

**FISCAL STRESS IN THE U.S. STATES: AN ANALYSIS OF
MEASURES AND RESPONSES**

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The Academic Faculty

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**FISCAL STRESS IN THE U.S. STATES: AN ANALYSIS OF
MEASURES AND RESPONSES**

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SUMMARY

Fiscal stress is an important and recurring problem that states face. Research to date on state fiscal stress involves, predominantly, cross-sectional and case study analyses and does not address the effectiveness of state responses. Many of these studies use different definitions and measures of fiscal stress compounding the difficulty of comparing fiscal stress findings. The present research effort adds to the fiscal stress literature by (1) clarifying the meaning of fiscal stress in the state context, (2) developing a measure of fiscal stress that operationalizes this meaning and is comparable across units, and 3) using this measure analyzes patterns in and the effectiveness of state responses. Fiscal stress is measured using four indexes: budget, cash, long-run, service-level. Eleven financial indicators, calculated using data from state Comprehensive Annual Financial Reports (CAFRs), are used to create these indexes for all fifty states for the years 2002-2009. Descriptive analysis compares state fiscal stress levels (grouped into low, moderate, and high fiscal stress by cluster analysis) to state economic growth rates, state responses, and institutional factors yielding several findings. First, states do not use an incremental or punctuated equilibrium strategy in responding to fiscal stress; nor do their responses follow the pattern predicted by Cutback Management theory. Second, institutional factors affect both the levels of fiscal stress and state responses to fiscal stress. Regression analysis supports and extends these findings. First, short-term responses of expenditure cuts, tax increases, and rainy day fund use do not affect state fiscal stress levels. Second, these responses have long-term effects on fiscal stress levels. A major implication of this research is that there is very little states can do in the short-term to reduce fiscal stress. However, by balancing expenditures and revenues states can set themselves up to weather the next economic downturn with lower levels of fiscal stress.

CHAPTER 1

INTRODUCTION

Every few years, newspapers are filled with bad news about U.S. state government finances, billion dollar budget deficits, dramatic cuts to programs and services, and sometimes government furloughs and layoffs. During the national recession that began in December 2007, many but not all states followed this well-worn pattern. Similar to business cycles, public budgeting and finance literature periodically focuses on the issues of fiscal stress, budget deficits, and budgeting with constrained resources. Over the past 30 years, research on state experiences of fiscal stress has clustered around national recessions, including those in 1982, 1990-91, and 2001. The 50 states provide an ideal laboratory for studying responses to and consequences of dramatic economic shifts and particularly, economic decline. States differ in their budget structures, protocols and processes, political and socioeconomic cultures, and demographics. On the other hand, most states are bound by balanced budget requirements that necessitate action to close budget gaps arising during economic downturns (Hou and Smith 2006; NCSL 2010).

A focus on governmental fiscal stress in the United States, initially at the municipal level, began with the near default of New York City in 1975 and subsequent problems in other cities (Levine 1978). As cities' problems continued, often due to the ebb and flow of the business cycle and demographic changes, the problems faced by states also gained recognition (Bahl 1984; Gold 1992; Ross and Greenfield 1980). State fiscal stress is a recurring problem, therefore the need to know the best short-term and long-term responses, is perennial. The current difficulties in state fiscal situations adds urgency to the problem, though understanding the best way to manage stress will be no less important once states' budgets balance.

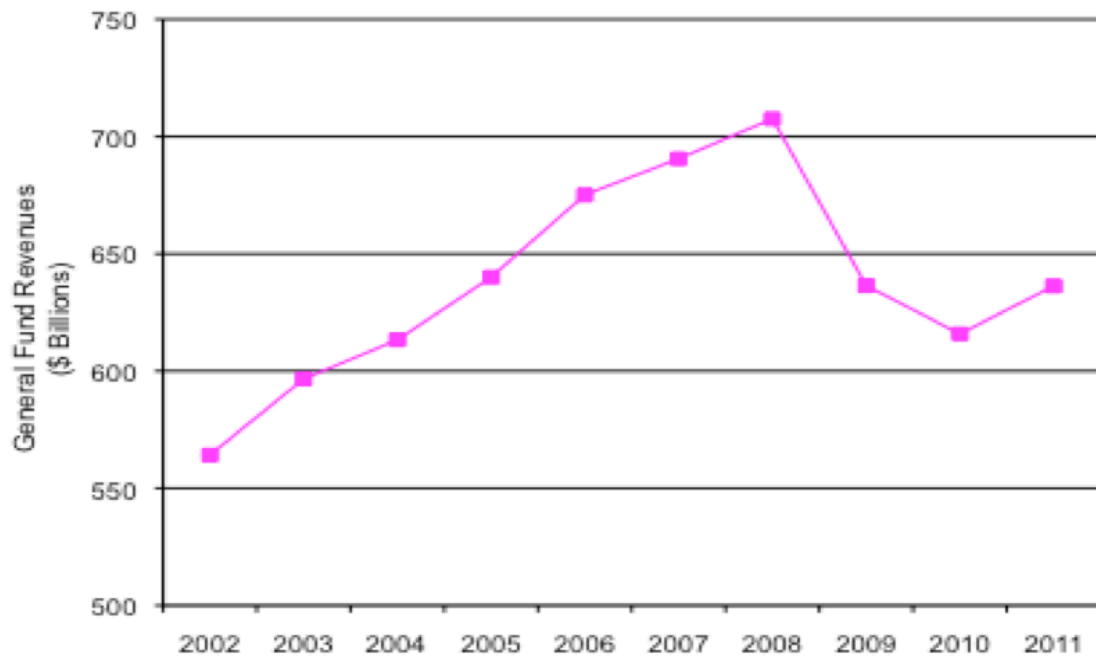
The fiscal stress literature is largely silent on effective strategies for dealing with its occurrence (Scorsone and Plerhoples 2010). Part of this is likely due to the cyclical nature of fiscal stress; eventually as the economy improves so do state fiscal situations. However, lengthy periods of economic stagnation or decline in some regions of the U.S. point to the need for practical advice on the best way to minimize fiscal stress. Though states' options for responding to fiscal stress are relatively limited – reduce expenditures, increase revenues, tap rainy day funds or reserves, and implement efficiency measures – a well-designed strategy for dealing with fiscal stress can minimize the short and long-term negative effects (Scorsone and Plerhoples 2010).

To address some of the gaps in current literature, this research proposes development of a new measure of state fiscal stress and then, using this measure, examines state responses to economic decline. In this analysis the following questions are addressed: (1) How is state fiscal stress defined and measured in the existing literature? (2) Is there a better measure of fiscal stress? And, if so, why is such a measure more reliable and valid? (3) Do state characteristics affect their experience of fiscal stress (as measured here) and/or influence their choice of responses? (4) Are some states able to navigate better through periods of fiscal stress than other states, and if so, why? (5) Are certain state responses more effective at reducing or alleviating fiscal stress? and, (6) Does the type of response a state uses in one period of fiscal stress affect its stress levels in subsequent periods of fiscal stress?

1.1 Motivation for Study

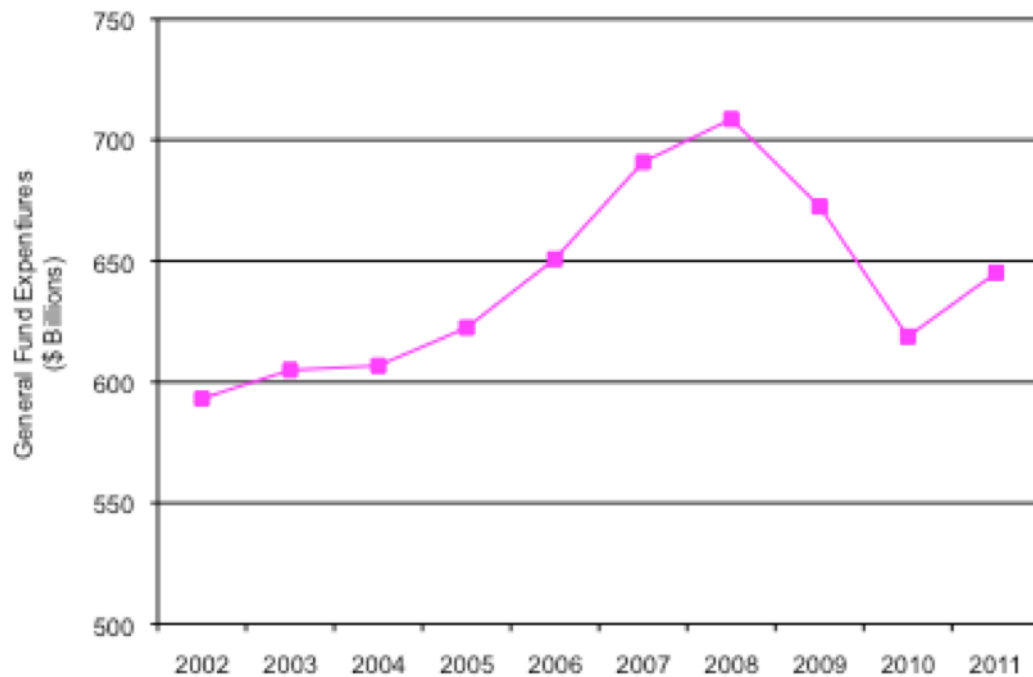
Effects from the recent “Great Recession” resulted in large budget deficits in many states over the last three years (2008 to 2011). With a slow and uneven economic recovery, budget deficits are expected to continue into fiscal years 2012 and 2013 (McNichol et al 2011). Indeed, the state budget repercussions of this economic downturn have extended several years longer than the length (December 2007 – June 2009) of the

national recession (McNichol et al 2011). In fiscal year 2009, 45 states faced a total budget deficit of \$109.9 billion. The budget deficits continued into fiscal year 2010 with 48 states facing total budget deficits of around \$196 billion or 29 percent of state budgets.



Source: NASBO Fiscal Survey of the State (Fall Edition)

Figure 1.1: Total State General Fund Revenues. Fiscal Years 2002 - 2011



Source: NASBO Fiscal Survey of the States (Fall Edition)

Figure 1.2: Total State General Fund Expenditures, Fiscal Years 2002 -2011

As shown in the figures above, neither revenue collections nor total state expenditures have returned to their pre-recession levels. This situation has direct repercussions not just for state budgets but also for state residents. Fiscal stress experienced by state governments generates interest, in part, due to the direct impact that revenue increases and expenditure cuts have on the public. For example, since the most recent recession began, California has issued IOUs instead of paying creditors, teachers in Hawaii were furloughed for seventeen days in one year, Florida increased tuition at all of its public universities by 15 percent, and the State of Washington intends to increase premiums on health plans for low-income residents by 70 percent (Johnson et al 2010; Knutson 2010). Not surprisingly, states are closing their budget deficits by reducing aid

to cities, effectively passing budget problems from states to cities (Cooper 2011). Use of this balancing technique has grown as federal stimulus dollars have dried up. Cuts in aid to cities – unlike cuts in some state services – are likely to result in visible and stark reductions in direct services to the public (e.g., closed libraries, unfilled potholes, fewer police and firefighters) (Cooper 2011). While state responses to fiscal stress differ, the effects on citizens are profound.

Besides the practical ramifications of fiscal stress, the non-theoretical and at times confusing nature of the academic discussion on fiscal stress also motivated this study. Apart from the work of Levine (1978, 1979, 1980) and Levine et al (1981a) in developing the “cutback management” literature, no budget theory explicitly considers how governments budget under constrained resources, how they will respond to fiscal stress, and why some responses may work better than others.

1.2 Contributions to Literature

Research to date on state fiscal stress involves, predominantly, cross-sectional and case study analyses. Research tends to concentrate on the causes of fiscal stress and state responses, but not on the effectiveness of state responses (Scorsone and Plerhoples 2010). Many of these studies use different definitions and measures of fiscal stress that compound the difficulty in identifying the effects of state responses to fiscal stress. The present research effort adds to the fiscal stress literature by (1) clarifying the meaning of fiscal stress in the state context and (2) proposing a new measure of fiscal stress that operationalizes this clarified meaning and is comparable across states and years. This measure takes advantage of improved cross-state financial reporting.

Building on previous work conducted at the municipal level (Lewis 1984; Downs and Rocke 1984; Bartle 1996) and state level (Dougherty and Klase 2009), this research delves into how state responses to fiscal stress vary by the severity of fiscal stress through

explicitly comparing three budget frameworks: incrementalism, punctuated equilibrium, and cutback management theory.

Case study and cross-sectional analyses provide only limited insight into which responses, if any, help advance a state out of fiscal stress. Even less is known about how state responses to one period of economic decline impact the fiscal stress experienced in a subsequent period. To better understand the effects of state budget and fiscal management on fiscal stress, this study uses an eight-year panel data set. This section adds to the literature by (1) deepening our understanding of the effectiveness of responses to fiscal stress, (2) using the state Coincident Index developed by the Philadelphia Federal Reserve to capture the effect of state economic conditions on responses to fiscal stress and (3) assessing the longer-term impacts of responses to fiscal stress. Results from this research may inform state policy makers, budget and finance officers and managers of effective short-term and long-term solutions to fiscal stress.

1.3 Scope and Limitations

The scope of this dissertation is to construct a valid and comparable 50-state fiscal stress measure following the methodology of Wang et al (2007); and to then use this measure to test the effectiveness of state responses. State comprehensive annual financial reports (CAFRs) from 2002 to 2009 will be used to create four indices, each measuring a dimension of fiscal stress: budget solvency, cash solvency, long-term solvency, and service-level solvency. Next, cluster analysis will be used to group states into low, medium, and high categories of fiscal stress. Descriptive analysis will be used to assess patterns in fiscal stress responses, assess the validity of theoretical propositions on state responses at different levels of fiscal stress severity as well as the relationship between state demographic and institutional characteristics and fiscal stress levels. Regression analysis will be used to analyze the effectiveness of fiscal stress responses in lowering fiscal stress levels.

This analysis is limited by several factors. The period of study, eight years, is due to the availability of government-wide state data that began to be collected in fiscal year 2002. For the purposes of this study, the range of economic conditions both at the state and national level minimize the effects of the limited time frame.

1.4 Organization

The rest of the dissertation is organized as follows. Chapter 2 outlines the theoretical and empirical framework for understanding how states respond to fiscal stress as well as the responses available to them. Chapter 3 covers the range of meanings assigned to fiscal stress in the literature and synthesizes a meaning that will be used throughout this research. In addition, this chapter covers the range of fiscal stress measures and the strengths and weaknesses of the most common state fiscal stress measures. In Chapter 4, the fiscal stress measure to be used in this analysis is constructed and tested against existing measures and coincident economic trends. Chapter 5 contains a descriptive analysis of state responses in light of fiscal stress severity, assesses the usefulness of the theoretical frameworks discussed in Chapter 2, and also looks for relationships between state institutional characteristics and the severity of fiscal stress. In this chapter states are divided into three categories of fiscal stress severity using cluster analysis. Chapter 6 details the data and methodology used to analyze the effectiveness of fiscal stress measures both within the short term and long-term. Chapter 7 discusses analytical findings, offers policy implications from this work and presents considerations for future research.

CHAPTER 2

THEORETICAL AND EMPIRICAL FRAMEWORK OF BUDGETARY RESPONSES TO FISCAL STRESS

No single theory explains the intricacies of the public budgeting process, the influence of political institutions and socioeconomic conditions on management choices, and the pattern of choices public organizations will make in an environment of constrained resources (Rubin 1990; Bartle 2001). While several theories provide a context for the decisions of budget actors, empirical work on the influence of budget and political institutions on state decision-making is also important to set the context and describe the environment that state budget and policy makers face. This analysis considers the decisions state budget actors make in conditions of fiscal stress. For this, budget theory provides a context and some guidance but not unequivocal certainty of how decisions are made under fiscal stress, why these decisions are made or the results expected from such decisions.

Three theories offer guidance on how states will react to stress – two primarily focus on periods of growth (though subsequent research has considered resource constrained environments), and the third theory was developed and specifically formulated to consider how local governments react to fiscal stress. In this chapter, these budget theories – incrementalism, punctuated equilibrium, and cutback management – are described with particular emphasis on their application to fiscal stress conditions. Research findings about the role of budget and political institutions in shaping government responses to fiscal stress are also considered and used to deepen our contextual understanding of decision-making under fiscal stress.

Maryland's recent budget woes illustrate the extent to which the budget process and fiscal stress are inextricably linked. In fiscal year 2012, Maryland – for the third straight year – faces an imbalance between expected revenues and planned expenditures¹, one manifestation of fiscal stress (McNichol et al 2011). Because of this imbalance, the focus of the governor, state legislature and interest groups is on the possibilities for implementing cost-saving measures (Wagner 2010). Some options open to the governor, who must submit a balanced budget to the legislature, include across-the-board cuts to local education aid, reducing payments to mental health providers, shifting responsibility for teacher pension costs to counties and increasing hospital contributions to the state's insurance program for the poor (Wagner 2010). In this case, the immediate need to address fiscal stress directly impacts the focus of budget decision-makers on specific balancing options, the political viability of programmatic changes, and the size of budget increases or decreases. The imperative, often constitutional, to balance budgets is the major driver of state responses to fiscal stress. As will be explained in the next chapter, budget deficits are not the only manifestation of state fiscal stress, however; they receive the majority of the attention.

Questions central to this analysis include those regarding state characteristics that may influence the level of their fiscal stress, the timing and responses to fiscal stress, differences in balancing strategies depending on the severity of fiscal stress, and the effectiveness of these responses. The answers to these questions depend on a number of factors that comprise public budgeting theory, including: the nature of relationships between and among budgeting stakeholders and decision-makers, the role of institutional and socioeconomic factors in budgetary decision-making, the pace of budgetary decision-making and the guidance decision-makers use to shape budget policy (Rubin 2005).

¹ Despite ending fiscal year 2011 with a budget surplus, Maryland's governor estimates the state will still face a budget deficit of \$700 million in fiscal year 2012 (Linksey 2011).

2.1 State Responses to Fiscal Stress

States have four² common responses to fiscal stress: reduce spending, increase revenue, implement efficiency gains that provide the same level of services for less money, or transfer funds between accounts (such as tapping into rainy day funds) (Gold 1995; Druker and Robinson 1993; Grizzle and Trogen 1994; Willoughby and Lauth 2003; Sobel and Holcombe 1996a; Douglas and Gaddie 2002; Hou 2003; Hou 2004). Current research on state government fiscal stress focuses on how states respond to stress and, in some cases, why they respond to stress in certain ways (Gold 1995; Druker and Robinson 1993; Grizzle and Trogen 1994; and Willoughby and Lauth 2003). Many of the effects of fiscal stress felt by state citizens are a direct result of how these governments respond to stress. Understanding why states respond in certain ways and how organizational characteristics shape their responses provides a more nuanced view of state responses to fiscal stress. Besides the type of response, the sequence of responses have important effects on how fiscal stress is experienced within the states.

2.1.1 Types of Responses

Reducing expenditures is a timely response to fiscal stress and can take many forms, from across-the-board to targeted cuts. Most budgetary responses to fiscal stress undertaken in the current fiscal year are done through spending and not tax changes (Fisher 1988). Poterba (1994) also finds that expenditure and tax changes are the largest (in terms of dollar amounts) responses to fiscal stress. As seen in state responses to the NASBO Fiscal Survey of the States³ strategies to eliminate budget deficits, also take the

² Even though borrowing specifically to alleviate budget gaps is prohibited in most states (Dougherty and Klase 2009), states occasionally engage in borrowing funds to relieve fiscal stress (Gold 1995).

³ The Fiscal Survey of the States is published twice a year in the fall and spring by the National Association of State Budget Officers' (NASBO) and the National Governors Association. Publication of this series

form of employee furloughs, layoffs, hiring freezes, salary reductions and reducing aid to local governments (NASBO 2010). Table 2.1 provides a sample of budget balancing strategies states used in FY 2010. Local aid includes revenue sharing programs that provide general funds to local governments or earmarked funds for street repair, local schools, libraries, and local jails. Since the 2001 recession, expenditure cuts, especially across-the-board and targeted cuts, are the most common measure taken by states during economic downturns (NASBO 2009).

Table 2.1: Examples of FY 2010 Budget Balancing Strategies									
	User Fees	Across-the-Board Cuts	Targeted Cuts	Reduce Local Aid	Lay-offs	Furloughs	Rainy Day Fund	Re-organize Agencies	Privatization
Number of States	13	26	33	20	25	22	23	11	2
Source: The Fiscal Survey of the States, NASBO 2010									

When faced with fiscal stress, states may try to minimize declining revenue by raising taxes or user fees. In many states, fiscal stress occurs because an economic downturn exposes an ongoing structural deficit or results in a temporary, but significant, cyclical deficit (Gold 1995; Hackbart and Ramsey 2004). Unlike expenditure cuts, many states are limited in the amount and frequency with which they can raise taxes (Braun et al 1993). In addition, the political costs of promoting tax increases during an economic

began in 1979. The results are based on field surveys completed by Governors' state budget officers in each of the 50 states. The Fiscal Survey includes information on states' general fund revenues, expenditures, and balances as well as actions states reported taking to balance budget shortfalls. The fall edition of the Fiscal Survey reports on enacted state budgets, while the spring edition reports on governor's proposed budgets.

downturn are well understood by politicians (Braun et al 1993). Tax increases are also more likely to go into affect the fiscal year following a budget shortfall, although they can occur within the same fiscal year (Poterba 1994). Despite these limitations, there does appear to be a relationship between severity of fiscal stress and the use of tax increases. In response to the 1990-1991 recession, states with the most severe levels of fiscal stress enacted the largest increases in taxes; with most increases going into effect as the period of fiscal stress ended (Gold 1995; Poterba 1994; Kalambokidis and Reschovsky 2005). In contrast, in response to the 2001 recession, states were much less likely to use tax increases to deal with budget problems (Kalambokidis and Reschovsky 2005; Maag and Merriman 2007). States are also more likely to enact tax increases after gubernatorial elections (Gold 1995). Tax increases have tended to result in a more balanced distribution of tax revenue. For instance, states with more reliance on income taxes tended to increase sales taxes or vice versa (Gold 1995). In terms of relieving fiscal stress in one year, tax increases tend to have delayed effects, since a tax increase in one year will not be felt until the next fiscal year. If a period of fiscal stress extends over several years, then increases in taxes or user fees may then provide needed relief. In addition, if the tax changes broaden the tax base or adjust previously inefficient tax systems, this may contribute to a more elastic tax system that then can protect the state against future periods of fiscal stress or reduce the severity of stress at a future period (Gold 1995). States increase taxes to raise revenues in times of fiscal stress using increases to sales taxes, personal income taxes, corporate income taxes, cigarette and tobacco taxes, motor fuel taxes and alcohol taxes. In the last decade, fee increases are the single most popular method of increasing revenues (NASBO 2010). Fee increases include user fees, university fees, transportation/motor vehicle fees, and business related fees. State efforts to produce the same level of programs or services at lower cost are characterized as efficiency measures. Examples of these activities include reorganizing agencies and privatization of public activities. These measures typically take place at the

agency or program level and so are hard to measure and assess quantitatively, especially across states. In response to cutbacks in Georgia during the 1990-1991 recession, agencies consolidated programs with similar or identical activities, outsourced some human resource functions and reduced middle management positions (Willoughby and Lauth 2003). In a multiple state study, however, Druker and Robinson (1993) found the opposite trend in middle management reduction, with few states attempting to flatten organizational structures and preserve service-providing positions.

State rainy day funds have proliferated since the 1980's with 48 states currently using some form of budget stabilization fund (Hou 2004; NASBO 2010). These funds, called budget reserve funds, revenue-shortfall accounts, cash-flow accounts, budget stabilization funds, or rainy day funds, are intended to stabilize the ups and downs of revenue collection with overspending in prosperous years curtailed by putting surpluses in the reserve fund and cutbacks in less prosperous years minimized by making transfers out of the reserve fund (Hou 2004; NASBO 2010). Indeed this is one area of state response to fiscal stress that has been studied extensively using quantitative methods as well as cross-sectional and panel data. Important characteristics of rainy day funds include whether states are legally required to fund to them, the size of fund balances, caps on a maximum balance, as well as limits on when and how reserve funds can be accessed (Sobel and Holcombe 1996a; Douglas and Gaddie 2002; Hou 2004; Hou 2006).

The structure of rainy day funds plays a role in easing or worsening state fiscal stress. Specifically concerning the 1990-1991 recession, the mere presence of a rainy day fund did not necessarily relieve the fiscal stress experienced by a state (Sobel and Holcombe 1996a). A panel analysis using state data from 1979-1999 confirms this conclusion (Hou 2003). However states with a legal requirement to fund rainy day funds experienced lower levels of fiscal stress (Sobel and Holcombe 1996a; Douglas and Gaddie 2002). An interesting relationship found by Douglas and Gaddie (2002) is that states with higher rainy day fund balances are more likely to experience fiscal stress – the

authors explain this seemingly counterintuitive finding as states that expect more volatility in their revenues fund their rainy day funds at higher levels. Such results point to the difficulty in determining the causality between rainy day fund existence, use and fiscal stress. Hou (2003) found a negative relationship between higher reserve fund balance and fiscal stress. This expected relationship may reflect the larger sample size (48 states over 21 years) as well as the use of a different measure of fiscal stress. Douglas and Gaddie (2002) use the sum of tax increases and expenditure shortfall as a percentage of general fund expenditures in one year as their measures of fiscal stress; in contrast, Hou (2003) uses general fund expenditure gaps as the dependent variable. Another factor, demonstrated in the economic downturn in 2001, is that many states experienced budget shortfalls so large that rainy day funds were not able to make up the difference (Kalambokidis and Reschovsky 2005). These studies suggest that rainy day funds serve a countercyclical function and that their structures determine to their relative effectiveness.

These responses, especially spending cuts, tax increases, and rainy day fund use, do not operate in isolation. Use of rainy day funds may reduce the need to cut expenditures and cutting expenditures may reduce the need for tax or user fee increases. In a review of state responses to the 2001 recession and its aftermath, Maag and Merriman (2007) find that states with higher savings (rainy day fund balances) were able to weather the recession without tax increases or substantial spending cuts. These findings suggest that states can engage in a trade-off among responses to successfully battle fiscal stress.

2.1.2 Effect of Budgetary Institutions and Politics on State Responses

A large body of research looks at how the interplay of politics and institutions (e.g. tax and expenditure limitations, balanced budget rules, etc.) affect state responses to fiscal stress. This research highlights the additional constraints that state decision-makers face when dealing with fiscal stress – they must work within their own institutional

framework. Ignoring these institutions risks means glossing over major factors that influence why states act as they do. This section focuses on the branch of research that is pertinent to U.S. states.

The general consensus among researchers investigating the role of budget institutions is that they do affect policy actions (Poterba 1996; Bohn and Inman 1996; Bayoumi and Eichengreen 1995; Fatas and Mihov 2006; Hou and Smith 2010). Research on balanced budget rules – these apply to 49 of 50 states – concerns the extent to which different balanced budget rules affect the occurrence of budget deficits and how they influence state responses to these deficits. Alesina and Bayoumi (1996) found that states with stricter balanced budget rules are less likely to run budget deficits and in the event that they do, the deficits tend to be smaller than in states with less stringent rules. Most research focuses on how the budget rules affect the size and speed of state responses to deficits. Findings indicate that states with stricter budget rules are more responsive to deficits and tend to address the problem faster than do states with weaker rules (Poterba 1994; Bohn and Inman 1996; Alesina and Bayoumi 1996). Poterba (1994), specifically looking at state responses during fiscal stress, found that states with weak anti-deficit rules (also called balanced budget rules) adjust spending less than those with stronger anti-deficit rules. Anti-deficit rules did not appear to affect state tax response to fiscal stress.

The effect of balanced budget rules on state responsiveness to business cycles addresses the trade-off between fiscal discipline and the flexibility to spend more to support the state economy. While Alesina and Bayoumi (1996) found balanced budget rules limit a state's budget flexibility, they found no economic costs to this. In contrast, Levinson (1998) notes, especially in larger states, that balanced budget rules may aggravate the effects of business cycle fluctuations.

Research on tax and expenditure limitations (TEs) concerns both their effect on state responses to fiscal stress and the broader effect these rules have on state ability to

respond to the business cycle. Poterba (1994) shows that states with TELs are less likely than states without them to use a tax change in response to deficits. Others have found that TELs limit state ability to respond to budget deficits and business cycles (Bayoumi and Eichengreen 1995; Fatas and Mihov 2006). As with the balanced budget rules, the effect of these limitations depends upon one's interpretation. Bayoumi and Eichengreen (1995) suggest state inability to alter spending and tax levels due to economic pressures may produce budget deficits or restrict ability to spend more on programs needed during economic downturns. Fatas and Mihov (2006) suggest that while states with TELs have less discretion to respond to economic shocks, since their fiscal policy will be less volatile, they may be less likely to experience volatile business cycles in the first place. The effect of politics, specifically the cooperation between the legislative and executive branches held by different political parties, have also been found to influence the speed and type of response to budget deficits. States with governors from one party and legislative houses in control of the other party are more likely to run budget deficits (Alt and Lowry 1994) and less likely to respond aggressively to budget deficits with either spending cuts or tax increases (Poterba 1994).

Taken together this research provides strong evidence that in analyzing states' actions, and more importantly, the effect of different actions on states' experience of fiscal stress – the institutional framework must be taken into account. Although the exact relationship between the institutional framework, a state's response, and their broader experience of fiscal stress is not entirely clear, it is evident that these factors have an impact.

2.2 Incrementalism

2.2.1 Background and Description of Theory

The predominant theory of public budgeting is incrementalism (Swain and Hartley 2001; Tucker 1982). Application of incrementalism to public budgeting was first introduced by Aaron Wildavsky in *The Politics of the Budgetary Process* (1964), was clarified and tested by Wildavsky and two coauthors, M.A.H. Dempster and Otto A. Davis in the 1960's and 1970's and then refined further by Wildavsky in the early 1980's and 1990's. This theory was largely in response to the reform orientation previously predominant in the field (Swain and Hartley 2001). The theory builds on the work of David Baybrooke and Charles Lindblom (1963) as well as that of Herbert Simon (1957) by applying concepts of incremental policy change and bounded rationality to the budget process and describes an organizational model for change (Swain and Hartley 2001; Dempster and Wildavsky 1979; Davis et al 1966). Incremental budget theory's central tenet is that due to the large amount of information facing budget decision-makers and the complexity of the decisions they need to make, budget decision-makers use an incremental method to calculate the budget amounts each year. Using this method, they do not consider the entire range of programs or the entire range of alternatives to these programs. Instead, they use last year's amount as the starting place and only consider a narrow range of increases or decreases (Dempster and Wildavsky 1979; Davis et al 1966; Wildavsky 1964). As a result, the budget process is not technically rational (i.e., it is not a comprehensive review of all the components and their alternatives). As clarified by Dempster and Wildavsky (1979) a budget process is incremental if based on two criteria: 1) the decisions focus around the existing base and 2) the number of alternatives to existing programs considered are small. Another aspect of incrementalism is that of a fair share; that changes in expenditures (increases or decreases) will be communal and each

agency's share of the budget will remain approximately the same (Swain and Hartley 2001).

These budgetary outcomes are the result of the roles budget actors play while applying incremental methods (Davis et al 1966). The roles are assigned specifically to actors in the federal budget process, but it is possible to generalize them to allow for their application to other levels of government. Agencies (federal agencies) advocate for increased expenditures, the executive budget office (Office of Management and Budget) has a bias towards reducing expenditures, the lower legislative house body with budget responsibility (House Appropriations Committee) wants to ensure constituents are served within the lowest possible expenditure, the upper legislative house body with budget responsibility (Senate Appropriations Committee) is the forum for agencies to appeal the lower house's actions and the executive (President) proposes the budget that then must be approved by the legislative body. Agencies are expected to ask for more funds for their programs and the executive budget office knows that their role is to fit agency requests within the limits of the budget. The results of this budget process as defined by incremental budget theory are a negotiated discussion of percentages, not absolute numbers, and are relatively stable over time.

The incremental method is not immune from or deaf to outside political, social or economic factors (Davis et al 1974; Dempster and Wildavsky 1979; Wildavsky 1986; Dezhbakhsh et al 2003), although it is often presented this way (Ryu 2009). As described, the incremental method of budgeting occurs within a political process (Davis et al 1966). Any factors that affect the political process and how budget actors interact with one another will potentially change the outcomes of the budget process (Davis et al 1966; Davis et al 1974; Swain and Hartley 2001). Political factors, such as which party is in control of the legislative houses and whether the legislative and executive branches are controlled by different parties; economic factors such as the predicted size of the budget deficit and whether the economy is in recession; and social factors, such as whether the

country is in a state of war and the ratio of the adult to youth populations, are examined to determine their effect on budget outcomes (Davis et al 1974). Dezhbakhsh et al (2003) find that factors that lead to political vulnerabilities such as presidential elections, persistent and large deficits as well as Democratic party control over the political process and changes in the party in control of the executive or legislative branches lead to changes in the regularity of budget changes and the closeness of these changes to current base levels of the budget.

As mentioned, this theory and the description of the relationships between budget actors are based on the federal budget process in the U.S. (Wildavsky 1964; Davis et al 1966; Dempster and Wildavsky 1979 and Davis et al 1974). Much of the empirical work that followed also focused on the U.S. federal budget process (Wanat 1974; Tucker 1982; Padgett 1980; Gist 1982; and Dezhbakhsh et al 2003), although not exclusively. In applying the incremental theory of budgeting to sub national units of analysis, scholars have taken the core elements of the theory and contextualized them to sub national budget actors and budget processes, and tested for indications of the incremental method (Lewis 1984; Lewis 1988; Downs and Rocke 1984; Rickards 1984; Hackbart and Ramsey 2004).

2.2.2 Application of Theory to Situations of Fiscal Stress

Incrementalism offers several insights into how states facing fiscal stress will react. In early and subsequent research, Davis et al (1966) and Dempster and Wildavsky (1979) used the terms increment and decrement to describe changes to the budget base. Researchers concerned with budgeting in periods of fiscal stress adapted the term decrement to decrementalism (Lewis 1984; Bartle 1996). The term signifies an incremental budget process – with examination of the base, concern for stakeholder harmony, and limited consideration of alternatives – only instead of increases to the budget base there are decreases to the budget base.

Taking the broad tenets of incrementalism, we expect states to retain the regularity of their budget processes, for the roles of budget actors to be preserved, and for the base to be the focus of conversation. Using these ideas, several researchers have sought to pinpoint the use of the incremental method within the tactics of local governments facing fiscal stress as well (Rickards 1984; Lewis 1984; Downs and Rocke 1984). Their findings are not unanimous, but through their operationalization of incrementalism at different levels of government the types of hypotheses and tests needed to determine the use of incremental methods is illustrated. They also provide a framework for testing the effectiveness of incremental responses to fiscal stress.

At the municipal level, researchers applying incremental budget theory have found indications of incremental budgeting – operationalized as across-the-board and opportunistic cuts. Rickards (1984), in an analysis of 105 West German cities over nine years, finds incrementalism more likely in certain fiscal conditions. More populous cities are more likely to follow incremental budgeting patterns. The author speculates this is due to the larger size of the budget and the increased demands by interest groups that result in decision-makers relying more on “fair-share” rules. In contrast, a larger tax base is more likely to result in bigger changes to budgets because there is more revenue to start new programs. This suggests that cities with fewer revenues are more likely to demonstrate incremental budgeting.

Looking at U.S. cities with the strongest and weakest economies between 1964 and 1979, Lewis (1984) found evidence of incremental budgeting or in the case of economically depressed cities, decremental budgeting. Incremental budgeting was operationalized as similar budget cuts for different city departments, regardless of their importance to the provision of core city services. The results of this analysis support the incidence of decremental budgeting by cities experiencing revenue declines, with no obvious strategy or administrative focus on preserving one department’s budget over another’s. A caveat on the application of this study to fiscal stress is that the cities in the

sample did not suffer sustained periods of decline. Therefore, Lewis (1984) suggests that decremental budgeting may not persist after multiple years of serious revenue declines.

In another study of U.S. cities, Downs and Rocke (1984) operationalize three incremental theories of budgetary decision-making: bureaucratic process theory (changes are incremental due to bounded rationality and inflexible organizational responses to change), interest group politics theory (changes are incremental to avoid upsetting interest groups), and managerial theory (overall budget increases are incremental due to mandatory spending requirements). While all three theories result in similar incremental outcomes during times of fiscal growth, they result in divergent outcomes in times of fiscal stress. This study tests how incrementalism in a fiscally stressed setting operates. Downs and Rocke (1984) find budgeting is essentially incremental (relatively small changes year to year) and that the fair share principle applies with no consistent departmental winners or losers – although this is not operationalized as across-the-board cuts. Furthermore, they find that in response to fiscal stress, budget cutting tends to take the path of least resistance (e.g. hiring freezes, deferred maintenance). The findings by Downs and Rocke (1984) mostly concur with those of Lewis (1984).

Wildavsky (1986) examined budgeting at the state level and found varying applications of incremental budgeting. The presence of various structural (or in another parlance, institutional) factors such as spending formulas, mandatory spending, earmarked tax revenues and federal grants for specific purposes constrain the choices available to state budgeters. In this analysis, it is not just bounded rationality that prevents decision-makers from considering all possible options. Rather, the structure of the budget and the budget process restrict comprehensive analysis. Wildavsky (1986) concludes that the most important factor for state budget decision-makers is revenue adequacy. A typology of budgeting divides states (or nations) into poor or wealthy with predictable or unpredictable revenues. Regardless of a state's wealth, if revenues are unpredictable, a pattern of repetitive budgeting – in which the budget is made and remade throughout the

fiscal year – dominates. However, with predictable revenue – even if it is low – incremental budgeting will be the norm.

2.2.3 Theoretical Implications for State Responses to Fiscal Stress

As discussed in the previous section, researchers have identified several practices associated with the incremental method of budgeting, specifically in times of fiscal stress. Across-the-board cuts, or at the very least not using targeted cuts, are described as indicative of the incremental method. In addition, the use of opportunistic reductions in expenditures and the lack of a discernable strategy or method in dealing with fiscal stress are also described as elements of a decremental strategy. The use of rainy day funds are not mentioned in relation to incrementalism, although this is more likely due to a research focus on municipal units of analysis than on anything else. Aggregate data on localities does not differentiate between funds for annual expenditures and rainy day funds (Wolkoff 1999), making it difficult to determine which municipalities use rainy day funds and their balances. Based on my review of incremental budgeting theory, rainy day fund use neither confirms nor contradicts incremental budgeting. Also using a rainy day fund can be categorized as opportunistic and allowing the continued avoidance of upsetting particular interest groups or agency heads. Also, to avoid upsetting budget stakeholders and avoid a comprehensive look at budget allocations, incrementalism suggests budget cutters will look to the easiest areas to trim. Opportunistic cuts include hiring freezes and slashing non-mandatory expenditures (Wildavsky 1986). A nuisance of incremental budgeting, particularly in times of fiscal stress, is that when state decision-makers cannot confidently or accurately predict their revenue flow within a fiscal year the budget then must be made and remade. The practice of repetitive budgeting involves adjustments to budgeted expenditures throughout budget execution, as revenue repeatedly misses targeted amounts.

2.2.4 Criticisms and Limitations of Theory

Since incrementalism has been the dominant theory of public budgeting for nearly 50 years, criticism of it is abundant and varied. Much of the criticism focuses on the empirical work that uses the theory as a framework for understanding practical application – critics question the methodology used by Davis et al (1966), the unit of analysis, and the definition of an increment (Swain and Hartley 2001; Natchez and Bupp 1973; Gist 1982; Berry 1990). Other criticism concerns the analytical and descriptive aspects of the theory. That is, some researchers equate incrementalism to a historical period of steady, across-the-board increases and not representative of current budgeting practice. Others question incrementalism's usefulness in periods of revenue decline in addition to its adherence to a strictly non-rational orientation of budgeting (Rubin 1990; Schick 1983; Bozeman and Straussman 1982; LeLoup 1978; Premchand 1983). Of particular interest for the present study are criticisms concerning incrementalism's description of the budget process.

A persistent criticism of incrementalism centers on its portrayal of the budget process, as legislatively dominant, comprised of political trade-offs among multiple budget actors with only marginal adjustments made to the budget year after year. Scholars offer several different conceptions of how the budget process functions. For instance, the budget process is described as both top-down and bottom-up by Bozeman and Straussman (1982) in their critique of the theory. In their view, budgeting, at least since the Budget and Accounting Act of 1921 (which created a federal executive budget process, a central budget office – now the Office of Management and Budget – the General Accounting Office – now the Government Accountability Office) has had both top-down and bottom-up elements. The authors argue that as chief executives face constrained revenues, top-down management will undermine the incremental nature of budgeting. The 1974 Congressional Budget and Impoundment Act; that created budget committees, the Congressional Budget Office, and changed the fiscal year, among other

actions, is also credited with fundamentally changing the U.S. budget process and moved the process further away from incremental budgeting (LeLoup 1988).

Although the terminology differs (LeLoup and Schick refer to micro- and macro-budgeting as opposed to top-down and bottom-up budgeting), the result is the same – chief executives, those in the legislative branch, program managers and other budget decision-makers are increasingly using non-incremental budget strategies. That is, throughout the 1970's and 1980's, as economic and political environments changed, budget practices diverged from the predominant theory (Rubin 1990). According to scholars critical of incrementalism, the theory may have been an accurate description of budgeting for a limited, historical time period but starting in the 1970's certain factors including the growth in mandatory spending, entitlements, and reduced revenues reduced its accuracy (Rubin 1990; Schick 1983; Bozeman and Straussman 1982).

In line with Schick's discussion of macro budgetary adaptations, Premchand (1983) suggests that the tasks performed by the government and the decision-making approaches they undertake are too complex to be described as simply incremental and non-analytical. While warning against overly rationalist, comprehensive descriptions of budgeting, Premchand (1983) explains that budgetary decision-making may include goals, strategies, and an overarching framework without being unrealistic or even exceedingly rational. Some of the macro budgeting adaptations highlighted by Schick (1986) underscore this point: countries (such as Australia, Sweden, Finland and Britain) have adopted fiscal rules, targets and expanded multiyear budgeting.

Closely related to critiques of incrementalism as only useful for limited historical periods are those that claim the theory does not accurately describe budgeting in periods of revenue decline (Schick 1983; Bozeman and Straussman 1982; Rubin 1990). These criticisms share a common interpretation of incrementalism; that it assumes growth will create a positive increment. Schick (1983) also points to the instability of 'decremental'

budgeting – when revenue decline is substantial, decision-makers may have to consider or reconsider significant budget changes in order to reach balance.

Although these criticisms have merit, using a slightly more flexible definition of incrementalism, as Wildavsky (1986) does, allows for a broader application of the theory and, perhaps, a more complete picture of the public budgeting process and outcomes. As mentioned, several scholars have used incremental theory to investigate budgeting in periods of both revenue growth and decline (Downs and Rocke 1984; Rickards 1984; Lewis 1984) while others define strategies in periods of revenue decline as both incremental and non-incremental (Hackbart and Ramsey 2004). As noted by Swain and Hartley (2001) incrementalism still provides a better description of budgeting than other theories and perhaps more importantly, describes the characteristics of budgeting – political process, limited human capacity for review, and agencies’ desire for increased funding– such that most subsequent descriptions of the budget process build on incremental theory.

2.3 Punctuated Equilibrium

2.3.1 Background and Description of Theory

Punctuated equilibrium is a theory of policy change developed in response to incremental theories of policy change and budgetary decision-making (Baumgartner and Jones 1993). In short, punctuated equilibrium theory integrates incremental and non-incremental policy change into a single theory (Baumgartner and Jones 1993). The theory has been applied to agenda setting, policy change and budgetary policy. Its application to budgetary policy, in particular, has resulted in an expanding body of research on budgeting at the federal, state and local levels. The budget is often, although not exclusively, presented as the outcome of decision-making between multiple layers of government. The theory builds on incrementalism and does not overtly reject it; however, punctuated equilibrium theory offers a different explanation for why large changes can occur within the policy system (Jones et al 1998; Baumgartner and Jones 1993).

Punctuated equilibrium makes several claims about the nature of policymaking and by extension the nature of budgetary decision-making. The theory further develops the concept of 'shift points' mentioned in early research on incrementalism (Jones et al 1998). The policy arena is broken into policy subsystems that alternate between periods of stasis and change (Jones et al 1998; Jones et al 2003). Within these subsystems several characteristics are found: bounded rationality on the part of individuals and organizations, limited attention to any one issue, and multiple layers of decision-making and responsibility. The limited attention to issues on the policy agenda is drawn from Kingdon's (1995) exposition of agenda setting. An issue may come to the forefront of attention for a number of reasons, but it is unlikely to maintain a high level of attention for a long period of time. In this setting an institution is defined as a set of individuals acting according to common rules resulting in collective outcomes (Jones et al 2003). Four major costs are found in this institutional setting: transaction costs, information costs, decision costs, and cognitive costs. Higher costs, termed friction, result in a slower organizational response to external stimuli. Multiple layers of organizational and individual decision-making and the resulting institutional frictions result in slow adjustment to changing external environments (Jones et al 2003). When applied to budgeting, these characteristics conspire to prevent government budgets from being quickly and easily adjusted to economic changes (or social and political changes) (Jones et al 1998). As a result, changes year after year will be small (incremental) until the system is forced, due to overwhelming urgency or an abundance of tension, to produce a dramatic change, a punctuation in the language of punctuated equilibrium advocates (Jones et al 2003; Breuing and Koski 2006).

As a result, scholars using the punctuated equilibrium theory as their framework focus on the following: (1) do budgets follow the expected pattern of stasis coupled with volatility? and (2) what institutional factors account for greater friction and more costly

collective decision-making and therefore cause a greater frequency or size of punctuations?

2.3.2 Application of Theory to Situations of Fiscal Stress

Punctuated equilibrium theory offers guidance on how states will respond to fiscal stress, although relatively little research focuses on this question directly. Scholars report a good deal of success in comparing actual budgeting patterns using national, state, local and international units of analysis to those predicted by the punctuated equilibrium theory (Jones et al 2009; Jones et al 2003; Jones et al 1998; Andersen and Mortensen 2009; Breuing and Koski 2006; Ryu 2009; Jordan 2003; Robinson et al 2007). According to Jones et al (2009), budgets experience periods of both stasis and volatility.

Punctuated equilibrium theory generates several expectations about how states respond to fiscal stress. Institutional friction and bounded rationality, found at all levels of government, will likely result in slow responses to environmental changes, such as a recession. The slow response time may be exacerbated by institutional characteristics that make decisions, transactions, or information costs higher. In other words, a dramatic response to fiscal stress may not be observed in the year that the stress first manifests, instead appearing in subsequent years. The inability to respond to fiscal stress quickly may result in further fiscal problems for a government. Subsequent retrenchment responses therefore are more likely to be dramatic and to affect non-priority functions.

Regarding the effect of institutional and other environmental factors on budgeting patterns, the literature is far from clear. Particularly at the state and local levels of government, research on the role of institutional and economic factors, such as fiscal stress, a governor's budgetary powers, and/or balanced budget requirements, are suggestive of the nature of relationships but not conclusive. The more control a governor has over the budget process, the higher information and transaction costs are and, as a result, punctuations occur with greater frequency (Breuing and Koski 2009). Institutional

friction also fosters increased punctuation. New York, with consistently late budget approval and a notoriously combative budget process, has more punctuations than any other state included in a study covering a 20-year period (Breuing and Koski 2006). On the other hand, divided government and type of balanced budget requirement were not found to influence the frequency of budget punctuations (Breuing and Koski 2006).

The frequency and size of punctuations across basic and developmental budget functions differ, at least in large, metropolitan cities (Jordan 2003). In this study, basic expenditures are defined as those for police, fire, and sanitation – essentially the core services of a municipality. Developmental expenditures are defined as those for parks, highways, and public buildings. Examining 38 cities over 27 years, Jordan (2003) finds that large punctuations are usually negative and that expenditures for developmental functions are more likely to experience large, negative punctuations in periods of economic decline. This suggests that in periods of fiscal stress, the brunt of expenditure cuts will be borne by developmental functions. In contrast to predictions by researchers using the incremental theory, punctuated equilibrium theory suggests that targeted cuts are to be expected in periods of fiscal stress.

The effect of structural deficits may also play a role in the frequency of punctuated policy actions. Structural deficits are the result of an on-going gap between a state's expenditures and revenues. As described by Hackbart and Ramsey (2004), structural deficits are the result of policy decisions to either expand state provided services without also expanding revenue sources or to cut taxes without a complementary reduction in state programs or services. As the cause of structural deficits is policy-driven, so too is the solution. However, Hackbart and Ramsey (2004) suggest that states tend to delay the revenue or expenditure decisions needed to correct a structural imbalance. As a result, the size of the policy change needed to correct a structural imbalance may increase – and as such, will result in more punctuated policy actions. Especially during periods of economic downturns, structural deficits that may have been

hidden by higher than expected revenue collections are likely to emerge and become more difficult to sustain.

2.3.3 Theoretical Implications for State Responses to Fiscal Stress

Several practices and organizational factors are associated with punctuated policy actions in response to fiscal stress. Targeted cuts are the most often cited example of a punctuated policy action in response to fiscal stress (Hackbart and Ramsey 2004; Jordan 2003). An advantage of operationalizing punctuated changes as targeted cuts is that it allows researchers to avoid the question of how big a change must be to qualify as a punctuated, not an incremental, change. Hackbart and Ramsey (2004) classify rainy day fund use as an incremental response because it allows states to avoid making difficult decisions and essentially to defer programmatic action. Organizational characteristics such as the presence of structural deficits and the extent of a governor's control over the budget process are highlighted as causes of punctuated actions (Hackbart and Ramsey 2004; Breunig and Koski 2009). Another implication of punctuated equilibrium theory on state budgetary responses is that responses may occur one or more fiscal years after stress initially appears. Incremental changes may persist despite the need for more substantive action as budget actors try to figure out the correct course of action and navigate the multiple layers of government decision-making. This has ramifications for the timing of responses and the connection between responses within one fiscal year to the level of fiscal stress that occurred a year or more past.

2.3.4 Criticism and Limitation of Theory

Criticism of punctuated equilibrium theory centers on the lack of causal explanations, poor predictability, and the methods used to measure punctuations (Givel 2006; Givel 2010; Robinson et al 2007). Robinson et al (2007), despite finding support for the stasis and punctuation model in school district budgets, questions the theory's

ability to explain why punctuations occur. The authors note that success in describing the nature of policy change – stasis combined with punctuation – does not substitute for explaining why the change occurs. As noted above, efforts to link institutional factors to the prevalence of punctuations exists, but it is still in its infancy. The inability of punctuated equilibrium to predict punctuations or to explain the conditions that lead to punctuations are major limitations of the theory. Furthermore, Givel (2010) points to cases in U.S. forestry policy, tobacco policy, and auto efficiency policy in which punctuations would be expected to occur due to rapid and major changes in their external environments, but in which no major policy outputs changed. Much of the criticism focuses on how to measure policy outputs via changes in statutes and regulations or in tone. All of this points to the difficulty in using punctuated equilibrium to form and support predictive hypotheses.

2.4 Cutback Management Theory

2.4.1 Background and Description of Theory

Cutback management theory explains the actions governments take in the face of fiscal stress. This theory grew out of observations of fiscal stress in U.S. localities in the 1970's and early 1980's (Levine 1978 and 1979; Levine et al 1981a). Scholars examined how state and local governments operate when there is no longer growth in revenues and fiscal stress sets in (Caiden 1980; Bahl 1984). At the time, Levine (1978) noted that most management theories available to public managers assumed a growth environment and available resources. Cutback management explains the political context and causes of fiscal stress as well as considers strategies and decision rules that public organizations can use to manage toward balance in periods of economic decline (Levine 1978; Levine et al 1981a). The theory draws from organizational change theory and relates it to the context of and actions taken in a resource-constrained environment (Levine 1978; Jick and Murray 1982).

Cutback management is defined as “managing organizational change toward lower levels of resource consumption and organizational activity” (Levine 1978, XX). Levine (1978, 317) explains that “so great is our enthusiasm for growth that even when organizational decline seems inevitable and irreversible, it is nearly impossible to get elected officials, public managers, citizens, or management theorists to confront cutback and decremental planning situations as anything more than temporary slowdowns.” The fundamental question cutback management theory attempts to answer is how to manage public organizations given flat or reduced appropriations (Levine 1978)? The difficulty with answering this question is that public organizations have to “be smaller, do less, consume fewer resources, but still do something and do it well” (Behn 1980, 614). More recently, cutback management theory has also been applied to budgeting in the U.S. states.

Several typologies to explain the causes of fiscal stress have been put forward by researchers using cutback management theory. Levine (1978) categorized the causes of fiscal stress as internal and external, political and economic. Savage (1992) refined this typology by differentiating between structural and cyclical causes of fiscal stress. Grizzle and Trogen (1994) divide causes of fiscal stress into cyclical and structural and within state control and outside of state control. These typologies demonstrate that most all states will face fiscal stress at some point—either from forces outside of their control such as federal mandates or recessions or from forces within their control such as setting appropriate spending and taxation levels.

Cutback management theory also describes the paradoxes and unintended consequences that result from fiscal stress and cutbacks (Levine 1978; Levine et al 1981a). These paradoxes of organizational decline include the need for the development of planning and information systems as well as policy analysis to determine how to reduce spending; but while funds for these systems are available in times of growth they are rarely available in times of constrained resources. Without slack resources, it is

difficult for public managers to smooth resistance to change and as such organizations will struggle to innovate or maintain flexibility. Fiscal stress also creates human capital problems due to the inability to reward or promote employees for being more efficient and not being able to attract younger workers with new ideas and lower salaries (Levine 1978). In addition, decision-makers may take short-term perspectives under conditions of fiscal stress (Levine et al 1981a). As a result, unintended and counterproductive consequences may result, making it even more difficult to get out of fiscal stress or avoid it in the future. Examples of these consequences are deferred maintenance resulting in deterioration of public buildings, bridges or roadways; reduced or deteriorating services that make investment in the community less likely, and personnel actions that may result in the best qualified and motivated employees leaving public service. Across-the-board cuts also tend to punish the most efficient departments and actually reward those departments with inefficiencies. As Berne and Stiefel (1993) found reallocations of funds hastened by fiscal stress can become permanent. In terms of the most effective response to fiscal stress—the one that will reduce the level of fiscal stress—cutback management theory does not offer one best way (Levine 1980), although a comprehensive strategy is preferred to one with piecemeal solutions. Instead, the optimal strategy will depend on several factors including the severity of fiscal stress, the size and power of the government unit, the power and alignment of interest groups, the power and professionalism of public employees, and the informal and formal power of political leaders (Levine 1980).

2.4.2 Application of Theory to Situations of Fiscal Stress

Most research applying cutback management theory to the states attempts to find meaning in the order and types of responses used. Regarding responses to fiscal stress, the framework devised by Levine (1978; 1979) and Levine et al (1981a) has been used to test the relationship between fiscal stress, organizational characteristics and

administrative responses (Bartle 1996; Pammer 1990). Levine (1978; 1979) lists the most common types of responses and categorizes them as efficiency or equity tradeoffs. In this context, equity means how cuts are distributed across the organization and efficiency means the extent to which cuts minimize the disruption to the organization (Levine 1978). Across-the-board cuts are equity based since they attempt to share the cuts across an organization with no single department or stakeholder group singled out. Targeted cuts are considered efficiency cuts because they involve determining the value of each employee and department and determining who is worth more to the government's operation.

Levine et al (1981a) presents a general model of local government responses to fiscal stress by using the experience of New York City as a guide. He tests resulting hypotheses on four localities, including: Baltimore, Cincinnati, Oakland, and Prince George's County in Maryland. In this model, changes in resource levels are an independent variable whose impact is affected by two political variables – formal authority structure and interest group structures. The dependent variable is the administrative responses of local governments. The model also considers short and long term effects of administrative responses. These effects may be felt at the micro level such as allocational effects (who benefits and loses), as well as at the macro level (effects felt by the whole community such as increased crime levels). The formal authority variable includes measures of the constraints placed on local governments such as borrowing, revenue raising and spending limitations. An interest group variable concerns the presence or absence of interest groups. This variable considers the activity level of interest groups both during growth and economic decline as well as their ability to form coalitions. Three strategies dealing with fiscal stress are outlined: (1) denial and delay strategies, (2) stretching and resisting strategies, and (3) cutting and smoothing strategies.

The model posits several hypotheses about the relationship between organizational structure, fiscal stress, and administrative response – five of which are

relevant to our analysis. The model predicts that administrative responses will vary (1) depending on the level of fiscal stress, (2) that responses to fiscal stress will follow a predictable pattern, (2a) lower levels of fiscal stress will be associated with denial of the problem and a delayed response, (2b) moderate fiscal stress will result in responses that affect all parties equally such as across the board cuts and adoption of hiring and purchasing freezes, and (2c) severe fiscal stress will result in cuts aimed at preserving efficient programs and eliminating lower performing programs or those outside the core mission through targeted cuts, reorganization of departments and reduction in force measures, and the reduction in employee benefits or pensions.

After testing these hypotheses against the experiences of four localities, Levine et al (1981a) found that responses do vary depending on the severity of fiscal stress but that responses happen over time. In other words, the response to fiscal stress may occur one or more years after the experience of severe fiscal stress. The findings also suggest that localities prefer responses that are perceived as more easily reversed (e.g., attrition rather than layoffs, reducing service levels rather than terminating programs). These scholars did not observe local governments adopting tactics in a systematic pattern. They found that localities use many tactics in response to fiscal stress and may even use all tactics at once. Localities did not overtly deny or delay responses to fiscal stress; moderate fiscal stress fostered equity cuts with a bias toward across-the-board cuts. The final hypothesis concerning severe fiscal stress was not tested, as the four case studies did not experience this level of stress in the study.

Much of the research on cutback management focuses on the question of “how do governments react when faced with fiscal stress?” Bartle (1996) summarizes the extant literature as: (1) governments practice incrementalism in reverse, decrementalism – in which the focus is on incremental changes to the budget, not the budget base (Lewis 1984; Schick 1983), (2) governments’ responses are systematic and depend on resource levels and administrative shifts in budgetary priorities (Levine et al 1981a; Rickards

1984; Behn 1985; Berne and Stiefel 1993; Dougherty and Klase 2009) and (3) government responses are mostly unstructured due to ambiguous goals and ill-defined preferences (Pammer 1990; Downs and Rocke 1984; Bartle 1996). Based on the predictions of how localities react in periods of fiscal stress and given various organizational characteristics, Bartle (1996) tests these frameworks against practices in cities in New York. His findings support an unstructured framework, finding that government responses to fiscal stress are varied and dependent upon government-specific factors.

Research applying cutback management theory to the state level supports cutback management theory, but is relatively sparse. In examinations of Florida and Georgia, researchers found tactics to resist and delay (mainly in Florida) and to smooth changes (mainly in Georgia) with relatively few instances of major programmatic shifts or eliminations (Willoughby and Lauth 2003; Grizzle and Trogen 1994). Other research focusing on personnel actions point to many of the unintended consequences of hiring, pay and promotion freezes (Druker and Robinson 1993; Greenhalgh and McKersie 1980). In an effort to apply the cutback management model to states, Dougherty and Klase (2009) assessed the responses of eight states to budget deficits between 2002 and 2005. They found that the pattern of responses largely followed that predicted by Levine et al (1981a). States initially used across-the-board cuts and hiring freezes; however, as deficits increased or fiscal stress persisted they tended to use targeted cuts. In a few cases, as a response to severe and prolonged budget deficits, states laid off employees and eliminated programs.

2.4.3 Theoretical Implications for State Responses to Fiscal Stress

Cutback management theory provides a relatively comprehensive description of how states will act under fiscal stress. The type of responses—across-the-board cuts, hiring freezes, targeted cuts, tax increases, or layoffs—will differ depending on the

severity of fiscal stress as well as the persistence of fiscal stress. Cutback management theory is also helpful in determining the temporal order of administrative responses to fiscal stress. The theory posits that fiscal stress, in the form of revenue declines, determines the extent of the administrative response. Since the measure of fiscal stress developed in this paper encompasses long-term and service level solvency along with the more directly relevant to cutback management theory budgetary and cash solvency, we expect to see different relationships between responses and these types of solvencies. It also suggests that we should not expect to see an effect on fiscal stress levels by administrative responses within the same fiscal year. Rather it is more likely that administrative responses in the previous fiscal year have an impact on the current year's fiscal stress level. The theory also offers reasons why certain responses – layoffs, for instance – may be less effective at improving the fiscal situation than anticipated by decision-makers.

2.4.4 Criticism and Limitations of Theory

Cutback management theory applies organizational change to resource-constrained environments, directly relevant to our current investigation. An element that is missing from the theory is direct application of theories of budgetary decision-making to explain why decision-makers use specific tactics. Perhaps the limitation most relevant to this analysis is the lack of discussion or empirical testing of the effectiveness of strategies in alleviating and preventing fiscal stress (Levine 1979; Scorsone and Plerhoples 2010).

Another criticism of the theory, although not unique to this theory, is that several researchers have not found the pattern of predicted responses or a difference in responses based on the severity of fiscal stress, as mentioned (Pammer 1990; Bartle 1996). Indeed, relatively little research attempts to apply the cutback management framework to a cross section of governments, at the state or local levels. While this is a limitation of the theory,

it is also a reason to explore the theory further and see where its merits and weaknesses lie.

2.5 Assessing Effectiveness

While theoretical and empirical literature tends to focus on predicting and discussing the types of responses states use to address fiscal stress (Dougherty and Klase 2009; Grizzle and Trogen 1994; Gold 1995; Finegold et al 2003), largely missing is an examination of the effectiveness of different responses – for example, a comparison of the effect of rainy day fund use, reductions in expenditures, and/or increases in taxes and other revenues on fiscal stress levels. With the exception of research on the effectiveness of using budget stabilization/rainy day funds to reduce gaps between expected and actual expenditures, the effects of state responses to fiscal stress are unexplored (Sobel and Holcombe 1996a; Douglas and Gaddie 2002; Hou 2003; Hou 2004). This leaves questions such as – will a certain response yield a quicker recovery or protection from fiscal stress in a subsequent period? – unanswered. The relative effectiveness of the range of possible responses – expenditure reductions, revenue increases, drawing on cash reserves – is not assessed, individually or as a group. In 1979, Levine called for more research on the effectiveness of responses to fiscal stress; more recently, a retrospective article identified effectiveness as a gap in state fiscal stress research (Scorsone and Plerhoples 2010). A review of the fiscal stress focused research provides some guidance as to the independent effects of different responses.

2.5.1 Rainy Day Funds

Studies on rainy day funds hint at the relationship between the existence of a rainy day fund, the size (as a percent of total expenditures) of the rainy day fund balance, the rules governing rainy day fund deposits and use, and fiscal stress levels (Hou 2003; Hou 2004; Douglas and Gaddie 2002; Sobel and Holcombe 1996a). The rules governing the

funds were found to play a more important role in reducing fiscal stress levels than the presence of a rainy day fund or its funding level (Douglas and Gaddie 2002; Sobel and Holcombe 1996a). Indeed, Douglas and Gaddie (2002) found that having more than one fund designated as a rainy day fund reduced states' fiscal stress levels significantly.

Using general fund expenditure gaps as the dependent variable, Hou (2003)'s findings are not directly applicable to fiscal stress levels. This research does suggest that higher rainy day fund balances reduce reliance on expenditure cuts by states during economic downturns. Other studies of rainy day funds focus on the appropriate size of the rainy day fund balance, not on the use of rainy day funds to address fiscal stress and budget shortfalls (Navin and Navin 1997; Joyce 2001). Confounding this analysis is these studies use different measures of fiscal stress – an issue discussed in the next chapter. The long-term effect of rainy day fund use on fiscal stress has not received significant empirical or theoretical attention. However, certain case study analyses suggest that the use of rainy day funds allows states to defer making crucial adjustments to spending and/or tax levels (Hackbart and Ramsey 2004; Gold 1995; Conant 2003). The finding that rainy day funds allow states to reduce expenditure cuts during economic downturns supports this analysis (Hou 2003). Therefore, choosing to use rainy day funds instead of cutting expenditures or increasing taxes and fees, may lead a state to perpetuate structural imbalance and make it more vulnerable to future fiscal stress.

2.5.2 Expenditure Cuts

Research on expenditure cuts during periods of fiscal stress focus on changes in patterns of spending and identifying which functional areas tend to receive the largest cuts (Finegold et al 2003; Dougherty and Klase 2009; Hackbart and Ramsey 2004). Case study research shows that not calibrating spending levels to revenue collections leads to extreme vulnerability to economic downturns (Gold 1995; Conant 2003; Finegold et al 2003). A general theme in this research is that fiscal stress arises in states that misjudged

or willfully ignored the need to match spending levels with volatile tax collections in the years prior to fiscal stress (Gold 1995; Conant 2010). As such, to reduce fiscal stress in the future, balancing spending levels and tax levels is the recommended course of action for states.

Research on the long-term effects of fiscal stress induced changes in expenditures tends to concentrate on permanent changes in programs and staffing levels (Berne and Stiefel 1993). Drawing from the research focusing on short-term effects of expenditure cuts (Gold 1995; Finegold et al 2003) and research with a longer time frame (Hackbart and Ramsey 2004), expenditure cuts may be effective at reducing future levels of fiscal stress. To do so, the focus of cuts is important, as is the extent to which the expenditure cut balance overall spending and revenue levels.

2.5.3 Tax and Fee Increases

As with expenditure cuts, tax and fee increases affect fiscal stress levels by helping states achieve revenue and expenditure balance. The effectiveness of tax and fee increases depends on several factors including the diversification of revenue sources and the type of taxes and fees increased by states. Certain taxes (e.g. sales taxes, corporate income taxes, capital gains tax) may have dramatically reduced revenue collections during economic downturns (Sjoquist and Wallace 2003; Sobel and Holcombe 1996b; Suerhoud 1994). While other taxes (e.g. alcoholic beverage taxes, motor fuels taxes, and personal income taxes) are less susceptible to cyclical variations (Suerhoud 1994; Sobel and Holcombe 1996b). Other research explores differences in the cyclical variability of taxes depending on a state's tax portfolio and finds that the same tax will have different cyclical variations depending on the suite of taxes employed by a state (Braun and Otsuka 1998). Based on research in this area, it appears that there is no single optimal portfolio of revenue sources (Braun and Otsuka 1998); however, there is evidence – although not entirely conclusive that having a mix of taxes able to adjust to cyclical changes may

improve state fiscal performance or at the very least provide a more stable revenue baseline (Hendrick 2002; Braun and Otsuka 1998; Brinner and Brinner 2002).

As related to the effectiveness of tax and fee increases in reducing fiscal stress, this research has both short-term and long-term implications. In the short-term, especially during an economic downturn, tax and fee increases may not raise as much revenue as anticipated due to the cyclical variability of revenues. In the long-term, states that are willing to use tax increases may diversify their revenue base and enhance its flexibility in the face of cyclical variation. In addition, if the tax changes broaden the tax base or adjust previously inefficient tax systems, this may contribute to a more flexible tax system that then can protect the state against future periods of fiscal stress or reduce the severity of stress at a future period (Gold 1995).

A theme throughout the literature on state responses to fiscal stress is that certain responses have long-term effects (Levine et al 1981b; Druker and Robinson 1993; Greenhalgh and McKersie 1980; Berne and Stiefel 1993). This suggests an important distinction between the types of responses: whether a response improves the efficiency in either spending or taxation or rather is sufficient only in allowing the state to muddle through to the next crisis (Gold 1995). This research does suggest that the use of certain responses over others – rainy day funds instead of broadening tax bases or reassessing spending priorities – may not only ease states fiscal stress in the current year, but set states up for more troubles in subsequent years.

2.6 Summary of Hypotheses

Taken together the theories of incrementalism, punctuated equilibrium and cutback management provide a theoretical framework, albeit at times contradictory, for understanding how states can and might respond to fiscal stress and the factors that influence their decisions. Despite differences in the root causes of behavior, several common relationships and activities emerge from these theories. The empirical research

provides a framework for understanding how and why institutional and political factors will affect state responses to fiscal stress and the level of fiscal stress they experience. Empirical research also provides guidance on the effectiveness of state responses, in both the short- and long-term, in mitigating fiscal stress.

A major theme that emerges around the question—how will states respond to fiscal stress—is that states are unlikely to react immediately or urgently to fiscal stress. Punctuated equilibrium theory suggests that it takes a while for tension to build up in the system for change to occur; in addition, it is difficult to get the multiple decision-making layers to see the need for change. Cutback management theory suggests decision-makers will try to delay their acknowledgement of a problem. Even in cases where this does not occur, decision-makers will hope that the fiscal stress is temporary or transient and that a quick fix, such as using rainy day funds, will meet the balanced budget requirement and obviate the need for further action (Hackbart and Ramsey 2004; Levine et al 1981a).

Based on this research my first hypothesis is:

H₁: States are strategic in their response to fiscal stress.

Flowing from these implications is that state actions will differ by the level of fiscal stress. They may not differ in a clean, sequential pattern as initially predicted by Levine et al (1981a), but it stands to reason that certain actions are more likely at lower levels and others at higher levels of fiscal stress. When answering the question —will state actions differ depending on the level of fiscal stress—these theories provide guidance. As described above cutback management theory predicts fiscal stress responses proceed based on the severity of fiscal stress.

As such, we should expect to see smaller, less disruptive measures at first and then as fiscal stress continues or worsens, more drastic changes. Low fiscal stress is accompanied by denial and delay tactics such as using cash balances (e.g., rainy day funds) and deferring maintenance. Moderate fiscal stress then calls for hiring freezes, productivity improvements and across-the-board cuts. These are the activities generally

associated with incremental budget theory as they are non-confrontational and tend to affect all interest groups equally. These tactics would also likely be observed in the punctuated equilibrium lens before or after a punctuation. Severe fiscal stress is more likely to necessitate targeted cuts, privatization of public services, program terminations, layoffs and an increase in user fees or taxes. Many of these actions are more typically associated with a punctuation in budget policy, especially targeted cuts. Based on this research, the second hypothesis and its sub-hypotheses are:

H₂: Responses will differ based on the severity of fiscal stress.

- *H_{2.1}: Rainy day funds will be used in periods of lower fiscal stress.*
- *H_{2.2}: Incremental budget strategies (e.g. across-the-board cuts and hiring freezes) will be used in periods of moderate fiscal stress.*
- *H_{2.3}: Punctuated equilibrium strategies (e.g. targeted cuts, privatization, and layoffs) will be used in periods of high fiscal stress.*

Based on the empirical literature we can form several hypotheses linking state characteristics with their responses and experience of fiscal stress. In addition, based on these theories we should expect state responses to differ depending on the flexibility granted decision-makers as well as their ability to reach decisions. As punctuated equilibrium theory suggests, factors that increase decision, transaction, and/or information costs will lead to more punctuations and less gradual change.

H₃: Institutional factors will affect state responses to fiscal stress.

- *H_{3.1}: States with balanced budget rules will take more actions to address fiscal stress.*
- *H_{3.2}: States with TELs will use more expenditure cuts and other non-tax measures to address fiscal stress.*
- *H_{3.3}: States with divided governments will take fewer actions to address fiscal stress.*

H₄: Institutional factors will affect states' levels of fiscal stress.

- *H_{4.1}: States with balanced budget rules will experience lower fiscal stress.*
- *H_{4.2}: TELs will affect state levels of fiscal stress.*
- *H_{4.3}: States with divided governments will experience higher fiscal stress.*

The difference between states experiencing fiscal stress due to cyclical fluctuations and structural imbalance is mentioned throughout this chapter. This distinction is important because the cause of fiscal stress is likely to impact both the experience and response to it. Hackbart and Ramsey (2004) suggest that states may take measures to meet the yearly balanced budget requirement, while ignoring a structural imbalance – setting the stage for drastic action farther down the road. Based on this, it seems that states with structural imbalances are more likely to follow the punctuated equilibrium pattern or jump to the last stage of the response pattern detailed by Levine et al (1981a). In addition, the extent to which a structural imbalance demonstrates states deferring decisions on prioritizing spending and/or adjusting revenue levels, we expect states with structural imbalances to have higher levels of fiscal stress.

H₅: States with structural deficits will engage different responses and experience higher fiscal stress.

- *H_{5.1}: States with structural deficits will be more likely to engage punctuated equilibrium responses in periods of high fiscal stress.*
- *H_{5.2}: States with structural deficits will experience higher fiscal stress.*

Based on both the theoretical guidance and empirical research it is harder to hypothesize the effectiveness of different responses to fiscal stress. Certain educated guesses can, however, be made. Although response effectiveness is not addressed directly, the unintended consequences and paradoxes of cutback management highlighted in the cutback management theory suggest that all responses are not equal. Some may have negative unintended consequences that result in recurring or extended fiscal stress; while other responses may reduce future fiscal stress levels. In the short-term, multiple exogenous factors influence a state's level of fiscal stress, including the growth of the

state economy and federal stimulus activities, are more likely to have an impact on the immediate fiscal stress levels. In addition, the timing of fiscal stress responses may not be soon enough to counteract current levels of fiscal stress. The hypotheses below differentiate between the short-term and long-term effects of state responses to fiscal stress.

H₆: The short-term effect of state responses (e.g. tax increases, expenditure cuts, rainy day fund use) on fiscal stress will be minimal.

H₇: The long-term effects of state responses (e.g. tax increases, expenditure cuts, and rainy day fund use) on fiscal stress will differ.

- *H_{7.1}: Tax increases and/or expenditure reductions will, in the long-term, reduce fiscal stress.*
- *H_{7.2}: Rainy day fund use will increase fiscal stress in the long-term.*

2.7 Conclusion

Rubin (1990) encourages budget researchers to see what is in front of them and to begin theorizing from what is there. In this analysis, the focus is on what occurs in practice and how to better present this in the academic literature. Despite this practical focus, this research will have implications for the theoretical literature discussed above; specifically do patterns emerge in line with incrementalism, punctuated equilibrium or cutback management theory predictions? And what role do institutions play in how states respond to resource constraints?

CHAPTER 3

FISCAL STRESS: DEFINITIONS AND MEASURES

In order to answer the questions at the core of this analysis, a reliable and valid measure of fiscal stress is needed. To begin, this chapter reviews the definitions of key terms: financial condition, fiscal stress, and fiscal crisis. After defining these terms, this chapter explores the evolution of fiscal stress measures. The most used state fiscal stress measures are identified and assessed on their comparability across years and between states as well as their ability to express the definition of fiscal stress.

3.1 Definitions of Financial Condition, Fiscal Stress and Fiscal Crisis

Many terms – fiscal stress, fiscal distress, poor fiscal health, poor financial condition, and weak fiscal condition – are used to describe the predicament of states and municipalities dealing with economic difficulties (Wang et al 2007; Rubin and Willoughby 2009; Levine et al 1981a; Stonecash and McAfee 1981). In some instances within both academic research and practitioner-oriented guidance, these terms are treated as synonyms (Hendrick 2004; New York State Comptroller's Office 2006). In fact, no definition of fiscal stress is universally accepted. Scholars often create their own definition to accommodate their research focus or they may refine a definition used in prior research (Jimenez 2009; Rubin and Willoughby 2009; Sobel and Holcombe 1996a; Maag and Merriman 2007; Alm et al 1993; Rubin 1982).

Definitions of related terms such as fiscal condition, financial condition, and fiscal health are also ambiguous in the current literature. An illustrative example of the imprecision evident in these literatures is provided by Wang et al (2007). In their review of the literature about public financial condition, the authors only use the term financial condition; however, in their effort to accurately represent the original language of the

articles they cite, they use the terms fiscal stress, fiscal condition, and financial crisis. For this reason, poor financial condition may, and often does, denote the same concept as the term fiscal stress.

The lack of an accepted definition spans the literatures regarding both state and local fiscal stress. To address the imprecision of these terms, this section reviews the definitions of fiscal stress and related terms in both of these literatures and then synthesizes definitions. This section also details where fiscal stress fits within the continuum of public financial conditions.

Three terms, along with close variations, appear consistently in the literature: (1) financial condition, (2) fiscal stress, and (3) fiscal crisis. These terms persist in the literature over time and across varying units of analysis. Regarding financial condition, and its close variants fiscal condition and fiscal health, these terms typically describe the overall fiscal circumstances of a state or local government (Wang et al 2007; Hendrick 2004; Kamnikar et al 2006). An entity's financial condition can be characterized as strong or weak, or even somewhere in between.

Definitions of fiscal stress and its variants fiscal strain and fiscal distress, on the other hand, suggest an identifiable problem (Levine et al 1981a; Gold 1995; Chaney et al 2002a; Conant 1992). The problem that fiscal stress describes regards the financial/fiscal condition of a government (New York State Comptroller's Office 2006; Rubin and Willoughby 2009; Hendrick 2004; Wang et al 2007). Fewer researchers use the term fiscal crisis as distinct from fiscal stress; indeed Honadle (2003) notes the practice of using the terms interchangeably. Honadle (2003) and Conant (1992) describe fiscal crisis as the end stage of fiscal stress. Given these relationships, Figure 3.1 shows the spectrum of financial condition and where fiscal stress and fiscal crisis fall within this continuum. Fiscal stress is defined as weak financial condition and fiscal crisis is defined as exceedingly weak financial condition.

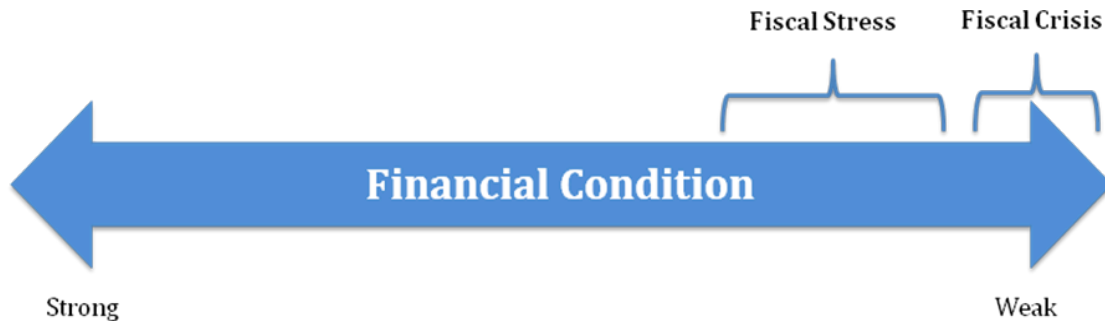


Figure 3.1: Spectrum of Public Financial Condition

3.1.1 Financial Condition

Financial condition describes a complex set of relationships covering a government's ability to raise revenues, borrow funds, make expenditures, and provide services. Definitions of financial condition (and fiscal condition or fiscal health) tend to contain two components, government's ability to meet financial obligations and government's ability to provide services to its residents. Hendrick (2004, 80) and Jimenez (2009, 81) define fiscal health as "the ability of a government to meet its financial and service obligations." Wang et al (2007, 2-3) hews closely to this by defining financial condition as a "government's ability to adequately provide services to meet current as well as future obligations," while noting that the most common concept of financial condition is "the ability of an organization to timely meet its financial obligations." Service obligations are the assumed cause of the financial obligations. With an accounting perspective, Kamnikar et al (2006, 32) present an approach that is along these same lines, defining financial condition as "a government's ability to meet its obligations as they come due and the ability to continue to provide the services its constituency requires." Berne and Schramm (1986, 5) define a government with a healthy financial condition as "being able to meet their financial obligations as they come due, in both the short run and the long run, while raising resources and providing public goods and

services.” Rubin and Willoughby (2009, 54) define fiscal condition as a state’s “ability to meet the public demand for public goods and services.” This definition explicitly lays out the service obligations while the financial obligations are assumed. Yet, each definition recognizes the two functions of government. First, government must provide services to its residents. Second, in order to provide these services now and in the future, government must meet its financial obligations.

The main difference in these definitions is the description of a government’s service obligations. Gauging a government’s service obligations is difficult because it is nearly impossible to measure whether a government is meeting ‘adequate’ or ‘constituency required’ services levels or ‘public demand’ (Rubin and Willoughby 2009; Chaney et al 2002a). Measuring public demand is fraught with difficulties, as is determining whether public demand in one state can be compared to public demand in others (Rubin and Willoughby 2009).

To ensure consistency within this paper, financial condition will be defined as a government’s ability to meet its short-run and long run financial obligations as they arise, while raising resources and providing goods and services. This definition, drawing heavily from Berne and Schramm (1986), details the commitments government must meet without placing a standard or criteria on the level of services it must provide. The multiple time periods and multiple constituencies that must be served by government are also laid out in this definition. With these obligations defined, it will be easier to pinpoint the areas in which a government experiences fiscal stress.

3.1.2 Fiscal Stress

Fiscal stress is a term often used and occasionally defined. Rubin (1982) noted nearly thirty years ago that there are as many definitions of the term as there are scholars interested in studying it, and this situation has not changed. Fiscal stress is hard to define for the same reasons that it is difficult to measure – it is a transient condition with

multiple facets and presentations (Bahl 1984). Two states, California and Michigan, are routinely described as experiencing fiscal stress. Some point to Michigan's declining population and eroded economic base as indicators of the fiscal stress that state is experiencing (Menchik 2002). By contrast, California's fiscal stress manifests itself in large budget deficits and in the state's inability to raise taxes or cut services to effectively close budget gaps (Schunk and Woodward 2005; Savage 1992). The causes of fiscal stress in these states differ, as does the manifestation of fiscal stress; still, most would agree that these two states are best characterized as experiencing fiscal stress.

At the broadest level, the literature suggests that fiscal stress is a condition of imbalance (Gold 1992; Copeland and Ingram 1983; Scorsone and Plerhoples 2010). The imbalance may be between the services the public would like and what government provides (Copeland and Ingram 1983) or more clearly, the case of expenditures exceeding available financial resources (Gold 1992). Operational definitions of fiscal stress are also common. Levine (1980, 4) defines fiscal stress as when an "economy is unable to generate enough economic growth to expand (or even sustain in some places) tax supported programs without putting unacceptable demands on taxpayers take home pay." For Conant (1992, 4) fiscal stress occurs when "the predicted growth in revenues for the upcoming biennium is sufficient to fund only the current year's base appropriation level and a small addition to the base." Along these lines, Sobel and Holcombe (1996a, 33-34) define fiscal stress as "the amount of discretionary tax increases plus the amount that expenditures were reduced from their long run trend growth during a recession." Kloha et al (2005, 314) defines fiscal distress as "a failure to meet standards in areas of operating position, debt, and community needs and resources over successive years." Again, these definitions share an interpretation of fiscal stress as imbalance between revenues and expenditures.

Some definitions of fiscal stress include the reactions to or symptoms of fiscal stress, rather than the condition itself. To avoid this tendency, recent authors relate fiscal

stress directly to financial condition and financial indicators (Wang et al 2007; Kamnikar et al 2006). In state level research, the trend is away from demographic and response-based definitions of fiscal stress toward a narrower focus on financial definitions that are then used to determine how stress affects the delivery of services, demographic changes, poverty levels, and tax systems.

Fiscal stress encompasses situations where a government is unable to meet either its financial or service obligations. The causes of such situations may differ among governments. Research identifies a number of potential causes of fiscal stress as well as reactions to fiscal stress. A definition of fiscal stress needs to be broad enough to capture its different dimensions— budgetary imbalance, overreliance on debt to finance current expenditures, inability to pay for essential services – without including the causes and consequences of fiscal stress. Otherwise comparisons across time and governments will be difficult.

For this analysis, fiscal stress is defined as a government’s inability to meet its short or long run financial obligations as they arise and may be accompanied by an inability to raise revenues or provide goods and services.⁴ Using this definition, a state may experience fiscal stress in one year but not the next. It is also possible for a state to experience fiscal stress for several years in a row. The above definition is intentionally similar to the definition of financial condition used in this analysis. Using similar definitions underscores the relationship between fiscal stress and financial condition; specifically, that fiscal stress is weak financial condition.

⁴ Goods and services include the goods and services directly provided by state governments and those provided by government enterprises.

3.1.3 Fiscal Crisis

Fiscal crisis is a term used with even less precision than fiscal stress; however, it does appear to suggest a financial condition worse than fiscal stress. Although fiscal stress and fiscal crisis are used interchangeably in some cases (Downing 1991; Gold 1995), recent research attempts to distinguish between the two terms. Honadle (2003, 1433) defines fiscal crisis as “a threat to the continued operation of the government, a true emergency situation in which government is unable to meet payroll, bills, and debt repayment.” Conant (1992, 4) defines fiscal crisis as the “funds needed to meet current year program obligations substantially exceed appropriated levels.” Inman (1995, 378) defines fiscal crisis as when “a city’s potential to raise revenues is insufficient to cover the city’s legally required expenditures.” Hirsch and Rufolo (1990) determine fiscal crisis as when a city lacks the flexibility to deal with revenue losses. Taking these definitions together, fiscal crisis is a situation where government faces an inability to meet financial obligations even after engaging typical fiscal actions. For example, tax revenues cannot be raised, or raised sufficiently, expenditures cannot be cut without compromising the provision of a minimum level of services, rainy day funds are not available or the government faces default or bankruptcy. In the present research, fiscal crisis is defined as a government’s inability to meet its short-run and long-run financial obligations as they come due coupled with an inability to raise revenues or provide goods and services.

Perhaps the state that has come closest to fiscal crisis in recent times is California. In July 2009, the state issued registered warrants (IOUs) in lieu of cash for general fund obligations. After revising the budget, the state stopped issuing IOUs in September 2009 and the IOUs were then redeemable (California State Controller’s Office 2009). Since the state still provided goods and services to its residents and resumed meeting its financial obligations, in this instance, the state does not meet the definition of fiscal crisis defined in this chapter or any of those found in the fiscal crisis literature. Indeed, the unit of

analysis for most research on fiscal crisis is municipalities. Due to the fiscal options open to cities, their size, and the services they typically provide, fiscal crisis is much more likely to occur at the local than at the state level (Honadle 2003). As shown in Figure 3.1, fiscal crisis is placed to the right of fiscal stress on the continuum of financial condition. This is to indicate that fiscal crisis signifies extremely poor financial condition.

3.1.4 Connotation of Fiscal Stress

For states, fiscal stress is a problem that requires a solution (New York State Comptroller's Office 2006; Municipal Fiscal Stress Task Force 2010). For this reason within the academic literature, fiscal stress tends to have a negative connotation. While fiscal stress may have negative consequences for government constituents and stakeholders, such as layoffs of public employees, cuts in school funding that may lead to lower test scores, or fewer benefits for the most vulnerable citizens that increases demands on homeless shelters, food banks, and free clinics; fiscal stress may result in positive management or fiscal changes within a government (Poister and McGowan 1984; Willoughby and Lauth 2003). Public managers may work to increase worker productivity or reduce program inefficiencies in anticipation of fiscal stress or in response to it (Poister and McGowan 1984). In response to the 1991 recession, Willoughby and Lauth (2003) found that some state program managers in Georgia used efficiency measures to reduce costs. Other researchers argue that extensive and sustained fiscal stress can result in less productive state work forces (Druker and Robinson 1993). Indeed outside of the state government context, research points to fiscal stress putting strain on management systems, not fostering productive changes (Rubin 1982; Schick 1988; Caiden 1980). In a review of OECD countries' responses to fiscal stress, Schick (1988) did not find a reliance on efficiency or effectiveness reviews or programs, rather governments tended to look for the easiest places to reduce spending. Nonetheless, whether fiscal stress is positive or negative, depends on the actions that state governments

take. Lewis and Logalbo (1980) provide a checklist of actions local governments can take to manage cutbacks and increase efficiency in government operations. If state managers are compelled to reassess their priorities, manage programs more effectively, and cut unnecessary expenses; then fiscal stress may play a positive role in the production of government goods and services. However, and this is what receives the majority of academic and journalistic attention, if fiscal stress results in severe cuts to services and/or state employee layoffs, then fiscal stress has a negative connotation. In this research, fiscal stress is not classified as either positive or negative, but rather as a condition that state governments, in this case, try to avoid or minimize.

3.2 Measures of Fiscal Stress

As with the definition of fiscal stress, there are nearly as many measures of fiscal stress as there are studies that mention it. Coupled with the abundance of measures is a lack of consensus on how best to operationalize the concept of fiscal stress (Gold 1992). The need to measure fiscal stress emerged in the aftermath of financial and fiscal problems at the local level. As the phenomenon of fiscal stress spread to states and other municipalities, so too did the need to operationalize what was meant by fiscal stress. Researchers quickly realized that measuring fiscal stress was difficult (Bahl 1984; Benson et al 1988) as it was poorly defined and difficult to measure directly. Measurement methods depend on data availability, researcher's preferences, and unit of analysis. As a result, despite thirty years of research at the local level and nearly as long at the state level, there is no accepted measure of fiscal stress (Jimenez 2009). This section begins with an overview of the measurement of fiscal stress at the state and local level and how it has changed over the past thirty years. Then we will investigate the best framework to use to operationalize our definition of fiscal stress and address the factors it must account for. The most used measures of fiscal stress at the state level will be grouped into five categories and the merits and drawbacks of each discussed. In the final

section, the role of data availability in constructing an accurate measure of fiscal stress and the impact of recent changes to statewide reporting will be discussed.

3.2.1 The Evolution of Fiscal Stress Measurement

Fiscal stress measurement has changed over the years, but there is still no consensus on the best measure or what it should encompass. The study of fiscal stress began at the municipal level in response to financial problems in urban areas like New York and Cleveland (Savage and Schwartz 1999). As such fiscal stress measures initially focused on municipal data sources and municipal problems. The main purpose at this stage was to identify which cities were the most fiscally stressed in order to determine the destination and size of federal and state aid as well as to distinguish between fiscally reliable and non-reliable investments (Burchell et al 1981; Ross and Greenfield 1980; Benson et al 1988). The debate over the appropriate measurement of fiscal stress focused on the breadth of the measure – should it reflect singular events, long-term decline, or a city’s ability to adapt to socioeconomic changes (Pammer 1990).

Early researchers on the topic used many financial indicators (29 – Clark (1977) and 101 – Howell and Stamm (1979)). Factor analysis and principle component analysis were used to extract the dimensions of fiscal stress or reduce the indicators into one composite measure. As scholars teased out the most important measures of stress (highest loading factors), they began to focus on specific indicators. Morgan and England (1983) used three measures: (1) long-term debt per capita divided by per capita income, (2) per capita expenditures for nine common functions divided by per capita income, and (3) own source revenue per capita divided by per capita income. Pammer (1990) takes this parsimony to an extreme, using one measure (the difference between ratio of total long term outstanding debt to total city income) to assess fiscal stress.

Criticism of this direction in fiscal stress research also began early. In many cases, the criticism focused on the causal models of fiscal stress; these included the socio-

economic decline model, internal political determinants model, and the bureaucratic expansion model (Pammer 1990). The socio-economic decline model focused on external determinants of fiscal stress, namely economic and demographic trends such as recessions and migration from urban to suburban areas. The internal political determinants model focuses on the role of municipal employee unions and other interest groups in creating a spendthrift political culture. The bureaucratic expansion model has its roots in public choice theory and supposes that excessive government spending causes municipal fiscal and financial problems. These models are not mutually exclusive but they have affected the focus of fiscal stress research and the type of fiscal stress measures used. Stonecash and McAfee (1981) questioned the causal model underlying many measures of fiscal stress. Specifically, they doubted the assumption that all city leaders react to local economic problems in the same way. In other words, measuring how cities react to stress does not necessarily capture the level of fiscal stress.

Ladd and Yinger (1989) took a different approach to measuring fiscal stress and fiscal health. A major goal of their research was to compare the effect of state imposed restrictions and general economic trends on cities' fiscal health and ability to provide services. As mentioned above fiscal stress can be assessed as the inability to provide a certain level of services to citizens. Ladd and Yinger (1989) developed a methodology that allowed them to standardize the amount of expenditures needed to provide the average amount of services – they then compared this to each city's revenue raising capacity. Using this system, they were able to look at a city's fiscal health with and without fiscal institutions and at the general trends in city fiscal health.

More recently, research presents indices with predictive power using financial measures (Kloha et al 2005; Brown 1993; Honadle and Lloyd-Jones 1998; Patton and Kahn 2003). Despite different constructions, these measures are quite similar to earlier efforts to measure fiscal stress using financial variables. Brown (1993) proposes ten ratios, including per capita revenue, percentage of general fund from own sources,

operating expenditures as a percentage of total expenditures, total revenues divided by total expenditures, and per capita direct long-term debt. Once these measures are calculated, Brown (1993) proposes a scoring scheme by which a city's relative risk of fiscal distress can be ranked and compared to other cities. Kloha et al (2005) builds on this scale by adding population growth and then setting standards by which an absolute level of risk can be determined. Several researchers have used these indices to assess municipal fiscal stress (Honadle and Lloyd-Jones 1998; Patton and Kahn 2003; Miller 2001).

Another method of fiscal stress measurement was put forward by Hendrick (2004) in which fiscal health is described as encompassing multiple dimensions that have different time frames. The financial context used to develop this measure is that developed by Berne and Schramm (1986). The three major dimensions of fiscal health proposed are: properties of each government's environment (factors outside the control of government), the balance of government fiscal structures with that environment (comparison of the environment to government financial choices), properties of each government's fiscal structure (how the government adapts to its environment). The author presents this measure as a starting point for exploring the multidimensional nature of fiscal health within suburban communities and the need to account for different time horizons and interactions. A major finding of this research is that either using a single measure to denote fiscal health or combining a number of different measures into a single index distorts the actual nature of fiscal health. As with the methodology developed by Ladd and Yinger (1989), the applicability of this framework is limited by the amount of data needed to develop the measure.

At the state level, fiscal stress measures tend to be directly relevant to the subject of the article and availability of data. The different types of state fiscal stress measures along with their strengths and weaknesses will be discussed later in this chapter.

3.2.2 Developing a Framework to Measure Fiscal Stress

Several frameworks are used to measure financial condition – some more applied and some more theoretical (Mead 2006). To measure fiscal stress it is first necessary to define what are the important factors of a state's financial condition – in other words to define what fiscal stress is a deviation from. In this analysis financial condition is defined as a government's ability to meet its short-run and long-run financial obligations as they arise, while raising resources and providing goods and services. By extension fiscal stress is a state's inability to meet either its short-run or long-run financial obligations, raise enough revenues to provide goods and services. A financial condition framework allows researchers and practitioners to operationalize the broader definition of financial condition and begin to apply these standards to local or state governments.

In public policy research, many scholars and practitioners draw on the International City/County Management Association (ICMA) model defined by the work of Groves et al (1981) in which financial condition is divided into four types of solvency: cash, budgetary, service-level, and long-run (Mead 2006; Lewis 2003). With financial condition defined as all four of these solvencies, fiscal stress can be insolvency in any of these four areas. Cash solvency concerns a government's liquidity and its ability to pay its bills (Groves et al 1981). Budgetary solvency concerns a government's ability to meet spending obligations without causing a deficit (Groves et al 1981). Long-run solvency is a government's ability to pay for all of its costs including those that may occur only every few years or in the future (Groves et al 1981). Long-run solvency allows financial condition to capture government's management of debt and capital assets. While cash and budgetary solvency look at short-term financial management, long-run solvency looks at a government's management of longer-term issues. Service level solvency concerns a government's ability to provide and pay for the level and quality of services required to meet the general health and welfare of a community (Groves et al 1981). The importance of dividing financial condition into different types of solvency is echoed in

more recent research (Berne 1992; Hendrick 2004; Wang et al 2007; Kamnikar et al 2006; Gomez et al 2009). In this analysis the scope and focus of this financial condition framework is appealing for three reasons. First, it concerns financial and fiscal factors without straying into variables that may differ state to state not due to underlying financial factors but rather state financial management practices or preferences. Second, state data that is currently available that allows the operationalization of these four solvencies. Third, the importance of each type of solvency is understandable. For instance, budget solvency is necessary to ensure states' do not run budget deficits and run afoul of balanced budget requirements.

Mead (2006, 385) details the factors that are important to consider when assessing government financial health:

- Fund balances, equity or net assets
- Revenues and expenditures/expenses as well as surpluses and deficits
- Changes in revenue bases
- Spending pressures and expenditure needs
- Outstanding debts, debt service, and post-employment benefits
- Liquidity

Each of these factors is covered by the concepts of cash, budget, service-level, and long-run solvency. So this assures us that using this framework captures the relevant factors in understanding financial condition. Wang et al (2007) demonstrate the usefulness of this framework in analyzing state financial condition. This is an important consideration given the municipal focus of many financial condition frameworks. Even the financial condition framework developed by the Florida Auditor General is to assess local government financial condition (Mead 2006). As will be discussed later, Wang et al (2007) also provides the financial ratios that measure each solvency.

3.2.3 A Good Measure of Fiscal Stress

What is a good measure of fiscal stress? To a certain extent the answer depends on the unit of analysis and the availability of data. The literature on financial condition and fiscal stress measurement points to several issues that should be considered in constructing a measure of fiscal stress. Four considerations – using a composite or multiple measures, the time frame of different indicators, the operationalization of public demand, and the criteria by which to declare fiscal stress – are discussed in several articles focusing on measurement (Hendrick 2004; Ross and Greenfield 1980; Jimenez 2009; Brown 1993; Kloha et al 2005). These issues can help guide the construction of a good fiscal stress measure for this analysis.

A fundamental concern for researchers creating measures of financial condition and by extension fiscal stress is whether a composite measure combining indicators of different underlying conditions should be used or instead each dimension of financial condition should be defined and then indicators used to measure them separately. Both methodologies have been used. Hendrick (2004) notes that since governments may differ in their levels of solvency on different measures, combining different dimensions of financial condition would be misleading. The author proposes constructing the dimensions separately and then assessing how governments perform on each. Wang et al (2007) uses both a set of indices measuring budget, cash, long-run and service-level solvency and a single index that combines the underlying financial indicators to create a composite measure of financial condition. Brown (1993) and Kloha et al (2005), in their models to predict local government fiscal stress, use multiple measures to arrive at a single score with which to assess a local government's condition. Despite the persistence of researchers using a single measure, many have noted the difficulty of measuring a multidimensional concept such as fiscal stress with a single measure or a composite measure (Jimenez 2009; Ross and Greenfield 1980). Another concern with creating a composite measure is how to set the correct weights on different indicators (Hendrick

2004). These philosophical and technical concerns point to the usefulness of multiple measures along different dimensions of financial condition and fiscal stress rather than a single measure.

A consideration that flows directly from the discussion of multiple versus single measures is how to account for measures or dimensions of fiscal stress that have different time frames. Hendrick (2004) provides an example of how this problem would arise. Some indicators of fiscal stress such as a government's ability to pay its bills on time are short-term. They deal with liquidity in how the government currently operates. Whether a government is able to meet its obligations over an entire budget year or whether it is able to generate enough revenue in a budget year to pay for planned expenditures within the budget year are mid-term measures of fiscal stress. A government's ability to meet debt obligations is a long-term measure. Since financial indicators and other types of fiscal stress measures may differ in terms of their time horizon, the usefulness of a measure that combines these measures is questionable.

A continuing difficulty in the measurement of financial condition or fiscal stress, as touched on in the previous section – is how or whether to attempt to measure public demand for government goods and services. To deal with this, many researchers use per capita income as a proxy for public demand (Hendrick 2004; Ladd and Yinger 1989). Ross and Greenfield (1980, 102) suggested that other measures, such as financial indicators do not assess whether a local government provides its citizens with the appropriate level of services. Financial indicators are not designed to measure public demand or to assess whether a government is meeting its service obligations; however, Chaney et al (2002a) proposes that it may be better to assess a government's ability to pay for services. By focusing on the ability to meet service obligations, we assume that the other factors that lead to choices about the level of goods and services occur. That way we do not end up penalizing a government for not providing 'enough' services when in fact citizens in that area may not want many or a certain level of government services.

However, we are still able to discern governments in stress based on their ability to provide these goods and services. Wang et al (2007) proposes three indicators to measure a government's ability to provide goods and services: tax per capita, revenues per capita, and expenses per capita. The higher any of these measures are, the less ability a government has to increase the provision of goods and services.

Finally, setting a criterion or standard for fiscal stress is highly subjective (Bahl 1982). Researchers disagree on whether to use an absolute or relative measure of fiscal stress. With relative measures, cities or states values on different indicators are compared to one another. One method uses a location quotient to compare one unit's indicators against the median or mean value for the entire cohort (Berne and Schramm 1986; Chaney et al 2002a; Miller 2001). Brown (1993) assigns scores based on a city's performance on ten indicators relative to cities of roughly the same population. A score is given for each indicator depending on the quartile a city falls into. Then the scores are assigned meaning – a city that performs in either the third or fourth quartile for all 10 indicators receives a rating of “among the best” (24). Falling in the lowest quartile will earn a city a rating of “among the worst”. Since the cities used for comparison purposes were not randomly selected, Brown (1993) notes that a city with a low score may not be in poor financial condition – just in poorer financial condition than the cities in the Government Finance Officers Association (GFOA) Financial Indicators database. Ross and Greenfield (1980) hold that the concept of fiscal stress (urban distress in their parlance) is relative and therefore can only have meaning when comparing localities. Kloha et al (2005a) also use financial and socioeconomic indicators to measure cities' financial conditions; however, they devise absolute criteria for poor financial condition. To do this, the authors note they have to assign values to variables that may seem subjective. Based on these values, cities can compare their point values to the authors' scale – 0 to 4 points and no action needed; 5 points and recommend fiscal watch, 6 to 7 points and recommend fiscal warning, and 8 to 10 points and the city is in fiscal

emergency. In state fiscal measures, the use of unreserved budget balance as a percent of total expenditures has invited much discussion of the point of fiscal stress (Joyce 2001). An often-cited threshold of good financial condition is a balance of 5 percent or greater (Rubin and Willoughby 2009); however, the appropriate value is far from settled. The purpose of this discussion is to illustrate that regardless of whether an absolute or relative measure is used; assigning value is subjective – whether the values are relative to other governments or relative to fixed criteria. Especially in the absence of agreed upon external criteria, comparing governments to one another and viewing their level of fiscal stress relative to other states makes sense.

3.2.4 Typology of State Fiscal Stress Measures

Armed with a framework for measuring fiscal stress as well as the factors we should consider in constructing a fiscal stress measure, this analysis now turns to the most common measures of state fiscal stress used. Five broad categories of state level measures are examined here: budget deficits, year-end unreserved budget balance, declines in state revenue performance, tax increases relative to expenditure trends, and financial ratios. In this section, only state measures are used since the focus is of this analysis is fiscal stress at the state level. Also, many municipal measures include factors or measures that do not apply to states and would only distract from the analysis. Each category of measures will be described, the strengths and weaknesses of each measure discussed, and the extent to which each measure covers the four types of fiscal stress illustrated in Table 3.1.

Budget Deficits

An instinctual indicator of fiscal stress is a budget shortfall or deficit. Budget deficits can occur throughout a fiscal year – when a budget is proposed, after the budget is passed by the legislature or at the end of a fiscal year (Poterba 1994). Budget deficits

result from an overestimation of revenue collections or an underestimation of expenditures or both. Due to balanced budget rules in place in nearly all states, budget deficits require timely action – either revenue increases, expenditure reductions or both. Budget deficits are an effective measure of fiscal stress because they show that estimated revenue levels do not support the services a state intended on providing in the next fiscal year. This measure is often used in case study analysis to identify which states are experiencing difficulty (Conant 2010).

Year-end Unreserved Budget Balance

The most often-cited measure of fiscal stress is the year-end unreserved budget balance (calculated using the general fund balance plus rainy day fund balances as percentage of general fund expenditures) (Jimenez 2009; Rubin and Willoughby 2009; Chaney et al 2002b; Gold 1995). This measure indicates how much money a state has left over at the end of a fiscal year. States with higher levels of fiscal stress should have lower balances and states experiencing less stress should have higher balances. This measure is collected annually by the National Association of State Budget Officers' (NASBO) Fiscal Survey and is available for all states over a 30-year time frame.

Revenue Performance

A relatively simple measure of fiscal stress is the change in a state's revenue performance across years. Reduced revenues are one sign of fiscal stress. This measure has been used both in state and municipal level analysis (Lewis 1988; Hendrick 1989; Alm et al 1993; Giertz and Giertz 2004; Jimenez 2009). Different specifications of changes in revenue performance are used – with some studies using a single measure of revenue performance and others using multiple measures. Alm et al (1993) use different measures of state revenue, including percentage change in real state government tax revenues and percentage change in real intergovernmental transfers to state government.

Also included is the percentage change in real state personal income; this functions as a measure of the size of the tax base (Alm et al 1993). Jimenez (2009) uses tax revenue per \$1,000 real personal income in addition to those used in Alm et al (1993). Jimenez (2009) acknowledges that higher tax effort may be due to citizen preferences, while controlling for citizens ideology. The citizen ideology variable is an attempt to reduce the distortion of citizen preferences on tax effort levels. Changes in revenue collection are a common cause of fiscal stress in the states, so using this as an indicator of stress makes sense.

Tax Increases Relative to Expenditure Trends

Other measures of fiscal stress attempt to incorporate both sides of stress – maintaining government-provided services and minimizing tax increases. Measures in this category address specific research questions and as such are not applicable to other research areas (Jimenez 2009). In their study of how rainy day funds affect fiscal stress, Sobel and Holcombe (1996a) and Douglas and Gaddie (2002) use “the amount of discretionary tax increase plus the amount the expenditures were reduced from their long-run growth during a recession” (Sobel and Holcombe 1996a, 33). States that maintain their expenditures in line with the real trend growth rate for expenditures and do not increase taxes are considered to be without fiscal stress. The authors make clear that this measure of fiscal stress is intended to be relevant to rainy day fund use and not as an absolute measure of fiscal stress. Maag and Merriman (2007) modify the fiscal stress measure used by Sobel and Holcombe (1996a) by defining state fiscal crises as when the policy-neutral revenue in one year is less than the actual revenue in the previous year. Policy-neutral revenue is defined as a state’s observed revenue minus tax increases and plus tax cuts – it is intended to measure the effect of economic conditions on a state’s revenues (Maag and Merriman 2007). While simpler, this measure effectively ignores the expenditure side of the fiscal stress equation. However, it does address a major shortcoming of the measure developed by Sobel and Holcombe (1996a) – that changes in

expenditure levels may be unrelated to fiscal stress. As noted by Maag and Merriman (2007), states may change their expenditure levels by pruning ‘optional’ or ‘expendable’ programs. As such, a decrease in expenditures below the trend line may reflect a change in preferences or a relatively mild response to expected reductions in revenues.

Financial Ratios

Suggestions have been made in the state fiscal stress literature to use financial ratios as measures of fiscal stress (Rubin and Willoughby 2009; Chaney et al 2002a). Kamnikar et al (2006) collected two years worth of data from state Comprehensive Annual Financial Reports (CAFRs) and computed three financial ratios for each state measuring liquidity, leverage, and ability to provide continuing services. The liquidity ratio measures a government’s ability to pay for its immediate obligations. The leverage ratio measures the extent that the government’s assets are financed through borrowing. The continuing services ratio measures the government’s ability to provide the same level of services in the future. These ratios assess a state’s financial condition, in this case defined as “a government’s ability to meet its obligations as they come due and the ability to continue to provide the services its constituency requires” (Kamnikar et al 2006, 31). Wang et al (2007) also used financial indicators to measure state financial condition by building 11 financial indicators using government wide statements in fiscal year 2003 CAFRs. Based on research about municipal fiscal stress and the preliminary work conducted about state fiscal stress, there is room for expansion of fiscal stress measures to include financial ratios. The strength of financial ratios in measuring changes in fiscal stress depends on which ratios are used. As the discourse within the municipal fiscal stress literature shows, there are many different financial ratios and they can be combined in multiple ways. Since relatively little work using financial ratios has been done at the state level, starting with the three ratios proposed by Kamnikar et al (2006) seems reasonable – the liquidity and continuing services ratios measures as short-term indicators

of fiscal stress and the match between state spending and revenues as a long-term measure of stress. The leverage ratio provides a check on whether states are financing a large proportion of activities through borrowing. The work of Wang et al (2007) takes this further by proposing financial indicators that measure budget, cash, service-level, and long-term solvencies. These indicators were found to accurately measure the underlying dimensions of solvency and to change in the expected direction given a set of socio-economic variables.

Table 3.1: Comparison of State Fiscal Stress Measures							
Measure	State-to-State Comparison	Year-to-Year Comparison	Budget Solvency	Cash Solvency	Service level Solvency	Long-run Solvency	Sources
Budget Deficits	Weak	Moderate	✓				Lauth 2010; Conant 2010; Dautrich et al 2010; Bunch 2010
Year-End Unreserved	Weak	Moderate	✓	✓			Rubin and Willoughby 2009; Jimenez 2009; Chaney et al (2002a); Gold (1995)
Revenue Performance	Weak	Weak			✓		Alm et al 1993; Jimenez 2009
Tax Increases relative to Expenditure Trends	Weak	Weak			✓		Sobel and Holcombe (1996a); Douglas and Gaddie (2002); Maag and Merriman (2007)
Financial Ratios	Moderate	Moderate	✓	✓	✓	✓	Wang et al (2007); Kamnikar et al (2006)

State-to-State Comparison

Analysis of fiscal stress among all fifty states is critical to assessing the factors that make some states more vulnerable to fiscal stress as well as what makes some states more successful at moving out of fiscal stress. As shown in Table 3.1, the five categories of fiscal stress measures do not allow state-to-state comparisons equally. Four of the measures – revenue performance, tax increases relative to expenditure trends, year-end reserve, and budget deficits – are classified as having low quality state-to-state comparisons. The reason for this poor rating is that each of these measures is calculated differently by different states. Concerning budget deficits, Reschovsky (2004) outlines two methodological issues that make comparisons across states inaccurate. First, states use different methods to estimate revenues and make different assumptions regarding revenue levels. Second, states use different methodologies to estimate expenditure levels. Some states use a current services budget – expenditures are equal to the amount of money needed in the next fiscal year to continue providing the same level of services provided in the current fiscal year. Budget gaps in these states would truly measure the difference between services provided last year and current year revenues. Some states estimate expenditures with increases as required by state statutory requirements. Because of differences in estimation methods for both revenues and expenditures, budget deficits in one state are not comparable to those in another state.

Recent work on the use of rainy day funds and general fund unreserved undesignated balances as countercyclical devices points to methodological problems in using this measure for fiscal stress, particularly in comparing across states (Hou 2003; Hou 2004). An array of rules govern the funding and use of rainy day funds and these play a large role in the size of the year-end unreserved budget balance. Since the rainy day fund balance is added to the general fund balance to determine the level of fiscal stress, factors apart from fiscal stress that cause states to have different funding levels are important. Findings by Hou (2004) highlight several factors –besides fiscal stress – that

result in states having different fund balances. First, minimum or maximum budget stabilization fund balances may be specified by law. States with higher caps on the maximum balance amount are associated with higher funding levels. Second, states without rules about carrying deficits over to the next fiscal year also have higher rainy day fund balances – despite having a higher risk of fiscal stress. Third, states in which the governor is from a different party than the majority of the legislature tend to carry higher rainy day balances; likely due to the difficulty in removing money from the fund. And fourth, the designated purpose for use of the rainy day fund also affects their funding level. In states that allow rainy day funds to be used for ‘any purpose’, the fund balance is likely to be lower. States with rainy day funds to be used for ‘revenue shortfalls’ will have balances lower during poor economic conditions; however, these states do not have statistically higher balances when economic conditions improve. These relationships demonstrate that factors unrelated to fiscal stress affect the level of rainy day fund balances – often in the opposite direction hypothesized by the literature. These findings bring into question the validity of using this measure to capture interstate fiscal stress differences.

Cross-state comparisons using year-end unreserved fund balance are also problematic. States are often able to defer expenditures or speed up receipt of revenues. For this reason, the National Conference of State Legislatures (NCSL) suggests caution in comparing this measure across states (Chaney et al 2002b). Researchers have also found that states do not always report their correct general fund balance – that is, the amount in their audited Comprehensive Annual Financial Report differs from the amount reported to NASBO (Hou 2003).

As with the fund balance measure, there are circumstances in which changes in revenue levels will not reflect changes in levels of fiscal stress. First, states may cut taxes during a period of relative economic prosperity. This change in tax revenue will be unlikely to reduce revenue collections to levels seen during the period fiscal stress, but it

may produce inconsistencies in analysis. Second, using revenue performance alone as an indicator of fiscal stress does not take into account expenditure levels. Fiscal stress occurs because of a mismatch between ongoing revenues and expenditures. While it is likely that revenue decline will produce fiscal problems; it is difficult to know the scale of these problems without considering the level of expenditures to be sustained. As for comparing revenue changes across states, it will likely be clear which states are experiencing severe fiscal stress and which are on firmer fiscal ground. The problem arises in determining a standard to rank states as experiencing low, moderate, or high fiscal stress.

Using tax increases relative to expenditure trends is also problematic as an interstate measure of fiscal stress. Measures that use either change in tax policy or change in expenditure policy run the risk of measuring a state's response to fiscal stress but not actual fiscal stress. Another concern is the use of a long-run growth rate of expenditures set for each state. As mentioned regarding the causes of fiscal stress, some states simply spend too much vis-à-vis the size and capacity of their tax base. If these states reduce their expenditures during a recession, it may be a sign of rational spending prioritization rather than response to fiscal stress. Also, this measure does not account for states that continue their expenditure trend using short-term debt rather than tax increases. This might allow gimmicks used by some states to obfuscate their level of fiscal stress experienced. First, since states may have different responses to fiscal stress (some may increase taxes, others may not; some may decrease expenditures, others may not), it is difficult to use this as an absolute measure of fiscal stress. Also the presence of different anti-deficit and balanced budget rules in states will allow certain states to tolerate higher budget deficits and take less action to remedy them. As such they may not register as experiencing fiscal stress using this measure.

Using financial indicators based on government-wide statements in annual CAFRs, by contrast, presents fewer problems for cross-state comparability. These statements allow a comparison across the entire state government and the factors counted

are relatively standardized. An advantage of this measure is that it does not directly incorporate state responses to fiscal stress into the measure of stress. In addition, using government-wide measures accounts for deficits in funds outside the general fund that may impact the financial condition of a state (Conant 2010). Certain factors such as the infrastructure asset reporting and approach to recording infrastructure assets' depreciation will affect state-to-state comparisons, but work on this so far has shown relatively minor distortions. In addition, these factors can be accounted for in a regression analysis.

Year-to-Year Comparison

Many of the issues that compromise state-to-state comparability also affect the validity of year-to-year comparisons. Budget deficits are a good measure of fiscal stress within one state when the methodology used to estimate deficits remains constant from one fiscal year to the next. For instance, Georgia experienced budget deficits in fiscal years 2008 and 2009 mainly due to declines in revenue collections (Lauth 2010; Lauth 2003); however, in fiscal year 2007 the budget was balanced. The budget deficits in 2008 and 2009 reflect the effects of the national recession in Georgia and the relatively inelastic tax system. In this sense, budget deficits do manifest changes in fiscal stress levels. However, differences in economic assumptions that underlie revenue estimates may vary year to year even within the same states (Gold 1992). Similarly, despite the differences that arise in states' year-end unreserved fund balance due to differential rules governing rainy day funds, as long as these rules remain constant year-to-year, then this measure should show differences in states financial condition year after year. Tax increases relative to expenditure performance and revenue performance are graded as weak year-to-year measures because these measures are particularly vulnerable to political changes. Tax increases or decreases may have more to do with the political preferences of whichever political party is in power, than a state's financial condition.

Financial ratios are rated as moderately effective year-to-year measures for similar reasons as they are moderately effective state-to-state measures. The standardization of government-wide statements and the comprehensiveness of the data are key factors in this comparability. However, as with the state to state comparisons, the phasing in of the GASB 34 requirements (discussed in the last section of this chapter) will result in some differences year after year as it does state to state.

3.3 Operationalizing the Financial Condition Framework

The extent to which these five measures of state fiscal stress captures the four dimensions of financial solvency differs significantly. Only financial indicators have the ability to incorporate all four dimensions due to the flexibility of the measure and the ability to add financial ratios that measure these dimensions. A budget deficit is a clear deficiency in budget solvency. Missing from the measure is an assessment of cash liquidity, long-run solvency and service-level solvency. Unreserved fund balance gets at the ability of a state to match revenues and expenditures (budget solvency) as well as its ability to pay short-term obligations (cash solvency); however, a state's ability to provide services and to meet long-term obligations are absent. Neither revenue performance nor tax increases relative to expenditure trends directly measure any of the four solvencies. In Table 3.1, they are checked as measuring service-level solvency mainly due to their focus on tax levels.

3.3.1 Elements of a Good Measure

Based on the literature, we have established that a measure that has the flexibility to measure aspects of fiscal stress separately is preferable to one that lumps them all together, that measuring the ability of a state to meet public demand for goods and services is important as is accounting for the different time frames of certain fiscal stress

measures, and that comparing states to each other to determine fiscal stress is more defensible than an external and absolute standard.

Although financial ratios can be added together to form a composite measure of fiscal stress, they are the only fiscal stress measure discussed here that allow for different dimensions of fiscal stress to be separately measured. This characteristic also means that financial ratios are better able to measure the ability of a state to meet public demand and to account for different time frames of underlying measures than other fiscal stress measures. On the question of what level qualifies as fiscal stress, all of the measures allow for flexibility on this consideration. Typically a lower year-end balance, smaller deficit, better tax performance or fewer tax increases relative to expenditures are taken to mean less fiscal stress. These are relative measures of fiscal stress and depend on how other states perform. Year-end unreserved fund balances typically are considered sufficient if they are at least five percent of total expenditures (Joyce 2001); however, this interpretation is used loosely (Rubin and Willoughby 2009).

3.4 Data Availability and GASB 34

The ability to collect data on government-wide indicators only recently became possible. The Governmental Accounting Standards Board (GASB) Statement No. 34: *Basic Financial Statements – and Management’s Discussion and Analysis – for State and Local Governments* issued in 1999 required governments to use a new financial reporting model that included consolidated government-wide financial statements that use the full accrual accounting basis (Plummer 2007 et al). These new requirements, particularly the production of the Statement of Activities and Statement of Net Assets make the use of financial ratios for cross-state comparison possible and practical. The Statement of Activities reports all revenues and costs of providing government activities; while the Statement of Net Assets reports on current financial assets and liabilities, capital assets and long-term liabilities (Mead 2006). GASB 34 is widely seen as the biggest change in

state and local financial reporting in decades (Mead 2006; Plummer et al 2007; Robbins and Houston 2002; Kravchuk and Voorhees 2001). The requirement which for states took effect in 2002 and is reflected in fiscal year 2002 state CAFRs (with the exception of New York state) is different from the prior CAFR presentation which focused on reporting by fund and allowed states to use different accounting systems (Chaney et al 2002b). Besides the government-wide financial statements with full accrual bases of accounting, GASB 34 also requires:

- A discussion of a government's financial activities and financial position
- Capital assets and long term debt must be reported in the Statement of Net Assets
- The required supplemental information (RSI) must include the MD&A, budgetary comparison schedules for government funds and information about infrastructure assets that do not have depreciation recorded on financial statements
- General infrastructure assets must be reported prospectively on the government-wide balance sheet net of accumulated depreciation (Kravchuk and Voorhees 2001).

Two changes required by GASB 34 that concern the reporting of infrastructure assets are particularly relevant for this analysis. All states are required to retroactively report infrastructure assets; however, states have up to three years to begin reporting this information. States are also provided the choice between a traditional or modified approach to reporting depreciation on infrastructure assets (Wang et al 2007). States that defer retroactive reporting of infrastructure assets – in other words they report on the debt of purchasing infrastructure assets at a different time than they record the infrastructure as an asset – results in lower net assets, total assets, capital assets net of related debt or unrestricted net assets (Wang et al 2007). The different timing of states reporting on infrastructure assets will result in spurious differences in the financial indicators listed above. Differences may also result from the different reporting practices of depreciation on infrastructure assets. States using the modified approach do not have to depreciate

infrastructure assets. Instead they must have an asset management system for infrastructure assets that must meet the following requirements:

- The government keeps up to date inventory records of its assets,
- Regular assessments are performed (every 3 years) using a measurement scale of the condition its infrastructure assets (and must be reported in RSI),
- An annual estimate is made of the costs required to maintain and preserve infrastructure assets at the condition level established by the government.

States adopting the modified approach may have lower expenses (Wang et al 2007). These two requirements, particularly the modified depreciation approach, reduce the uniformity of these government-wide statements (Kravchuk and Voorhees 2001).

3.5 Conclusion

In this chapter, the various definitions and measures of fiscal stress are discussed. By synthesizing multiple definitions of fiscal stress, this chapter articulates a single definition that encompasses four types of solvency: budget, cash, long-run, and service-level. A typology of fiscal stress measures is created and the different measures found throughout fiscal stress literature are assessed on their ability to operationalize the four types of solvency that contribute to fiscal stress. Financial indicators are found to best measure fiscal stress due to the amount of information they can represent.

CHAPTER 4

CONSTRUCTING AND TESTING A FISCAL STRESS MEASURE

4.1 Introduction

Given an understanding of fiscal stress, a definition and measurement aspects, we now must determine how to express the concept numerically with the available data. This chapter focuses on the second research question of this analysis - is there a better measure of fiscal stress than has been presented in the past, and why is this new measure valid and reliable? In this case, a measure of fiscal stress is constructed from financial indicators that operationalize the following definition of the term: a government's inability to meet its short or long run financial obligations, as they arise, that may also be accompanied by an inability to raise revenues or provide determined levels of goods and services. The definition of fiscal stress is then broken into various components. The first component, a state's ability or inability to meet short run financial obligations as they arise, is captured by a cash solvency index. The second component, a state's ability or inability to meet long run financial obligations as they arise, is measured by a long-run solvency index. The third component, a state's ability or inability to raise revenue, is captured by a budget solvency index. And finally, the fourth component, a state's ability or inability to provide a previously determined level of goods and services, is measured by a service-level index.

There are many financial indicators that can measure aspects of a state's financial condition and by extension, fiscal stress. The eleven financial indicators used in this chapter are based on prior research and data availability. Using these financial indicators, four indices – cash, budget, long-run and service-level – are constructed. The reliability and validity of these indices as measures of fiscal stress will also be assessed. Once these indices are constructed, tested and combined, a measure of fiscal stress exists that allows

comparison across years and among the American states. This will improve scholars' ability to conduct time series and panel analysis of the state experience of fiscal stress and their responses to fiscal stress as well as policy makers' ability to make judgments about policies affecting the financial condition of their specific government.

4.2 Financial Indicators and Index Construction

The financial indicators used in this analysis were chosen based on their past use to measure state financial condition as well as because of the availability of data. Wang et al (2007) operationalized the cash, budget, long-run and service-level solvency definitions introduced by Groves et al (1981). The authors use eleven financial indicators⁵ to construct four separate indices of financial condition: cash ratio, quick ratio, current ratio, operating ratio, surplus (deficit) per capita, net assets ratio, long-term liability ratio, long-term liability per capita, tax per capita, revenue per capita, and expenses per capita. Table 4.1 lists each financial indicator, its definition, the interpretation of its value, and the fiscal stress index to which it contributes. The data used to create these financial indicators are available in the government-wide financial statements in state Comprehensive Annual Financial Reports (CAFRs).

As mentioned above and detailed in table 4.1, four indices of fiscal stress are created in this chapter: cash, budget, long-run, and service-level. These indices capture

⁵ Other financial ratios are proposed in the literature and are available using state government-wide financial statements in CAFRs. Kamnikar et al (2006) proposes three measures to assess state financial condition: cash quick ratio (cash+cash equivalents+investments/current liabilities), debt to asset ratio (total liabilities/total assets), and continuing services ratio (unrestricted net assets/expenses). Chaney et al (2002b) list six financial ratios to measure local government financial condition including cash ratio, operating ratio, and long-term debt/total assets. In sum, multiple financial ratios exist and all measure some component of a government's financial condition. The value of using those proposed by Wang et al (2007) is that these financial ratios are linked to each of the four dimensions of solvency. And, as explained later in this chapter, these financial ratios are internally and externally consistent measures of each dimension of financial condition examined here.

both the financial condition of a state as well as its level of fiscal stress. The methodology for creating these indices draws from Wang et al (2007).

Table 4.1: Financial Indicators Used to Measure Fiscal Stress				
ID	Financial Indicator	Definition	Meaning	Dimension
1	Cash Ratio	(Cash+Cash Equivalents+ Investments)/Current Liabilities ^a	Higher ratio indicates greater cash solvency	Cash
2	Quick Ratio	(Cash+Cash Equivalents+ Investments +Receivables)/ Current Liabilities	Higher ratio indicates greater cash solvency	Cash
3	Current Ratio	Current Assets ^b /Current Liabilities	Higher ratio indicates greater cash solvency	Cash
4	Operating Ratio	Total Revenues/Total Expenses	1 or above indicates budget solvency	Budget
5	Surplus (deficit) per capita	Total Surpluses (Deficits)/Population	Positive indicates budget solvency	Budget
6	Net Asset Ratio	Restricted and Unrestricted Net Assets/Total Assets	Higher ratio indicates stronger long-run solvency	Long-run
7	Long-term Liability Ratio	Long-term (non-current) Liabilities/ Total Assets	Lower ratio indicates stronger long-run solvency	Long-run
8	Long-term Liability per capita	Long-term (non-current) Liabilities/ Population	Lower value indicates greater long-run solvency	Long-run
9	Tax per capita	Total Taxes/Population	Higher value indicates lower service-level solvency	Service-level
10	Revenue per capita	Total Revenues/Population	Higher value indicates lower service-level solvency	Service-level
11	Expenses per capita	Total Expenses/Population	Higher value indicates lower service-level solvency	Service-level

Source: Wang et al (2007, 8-9)

^aCurrent liabilities were classified for twenty-four states. Twenty-six states did not classify liabilities as current or noncurrent for all eight years. Using the same method as Wang et al (2007) liabilities are assumed to be listed in order of maturity. Current liabilities as measured in this analysis do not include any liability items listed as or after noncurrent liabilities or long-term liabilities. Since states list different items as liabilities, the composition of current liabilities across states is not identical.

^bCurrent assets were classified for twenty-four states. Twenty-six states did not classify assets as current or noncurrent for all eight years. Using the same method as Wang et al (2007) assets are assumed to be listed in order of liquidity. In this analysis, current assets include assets listed before restricted or capital assets. Receivables include all items listed as receivable that are listed before restricted assets. Since states list different items as assets, the composition of current assets across states is not identical.

Five of the financial indicators (Surplus per capita, Long-term liability per capita, Tax per capita, Revenues per capita, and Expenses per capita) are not presented as ratios and therefore, require adjustment due to yearly fluctuations in inflation. These financial indicators are deflated using the GDP price index. To ensure that the financial indicators are interpreted correctly when added together, five are transformed so that higher values denote higher solvency. This was done by taking the inverse of the original variable.⁶ All the financial indicators were standardized and converted to z scores. Each index was created as follows; the standardized financial indicators underlying each solvency index were added together and then averaged. The resulting score is the value for each index. All states for which data is available are included in the analysis.

4.3 Data

Data was collected from Comprehensive Annual Financial Reports (CAFRS) for all 50 states for fiscal years 2002 through 2009. With the exception of New York, all states had implemented GASB 34 by 2002 and therefore their CAFRS were prepared using the GASB 34 financial reporting model.⁷ Two financial statements in each CAFR – the Statement of Net Assets and the Statement of Activities – are the sources of government-wide financial information. Information on how states report on their infrastructure assets was also collected from the CAFRs. Annual estimates of resident population by state for the years 2001 through 2009 was taken from the U.S. Census

⁶ Long-term liability ratio, long-term liability per capita, tax per capita, revenue per capita and expenses per capita indicate a lower level of solvency the higher the value. The other six financial indicators indicate a higher-level solvency the higher the value. When aggregating these values and comparing between the different indexes, it is necessary that a higher value have the same meaning for all financial indicators. To ensure this, the inverse of the five ratios listed above are taken. By taking the inverse, a higher value on the five indicators listed also indicates a higher level of solvency.

⁷ GASB Statement No.34: *Basic Financial Statements – and Management’s Discussion and Analysis – for State and Local Governments* required governments to report consolidated government-wide financial statements that use the full accrual accounting basis. This included the production of the Statement of Activities and Statement of Net Assets.

Bureau, Population Division. Data on the economic growth within a state in one year is taken from the State Coincident Index published by the Federal Reserve Bank in Philadelphia. The Bank generates and reports an indexed measure of economic growth in each state by month based on four economic indicators: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average) (Crone 2006). Total personal income by state for the years 2001 through 2009 was collected from the U.S. Bureau of Economic Analysis, State Annual Personal Income tables. The general fund ending balance and total expenditures figures used to create the ending budget balance as a percent of total expenditures variable are consistently taken from the NASBO Fall Fiscal Survey of the States for the years 2002 through 2010.

4.4 Results

4.4.1 Descriptive Analysis

Descriptive statistics for the eleven untransformed financial indicators are shown in Table 4.2.

Cash Solvency

Three indicators comprise the cash solvency index, including the cash, quick and current ratios. For these ratios, a higher value means a state has more current assets available to cover current liabilities. As defined by Groves et al (1981), cash solvency is a “government’s ability to generate enough cash or liquidity to pay its bills” (6). The cash ratio includes only the most liquid of current assets, with the quick and current ratios including increasingly less liquid current assets.

Table 4.2: Descriptive statistics for Financial Indicators							
	N ^b	Mean	Median	Standard Deviation	Maximum	Minimum	Skewness
Cash Ratio ^a	391	1.854	1.560	1.067	6.893	.321	1.448
Quick Ratio ^a	391	2.663	2.206	1.521	10.421	.825	2.152
Current Ratio ^a	391	2.850	2.344	1.616	11.691	.978	2.612
Operating Ratio	399	1.025	1.015	.119	2.08	.323	2.980
Surplus (deficit) per capita	399	172.718	92.308	1151.54	11904	-9447.86	3.403
Net Asset Ratio	399	.543	.608	.287	.940	-.751	-1.764
Long-run Liability ratio	399	.311	.248	.255	1.405	.017	1.835
Long-run Liability per capita	399	2006.43	1462.19	1538.15	6883.65	122.49	1.308
Tax per capita	399	2409.4	2238.55	907.38	12408.13	1095.42	4.316
Revenue per capita	399	5307.77	4892.34	1967.64	22,927.35	5307.77	4.530
Expenses per capita	399	5163.60	4833.54	1455.95	14241.26	2704.53	1.77
^a For the Cash, Quick and Current ratios, Alaska is omitted for the purposes of reporting the descriptive statistics. Unlike other states, Alaska keeps a very large current asset balance – including cash and cash equivalents – that positively skews the mean. ^b New York state is excluded for 2002 because the state did not implement GASB 34 and government-wide financial reporting until 2003.							

As such, these three indicators provide a sense of how liquid a government is, implying its ability to pay off current liabilities. As shown in Table 4.2, the mean of the cash ratio is 1.854 and the standard deviation is 1.067.⁸

The mean of the quick ratio is 2.663 and the standard deviation is 1.521.⁹ A quick ratio greater than 1 is the commonly accepted standard for sufficient cash reserves

⁸ With Alaska included, the mean is 2.154 and the standard deviation is 3.001. Unlike the other states in the dataset for the years 2002 -2005, Alaska kept a large amount of cash and investments on hand compared to its level of current liabilities. For these years, Alaska's cash ratio ranged from 34.8 to 20.2 with a high of 41.07 in 2003. However, from 2005 to 2009, Alaska's cash ratio, while still high, fell more in line with maximums in the dataset with cash ratio's ranging from 5.6 to 10.4 in 2005 and 2009 (respectively) with a high of 12.2 in 2008.

⁹ The experience of Alaska described in the cash ratio, is virtually identical to that with the quick ratio. The mean of the quick ratio is 2.702 and a standard deviation of 1.695. When Alaska is included the mean is

(Finkler 2005). As a comparison, in 2003, 40 states have quick ratios greater than 1; where as in 2009, 33 states have quick ratios greater than 1. This suggests that the quick ratio is sensitive to economic trends. The mean of the current ratio is 2.85 and the standard deviation is 1.616.¹⁰ The rule of thumb for sufficiency equals a current ratio of 2 (Finkler 2005). As with the quick ratio, more states achieved sufficiency in 2003 (64 percent) than in 2009 (54 percent). This suggests that more states were in a position to meet short-term obligations in 2003 than in 2009, presumably given the effects of the economic downturn that began in December 2007.

Budget Solvency

Two financial indicators make up the budget solvency index: operating ratio and the surplus (deficit) per capita. Since budget solvency is a state's "ability to generate sufficient revenues over its normal budgetary period to meet its expenditure obligations and not incur deficits" (Groves et al 1981, 6), both of these indicators concern the balance between revenues and expenses. The operating ratio is calculated as total revenues divided by total expenses. The surplus (or when the value is negative, deficit) per capita is calculated using the change in net assets divided by state population. The mean operating ratio is 1.025 and the standard deviation is 0.119. An operating ratio greater than 1 indicates budget solvency or that a state can cover all expenses within a year with its current year revenues. The mean surplus per capita is \$172.71 with a standard deviation of \$1,151. This indicates a great deal of variation in surplus/deficits among the states over the years. Forty-six states had deficits in 2009 compared to 27 states with

2.957 and the standard deviation is 3.192. As with the cash ratio, the truly divergent values are for the years 2002 through 2005.

¹⁰ With Alaska included the mean of the current ratio is 3.146 with a standard deviation of 3.26.

deficits in 2003. As with the cash solvency index, this index is sensitive to economic changes.

Long-run solvency

Three indicators measure long-run solvency: net assets ratio, long-term liability ratio, and long-term liabilities per capita. Long-run solvency is a government's "long-run ability of a government to pay all the costs of doing business, including expenditure obligations that normally appear in each annual budget, as well as those that show up only in the years in which they must be paid" (e.g. replacement of capital assets, pension costs, etc.) (Groves et al 1981, 6). A higher net assets ratio indicates a better ability to meet and pay long-run obligations (Wang et al 2007). A higher value for the long-term liability ratio and long-term liability per capita denote a higher long-term liability load of a state, and indicates potentially greater difficulty paying the liability off. The mean net assets ratio is 0.543 with a standard deviation of 0.287. The mean long-term liability ratio is 0.311 with a standard deviation of 0.255. The mean long-term liability per capita is \$2,006 with a standard deviation of \$1,538. Long-term liability per capita differs greatly between states, although it is less sensitive to economic trends.

Service-level solvency

Three measures also compose the service-level solvency index: tax per capita, revenue per capita, and expense per capita. Service-level solvency measures "whether a government can provide the level and quality of services required for the general health and welfare of a community" (Groves et al 1981, 6). The first two indicators, tax and revenue per capita assess the revenue burden on state residents. Expense per capita assesses the cost of providing services to state residents (Wang et al 2007). As it is operationalized, a higher value on these three indicators suggests lower overall service-level solvency. Higher values suggest a higher tax burden (and subsequently less room

for increases) and higher costs of providing services. The mean of tax per capita is \$2,409 and the standard deviation is \$907. The mean revenue per capita is \$5,308 with a standard deviation of \$1,967. Finally, expense per capita has a mean of \$5,164 and a standard deviation of \$1,456 (all numbers rounded).

4.4.2 Measurement Reliability

Measurement reliability is the extent to which a measure is free from random measurement error. Wang et al (2007) proposes three criteria to test the reliability of these indices. First, correlation should be present between the financial indicators used to make up each index. Second, there should be correlation between the indices themselves. This correlation assesses the extent to which they are measuring different dimensions of the same concepts (financial condition and fiscal stress). Third, the extent to which reporting-related differences affect the reliability of individual state financial ratios should be either minimal or correctable.

The financial indicators making up each index are highly correlated at a significant level, meeting the first criterion of measurement reliability. The correlation between the three cash solvency index financial indicators is high. The current ratio is highly correlated with the quick ratio ($r=0.9969$, $p<0.000$) and the cash ratio ($r=0.9691$, $p<0.000$). The correlation between the quick ratio and the cash ratio is also high ($r=0.9749$, $p<0.000$). For the budget solvency index, the operating ratio and surplus per capita are highly correlated ($r=0.9111$, $p<0.000$). For the long-run solvency index, the financial indicators are also highly correlated, although the correlation is not positive for two of the three indicators. Long-term liability ratio and net asset ratio are highly negatively correlated ($r=-0.9730$, $p<0.000$). The net asset ratio and long-term liability per capita ($r=-0.7039$, $p<0.000$) are also highly negatively correlated. Long-term liability ratio and long-term liability per capita are highly positively correlated ($r=0.7563$, $p<0.000$). In the final solvency index, service-level, the financial indicators are also

highly correlated. Tax per capita is highly correlated with revenues per capita ($r=0.6843$, $p<0.000$) and expenses per capita ($r=0.6982$, $p<0.000$). Revenue per capita and expenses per capita are also highly correlated ($r=0.8225$, $p<0.000$).

The second criterion of measurement reliability is that each dimension of solvency is related. Table 4.3 shows the correlation and significance of the association between each of the indices. For the most part, the association between each index is as expected. Cash solvency is positively associated with budget solvency, so states with more current assets are also more likely to have balanced revenues and expenses. Both cash and budget solvency are associated with long-run solvency, indicating that states with higher cash and budget solvency have higher long-run solvency (and lower long-term debt levels). Service-level solvency is also significantly related to long-run solvency. The association between service-level solvency and cash and budget solvency is less clear. The relationship between cash solvency and service-level solvency is not significant and the relationship between budget solvency and service-level solvency is significant, but negatively associated. The data suggests that states with higher

Table 4.3: Correlation Matrix for Cash, Budget, Long-run and Service-level Indices				
	Cash	Budget	Long-run	Service-level
Cash	1.000			
Budget	0.1102 (0.0277)	1.000		
Long-run	0.2625 (0.0000)	0.2381 (0.0000)	1.000	
Service-level	-0.0475 (0.3440)	-0.1981 (0.0010)	0.3054 (0.0000)	1.000
Correlation coefficient reported with the significance level in parentheses.				

budget solvency have lower service-level solvency. One interpretation of this relationship is that states with budget balance have higher taxes per capita, expenses per capita or revenue per capita. In this setting, having higher per capita indicators is not a problem because these states realize budget balance without the need to raise taxes or revenues. However, for states with low budget solvency, low service-level solvency presents a real problem. In this situation, a state would not have much room to improve budget solvency by increasing revenues without potentially cutting expenditures significantly.

An additional measure of the reliability related to these 11 financial indicators as a measure of fiscal stress is Cronbach's alpha. Cronbach's alpha for the standardized values of these 11 financial indicators is 0.7037 (including all 50 states). Based on previous research on municipal and state financial condition and using CAFRs, a range of Cronbach's alpha values between 0.600 and 0.800 are considered acceptable (Wang et al 2007).

The final examination of measurement reliability concerns differences in how each state records infrastructure assets, as allowed by the GASB 34 financial reporting model. As discussed in the previous chapter, states have the option to record infrastructure assets using typical depreciation or using a modified approach. States also had the option of delaying retroactive reporting on the value of all infrastructure assets until fiscal year 2006.

For states that deferred the retroactive reporting of infrastructure assets, this delay will affect the size of their net assets, total assets, and unrestricted assets (Wang et al 2007). Based on a review of state CAFRs, only four states elected to defer reporting infrastructure assets: Alabama, California, Montana, and Rhode Island. The small number of states that chose to defer reporting reduces the likelihood that this reporting difference systematically affects the dataset; however, a t-test is used to assess whether the affected financial indicators are significantly different between these states and those that did not defer reporting. The financial indicators likely to be affected by this reporting difference

are the net assets ratio and the long-term liability ratio. Since states only deferred reporting up to 2006 and most states started reporting assets retroactively before then, the t-tests are conducted on the difference in indicator means by year. For 2002, when all four states deferred; the mean difference for the net assets ratio between states that deferred and those that did not was 0.1321, not a statistically significant difference ($t=0.9695$, $p=0.3372$). For the long-term liability ratio, in 2002 the mean difference was -0.04144, also not statistically significant difference ($t=-0.3583$, $p=0.7217$). For 2003, when all four states deferred reporting, the mean difference between net assets ratios was 0.2061, not statistically significant ($t=1.4054$, $p=0.1663$). The same was true for the long-term liability ratio ($t=-0.9938$, $p=0.3253$). In 2004 and 2005, only two states still deferred retroactive reporting. The statistical significance for the mean difference between the 48 states that reported retroactive assets and those that did not ranged from marginally significant to significant at the 0.05 level for both the net assets ratio and long-term liability ratio. However, it is unclear if this should be interpreted as solely due to the deferred reporting, or due to other differences between these two states, California and Rhode Island, and the other 48 states. Overall, these results suggest that the practice of deferred reporting has a relatively limited impact on the financial indicators. However, to correct for any systematic differences, controlling for deferred reporting practices is warranted.

The second difference in state reporting of infrastructure assets is how they report depreciation of infrastructure assets. In lieu of depreciating these assets, GASB 34 offers states the option of a modified approach in which they do not record depreciation but rather must maintain assets at an approved level and report on their ability to meet this criteria. According to Wang et al (2007), states using the modified approach may have lower expenses and higher net assets. This may affect the operating ratio, surplus per capita, net asset ratio, and expenses per capita. Twenty-three states chose the modified approach. No state changed their approach to recording infrastructure depreciation

between 2002 and 2009. There was a significant difference between the means of the net assets ratio ($t=-3.597$, $p=0.000$) and expenses per capita ($t=5.236$, $p=0.000$). The impact of modified approach is not significant for the operating ratio ($t=-0.3024$, $p=0.7625$) and surplus per capita ($t=0.3426$, $p=0.7320$). The mean net assets ratio is higher for states using the modified approach, while the mean expenses per capita is lower. By testing the means of the long-run and service-level solvency indices for states that use the modified and traditional approach, we find that the two groups are significantly different. States using the modified approach have a higher mean long-run solvency index value ($t=-4.14$, $p<0.000$) and a higher service-level solvency index value ($t=-4.81$, $p<0.000$). Dropping these indicators is an option for eliminating these systematic differences. However, the expenses per capita indicator provides information on the cost of providing services, without which the revenues and taxes per capita are biased. The net assets ratio captures a state's ability to pay off long-term liabilities. In order to keep these indicators and protect against bias, the approach to recording state infrastructure asset depreciation will either be added as a dummy variable to regression analysis or fixed effects will be used to capture systematic differences.

4.4.3 Measurement Validity

Measurement validity presumes that the measure is actually assessing the intended concept, in this case, fiscal stress. Wang et al (2007) lists three criteria for assessing the validity of these measures. First, the measures should have face validity; they should intuitively make sense as measures of fiscal stress. The reasoning behind using financial indicators as measures of fiscal stress is detailed in Chapter 3. Second, the measures should apply to the concept comprehensively. That is, the measures should apply to the entire state government. Third, the measures should have predictive validity. Since financial condition (and by extension, fiscal stress) is related to socioeconomic

variables, then we would expect to see a relationship between these fiscal stress measures and certain socio-economic variables.

Total state population and state personal income per capita provide insight into the differences between larger and smaller states, as well as among higher and lower income states. In previous research, Wang et al (2007) found that larger states and higher income states tend to have poorer financial condition. Viewing states over eight years, we find a similar relationship. All four indices had a significant correlation with population size. Cash ($r=-0.1956$, $p=0.000$), budget ($r=-0.1586$, $p=0.002$), and long-run ($r=-0.2795$, $p=0.000$) indices had a negative relationship with state population size. Service-level index had a positive significant relationship with population size ($r=0.1309$, $p=0.009$), indicating that larger states have higher service-level solvency. States with increasing populations tend to have higher cash ($r=0.109$, $p=0.029$), long-run ($r=0.1530$, $p=0.002$), and service-level ($r=0.3255$, $p=0.000$) solvency. Three of the indices had a significant negative relationship with income per capita. The budget index did not have a significant relationship with income per capita; however, it did have a significant positive relationship with the percentage change in income per capita ($r=0.4238$, $p=0.000$). This relationship suggests that higher income states tend to have lower cash, long-run, and service-level solvency, but states with growing income per capita tend to have higher budget solvency.

To assess the relationship between the indices and changes in economic condition, the State Coincident index (described in the data section above) is used. The State Coincident index is available for each month for over 30 years. Using the month-to-month percentage changes, we can calculate the yearly change in the State Coincident index for each state. When the individual indices are used, only the budget index has a significant positive correlation with the economic change measure ($r=0.2565$, $p=0.000$). These results show that the budget index is the only one that is sensitive to changes in economic conditions.

As a final check on the validity of these indices as measures of fiscal stress, we correlate each index with the unreserved budget balance as a percent of total expenditures. This variable is one of the most common measures of fiscal stress (Rubin and Willoughby 2009, Chaney et al 2002a) and as such if no correlation exists this would throw doubt on these indices and their ability to measure fiscal stress. Table 4.4 shows the Pearson's correlations and significance levels between the unreserved budget balance as a percent of total expenditures (UUB) and each index. The table highlights the statistically significant relationship between the UUB and the budget index. Only marginally significant correlations are present

Table 4.4: Correlation between Indices and Unreserved Budget Balance				
	Cash	Budget	Long-run	Service-level
Unreserved Budget Balance as a % of Total Expenditures	-0.0491 (0.3282)	0.1895 (0.0010)	0.0898 (0.0732)	-0.0381 (0.4482)
Source: NASBO Fiscal Survey of the States and State CAFRs				

between the UUB and the long-run index. These findings support the statements made in Chapter 3 that the UUB only measures one aspect of fiscal stress – budget solvency.

4.5 Conclusion

This chapter proposes, constructs, and tests a new measure of fiscal stress and in so doing, answers the question as to whether a more reliable and valid measure of fiscal stress is available. This new measure, based on financial ratios, divides fiscal stress into four different dimensions: cash, budget, long-run and service-level solvency. These dimensions express in numerical terms the definition of fiscal stress described in Chapter 3. With tests of measurement reliability and validity, this measure of fiscal stress is

shown to be a robust and multi-faceted expression of fiscal stress at the state level. With this measure of fiscal stress, states may be compared to one another over multiple years with some degree of confidence. This new measure provides the flexibility to categorize fiscal stress levels and then compare state actions to theoretical models. This measure also provides the ability to assess the short-term and long-term effectiveness of state responses at reducing different types of fiscal stress.

CHAPTER 5

TRENDS IN STATE RESPONSES TO FISCAL STRESS

5.1 Introduction

Without consistent and comparable fiscal stress measures, analysis of state responses to fiscal stress has been piecemeal and subjective (Dougherty and Klase 2009; Jimenez 2009). Using the fiscal stress measures described in the previous Chapter allows for a systematic and multi-year analysis of state responses during fiscal stress. In this Chapter, the relationships between state responses, fiscal stress levels, economic conditions, political dynamics and legal requirements are examined. Incorporating the passage of time into this analysis also allows for the determination of the temporal order of responses to fiscal stress. Analysis of these issues will provide answers to the third question posed in the introduction: Do certain characteristics affect states' experience of fiscal stress and/or influence the choice of responses?

States have a range of possible responses to fiscal stress: across-the-board cuts, tax and/or fee increases, hiring freezes, employee furloughs, and/or layoffs. Although states receive revenue from a number of sources, including the federal government, taxes and fees are the only sources of revenue mostly under their control (Wulf 2002).

Institutional, political and other factors influence a state's choice of tactics. These factors include local and national economic conditions, legislation governing budget deficits, and state spending and taxing powers. The combination of these factors results in a wide variety of state responses, the mix of which can indicate either a clear pattern of decision making or an unstructured decision making process with no clear guiding principles. Despite tools available to state policy makers to smooth revenue volatility and avoid abrupt shifts in spending and taxation (e.g. more accurate revenue estimation techniques, multi-state rainy day funds, diversification of tax structures), states may lack

either the legal power or the political will to use these tools or implement them consistently (Thompson and Gates 2007; Willoughby 2007). In this Chapter, state responses to close budget deficits between 2002 and 2009 are examined. This analysis teases out whether state responses in periods of fiscal stress differ among states with different political and legal arrangements. And, states will be compared according to responses in periods of fiscal stress against those responses predicted by the theories of cutback management, incrementalism, and punctuated equilibrium.

5.2 Data and Methodology

As discussed in Chapter 4, the data used to create the budget, cash, long-run, and service-level solvency indices come from Comprehensive Annual Financial Reports (CAFRs) for the 50 states for fiscal years 2002 through 2009. Data on the economic growth within states by year is taken from the State Coincident Index published by the Federal Reserve Bank in Philadelphia. The Bank generates and reports an indexed measure of economic growth in each state by month based on four economic indicators: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average) (Crone 2006). State responses to budget gaps are taken from the fall edition of the National Association of State Budget Officers' (NASBO) Fiscal Survey of States from 2003 to 2010. This data is collected from the table titled, *Strategies Used to Reduce or Eliminate Budget Gaps* and covers fiscal years 2002 – 2009. NASBO collects specific information from states regarding strategies used to reduce or eliminate budget gaps. Eleven strategies indicated across years are included here. Hiring freezes are not listed in this table, though such information is included in the table notes. Beginning with the 2009 NASBO Fiscal Survey, fees are separated into five categories (user, higher education-related, court-related, transportation/motor vehicle and business-related). For this analysis, a state that engaged any type of fee is recorded as “using fees.”

Using this set of responses is appropriate for two reasons: 1) budget gaps are a manifestation of fiscal stress, particularly budget fiscal stress (e.g., a lack of budget solvency) and 2) the types of responses recorded are the same discussed in the theoretical literature (e.g., rainy day funds, across-the-board cuts, and layoffs). Tax increases as a response to budget gaps are not included in the table mentioned above. Information on tax changes is taken from the Fall NASBO Fiscal Survey, specifically the table titled, *Enacted Revenue Actions by Type of Revenue and Net Increase or Decrease*. For each fiscal year, this table presents the tax changes enacted by state, along with the expected revenue change. State balanced budget requirements are taken from Hou and Smith (2006). Hou and Smith (2006) analyze state laws and constitutions to determine which types of balanced budget rules are present. Based on their review, the authors find differences between what states report as their balanced budget rules and the rules actually inscribed in state laws. From their review, Hou and Smith (2006) find that only North Dakota has no balanced budget requirements. Three other states, Indiana, Tennessee, and Vermont, do not have one of the four balanced budget rules modeled in this analysis; but they do have other balanced budget requirements.¹¹ One potential limitation of this data source is changes to state balanced budget requirements since 2006. The NASBO *Budget Processes in the States, 2008* contains a more recent survey of state balanced budget requirements. However, Hou and Smith (2006; 2010) raise questions as to the accuracy of this data source given the interpretation of state law that occurs. The National Conference of State Legislatures also weighs in on the difficulty of determining exactly which balanced budget rules are in place (2010). To allow for comparability

¹¹ Indiana has a constitutional and statutory requirement that own source revenue and debt must match expenditures. In addition to this requirement, Tennessee has requirements that a limit is in place on the amount of debt that may be assumed for the purpose of deficit reduction and within fiscal year controls are in place to prevent deficits. Vermont has a statutory requirement the same as Indiana (Hou and Smith 2006).

across states and because balanced budget requirements be they statutory or constitutional do not change with great frequency, this analysis uses the rules identified by Hou and Smith (2006). Political party affiliation of state governors and legislatures are recorded from the Book of the States, 2002-2009. Data on tax and expenditure limitations (TEs) comes from the National Conference of State Legislatures (2008). Structural balance information is taken from the Government Performance Project (GPP), 2008 “Grading the States” report, published in *Governing*. Determining which states suffer from structural deficits is difficult and ultimately subjective. The GPP divides states into three categories of structural balance: weakness, mid-level and strength. The GPP has assessed states, including their structural balance, for multiple years. For the purposes of this analysis, the 2008 structural balance score is used for the entire data set (2002-2009). The 2008 score is used for several reasons: 1) since an annual structural balance score is not available, it is not clear how to impute the data for other years, 2) the values of the structural balance scores do not change much between 2005 and 2008 (see Appendix C), 3) since the GPP scores are based on a combination of surveys, interviews, and document reviews, it is possible that changes between 2005 and 2008 reflect the scorers preferences and not a substantive change in a state’s structural balance. Table 5.1 summarizes the variables, sources and years collected.

Table 5.1: Sources of Data for Relevant Variables		
Variable	Data Source	Years Collected
Budget Balancing Strategies	NASBO Fiscal Survey of the States	FY 2002-2009
Balanced Budget Requirements	Hou and Smith (2006) – Content Analysis of State Laws	2006
Tax and Expenditure Limitations	National Conference of State Legislatures	2008
Structural Balance	Government Performance Project – Pew Center for the States	2008
Political Party Affiliation <ul style="list-style-type: none"> • Governor’s Party • Unified Government 	Book of the States	2002-2009
Economic Growth	State Coincident Index –Federal Reserve Bank of Philadelphia	2002-2009
Fiscal Stress	State Comprehensive Annual Financial Reports (CAFRs)	FY 2002-2009

Using k-means cluster analysis¹², states are categorized into high, moderate, and low levels of fiscal stress based on their four index scores (budget, cash, long-run and service-level solvencies). As a result, each state in each year has four scores of fiscal stress. Using the means of each cluster, states were assigned to one of three fiscal stress clusters (low, moderate, and high). For the budget solvency indices, four clusters rather than three were created. The fourth cluster captured those states with high, positive values in the budget index. For the budget index, the two clusters with positive means are classified as the low fiscal stress cluster. As discussed in Chapter 4, Alaska is a positive outlier for the cash, current and quick ratios (the three ratios that comprise the cash

¹² K-means cluster analysis allows the researcher to specify the number of clusters. An algorithm is used to minimize within-cluster variance and maximize variability between clusters. Since initial clusters are chosen randomly, the sequence of the dataset may influence the initial clusters. To correct for this, the dataset was randomly sorted before cluster analysis was performed.
<http://faculty.chass.ncsu.edu/garson/PA765/cluster.htm#kmeans>

solvency index). Since k-means cluster analysis is sensitive to outliers and to avoid the positive skew produced by Alaska’s values for these three ratios, the cluster analysis performed using the cash solvency index excluded Alaska for 2002 to 2009. After the cluster analysis was conducted, Alaska was added back into the dataset and assigned to the appropriate group using the cluster means.

The means of the fiscal stress clusters provides context as to the difference between high, moderate, and low for each index. Since four clusters were generated for the budget index, there are four means – the two highest of which are classified as low fiscal stress. Figure 5.1 shows the means of the low, moderate and high clusters for each index. Cluster analysis results are presented in Appendix A.

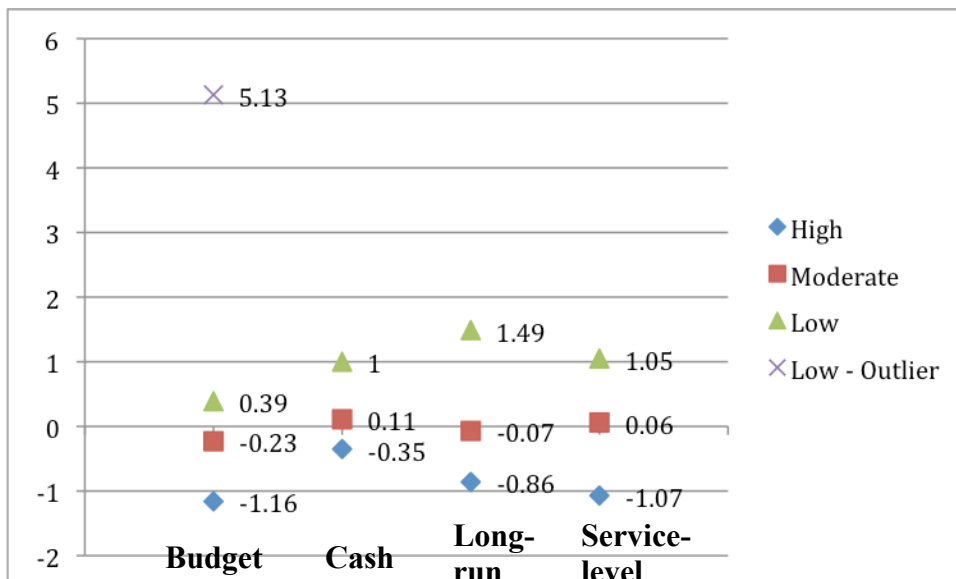


Figure 5.1: Cluster Means for Fiscal Stress Indices

While some states have similar cluster results for the different indices (e.g. falling in the “moderate” group for the four indices), others show variability in their fiscal stress levels across the different measures. In 2009, California was categorized in the high fiscal stress cluster for all four of the solvency indices. By contrast, in the same year, Alaska

was categorized in the high fiscal stress cluster for budget and service-level solvency, but in the low fiscal stress cluster for the cash and long-run solvency. These findings suggest that California has entrenched fiscal stress in both the short-term and long-term. By contrast, Alaska's divergent fiscal stress clusters suggest difficulty in the short-term, but sound long-term solvency.

Descriptive analysis and the difference between means test (t-test) are used to analyze patterns in state responses relative to the level of fiscal stress and other characteristics. See Appendix B to see the state response profiles. These profiles include the year, responses indicated, and fiscal stress level for each dimension of fiscal stress. In reviewing state responses, the following questions guide this analysis:

- Are states responding to fiscal stress?
 - If so, to which types of fiscal stress are they responding?
- How fast do states respond to fiscal stress?
- Which responses are the most common – is there a clear pattern?
- Are there differences in responses among states with different economic, political and legal environments?

These findings will be examined within a broader context of national and state trends to help illuminate why states may have favored some actions over others

5.3 Findings

Cluster Analysis Results

In this section, the states are sorted into three levels of fiscal stress: low, moderate, and high. Since each state in each year is treated as a separate observation, it is possible for a state to have a moderate level of fiscal stress one year and a high level the next. Also, unique to this analysis is that states are assessed on their level of fiscal stress

by the four different dimensions of financial condition: cash, budget, long-run and service-level solvency. The results of this analysis are presented in Appendix A. Categorizing states as experiencing low, moderate and high fiscal stress is crucial for the subsequent analysis on state responses and the influencing factors on response.

States fiscal stress levels are affected by economic conditions and vary year to year as shown in Tables 5.2 and 5.3. In 2005, a year in which most states experienced positive economic growth,¹³ only two states are grouped into the high fiscal stress group for budget solvency. By contrast in 2009, a year of very poor state economic growth,¹⁴ 18 states are in the high fiscal stress cluster for budget solvency. In addition, the number of states with high fiscal stress for all four of the indices increased from one to six between 2005 and 2009, as shown in Tables 5.2 and 5. 3.

As discussed in Chapter 4, the budget solvency index is the only one of the four indices with a statistically significant correlation with state economic growth. This relationship is underscored by the pattern shown in Tables 5.2 and 5.3. While the number of states with high budget fiscal stress increased between 2005 and 2009, the number of states with high cash, long-run, and service-level fiscal stress is nearly the same. On the other hand, while the total number of states with high cash, long-run, and service-level fiscal stress remains nearly static, states that move from low or moderate budget fiscal stress to high budget fiscal stress are also more likely to have high cash, long-run, and/or service-level fiscal stress.

¹³ As measured by the State Coincident Index - includes four economic indicators: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average) - only two states (Louisiana and Michigan) experienced negative monthly changes or a decrease in index level between the start and end of the year.

¹⁴ In 2009, all states, except for one, experienced negative monthly changes and a decrease in their State Coincident Index between the start and end of the year.

Table 5.2: States with High Fiscal Stress in 2005 by Index			
Cash	Budget	Long-run	Service-Level
Arizona	Massachusetts	California	Alaska
California	New Jersey	Connecticut	California
Colorado		Hawaii	Connecticut
Connecticut		Illinois	Delaware
Delaware		Massachusetts	Hawaii
Florida		Nevada	Massachusetts
Georgia		New Jersey	Minnesota
Illinois		New York	New Jersey
Indiana		North Dakota	New Mexico
Kansas		Ohio	New York
Kentucky		Oregon	Rhode Island
Maine		Rhode Island	Vermont
Maryland		Washington	Washington
Massachusetts		West Virginia	West Virginia
Michigan		Wisconsin	Wyoming
Minnesota			
Mississippi			
New Hampshire			
New Mexico			
New York			
North Carolina			
Oklahoma			
Oregon			
Pennsylvania			
Rhode Island			
South Carolina			
Texas			
Vermont			
Washington			
Wisconsin			
Wyoming			
Total 31	2	15	15

Table 5.3: States with High Fiscal Stress in 2009 by Index			
Cash	Budget	Long-run	Service Level
Arizona	Alaska	California	Alaska
California	Arizona	Connecticut	California
Colorado	California	Delaware	Connecticut
Connecticut	Connecticut	Florida	Delaware
Delaware	Delaware	Hawaii	Hawaii
Georgia	Hawaii	Illinois	Louisiana
Hawaii	Illinois	Kentucky	Maine
Illinois	Kentucky	Maryland	Massachusetts
Kansas	Maryland	Massachusetts	Minnesota
Kentucky	Massachusetts	Michigan	New Jersey
Maine	Nevada	Nevada	New Mexico
Maryland	New Jersey	New Jersey	New York
Massachusetts	New Mexico	New York	North Dakota
Michigan	New York	Ohio	Rhode Island
Minnesota	Oregon	Oregon	Vermont
Mississippi	Texas	Rhode Island	Washington
New Hampshire	Washington	Washington	West Virginia
New Jersey	Wyoming	Wisconsin	Wyoming
New Mexico			
New York			
North Carolina			
Oregon			
Pennsylvania			
Rhode Island			
South Carolina			
Texas			
Vermont			
Virginia			
Wisconsin			
Wyoming			
Total: 30	18	18	18

Analysis of Responses to Fiscal Stress and Economic Condition

In this section, state responses are compared by state economic condition. Certainly, state responses reflect economic conditions, given the relationship between the economic environment and revenues. Typical state responses to fiscal stress include

imposing new or raising fees/charges, drawing down rainy day funds, making across-the-board and/or targeted cuts, hiring freezes, furloughs and/or layoffs of state employees, conducting state employee early retirement programs, reorganizing state programs or departments, reducing aid to local governments, or privatization of state services and/or programs. Fee changes may involve user fees, higher education-related fees, court-related fees, transportation/motor vehicle fees, and business-related fees. Still, as noted in Chapter 4, fiscal stress is not perfectly correlated with economic condition.

Certain responses by states to stress are clearly favored over others, as indicated in Table 5.4. Across-the-board cuts and accessing rainy day funds are the two most commonly reported actions states use to balance budgets. Both responses can be applied very quickly to close gaps between expenditures and revenues. In contrast, privatization, the least used method, is highly unlikely to quickly garner a sustainable flow of revenues or reduce expenditures substantially. Tax increases are similar to privatization in that quick results are unlikely; still, this is a more common response to stress by states than privatization. That fewer states imposed tax changes in response to the most current “Great Recession” compared to the recession in 2001 might represent state concern that such measures may compound the economic downturn. In addition, the large federal stimulus may have allowed states to avoid increasing taxes. Federal stimulus dollars may have taken the place of revenue losses.

Table 5.4 also shows the year-to-year fluctuations in responses. Both the number of states taking actions to address stress as well as the use of more severe actions (e.g. layoffs, furloughs, and tax increases) of action is clustered around 2002 and 2003 and then again around 2008 and 2009, with very few actions taken between 2004 and 2007. It is important to note that just considering the NASBO Fiscal Survey data of state responses underestimates total responses. In 2004, for instance, states kept expenditure growth very low – below the historical average of 6.4 percent (Samuels 2004). State actions mitigated the need for additional expenditure cuts. In addition, states took actions

not recorded by the NASBO survey, including incentives to private industry to spur economic development, collecting back taxes and offering tax amnesty programs, engaging in partnerships with faith-based and non-profit organizations to share the cost of providing social welfare programs, and streamlining the provision of government services via the conduct of government business over the Internet (Willoughby 2004).

Table 5.4: State Responses to Budget Gaps and Enacted Tax Increases Fiscal Years 2002-2009									
	2002	2003	2004	2005	2006	2007	2008	2009	Total
Rainy Day Fund	26	25	4	3	2	1	9	26	96
Across-the-Board Cuts	27	32	6	5	2	1	10	29	111
Hiring Freezes	6	5	1	0	0	0	1	1	13
Reorganizing State Agencies	13	13	2	2	1	0	4	7	42
Early Retirement	5	13	1	0	1	0	1	6	27
Targeted Cuts	2	2	4	1	0	0	2	33	45
Privatization	2	0	0	0	1	0	0	3	6
Reduce local aid	9	11	2	1	0	0	2	17	41
Furloughs	6	9	2	0	1	0	0	15	33
Layoffs	15	16	3	1	1	0	3	19	58
Fees	5	16	2	0	0	0	1	14	38
Taxes Increases	12	23	27	20	20	14	15	10	141
Total Number of State Indicated Responses	125	165	54	33	29	16	48	180	
Source: NASBO Fiscal Survey of the States (Fall 2001-2010)									

Table 5.4 presents an interesting representation of the ebb and flow in the frequency and severity (e.g. use of layoffs, furloughs, and tax increases) of responses. Based on the Governors' State of the State addresses and the State Coincident Index, fiscal years 2002 and 2003 indicate difficult economic conditions in the states. At first glance, the state responses in 2002 appear to be over-reactions to the small but positive growth levels in 2002. However, when coupled with the fact that the majority of states experienced negative or flat growth in 2001, the responses make more sense as the delayed response of states to the economic conditions of 2001. In 2003, despite broadly improved economic growth levels, states indicate taking more actions to combat stress

than in 2002. As economic conditions continued to improve and stabilize, responses also fell in 2004, 2005, and 2006. Between 2004 and 2006, state revenue growth improved with many states experiencing budget surpluses by 2006 (Willoughby 2006; Willoughby 2005; Boyd 2005; Samuels 2004). Unfortunately, economic conditions began to deteriorate in 2007, though most state revenue collections met their revenue estimates that year (Sigriz 2008). Since the economic downturn did not begin in earnest until December 2007, it is not surprising that few states indicate responses to fiscal stress in 2007. By 2008, however, as the “Great Recession” gained momentum, states began to react, though not dramatically. Indeed, in gubernatorial State of the State addresses, many mentioned the housing and financial crises and their potential impact on state finances, though nearly half of governors presented plans to cut taxes (Willoughby 2008). By 2009, with rapid declines in revenue occurring, most states took action and several engaged multiple responses (Sigriz 2009).

Analysis of Fiscal Stress and Responses

In this section, analyses regard the variation in state responses by fiscal stress level. Patterns and trends of state fiscal stress level and responses are also considered. NASBO queries states as to their strategies used to close budget gaps. While results here indicate no clear themes, some patterns of state response to budget fiscal stress do emerge. Specifically, states experiencing low budget fiscal stress are less likely than other states to initiate any response and very few take the dramatic steps of layoffs, furloughs, or raising fees. Surprisingly, even states experiencing high budget fiscal stress do not consistently take dramatic action, some indicate making no response at all. These results suggest that an economic downturn (negative economic growth rate) does not automatically result in a state experiencing moderate or high budget or other types of fiscal stress. Economic condition is a very important predictor of fiscal stress, but not the

only factor. Fiscal stress, as measured here, does not seem to compel immediate action by states; although it may set the stage for how states eventually respond.

Table 5.5: State Responses to Budget Gaps and Enacted Tax Increases Compared to Fiscal Stress Level For Fiscal Years 2002-2009									
	2002	2003	2004	2005	2006	2007	2008	2009	Total
<i># of states with high budget fiscal stress</i>	7	2	1	2	0	0	2	18	
<i># of states with moderate budget fiscal stress</i>	38	40	28	21	17	21	38	30	
Rainy Day Fund	26	25	4	3	2	1	9	26	96
Across-the-Board Cuts	27	32	6	5	2	1	10	29	111
Hiring Freezes	6	5	1	0	0	0	1	1	13
Reorganizing State Agencies	13	13	2	2	1	0	4	7	42
Early Retirement	5	13	1	0	1	0	1	6	27
Targeted Cuts	2	2	4	1	0	0	2	33	45
Privatization	2	0	0	0	1	0	0	3	6
Reduce local aid	9	10	2	1	0	0	2	17	41
Furloughs	6	9	2	0	1	0	0	15	33
Layoffs	15	16	3	1	1	0	3	19	58
Fees	5	16	2	0	0	0	1	14	38
Tax Increases	12	23	27	20	20	14	15	10	141
Source: NASBO Fiscal Survey of the States (Fall 2001-2010) and State Comprehensive Annual Financial Reports (2002-2009)									

As shown in Table 5.5, states are unlikely to take action if they are experiencing only low or moderate fiscal stress – this is particularly true every year from 2004 to 2007. Results indicate less of a pattern regarding state actions when experiencing high budget fiscal stress. In 2002 and 2003, despite only a handful of states with high budget fiscal stress, most states responded, with many taking more than one type of action. In 2009, the pattern is more as expected; as more states move into high budget fiscal stress and many into moderate budget fiscal stress, the number of responses by states in reaction to this stress increases. Fiscal stress may have an impact on the types of state responses, but it is not clear that responses are immediate.

Looking at individual state responses between 2002 and 2009, it is possible to ascertain whether states engage in an escalating number of responses to fiscal stress or a “throw everything at it at once and see what works” strategy. This analysis is based on the state response profiles in Appendix B. Of the 50 states, some appear to show an escalating response while others do not. Between 2002 and 2009, 31 states¹⁵ indicate sustained budget fiscal stress (high, moderate, or a combination of the two for at least three consecutive years). Fifteen states¹⁶ realized an increase in budget fiscal stress from low to high over two or more years. Some states are counted in both groups. Patterns of responses examined include an increase in the number and severity of responses by states as budget fiscal stress persists or becomes more severe. While there is no definitive method to categorize severity of responses, for the purposes of this analysis, use of rainy day funds, hiring freezes, early retirement, and across-the-board cuts are considered less severe responses and furloughs, layoffs, and fees are considered more severe responses. Thirteen¹⁷ out of the 31 states indicating sustained budget fiscal stress show a pattern of escalating responses. Eleven¹⁸ out of the 15 states with an increase in budget fiscal stress over two or more years showed a pattern of escalating responses. In Arizona, budget fiscal stress increased from low to moderate to high from 2007 to 2009. Arizona’s responses to fiscal stress also increase in number over time, starting with targeted cuts when fiscal stress increased from low to moderate and then engaging rainy day fund, across-the-board cuts, targeted cuts, reduction in local aid, fees, furloughs and layoffs

¹⁵ Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New Mexico, New York, Nevada, North Carolina, Ohio, Pennsylvania, Rhode Island, Utah, Vermont, Virginia, and Wisconsin

¹⁶ Alaska, Arizona, Delaware, Hawaii, Kentucky, Maryland, Massachusetts, Nevada, Oregon, New Jersey, New Mexico, New York, Texas, Washington, and Wyoming

¹⁷ Alabama, Arkansas, California, Colorado, Georgia, Hawaii, Kentucky, Nevada, North Carolina, Pennsylvania, Vermont, Virginia, and Wisconsin

¹⁸ Alaska, Arizona, Hawaii, Kentucky, Maryland, Massachusetts, Nevada, New Jersey, New Mexico, New York, and Washington

when fiscal stress advanced from moderate to high. Nevada and New Mexico both respond to stress in a pattern similar to Arizona. With other states, responses to balance the budget only begin after budget fiscal stress reached high levels (e.g. Hawaii, Massachusetts, Maryland, New York, and Washington).

Based on individual state analysis it does not appear that budget fiscal stress (or the other fiscal stress indices) necessarily predicts the type or number of state responses. Table 5.5 shows that responses tend to closely follow economic conditions. However, many states experienced moderate and sustained budget fiscal stress during the years 2004-2007, years in which economic growth was mostly positive in the states. These were also the years in which responses to fiscal stress were minimal. To the extent that fiscal stress worsens when the economy worsens and improves when the economy improves, the state responses follow the expected pattern. However, when states continue to experience fiscal stress during periods of economic growth, they do not automatically respond to the stress. The effect of response choice on fiscal stress levels is explored in the next chapter.

Analysis of Responses by Fiscal Stress Level

Table 5.6 shows state responses by low, moderate, and high budget fiscal stress. For all responses, except for tax increases, states with low budget fiscal stress indicate using fewer responses. For states with low budget fiscal stress, tax increases are the most common response followed by across-the-board cuts and rainy day fund use. The prevalence of tax increases for all levels of budget fiscal stress suggests that these are being used for reasons other than to address budget deficits. Excluding tax increases, the states with moderate budget fiscal stress use across-the-board cuts most often, followed by rainy day funds, and layoffs. States with high budget fiscal stress, again excluding tax increases, use rainy day funds, across-the-board cuts, and targeted cuts most often.

Comparing across low, moderate, and high fiscal stress, (excluding tax increases) states with high budget fiscal stress indicate using responses at higher levels than states with moderate or low budget fiscal stress.

Table 5.6: State Responses to Budget Gap by Level of Budget Fiscal Stress			
Budget	Fiscal Stress Level		
	Low	Moderate	High
Rainy Day Funds	8 (6%)	72 (31%)	16 (50%)
Across the Board Cuts	9 (7%)	87 (37%)	15 (47%)
Hiring Freeze	1 (1%)	11 (5%)	1 (3%)
Re-Org	0 (0%)	38 (16%)	4 (13%)
Early Retirement	1 (1%)	20 (9%)	6 (19%)
Furloughs	1 (1%)	22 (9%)	10 (31%)
Targeted cuts	4 (3%)	26 (11%)	15 (47%)
Fees	0 (0%)	30 (13%)	8 (25%)
Privatization	0 (0%)	5 (2%)	1 (3%)
Cut Local Aid	1 (1%)	30 (13%)	10 (31%)
Layoffs	2 (1%)	45 (19%)	11 (34%)
Tax Increase	44 (33%)	86 (37%)	11 (34%)
Total	134	233	32
Source: NASBO Fiscal Survey of the States (2002-2010) and State Comprehensive Annual Financial Report (2002-2009)			

Table 5.7: State Responses to Budget Gaps by Level of Cash Fiscal Stress			
Cash			
	Low	Moderate	High
Rainy Day Funds	9 (23%)	29 (24%)	58 (24%)
Across the Board Cuts	7 (18%)	33 (27%)	72 (30%)
Hiring Freeze	2 (5%)	1 (1%)	11 (5%)
Re-Org	3 (8%)	9 (7%)	30 (13%)
Early Retirement	2 (5%)	10 (2%)	15 (6%)
Furloughs	2 (5%)	9 (7%)	22 (9%)
Targeted cuts	2 (5%)	11 (9%)	31 (13%)
Fees	4 (10%)	6 (5%)	28 (12%)
Privatization	0 (0%)	2 (2%)	4 (2%)
Cut Local Aid	2 (5%)	5 (4%)	34 (14%)
Layoffs	5 (13%)	20 (16%)	33 (14%)
Tax Increase	8 (20%)	40 (33%)	93 (39%)
Total	40	122	237
Source: NASBO Fiscal Survey of the States (2002-2010) and State Comprehensive Annual Financial Report (2002-2009)			

Table 5.7 shows state responses to budget gaps by the level of cash fiscal stress. State responses are used slightly more often with higher levels of cash fiscal stress. For states with low cash fiscal stress, the most often used responses are rainy day funds, across-the-board cuts, and tax increases. For states with moderate cash fiscal stress, the most often used responses are tax increases, across-the-board cuts, and rainy day funds. For states with high cash fiscal stress, the most often used responses are tax increases, across-the-board cuts, and rainy day funds. As these indicate, all states regardless of their level of cash fiscal stress tend to use tax increases, rainy day funds, and across-the-board

cuts most often. The only response with a large difference in use between high, moderate, and low cash fiscal stress is cuts to local aid.

Table 5.8 shows state responses to budget gaps by low, moderate, and high long-run fiscal stress. As with cash fiscal stress, the three most common responses for states with low, moderate, and high long-run fiscal stress are tax increases, rainy day fund use, and across-the-board cuts. The less often used responses – targeted cuts, reorganization, early retirement, furloughs, cuts to local aid, fees, and layoffs – are used at higher levels by states with high long-run fiscal stress.

Table 5.8: State Responses to Budget Gaps by Long-Run Fiscal Stress Level			
Long-run	Low	Moderate	High
Rainy Day Funds	14 (25%)	57 (25%)	25 (22%)
Across the Board Cuts	12 (21%)	66 (29%)	33 (28%)
Hiring Freeze	1 (2%)	10 (4%)	2 (2%)
Re-Org	4 (7%)	24 (11%)	14 (12%)
Early Retirement	2 (4%)	12 (5%)	13 (11%)
Furloughs	4 (7%)	15 (7%)	14 (12%)
Targeted cuts	4 (7%)	21 (9%)	20 (17%)
Fees	1 (2%)	19 (8%)	18 (16%)
Privatization	1 (2%)	3 (1%)	2 (2%)
Cut Local Aid	3 (5%)	23 (10%)	15 (13%)
Layoffs	7 (13%)	30 (13%)	21 (18%)
Tax Increase	19 (34%)	64 (28%)	58 (50%)
Total	56	227	116
Source: NASBO Fiscal Survey of the States (2002-2010) and State Comprehensive Annual Financial Report (2002-2009)			

Table 5.9 shows state responses to budget gaps by service-level fiscal stress. When divided by service-level fiscal stress, the distribution of state responses is very different than shown in table 5.6. States with lower service-level fiscal stress have higher use of responses for all but tax increases.

Table 5.9: State Responses to Budget Gaps by Service-level Fiscal Stress Level			
Service-level			
	Low	Medium	High
Rainy Day Funds	41 (34%)	35 (23%)	17 (13%)
Across the Board Cuts	38 (32%)	47 (31%)	26 (21%)
Hiring Freeze	6 (5%)	3 (2%)	4 (3%)
Re-Org	19 (16%)	12 (8%)	11 (9%)
Early Retirement	7 (6%)	12 (8%)	8 (6%)
Furloughs	13 (11%)	11 (7%)	9 (7%)
Targeted cuts	12 (10%)	19 (12%)	14 (11%)
Fees	17 (14%)	8 (5%)	13 (10%)
Privatization	4 (3%)	2 (1%)	0 (0%)
Cut Local Aid	17 (14%)	13 (8%)	11 (9%)
Layoffs	25 (21%)	23 (15%)	10 (8%)
Tax increase	34 (29%)	45 (29%)	62 (49%)
Total	119	154	126
Source: NASBO Fiscal Survey of the States (2002-2010) and State Comprehensive Annual Financial Report (2002-2009)			

Analysis of fiscal stress and responses based on political differences

In this section, the role of political dynamics is considered in relation to state fiscal stress and responses to stress. Two questions guide this analysis: Do governments

with a partisan split between the branches experience different levels of fiscal stress?

And, do such states engage different types of budget balancing responses?

Between 2002 and 2009, 44 percent of states were of one party – the same party was in control of the executive and legislative branches. The average values of the fiscal stress indicators of states with divided government were statistically significantly lower for three of the four measures.

Table 5.10: T-Test Results Comparing Divided and Unified Governments			
	Divided Government	Unified Government	T-Test
Budget Solvency	-0.102	0.128	T=2.35 P=0.019
Cash Solvency	-0.10	0.124	T=2.25 P=0.025
Long-run Solvency	-0.757	0.095	T=1.99 P=0.047
Service-level Solvency	-0.077	0.097	T=1.89 P=.059

As shown in Table 5.10, states with divided governments have statistically significant lower mean values on the budget, cash, and long-run fiscal stress indices than states with unified governments.

Table 5.11: State Responses to Budget Gaps by Political Differences				
	Executive and Legislative Branches Political Affiliation		Governor's Political Affiliation	
	Divided	Unified	Democrat	Republican
Rainy Day Fund	49 (22%)	47 (27%)	42 (22%)	52 (25%)
Across-the-Board Cuts	65 (29%)	47 (27%)	60 (31%)	51 (25%)
Hiring Freezes	9 (4%)	5 (3%)	7 (4%)	6 (3%)
Reorganizing State Agencies	27 (12%)	15 (8%)	17 (9%)	24 (12%)
Early Retirement	14 (6%)	13 (7%)	10 (5%)	17 (8%)
Targeted Cuts	20 (9%)	24 (14%)	25 (13%)	18 (9%)
Privatization	4 (2%)	2 (1%)	2 (1%)	4 (2%)
Reduce local aid	24 (11%)	17 (10%)	22 (11%)	18 (9%)
Furloughs	19 (9%)	14 (8%)	14 (9%)	19 (7%)
Layoffs	29 (13%)	29 (16%)	24 (12%)	33 (16%)
Fees	22 (10%)	16 (9%)	15 (8%)	23 (11%)
Taxes	89 (40%)	52 (29%)	69 (36%)	70 (34%)
Total	222	177	193	204
Source: NASBO Fiscal Survey of the States (2002-2010) and The Book of the States (2002-2009)				

The political party of governors also appears to play a role in fiscal stress levels. While there is no significant difference in the mean values of budget and long-run solvency scores for states with Democratic or Republican governors, there are significant differences for cash and service-level solvency indices. States with Republican governors have mean cash solvency values of 0.124 and states with Democratic governors have mean values of -0.127 ($t=2.52$; $p=0.012$). States with Republican governors also have

higher service-level solvency values with an average of 0.096 compared to states with Democratic governors, -0.098 ($t=2.11$, $p=0.035$).

The use of balanced budget responses is quite similar between unified and divided governments as well as Democratic and Republican governors, as shown in Table 5.11. The one exception to this is the use of tax increases by states with unified and divided government. States with divided government are more likely to respond to fiscal stress with tax increases. This is an interesting since tax increases are not a quick response to balance the budget. This finding supports those of Alt and Lowry (1994), specifically that divided government does not always result in gridlock.

Analysis of fiscal stress and responses based on legal differences

States have a variety of institutional arrangements including legal restrictions on taxing and spending, as well as requirements regarding gubernatorial and legislative treatment of balanced budgets and deficits. In this section, states with different balanced budget and tax and expenditure rules are examined to determine any differences in fiscal stress levels and responses to budget gaps.

Most states have statutory or constitutional requirements that governors must submit a balanced budget (Hou and Smith 2006; NCSL 2010). For the budget, cash, and service-level solvency indices, there are significant differences in means between states with requirements that governors submit a balanced budget and those that do not. Interestingly, states with this requirement had a lower mean score, -0.05, on the budget solvency index – indicating higher budget fiscal stress – than states without the requirement, 0.20 ($t=2.10$, $p=0.037$). States that require the governor to submit a balanced budget had higher mean scores on the cash ($t=-2.04$, $p=0.042$) and service-level ($t=-3.35$, $p=0.001$) solvency indices – indicating lower fiscal stress on these dimensions – than those without the requirement. The difference in mean values of the long-run solvency index between states with and without this requirement was not significant.

In most states, legislatures must also pass a balanced budget. A significant difference in mean scores between states with and without this requirement is indicated for the long-run solvency index only. States that require legislatures to pass a balanced budget have a higher mean long-run solvency score, 0.475, as compared to states without this requirement, -0.135 ($t=6.20$, $p=0.000$).

Another balanced budget requirement requires that the governor must sign a balanced budget (the enacted budget). Just three states require the governor to meet this requirement (Hou and Smith 2006). While differences between states with and without this requirement are only marginally significant for the budget and cash solvency index values¹⁹; there is a significant difference between these groups in the mean values of the long-run and service-level solvency indices. Interestingly, states with this requirement have lower scores on the long-run solvency index (-1.08 versus 0.048; $t=5.54$, $p=0.000$) and service-level solvency (-0.785 versus 0.035; $t=3.66$, $p=0.000$), than those states without the requirement.

Some states also have a requirement that prevents them from carrying over a deficit into the next fiscal year. Differences in the values of the budget and cash solvency indices are not significant, but there are significant differences in the values of the long-run and service-level solvency indices between states with and without this requirement. For the long-run solvency index, states without the requirement have lower mean values (-0.0466 versus 0.244; $t=-2.52$, $p=0.012$). Similar findings are found with regard to the mean values of the service-level index (-0.069 versus 0.362; $t=-3.49$, $p=0.001$). Based on these results, states with the no deficit carryover requirement have lower cash and service-level fiscal stress levels than states without the requirement.

¹⁹Mean budget solvency index score for states with this requirement is -0.419 and for states without the requirement is 0.0187 ($t=1.81$; $p=0.071$). Mean cash solvency index score for states with this requirement is -0.453 and for states without the requirement is 0.020 ($t=1.93$; $p=0.054$).

Besides legal requirements concerning budget balance, many states also have rules governing their ability to increase taxes and spending. Spending limitations are more common than revenue limitations; 25 states have spending limits and six states have revenue limits. The differences in fiscal stress between states with and without spending limits are only significant with respect to the cash solvency index. States with spending limitations have a higher mean value on the cash solvency index than states without spending limitations – indicating lower fiscal stress levels (0.105 versus -0.115; $t=-2.22$, $p=0.027$).

States with revenue limitations have statistically significant different means from states without the requirement for the long-run and service-level solvency indices; the differences are not significant for the budget and cash solvency indices. For the long-run solvency index states with revenue limits have lower mean values, -0.242, than states without revenue limits, 0.033 ($t=2.11$, $p=0.036$). For the service-level index, states with revenue limits have higher mean values, 0.431, than states without the limits, -0.059 ($t=-3.52$, $p=0.001$). This means that states with revenue limits compared to those without such limits have higher long-run solvency and lower service-level solvency.

Table 5.12 shows differences in the use of balancing responses of states with and without the four types of balanced budget requirements. Compared to states without balanced budget requirements, states with these requirements are more likely to take action in the face of budget deficits. For ten out of the 12 possible actions, states requiring their governor to submit a balanced budget engage more responses. States requiring their legislature to enact a balanced budget used seven out of the 12 possible responses more often than states without the requirement, although at a much closer percentage of use. In eight of 12 responses, states that require the governor to sign a balanced budget also were more likely to engage responses than states without the requirement. In contrast to the other three balanced budget requirements, states with the

no deficit carryover requirement use balancing responses at a similar level as those without this requirement.

Table 5.12: State Responses to Budget Gaps by Balanced Budget Requirements								
Response	Governor must submit a balanced budget		Legislature must pass a balanced budget		Governor must sign a balanced budget		No deficit carryover	
	Required	Not Required	Required	Not Required	Required	Not Required	Required	Not Required
Rainy Day Fund	88 (28%)	8 (1%)	77 (25%)	19 (22%)	6 (35%)	90 (24%)	19 (30%)	77 (23%)
Across-the-Board Cuts	92 (29%)	20 (25%)	90 (29%)	22 (25%)	3 (18%)	109 (29%)	20 (31%)	92 (27%)
Hiring Freezes	11 (3%)	3 (4%)	12 (4%)	2 (2%)	0 (0%)	14 (4%)	1 (2%)	13 (4%)
Reorganizing State Agencies	38 (12%)	4 (5%)	33 (11%)	9 (10%)	4 (24%)	38 (10%)	5 (8%)	37 (11%)
Early Retirement	26 (8%)	1 (1%)	22 (7%)	5 (6%)	3 (18%)	24 (6%)	2 (3%)	25 (7%)
Targeted Cuts	38 (12%)	6 (8%)	34 (11%)	10 (11%)	2 (12%)	42 (11%)	6 (9%)	38 (11%)
Privatization	5 (2%)	1 (1%)	4 (1%)	2 (2%)	0 (0%)	6 (2%)	2 (3%)	4 (1%)
Reduce local aid	37 (12%)	4 (5%)	31 (10%)	11 (11%)	4 (24%)	37 (10%)	5 (8%)	36 (11%)
Furloughs	31 (10%)	2 (3%)	28 (9%)	5 (6%)	4 (24%)	29 (8%)	4 (6%)	29 (9%)
Layoffs	56 (18%)	2 (3%)	46 (15%)	12 (14%)	4 (24%)	54 (14%)	9 (14%)	49 (15%)
Fees	34 (11%)	4 (5%)	33 (11%)	5 (6%)	4 (24%)	34 (9%)	2 (3%)	36 (11%)
Tax Increases	112 (35%)	29 (36%)	104 (33%)	37 (42%)	7 (41%)	134 (35%)	14 (22%)	127 (38%)
Total	319	80	311	88	17	382	64	335
Source: NASBO Fiscal Survey of the States (2002-2010) and Hou and Smith 2006								

Table 5.13 looks at differences in budget balancing response use between states with and without spending and revenue limitations. Since spending limits are less likely to influence state action during a resource constrained situation, it is not surprising that states with and without spending limits tend to engage all the responses with about the

same frequency. States with revenue limitations, however, are much more likely to engage specific responses including, reduce local aid, furloughs, layoffs and fees. This suggests that states with limits on their revenue raising abilities (specifically, to making tax increases) are more likely to resort to more severe personnel actions as well as the use of fees – since they are not included under the limitation.

Table 5.13: State Responses to Budget Gaps by Spending and Revenue Limits				
Response	Spending Limitation		Revenue Limitation	
	Present	Not Present	Present	Not Present
Rainy Day Fund	51 (25%)	45 (24%)	11 (23%)	85 (24%)
Across-the-Board Cuts	61 (29%)	51 (27%)	12 (25%)	100 (28%)
Hiring Freezes	7 (3%)	7 (4%)	2 (4%)	12 (3%)
Reorganizing State Agencies	21 (10%)	21 (11%)	6 (13%)	36 (10%)
Early Retirement	19 (9%)	8 (4%)	5 (10%)	22 (6%)
Targeted Cuts	22 (11%)	22 (12%)	6 (13%)	38 (11%)
Privatization	4 (2%)	2 (1%)	0 (0%)	6 (2%)
Reduce local aid	20 (10%)	21 (11%)	13 (27%)	28 (8%)
Furloughs	22 (11%)	11 (6%)	7 (15%)	26 (7%)
Layoffs	34 (16%)	24 (13%)	11 (23%)	47 (13%)
Fees	20 (10%)	18 (9%)	8 (17%)	30 (9%)
Taxes	80 (38%)	61 (32%)	14 (29%)	127 (36%)
Total	208	191	48	351
Source: NASBO Fiscal Survey of the States (2002-2010) and National Conference of State Legislators				

Table 5.14 shows the different responses taken by states at different levels of structural balance. For nine out of the 12 responses, states with a weakness in structural balance use a response more often than states with mid-level and strength in structural balance. Tax increases, rainy day fund use, and across-the-board cuts are the most common responses regardless of a state's structural balance capacity.

Table 5.14: State Responses to Budget Gaps by Level of Structural Balance			
	Structural Balance		
	Strength	Mid-level	Weakness
Rainy Day Funds	21 (29%)	49 (21%)	26 (27%)
Across-the-Board Cuts	21 (29%)	60 (26%)	31 (33%)
Hiring Freeze	3 (4%)	4 (2%)	7 (7%)
Re-Org	11 (15%)	17 (7%)	14 (15%)
Early Retirement	3 (4%)	17 (7%)	7 (7%)
Furloughs	6 (8%)	15 (6%)	12 (13%)
Targeted cuts	5 (7%)	25 (11%)	14 (15%)
Fees	8 (11%)	11 (5%)	19 (20%)
Privatization	1 (1%)	3 (1%)	2 (2%)
Cut Local Aid	5 (7%)	20 (9%)	16 (17%)
Layoffs	11 (15%)	31 (13%)	16 (17%)
Tax increase	19 (26%)	75 (32%)	47 (49%)
Total	72	232	95
Source: Government Performance Project (2008) and NASBO Fiscal Survey of the States (2002-2010)			

As shown in Table 5.15, 85 percent of states scored as having a weakness in structural balance in 2008 had either high or moderate budget fiscal stress as compared to

62 percent of states scored as mid-level and 55 percent of states scored as strong. At least by this definition of structural deficit, those states with a weakness in their capacity to achieve structural balance are more likely to experience high or moderate fiscal stress. Results of an analysis of variance test (ANOVA) also show that these groups are significantly different.²⁰

Table 5.15: State Structural Balance by Budget Fiscal Stress Level			
	Strength	Mid-Level	Weakness
Low	32 (44%)	87 (38%)	15 (16%)
Moderate	39 (54%)	126 (54%)	68 (72%)
High	1 (1%)	19 (8%)	12 (13%)
Total	72	232	95
Source: Government Performance Project (2008) and State CAFRs (2002-2009)			

5.4 Discussion of Hypotheses

These findings provide context as well as clarification to the multiple hypotheses introduced in Chapter 2. These results bring into question a basic assumption of some of the hypotheses, specifically that fiscal stress drives the use and choice of responses. While relationships appear to exist between the frequency and choice of responses and fiscal stress levels, it does not appear that fiscal stress levels are the driving force. There are several reasons why this may be the case. First, states may not be aware of their fiscal

²⁰ ANOVA results of the budget cluster and structural balance F=10.89 and p=0.000

stress level, certainly not as defined and measured here. States may be more focused on immediate circumstances such as budget deficits, declining revenue numbers, or political pressures for increased spending and/or tax decreases. Second, states may experience fiscal stress but not exhibit symptoms. For example, in 2004 and 2005, many governors' noted in their State of the State addresses that despite improvements in revenue collections there was still a mismatch between spending and tax levels (Willoughby 2005). This suggests difficulties in achieving budget solvency despite increasingly positive economic conditions. Without the outward manifestations of budget fiscal stress, states took very few balancing measures. Third, achieving budget, cash, long-run, and service-level solvency may put competing pressures on a state.

Instead of responses flowing directly from fiscal stress levels, the findings here suggest more tenuous relationships. States respond to fiscal conditions, but they appear to be reacting to specific events (e.g. revenue collection declines and budget deficits). To the extent that those events denote fiscal stress, we would expect to see a response. This turns the relationship between fiscal stress and state responses posited in Cutback Management theory on its head.

H₁: States are strategic in their response to fiscal stress

As discussed above, based on descriptive analysis it is not clear that states take budget-balancing actions in response to fiscal stress. While multiple factors play a role in how states respond to fiscal stress, economic conditions appear to be the most important indicator of use. As shown in Tables 5.4 and 5.5, states are more likely to take quick action when economic conditions are also deteriorating, so this hypothesis appears to hold only under specific circumstances.

H₂: Responses will differ based on the severity of fiscal stress.

Tables 5.6, 5.7, 5.8 and 5.9 show responses of states with different fiscal stress levels for each of the measures, budget, cash, long-run and service-level. Especially with regards to budget fiscal stress, responses differ depending on severity of this stress. States

with lower budget fiscal stress take fewer actions than states with moderate or high budget fiscal stress. In the findings above, budget fiscal stress was the index found to be most related to use of budget-balancing actions by states. It is also the only fiscal stress index to be correlated with economic activity. (See Appendix A for an indication of the relatively static nature of the cash, long-run, and service-level solvencies.)

H_{2.1}: Rainy day funds will be used in periods of lower fiscal stress.

This hypothesis is mostly unsupported. For budget, cash, and long-run fiscal stress, the use of rainy day funds is not more prevalent among states with lower levels of fiscal stress. Indeed, states with moderate or high budget fiscal stress tend to access their rainy day funds with the same frequency or more often than states with lower fiscal stress levels. Arranging states by the service-level fiscal stress values indicates higher use at lower levels of fiscal stress.

H_{2.2}: Incremental budget strategies will be used in periods of moderate fiscal stress.

As with the use of rainy day funds, states at each level of budget, cash, long-run, and service-level fiscal stress use incremental strategies. As shown in Table 5.6, states with moderate budget fiscal stress do use re-organizations and hiring freezes slightly more often than states with high budget fiscal stress; however, states with high budget fiscal stress use across-the-board cuts with more frequency than those in the moderate category. Similar distributions between states with high, moderate, and low cash and long-run fiscal stress exist. States with moderate service-level fiscal stress do not use across-the-board cuts, hiring freezes, and other productivity improving strategies more often than states with low service-level fiscal stress.

Regarding the use of an incremental budget strategy, Table 5.4 shows that two of the most popular responses to balance budgets are across-the-board cuts and rainy day funds. Hiring freezes and other productivity improvements such as re-organizations are much less common. Tax increases are also used quite often by states; however, these are

not necessarily in response to budget gaps. At the very least, this suggests that more states use the responses associated with incremental budget strategy.

H_{2.3}: Punctuated equilibrium strategies will be used in periods of high fiscal stress.

Punctuated equilibrium strategies (e.g. targeted cuts, privatization, layoffs, and increases in fees) are used more by states with high levels of budget, cash, and long-run fiscal stress. However, these are not the only strategies used by states with high levels of fiscal stress. Interestingly, for budget fiscal stress, use of tax increases is similar across the three levels. For the other three types of fiscal solvency, use of tax increases is more common for states with high fiscal stress. The impact of tax increases on fiscal stress levels will be investigated in the next chapter. There is a marked increase in the use of targeted cuts in response to the recent recession. Thirty-three out of 50 states used targeted cuts in 2009 to deal with budget deficits. This suggests no clear strategy either incremental or punctuated prevails.

H₃: Institutional factors will affect state responses to fiscal stress.

As suggested by the literature review in Chapter 2, institutional factors – both political and legal – appear to influence states' choice of responses. Overall the findings support this set of hypotheses.

H_{3.1}: States with balanced budget rules will take more actions to address fiscal stress.

This hypothesis is partially supported by the analysis comparing responses between states with and without these balanced budget requirements. States with rules requiring the governor to submit and sign a balanced budget and the legislature to pass a balanced budget take more actions than states without these requirements. States with requirements preventing the carryover of deficits only use rainy day funds and across-the-board cuts more often than states without this requirement. This finding is unexpected because the no deficit carryover requirement is the strictest of the balanced budget requirements (Hou and Smith 2006). One explanation for this finding is that states with

this requirement must act quickly (after the budget is passed, often mid-year or near the end of the fiscal year) at which point they need an action that takes effect immediately. Rainy day funds (if flush) provide instance access to balance. Another explanation is related to the research by Hou and Smith (2006; 2010) concerning the importance of viewing balanced budget requirements as part of a system as well as the extent to which policy makers interpret and reinterpret the meaning of balanced budget rules. The fluidity and flexibility of these rules year to year may influence ability to conclusively prove that one type of balanced budget rule results in a specific action.

H_{3.2}: States with TELs will use more expenditure cuts and other non-tax measures to address fiscal stress.

This hypothesis is partially supported by the findings. According to Table 5.13, states with revenue limits are more likely to use fees, layoffs, furloughs, and reduce local aid. The use of fees may be a method of raising revenue without violating the tax limits. Beyond these responses, states with either spending or revenue limits do not appear to be substantially less likely to take action. However, the frequency of engaging the response may mask its total effects (Poterba 1994).

H_{3.3}: States with divided governments will take fewer actions to address fiscal stress.

This hypothesis is not supported by the findings as the use of balancing actions by states with divided and unified governments are very similar. The one response that divided governments are more likely to take is the use of tax increases. There are divergent opinions on the effect of divided government – does it lead to moderation or delay (Alt and Lowry 1994). These findings do not fully support either of these. Since divided governments engage fewer budget balancing strategies, this tends to support the delay theory. However, the higher use of tax increases supports the findings of Alt and Lowry (1994) who find that higher spending is often supported by more taxes.

H₄: Institutional factors will affect states' levels of fiscal stress.

As discussed in Chapter 2, institutional factors appear to influence differences among states and their experience of fiscal stress. Overall this set of hypotheses is supported by the findings.

H_{4.1}: States with balanced budget rules will experience lower fiscal stress.

The t-test results also partially support the hypothesis that states with balanced budget requirements will experience lower fiscal stress levels. None of the balanced budget requirements resulted in states having lower budget fiscal stress levels. Indeed, states that require the governor to submit a balanced budget tended to have higher budget fiscal stress. One explanation of this finding is that all but ten states have this requirement. Also even in states without this requirement there is the political norm and public expectation that the governor will submit a balanced budget (Hou and Smith 2006), as a result states without this requirement are expected to act in a similar, fiscally disciplined way. Also, submitting a balanced budget does not guarantee that the appropriate measures are taken to prevent budget deficits emerging in the middle or at the end of the fiscal year.

States that require their legislatures to pass a balanced budget and that are not allowed to carry forward deficit have lower long-run fiscal stress than states without these requirements. However, states with the requirement that the governor must sign a balanced budget appear to have higher long-run fiscal stress than states without the requirement. As discussed with regard to H_{3.4}, these balanced budget rules are more flexible than their modeling implies. While modeling in this manner is consistent with past research, work by Hou and Smith (2006; 2010) suggests that balanced budget rules are products of their environment and their interpretation may change due to state circumstances.

H_{4.2}: TELs will affect state levels of fiscal stress.

This hypothesis is also partially supported by the findings. Some differences in fiscal stress levels exist between states with and without tax and expenditure limitations.

States with spending limits have lower cash fiscal stress levels. This means they tend to keep more cash and other liquid assets available to handle short-term liabilities. States with revenue limits have higher long-run fiscal stress but lower service-level fiscal stress. The revenue limits may result in these states taking on additional debt to finance state activities, hence the higher long-run fiscal stress. The lower service-level fiscal stress is likely related to lower tax levels per capita.

H_{4.3}: States with divided governments will experience higher fiscal stress.

This hypothesis is mostly supported by the findings. States with divided government appear to experience higher levels of fiscal stress, particularly budget, cash, and long-run fiscal stress. This finding is interesting given that the frequency of responses is very similar for divided and unified governments.

H₅: States with structural deficits will engage different responses and experience higher fiscal stress.

This set of hypotheses is supported by the findings.

H_{5.1}: States with structural deficits will be more likely to engage punctuated equilibrium responses in periods of high fiscal stress.

This hypothesis is supported. States having a weakness in structural balance use targeted cuts, furloughs, fees, tax increases, layoffs and cut local aid more than states defined as indicating mid-level structural balance, as shown in Table 5.14. At the same time, they are still using the less severe responses such as rainy day funds and across-the-board cuts at about the same rate as other states. These findings suggest that poor structural balance result in states using a broader range of responses and more permanent responses to deal with structural deficits.

H_{5.2}: States with structural deficits will experience higher fiscal stress.

This hypothesis is supported by the findings. More states with a strength in structural balance are in the low budget fiscal stress grouping than are states with a mid-level or weakness score in structural balance. At the same time, more states with a

weakness in structural balance are in the high budget fiscal stress grouping than are states with a mid-level or strength score in structural balance.

5.5 Conclusion

This chapter attempted to answer the question: Do state characteristics affect their experience of fiscal stress and/or influence their choice of responses? As a corollary, the theoretical implications of this question were also investigated. Using the dataset developed in Chapter 4, with four fiscal stress indices measuring budget, cash, long-run, and service-level solvency, the relationship between fiscal stress, state responses to balance, and institutional factors are assessed. Findings here indicate that state fiscal stress levels do not appear to be the main reason for responses taken. Institutional factors – such as legal requirements and political dynamics – effect fiscal stress levels and responses. The next chapter will continue to probe this question and others by using regression analysis to determine how the size and choice of response (expenditure, tax, and rainy day) along with institutional factors affect the level of fiscal stress experienced by states.

CHAPTER 6

EFFECTIVENESS OF STATE RESPONSES TO FISCAL STRESS

6.1 Introduction

Fiscal stress – due to balanced budget rules and budget deficits – compels state action (Gold 1995; Scorsone and Plerhoples 2010). State responses to fiscal stress can have profound effects on state residents as the actions of three states with high budget fiscal stress in 2009 demonstrate. State spending cuts in Arizona resulted in one million low-income residents losing access to state funded Medicaid services as well as layoffs, furloughs and pay cuts for state employees (Johnson et al 2011). In California, state aid to local school districts for K-12 classes was reduced by billions of dollars (Johnson et al 2011). In Nevada, spending cuts have resulted in furloughs and pay cuts to state employees as well as elimination in funding for local schools' gifted and talented programs (Johnson et al 2011; Johnson et al 2009).

Although the effect of state tax levels on business location and job creation is uncertain (Buss 2001; Fisher 2002; Chirinko and Wilson 2008), governors (and legislators) typically abhor the political consequences of tax increases (Gold 1995; Poterba 1994). Given the social and political impact of state responses to fiscal stress, their effectiveness at reducing fiscal stress is an important and salient question. If certain state responses to fiscal stress are more effective at reducing fiscal stress, either in the short-term or long-term, this is information state budget and policy makers could use in response to future fiscal stress. To broaden our understanding of the effectiveness of state responses to fiscal stress, this chapter addresses three questions: 1) Are some states able to navigate better through periods of fiscal stress than other states, and if so, why?; 2) Are certain state responses more effective at reducing or alleviating fiscal stress?; and 3) Does the type of response a state uses in one period of fiscal stress affect its stress levels in

subsequent periods of fiscal stress? In answering these questions, this analysis tests hypotheses on the effect of institutional factors on fiscal stress as well as the short-term and long-term effectiveness of state responses to fiscal stress as outlined in Chapter 2.

As discussed in Chapter 2, research on responses to state government response to fiscal stress tends to use case studies and concentrate around recessionary periods (Willoughby and Lauth 2003; Grizzle and Trojan 1994; Gold 1995; Finegold et al 2003; Dougherty and Klase 2009). The current research attempts to categorize and explain state responses to stress across periods that include economic growth and decline. Largely missing from the literature is an investigation of state response strategies over time and with a focus on the effectiveness of responses (Scorsone and Plerhoples 2010).

To address these gaps in the literature on responses to fiscal stress, this analysis adds several elements. First, the use of a panel data set as opposed to a cross-sectional data set is a step forward in deepening our understanding of states and their experience of fiscal stress. The panel data set also allows investigation of the impact of responses and budget institutions across more than one national recession. Second, this analysis takes a quantitative approach to the effectiveness of the three most common fiscal stress responses. While some quantitative analysis on the effectiveness of rainy day funds in plugging budget gaps has been conducted, the effectiveness of tax increases and expenditure cuts to address stress has not been adequately addressed in the literature. Third, in this analysis, state responses are modeled to measure actions actually taken by states. The three responses – tax increases, expenditure cuts, and rainy day fund use – are modeled to capture state-initiated change.²¹ Fourth, this analysis uses measures of fiscal

²¹ States may maintain high rainy day fund balances but still not use them to address budget shortfalls. The debate in Texas over the fiscal year 2011 \$4.3 billion dollar shortfall illustrates this point. Despite having a rainy day fund of \$9.4 billion, the Governor and Legislature decided to use a combination of expenditure cuts (\$853.6 million) and rainy day funds (\$3.1 billion) to close the budget shortfall (Watts 2011). Similarly, only using the change in tax collections is not an accurate measure of policy changes regarding

stress that comprise a broader and more comparable definition of fiscal stress. By assessing the factors that affect these fiscal stress indices, the analysis allows us to assess the sensitivity of state budget, cash, long-run, and service-level imbalances to typical state responses. For example, the use of rainy day funds may assist in reducing budget fiscal stress but not prove useful in alleviating cash or long-run fiscal stress.

6.2 Data and Methodology

6.2.1 Data and Sources

Dependent Variables

As discussed in Chapter 4, the data used to create the budget, cash, long-run, and service-level solvency indices was collected from Comprehensive Annual Financial Reports (CAFRS) for all 50 states (except New York in 2002) for fiscal years 2002 through 2009. The values used for these variables are index scores; the higher the score the lower the level of fiscal stress. The indexes were created by standardizing the relevant financial indicators (see Table 4.1, Chapter 4) and averaging them.

Independent Variables

The three variables of interest are those measuring state responses to fiscal stress: expenditure decreases, tax and fee increases, and rainy day fund use. State general fund²² expenditure data is taken from the NASBO Fiscal Survey. Expenditure decreases are coded as a dichotomous variable with a 1 representing a negative percentage change in

taxes and fees. Revenue collection changes are very sensitive to economic conditions. Simply measuring the change in total revenue collections is more likely to measure changes in state income levels, than changes in state policy.

²² The state general fund is the largest depository of state funds and is usually used to fund daily operations of government (Finkler 2005).

expenditures. A 0 represents a state with an increase or no change in expenditures. This operationalization is used to describe a state's action. Although some scholars use percentage change in expenditures (McGranahan 2002; Jordan 2003; Pagano 2002), to capture a state's response to fiscal stress and accurately interpret it, this analysis models expenditure changes as a dichotomous variable. This allows an interpretation on the effect of using the response.

Tax change data is taken from the NASBO Fiscal Survey, specifically the table on *Enacted Revenue Actions by Type of Revenue and Net Increase or Decrease*. For each fiscal year, this table shows the tax changes enacted along with the expected revenue change. State general fund revenue values are also taken from the NASBO Fiscal Survey. Using enacted revenue changes as opposed to variations in revenue collections from one year to the next is important to accurately assess policy actions. As explained by Auerbach (2000) changes in tax revenues are very sensitive to economic conditions and often change without a policy decision. As with expenditure reductions, this variable is modeled as a dichotomous variable. States that increased taxes and fees are coded as 1 and states with no change or a decrease in taxes and fees are coded as 0.

To model rainy day fund use, data on the dollar value of a state's budget stabilization funds is taken from the NASBO Fiscal Survey. The change in the budget stabilization fund from one year to the next is divided by general fund expenditures for the current year. This calculates the size of the rainy day fund action – decreasing the fund means the state is using the rainy day fund and increasing the rainy day fund or leaving it with the same balance means the state is not using the rainy day fund. As with the other two variables, this is modeled as a dichotomous variable. States that used the rainy day fund (a decrease in fund balance between two years) are coded as 1 and states that did not use the rainy day fund (an increase or no change in the rainy day fund balance between two years) are coded as 0.

Institutional Variables

As discussed in Chapter 2, several institutional factors may influence a state's experience of fiscal stress, including balanced budget requirements and tax and expenditure limitations (TEs). This research takes advantage of Hou and Smith's (2006) assessment of state legal frameworks to operationalize the state balanced budget requirements. In the models below balanced budget requirements are represented as BBREQ. The balanced budget requirements are represented as four dichotomous variables, each a dichotomous variables (e.g., (1) Governor must sign a balanced budget, (2) Governor must submit a balanced budget, (3) Legislature must pass a balanced budget, and (4) the state may not carry deficit over into the next fiscal year) and coded 1 if present and 0 if not present. Tax and expenditure limitations are denoted in the model as TEL. This includes two dichotomous variables measuring whether a state has a legal restriction on spending increases or on revenue increases. The variable is coded 1 if a TEL is present and 0 if it is not present. Data on TELs come from the National Conference of State Legislatures.

Political factors including party affiliation of the governor and the ability of the governor and legislature to work together may also play a role in state fiscal stress levels (Hou 2003; Alt and Lowry 1993; Poterba 1994). These factors are represented as POLITICAL in the equations below. This is measured using two dichotomous variables. One captures the political party affiliation of the state's governor, 0 for Democrat and 1 for Republican. The other measures whether different political parties control the branches of state government. For states with the same party in charge of the executive and legislative branches, the variable is coded 0. For states with a different party in charge of the executive and legislative branches or different parties in charge of the two legislative chambers is coded a 1. Political party affiliation of state governors and legislatures comes from the Book of the States 2002-2009.

Economic Variables

A state's economic growth rate, based on the findings in Chapter 5, appears to be an important factor in a state's fiscal stress level. In the models below this is designated ECONOMIC. Owyang et al (2005) demonstrate that state-level recessions tend to correspond to national recessions, though state recessions differ in both timing and length. For a more nuanced representation of a state's economic conditions, the average yearly change in the State Coincident Index is used here. This allows state and regional differences in economic conditions to be modeled. Economic growth is measured within a state in one year and is taken from the State Coincident Index published by the Federal Reserve Bank in Philadelphia. The Bank generates and reports an indexed measure of economic growth in each state by month based on four economic indicators: nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average) (Crone 2006). In the model, this variable is lagged by one year. As the findings in Chapter 5 indicate, the effects of economic growth or decline do not immediately affect fiscal stress levels. It takes several months for the effects of an economic slowdown or an economic recovery to be represented in a state's balance sheet. Also included in the model is a measure of state structural balance, STRUCBAL. As discussed in Chapter 5, structural balance is a difficult phenomenon to capture and measure. For this analysis, structural balance information is taken from the 2008 "Grading the States" report published in *Governing* by the Pew Trust, Center on the States Government Performance Project (GPP). This variable is a dichotomous variable coded 1 if a state was reported as having a strength in structural balance and coded 0 if a state was reported to have either mid-level or weak structural balance. For additional

discussion of this variable choice, see Chapter 5 and Appendix C.²³ State and year-specific differences are controlled for using dichotomous variables.

6.2.2 Methodology

In each regression model, several specification problems will be addressed. First, endogeneity is a concern in this research, specifically simultaneity between state fiscal stress and state actions to address it. In other words an increase in fiscal stress may cause the frequency and size of state actions also to increase. When the dependent variable and at least one explanatory variable are jointly determined, the explanatory variable is correlated with the error term, violating the classical regression assumptions (Wooldridge 2006). This relationship may result in the independent variable, state responses, being inappropriately attributed to changes to the dependent variable, instead of the reverse (Studenmund 2006). Endogeneity, specifically simultaneity, results in biased estimators. To address these concerns, results from Chapter 5 and efforts in similar research (Hou 2003, Hou 2004) are considered to correct this bias. In the previous chapter, descriptive analysis showed that the level of fiscal stress did not have a strong effect on state use of actions. The lack of connection between level of fiscal stress and the types of state action taken suggests the limited extent to which fiscal stress effects state response. Endogeneity is addressed here by following previous scholars and lagging state responses by one year (Hou 2003; Hou 2004; Poterba 1994).

Second, serial correlation is a concern with a panel dataset. Serial correlation violates the classical assumption that different observations of the error term are uncorrelated with one another (Studenmund 2006). When the order of the observations

²³ Appendix C shows the regression analysis using an alternative coding of the structural balance variable. The structural balance variable is only marginally significant for the budget fiscal stress when the structural balance variable is coded using the 2005 and 2008 values. The difference between the two regression models suggests the structural balance variable is not very robust.

has meaning, in this case a time series, serial correlation is likely to occur since the error term in year 2 may depend on the error term in year 1. As a result, the correlation between error terms will not equal zero. First-order serial correlation occurs when the current value of the error term is a function of the previous value of the error term. While serial correlation does not cause bias in the coefficient estimates, the estimates may still be different from the true beta and the standard errors may be biased, resulting in inaccurate hypothesis testing. To test for first-order serial correlation, the Wooldridge test for panel datasets is conducted.²⁴ When serial correlation is found, Prais-Winsten OLS estimation is used to correct for it. Prais-Winsten OLS estimations are also used by scholars using similar datasets (Hou 2003; Hou 2004).

Third, heteroskedasticity is a concern in the dataset. Heteroskedasticity occurs when the variance of the error terms is not constant (Wooldridge 2006). Heteroskedasticity does not result in biased or inconsistent OLS estimates; however, the standard errors are no longer reliable for constructing confidence intervals and t-statistics. With states as the unit of analysis, it is possible for unobserved factors across states to result in not constant error terms. Heteroskedasticity is tested for in each model using the Breusch-Pagan test for heteroskedasticity. For models that have a significant p-value, robust standard errors are used.

Fourth, without controlling for time-invariant factors from year to year and within states, the specification is vulnerable to omitted variable bias. To address this issue, time and state-specific effects are controlled for using year and state dummy variables. The dataset used for the initial analysis is a panel dataset with 50 states²⁵ over eight years (2002 to 2009). The three independent variables of interest, as defined above, are the

²⁴ The Durbin-Watson test does not work on panel datasets. The Wooldridge test (xtserial in STATA) sets a null hypothesis of no serial correlation.

²⁵ New York is not included for 2002.

expenditure, tax, and rainy day actions taken within a fiscal year. The regression equation below describes the model of fiscal stress within the states. The expenditure, tax and rainy day actions are included in the same model because the analysis attempts to tease out the effect²⁶ of reducing expenditures, raising taxes, and using rainy day fund balances while holding the other responses constant. The other variables included in the model – economic, political, and institutional factors – are control variables used in previous research (Hou 2003; Jimenez 2009; Poterba 1994).

Two-way scatter plots were used to identify outliers for each dependent-independent variable model. With budget fiscal stress as the dependent variable and the three independent variables of interest (tax and fee increases, expenditure cuts, and rainy day fund use), two states, Alaska and Wyoming, consistently deviated from the scatter plot groupings. Similar analyses were done for the cash, long-run and service-level fiscal stress dependent variables. Alaska was an outlier for the cash fiscal stress model, Nebraska and Wyoming outliers for the long-run fiscal stress dependent variable and Alaska and Nevada outliers for the service-level fiscal stress dependent variable. These state outliers were removed from the relevant regression model.

To address the first two questions: (1) Are some states able to navigate better through periods of fiscal stress than other states?, and (2) Are certain state responses more effective at reducing or alleviating fiscal stress?; the effects of institutional factors as well as expenditure cuts, tax increases, and rainy day fund use on fiscal stress will be tested.

²⁶ Literature shows that the three state responses are not used in a vacuum. Indeed states may use one instead of the other in a trade-off (Maag and Merriman 2007). However, a correlation matrix shows relatively low correlation between the enacted change in tax revenues as a percent of total tax revenue, percentage change in expenditures, and change in rainy day fund balance as a percent of total general expenditures (0.05 between the tax and expenditure variables, -0.02 between rainy day fund and tax variables, and 0.19 between expenditure and rainy day fund variables).

$$\text{STRESS}_{it} = \beta_1 \text{EXPENDITURE}_{it-1} + \beta_2 \text{TAX}_{it-1} + \beta_3 \text{RDF}_{it-1} + \beta_4 \text{BBREQ}_{it} + \beta_5 \text{TEL}_{it} + \beta_6 \text{ECONOMIC}_{it-1} + \beta_7 \text{POLITICAL}_{it} + \beta_8 \text{STRUCBAL}_{i2008} + \gamma_t + \epsilon_{it}$$

$i = 50 \text{ or } 49$

$t = 8 \text{ (2002-2009)}$

To address the third question, (3) Does the choice of response by a state in one period of economic downturn affect its experience of fiscal stress through a subsequent period of economic downturn?, the dataset will be restricted to three years (2007-2009). The model below includes the three state actions in 2002. In 2002, states experienced higher levels of fiscal stress due to the effects of a national (and subsequently regional and state) recession.

$$\text{STRESS}_{it} = \beta_1 \text{EXPENDITURE}_{it-1} + \beta_2 \text{TAX}_{it-1} + \beta_3 \text{RDF}_{it-1} + \beta_4 \text{EXPENDITURE}_{i2002} + \beta_5 \text{TAX}_{i2002} + \beta_6 \text{RDF}_{i2002} + \beta_7 \text{BBREQ}_{it} + \beta_8 \text{TEL}_{it} + \beta_9 \text{ECONOMIC}_{it-1} + \beta_{10} \text{POLITICAL}_{it} + \beta_{11} \text{STRUCBAL}_{i2008} \alpha_i + \gamma_t + \epsilon_{it}$$

$i = 50$

$t = 3 \text{ (2007-2009)}$

6.3 Findings

Descriptive Statistics

Table 6.1 presents the frequency and size of the three state responses to fiscal stress from 2002 to 2009. Of the three responses, the use of rainy day funds most closely follows changes in economic growth. The number of states using their rainy day funds was at its highest in 2002 and 2009, both years marked by low to negative state growth rates. The size of the responses also varies year to year. The greatest variety in response size is seen with expenditure cuts, here represented as the percentage change in states reducing expenditures. Tax and fee increases are relatively small and constant between 2002 and 2009, suggesting their limited use to address fiscal stress.

Table 6.1: Frequency and Size of State Rainy Day Fund Use, Tax Increases, and Expenditure Cuts

	Rainy Day Fund Use		Tax & Fee Increases		Expenditure Cuts	
	Number	Size (%)	Number	Size (%)	Number	Size (%)
2002	28	5.1	14	1.6	15	2.5
2003	23	2.1	23	3.1	27	4.3
2004	6	.4	36	2.5	11	7.1
2005	6	1.2	24	1.7	2	9.2
2006	3	.6	25	1.3	5	3.6
2007	7	2.8	14	1.2	2	3.9
2008	11	2.8	18	2.0	7	1.8
2009	27	2.8	14	1.0	33	6.6

Source: NASBO Fiscal Survey of the States (2001-2010)

Regression Results

Table 6.2 shows the results of four regression models including one year lagged state actions on the four different measures of fiscal stress. The following regression estimations are used for each dependent variable; with budget fiscal stress as the dependent variable, OLS estimation²⁷ is used; with cash fiscal stress as the dependent variable, OLS estimation with robust standard errors²⁸ is used; with long-run fiscal stress as the dependent variable a Prais-Winsten estimation with robust standard errors²⁹ is

²⁷ Breusch-Pagan test for heteroskedasticity $\chi^2 = 2.44$, $p > \chi^2 = 0.1181$; Wooldridge test for autocorrelation $F = 1.65$, $\text{prob} > F = 0.2049$

²⁸ Breusch-Pagan test for heteroskedasticity $\chi^2 = 227.08$; $p > \chi^2 = 0.000$; Wooldridge test for autocorrelation in panel data $F = 1.24$, $\text{prob} > F = 0.2719$

²⁹ Breusch-Pagan test for heteroskedasticity $\chi^2 = 124.41$, $\text{prob} > \chi^2 = 0.000$; Wooldridge test for autocorrelation in panel data $F = 50.30$, $\text{prob} > F = 0.000$

used; and with service-level fiscal stress as the dependent variable a Prais-Winsten estimation³⁰ is used. The model fit for each specification is relatively high.

Based on the regression results in Table 6.2, H₄: *Institutional factors will affect states' levels of fiscal stress* is supported. Specifically, H_{4.1}: *States with balanced budget rules will have experience lower fiscal stress* is mostly supported. For three of the fiscal stress indices – cash, long-run, and service-level – requiring the Governor to sign a balanced budget results in lower fiscal stress. (Remember that the higher the value of each fiscal stress index, the lower the state's level of fiscal stress.) States with the budget rule have a cash fiscal stress value 0.688 points higher than states without this requirement. The effect is larger for long-run and service-level fiscal stress. States with the budget rule have long-run fiscal stress values 1.77 points higher and service-level fiscal stress values 1.57 points higher.

States requiring the Governor to submit a balanced budget have budget fiscal stress values 0.494 points lower than states without this requirement. In contrast, states with this requirement have cash fiscal stress values 0.982 points higher, long-run fiscal stress values 2.06 points higher and service-level fiscal stress values 1.05 points higher. Therefore, for three types of fiscal stress, this budget rule results in lower levels of fiscal stress. The requirement that legislatures pass a balanced budget has the smallest effect on fiscal stress levels. Only long-run fiscal stress is affected by this requirement, as states have a long-run fiscal stress value 0.141 points higher than states without this requirement.

The requirement of no carryover deficit into the next fiscal year, the strictest of the balanced budget requirements in the model, results in lower fiscal stress levels in two areas. States with this rule have higher budget and service-level fiscal stress values and

³⁰ Breusch-Pagan test for heteroskedasticity $\chi^2 = 0.40$, $\text{prob} > \chi^2 = 0.526$; Wooldridge test for autocorrelation in panel data $F = 42.62$, $\text{prob} > F = 0.000$

therefore lower levels of fiscal stress. Specifically, states with this requirement have a budget fiscal stress value 0.521 points higher and a service-level fiscal stress value 0.756 points higher than states without this requirement. Balanced budget rules do not have a uniform effect on fiscal stress, but overall the effect is positive.

Results here indicate support for H_{4.2}: *TEs will affect state levels of fiscal stress*; TEs have an impact on three types of fiscal stress. Spending limits have a marginally significant positive impact on service-level fiscal stress; states with a spending limit have a service-level fiscal stress value 0.174 points higher than states without the spending limit. Revenue limits have a negative effect on cash, long-run and service-level fiscal stress values. States with revenue limits have cash fiscal stress values 1.10 points lower than states without the limit, long-run fiscal stress values 1.67 points lower than states without the limit and service-level fiscal stress values 0.487 points lower.

Results do not support H_{4.3}: *States with divided governments will experience higher fiscal stress*. The divided government variable is marginally significant in the budget fiscal stress model; however, the coefficient is positive suggesting states with divided government actually have budget fiscal stress values 0.068 points higher than states with unified government. This value is small and only marginally significant. Based on the regression results, the political affiliation and distribution of power between the executive and legislative branches do not appear to play a role in fiscal stress levels.

Table 6.2: Regression Model with State Actions Modeled				
Independent Variables	Dependent Variables			
	(1) Budget ^a	(2) Cash ^b	(3) Long-run ^c	(4) Service-level ^d
Rainy Day Fund Use (Dummy) – 1 Year Lag	0.018 (.037)	-0.035 (.025)	-0.012 (.025)	-0.003 (.016)
Expenditure Cuts (Dummy) – 1 Year Lag	-0.001 (.040)	-0.023 (.024)	0.002 (.019)	-0.004 (.017)
Tax Increases (Dummy) – 1 Year Lag	0.007 (.030)	0.004 (.020)	-0.003 (.017)	-0.013 (.013)
Governor signs balanced budget	-0.266 (.096)	0.688** (0.077)	1.77** (.216)	1.57** (.161)
Governor submits balanced budget	-0.494* (.302)	0.982** (.083)	2.06** (.295)	1.05** (.259)
Legislature passes balanced budget	0.130 (.267)	-0.027 (.049)	0.141** (.036)	-0.135 (.133)
No Deficit Carryover	0.521** (.191)	-0.067 (.112)	-0.009 (.162)	0.756** (.160)
Spending Limit	0.040 (.129)	-0.127^ (.069)	0.056 (.087)	0.174^ (.089)
Revenue Limit	0.213 (.179)	-1.10** (.101)	-1.67** (.297)	-0.487^ (.259)
Divided Government	0.068^ (.038)	-0.001 (.025)	0.009 (.037)	-0.015 (.020)
Governor's Political Party	0.046 (.042)	0.013 (.029)	-0.028 (.031)	-0.028 (.023)
Structural Balance	0.324* (.162)	1.02** (.078)	-1.28** (.298)	0.679** (.258)
Economic Growth (%) – 1 Year Lag	0.038** (.009)	0.006 (.008)	0.002 (.004)	-0.010* (.005)
Observations	380	388	380	380
Adjusted R ²	0.6551	0.8567	0.8883	0.9038

^ Significant at the 90% confidence level. *Significant at the 95% confidence level. **Significant at the 99% confidence level. All regression models include control variables for year and states.

^a OLS regression. Tests for first-order serial correlation and heteroskedasticity do not show these problems.

^b OLS regression with robust standard errors. Tests show no serial correlation but heteroskedasticity is present.

^c Prais-Winsten OLS regression with robust standard errors.

^d Prais-Winsten OLS regression.

These finding offer some support for H_{5.2}: *States with structural deficits will experience higher fiscal stress*. States with a strength in structural balance have budget fiscal stress values 0.324 point higher than states with a weakness or mid-level capacity

in structural balance; cash fiscal stress scores 1 point higher than states with a weakness or mid-level capacity in structural balance, and service-level fiscal stress values 0.679 points higher than the weaker states. However, the opposite relationship is observed with long-run fiscal stress. States with a strength in structural balance have long-run fiscal stress values 1.28 points lower (and therefore higher fiscal stress levels) than states with a weakness or mid-level capacity for structural balance. As shown in Appendix C, when the regression equation is run with an alternative coding for the structural balance variable, the findings change. Specifically, the nature of the relationship between structural balance capacity and fiscal stress levels becomes only marginally significant for budget fiscal stress and not significant for the other three types of fiscal stress.

The final hypothesis tested concerns the short-term effects of rainy day fund use, expenditure cuts, and tax increases on fiscal stress. This hypothesis, H₆: *The short-term effects of state responses on fiscal stress levels will be minimal* is supported by the regression results; the short-term effects of these state actions are minimal. None of the state response variables has a statistically significant relationship with fiscal stress levels.

Table 6.3 shows the regression results of a model that looks at the effects of actions taken in 2002 on current levels of fiscal stress (2007-2009). Actions in 2002 are used because many states at the time were responding to both higher levels of fiscal stress and the effects of an economic slowdown that resulted from the 2001 national recession. This model tests H₇ and its sub-hypotheses. The hypothesis, H₇: *The long-term effects of state responses on fiscal stress will differ* is supported. The sub-hypothesis, H_{7.1}: *Tax increases and/or expenditure reductions will, in the long-term, reduce fiscal stress levels* is partially supported by the findings. Expenditure cuts in 2002 result in cash fiscal stress values 0.446 points lower (and therefore higher levels of fiscal stress) but service-level fiscal stress values 1.67 points higher (and therefore lower levels of fiscal stress) than states that did not use expenditure cuts in 2002. Tax increases in 2002 result in budget fiscal stress values 0.489 points higher and therefore lower fiscal stress levels. In contrast

Table 6.3: Regression Model with 2002 State Actions Modeled

Independent Variables	Dependent Variables			
	(5) Budget ^a	(6) Cash ^b	(7) Long-run ^c	(8) Service-level ^d
Rainy Day Fund Use – 1 Year Lag	0.069 (0.066)	0.009 (0.043)	0.042 (0.035)	-0.017 (0.036)
Expenditure Cuts – 1 Year Lag	0.0152 (0.082)	0.031 (0.042)	0.074 (0.046)	0.106* (0.046)
Tax Increases – 1 Year Lag	0.004 (0.090)	0.027 (0.032)	-0.086** (0.029)	0.023 (0.026)
Rainy Day Fund Use – 2002	-0.125 (0.144)	0.777** (0.156)	-2.75** (0.098)	2.39** (0.145)
Expenditure Cuts – 2002	-0.150 (0.132)	-0.446** (0.060)	-0.233 (0.048)	1.67** (0.075)
Tax Increases – 2002	0.489* (0.189)	-0.065 (0.100)	-0.700** (0.090)	-1.30** (0.093)
Governor signs balanced budget	-0.243* (0.100)	0.481** (0.050)	0.144** (0.045)	0.376** (0.056)
Governor submits balanced budget	-0.449* (0.219)	0.470** (0.117)	0.349** (0.102)	2.04** (0.126)
Legislature passes balanced budget	0.266 (0.240)	-0.079** (0.035)	0.171** (0.031)	-0.072 (0.127)
No Deficit Carryover	0.320^ (0.169)	0.439** (0.132)	-1.974** (.105)	2.30** (0.112)
Spending Limit	-0.477** (0.099)	-0.266** (0.065)	-0.920** (0.064)	0.436** (0.070)
Revenue Limit	-0.278^ (0.148)	0.178 (0.182)	-2.09** (0.164)	2.22** (0.165)
Divided Government	0.064 (0.083)	-0.022 (0.059)	-0.046 (0.040)	-0.021 (0.045)
Governor's Political Party	0.036 (0.093)	-0.012 (0.070)	0.072 (0.085)	-0.020 (0.049)
Structural Balance	0.047 (0.133)	1.69** (0.165)	0.816** (0.166)	-2.04** (0.174)
Economic Growth (%) – 1 Year Lag	0.017 (0.014)	-0.001 (0.010)	0.010 (0.008)	-0.025** (0.008)
Observations	144	147	144	144
Adjusted R ²	0.8203	0.9732	0.9928	0.9900

^ Significant at the 90% confidence level. *Significant at the 95% confidence level. **Significant at the 99% confidence level. All regression models include control variables for year and states.

^a OLS regression. Tests for first-order serial correlation and heteroskedasticity do not show these problems.

^b Prais-Winsten regression with robust standard errors. Tests show serial correlation and heteroskedasticity is present.

^c Prais-Winsten OLS regression with robust standard errors.

^d Prais-Winsten OLS regression.

tax increases in 2002 result in long-run and service-level fiscal stress values 0.700 and 1.30 points lower (respectively), denoting higher service-level fiscal stress.

Rainy day fund use in 2002 has similarly divergent effects, resulting in $H_{7.2}$: *Rainy day fund use will increase fiscal stress in the long-term* being partially supported. For cash and service-level fiscal stress, using rainy day funds in 2002 results in values 0.777 points and 2.39 points higher (respectively), supporting $H_{7.2}$. However, regarding long-run fiscal stress, using rainy day funds in 2002 results in values 2.75 points lower, and so contradicts $H_{7.2}$.

6.4 Discussion of Hypotheses and Findings

The regression findings provide information on the effectiveness of the three most common state responses to fiscal stress and the role of institutional factors in helping states mitigate fiscal stress.

Role of Institutional Factors

Hypothesis 4 and its three sub-hypotheses suggest that institutional factors will affect fiscal stress levels. As described in Chapter 5, there do appear to be some differences in state responses depending on institutional factors.

H_{4.1}: States with balanced budget rules will experience lower fiscal stress

This hypothesis is mostly supported and regarding all four fiscal stress measures. Requiring the Governor to *sign* a balanced budget results in lower cash, long-run, and service-level fiscal stress levels. Requiring a Governor to *submit* a balanced budget results in lower cash, long-run and service-level fiscal stress levels. Requiring that deficits not be carried over into the next fiscal year results in lower budget and service-level fiscal stress. The least effective balanced budget requirement at reducing fiscal stress is that rule requiring the legislature to pass a balanced budget. Since balance – either in terms of assets to liabilities, expenditures to revenues, or long-term liabilities to

total assets – is important to the measures of fiscal stress, the overall positive effect of these requirements makes sense. A more interesting question is why balanced budget requirements sometimes are associated with higher fiscal stress levels.

The answer may be related to the limits balanced budget requirements put on automatic stabilization mechanisms (e.g., spending). If balanced budget requirements act as limits on spending increases needed to help stabilize a state economy suffering from an economic downturn, the result may be a longer period of slow or negative economic growth (Johnson 2010b).

H_{4.2}: TELs will affect state levels of fiscal stress.

TEs have an impact on fiscal stress levels; however, the direction of the impact depends on whether a state has revenue or spending limits. Spending limits are marginally related to higher service-level fiscal stress values. Revenue limits appear to be related to lower cash, long-run and service-level fiscal stress values. The minimal impact of spending limits on fiscal stress levels may be due to the methods states have to circumvent these limits (Bowler and Donovan 2004); however, results here indicate these constraints do have a small positive effect on service-level fiscal stress levels. The negative effect of revenue limits on fiscal stress levels is likely due to their hampering state ability to increase taxes and thereby draw in more revenues to balance with spending (Finegold et al 2003).

H_{4.3}: States with divided governments will experience higher fiscal stress.

When controlling for other factors occurring within state government, political factors do not appear to have a significant influence (at least as modeled here) on fiscal stress levels. Despite prior research that partisan differences across branches hampers state action, this model does not find significant evidence of such a relationship. The case study by Lauth (2010) on Georgia's experience with the most recent national recession and the struggles between Georgia's Republican governor and Republican-controlled General Assembly sheds some light on this result. Even when the same party controls

both branches of state government, there is no guarantee that they will work effectively or cordially with one another.

H_{5.2}: States with structural deficits will experience higher fiscal stress.

For budget, cash, and service-level fiscal stress, a strong capacity for structural balance results in better fiscal stress conditions. Yet, for long-run fiscal stress, states with strength in structural balance capacity appear to experience greater fiscal stress than states with weaker structural balance capacity. States with weaker structural balance capacity are more likely to experience budget, cash, and service-level fiscal stress due to an on-going inability to match current revenues with current expenditures. It is unclear why long-run fiscal stress levels would be higher for states with strong structural balance capacity; however, it is possible states shift current problems to the long-term. The long-run fiscal stress index captures long-term liabilities and the ability of states to pay for them. Structural balance capacity is concerned with current and medium term management of revenues and expenditure levels. Adding debt at unsustainable levels is an example of a state action that may support structural balance in the near term, but result in worsening long-run fiscal stress.

Effectiveness of State Responses

Hypotheses 6 and 7 are partially supported by the regression findings. The effectiveness of state response to fiscal stress appears to depend on the time between an action and its' effect. While this does not provide much help to states in the throes of fiscal stress, it does provide some guidance on how to mitigate future fiscal stress. This analysis adds to the fiscal stress literature by assessing the effectiveness of rainy day fund use, expenditure cuts, and tax and fee increases in addressing short-term and long-term state fiscal stress.

H₆: The short-term effect of state responses on fiscal stress levels will be minimal.

The results of the regression analysis demonstrate that none of the state actions of interest (expenditure cuts, rainy day fund use, tax and fee increases) reduce state fiscal stress in the current year, supporting hypothesis 6. It is important to remember that fiscal stress as measured here is not the same as a budget shortfall. States do use rainy day funds to fill budget gaps; expenditure cuts to reduce budget shortfalls, and tax and fee increases to boost revenues.

H₇: The long-term effects of state responses (e.g. tax increases, expenditure cuts, and rainy day fund use) on fiscal stress will differ.

Another aspect of this analysis is the effect of state responses during a previous period of fiscal stress on a more recent episode of stress, in other words, the long-term effects of state responses on fiscal stress. These regression results support hypothesis 7 that the effects of responses will differ. Despite state responses having no short-term effect, state responses in one period of stress do appear to have effects in a subsequent period of stress. Differences in their effects appear to be related to the type of fiscal stress as well as to the type of response.

H_{7.1}: Tax increases and/or expenditure reductions will, in the long-term, reduce fiscal stress levels.

Tax increases in 2002 have a positive effect on budget fiscal stress levels in the years 2007 to 2009. In contrast, tax increases in 2002 have a negative effect on long-run and service-level fiscal stress levels in the years 2007 to 2009. Expenditure cuts in 2002 have a positive effect on service-level fiscal stress levels and a negative effect on cash fiscal stress in 2007 to 2009.

The budget fiscal stress measure is composed of a state's operating ratio (total revenues/total expenses) and state surplus (deficit) per capita. This measure attempts to gauge a state's ability to generate sufficient revenues over its normal budgetary period to meet its expenditure obligations and not incur deficits (Groves et al 1981). Based on the regression results, of the three state responses, tax increases in 2002 were the most

effective way to reduce fiscal stress from 2007 to 2009. Tax increases in 2002 may result in lower budget fiscal stress in 2007 to 2009 by balancing on-going revenues and expenditures.

The cash fiscal stress index attempts to measure a government's ability to generate enough cash to pay its bills (Groves et al 1981). Three indicators are used to assess this definition: cash ratio (cash, cash equivalents and investments divided by current liabilities), the quick ratio (cash, cash equivalents, investments and receivables divided by current liabilities), and the current ratio (current assets divided by current liabilities). Given these definitions, actions that increase current assets and/or reduce current liabilities will assist in lowering cash fiscal stress levels. Based on the regression results, of the three state responses, rainy day fund use is the most effective at reducing future fiscal stress. Expenditure cuts in 2002 may result in inefficient cuts that commit the state to more spending in the future. For instance, reducing spending on education and other social services may translate to more spending in healthcare or law enforcement. While expedient in the short-term, expenditure cuts may not be cost-effective in the long-term. Using rainy day funds may allow states to avoid expenditures cuts (Hou 2003) and some of their negative consequences on cash fiscal stress levels.

The long-run fiscal stress index is measured by the net asset ratio (restricted and unrestricted net assets divided by total assets), the long-term liability ratio (non-current liabilities divided by total assets), and long-term liability per capita. This measure attempts to the ability of a government to pay its long-term liabilities (e.g. pension costs and replacement of capital assets) in the years that they will become due (Groves et al 1981). Actions that increase long-term liabilities or reduce assets will result in worsening long-run fiscal stress. Of the three state responses, none are effective at reducing future long-run fiscal stress levels. Both tax increases and rainy day fund use in 2002 may have a negative effect on long-run fiscal stress because they allow states to avoid reducing long-term liabilities. The extent to which these actions allow states to avoid decisions on

long-term liabilities permanently explains why this effect is significant in 2007-2009. The large negative effect of rainy day fund use may also be related to the reduction in total assets with the spending of rainy day funds.

Service-level fiscal stress is measured as tax per capita, revenue per capita, and expenses per capita. This measure attempts to gauge a state's ability to provide the level and quality of services required for the general health and welfare of the state's residents (Groves et al 1981). The service-level index essentially measures the amount of room a state has to raise taxes, revenues, and expenses per capita. The lower these measures, the better the fiscal stress scores. Given the construction of the service-level fiscal stress index, it makes sense that expenditure cuts result in improved service-level fiscal stress and tax increases in worsening service-level fiscal stress. With expenditure cuts, the expenses per capita measure is lower and therefore a state is farther from an inefficiently high spending level. At the same time, tax increases result in a higher tax per capita and revenue per capita, resulting in higher service-level fiscal stress levels. Of the three state responses, rainy day fund use is the most effective at reducing service-level fiscal stress levels (expenditure cuts also have strong effect on reducing service-level fiscal stress).

H_{7.2}: Rainy day fund use will increase fiscal stress in the long-term.

This hypothesis is partially supported because rainy day fund use in 2002 results in worsening long-run fiscal stress in 2007 to 2009. As described in Chapter 2, rainy day fund use can worsen fiscal stress levels by deferring difficult decisions and actions regarding spending and taxing levels. As Hackbart and Ramsey (2004) state, the use of rainy day funds to address fiscal stress is ineffective because such use does not address eroding tax bases or unsustainable spending policies. That is, rainy day fund use is thought to push existing problems down the road (Hackbart and Ramsey 2004). Long-run fiscal stress, in particular, captures the extent to which a state is, over time, not addressing fiscal balance. Debt taken on to cover pension costs and maintenance costs deferred for capital are reflected in worsening long-run fiscal stress.

Rainy day fund use in 2002 results in improved cash and service-level fiscal stress levels in 2007 to 2009. One explanation for this relationship, suggested by Brinner and Brinner (2002), is that rainy day fund use may allow states to take more thoughtful and well-planned approaches to cutting spending or raising revenues. Hasty spending cuts can lead to cuts in programs or services that actually save states money in the long-term (Levine et al 1981). As such, rainy day fund use in 2002 may have resulted in lower current liabilities in 2007 to 2009. Rainy day fund use in 2002 may also have resulted in fewer tax increases, and therefore improve service-level fiscal stress levels.

6.5 Conclusion

This chapter set out to examine three questions regarding state experience and response to fiscal stress. The findings related to the first question – are some states able to navigate better through periods of fiscal stress than other states? – indicate that some factors make states more and less vulnerable to fiscal stress. Certain institutional characteristics that some states adopt and others do not appear to assist states in managing their experience of fiscal stress. Certain balanced budget requirements have positive and relatively strong impacts on state fiscal stress. Other institutional factors, such as limitations on states' collections of revenues, appear to have a negative impact on state ability to manage through fiscal stress.

The answer to the second question – are certain state responses more effective at reducing or alleviating fiscal stress? – is less clear. Of the three state responses tested in this analysis, none had a statistically significant relationship to fiscal stress levels. It is possible that in the short-term, state responses to fiscal stress take a backseat to other factors such as overall economic recovery. However, as indicated by the findings related to the next question, the real issue may be the time needed to see the impact of state responses. That is, the findings related to the third question – does the type of response a

state uses in one period of fiscal stress affect its stress levels in subsequent periods of fiscal stress? – indicate that the type of response will influence long-term fiscal stress levels. State actions that contribute to a balance between expenditures and revenues appear to result in less stress during the next episode of widespread fiscal stress among states. Merely using rainy day funds to cover cyclical deficits also appears to impact state experience of fiscal stress in later years. However, this impact differs depending on the *type* of fiscal stress experienced. These findings suggest that the sacrifices states take to address fiscal stress – tax increases, expenditure cuts, and use of rainy day funds – are effective at putting states on a more solid financial condition. On the other hand, the short-term impacts of these actions are unlikely to yield the quick and decisive results that state budget and policy makers might expect and hope for.

CHAPTER 7

CONCLUSION

This study examined measures and responses to fiscal stress in the U.S. states. Six questions were addressed:

- (1) How is state fiscal stress defined and measured in the existing literature?
- (2) Is there a better measure of fiscal stress? And, if so, why is such a measure more reliable and valid?
- (3) Do state characteristics affect their experience of fiscal stress and/or influence their choice of responses?
- (4) Are some states able to navigate better through periods of fiscal stress than other states, and if so, why?
- (5) Are certain state responses more effective at reducing or alleviating fiscal stress?
- (6) Does the type of response a state uses in one period of fiscal stress affect its stress levels in subsequent periods of fiscal stress?

This chapter summarizes the results of this research, the implications, and the contributions of this work to both theoretical and empirical research. Limitations of the study will be addressed, as well as areas that are fertile ground for future research.

7.1 Review of Main Research Findings

The motivations for this study are several: (1) to contribute substantively to the scholarly work about public fiscal management, and more specifically state government fiscal health and management, (2) to determine better ways to understand and measure fiscal stress in U.S. state governments, and (3) to inform state government budget and

policy decision makers about the best means to reach and maintain state fiscal health, especially in both up and down economies. The theoretical and empirical framework of state budgetary responses to fiscal stress was addressed in Chapter 2. In this chapter, the theoretical explanations for state responses to fiscal stress according to three budget theories, incrementalism, punctuated equilibrium, and cutback management, are detailed. In addition, empirical research on fiscal stress and the roles of institutional and political factors and the effectiveness of state responses is discussed. Finally this chapter forms seven sets of hypotheses based on the theoretical and empirical research.

Chapter 3 presented the foundation for creation of a measure of fiscal stress that is comparable across years and the American states while allowing for an understanding of the different dimensions of fiscal stress. Using the framework of Groves et al (1981) and concept operationalization of Wang et al (2007), fiscal stress indices measuring four different dimensions of fiscal stress were created: budget, cash, long-run, and service-level. The budget solvency index attempts to measure a state's ability to generate enough revenue to cover expected expenditures in a fiscal year. The cash solvency index attempts to measure a state's liquidity and its ability to pay current liabilities. The long-run solvency index attempts to measure a state's long-term ability to pay its liabilities. The service-level solvency index attempts to measure a state's ability to provide the required level and quality of goods and services.

The measurement validity and reliability of these indices was assessed in Chapter 4. While these indices are mostly valid and reliable, certain systematic differences exist. Inconsistencies in how states adopted and record depreciation results in systematic differences in two of the financial indicators used in the long-run and service-level solvency indices.

In Chapter 5, this research then used this new measure of fiscal stress to test hypotheses suggested by theoretical and empirical literature about the relationship between fiscal stress levels and state government responses. Analyses also incorporated

the relationship between institutional factors and fiscal stress levels. Important findings from this research include that no single strategy of budgeting dominates among the states. That is, no theoretical perspective dominates state behavior. The actions states take to address fiscal stress are associated with the both “incremental” and what can be considered “punctuated equilibrium” responses. A main hypothesis of cutback management theory, specifically, that responses will vary by differences in the level of fiscal stress was not supported. The lack of a structured state strategy to deal with fiscal stress and economic downturn supports the research of Pammer (1990) and Bartle (1996) who claim that local governments have so many differences in structure, personality, and organizational culture that patterns are impossible to observe.

Chapter 6 uses regression analysis to investigate institutional factors as well as short and long-term impacts of responses on fiscal stress. Institutional factors play a role in both the responses states take to combat fiscal stress and regarding the level of fiscal stress that they experience. Specifically, balanced budget rules and TELs either mitigate fiscal stress levels or foster a state policy environment that is more vulnerable to fiscal stress. Another finding is that the type of fiscal stress being measured – budget, cash, long-run, and service-level – can foster different institutional effects. For example, three of the four balanced budget rules modeled reduce the level of long-run fiscal stress. In contrast, of the four balanced budget rules, one contributed to higher levels of budget fiscal stress while another rule reduced budget fiscal stress. Structural balance was also found to be an important predictor of budget, cash, and service-level state fiscal stress. The short and long-term impacts of three common state responses to fiscal stress are also key findings of this research. In the short-term, none of these responses (tax increases, expenditure cuts or accessing the rainy day fund) had a statistically significant impact on fiscal stress. However, when assessing the impact of states responses to stress in one period of economic downturn compared to a subsequent period of economic downturn, long-term impacts were observed. In particular, impacts of state responses to stress

Table 7.1: Summary of Key Findings Related to Hypotheses	
Hypotheses	Finding
H₁: States are strategic in their response to fiscal stress.	Not Supported
H₂: Responses will differ based on the severity of fiscal stress.	Partially Supported
H_{2.1}: Rainy day funds will be used in periods of lower fiscal stress.	Not Supported
H_{2.2}: Incremental budget strategies will be used in periods of moderate fiscal stress.	Partially Supported
H_{2.3}: Punctuated equilibrium strategies will be used in periods of high fiscal stress.	Partially Supported
H₃: Institutional factors will affect state responses to fiscal stress.	Supported
H_{3.1}: States with balanced budget rules will take more actions to address fiscal stress.	Partially Supported
H_{3.2}: States with TELs will use more expenditure cuts and other non-tax measures to address fiscal stress.	Partially Supported
H_{3.3}: States with divided governments will take fewer actions to address fiscal stress.	Not Supported
H₄: Institutional factors will affect states' levels of fiscal stress.	Supported
H_{4.1}: States with balanced budget rules will experience lower fiscal stress.	Mostly supported
H_{4.2}: TELs will affect state level of fiscal stress.	Supported
H_{4.3}: States with divided governments will experience higher fiscal stress.	Not Supported
H₅: States with structural deficits will engage different responses and experience higher fiscal stress.	Mostly Supported
H_{5.1}: States with structural deficits will be more likely to engage punctuated equilibrium responses in periods of high fiscal stress.	Supported
H_{5.2}: States with structural deficits will experience higher fiscal stress.	Partially Supported
H₆: The short-term effect of state responses (e.g. tax increases, expenditure cuts, rainy day fund use) on fiscal stress levels will be minimal.	Supported
H₇: The long-term effects of state responses (e.g. tax increases, expenditure cuts, and rainy day fund use) on fiscal stress will differ.	Supported
H_{7.1}: Tax increases and/or expenditure reductions will, in the long-term, reduce fiscal stress levels.	Mostly Supported
H_{7.2}: Rainy day fund use will increase fiscal stress in the long-term.	Partially Supported

differed, depending on the type of fiscal stress considered. This resulted in different answers to the question, what is the most effective response to fiscal stress? A summary of these findings is presented in Table 7.1.

7.2 Implications

These findings suggest that states have some control over their experience of fiscal stress. They may exert this control through their responses to fiscal stress, their decision to match revenues with expenditures, and either their adoption of balanced budget rules and TELs or their interpretation of these rules. However, state ability to control their experience of fiscal stress does not mean that they can expect immediate results. Results regarding the impact of longer-term responses indicate that the timing of state action matters. Working to reduce vulnerability to economic downturns *before* a downturn occurs is more likely to yield positive results than actions taken in the midst of recession and deepening fiscal stress. This enhanced understanding of how institutional requirements and state actions influence the experience of fiscal stress may assist researchers when attempting to predict which states are more likely to end up in fiscal stress in subsequent recessions. In terms of what this research means to state policy and budget makers, the findings underscore the importance of preparing for the inevitable bad times during the good times. Budget restraint – both in terms of not haphazardly cutting taxes and increasing spending – is crucial to states performing better during the next economic downturn.

7.3 Limitations and Future Research

Despite the contributions of this study, there are some important limitations and multiple opportunities for further research. For example, this dataset only covers two episodes of national recession. Annually updating the data set using state CAFRs from 2009 forward would provide the opportunity to expand the data set coverage and produce more robust results.

Also, the GASB 34, which allows for the creation of the fiscal stress measures used in this analysis, was fully implemented in 2002. As additional years are added to this dataset, we may find that certain relationships between the explanatory variables and

fiscal stress change and either strengthen or weaken the findings here. The manner in which the three response variables are modeled in this analysis does not allow for deeper investigation of across-the-board vs. targeted cuts or furloughs vs. layoffs and their affects on state experiences of fiscal stress. Similarly, understanding the effect of an increase of personal income taxes as opposed to fees or sales taxes would deepen our understanding of how state tax choices in particular affect their fiscal stress levels. Also not reported here is the effect of the size of state responses on fiscal stress levels. The scope of this analysis did not include these types of investigations, but future research in this area may be fruitful.

The difficulties in defining and measuring structural balance are similar in many ways to those related to understanding fiscal stress. This is an important concept, often discussed in empirical literature. As modeled in this analysis, structural balance appears to play a large role in state financial condition (level of fiscal stress experienced). However, a more robust measure of structural balance may yield more precise findings about its' effect on fiscal stress. Future research that examines defining and measuring structural balance that supports reliable and valid comparison across states is warranted.

Finally, quantitative research such as this does not provide substantive focus on specific states, their cultures and traditions and context that would better explain any experience of fiscal stress and their responses to it. This research does not answer questions like, why did Alabama weather the current national recession better than Kentucky? or Why did Louisiana and Arizona experience different levels of fiscal stress, when both of these states have similar balanced budget rules? The current research provides a framework for better understanding patterns; case studies of the individual states can provide further texture to this framework. Essentially, this research provides the starting point for state analysts and scholars to evaluate the robustness or vulnerability of state institutional, political, and economic systems to fiscal stress.

7.4 Contributions to Theoretical and Empirical Research

This study contributes to both theoretical literature and empirical research on fiscal stress. In this study, three theoretical frameworks – incrementalism, punctuated equilibrium, and cutback management theory – are compared in their ability to explain how states manage declining resources and fiscal stress. Most prior research comparing these theories was conducted at the local level (Pammer 1990; Bartle 1996; Jordan 2003; Levine et al 1981b; Lewis 1994; Rickards 1984). And, most research conducted at the state level does not review state responses in the 50 American states, rather must work uses a selection of case study states (Dougherty and Klase 2009). In this analysis, the comparison of state actions includes all U.S. states and covers eight years, using a standardized measure of fiscal stress and a single data source for state responses. As a result of this comparison, results are able to answer whether one theoretical framework is better than others at explaining patterns of state responses to stress. In fact, findings from this research indicate that no single theoretical framework of public budgeting explains how states respond to fiscal stress. Instead, it appears that states respond to particular and immediate needs, without engaging any specific strategy, similar to the findings of Pammer (1990) and Bartle (1996) conducted at the local level.

To the existing empirical research on fiscal stress, this study makes several contributions. This paper adds to the literature by (1) clarifying the meaning of fiscal stress and developing a measure of fiscal stress that can be duplicated from publically available data, (2) using the State Coincident Index developed by the Philadelphia Federal Reserve to capture the effect of state economic conditions on responses to fiscal stress, and (3) assessing the longer-term impacts of responses to fiscal stress by using a panel dataset over eight years. While there are multiple avenues for additional research on state fiscal stress, this analysis provides a basis for future research about government fiscal stress by providing a robust measure of the concept.

APPENDIX A

CLUSTER ANALYSIS RESULTS

State	Year	Budget	Cash	Long-Run	Service-Level
Alabama	2002	Moderate	Low	Low	Low
Alabama	2003	Low	Low	Low	Low
Alabama	2004	Low	Low	Low	Low
Alabama	2005	Low	Low	Low	Low
Alabama	2006	Low	Low	Low	Low
Alabama	2007	Moderate	Moderate	Low	Low
Alabama	2008	Moderate	Moderate	Low	Low
Alabama	2009	Moderate	Moderate	Low	Low
Alaska	2002	High	Low	Low	High
Alaska	2003	Low	Low	Low	High
Alaska	2004	Low	Low	Low	High
Alaska	2005	Low	Low	Low	High
Alaska	2006	Low	Moderate	Low	High
Alaska	2007	Low	Low	Low	High
Alaska	2008	Low	Low	Low	High
Alaska	2009	High	Low	Low	High
Arizona	2002	Moderate	High	Moderate	Low
Arizona	2003	Moderate	High	Moderate	Low
Arizona	2004	Moderate	High	Moderate	Moderate
Arizona	2005	Low	High	Moderate	Moderate
Arizona	2006	Low	High	Moderate	Moderate
Arizona	2007	Low	High	Moderate	Moderate
Arizona	2008	Moderate	High	Moderate	Moderate
Arizona	2009	High	High	Moderate	Low
Arkansas	2002	Moderate	Moderate	Moderate	Moderate
Arkansas	2003	Moderate	Moderate	Moderate	Moderate
Arkansas	2004	Low	Moderate	Moderate	Moderate
Arkansas	2005	Low	Moderate	Moderate	Moderate
Arkansas	2006	Moderate	Moderate	Moderate	Moderate
Arkansas	2007	Moderate	Moderate	Moderate	Moderate
Arkansas	2008	Moderate	Moderate	Moderate	Moderate
Arkansas	2009	Moderate	Moderate	Moderate	Moderate
California	2002	High	High	High	Moderate
California	2003	High	High	High	Moderate
California	2004	Moderate	High	High	Moderate
California	2005	Moderate	High	High	High
California	2006	Moderate	High	High	High
California	2007	Moderate	High	High	High
California	2008	Moderate	High	High	High
California	2009	High	High	High	High
Colorado	2002	Moderate	High	Moderate	Low

State	Year	Budget	Cash	Long-Run	Service-Level
Colorado	2003	Moderate	High	Moderate	Low
Colorado	2004	Moderate	High	Moderate	Low
Colorado	2005	Moderate	High	Moderate	Low
Colorado	2006	Low	High	Moderate	Low
Colorado	2007	Low	High	Moderate	Low
Colorado	2008	Moderate	High	Moderate	Low
Colorado	2009	Moderate	High	Moderate	Low
Connecticut	2002	High	High	High	High
Connecticut	2003	Moderate	High	High	High
Connecticut	2004	Moderate	High	High	High
Connecticut	2005	Moderate	High	High	High
Connecticut	2006	Moderate	High	High	High
Connecticut	2007	Moderate	High	High	High
Connecticut	2008	High	High	High	High
Connecticut	2009	High	High	High	High
Delaware	2002	Moderate	High	Moderate	High
Delaware	2003	Moderate	High	Moderate	High
Delaware	2004	Low	High	Moderate	High
Delaware	2005	Low	High	Moderate	High
Delaware	2006	Low	High	Moderate	High
Delaware	2007	Low	High	Moderate	High
Delaware	2008	Moderate	High	Moderate	High
Delaware	2009	High	High	High	High
Florida	2002	Low	High	Moderate	Low
Florida	2003	Low	High	Moderate	Low
Florida	2004	Low	High	Moderate	Low
Florida	2005	Moderate	High	Moderate	Low
Florida	2006	Moderate	Moderate	Moderate	Low
Florida	2007	Low	Moderate	Moderate	Low
Florida	2008	Moderate	Moderate	High	Low
Florida	2009	Moderate	Moderate	High	Low
Georgia	2002	Moderate	Moderate	Moderate	Low
Georgia	2003	Moderate	Moderate	Moderate	Low
Georgia	2004	Moderate	Moderate	Moderate	Low
Georgia	2005	Moderate	High	Moderate	Low
Georgia	2006	Moderate	High	Moderate	Low
Georgia	2007	Low	Moderate	Moderate	Low
Georgia	2008	Moderate	High	Moderate	Low
Georgia	2009	Moderate	High	Moderate	Low
Hawaii	2002	Moderate	Low	High	High
Hawaii	2003	High	Low	High	High
Hawaii	2004	Moderate	Low	High	High
Hawaii	2005	Low	Low	High	High
Hawaii	2006	Moderate	Low	High	High
Hawaii	2007	Moderate	Moderate	High	High
Hawaii	2008	High	Moderate	High	High
Hawaii	2009	High	High	High	High
Idaho	2002	Moderate	Low	Low	Moderate
Idaho	2003	Moderate	Low	Low	Low

State	Year	Budget	Cash	Long-Run	Service-Level
Idaho	2004	Low	Moderate	Low	Moderate
Idaho	2005	Low	Moderate	Low	Moderate
Idaho	2006	Low	Moderate	Low	Moderate
Idaho	2007	Low	Moderate	Low	Moderate
Idaho	2008	Low	Moderate	Moderate	Moderate
Idaho	2009	Moderate	Moderate	Moderate	Moderate
Illinois	2002	High	High	High	Moderate
Illinois	2003	Moderate	High	High	Moderate
Illinois	2004	Moderate	High	High	Moderate
Illinois	2005	Moderate	High	High	Moderate
Illinois	2006	Moderate	High	High	Moderate
Illinois	2007	Moderate	High	High	Moderate
Illinois	2008	Moderate	High	High	Moderate
Illinois	2009	High	High	High	Moderate
Indiana	2002	Moderate	High	Moderate	Low
Indiana	2003	Moderate	High	Moderate	Low
Indiana	2004	Moderate	High	Moderate	Moderate
Indiana	2005	Moderate	High	Moderate	Moderate
Indiana	2006	Low	High	Low	Moderate
Indiana	2007	Moderate	Moderate	Low	Moderate
Indiana	2008	Moderate	Moderate	Low	Moderate
Indiana	2009	Moderate	Moderate	Low	Moderate
Iowa	2002	Moderate	Moderate	Moderate	Moderate
Iowa	2003	Moderate	Moderate	Moderate	Moderate
Iowa	2004	Moderate	Moderate	Moderate	Moderate
Iowa	2005	Moderate	Moderate	Moderate	Moderate
Iowa	2006	Low	Moderate	Moderate	Moderate
Iowa	2007	Low	Moderate	Moderate	Moderate
Iowa	2008	Moderate	Moderate	Moderate	Moderate
Iowa	2009	Moderate	Moderate	Moderate	Moderate
Kansas	2002	Moderate	Moderate	Moderate	Moderate
Kansas	2003	Moderate	High	Moderate	Moderate
Kansas	2004	Moderate	High	Moderate	Moderate
Kansas	2005	Low	High	Moderate	Moderate
Kansas	2006	Moderate	High	Moderate	Moderate
Kansas	2007	Low	High	Moderate	Moderate
Kansas	2008	Moderate	High	Moderate	Moderate
Kansas	2009	Moderate	High	Moderate	Moderate
Kentucky	2002	Moderate	Moderate	Moderate	Moderate
Kentucky	2003	Low	Moderate	Moderate	Moderate
Kentucky	2004	Moderate	High	Moderate	Moderate
Kentucky	2005	Low	High	Moderate	Moderate
Kentucky	2006	Moderate	High	Moderate	Moderate
Kentucky	2007	Moderate	Moderate	Moderate	Moderate
Kentucky	2008	Moderate	High	Moderate	Moderate
Kentucky	2009	High	High	High	Moderate
Louisiana	2002	Low	Moderate	Moderate	Moderate
Louisiana	2003	Moderate	Moderate	Moderate	Moderate
Louisiana	2004	Moderate	Moderate	Moderate	Moderate

State	Year	Budget	Cash	Long-Run	Service-Level
Louisiana	2005	Low	Low	Moderate	Moderate
Louisiana	2006	Low	Moderate	Moderate	Moderate
Louisiana	2007	Low	Moderate	Moderate	High
Louisiana	2008	Low	Moderate	Moderate	High
Louisiana	2009	Moderate	Moderate	Moderate	High
Maine	2002	Moderate	High	Moderate	Moderate
Maine	2003	Moderate	High	Moderate	Moderate
Maine	2004	Low	High	Moderate	Moderate
Maine	2005	Moderate	High	Moderate	Moderate
Maine	2006	Low	High	Moderate	High
Maine	2007	Low	High	Moderate	High
Maine	2008	Moderate	High	Moderate	High
Maine	2009	Moderate	High	Moderate	High
Maryland	2002	Moderate	High	Moderate	Moderate
Maryland	2003	Moderate	High	High	Moderate
Maryland	2004	Moderate	High	High	Moderate
Maryland	2005	Low	High	Moderate	Moderate
Maryland	2006	Low	High	Moderate	Moderate
Maryland	2007	Moderate	High	High	Moderate
Maryland	2008	Moderate	High	High	Moderate
Maryland	2009	High	High	High	Moderate
Massachusetts	2002	High	High	High	High
Massachusetts	2003	Moderate	High	High	High
Massachusetts	2004	Low	High	High	High
Massachusetts	2005	High	High	High	High
Massachusetts	2006	Low	High	High	High
Massachusetts	2007	Moderate	High	High	High
Massachusetts	2008	Moderate	High	High	High
Massachusetts	2009	High	High	High	High
Michigan	2002	Moderate	High	Moderate	Low
Michigan	2003	Moderate	High	Moderate	Low
Michigan	2004	Moderate	High	Moderate	Low
Michigan	2005	Moderate	High	Moderate	Low
Michigan	2006	Moderate	High	Moderate	Low
Michigan	2007	Moderate	High	Moderate	Low
Michigan	2008	Moderate	High	Moderate	Low
Michigan	2009	Moderate	High	High	Low
Minnesota	2002	Moderate	High	Moderate	High
Minnesota	2003	Moderate	High	Moderate	High
Minnesota	2004	Moderate	High	Moderate	High
Minnesota	2005	Low	High	Moderate	High
Minnesota	2006	Low	High	Moderate	High
Minnesota	2007	Low	High	Moderate	High
Minnesota	2008	Moderate	High	Moderate	High
Minnesota	2009	Moderate	High	Moderate	High
Mississippi	2002	Moderate	Moderate	Moderate	Moderate
Mississippi	2003	Moderate	High	Moderate	Moderate
Mississippi	2004	Moderate	Moderate	Moderate	Moderate
Mississippi	2005	Moderate	High	Moderate	Moderate

State	Year	Budget	Cash	Long-Run	Service-Level
Mississippi	2006	Low	High	Moderate	Moderate
Mississippi	2007	Low	High	Moderate	Moderate
Mississippi	2008	Moderate	High	Moderate	Moderate
Mississippi	2009	Moderate	High	Moderate	Moderate
Missouri	2002	Moderate	Moderate	Low	Low
Missouri	2003	Moderate	Moderate	Low	Low
Missouri	2004	Moderate	Moderate	Moderate	Low
Missouri	2005	Moderate	Moderate	Moderate	Low
Missouri	2006	Moderate	Moderate	Moderate	Low
Missouri	2007	Moderate	Low	Moderate	Low
Missouri	2008	Moderate	Low	Moderate	Low
Missouri	2009	Moderate	Moderate	Moderate	Low
Montana	2002	Low	Low	Low	Low
Montana	2003	Low	Moderate	Low	Low
Montana	2004	Low	Low	Low	Moderate
Montana	2005	Low	Low	Low	Moderate
Montana	2006	Low	Low	Low	Moderate
Montana	2007	Low	Low	Low	Moderate
Montana	2008	Low	Low	Low	Moderate
Montana	2009	Low	Low	Moderate	Moderate
Nebraska	2002	Moderate	High	Low	Low
Nebraska	2003	Moderate	Moderate	Low	Low
Nebraska	2004	Low	Moderate	Low	Low
Nebraska	2005	Low	Moderate	Low	Moderate
Nebraska	2006	Low	Moderate	Low	Moderate
Nebraska	2007	Low	Moderate	Low	Moderate
Nebraska	2008	Low	Moderate	Low	Moderate
Nebraska	2009	Moderate	Moderate	Low	Moderate
Nevada	2002	Moderate	Moderate	High	Low
Nevada	2003	Moderate	Moderate	High	Low
Nevada	2004	Low	Moderate	High	Low
Nevada	2005	Low	Moderate	High	Low
Nevada	2006	Low	Moderate	Moderate	Low
Nevada	2007	Moderate	High	Moderate	Low
Nevada	2008	Moderate	Moderate	Moderate	Low
Nevada	2009	High	Moderate	High	Low
New Hampshire	2002	Moderate	High	Moderate	Low
New Hampshire	2003	Moderate	High	Moderate	Low
New Hampshire	2004	Moderate	High	Moderate	Low
New Hampshire	2005	Low	High	Moderate	Low
New Hampshire	2006	Moderate	High	Moderate	Low
New Hampshire	2007	Low	High	Moderate	Low
New Hampshire	2008	Moderate	High	Moderate	Low
New Hampshire	2009	Moderate	High	Moderate	Low
New Jersey	2002	Moderate	High	High	Moderate
New Jersey	2003	Moderate	Moderate	High	High
New Jersey	2004	Moderate	Moderate	High	High
New Jersey	2005	High	Moderate	High	High
New Jersey	2006	Moderate	Moderate	High	High

State	Year	Budget	Cash	Long-Run	Service-Level
New Jersey	2007	Moderate	High	High	High
New Jersey	2008	Moderate	High	High	High
New Jersey	2009	High	High	High	High
New Mexico	2002	High	High	Moderate	High
New Mexico	2003	Moderate	High	Moderate	High
New Mexico	2004	Moderate	High	Moderate	High
New Mexico	2005	Moderate	High	Moderate	High
New Mexico	2006	Moderate	High	Moderate	High
New Mexico	2007	Low	High	Moderate	High
New Mexico	2008	Moderate	High	Moderate	High
New Mexico	2009	High	High	Moderate	High
New York	2003	Moderate	High	High	High
New York	2004	Moderate	High	High	High
New York	2005	Moderate	High	High	High
New York	2006	Low	High	High	High
New York	2007	Moderate	High	High	High
New York	2008	Moderate	High	High	High
New York	2009	High	High	High	High
North Carolina	2002	Moderate	High	Moderate	Low
North Carolina	2003	Moderate	High	Moderate	Low
North Carolina	2004	Moderate	High	Moderate	Low
North Carolina	2005	Moderate	High	Moderate	Moderate
North Carolina	2006	Low	High	Moderate	Moderate
North Carolina	2007	Low	High	Moderate	Moderate
North Carolina	2008	Moderate	High	Moderate	Moderate
North Carolina	2009	Moderate	High	Moderate	Moderate
North Dakota	2002	Moderate	Moderate	High	Moderate
North Dakota	2003	Moderate	Moderate	High	Moderate
North Dakota	2004	Low	Moderate	High	Moderate
North Dakota	2005	Low	Moderate	High	Moderate
North Dakota	2006	Low	Moderate	High	High
North Dakota	2007	Low	Moderate	Moderate	High
North Dakota	2008	Low	Moderate	Moderate	High
North Dakota	2009	Low	Moderate	Moderate	High
Ohio	2002	High	Moderate	High	Moderate
Ohio	2003	Moderate	Moderate	High	Moderate
Ohio	2004	Moderate	Moderate	Moderate	Moderate
Ohio	2005	Moderate	Moderate	High	Moderate
Ohio	2006	Moderate	Moderate	High	Moderate
Ohio	2007	Low	Moderate	High	Moderate
Ohio	2008	Moderate	Moderate	High	Moderate
Ohio	2009	Moderate	Moderate	High	Moderate
Oklahoma	2002	Moderate	Moderate	Low	Low
Oklahoma	2003	Moderate	Moderate	Low	Low
Oklahoma	2004	Low	High	Low	Low
Oklahoma	2005	Low	High	Moderate	Low
Oklahoma	2006	Low	High	Moderate	Moderate
Oklahoma	2007	Low	High	Moderate	Moderate
Oklahoma	2008	Low	High	Moderate	Moderate

State	Year	Budget	Cash	Long-Run	Service-Level
Oklahoma	2009	Moderate	Moderate	Moderate	Moderate
Oregon	2002	Moderate	High	Moderate	Moderate
Oregon	2003	Moderate	High	Moderate	Moderate
Oregon	2004	High	High	High	Moderate
Oregon	2005	Moderate	High	High	Moderate
Oregon	2006	Low	Moderate	High	Moderate
Oregon	2007	Moderate	High	High	Moderate
Oregon	2008	Moderate	High	High	Moderate
Oregon	2009	High	High	High	Moderate
Pennsylvania	2002	Moderate	High	Moderate	Moderate
Pennsylvania	2003	Moderate	High	Moderate	Moderate
Pennsylvania	2004	Moderate	High	Moderate	Moderate
Pennsylvania	2005	Moderate	High	Moderate	Moderate
Pennsylvania	2006	Low	High	Moderate	Moderate
Pennsylvania	2007	Moderate	High	Moderate	Moderate
Pennsylvania	2008	Moderate	High	Moderate	Moderate
Pennsylvania	2009	Moderate	High	Moderate	Moderate
Rhode Island	2002	Moderate	High	High	High
Rhode Island	2003	Moderate	High	High	High
Rhode Island	2004	Moderate	High	High	High
Rhode Island	2005	Moderate	High	High	High
Rhode Island	2006	Moderate	High	High	High
Rhode Island	2007	Moderate	High	High	High
Rhode Island	2008	Moderate	High	High	High
Rhode Island	2009	Moderate	High	High	High
South Carolina	2002	Moderate	High	Moderate	Moderate
South Carolina	2003	Moderate	High	Moderate	Moderate
South Carolina	2004	Low	High	Moderate	Moderate
South Carolina	2005	Low	High	Moderate	Moderate
South Carolina	2006	Low	High	Moderate	Moderate
South Carolina	2007	Low	High	Moderate	Moderate
South Carolina	2008	Moderate	High	Moderate	Moderate
South Carolina	2009	Moderate	High	Moderate	Moderate
South Dakota	2002	Moderate	Moderate	Low	Low
South Dakota	2003	Low	Moderate	Moderate	Low
South Dakota	2004	Low	Low	Moderate	Low
South Dakota	2005	Low	Low	Moderate	Low
South Dakota	2006	Low	Low	Moderate	Low
South Dakota	2007	Low	Moderate	Moderate	Low
South Dakota	2008	Moderate	Low	Moderate	Low
South Dakota	2009	Moderate	Low	Moderate	Low
Tennessee	2002	Moderate	Moderate	Low	Low
Tennessee	2003	Moderate	Moderate	Low	Low
Tennessee	2004	Low	Moderate	Low	Low
Tennessee	2005	Low	Moderate	Low	Low
Tennessee	2006	Low	Moderate	Low	Low
Tennessee	2007	Low	Moderate	Low	Low
Tennessee	2008	Moderate	Moderate	Low	Low
Tennessee	2009	Moderate	Moderate	Low	Low

State	Year	Budget	Cash	Long-Run	Service-Level
Texas	2002	Moderate	High	Moderate	Low
Texas	2003	Moderate	High	Moderate	Low
Texas	2004	Low	High	Moderate	Low
Texas	2005	Low	High	Moderate	Low
Texas	2006	Low	High	Moderate	Low
Texas	2007	Low	High	Moderate	Low
Texas	2008	Moderate	High	Moderate	Low
Texas	2009	High	High	Moderate	Low
Utah	2002	Moderate	Low	Moderate	Low
Utah	2003	Moderate	Low	Moderate	Low
Utah	2004	Moderate	Low	Moderate	Low
Utah	2005	Low	Low	Moderate	Low
Utah	2006	Low	Low	Moderate	Low
Utah	2007	Low	Low	Moderate	Low
Utah	2008	Low	Low	Moderate	Low
Utah	2009	Moderate	Low	Moderate	Low
Vermont	2002	Moderate	Moderate	Moderate	High
Vermont	2003	Moderate	High	Moderate	High
Vermont	2004	Low	High	Moderate	High
Vermont	2005	Moderate	High	Moderate	High
Vermont	2006	Low	High	Moderate	High
Vermont	2007	Moderate	High	Moderate	High
Vermont	2008	Moderate	High	Moderate	High
Vermont	2009	Moderate	High	Moderate	High
Virginia	2002	Moderate	High	Moderate	Low
Virginia	2003	Moderate	High	Moderate	Low
Virginia	2004	Low	High	Moderate	Low
Virginia	2005	Low	Moderate	Moderate	Low
Virginia	2006	Low	High	Moderate	Moderate
Virginia	2007	Moderate	High	Moderate	Moderate
Virginia	2008	Moderate	High	Moderate	Moderate
Virginia	2009	Moderate	High	Moderate	Low
Washington	2002	Moderate	High	High	High
Washington	2003	Low	High	High	High
Washington	2004	Moderate	High	High	High
Washington	2005	Low	High	High	High
Washington	2006	Low	Moderate	High	High
Washington	2007	Low	Moderate	High	High
Washington	2008	Moderate	Moderate	High	High
Washington	2009	High	Moderate	High	High
West Virginia	2002	Moderate	High	High	High
West Virginia	2003	Moderate	High	High	High
West Virginia	2004	Low	High	High	High
West Virginia	2005	Low	Moderate	High	High
West Virginia	2006	Low	Moderate	High	High
West Virginia	2007	Low	Moderate	High	High
West Virginia	2008	Low	Moderate	Moderate	High
West Virginia	2009	Moderate	Moderate	Moderate	High
Wisconsin	2002	Moderate	High	Moderate	Moderate

State	Year	Budget	Cash	Long-Run	Service-Level
Wisconsin	2003	Moderate	High	Moderate	Moderate
Wisconsin	2004	Moderate	High	High	Moderate
Wisconsin	2005	Moderate	High	High	Moderate
Wisconsin	2006	Moderate	High	High	Moderate
Wisconsin	2007	Moderate	High	High	Moderate
Wisconsin	2008	Moderate	High	High	Moderate
Wisconsin	2009	Moderate	High	High	Moderate
Wyoming	2002	Low	Moderate	Moderate	High
Wyoming	2003	Low	Moderate	Moderate	High
Wyoming	2004	Low	High	Moderate	High
Wyoming	2005	Low	High	Moderate	High
Wyoming	2006	Low	High	Moderate	High
Wyoming	2007	Low	High	Moderate	High
Wyoming	2008	Low	High	Low	High
Wyoming	2009	High	High	Moderate	High

APPENDIX B

STATE RESPONSE PROFILES

State	Year	Budget Fiscal Stress Score	Rainy Day	Across-the-Board Cuts	Hiring Freeze	Re- Org	Early Retirement	Targeted Cuts	Privatization	Reduce Local Aid	Fees	Furlough	Layoffs	Tax
Alabama	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Alabama	2003	Low	1	1	0	0	0	0	0	0	0	0	0	0
Alabama	2004	Low	0	0	0	0	0	0	0	0	0	0	0	0
Alabama	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Alabama	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Alabama	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Alabama	2008	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
Alabama	2009	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
Alaska	2002	High	0	0	0	0	0	0	0	0	0	0	0	0
Alaska	2003	Low	0	0	0	0	0	0	0	0	0	0	0	0
Alaska	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Alaska	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Alaska	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Alaska	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Alaska	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Alaska	2009	High	1	0	0	0	0	1	0	0	0	0	0	0
Arizona	2002	Moderate	1	1	0	1	0	0	1	0	0	0	1	0
Arizona	2003	Moderate	1	1	0	1	0	0	0	0	0	0	1	0
Arizona	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Arizona	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Arizona	2008	Moderate	0	0	0	0	0	1	0	0	0	0	0	0
Arizona	2009	High	1	1	0	0	0	1	0	1	1	1	1	1
Arkansas	2002	Moderate	0	1	0	1	0	0	0	0	1	0	1	0
Arkansas	2003	Moderate	1	1	0	0	0	0	0	0	1	0	1	0
Arkansas	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Arkansas	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Arkansas	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Arkansas	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Arkansas	2008	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Arkansas	2009	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
California	2002	High	0	1	1	1	0	0	0	1	0	0	0	0
California	2003	High	0	1	0	1	1	0	0	0	1	1	1	0
California	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
California	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
California	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
California	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
California	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
California	2009	High	1	0	0	0	0	1	0	1	1	0	1	1
Colorado	2002	Moderate	0	1	1	1	0	0	0	1	0	0	0	0
Colorado	2003	Moderate	0	1	0	1	1	0	0	0	1	1	1	0
Colorado	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Colorado	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Colorado	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Colorado	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Colorado	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Colorado	2009	Moderate	1	0	0	0	0	1	0	1	1	0	1	0

State	Year	Budget Fiscal Stress Score	Rainy Day	Across-the-Board Cuts	Hiring Freeze	Re- Org	Early Retirement	Targeted Cuts	Privatization	Reduce Local Aid	Fees	Furlough	Layoffs	Tax
Connecticut	2002	High	1	0	0	0	0	0	0	0	0	0	0	0
Connecticut	2003	Moderate	0	1	0	1	1	0	0	1	1	0	1	1
Connecticut	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Connecticut	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Connecticut	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Connecticut	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Connecticut	2008	High	0	0	0	0	0	0	0	0	0	0	0	1
Connecticut	2009	High	0	1	0	0	1	1	0	0	0	1	0	0
Delaware	2002	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Delaware	2003	Moderate	0	1	1	1	0	0	0	0	0	0	0	0
Delaware	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Delaware	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Delaware	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Delaware	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Delaware	2008	Moderate	0	1	1	1	0	0	0	0	0	0	0	1
Delaware	2009	High	0	1	0	0	0	1	0	0	0	0	0	1
Florida	2002	Low	0	1	0	0	0	0	0	0	0	0	0	0
Florida	2003	Low	0	0	0	0	0	0	0	0	0	0	0	0
Florida	2004	Low	0	0	0	0	0	0	0	0	0	0	0	0
Florida	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Florida	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Florida	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Florida	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Florida	2009	Moderate	1	0	0	0	0	1	0	0	1	0	0	0
Georgia	2002	Moderate	0	1	0	1	0	0	0	0	0	0	0	0
Georgia	2003	Moderate	1	1	0	1	0	0	0	0	1	0	0	0
Georgia	2004	Moderate	1	1	0	1	0	0	0	1	0	1	1	1
Georgia	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Georgia	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Georgia	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Georgia	2008	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
Georgia	2009	Moderate	1	1	0	1	0	1	0	0	0	1	1	0
Hawaii	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii	2003	High	0	1	0	0	0	0	0	0	0	0	0	1
Hawaii	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Hawaii	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii	2008	High	0	0	0	0	0	0	0	0	0	0	0	0
Hawaii	2009	High	1	1	0	0	0	0	0	0	0	0	0	0
Idaho	2002	Moderate	1	1	0	1	1	0	0	0	0	1	1	0
Idaho	2003	Moderate	1	1	0	1	1	0	0	0	1	1	1	0
Idaho	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Idaho	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Idaho	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Idaho	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
Idaho	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Idaho	2009	Moderate	1	0	0	0	0	0	0	0	1	1	1	0
Illinois	2002	High	0	1	1	1	0	0	0	0	0	1	1	0
Illinois	2003	Moderate	0	0	0	0	1	0	0	0	0	0	0	1
Illinois	2004	Moderate	1	1	0	1	0	0	0	0	1	0	0	1
Illinois	2005	Moderate	0	0	0	1	0	0	0	0	0	0	1	1
Illinois	2006	Moderate	0	1	0	1	0	0	1	0	0	0	0	0
Illinois	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Illinois	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0

State	Year	Budget Fiscal Stress Score	Rainy Day	Across-the-Board Cuts	Hiring Freeze	Re- Org	Early Retirement	Targeted Cuts	Privatization	Reduce Local Aid	Fees	Furlough	Layoffs	Tax
Illinois	2009	High	1	1	0	0	0	1	0	0	1	0	1	0
Indiana	2002	Moderate	1	1	0	0	0	0	0	0	1	0	0	0
Indiana	2003	Moderate	0	1	0	0	1	0	0	1	1	1	0	1
Indiana	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Indiana	2005	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Indiana	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Indiana	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Indiana	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Indiana	2009	Moderate	0	1	0	0	0	1	1	0	0	0	0	0
Iowa	2002	Moderate	1	1	0	1	1	0	0	1	0	1	1	0
Iowa	2003	Moderate	1	0	0	0	0	0	0	0	0	0	0	1
Iowa	2004	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Iowa	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Iowa	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Iowa	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Iowa	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Iowa	2009	Moderate	0	1	0	0	0	1	0	0	0	0	0	0
Kansas	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Kansas	2003	Moderate	0	1	0	0	0	0	0	1	1	0	0	1
Kansas	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Kansas	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Kansas	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Kansas	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Kansas	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Kansas	2009	Moderate	0	1	0	0	0	1	0	1	0	0	0	1
Kentucky	2002	Moderate	1	0	0	0	0	1	0	0	0	0	0	0
Kentucky	2003	Low	0	1	0	0	0	0	0	0	0	0	0	0
Kentucky	2004	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
Kentucky	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Kentucky	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Kentucky	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Kentucky	2008	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Kentucky	2009	High	1	1	0	0	0	1	0	0	0	0	0	0
Louisiana	2002	Low	0	0	0	0	0	0	0	0	0	0	0	0
Louisiana	2003	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
Louisiana	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Louisiana	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Louisiana	2006	Low	1	1	0	0	1	0	0	0	0	1	1	0
Louisiana	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Louisiana	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Louisiana	2009	Moderate	0	1	0	0	1	0	0	0	0	1	1	0
Maine	2002	Moderate	1	0	1	0	0	1	0	0	0	0	0	1
Maine	2003	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Maine	2004	Low	0	0	0	0	0	1	0	0	0	0	0	0
Maine	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Maine	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Maine	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
Maine	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Maine	2009	Moderate	1	1	0	0	0	0	0	1	0	0	0	1
Maryland	2002	Moderate	1	1	1	0	0	0	0	0	0	0	0	0
Maryland	2003	Moderate	0	0	0	0	0	1	0	0	0	0	0	1
Maryland	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Maryland	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Maryland	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Maryland	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0

State	Year	Budget Fiscal Stress Score	Rainy Day	Across-the-Board Cuts	Hiring Freeze	Re- Org	Early Retirement	Targeted Cuts	Privatization	Reduce Local Aid	Fees	Furlough	Layoffs	Tax
Maryland	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Maryland	2009	High	1	1	0	0	0	1	0	1	0	1	1	1
Massachusetts	2002	High	1	0	0	0	1	0	0	1	0	1	1	0
Massachusetts	2003	Moderate	1	0	0	1	1	0	0	1	1	1	1	1
Massachusetts	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Massachusetts	2005	High	0	0	0	0	0	0	0	0	0	0	0	1
Massachusetts	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Massachusetts	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Massachusetts	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Massachusetts	2009	High	1	1	0	1	0	1	0	1	1	1	1	0
Michigan	2002	Moderate	1	1	0	1	1	0	0	1	1	0	1	0
Michigan	2003	Moderate	1	1	1	0	1	0	0	1	1	0	0	1
Michigan	2004	Moderate	0	0	0	0	0	0	0	1	1	1	0	1
Michigan	2005	Moderate	1	1	0	0	0	0	0	1	0	0	0	1
Michigan	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Michigan	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Michigan	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Michigan	2009	Moderate	0	1	0	0	0	1	0	1	0	1	1	0
Minnesota	2002	Moderate	1	1	0	1	0	0	0	1	0	0	1	1
Minnesota	2003	Moderate	1	1	0	1	1	0	0	0	1	0	1	1
Minnesota	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Minnesota	2005	Low	0	1	0	0	0	0	0	0	0	0	0	0
Minnesota	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Minnesota	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Minnesota	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Minnesota	2009	Moderate	1	0	0	0	0	1	0	1	0	0	0	1
Mississippi	2002	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
Mississippi	2003	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
Mississippi	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Mississippi	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Mississippi	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Mississippi	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Mississippi	2008	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
Mississippi	2009	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
Missouri	2002	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Missouri	2003	Moderate	0	0	0	0	0	0	0	0	0	0	1	1
Missouri	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Missouri	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Missouri	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Missouri	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Missouri	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Missouri	2009	Moderate	0	1	0	0	0	1	0	0	0	0	1	0
Montana	2002	Low	0	0	0	0	0	0	0	0	0	0	0	0
Montana	2003	Low	0	1	1	0	0	1	0	1	0	0	0	0
Montana	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Montana	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Montana	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Montana	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0

State	Year	Budget Fiscal Stress Score	Rainy Day	Across-the-Board Cuts	Hiring Freeze	Re- Org	Early Retirement	Targeted Cuts	Privatization	Reduce Local Aid	Fees	Furlough	Layoffs	Tax
Montana	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Montana	2009	Low	0	0	0	0	0	0	0	0	0	0	0	0
Nebraska	2002	Moderate	1	1	0	1	0	0	0	1	0	0	1	0
Nebraska	2003	Moderate	1	1	0	1	0	0	0	1	0	0	1	1
Nebraska	2004	Low	0	1	0	0	0	1	0	0	0	0	1	1
Nebraska	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Nebraska	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Nebraska	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Nebraska	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Nebraska	2009	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Nevada	2003	Moderate	1	1	0	1	0	0	0	0	0	1	1	0
Nevada	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Nevada	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Nevada	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Nevada	2008	Moderate	1	1	0	1	0	0	0	0	0	0	0	0
Nevada	2009	High	0	1	0	0	1	1	1	1	1	0	1	0
New Hampshire	2002	Moderate	0	1	1	0	0	0	0	0	0	0	0	1
New Hampshire	2003	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
New Hampshire	2004	Moderate	0	0	1	0	0	0	0	0	0	0	0	0
New Hampshire	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New Hampshire	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	2008	Moderate	0	1	0	0	0	1	0	0	0	0	0	1
New Hampshire	2009	Moderate	1	0	1	0	0	1	0	0	0	0	0	0
New Jersey	2002	Moderate	1	1	0	0	0	0	0	0	0	1	1	1
New Jersey	2003	Moderate	0	0	0	0	0	0	0	0	1	0	0	1
New Jersey	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New Jersey	2005	High	0	0	0	0	0	0	0	0	0	0	0	1
New Jersey	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New Jersey	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New Jersey	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
New Jersey	2009	High	1	1	0	0	0	1	0	1	1	1	0	0
New Mexico	2002	High	0	0	0	0	0	0	0	0	0	0	0	0
New Mexico	2003	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
New Mexico	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New Mexico	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New Mexico	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
New Mexico	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
New Mexico	2008	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
New Mexico	2009	High	1	1	0	0	0	1	0	0	0	0	0	0

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Mexico														
New York	2003	Moderate	0	0	0	0	1	0	0	0	1	0	0	1
New York	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
New York	2005	Moderate	0	1	0	1	0	0	0	0	0	0	0	1
New York	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
New York	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
New York	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
New York	2009	High	0	1	0	0	0	1	0	1	1	0	0	1
North Carolina	2002	Moderate	1	1	0	1	0	0	1	0	0	0	1	1
North Carolina	2003	Moderate	1	1	0	1	0	0	0	0	0	0	1	1
North Carolina	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
North Carolina	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
North Carolina	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
North Carolina	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
North Carolina	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
North Carolina	2009	Moderate	1	1	0	0	0	1	0	1	0	0	0	0
North Dakota	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
North Dakota	2003	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
North Dakota	2004	Low	0	0	0	0	0	0	0	0	0	0	0	0
North Dakota	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
North Dakota	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
North Dakota	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
North Dakota	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
North Dakota	2009	Low	0	0	0	0	0	0	0	0	0	0	0	0
Ohio	2002	High	1	1	0	0	1	0	0	1	0	0	1	1
Ohio	2003	Moderate	1	1	0	0	1	0	0	0	0	0	1	1
Ohio	2004	Moderate	0	0	0	0	1	1	0	0	0	0	1	1
Ohio	2005	Moderate	0	0	0	0	0	1	0	0	0	0	0	0
Ohio	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Ohio	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Ohio	2008	Moderate	0	1	0	0	1	0	0	0	0	0	1	0
Ohio	2009	Moderate	1	1	0	1	1	1	0	0	0	0	1	0
Oklahoma	2002	Moderate	1	1	0	0	0	0	0	0	0	1	0	0
Oklahoma	2003	Moderate	1	1	0	0	0	0	0	0	0	1	1	1
Oklahoma	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Oklahoma	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Oklahoma	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Oklahoma	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Oklahoma	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Oklahoma	2009	Moderate	0	0	0	0	0	0	0	0	0	0	0	0

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Oregon	2002	Moderate	1	1	0	1	0	0	0	1	0	0	1	1
Oregon	2003	Moderate	1	1	0	0	0	0	0	1	0	0	0	1
Oregon	2004	High	0	0	0	0	0	0	0	0	0	0	0	1
Oregon	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Oregon	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Oregon	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Oregon	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Oregon	2009	High	1	0	0	0	0	1	0	1	0	1	1	0
Pennsylvania	2002	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	2003	Moderate	1	0	0	0	0	0	0	0	0	0	0	1
Pennsylvania	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	2009	Moderate	0	1	0	0	0	1	0	0	0	0	0	0
Rhode Island	2002	Moderate	0	0	0	0	0	0	0	0	1	0	0	1
Rhode Island	2003	Moderate	0	1	1	0	0	0	0	0	1	0	0	1
Rhode Island	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Rhode Island	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Rhode Island	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Rhode Island	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Rhode Island	2008	Moderate	1	1	0	1	0	0	0	1	1	0	1	1
Rhode Island	2009	Moderate	1	1	0	0	0	1	0	1	1	1	0	1
South Carolina	2002	Moderate	1	1	0	0	0	0	0	0	0	0	0	1
South Carolina	2003	Moderate	1	1	0	0	1	0	0	0	0	1	1	0
South Carolina	2004	Low	0	1	0	0	0	0	0	0	0	0	0	0
South Carolina	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
South Carolina	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
South Carolina	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
South Carolina	2008	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
South Carolina	2009	Moderate	1	1	0	0	1	1	0	1	0	1	1	0
South Dakota	2002	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
South Dakota	2003	Low	1	0	0	0	0	0	0	0	0	0	0	0

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Dakota														
South Dakota	2004	Low	1	0	0	0	0	0	0	0	0	0	0	1
South Dakota	2005	Low	1	0	0	0	0	0	0	0	0	0	0	0
South Dakota	2006	Low	1	0	0	0	0	0	0	0	0	0	0	0
South Dakota	2007	Low	1	0	0	0	0	0	0	0	0	0	0	0
South Dakota	2008	Moderate	1	0	0	0	0	0	0	0	0	0	0	1
South Dakota	2009	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	2002	Moderate	1	0	0	0	0	0	0	0	0	0	0	0
Tennessee	2003	Moderate	1	0	0	0	0	0	0	0	0	0	0	1
Tennessee	2004	Low	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Tennessee	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
Tennessee	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Tennessee	2009	Moderate	1	0	0	0	0	0	0	0	0	0	0	1
Texas	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Texas	2003	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Texas	2004	Low	0	0	0	0	0	0	0	0	0	0	0	0
Texas	2005	Low	1	0	0	0	0	0	0	0	0	0	0	0
Texas	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Texas	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
Texas	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Texas	2009	High	0	0	0	0	0	0	0	0	0	0	0	0
Utah	2002	Moderate	1	1	0	1	0	0	0	1	1	0	1	0
Utah	2003	Moderate	0	1	1	0	0	0	0	0	1	0	1	1
Utah	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Utah	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Utah	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Utah	2007	Low	0	0	0	0	0	0	0	0	0	0	0	0
Utah	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Utah	2009	Moderate	0	0	0	0	0	0	0	0	1	0	1	0
Vermont	2002	Moderate	1	1	1	0	0	0	0	0	0	0	0	0
Vermont	2003	Moderate	0	1	0	0	0	0	0	0	0	0	0	1
Vermont	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Vermont	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Vermont	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Vermont	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Vermont	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Vermont	2009	Moderate	0	0	0	1	0	1	0	0	0	0	0	0
Virginia	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	2003	Moderate	1	1	0	1	1	0	0	1	1	1	1	0
Virginia	2004	Low	0	0	0	0	0	0	0	0	0	0	0	1
Virginia	2005	Low	0	0	0	0	0	0	0	0	0	0	0	1
Virginia	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	2007	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Virginia	2008	Moderate	1	1	0	1	0	0	0	1	0	0	1	0
Virginia	2009	Moderate	1	0	0	1	0	1	1	1	1	1	1	0
Washington	2002	Moderate	1	1	0	0	0	0	0	0	0	0	0	0
Washington	2003	Low	0	0	0	0	0	0	0	0	0	0	0	0
Washington	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1

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Washington	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Washington	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
Washington	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
Washington	2008	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Washington	2009	High	0	0	0	0	1	1	0	0	0	1	1	0
West Virginia	2002	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
West Virginia	2003	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
West Virginia	2004	Low	0	0	0	0	0	1	0	0	0	0	0	1
West Virginia	2005	Low	0	1	0	0	0	0	0	0	0	0	0	1
West Virginia	2006	Low	0	0	0	0	0	0	0	0	0	0	0	1
West Virginia	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
West Virginia	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
West Virginia	2009	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Wisconsin	2002	Moderate	0	1	0	0	0	0	0	0	0	0	1	1
Wisconsin	2003	Moderate	0	1	0	0	0	0	0	0	0	1	0	0
Wisconsin	2004	Moderate	0	0	0	0	0	0	0	0	0	0	0	1
Wisconsin	2005	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Wisconsin	2006	Moderate	0	0	0	0	0	0	0	0	0	0	0	0
Wisconsin	2007	Moderate	0	1	0	0	0	0	0	0	0	0	0	0
Wisconsin	2008	Moderate	1	1	0	0	0	0	0	0	0	0	0	1
Wisconsin	2009	Moderate	0	1	0	1	0	1	0	1	1	0	1	0
Wyoming	2002	Low	0	0	0	0	0	0	0	0	0	0	0	0
Wyoming	2003	Low	0	0	0	0	0	0	0	0	0	0	0	0
Wyoming	2004	Low	0	0	0	0	0	0	0	0	0	0	0	0
Wyoming	2005	Low	0	0	0	0	0	0	0	0	0	0	0	0
Wyoming	2006	Low	0	0	0	0	0	0	0	0	0	0	0	0
Wyoming	2007	Low	0	0	0	0	0	0	0	0	0	0	0	1
Wyoming	2008	Low	0	0	0	0	0	0	0	0	0	0	0	0
Wyoming	2009	High	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX C

STRUCTURAL BALANCE

The table below shows the Government Performance Project Scores for each state concerning its capacity to achieve structural balance. Thirty states have the same scores between 2005 and 2008. Twenty states have different scores. Of these twenty, eleven switched between mid-level and weakness or vice versa.

State	Structural Balance Score		Different
	2005	2008	
Alabama	Weakness	Weakness	No
Alaska	Weakness	Mid-level	Yes
Arizona	Mid-level	Weakness	Yes
Arkansas	Mid-level	Mid-level	No
California	Weakness	Weakness	No
Colorado	Weakness	Mid-level	Yes
Connecticut	Mid-level	Mid-level	No
Delaware	Strength	Strength	No
Florida	Mid-level	Mid-level	No
Georgia	Mid-level	Strength	Yes
Hawaii	Weakness	Mid-level	Yes
Idaho	Mid-level	Strength	Yes
Illinois	Mid-level	Weakness	Yes
Indiana	Weakness	Strength	Yes
Iowa	Mid-level	Mid-level	No
Kansas	Strength	Mid-level	Yes
Kentucky	Mid-level	Mid-level	No
Louisiana	Mid-level	Mid-level	No
Maine	Weakness	Weakness	No
Maryland	Mid-level	Mid-level	No
Massachusetts	Mid-level	Weakness	Yes
Michigan	Weakness	Weakness	No
Minnesota	Strength	Mid-level	Yes
Mississippi	Mid-level	Mid-level	No
Missouri	Mid-level	Mid-level	No
Montana	Weakness	Mid-level	Yes
Nebraska	Mid-level	Strength	Yes
Nevada	Mid-level	Mid-level	No
New Hampshire	Weakness	Weakness	No
New Jersey	Weakness	Weakness	No
New Mexico	Mid-level	Mid-level	No

State	Structural Balance Score		Different
	2005	2008	
New York	Weakness	Weakness	No
North Carolina	Mid-level	Mid-level	No
North Dakota	Mid-level	Strength	Yes
Ohio	Mid-level	Mid-level	No
Oklahoma	Mid-level	Mid-level	No
Oregon	Weakness	Mid-level	Yes
Pennsylvania	Strength	Strength	No
Rhode Island	Mid-level	Weakness	Yes
South Carolina	Mid-level	Mid-level	No
South Dakota	Strength	Strength	No
Tennessee	Weakness	Mid-level	Yes
Texas	Mid-level	Mid-level	No
Utah	Strength	Strength	No
Vermont	Strength	Mid-level	Yes
Virginia	Strength	Mid-level	Yes
Washington	Mid-level	Mid-level	No
West Virginia	Mid-level	Mid-level	No
Wisconsin	Weakness	Weakness	No
Wyoming	Weakness	Mid-level	Yes

Regression Model with State Actions Modeled and Alternative Structural Balance Variable				
Independent Variables	Dependent Variables			
	(9) Budget ^a	(10) Cash ^b	(11) Long-run ^c	(12) Service-level ^d
Rainy Day Fund Use	0.029	-0.038	-0.006	-0.002
(Dummy) – 1 Year Lag	(0.037)	(0.028)	(0.022)	(0.016)
Expenditure Cuts	-0.004	-0.023	0.000	-0.004
(Dummy) – 1 Year Lag	(0.040)	(0.027)	(0.019)	(0.017)
Tax Increases (Dummy)	0.008	-0.018	0.000	-0.012
– 1 Year Lag	(0.030)	(0.032)	(0.016)	(0.013)
Governor signs balanced budget	-0.028	0.882**	1.77**	1.57**
	(0.096)	(0.120)	(0.214)	(0.161)
Governor submits balanced budget	-0.695*	0.096	2.07**	1.05**
	(0.342)	(0.093)	(0.295)	(0.260)
Legislature passes balanced budget	0.130	-0.048	0.141**	-0.134
	(0.266)	(0.056)	(0.036)	(0.133)
No Deficit Carryover	0.766*	0.844**	-0.012	0.756**
	(0.317)	(0.125)	(0.163)	(0.160)
Spending Limit	0.046	-0.105	0.058	0.174^
	(0.129)	(0.080)	(0.087)	(0.089)
Revenue Limit	0.221	0.162^	-1.67**	-0.487^
	(0.178)	(0.088)	(0.296)	(0.260)
Divided Government	0.074^	-0.030	0.014	-0.014
	(0.038)	(0.041)	(0.033)	(0.020)
Governor's Political Party	0.052	0.026	-0.025	-0.027
	(0.042)	(0.037)	(0.029)	(0.023)
Structural Balance with 2005 and 2008 values	0.104^	-0.004	0.137	0.029
	(0.059)	(0.041)	(0.105)	(0.041)
Economic Growth (%) – 1 Year Lag	0.038**	0.006	0.002	-0.010*
	(0.009)	(0.008)	(0.004)	(0.005)
Observations	380	388	380	380
Adjusted R ²	0.6574	0.7168	0.8912	0.9032

^ Significant at the 90% confidence level. *Significant at the 95% confidence level. **Significant at the 99% confidence level. All regression models include control variables for year and states.

^a OLS regression. Tests for first-order serial correlation and heteroskedasticity do not show these problems.

^b OLS regression with robust standard errors. Tests show no serial correlation but heteroskedasticity is present.

^c Prais-Winsten OLS regression with robust standard errors.

^d Prais-Winsten OLS regression.

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