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Cyclical Economic Impacts on Aggregated Fiscal Imbalance Levels in the United States

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Abstract

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MSM, University of Maryland University College, 2004

BS, Central Washington University, 1983

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Applied Management and Decision Science

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Abstract

The impacts of cyclical economic volatility on state-level fiscal imbalance levels have gained attention, given that beginning in late 2007, the United States experienced the deepest and longest-lasting recession in its history. The problem addressed in this study is how cyclical impacts on a state's economic and demographic factors are related to fluctuations in fiscal imbalance levels. The purpose of this study was to evaluate relationships between socioeconomic factors and state-level fiscal imbalance levels in the 48 contiguous U.S. states, and to assess how the statistical presence and strength of these relationships varied during years 2000 to 2010. Musgrave's theory of public economy, Oates's fiscal federalism theory, and Buchanan's fiscal imbalance theory served as the theoretical foundation. This longitudinal, time-series-cross-sectional study used multiple linear regressions to assess the statistical relationships between the federal agency-provided datasets of unemployment, age demographics, per capita income, poverty, entrepreneurial activity, gross state product, and the fiscal imbalances levels in the 48 contiguous U.S. states during years 2000 to 2010. The study results provided evidence that the set of independent variables explained fluctuations in fiscal imbalance levels during the years 2000 to 2010, and that the independent variables of unemployment rate, percent of population under the federal poverty level, and gross state product were related to fiscal imbalance levels with varying degrees of significance and strength from one year to the next. The implication of the study for social change is that policy makers who understand these relationships may construct better policies to mitigate fiscal imbalance volatility and to encourage state-level fiscal equivalence across the United States.

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Dedication

This study is dedicated to my father, the late C. Arthur Merriman, who encouraged me to continually pursue my education and to relentlessly seek answers to my intellectual curiosities. "A tree is never *just* a tree…a stone is never *just* a stone…."

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Chapter 1: Introduction to the Study

Introduction

The defining characteristic of public sector economics is the continual struggle between the demands placed on governmental entities to provide public goods and services and the desires of the constituency and the fiscal capacity of public jurisdictions to finance those demands (Joyce & Pattison, 2010). Faced with one of the longest and broadest economic recessions in United States history, public sector entities have experienced sharp declines in critically needed tax revenues precisely when the demand for governmental safety-net services has soared (Gerst & Wilson, 2010).

From January of 2006 to February of 2009, the national unemployment rate rose from 4.7% to 9.5%, with 44 states incurring fiscal deficits of over $78 billion or approximately $260 per person (Inman, 2010). Real Gross Domestic Product (GDP) was negative for five of six quarters of 2008 and 2009 falling by 3.8%, with state and local government revenues virtually collapsing on average over 10% on a year-over-year basis (Connaughton & Madsen, 2012; Gerst & Wilson, 2010). Simultaneously, consumer demand pressure for public support in healthcare, education, Medicare and Medicaid, and retiree benefits increased dramatically (Joyce & Pattison, 2010).

The responsibility for absorbing these revenue contractions and expenditure expansions falls squarely on public entities mandated with the task of collecting economic resources in the form of taxes, and subsequently redistributing these resources to the public in the form of public goods and services.

Conceptually, the collection and subsequent redistribution of tax revenues in the form of public goods and services is to some extent straightforward. However, the application of these processes in practice becomes complicated when neither the burden of who pays taxes nor the benefit of who receives public goods and services are distributed equally throughout society (Hyman, 2008; Oates, 1972). The relationship between the structural form of a governmental entity, whether centralized of decentralized, and its ability to equitably and efficiently respond to regional fiscal inequalities may be more problematic than is conceptually realized for the following reasons:

1. The most frequently cited structural problems of a decentralized government entity are the lack of capacity at subnational levels of government to exercise responsibility for public services and the effect of differences in political ideologies between jurisdictions leading to a misalignment of fiscal responsibilities (Ahmad, Devarajan, Khemani, & Shah, 2006; Oates, 1972).
2. In centralized governmental structures, public entities are relatively unconstrained in their choice of policies for reducing regional inequalities, whereas in decentralized public entity structures, the segregation of political decision making powers amongst hierarchical levels of government curtails federal flexibility in policy choice (Shankar & Shah, 2001).

Under the federal form of government in the United States, a distinct group of problems occurs when a federal entity contains, within its geographical boundaries, several smaller state-level subdivisions also possessing taxing and spending authority

(Buchanan, 1950, p. 583). Federal revenues, typically in the form of taxes, are generated from within each state jurisdiction based on the nature, composition, and fiscal capacity of their respective internal socioeconomic characteristics. Independent of these revenue generation factors, these same state jurisdictions possess differing degrees of public demand pressure for federally-provided goods and services in such areas as social security, public assistance for health and welfare, transportation, and higher education.

In an optimally proportional fiscal environment, each individual jurisdiction would possess the necessary fiscal capacity to generate the dollar amount of federal revenues required to fund an equivalent dollar value of federally provided public goods and services, thereby presenting an economic environment absent a measureable level of fiscal disparity between contiguous jurisdictions (Tanzi, 1982). Inevitably, however, *fiscal imbalances* occur when either the level of fiscal capacity for tax revenue generation or the level of demand for public goods and services are nonequivalent between entities within a federal polity (Buchanan, 1950, p. 584).

From a microeconomic perspective, the anatomical configuration of fiscal imbalances occurring between jurisdictions may vary depending on the direction of comparison being made between two or more independent public entities in a federal system. A *vertical fiscal imbalance* exists when the revenues of two differing hierarchical tiers of government are not sufficient to fund each member's expenditure requirements (Brenton, 1996; Dahlby, 2005; Walter, 2004). A *horizontal fiscal imbalance* occurs between two jurisdictions sharing a similar tier on the federal government hierarchy when differences exist in the ability of each jurisdiction to either

raise a comparable level of tax revenues, or when two differing jurisdictions experience different expenditure levels for providing public benefits and services (Dahlby, 2005; Walter, 2004).

Focusing on the horizontal fiscal imbalance definition, the purpose of this study was to observe and analyze aggregated fiscal imbalance levels existing across the 48 contiguous state-level entities of the United States federal population. From a microeconomic perspective, the fiscal imbalance disparity level for each individual state is represented by each state's fiscal imbalance ratio of federal spending received divided by federal taxes remitted to the U.S. Department of the Treasury. From a macroeconomic perspective, *aggregate fiscal imbalance* refers to the relative single measure of the total statistical dispersion of fiscal imbalance disparity across the entire 48 contiguous state-level jurisdictional population within the United States.

Ultimately, the maintenance and improvement of the standard of living for a population is the principal objective of public fiscal policy and a fundamental expectation of the governed (Sen, Muellbauer, Kanbur, Hart, & Williams, 1987). The concern of federal decision makers, who are interested in reducing the range of fiscal disparity between state-level jurisdictions nationwide, centers on cyclical fluctuations in the economic environment eliciting disproportionate fluctuations in the nominal levels of fiscal imbalance of each state, which in turn may cause the overall "bandwidth" in aggregated fiscal imbalance disparity levels nationwide to expand or contract in a negative manner (Lee & Lemieux, 2010). Accordingly, this study was needed to investigate how state-level nominal fluctuations in fiscal imbalance occurred over time as

well as to observe how fiscal imbalance disparity levels nationwide may converged or diverged during cyclical changes in the economic environment.

The effects of fiscal policy on public sector growth and sustainability have received considerable attention since the late-1970s (Bartik, 1991; Crain & Lee, 1999; Phillips & Gross, 1995; Wasylenko, 1997). Through the continued focus of this attention on the development of federal tax and expenditure policies, federal decision makers could develop a preemptive methodology to mitigate fiscal imbalances by gaining an understanding of how fluctuations in key socioeconomic factors potentially exacerbate aggregate fiscal imbalances and how structural elements in a fiscal economic system may be particularly sensitive to recessionary pressures.

By directly addressing these potential structural deficiencies, decision makers may develop the preventative processes necessary to directly mitigate the basal causes of aggregated fiscal imbalances, including the introduction of regional economic development strategies designed to promote economic growth and regional fiscal equivalence. For example, Moon (2003) suggested that if aggregated fiscal imbalances occur due to interjurisdictional variances in production infrastructure, then decision makers could focus on increasing infrastructure investment in less-developed regions (p. 3). Simultaneously, if the policy objective is to enhance the quality of life in fiscally deficient jurisdictions, more emphasis could be focused on developing policies that promote social design and development. In both of these scenarios, the ultimate goal is to insulate each jurisdiction from those factor impacts that potentially increase the level of aggregate fiscal imbalance during periods of cyclical volatility.

The following sections of this chapter highlight the historical and theoretical background regarding aggregated fiscal imbalances, a detailed explanation of the problem and purpose of the study, a presentation of the research questions and related hypotheses as well as an analysis of the current fiscal imbalance environment in the United States, including the key variables involved, the gaps in current literature, and suggestions as to how this proposed multiyear interjurisdictional analysis will benefit federal decision makers.

Background

From the beginning of the most recent economic recession in December of 2007, the resulting fiscal downturn has affected nearly every component of commercial and private economic condition (Chernick, Reimers, & Tennant, 2013). Although the United States economy has marginally improvement over the last several months, minimal economic gains and a continuing global economic downtown cast doubt on any hope of a full recovery in the near future (Congressional Budget Office, 2014; Cynamon & Fazzari, 2013). While the negative impacts of the recession on international trade, per capita income, unemployment, and Gross Domestic Product (GDP) are a few of the most commonly referenced economic measures of concern to federal decision makers, an equally important federal issue is how cyclical volatilities in the economic environment may negatively impact the range of aggregated fiscal imbalance occurring within the United States. Large regional inequities between states represent serious threats "with the state's inability to deal with such inequities creating potential for disunity" (Shankar & Shah, 2001, p. 1422).

Due to each individual state government having its own intrinsic socioeconomic characteristics, a state jurisdiction's fiscal imbalance ratio, calculated as the quotient of the dollar amount of federal goods and services expenditure received divided by the dollar amount of federal taxes generated, may vary considerably from that of its jurisdictional peers. The sheer number of possible economic factors potentially impacting jurisdictional fiscal capacities and expenditure demand levels makes the development of a measurement methodology of regional disparity difficult since, according to Moon (2003), "regional disparity is a multi-faceted occurrence encompassing various inequalities in income, production capacity and social infrastructures…there is no single comprehensive method of assessing its various dimensions" (p. 4). Crain and Lee (1999) described the lack of systematic guidance regarding which variables to include when constructing and evaluating cross-state economic growth models:

> The appeal of cross-state empirical analysis derives from the fact that while states differ in relevant dimensions, they are not so different as to make omitted variables an overwhelming source of error....investigators feel secure in considering a relatively small number of control variables in an attempt to establish a statistical relationship between state economic performances and a particular variable of interest...these specification differences make it hard to evaluate and compare the results of existing studies. (p. 242)

In an effort to construct a measure of the impact of the 1981-1982 economic recession on state and regional economies, Connaughton and Madsen (1985) examined

the effects of the 1981-1982 recession on gross production and output by annualizing rates of change in Gross State Product (GSP). In subsequent research, Connaughton and Madsen (2009) expanded their previous research by investigating the impact of the 2001 recession on GSP by employing a state by state comparison. Berry and Kaserman (1993) studied the percentage change in employment in the manufacturing sectors of the 50 U.S. states while analyzing GDP economic growth during multiple economic events occurring between the years of 1929 and 1987. From a different perspective, Moon (2003) presented weighted coefficient of variation and weighted GINI coefficient values measuring the aggregated change in per capita GDP and per capita regional consumption expenditure in all 16 provinces of South Korea to measure the level of regional inequality shifts occurring as a result of state implemented decentralization policies.

While each of these researchers highlighted different economic factor variables to quantify the impacts of cyclical economic events on cross-state economic growth dynamics, they subtly illustrated a gap in the literature being the continued lack of a universally accepted methodology of specifically defining and measuring the level of aggregate fiscal imbalance disparity occurring within and between a cohort of state-level jurisdictions. Accordingly, this study was needed to address this variable of interest, not by proposing a fixed set of variables to comprehensively measure the impact of cyclical business cycles on the U.S. economy, but by enhancing and expanding previous research through observing and understanding of how certain specified economic variables impacting aggregated fiscal imbalance levels fluctuate within the population of U.S.

states—fluctuations that may, in turn, cause relative imbalances in the quality of life and economic potential in all regions over time.

Statement of the Problem

Shankar and Shah (2001) published that the regional inequalities within geographically large countries represent a significant development challenge, with converging or diverging measurements of fiscal imbalance levels accentuating fiscal disparities between contiguous jurisdictions (p. 8). Connaughton and Madsen (2012) presented that during the 2008-2009 economic recession real gross domestic product (GDP) was negative for five of six quarters, over eight million jobs were lost, and the national unemployment rate nearly doubled from five percent to over ten percent. The overall issue is that, while these numbers themselves are staggering, the impacts of these economic fluctuations may affect one state differently than its jurisdictional peers. Accordingly, the problem addressed by this study was whether there is a statistically significant relationship between certain socioeconomic and demographic factors and fluctuations in fiscal imbalance levels in the 48 contiguous U.S. states, and if so does the presence and relational strength of these relationships vary during different phases of an economic cycle.

Understanding this relational phenomenon is critical in today's volatile economic environment as federal decision makers are concerned that interstate variances in either fiscal capacity or expenditure demand levels may result in high levels of fiscal imbalance disparity within a population of state-level jurisdictions (Garrett, Wagner, & Wheelock, 2007, p. 16). If all jurisdictions within a federation were endogenously homogenous in

both economic factor endowment and public demand levels for public goods and services, the overall measure of aggregate fiscal imbalance would be minimal. By contrast, if the same economic factors existing within all jurisdictions of a federation were endogenously heterogeneous, the overall measure of aggregate fiscal imbalance could be wide and varied (Tanzi, 1982). While each jurisdiction's economic factors may be quantified as a snapshot measurement of fiscal imbalance at a specific point in time, these same economic factors may expand or contract over successive periods of time when either uncertainty or demand shocks generate a rapid slowdown and subsequent rebound in economic activity (Bloom, 2009, p. 3). Figure 1 illustrates the impact of cyclical economic fluctuations on the rate of GDP within the U.S. economy over time.

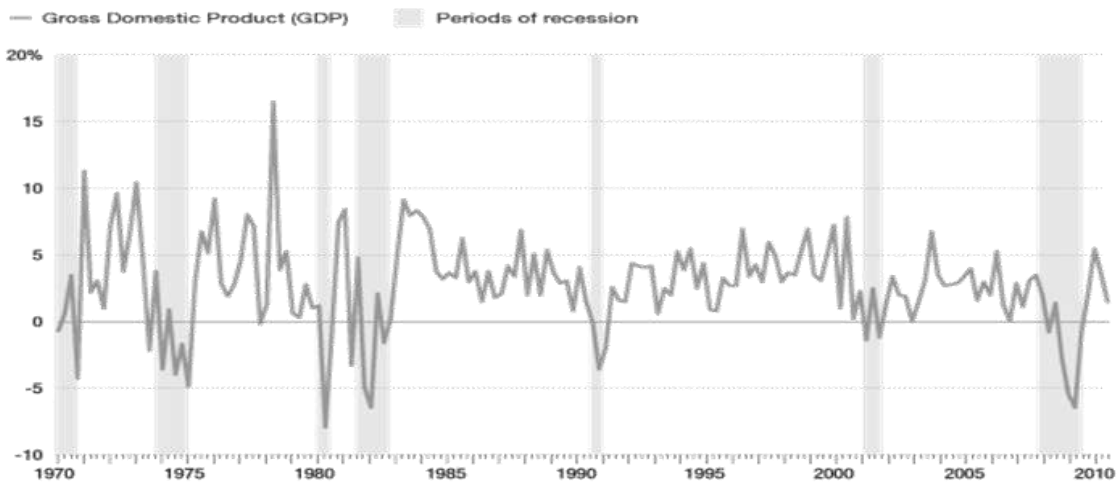


Figure 1. Cyclical fluctuations in GDP during recessionary periods.

Source: National Bureau of Economic Research (2014). U.S. business cycle expansions and contractions. Retrieved from http://www.nber.org/cycles/US_Business _Cycle_Expansions_and_Contractions_20120423.pdf.

When cyclical economic shocks create a variety of uneven state-level fiscal disparities in the collection and distribution of public resources, the federal government, in effect, acts as a redistribution mechanism by its transferring excess tax revenue resources from fiscally affluent states to fund the deficit expenditure demands in fiscally poorer states (Rector & Kim, 2008). While these redistribution payments artificially equalize the fiscal relationship between the supply of and demand for federal resources, regional resentment may brew as poorer states requiring a subsidy may consider fiscal inequalities a manifestation of regional economic justice, while richer states may view their connection to poorer states as a hindrance to their efforts to increase the prosperity of their citizens (Shankar & Shah, 2001, p. 1421). Regardless of each individual state's perspective, the concern to federal decision makers is how the volatility of socioeconomic factors occurring on a macroeconomic level impacts the expansion or contraction elasticity of aggregated fiscal imbalance levels nationwide.

Rather than taking the traditional approach of measuring the affect of one or more economic factors against the productivity performance of GSP (Connaughton & Madsen, 2009; Moon, 2003; Shankar & Shah, 2001), the research scope of this study filled a gap in the literature by examining the fluctuations in several key socioeconomic factors to observe how these fluctuations may be related to corresponding fluctuations in aggregate fiscal imbalance in the United States during cyclical periods of economic volatility. Armed with this observational information, decision makers would be better prepared to make forward-looking decisions on such issues as the economic redevelopment of

depressed local economies, the redesign and implementation of tax structures that are insulated against economic shocks in the fiscal environment, the financial support of the poor and infirmed, and the overall improvement in the standard of living of all people in the United States.

Purpose of the Study

The purpose of this quantitative, descriptive, longitudinal, TSCS study was to provide a deeper understanding of the impact of cyclical changes in the economic environment on aggregated fiscal imbalance levels within the 48 contiguous U. S. state jurisdictions. This objective was achieved, in two phases, by using large amounts of historical economic data, obtained from U.S. government agency datasets, to observe possible relationships between the predictor variables and state-level fiscal imbalance levels, and to statistically measure if the existence and relational strength of these relationships fluctuated during the during the period of years 2000 through 2010. The implication of the study for business and social change is that policy makers who understand these cyclical relationships may better construct fiscal policies designed to mitigate fiscal imbalance volatility and to encourage state-level fiscal equivalence across the 48 contiguous U.S. state jurisdictions.

The initial phase of this study measured, described, regressed, and analyzed year 2000 measurements of the unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the

United States may be related to fluctuations in state-level fiscal imbalances across the United States prior to, during, and immediately following the 2007 to 2009 economic recession.

The second phase of the analysis measured, described, regressed, and analyzed how the relationship between unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States and state-level fiscal imbalances was either strengthened or weakened over time and, accordingly, which economic factors best related to a state's fiscal imbalance throughout the 11-year period.

The potential findings may provide elected officials, public sector economists, municipal planners, and other public sector stakeholders an analytical tool to assist in (a) developing tax structures that are highly insulated to the negative effects of an economic recession, (b) establishing economic policy that encourages the channeling of funding for economic development to those regions that experience a higher level of fiscal imbalance fluctuation than other jurisdictions, and (c) providing guidance and analytical capabilities to public sector decision makers so that operational effort may be focused on solving fiscal imbalance disparities by understanding and addressing the actual causes of adverse fiscal imbalance fluctuations.

Research Questions

Considering the potential for adverse fiscal constraints experienced within the United States during the cyclical periods of economic volatility, combined with the probable variances in federal tax revenue generation and public good demands within and between state government entities, I observed how fluctuations in socioeconomic factors may be related to corresponding fluctuations in the dispersion of aggregate fiscal imbalance in the United States. The following research questions and related hypotheses set the framework for studying this alteration:

Research Question 1: Quantitative- Is there a relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the four measurement time periods of: (a) the 2000 to 2007 prerecession expansion, (b) the 2007 to 2009 economic recession, (c) the 2009 to 2010 postrecession recovery, and (d) the entire 2000 to 2010 11-year period?

***H*1$_0$1:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and fluctuations in the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal

poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2007 expansionary period of time.

***H*1$_A$1:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2007 expansionary period of time.

***H*1$_0$2:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2007 to 2009 recessionary period of time.

***H*1$_A$2:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment

percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2007 to 2009 recessionary period of time.

***H*1$_0$3:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2009 to 2010 recovery period of time.

***H*1$_A$3:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2009 to 2010 recovery period of time.

***H*1$_0$4:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2010 encompassing period of time.

***H*1$_A$4:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2010 encompassing period of time.

Research Question 2: Quantitative - How does the relationship strength between the dependent variable, fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a

percentage of per capita GDP in the United States fluctuate throughout the years 2000 to 2010?

***H*2$_0$:** The relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States does not fluctuate throughout the years 2000 to 2010.

***H*2$_A$:** The relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States fluctuates throughout the years 2000 to 2010.

Theoretical Framework

An econometric study of public sector fiscal imbalance requires a theoretical understanding of the importance of government in a free market economy, the manner in which intergovernmental structural hierarchy impacts revenue and expenditure allocations, how interjurisdictional inequities occur between public sector entities, and the interrelated nature of changes in socioeconomic factors and fluctuations in the aggregate level of fiscal imbalance between sublevel jurisdictions in a federal system. Due to the multifaceted nature of governmental economics, however, no single theory

adequately addresses the myriad number of economic challenges that may occur in the public sector (Arnett, 2012; Rubin, 1990). Accordingly, in this study, I proposed an amalgamation of a number of complicated and unique theories that, while separately distinct, create an intertwined framework used to identify and define the concept of interjurisdictional fiscal imbalance. As such, the theoretical framework for this study was based on three primary conventions of study (a) voluntary theory of public economy, (b) fiscal federalism theory, and (c) fiscal imbalance theory.

Musgrave's voluntary theory of public economy centers on the question of why should the governmental sector be involved in the economy when a free market system should be all that is required for the optimal delivery of goods and services to the public. A free market economy is driven by individual motivation, competition, and market demand, all of which combine to determine pricing, wages, and market responsiveness to consumer preferences for goods and services. Musgrave (1959) was concerned that the objectives of market efficiency and equity would be violated if a free market economy operated without a public sector presence. Primarily, Musgrave believed that free market economies could fail as the distribution of income is unfairly controlled by private individuals who own the necessary resource inputs and outputs of the market, thereby giving owners too much control over market pricing. In addition, a free market economy would not maintain sufficiently high levels of output and employment as cyclical volatility would both periods of idle capacity followed by periods of excess spending and inflation. Finally, differences in resource allocation, consumer preferences, and market driven externalities would cause variances in the levels of production between

jurisdictions. Musgrave asserted that these potential failings reflect the need for governmental market intervention to allocate income equitably, to stabilize levels of employment and prices, and to efficiently allocated resources.

Musgrave's theory is relevant to this study as the analysis of fiscal imbalance disparity requires an understanding of the general purpose of governmental involvement in delivering public goods and services to the public. Public sector entities each have varying levels of fiscal capacity, economic resources, and demand requirements for public services, with all of these factors impacted by fluctuations economic conditions. The role and purpose of government, therefore, is critical in establishing macroeconomic stability.

Fiscal federalism theory is based upon the fundamental work of Oates (1972), who suggested that one of the most efficient public sector structures for the optimal allocation of public goods occurs when the responsibility for decisions falls across multiple tiers of government. Fiscal federalism theory relates to the approach of this study by establishing the structural basis for a federal government's centralized involvement in the distribution of certain public goods and services. The authority for taxation and the provision for public goods and services could be assigned locally rather than centralizing the functions at the federal level. However, there are certain theoretical concepts involving the methodology in which tax burdens are assigned and public goods are allocated that may be only be resolved through a multitiered governance structure.

While highlighting both the positive and negative attributes of both centralized and decentralized governmental structures, Oates originally championed decentralized

structures by his stressing that regional or local governments are better suited to adapt outputs of public spending to the preferences and environmental situations of a public entity's local community (p. 12). When structurally decentralized political entities within a federal system are given greater autonomy over the funding for and provision of public goods and services, higher levels of economic growth, accountability, and responsiveness of government officials to local demands and needs are realized (Amagoh & Amin, 2012; Bjedov & Madies, 2010).

Ironically, Oates (2008) later readdressed the centralized versus decentralized debate by acknowledging that centralized governments are better suited for the assignment of providing a public good when doing so mitigates the allocative distortions caused by the existence of interjurisdictional spillover effects (p. 315). Hillesheim (2012) supported Oates's amended logic by suggesting that, while decentralized public good provisions are closely matched to regionalized preference, centralized governments make it possible to internalize spillover effects. Watt (2006) agreed by stating that a central government should play the directing roll in stabilizing and redistributing public goods and services, yet acknowledged that central government methodologies negate the ability of local governments to allocate goods and services in a manner that best reflects local citizen’s tastes and preferences (pp. 8-10). Lorz and Willman (2005) concluded that the centralized structure internalizes interjurisdictional spillovers but incurs certain costs of centralization. Accordingly, the optimal degree of centralization exists where the benefit of spillover internalizations and the costs of centralization are in equilibrium (Lorz & Willman, 2005, p. 255).

Fiscal imbalance theory, also known as fiscal disparity theory, focuses on Buchanan's (1950) addressing the level of fiscal capacity within a governmental jurisdiction, and the ability of a political entity's fiscal capacity to fund the demands for services and benefits from the jurisdiction's citizenry. This study involved a direct analysis of interjurisdictional fiscal imbalances occurring within and between state-level entities in the United States. The key concept of fiscal imbalance is the understanding of how the fiscal capacity of a jurisdiction may or may not match the level of demand for public sector support. Within fiscal imbalance theory are methodologies available to mitigate these forms of fiscal disparity. Buchanan (1950) addressed the concept of fiscal disparities arising when, in a federal governance structure, a single jurisdiction has within its boundaries a number of smaller political jurisdictions each with its own ability to tax and spend public resources (p. 583). Each of these sublevel entities differs in both their respective tax capacity and in the fiscal pressures they face.

While each of these sublevel jurisdictions has the responsibility to provide services and benefits to its residents, some entities have a comparably higher level of difficulty funding these demand pressures than others (Tannenwald, 2002, p. 17). Sublevel entities may have a significant level of difference in their fiscal capacity to generate tax revenues due to variances in socioeconomic factors. Simultaneously, sublevel entities have differing levels of fiscal need where each jurisdiction's socioeconomic conditions either increase the cost of benefits and services delivery or cause the jurisdiction to augments its scope of services relative to other jurisdictions. Integral to the study of fiscal imbalance is the understanding of equalization payment

strategies incorporated to mitigate disparities and to equalize citizen's access to public services across jurisdictions (Gravel & Poitevin, 2006, p. 1726). The empirical literature highlights the debate on the effectiveness of equalization programs and the ability of governmental redistribution input in a free-market environment to provide public benefits and services in an efficient and equitable manner.

Further discussion in Chapter 2 will provide additional theoretical detail highlighting why decentralized federal governments are in the business of distributing pubic goods and services to their sublevel jurisdictions, which structure of governance, decentralized or centralized, best provides for the provision of public gods and services, and how aggregate fiscal imbalances occur between interrelated state level jurisdictions.

Nature of the Study

This nature of this study incorporated a quantitative longitudinal design. In quantitative research, researchers determine the topic of interest, gather data regarding intrinsic characteristics of a particular population or units of study, and subsequently examine specific measurements of the characteristics using statistical methodologies (Leedy & Ormrod, 2005, p.181). A longitudinal study is a form of research that takes place in time, using at least two or more waves of measurement taken of the same participants, processes, or systems, to plot trajectories of changes in certain aspects the environment (Trochim, 2001, p.5). The primary strength of a longitudinal design is the ability to observe and evaluate the stability and continuity of several attributes of a sample, through repeated measurements of the same participants, to observe changes or

trends within the sample population (Kagan & Moss, 1962; Newman, Caspi, Moffit, & Silva, 1997; Ployhart & Vandenberg, 2010).

Descriptive statistical information was provided, in the form of simplified summaries of data, to present quantitative descriptions in a manageable form (Trochim, 2001, p. 268). A researcher using descriptive statistics describes certain characteristics of the distribution of scores, such as the average score of one variable or the degree that one variable score differs from another, followed by an examination of the arranged data to determine how the data relates to the original hypothesis.

For Research Question 1, the dependent variable was represented by the net percentage change in the fiscal imbalance ratios for each state occurring during each of the four time periods under observation. Structurally similar to the econometric model developed by Connaughton and Madsen (2012), regressions were made using the dependent variable, the measured change in aggregate fiscal imbalance ratios for each of the four time periods under observation, and the year 2000 independent variables of the unemployment percentage rate by state, the percent of the state population of age 65+, the level of per capita income by state, the percent of the state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States for the purpose of observing potential relationships. For Research Question 2, data containing observations of multiple economic phenomena obtained over multiple periods of time for the contiguous 48 state-level jurisdictions in the United States were compiled (Baltagi, 2008; Davies & Lahiri, 1995). The nature of this second-phase analysis was to observe

how the relationship between the annual measurements of aggregate fiscal imbalance and the independent variables strengthened or weakened over time, and which independent variable best relates to a state's fiscal imbalance throughout the 11-year period.

Datasets containing the economic elements used to calculate the aggregate fiscal imbalance measurements for each year under observation were obtained from the Internal Revenue Service and the U. S. Census Bureau. Socioeconomic data tables regarding the independent variables were obtained from the United States Department of Commerce, the Bureau of Economic Analysis, the U. S. Bureau of Labor and Statistics, and the United States Census Bureau.

Operational Definitions

Dependency ratio: The dependency ratio measures the percent of dependent people not of working age/number of people of working age.

Externalities: The cost or benefits of a market transaction not included in the actual sales price. Positive externalities are those benefits accruing to third parties separate from those individuals directly participating in the transaction. Negative externalities are the costs to third parties other than the buyers or sellers of a good or service (Bruhlhard & Jametti, 2006; Hyman, 2008; Lorz & Willman, 2005).

Fiscal capacity: The economic measure of the ability of public sector jurisdictions to finance governmental services (Hyman, 2008).

Fiscal federalism: The division of tax allocation and spending distribution among various levels of government (Amagoh & Amin, 2012; Hyman, 2008; Oates, 1972, 1999).

Fiscal imbalance ratio: The measurement of fiscal imbalance is the quotient of each state's share of federal spending for the provision of goods and services divided by the each state's share of federal taxes generated. Fiscal surplus states are those with fiscal inequality ratios less than 1.00—representing a lesser amount of federal spending received than federal tax revenue generated. Conversely, deficit states are those with fiscal inequality ratios greater than 1.00—representing a greater amount of federal spending received than federal tax revenue generated.

Public goods and benefits: Benefits provided by a public sector entity that are shared by large population of consumers. Pure public goods are considered nonrival and nonexclusive (Boettke, Coyne, & Leeson, 2011; Case, 2008; Hyman, 2008; Oates, 1972).

Spatial econometrics: A field of study combining both geographical location and economic theory. Spatial econometrics involves the analysis of physical and economic interactions between political entities that may not be independent (Coughlin, Garret, & Hernandez-Murillo, 2006).

Spatial interdependence: The lack of economic independence among observations in a cross sectional or panel data set of public entity jurisdictions (Janikas & Rey, 2008; Rey & Montouri, 1999).

Spillovers: Excess benefits or costs of economic activity that affect those who are neither involved over the payment for the activity nor the decision regarding the level of production (Case, 2008; Hillesheim, 2012; Lorz & Willman, 2005).

Assumptions

The publicly available data collected and analyzed in this study were provided by federal government and regulatory agencies and were assumed to be genuine and accurate. The relevant economic datasets were acquired from the Internal Revenue Service, the United States Office of Management and Budget, the United States Department of Commerce, the Bureau of Economic Analysis, the U. S. Bureau of Labor and Statistics, and the United States Census Bureau.

Scope and Limitations

The scope of the study was limited for the following reasons:

1. Sample archival data collected for the study were limited to 2000 through 2010, representing the annual measures of economic factors required for the analysis of fiscal imbalance ratios in existence before, during, and immediately following the 2007 to 2009 economic recession. Sample data availability pertaining to federal spending by state, previously published in the U.S. Census Bureau's Consolidated Federal Funds Report (CFFR) were constrained by the congressional decision to discontinue the CFFR for public dissemination after 2010. Sample data collections were further constrained by the limited availability of detailed economic information regarding other socioeconomic factors that may affect levels of aggregated fiscal imbalance. Additional specific information might enable further research addressing a more comprehensive model of fiscal imbalance study.

a. The federal spending-to-tax ratios used in this study were calculated based on raw data provided by the federal government. Based on these raw data, the amount of total federal spending may have been more or less than the total federal income derived from tax revenues in any given year that reflected an aggregate level of fiscal deficit or surplus position, respectively. In this study, I completed an analysis based on the actual cash flow of federal funds with no corresponding accrual adjustment made to reallocate any relative fiscal surplus or deficit, occurring in any one year, back to the 48 contiguous U.S. States.

Significance

From a public policy perspective, this research was significant in its potential to highlight how cyclical pressures on socioeconomic factors potentially worsen the distribution of fiscal imbalances across the United States. The findings of this research potentially give senior policy makers a theoretical tool to shift from reactively responding to increased fiscal inequality disparities to preemptively developing a process of balancing revenue and expenditure practices to promote positive social change, service level sustainability, and fiscal equality across the country.

Summary

In Chapter 1, I included an introduction to this study highlighting the challenges of public sector decision makers in balancing citizen demands for public goods and services with the capacity of the fiscal system to finance these demands. The statistical and theoretical information have been provided to develop a greater understanding of the

factors and issues that public sector decision makers, citizens, and other stakeholders face during their challenge of equitably balancing net interjurisdictional fiscal imbalances. The literary framework established in this study provide a conceptual foundation supporting the ideologies of public economy theory, fiscal federalism theory, and fiscal equalization theory, with further relevant discussion highlighting how these theories address the structure of governance and the economic variances that are inherent between jurisdictions operating under a federal governance structure.

In Chapter 2, I include information regarding the purpose of public sector involvement in a market economy, the governance structure within a multitiered public sector environment, and the factors contributing to jurisdictional fiscal imbalances and the various forms of equalization strategies a central government may use to mitigate fiscal imbalances.

In Chapter 3, I include a detailed description of the statistical methodology chosen to measure the empirical relationships between changes in fiscal imbalance levels and key economic factors that may contribute to fluctuations in fiscal imbalances within state governments. Chapter 4 contains the detailed statistical analysis of the study, with the purpose of Chapter 5 being a summary of the key findings of the analysis, the potential implications of the study, recommended actions for public sector decision makers, and the potential application for social change.

Chapter 2: Literature Review

Introduction

This purpose of this study was to investigate how cyclical fluctuations in unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States of GSP, impacted the aggregate fiscal imbalance levels within the United States during the 11-year period of 2000 through 2010. Key to understanding the elements of this investigation is the empirical and theoretical knowledge of public entity operational and fiscal structure, the environmental causes of interjurisdictional fiscal imbalances, and the related equalization methodologies used by central forms of government to mitigate interjurisdictional fiscal imbalances within their political subdivisions.

In this chapter, a review of relevant classical and contemporary literature is presented to analyze, compare, and synthesize the conceptual theories of public economy, fiscal federalism, fiscal imbalance and interjurisdictional equalization. The goal of this literature review is to elucidate the underlying theoretical framework upon which governmental decision makers and stakeholders determine the role and level of public sector involvement in the economy, the optimal governance structure of the public sector system, and the methodologies available to equitably allocate tax burden and spending benefits within sublevel political jurisdictions. The theories presented herein were selected because of their relationship to the problem statements in this study.

Strategy for Searching the Literature

The review of literary research begins with a search for peer-reviewed literature found in academic and professional databases located at Walden University. These database searches were conducted using ABI/INFORM, Academic Search Complete, Business Source Complete, ProQuest Central, Political Science Complete, EBSCOhost, Thoreau, and other available sources within the Walden library services. In addition, the web-based search engine Google Scholar was used to locate pertinent studies, with follow-up searches and document recoveries on these articles executed on the Walden databases.

These informational searches were initially wide ranging, with further refined searching performed on specific aspects of this study limited to peer-reviewed articles written and published within the last 8 years. The following key terms represent the primary search variables used to develop this literary analysis: *fiscal imbalance, fiscal disparity, spatial dependence, per capita income, decentralism, consumer spending, revenue elasticity, tax imbalance, Tiebot's theory, ability to pay theory, fiscal federalism, free rider,* and *interjurisdictional externalities*. Furthermore, searches for definitional information on key variable data were performed on professional websites of the U.S. Census Bureau, the U.S. Department of Commerce-Bureau of Economic Analysis, the Internal Revenue Service, and the U.S. Department of Labor.

Theoretical Chronology

No single theory stands alone in its ability to illuminate the intricacies of public sector fiscal economics, the persuasive power of political processes and socioeconomic

conditions on management choices, and the pattern of decisions public organizations will make in an environment of constrained resources (Arnett, 2012). An examination of the theoretical concepts of aggregate fiscal imbalances requires an understanding of the classical theories addressing the optimal operational design of governmental structure, the mechanisms that facilitate interjurisdictional imbalances in taxation and resource distribution, and the methodologies public entities use to equalize fiscal imbalance fluctuations occurring within sublevel governmental units within a federal polity.

I begin Chapter 2 with a sequential exploration of the seminal works of Richard Musgrave's (1939) voluntary theory of public economy, Wallace Oates's (1972) decentralism theorem, and James Buchanan's (1950) theory of fiscal equalization. Musgrave's research on the functional role of government highlighted macroeconomic stabilization, income redistribution, and resource allocation as the three primary activities of public sector operations. Musgrave's theory relates to the present study by highlighting the purposeful role of state and local government as an economic distribution mechanism. Oates's decentralism theory focused on the division of economic functions between different tiers of government so that income is distributed and resources are deployed in the most equitable and efficient manner possible. This multitiered analysis relates to the operational and structural form of governance in the United States. Finally, Buchanan's theory on fiscal equalization addressed the topic of mitigating intergovernmental transfers being used to allow jurisdictions of differing levels of fiscal capacity to finance a consistent and equal level of public benefits and services using a comparatively equal rate of taxation. The funding mechanisms outlined

by Buchanan illustrate the generally accepted methodologies used by decentralized governments to mitigate fiscal disparities existing with their sublevel jurisdictions.

While each of these theorists addressed a separate element of public sector economics, the combination of these theories establishes the necessary framework required to understand the optimal public sector mechanisms for efficiently providing public goods and services in an environment of imbalance and uncertainty. I conclude Chapter 2 with a definitional listing of the variables of interest to this study.

The Economic Role of Government

Now, more than ever, the public is inundated with media reports expounding the deteriorating fiscal health of the nation's governments (Arnett, 2012). In the United States, the negative effects of the 2007 to 2009 economic recession on general governmental revenues, public sector spending, and the economic well-being of individuals place local government officials in the difficult position of matching limited financial resources to an ever increasing demand for public assistance from their constituency. With the goal of formulating a public sector fiscal policy that best provides both an equitable distribution of income and an efficient methodology of allocating resources, federal decision makers are motivated to determine the optimal structural form of government for the provision of public goods and services comes into play.

It is important to analyze why the public sector should even be considered. The necessity for public policy to be the impetus for determining the socially acceptable distribution of income and public resources has classical theoretical backing (Hyman, 2008; Lee & Clark, 2013). According to Hyman (2008), "governments are organized to

exercise authority over the actions of people who live together in a society, and to provide and finance essential services" (p. 4). In a free market economy with little or no governmental involvement, virtually all inputs for goods and services are owned by private enterprise. Prices for goods and services are determined through the free interplay of supply and demand, with consumers selecting products based on their own tastes, preferences, and economic capacity. Furthermore, Lee and Clark (2013) asserted that

> civil society and free market prosperity depend on government securing…liberty by protecting persons and property against violence and theft, providing basic infrastructure and public goods unlikely to be privately provided, and enforcing the rules of private property and voluntary exchange. (p. 288)

Theoretically, a free-market economy could be considered all that is necessary to distribute income and allocate resources. In describing the benefits of a free-market economy, Adam Smith (1776) contradicted the mainstream acceptance of the mercantilist model, in which the purpose of governmental intervention is to enrich the state, by introducing the theoretical concept that the effort of many individuals seeking to maximize their own individual utility will result in an outcome that is best for the entire economy (p. 180). However, others recognized certain shortcomings of a free-market economy. Public goods are not offered in a free-market economy due to their characteristics of nonrivalry and nonexcludability, and absent regulatory rules, individual corporate owners are in the position to control pricing and supply levels in order to exploit consumers (Musgrave, 1996, p. 249). Another difficulty in Adam's utilitarian

approach is that individual utility is difficult to measure and comparisons between individual's tastes and preferences are nearly impossible to construct.

The discussion among theorists subsequently shifted to the suggestion that the measurement of utility is therefore ordinal, with the resulting topic centered on an economy's achieving Pareto efficiency–where the allocation of resources occurs in such a manner that it is impossible for any one individual to be better off without making at least one person worse off. For example, Case (2008) stated that the concept of economic efficiency has little to do with the character of individual preferences, whereas the discussion should ask only does a change in the allocation of resources, the mix of output or the distribution of output in "one or more people being better off than without anyone else being worse off…if we can answer yes we should make the change" (p. 349).

Governmental Stabilization of a Free Market Economy

Frequently, a free market economy is unable to efficiently provide certain goods and services, such as social security or national defense. Business entities in a free market economy will prioritize the production and sale of certain products based on profitability factors while ignoring potential negative externalities such as pollution or the exhaustion of raw materials. Feeling the impacts of these negative factors, individuals are motivated to turn to government to either acquire unavailable public goods and services or to submit to government authority to achieve regulatory restrictions and enforcement penalties on negative externality impacts. The inclusion of government interaction creates a mixed market economy where the primary role of government is to

purchase inputs from the private sector to produce and distribute public goods and services (Hyman, 2008, p. 8).

Musgrave (1939) argued that even if a purely free-market environment could function at full employment and with all resources being used in the most efficient manner attainable, the ensuing distribution of income may not always be socially equitable due to private ownership of both economic inputs and the related framework of consumer prices and outputs. Accordingly, writers of public policy would promote efficiency by dictating the needed framework to distribute income efficiently and equitably. Oates (1972) further concurred that a free market economy is not designed to attain a high level of employment and economic output and, therefore, might result in extended periods of idle capacity, inefficient and inequitable spending, and inflationary tendencies; in this case, public sector monetary and fiscal policy could be designed to assure high levels of output and employment with reasonable stability in the overall level of prices (p. 14). Bator (1958) posited that, absent public sector involvement, resources could potentially be misallocated among alternative goods and services, resulting in excessive levels of some activities and insufficient levels of activity in others (p. 362).

With these endogenous weaknesses present in a market-driven economy, public policy could necessitate "unit taxes or subsidies to induce efficient behavior or…actual public provision of certain goods and services…to ensure an efficient pattern of resource use" (Oates, 1972, p. 14). While these inclusionary benefits of governmental interaction in the marketplace are evident, the question remains as to the optimal public sector

organizational structure and political hierarchy that best maximizes the redistribution of income and economic opportunity to a community.

Musgrave's Voluntary Theory of Public Economy

Noting these varying and conflicting positions relating to market efficiency and the role of the public sector in a free market economy, Musgrave (1959) posited that the efficiency of an economic system can only be adequately measured by the degree in which the system provides an equitable distribution of income and an efficient allocation of resources. By shifting the analysis of public sector versus free-market efficiency from the positive economics approach of asking how *does* an economic system work to normative economics and the question of how *should* an economic system work (Case, 2008, p. 349).

Musgrave expressed a level of concern regarding an economy based purely on a free-market system. With a focus on the concepts of efficiency and equity, Musgrave (1959) opined that a free-market economy operating without a public sector is likely to fail in three different scenarios:

1. Even if a free-market economy were to run efficiently at full employment, there is no certainty that the related distribution of income would be equitable. The distribution of income would be based on a system of private ownership of resources inputs, structure of prices, and outputs in the economy that may not be palatable to society. Accordingly, the public sector is needed to attain a socially acceptable distribution of income.

2. An unregulated economy would not necessarily prompt high and stable levels of output and employment. Total spending in an economy may be cyclically volatile, thereby creating periods of waste caused by idle capacity, offset by periods of excessive spending and inflation. Public sector entities would be needed to establish fiscal and monetary policies designed to maintain the economy at high levels of output and employment with reasonable stability in prices.
3. The resources required to generate alternative goods and services are likely to be misallocated. Differences in product imperfections, consumer preferences, and market-driven externalities may lead to excessive levels of production in some areas and insufficient levels in others. The public sector would be required to possible provide taxes or subsidies to encourage efficient behavior or to possible take control of the provision of certain public goods and services to ensure an efficient pattern of resource use (Musgrave, 1959; Oates, 1972).

Musgrave (1959) summarized that these potential free-market failures reflect the need for a public sector to resolve the problems of (a) the attainment of an equitable distribution of income, (b) the stabilization of high levels of employment coupled with stable prices, and (c) the establishment of an efficient methodology of allocating resources use if an economic system is to reach a Pareto optimum.

Musgrave (1959) subsequently presented his three branch taxonomy by segregating the proper role of government into three separable branches: (a) allocation

(efficiency), (b) distribution (equity), and (c) macroeconomic stabilization. The stabilization and distribution functions would be under the jurisdictional control of a central form of government while the remaining allocation function would be disseminated amongst other sublevel governmental entities (Ewetan, 2012). Oates (1972) found Musgrave's three functions to be interdependent, where the determination of a welfare optimum necessitates a simultaneous solution for the distribution of income and the allocation of resources (p. 15). For example, if a society desires to build a new fire station, the required planning would address the shifting of resources to public safety, a redistribution of income in favor of the owners of the resources required to acquire a new fire station and the recipients of the new fire protections services and a recognition that the aggregate demand for increased fire protection services will occur. This example illustrates the complexity in applying the three public sector functions to an actual program.

While Musgrave (1959) approached the concept of governance structure by theorizing which conceptual structure should be inherent in a governmental entity in order to achieve a welfare optimum, Oates (1972) found Musgrave's concept lacking in its applicability to actual governmental processes and public programs. Oates (1972) suggested that the true determination of a welfare optimum requires a simultaneous solution for all three public sector processes and that any public problem could result in an imbalanced allocative and redistributive impact on the various parties involved (p. 15). Case (2008) agreed with Musgrave's conceptual structure being theoretically based on the premise that both the purpose of the economic system and the role of government is

the improvement of the well-being of individuals or households and that a "moral reference point is needed to reconcile the contradictions associated with the responsibilities of governing and the desirability of an individual-based utility approach to social well being" (Case, 2008, p. 355).

If one accepts the role of public policy to be the guide for allocative, distributive and stabilizing public sector processes, the question remains as to which structure of governance is optimal for the provision of the public goods and services to best meet citizen demands. Case' suggestion, like Musgrave's concept, only addresses the purpose and structure of government being centralized around the achievement of an "optimal" allocation of resources based on individual preferences, moral norms, and the need to implement community values into the allocation process. Lacking is a discussion on exactly how a public sector function should be structured to logistically and operationally provide the desired allocation service to its citizenry. What is needed is a shift of the theoretical discussion from *what* a conceptual structure should accomplish via the allocation process to normative discussion on *how* an actual governance structure could best be designed to achieve efficiency and equity in allocating income and resources. The theoretical debate on governance structure is wide and varied. Oates (1972) launched this direction of discussion by suggesting that Musgrave's conceptual structure provides the platform for a "convenient point of departure" for a normative study of governmental structure (p. 14).

Introduction to Fiscal Federalism

An examination of the optimal structural design of government should begin with an analysis of how the public sector structure format plays an important role in modern welfare economics. Both classical and contemporary studies focus on the concept of fiscal federalism as an optimal structural form of government. Fiscal federalism is a derivative of federalism–federalism being a political concept in which power to govern is shared between national and sub-national governments. For a federation to be sustained, decision making authority should be placed at the lowest level possible instead of concentrating the process at the center (Ewetan, 2012, p. 1077).

Accordingly, fiscal federalism theory centers on the allocation of taxing and expenditure responsibilities between hierarchical levels of government. Each successive tier is independent in its authority to level taxes for the local of provision of public goods and services, yet each tier is complementary to other overlapping jurisdictions tasked with a similar public purpose (Ewetan, 2012; Wheare, 1963). With many of these governmental relationships occurring within similar or overlapping jurisdictional boundaries, any one individual or other economic entity may be subject to the authority of several tiers of government (Hyman, 2008, p. 690).

Due to the intertwined relationships occurring between these overlapping jurisdictions, fiscal federalism theory addresses which public sector functions are best centralized and which are best placed in decentralized levels of government (Oates, 1999). Given the vast number of public goods and services provided combined with varying geographical and socioeconomic levels of consumption demand, no specific

level of government could possibly provide the perfect solution to optimally distributing public benefit. Oates provided a possible solution to this issue by highlighting each form of government, centralized and decentralized, to provide a comparative framework to determine the proper methodology of allocation between the two forms of governmental hierarchy.

Oates's Decentralization Theorem

The understanding of the hierarchical governance structure between political entities within a federal environment is critical, as is the discussion of which format of governance, centralized, decentralized, or a combination of the two, is most beneficial. "Whether certain public goods and services should be provided on a centralized or decentralized jurisdictional level is a question of political relevance and has occupied politicians and economists for decades" (Hillesheim, 2012, p. 29). As state and local governments increasingly struggle with balancing budgets and meeting constituent increasing demands for public goods and services, citizens, economists, and politicians alike have begun to question the current alignment of fiscal functions between different levels of government. "While some of these pressures are primarily political in nature, it seems they also stem, in great measure, from the fact that the existing structure of the public sector has failed to perform its economic functions properly" (Oates, 1972, p. 5).

Oates supported the establishment of the optimal governmental structure by stating that “within the framework of modern welfare economics, the effectiveness of an economic system is measured by the degree to which the system provides an equitable distribution of income and an efficient allocation of resources” (Oates, 1972). Oates

questioned which "form of government promises the greatest success in resolving the allocation, distribution, and stabilization problems" (Oates, 1972, p. 3). The debate requires an understanding of the key elements of each form of government. By definition, a purely centralized form of government is considered unitary and one which assumes the full responsibility for providing the three functions of the public sector as described by Musgrave—allocation, distribution, and stabilization. In contrast, a purely decentralized form of government begins with a central government entity that, in the extreme sense, has no economic responsibility (Oates, 1972). Rather, smaller local governmental entities provide nearly all of the economic functions of the public sector. This theoretical comparison focuses on which organizational framework of the public sector, centralized, decentralized or some other form, best supports resources being allocated efficiently, income being equitably distributed, and high levels of employment and stability of prices being maintained.

Strengths of a purely centralized form of government.

Under the purely centralized form of government, policy decisions on the allocation of public goods and services are made at a national level, where the three economic functions of allocation, distribution, and stabilization are aggregated, and the centralized provision of goods and services theoretically results in the uniformity of the quality and quantity of public goods across the national spectrum (Oates, 1972). This national preference for collective benefits is significant as national public goods are consumed by all members of the nation regardless of where they are located. In regards to certain pure public goods such as national defense, social security, income

redistribution, and economic stability, a centralized form of government provides a level of public good provision efficiency that would be difficult to obtain through a collection of local government entities. Hillesheim stated that "centralization always dominates decentralization in the case of identical regional preferences" (p. 31). The strengths of a centralized form of government may be further elucidated through Oates' discussion of how this form develops efficiencies in each of the economic functions of allocation, distribution, and stabilization.

In addressing the *allocation* of certain classes of public goods and services, Oates suggested that a centralized form of government is more likely to be successful in providing appropriate levels of output than a decentralized form of government. "It is the responsibility of the public sector...to either institute incentives for private production or...to provide directly appropriate levels of output of those goods and services not forthcoming in efficient quantities through the operation of free markets" (Oates, 1972, p. 8). While some of these goods and services might be allocated to meet demand in selected areas of a national economy, other goods and services of a pure public good, such as a senior age retirement program, may be of a nature where they bestow certain benefits on everyone in the nation.

In considering the *distribution* function of a public entity, Oates (1972) discussed the dilemma of a theoretically decentralized form of government desiring a more egalitarian distribution of income than the current market distribution by the incorporation of a negative income tax (p. 14). Such a tax would require a transfer of income from those who are wealthy to those who are poor based solely on the

individual's level of income before taxes or transfers. The difficulty of implementing such a tax structure in a decentralized environment is the high degree of individual mobility within in a national economy. Such a tax policy would "create strong incentives for the wealthy to move out to neighboring municipalities and for the poor to migrate into the community" (Oates, 1972, p. 7). Accordingly, a more egalitarian distribution of income may occur, but it would be more the result of a fall in per capita income due to an outflow of wealthy individuals and a corresponding influx of the poor (p. 7).

This degree of individual mobility, however, is much less across national borders, allowing for tax policies at a centralized, concentric level of government to find better success at implementing redistributive programs. Accordingly, Oates (1972) concluded that a centralized government would be "more effective in achieving the redistributional objectives of the society than is a governmental organization at the opposite end of the spectrum" (p. 8).

Oates further suggested that in order to maximize the *stability* function of high levels of employment with stable prices, a centralized form of government is in a stronger position to exercise control over the size of the monetary system. Absent this centralized authority, local governments would operate under their own respective fiscal spending policies and could, theoretically, increase funding by simply printing more money rather than tax their communities, an action which could lead to higher inflation. In addition, local economies are highly open with many individuals typically purchasing goods and services from a number of other communities.

Oates (1972) stated that this highly mobile dynamic implies that leakages from a marginal dollar of private purchases in other jurisdictions could potentially be large, resulting in a potential nullification of local policy actions. An example would be a reduction of tax on consumption expenditures implemented as a measure to expand the local economy. Much of the expansionary effect of the tax could be lost as new discretionary income resulting from the tax cut could be spent in other jurisdictions. A centralized government would, therefore, be in a better position to implement monetary and fiscal policy. Oates contended that interjurisdictional shifts in economic activities have external impacts on neighboring communities as "cyclical movements in aggregate economic activity are largely national in scope…and can be best treated by counter-cyclical policies operating on a nationwide scale" (Oates, 1972, p. 6).

Strengths of a purely decentralized form of government.

A fiscally decentralized form of government is one where sub-national governmental entities are given the responsibility over the provision and financing of public goods and services (Bjedov and Madies, 2010, p. 32). While Oates recognized the strengths of a centralized form of government, he also recognized that "a basic shortcoming of a unitary form of government is its probable insensitivity to varying preferences among the residents of the different communities" (Oates, 1972, p. 11).

While a centralized form of government creates a uniformity in public goods and services, the consumption demand for these goods may not be uniform as some individuals may desire an expanded or high-quality level of consumption, while others may consume less of a certain good or service with the anticipation that the lower level of

output would result in a simultaneous lower tax assessment. Essentially, if a public good is consumed in equal amounts by everyone regardless of location, a centralized form of government suffices. However, if the benefit of public goods is limited to individuals in a specific subset of the population, the provision of goods by a purely centralized form of government will be inherently inefficient. A decentralized form of government is a partial solution as the level of efficiency is increased when the variety of output of certain public goods and services closely reflects the tastes and preferences of the individuals who make up society (Jimenez, 2009; Oates, 1972).

Oates further suggested that a decentralized form of government provides certain welfare gains due to the high level of consumer mobility. Oates relied upon previous research by Charles Tiebot description of how centralized and decentralized forms of government adapt to consumer preferences. Tiebot (1956) stated a centralized form of government attempts to adjust to the pattern of consumer preferences whereas a centralized form of government various entities have their revenue and expenditure patterns fixed (p. 418). Accordingly, when in an environment consisting of a number of adjacent jurisdictions offering varying consumption levels of public goods and services, the consumer has the opportunity to "vote with their feet" by selecting to locate in that jurisdiction which best represents his tastes. This ability to choose, to relocate, and to select a fiscal package of public goods and services might approximate a market solution to the inefficiencies Oates found prevalent in a centralized form of government.

Finally, Oates suggested that decentralization is advantageous as it provides for a more efficient level of public output because expenditure decisions are driven by true

costs of a good or service. If a community is required to finance its own public programs through taxation, individuals will have an increased tendency to weigh the related taxation costs against the benefits to be obtained. Whereas, if the same program were to be funded by a centralized government, individuals would be required to pay for only a small part of the program benefits, thus having an incentive to vote for and expand public programs to the maximum possible.

The optimal form of government: Fiscal federalism.

Both forms of government, purely centralized and purely decentralized, have comparative advantages and disadvantages in the economic functions of allocating, distributing, and stabilizing public resources. Oates suggested that a decentralized form of government dominates centralized in the absence of interjurisdictional spillovers, and that absent economies of scale associated with centralized benefits and goods provision, a decentralized form of government is welfare enhancing (Oates, 1972; Oates, 2008, p. 314). In his summary, Oates (1972) pointed out that a centralized form of government is best suited for resolving distribution and stabilization problems, but fails when the provision of public goods is uniform in an environment of differing consumption demands across jurisdictions. At the same time, a decentralized form of government meets consumer consumption demands on a local level, but fails at providing a consistent allocation of pure public goods when jurisdictions compete for public benefits.

To resolve this dilemma, Oates proposed "a form of government that combines the advantages of these two polar forms and avoids the most serious shortcomings of each; a federal form of government meets this need" (Oates, 1972, p. 14). Under this

federal format, both a centralized and a decentralized level of government operate in unison with each entity having responsibility for the provision of public goods and services within its respective geographical location. The central government is responsible for stabilizing the economy, for distributing income fairly, and for providing those public goods and services that significantly impact the benefit of all members of jurisdiction, while the local decentralized government entities provide goods and services that are of primary interest to the constituency of their respective jurisdictions (Oates, 1972, p. 14).

This cooperative, yet autonomous, method of meeting the allocation, distribution, and stabilization requirements of the public sector make the federalism form the optimal form of government. This hybrid form of public sector cooperation prompted Oates (1972) to propose his Decentralization Theorem:

> For a public good–the consumption of which is defined over geographical subsets of the total population, and for which the costs of providing each level of output of the good in each jurisdiction are the same for the central or for the respective local government–it will always be more efficient (or at least as efficient) for local governments to provide the Pareto-efficient levels of output for their respective jurisdictions than for the central government to provide any specified and uniform level of output across all jurisdictions. (p. 35)

Other Contributing Theories on Governmental Structure

Regardless of Oates' findings, there is continued debate on the optimal government structure. Boettke et al. (2011) described a theoretical debate between two

philosophical camps—the consolidationists who suggest that a centralized, autonomous public sector entity is the optimal level of public good and service provision, versus the polycentrists who suggest that a decentralized governance system structured around multiple, lower-level governmental jurisdictions is more appropriate for this purpose (p. 210). Ostrom and Parks (1999) suggested a hybrid governance structure by concluding that:

> Neither a single layer of small production bureaus nor a single large bureau appears to have as high a performance potential as a complex mixed system with many smaller agencies producing some services and some intermediate and large agencies producing others. (p. 292)

Oates (1972) theory has a tendency to discount the presence of interjurisdictional spillovers and the fact that central policies are considered inherently uniform across the country. In contrast, Greco (2003) and Banzhaf and Chupp (2012) argued that discounting these factors is unrealistic as decentralized governments respond better to local preferences, yet fail to recognize the costs of negative interjurisdictional spillovers to adjacent communities—such as air pollution and traffic—while centralized governments may internalize those spillovers yet are more likely to ignore local needs.

Fiscal Imbalance Theory

Under fiscal federalism theory, the role of government includes the power to allocate taxation and expenditure responsibilities within a multi-hierarchical format of government. Within this hierarchy, Oates specifically outlined the theoretical central government being best suited to stabilize the economy, to distribute income fairly, and to

provide for public benefits and services that significantly benefit the population as a whole. Simultaneously, political subdivisions of the central government are required to finance traditionally assigned local government functions with revenue sources based on each subdivision's fiscal capacity and level of demand for public services.

A distinct problem arises as differing jurisdictions, by nature of their respective demographical factors, have differing levels of ability to raise economic resources. If among the state's political subdivisions there exist significant disparities between fiscal capacities, the resulting variances in revenue generation potential may cause fiscal inequalities to occur between and within these sublevel jurisdictions. Buchanan (1950) theorized that these variance differentials are neither unique nor the sole catalyst to increasing fiscal disparities between jurisdictions, and that the progressive increase in fiscal inequalities may also be attributed to three historical trends: (a) the continual industrialization, specialization, and integration of the economy on a national scale, (b) the involvement of government in the financial activity of the marketplace has increased, and (c) the increase in governmental activity in the operations of lower-level public sector entities due to higher demands for social service provision (p. 584).

Vertical Versus Horizontal Fiscal Imbalances

The forms of fiscal imbalance which exist in an economy vary depending on the relational comparison being made between two independent public entities in a federal system. A vertical fiscal imbalance exists when the revenues of two differing hierarchical tiers of government are not sufficient to fund each member's expenditure requirements (Breton, 1996; Dahlby, 2005; Walter, 2004). A vertical fiscal imbalance

requires a restructuring of the division of revenue and expenditure responsibilities between the two levels of government such that the actual revenue-expenditure asymmetry approaches the optimal form (Sharma, 2011, p. 104). Many times a vertical fiscal imbalance is resolved by a transfer of funds from the over-endowed central government to the under-endowed sublevel government. A horizontal fiscal imbalance occurs between two jurisdictions sharing a similar tier on the federal government hierarchy (Dahlby, 2005; Walter, 2004). A horizontal fiscal imbalance occurs when differences exist in the ability of each jurisdiction to either raise a comparable level of tax revenues, or when two differing jurisdictions experience different cost levels of providing public benefits and services. A horizontal fiscal imbalance is typically corrected by allocating an equalization payment from the more affluent entity to the needier entity.

Buchanan and Fiscal Imbalance Theory

Buchanan described the early years of United States history where most economic activity was limited to local markets. Public goods and services were provided by local political entities whose geographical boundaries corresponded to these local markets. Buchanan suggested that the rapid developments in transportation and communication led to an emphasis on specialization of industrial processes. As the economy became more productive, fiscal inequalities increased in the personal income and wealth individuals - leading to expanding individual differences and a closer concentration of higher income recipients in the more favored areas (Buchanan, 1950, p. 584).

This geographical relocation of individuals and related wealth created fiscal disparities between jurisdictions. In affluent localities, the level of fiscal capacity could

be greater as could the demand for certain public goods and services. Simply put, those individuals with more discretionary income could be more receptive to paying a higher level of tax burden for an increased level of governmental services. In contrast, the less affluent localities had a reduced level of fiscal capacity making it difficult for the governmental entity to fund and pay for a similar level of governmental services. Buchanan felt that the disparities and the discrepancies between fiscal capacity and public good demand were further accentuated by the historical shift of government services from a protective role, where the provision of public benefits is based on an individual's ability to pay, to a social services role where governmental services "were provided equally to all citizens, or based upon some basis of personal need" (Buchanan, 1950, p. 586).

To mitigate the fiscal inequities occurring between jurisdictions, Buchanan proposed the concept of an intergovernmental transfer system which would allow fiscally unequal political subdivisions to provide an equal level of services at an equal level of taxation. Buchanan based this premise on Pigou's central tenant of equity in that "different persons should be treated similarly unless they are dissimilar in some relevant aspect" (Pigou, 1929, p. 9). Under this "equal treatment for equals" concept, individuals living in jurisdictions of lower fiscal capacity have a greater degree of fiscal pressure originating from either a greater tax burden or a lower level of public services provision than do individuals living in areas of greater fiscal capacity.

Tiebot (1956) hypothesized that individuals, having differing tastes, preferences, and capacity to pay taxes, will move from one community to another until they locate in a

jurisdiction that best maximizes their personal utility. This may result in a higher level of expenditures without an accompanying improvement in the receiving jurisdiction's tax base (Jimenez, 2009; Marcelli & Musso, 2001). Tiebot's theory reflected the migration risk that may occur when the level of fiscal pressure exceeds the level of personal utility. Faced with this pressure, individuals may migrate to other jurisdictions where the level of fiscal pressure is less. Peterson (1981) modified Tiebot's argument by highlighting the motivation for local governments to compete for mobile capital in order to promote their own economic development agendas. Jimenez (2012) stated that this form of competition impacts expenditure policies of local governments as municipalities are forced into offering high benefit-cost ratios in order to attract capital (p. 82).

To counteract this latter form of migration risk, an intergovernmental transfer system would provide an economic incentive for human and non-human resources to be retained in areas of greater fiscal pressure (Buchanan, 1950). Essentially, when a high degree of fiscal disparity exists between sublevel jurisdictions, the central government could mitigate fiscal inequities by transferring funds from one jurisdiction to another. Buchanan found this concept fulfilling as the central government subsidy would balance the fiscal equation thereby sufficing the concept that citizens would be considered equals; however he also found it ironic that the central government must, through the intergovernmental fund transfers, violate a true equity precept by economically favoring individuals residing in the fiscally weaker jurisdictions. Even with this contradiction, Buchanan rationalized this irony by stating that "neither the tax burdens nor the standards of public service need be equal...only that the residua be substantially the same"

(Buchanan, 1950, p. 591). Following this form of logic, the policy objective of an intergovernmental transfer program, therefore, is to ensure equal fiscal treatment regardless of the domicile of the individual.

To illustrate a simplistic model representation of the mechanics of an intergovernmental transfer system, suppose that within a hypothetical Federal Government W, there are two state jurisdictions, S and K, each with a population of 1,000 citizens and with other interjurisdictional factors such as levels of employment being similar as well. State S has an agriculturally-based economy, with an average annual per capita income of $32,000. State K has a substantially developed high-tech industry sector affording its citizens an average annual per capita income of $53,000. Federal Government W has a progressive state tax structure generating a higher incremental level of tax per marginal dollar of income earned which contributes to per capita state tax burdens for states S and K are $650 and $1,250, respectively. Table 1 reflects a slightly higher effective tax burden rate in State K compared to State S due to the progressivity of the state tax structure.

Table 1

Theoretical Tax Capacity Structure – Federal Government W

	Federal Government W				
	Population	Per capita income	Per capita tax burden	Effective tax burden rate	Tax revenue generated
State S	1,000	$32,000	$650	2.03%	$650,000
State K	1,000	$53,000	$1,250	2.36%	$1,250,000
	Total taxes generated:				$1,900,000

Even with similar population bases, State S possesses a theoretical fiscal capacity measured at $650,000 while State K enjoys a fiscal capacity measured at $1,250,000 - a figure nearly double that of State S due to the higher level of per capita income. Except for the slight difference in the effective tax burden rate, equals are treated equally. This comparison, however, reflects only the jurisdictional tax capacity of each community. If the level of fiscal capacity is considered alone, the overall fiscal structure is considered equitable. However, if both sides of the fiscal equation are included, fiscal capacity and the demand for public benefits and services, a significant inequity in the treatment of equals becomes apparent.

Now suppose that Federal Government W provides an expenditure level of publicly provided services, using the combined $1,900,000 tax revenue received from both sublevel jurisdictions, such that each jurisdiction receives an equal amount of public benefit expenditure - equals being equal. Table 2 reflects the distribution of public benefit expended in each of the two states.

Table 2

Theoretical Distribution of Public Benefit – Federal Government W

	Federal Government W		
	Population	Per capita public benefit	Public benefit distributed
State S	1,000	$950	$950,000
State K	1,000	$950	$950,000
Total public benefits received:			$1,900,000

The public benefit distribution is expended equally, with no consideration given to the fiscal capacity of either jurisdiction. Here in lies the inequity of the Federal Government W's fiscal structure. Table 3 reflects the calculation of taxes paid versus benefits received for each state jurisdiction.

Table 3

Surplus (Deficit) Position of States S and K

	Federal Government W	
State S		
	Revenue paid to Federal Government W	$650,000
	less: benefits received from Federal Government W	(950,000)
	Surplus (deficit) fiscal imbalance	($300,000)
State K		
	Revenue paid to Federal Government W	$1,250,000
	less: benefits received from Federal Government W	(950,000)
	Surplus (deficit) fiscal imbalance	$300,000

State S generated and submitted $650,000 in tax revenue to Federal Government W while receiving in return $950,000 in federal benefit expenditure, thereby incurring a

fiscal deficit imbalance in the residuum amount of ($300,000). Conversely, State K generated and submitted to Federal Government W while receiving in return $1,250,000 in federal benefit expenditure, thereby enjoying a fiscal surplus imbalance in the residuum amount of $300,000. The resulting equal and offsetting interjurisdictional fiscal residuum reflect the level of fiscal disparity occurring between the two states. If, under Buchanan's theory of an intergovernmental transfer system, a transfer were made using the remaining $300,000 in surplus fiscal imbalance from State K to State S to subsidize its deficit fiscal imbalance, the resulting residuum are effectively eliminated. This intergovernmental transfer enables equals to be equals, as a comparison of the two states shows materially similar effective tax burden rates and jurisdictional spending received levels. The irony cannot be missed, as Buchanan noted in his model, that residents of State K are effectively paying for public services provided in State S.

For consideration and application to other potential studies, Buchanan provided alternative methodologies to the intergovernmental transfer system to bring about fiscal equilibrium between sublevel public entities. Rather than the utilization of a intergovernmental transfer, a geographically determined personal income tax program could be implemented assigning varying tax rates to individual sublevel jurisdictions so as to mitigate disparities in interjurisdictional fiscal capacities; this methodological use of vary tax rates among equals would closely achieve the equity goal (Buchanan, 1950, p. 595). The political benefits of a discriminatory central government personal income tax is that it would allow for an interjurisdictional transfer effect to occur without requiring the need for an increase in overall central government tax rates. Buchanan noted that the

difficulty in implementing such a plan would be significant constitutional barriers existing in the United States where the courts have "held repeatedly that the uniformity of taxation required was geographical in nature" (Buchanan, 1950, p. 596).

Transition From Theory to Application of Research Variables

State governments have experienced unprecedented erosion in revenues as a result of the economic recession. According to the National League of Cities (NLC) 'Fiscal Conditions in 2012' report, state and local government finance officers report of their continuing struggle with the economic impacts of depressed housing markets, slow consumer spending, and high levels of unemployment (Pagano, Hoene, & MacFarland, 2012). Between 2007 and 2009, average real family income fell by 17 percent, by far the largest overall drop since the great depression (Saez, 2012). These economic impacts have a direct effect on public sector revenues as property, sales, income, and excise tax collections make up nearly 80 percent of general government revenues (National Association of State Budget Officers, 2011). Historic levels of foreclosures and declines in assessed valuations of real property have had a suppressing effect on real property tax revenues.

Any relief from this effect is not expected in the near future as collections of property taxes lag behind improvements in housing prices by 3 years (Lutz, 2008, p. 66). Simultaneously, the loss of personal income caused by high levels of unemployment have created downward pressures on consumer spending, which in turn erodes sales and other forms of consumption-related state tax revenue. Impairments in these forms of state tax revenue put financial support for unemployment, medical

assistance, food stamps, and other social welfare programs at extreme risk (Jimenez, 2009; Chernick & Rechovsky, 2003).

State governmental spending has not fared any better as the drastic reduction in nearly every form of tax revenue leave states with no other option than to make offsetting cuts in expenditures. These offsetting expenditure reductions are required as all states, with the exception of Vermont, operate under some form of legislative or constitutional rule requiring a balanced budget. By mid-year 2010, 38 states still forecasted lower levels of spending in fiscal year 2011 compared to 2008, with fiscal year 2010 general fund expenditures down 7.3 percent from 2009 (National Association of State Budget Officers, 2011).

The loss of revenues was not the only factor impacting public spending. High levels of unemployment have a cause and effect relationship with an increased need for a number of public welfare services. The reduction in personal household income has a direct effect on the need for unemployment claim payments and job training programs. Unemployed individuals may lose health insurance benefits, causing an increased financial stress on hospitals and local health clinics. Public safety costs increase as well as "crime rates increase during economic downturns, increasing the need for police services" (Congressional Budget Office, 2010). In some cases, individuals losing their employment shift from using personal vehicles to public transportation putting a higher level of stress on these infrastructure systems.

Research Variables

Political subdivisions within a federal structure each have their own intrinsic socioeconomic characteristics which respond differently to economic fluctuations. Due to each jurisdiction's having different levels of fiscal capacity combined with varying demand pressures from each jurisdiction's constituency, changes in economic variables will have different effects depending on the nature and composition of each jurisdictions economy.

Fiscal Imbalance Ratio

In the United States, each state generates, collects, and remits federal income, excise, estate, and gift taxes to the United States Treasury via the Internal Revenue Service (IRS). These funds are pooled and reallocated back to each state based on the demand level for various goods and services. In practice, it is rare that a state's expenditure demand requirement for goods and services will equal exactly the amount of tax and fee revenue generated. Accordingly, some state jurisdictions will receive more in public goods and services expenditures than the amount of tax revenue generated; other jurisdictions will generate more in tax and fee revenue than they receive in public goods and services.

For the purpose of this study, a fiscal imbalance represents the differential mismatch between the governmental revenues generated by a jurisdiction and the level of expenditures required to meet the jurisdiction's constituent demand for public goods and services. The imbalance is presented in ratio form with the numerator reflecting a

measure of federal spending received and the denominator reflecting the amount of federal revenues generated and paid to the U.S. government.

Fluctuations in the economic factors within each state may impact the state's fiscal imbalance ratio differently than other jurisdictions. In terms of fiscal capacity, one state may have a higher level of commercial retail development which generates a comparably higher level of revenue growth than other states during prosperous periods of time, yet the same state may experience a higher level of revenue erosion during economic recessions as sales tax revenues are highly sensitive to shifts in economic conditions. In terms of demand levels for public goods and services, one state may have an agriculturally oriented economic base which experiences seasonal fluctuations and a higher sensitivity to negative economic conditions; both of these scenarios may result in a higher demand level for public safety net services, such as low income housing or unemployment payments, than other state jurisdictions. Each state has its own mix and economic composition of socioeconomic factors which may respond differently to fluctuations in the economic environment than its neighboring jurisdictions.

Of interest to this study was the observation measurement of examine how fluctuations in unemployment percentage rate by state, the percentage of the population over age 65 by state, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and per capita GSP by state as a percentage of per capita GDP in the United States are related to fluctuations in the dependent variable, the net change in aggregate fiscal imbalance ratio, during a periods of cyclical economic volatility.

Unemployment

One of the most widely recognized indicators of an economic recession is higher unemployment rates. Figure 2 shows that from 2004 through 2007 the national unemployment rate had been hovering at an average of 5.0 percent.

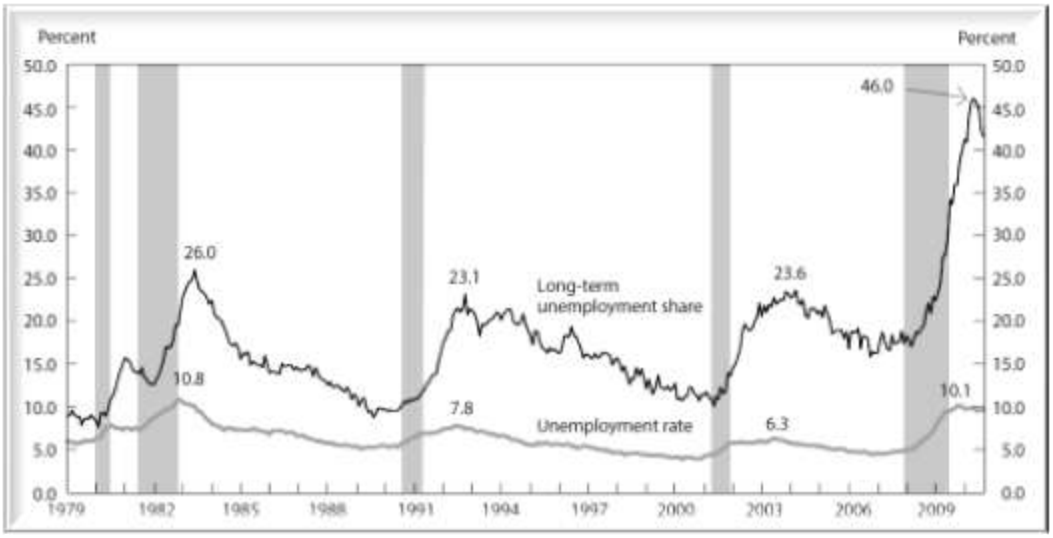


Figure 2. Unemployment during recessionary periods.

Source: Bureau of Labor & Statistics, U.S. Department of Labor (2012). *BLS spotlight on statistics: The recession of 2007-2009.* Retrieved from http://www.bls.gov/spotlight/2012 /recession/pdf/ recession_bls_spotlight.pdf. Permission per Title 17 U.S.C., Section 105.

According to the Bureau of Labor and Statistics, national unemployment reached its peak at 10.0 percent in October of 2009 - the highest rate in nearly 30 years (Bureau of Labor and Statistics, 2012, p. 2). Most notable in Figure 2 is the increased level in the

long-term unemployment share rate, representing those who have been unemployed for 27 weeks or longer.

While the current fiscal recession was initiated by a severe contraction in the housing market, the high levels of unemployment lingering through the last few years have been an impediment to the economy experiencing a healthy economic rebound (Diamond, 2013, p. 31). With the economic remnants of the economic recession still remaining several years after its inception, a critical question lingers as well regarding why unemployment has not significantly abated. Baker, Bloom, and Davis (2012a) suggested that the weak recovery in unemployment stems from high levels of market uncertainty regarding federal economic policy which causes reluctance in households and businesses to spend, invest, and hire (p. 39). Diamond (2013) studied the concepts of cyclical versus structural unemployment to interpret how shifts in the Beveridge Curve observed during the recession may signal new levels of long-term unemployment in the United States. Frazis and Ilg (2009) analyzed labor status flows to determine how changes in unemployment rates and employment-population ratios during the current recession differs those of previous recessions.

The Beveridge Curve is a graphical representation of the ratio of job openings to unemployment rate and is considered an appropriate methodology of measuring how well the labor market is functioning (Diamond, 2013). Typically, the relationship between job openings and unemployment is reciprocal with lower openings and higher levels of unemployment expected during periods of economic recession. By observing shifts in the Beveridge Curve during and after the recent recession, Diamond observed two

distinct periods when job opening rates appeared to increase with immaterial changes in the unemployment rate. Stating that shifts along the Beveridge curve signify cyclical changes in unemployment, Diamond (2013) questioned if the erratic pattern of movement observed during and after the recession may signify that the fluctuations may be structural in nature, and that higher levels of long-term unemployment may now be the "new normal" in the United States economy (p. 33). Through the combined analysis of previous literature and unemployment data gathered from the recessionary period, Diamond suggested that recent erratic movements may simply reflect that the pool of long-term unemployed workers has simply increased, that recruiting and hiring practices were remaining stagnant, that federally extended provision of unemployment benefits has resulted in an increased amount of time unemployed workers will remain out of the workforce, and that inadequate aggregate labor demand is a contributing factor to unemployment rates remaining at high levels.

Frazis and Ilg (2009) took a similar approach to Diamond's by analyzing shifts in unemployment rates and employment-population ratios. Using data from the Bureau of Labor and Statistics (BLS), Frazis and Ilg calculated that during the period from March 2007 to December 2009, the percentage change in the jobless rate rose 2.8% while the employment-population ratio decreased by 2.3%. Of interest to Frazis and Ilg were the levels of employment flows into and out of the workforce. By categorizing workers into the three labor force states of employment (E), unemployment (UE), and not in the labor force (N), the authors measured and compared the velocity at which workers moved between the three categories during the recent recessionary period and previous

recessions. The author's comparison found that while labor flows out of employment were similar in all recessionary periods, labor flows back into the employment state during the recent recession were lagging behind similar flows of past recessions. Interestingly, the observation of a slowness to reenter the workforce by unemployed individuals regardless of job availability mirrors the results found by Diamond.

Baker, Bloom, and Davis (2012b) also observed the sluggishness of output growth and high levels of unemployment. Rather than looking at quantitative ratios of economic fluctuations, Baker et al. were interested in measuring economic policy uncertainty and its effect on economic performance. The authors used a previously developed index of economic policy uncertainty (Baker et al., 2012a) consisting of the combined measures of press coverage of policy related uncertainty, the number of tax code revisions expiring in the future, and observed disagreements among economic forecasters as a proxy for uncertainty.

By plotting the levels of economic uncertainty over time, the authors found that the level of economic uncertainty has been higher during the recent recession and that short-term movements in economic uncertainty are similar to measurements of policy related uncertainty more during recent years than previous periods. Baker et al. (2012b) concluded by confirming their view of policy uncertainty having a profound impact due to policy uncertainty being at historically high levels the last four years, that policy-related concerns represent a larger share of overall economic uncertainty, and that the measured rise in policy uncertainty corresponds to the current lower levels of output and employment (p.55).

Percent of Population Over Age 65

In 2011, the oldest members of the "Baby Boom" generation turned 65. As has been observed since post-World War II, this cohort of aging individuals will affect many of the social service, medical, and economic structures of the U.S. as they move through the maturation phase of their life cycle. Figures 3 and 4 illustrate that, according to the U.S. Census Bureau, the number of people in the United States over age 65 is expected to grow from 35 million in 2000 to 89 million in 2050 which will representing 20.3% of the total U.S. population (Wiener & Tilly, 2013):

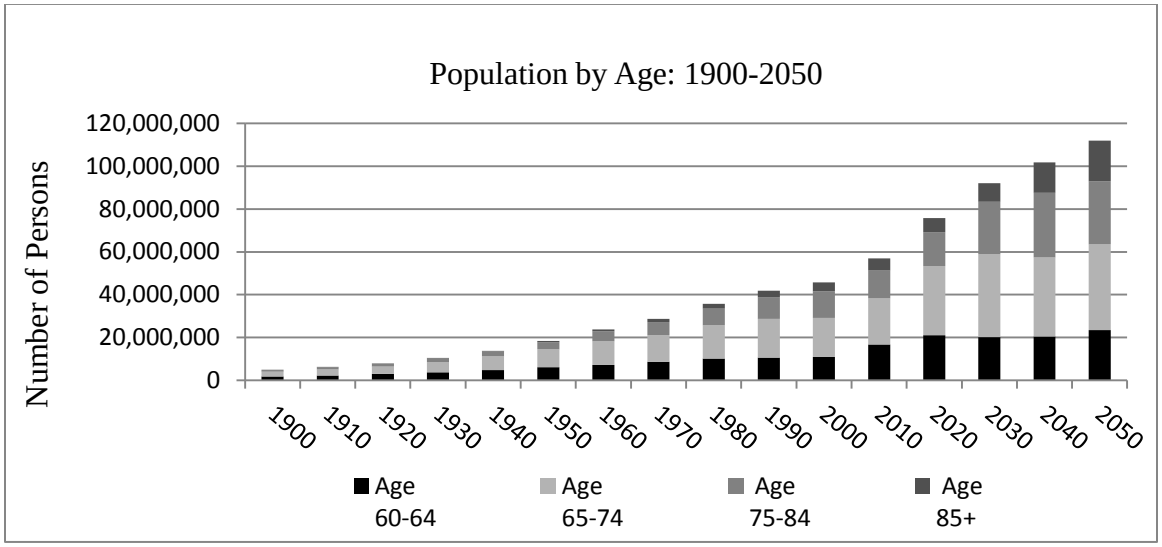


Figure 3. Projected U.S. population 60+ 1900-2050.

Source: U.S. Department of Health and Human Services. Retrieved online at http://www.aoa.acl.gov/Aging_Statistics/future_growth/future_growth.aspx. Permission per Title 17 U.S.C., Section 105.

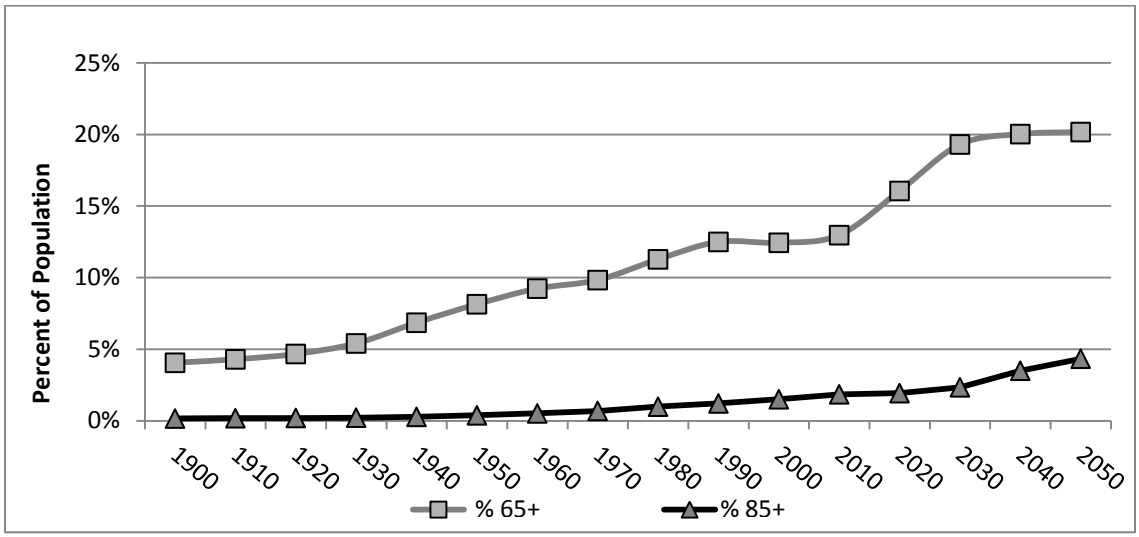


Figure 4. Percent of population 65+ 1900-2050.

Note: U.S. Department of Health and Human Services. Projections for 2010 through 2050 are from: Table 12. Projections of the Population by Age and Sex for the United States: 2010 to 2050 (NP2008-T12), Population Division, U.S. Census Bureau; Release Date: August 14, 2008. Retrieved online at http://www.aoa.acl.gov/Aging_Statistics/future_growth/future_growth.aspx. Permission per Title 17 U.S.C., Section 105.

This rapid growth of the older age component of the economy will dramatically impact health care costs as the demand for Medicare and nursing homes, as well as for the treatment of dementia, heart disease, and osteoporosis—rather than acute illnesses (Schneider & Guralnik,1990; Wiener & Tilly, 2002). Those over age 65 also tend to be bigger recipients of government spending for education, pensions and health care.

These demographical dynamics are economically important as public expenditures for the aging are expected to grow as a percent of GDP. Table 4 presents

official government projections for Medicare and Social Security expenditures for long-term care expenditures.

Table 4

Percent of GDP for Federal Healthcare Programs

Program	2000	2050	Percent change
Medicare	2.2	6	173
Social security	4.2	6.5	55
Medicaid long-term care	0.4	0.7	95
Total	6.8	13.2	94

Source: Board of Trustees (2001). *The 2001 Annual report of trustees of the Federal Old-Age and Survivor's Insurance and Disability Insurance Trust funds.* Baltimore, MD: Social Security Administration.

The projected rise in the national Dependency Ratio, the ratio of economically inactive compared to economically active, as social program costs increase dramatically will challenge policy makers to fund an increase in expenditure demand from a demographic segment of the population which contributes a smaller proportional amount to federal tax revenues (Wiener & Tilly, 2002).

The social program costs for the aging is not the only issue concerning decision makers regarding the percent of population over age 65. The American public is a very mobile public. Tiebot (1956) theorized that individuals are fully mobile, and are fully informed of the wide variations in levels and mixes of local expenditure and tax burdens

that exist between neighboring jurisdictions. Accordingly, many senior citizens will select a community in which to reside depending how a jurisdiction best matches the individual's tastes and preferences for public benefits and services. Individuals seeking community attributes of lower tax rates, cheaper housing, better traffic routing, a slower pace of life, and the ability to leave the deteriorating core of central cities (Hyman, 2008, p. 696). With the proliferation of the automobile, individuals may live in one community while at the same time demanding services from an adjacent community. While Tiebot's model explained individual motivations to relocate to different communities, the model ignores the interjurisdictional externality costs or benefits that occur when individuals in one community may pay for or consume public services that were decided on in an adjacent community.

One of the guiding precepts to Buchanan's (1950) fiscal imbalance theory is the recognition that different jurisdictions have varying levels of the fiscal capacity needed to provide a standard package of public goods and services. "The proportion of the population age 65 and over varies by state…this proportion is partly affected by the state fertility and mortality levels and partly by the number of older and younger people who migrate to and from the state" (Federal Interagency Forum on Aging-Related Statistics, 2012, p. 3). In addition, various socioeconomic factors within a jurisdiction cause fluctuations in the demand for public services based on each jurisdiction's demographic mix. Theoretically, a more aged jurisdiction with a less developed economic based may suffer more economically than an affluent jurisdiction that may be insulated from the negative impacts of a recession.

Per Capita Income

The elements that determine per capita income across communities varies geographically because neither economic development nor labor force factors are homogenous across political jurisdictions. Local government revenues vary on a per capita basis due to different levels of fiscal capacity factors occurring between jurisdictions. Krueger's seminal work on per capita income differences between countries began with the acknowledgement that "the days when a single factor—capital, skills, entrepreneurship—was believed to be the key to economic development...have long since passed" (Krueger, 1968, p. 641). Krueger felt that little research had been performed to quantify the degree to which other explanatory variables, such as capital or trade skill levels, may cause differentials in per capita income. If one could determine that most of the differential is the result of uneven factor endowments then resource accumulation would be the basis for economic development analysis; if resource disparities have little observed impact on per capita income differentials, then research should be focused on models that study resource inputs to resource outputs (Krueger, 1968, p. 641).

In an effort to craft a methodology of determining material factor roles causing per capita income disparities, Krueger (1968) suggested that three human capital variables determine at least half of the per capita income variances between regions: (a) years of education—representing the best measure of investment in an individual, (b) age distribution—a factor which impacts population growth and productivity, and (c) urban-rural distribution of the population—spatial distribution being a factor in determining

income per individual (p. 647). While Krueger's study appears to address human capital alone as a significant component of per capita income differential analysis, absent is a clear reference to the impacts productivity and factor price may contribute to the equation.

Counter to Krueger's position, Kahn (2009) suggested that differences in per capita income across jurisdictions are not a result of the availability of capital and labor; differences in per capita income are the result of varying levels of efficiency at which production factors are used (p. 11). Kahn (2009) describes the elements of growth accounting - the classical economics approach to explaining differences in income per person by dissecting gross domestic product (GDP) into capital per worker, human capital per worker, and total factor productivity (TFP). TFP represents the both the efficiency in which the inputs of labor and capital are used, and the level of residual output remaining after accounting for the physical and human capital (Kahn, 2009, p. 17). According to Kahn, this dissection process leads the reader to conclude that differences in per capita income across jurisdictions is attributable to differences in the amount of physical capital available, or the level of technical training received by each worker (p. 15).

To other researchers, this conclusion is misleading as illustrated through recent research by both Klenow and Rodriguez (1997) and Hall and Jones (1999) which supports the theory that between 50 to 70 percent of the observed differences in per capita income comes from differences in TFP. Essentially, less affluent jurisdictions are

poorer, not due to less capital and skill levels per worker, but because these jurisdictions use these factors less efficiently than others.

The Percent of State Population Below the Federal Poverty Level

The United States has one of the highest rates of poverty in the Western world (Iceland, 2006). The irony is that the United States is also the wealthiest nation in the world in terms of GDP per capita with all other countries GDP measurements falling "within a tight range of 12 percentage points in their GDP per capita, from 69 to 81 percent of the U.S. level" (Smeeding, 2006, p. 70). One of the fundamental reasons the U.S. has one of the highest poverty rates while at the same time being the richest nation lies in the fact that the nature and causes of poverty in the United States is greatly misunderstood, and that the U.S. has a much more unequal distribution of income that other industrialized nations (Jantti, 2009; Rank, 2006).

There are many reasons why poverty is an important issue in the study of fiscal imbalance. Studies on the adverse effects of poverty on the developmental growth, and the physical and mental stability of youth have shown that children raised in poverty are more likely to worse off in self-esteem, school achievement, and in anti-social behavior (Smeeding, 2006). Individuals suffering in these areas might find it difficult to find living wage employment in their adult years, thereby placing greater demand strain on the provision of social support programs. In addition, much of the economic growth in the United States was fueled by a vibrant middle class. "As the demand for new technology soared, so did technological innovation, productivity, and wages and benefits…increasing

the number of people who can purchase goods and services; that in turn, stimulates economic growth and raises the average standard of living" (Iceland, 2006, p. 3).

Nijhawan and Dubas (2006) researched the relationship between poverty and income inequality by studying economic data from across the 50 U.S. states. The study confirmed an inverse relationship between income inequality and income growth finding that income inequality may actually cause income growth thereby reducing poverty in the future. Other research has shown that spatially-related income inequality is important when considering how different jurisdictions respond to economic growth in mitigating poverty (Bourguignon, 2004; Joshi & Gebremedhin, 2012; Ravillion, 1997).

With a highly and increasingly unequal distribution of income fueling an even greater disparity in both relative and absolute poverty, the long-term spatial effect of poverty on the relative measure of interjurisdictional fiscal imbalances between states is significant as poverty reduces produces a two-fold adverse impact on a jurisdiction's fiscal imbalance ratio. First, lower levels of per capita income in one state, in relation to other states, comparatively reduces the poorer jurisdiction's tax generating capacity. At the same time, a higher percentage of individuals living in poverty in one state create a higher demand level for unemployment benefits, medical care subsidies, and other social safety net services compared to other more affluent states. Accordingly, the measurement of the level of individuals living below the federal poverty level may have an important relationship to the level of fluctuations in aggregate fiscal imbalances during periods of economic instability.

The Kauffman Index for Entrepreneurial Activity

One conceptual component of fiscal imbalance theory is the understanding of fiscal differentials existing between jurisdictional elements of a federal system. These fiscal differentials evolve when either the tax generation capacity or the level of demand for public goods and services between jurisdictions lack equivalency in measurement (Buchanan, 1950). With certain jurisdictions being economically weaker than others, an obvious objective of for decision makers might focus on the need for encouraging equivalency and expanding economic growth within poorer jurisdictions.

Solow (1956) developed an economic growth model that included a list of economic factors which contribute to economic development—a list which included the concept of entrepreneurship as a key component to observed economic growth. Holcombe (1998) suggested that the inclusion of entrepreneurial activity into economic growth models illuminates the concept that "the engine of economic growth is entrepreneurship, not technology advance or investment in human capital" (p. 60). Wong, Ho, and Autio (2005), studying the effect of entrepreneurship at the country level, found that only high-level entrepreneurship impacts economic growth, and that firms experiencing rapid levels of growth are more significant than new or start-up firms. Acs and Armington (2006) concluded that the understanding of the relationship between entrepreneurship and economic growth is better situated at the sub-national or state level as local public entities are more homogenous, and there is superior mobility of human and non-human factors between states than at the federal level (p. 141).

There are numerous indices used to measure the impacts of entrepreneurial activity on economic growth. The Economic Freedom of North America (EFNA) index defines the impact of governmental market interference on a national free market economies and how taxation, spending, and regulation effect entrepreneurship (Ashby, Bueno, & McMahon, 2011; Powell & Weber, 2013). The Global Entrepreneurship Monitor Consortium (GEM) is a wide ranging indices measurement of entrepreneurial activity across a number of countries (Hafer, 2013; Wong et al., 2005). The Kauffman Index for Entrepreneurial Activity (KIEA), a superior measure of state entrepreneurial activity, explains state-level entrepreneurial activity as a component of economic growth (Hafer, 2013; Hall & Sobel, 2008; Powell & Weber, 2013).

The KIEA index, using state-level data from the U.S. Census Bureau's Current Population Survey (CPS), measures the percentage of the adult, non-business-owning population which start a new business each year. In addition to measuring the comprehensive level of business start-up activity, the KIEA index calculates separate estimates for specific demographic groups, for each of the 50 U.S. states, and for certain metropolitan statistical areas (MSAs). "The KIEA index provides the only national measure of business creation by specific demographic groups" (Fairlie, 2014). An analysis of state-level fiscal imbalance fluctuations should include an index gauging any potential relationship between new business activity and the fiscal capacity expansion of a jurisdiction. Due to the availability of state-level indices for all years, and the robustness and depth of its index components, the KIEA index will be used as a measure of entrepreneurial activity occurring within the 48 contiguous U.S. states for this study.

Per Capita GSP by State$_i$ as a Percentage of Per Capita GDP in the United States - GDP$_{US}$.

GSP is a measurement of a state's economic output calculated as the combination of all value-added activities from all industries in the state. GSP is the state-level derivative of a nation's GDP, with GDP representing the market value of goods and services produced by labor and property capital within the United States, regardless of nationality. One of the key issues connected to interjurisdictional fiscal imbalance analysis is whether the overall GSP disparity levels contract or expand during cyclical economic periods of time.

The velocity at which fiscal imbalances levels diverge or converge can be categorized into two different types of divergence models: (a) sigma convergence, or σ-convergence, is when the overall variation of income or other economic factors across a jurisdictional population decreases—most frequently measured by fluctuations in the standard deviation or coefficient of variation of a given economic variable such as GSP, and (b) beta convergence, or β-convergence, when the convergence velocities vary within a population of states depending on the level of fiscal affluence of each individual entity, thereby allowing poorer states economies to potentially grow at a faster rate than a richer state (Wodon & Yitshaki, 2001).

Paas and Schlitte (2006) in a study of GDP convergence factors impacting regional income disparities in the European Union (EU-25) determined that beta and sigma convergence are mutually exclusive, that the speed of convergence occurs differently between regional and nation levels, and that tests for spatial autocorrelation

between regions determined that convergence velocities within a state jurisdiction are affected by contiguous jurisdictions (p. 19). Garrett et al. (2005) used GSP as a measurement variable to determine the existence of spatial correlations in regional fiscal disparities and income growth between the 50 U.S. states. The researchers found positive spatial correlation in income growth across contiguous states. However the strength of the spatial correlation varied between geographic regions.

Garret et al. (2005) concluded that spatial correlations between states are complex, and that further research is warranted to understand how various economic factors impact growth dynamics, and that state decision makers should pay close attention to the fiscal policies of neighboring states, as state-level policies can have significant influence over growth in adjacent states (p. 17). For these reasons, GSP is chosen as an independent variable in this study due to its relevance as an empirically accepted measure of economic growth, and as a valid economic measure of economic output at the state level.

Summary and Conclusion

This literature review develops the ground work for the study and includes a review of the theoretical and thematic concepts which frame the how public entities allocate and distribute public goods and services in a manner which stabilizes an economy, how the responsibility for the delivery of various forms of public goods and services are assigned to different hierarchical levels within multi-tiered governmental structure, and how a central form of government might mitigate economic deficiencies that occur between its sublevel political jurisdictions. The variables of unemployment

percentage rate by state, the percentage of the population over age 65 by state, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and per capita GSP by state as a percentage of per capita GDP in the United are highlighted to illustrate how socioeconomic factors play an important part in fiscal imbalance dynamics that exist between state jurisdictions.

The literature review exposes certain gaps in the literature regarding alternative methodologies that could be used to mitigate fiscal imbalances that occur as these socioeconomic factors fluctuate during economic cycles. The present study sought to provide greater detail of the causes of fiscal imbalance fluctuations so that decision makers may address fiscal disparities at their economic roots rather than simply funding disparities after the fact.

Chapter 3 outlines the design and research methodologies used to observe and measure fluctuations in the independent variables and how any fluctuations might impact the levels of fiscal imbalances occurring within the 48 contiguous U.S. states. Chapter 4 highlights the results of the proposed research, while chapter 5 provides a summarizing discussion of the findings of the research questions and data, a recommendation for future study and organizational practice, in addition to research implications for social change.

Chapter 3: Research Methodology

Introduction

The goal of this quantitative study was to examine the potential relationships between fluctuations in key socioeconomic factors and changes in aggregate fiscal imbalance levels in the United States during the years of 2000 through 2010. The information in Chapter 3 includes the research problem, the research design and rationale, the research questions and related hypotheses, the sample data, study methodology, and the selected study approach. The discussion also includes sections addressing data collection and the data analysis plan, threats to validity, and ethical considerations of the research. The chapter concludes with a summary of the rationale for using a quantitative longitudinal design addressing the research problem, an explanation of the procedures used to support or reject the null hypotheses, and a discussion of the potential for social change.

Research Design and Rationale

Research design, the overall plan of structure of a study, consists of clearly stated research questions and the related plans for compiling, processing, and interpreting data to answer the questions (Singleton & Straits, 2010). Singleton and Straits (2010) described a quantitative study as one that analyzes values or categories of numbers to observe if differences between categories can be expressed numerically. The data-analysis techniques of a quantitative study depend on whether the intent of the study is descriptive, explanatory, or a hybrid of the two methods. The objective of a researcher using a descriptive study is to describe some phenomenon by focusing on relatively few

dimensions of a specific entity and measuring the dimension systematically and precisely, usually with detailed numeric data (Singleton & Straits, 2010, p. 108). The objective of a researcher using an explanatory study is to investigate possible relationships between two or more variables and to attempt to explain these relationships in terms of cause and effect (Singleton & Straits, 2010, p. 267). These formalized procedural methodologies of study research assist in guiding researchers in quantitative research analysis (Aczel & Sounderpandian, 2009; Creswell, 2009).

Within the realm of study methodologies are those models used to observe and measure changes that occur throughout a process or phenomenon, and in which the function of time are an important element of the research design. According to Salkind (2000), there are two basic developmental research methods that are used to describe changes or differences in behavior within a framework of age, stage, or other measurement of time: (a) cross-sectional method and (b) longitudinal method (p. 200). The cross-sectional method is used to examine several elements of a study design at one specific point in time, whereas the longitudinal method assesses changes in a certain behavior of a variable at more than one measured point, or wave, in time. Of the two methods, the longitudinal method reveals extensive detail on the development or trend of a process over an extended period of time, whereas the cross-sectional method provides no indication of as to the direction of change that a group might take (Salkind, 2000, p. 202; Yan & Lou, 2008).

Rather than attempting to influence or manipulate the identified explanatory variables or events in any way, the purpose for choosing a quantitative, longitudinal

design methodology for this study was to develop informed responses to the research questions by observing, analyzing, and interpreting measurements of a multiyear economic phenomenon. Essentially a fact-finding exercise, the purpose of using a longitudinal research design in this study was to examine how fluctuations in of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States may be related to corresponding changes in aggregate fiscal imbalance levels during the 11-year period of 2000 to 2010. Additionally, the purpose of this quantitative model was to use statistics to compare the annual level of statistical variance in fiscal imbalance ratios of each state to the annual changes in the various socioeconomic factors to determine if possible relationships exist between all of the explanatory variables, and if so, which changes in economic factors have a higher relational strength to observed changes in levels of fiscal imbalance.

The choice of a longitudinal design is consistent with contemporary research designs used to advance knowledge in the discipline of governmental fiscal policy and economic performance. Of particular interest to this study, within the realm of longitudinal design study formats, was the use of time-series-cross-section (TSCS) modeling in the prototypical empirical analysis of comparative fiscal politics and public sector economic performance. TSCS data are the most commonly used data in any comparison of political units, and any study that compares political units such as regions,

states, or counties within a single public entity (Beck & Katz, 2011, p. 332). Beck (2001) stated that "TSCS data are characterized by repeated observations (often annual) on the same fixed non-sampled political units (usually states or countries)" (p. 271). TSCS data analysis incorporates a three-dimensional data analysis structure using multiple units and multiple variables, over multiple periods of time. Figure 5 shows the three-dimensional structure of this study consisting of the analysis of multiple economic variables, with multiple states, measured over multiple periods of time:

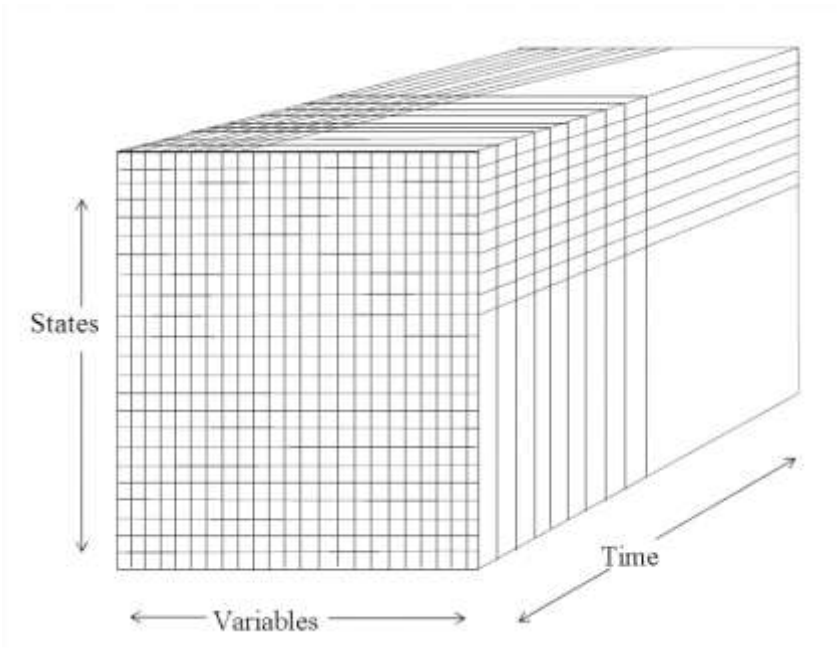


Figure 5. Three-dimensional structure of a TSCS plan design for 48 U.S. states.

Note: Adapted from Wlezian, C. (1999). Presidential polls as a time series: The case of 1996. *Public Opinion Quarterly, 63*(2), 163-177. Permission for use licensed through Oxford University Press. See Appendix H.

A common TSCS design structure in comparative econometric studies of the U.S. states is where an economic performance measure or policy objective is regressed against a number of economic variables (Beck, 2001; Fiorina, 1994; Fording, 1997; Hollingsworth, Hanneman, Hage, & Ragin, 1996; Smith, 1997). In a comparison of panel data and TSCS data as two subsets of a longitudinal design, there are inherent differences between the two processes. Panel data is repeated cross-section data where the units of measurement are sampled, yet only observed a few times—whereas TSCS units are fixed with no sampling scheme for the units and any reapplication of the study model must retain the units fixed and complete (Beck, 2001, p. 113; Freedman & Peter, 1984). In the use of panel data, all inferences of interest are on the elements of the population that were sampled rather than being conditioned on the selected sample (Beck, 2001, p. 113). In the use of TSCS data, "all inferences of interest are conditional on the observed units" with any replication of a previous model being focused on the draw of a new data sample from the same fixed unit of observation (Beck, 2001, p. 113).

Following these TSCS modeling concepts, I examined the potential relationships between fluctuations in multiple socioeconomic factor variables and changes in aggregate fiscal imbalance levels, using 48, fixed, nonsampled, observational units (states), over multiple periods of time (the 11-year period of 2000 through 2010) using a quantitative, longitudinal, time-series-cross-section research design, for a total of 3,696 observations.

Research Methodology

In this study, I employed a quantitative descriptive research methodology—a methodology that gives the researcher the ability to objectively observe and test the

relationship between fluctuations in key economic factors and corresponding fluctuations in aggregate fiscal imbalance levels in the target population of the 48 contiguous U.S. states over an 11-year period.

Target Population

Econometric studies of an entire population of political entities allow for cross-population generalizability of the research findings about one group, population, or setting to other groups, populations, or settings (Schutt, 2012, p. 21). Accordingly, the procedural sequence of this econometric study began with an examination of a fiscal phenomenon occurring geographically within the target population of the 48 contiguous U.S. state jurisdictions. The significance of using the 48 state jurisdictions followed the theory that spatial interdependence exists between contiguously-located jurisdictions—contiguous being defined as those states either "touching or connected throughout in an unbroken sequence" (Merriam-Webster Online, 2014). Coughlin et al. (2006) stated that "units of observation, such as states or countries, are typically defined by politically established boundaries rather than economic boundaries…technology spillovers, migration, trade flows, commuting patterns and public policy can link economies together despite their political separation" (p.3).

In this study, I excluded the two noncontiguous U.S. states, Alaska and Hawaii, based on two previous research studies that found that, due to these two states having very unique economies and their being located great distances from the closest U.S. state, estimating similar spatial relationships as assumed for the remaining 48 contiguous states may be unreasonably different than those of other states (Barrios, Diamond, Imbens, &

Kolesar, 2012, p. 580; Coughlin, et al., 2006, p. 6). Recent research using spatial econometric techniques to investigate fluctuation dynamics in economic data within an entire interrelated and contiguous population of political jurisdictions has become more prevalent (Abreu, de Groot, & Florax, 2004; Garrett, Wagoner, & Wheelock, 2007). Abreu et al. (2004) distinguished between spatial models of absolute and relative location that are based on the classification of *spatial dependence*— "when the observations at one location depend on the values of observations at other locations" (p. 2). For example, the growth rate of one state-level jurisdiction surrounded by states with high levels of growth may benefit from positive spillovers resulting from consumers who earn higher wages in the higher growth jurisdictions, yet live and spend funds in the adjacent jurisdiction.

Garret et al. (2005) found that when a positive spatial correlation existed in income growth analysis across all 48 contiguous U.S. states as a whole, and when spatial correlation is assumed to impact all elements of a population in an equal manner, "a given state's income growth is directly related to the income growth of its neighbors" (p. 1). Cliff and Ord (1981) used a model of correlation to investigate the determinants of state-level annual income growth in the complete population of all 48 contiguous U.S. states using data from 1977 to 2002. Anselin (1988) proposed that spatial correlation in longitudinal models depends upon the use of all contiguous 48 states under observation. Margrini (2004) argued that geographical elements within regional or country income growth studies are not interchangeable and that regional income studies should be based on different empirical methods than other forms of study, especially when the geographical elements are contiguous in nature. Finally, Rey and Montouri (1999)

studied income and growth rates using global spatial autocorrelation statistics across all 50 U.S. states resulting in the determination that measures of income of one state are correlated with those of adjacent states.

Econometric models using the contiguous geographic location of all jurisdictional elements within a geographical population are valid as the statistical analysis of the interwoven economic relationships between adjacent states could be weakened or impaired should any jurisdictional elements be excluded from the econometric analysis (Anselin, 1988; Coughlin et al., 2006; Rey & Jankas, 2005). Conceptually formulated on the modeling framework of these previous studies, I extended previous research by gathering and analyzing sample economic data from the 48 contiguous U.S. states for the years 2000 through 2010, as fiscal imbalance levels are a highly intertwined relational factor between one state and its contiguous state-level peer jurisdictions, and the measure of fiscal imbalance within any one state jurisdiction is highly sensitive to economic dynamics within all other contiguous states in the study population.

Sample and Sampling Procedure

In order to examine state-level fiscal imbalances and their relationship with various socioeconomic factors, I relied on sample data obtained from federal agencies—the Internal Revenue Service, the U.S. Census Bureau, the U.S. Bureau of Economic Analysis, the U.S. Department of Commerce—and the Ewing Marion Kauffman Foundation's KIEA statistic, the Kauffman Index on Entrepreneurial Activity, compiled from sample data provided by the U.S. Census Bureau's Current Population Survey. All of these entities provided detailed documentation and data on a comprehensive variety of

national and state-level fiscal factors. The datasets from these agencies provided the necessary elements to construct the sample data for years 2000 to 2010 required for this study. The 11-year period used in this research study represented a sample range of dates covering a number of cyclical fluctuations in economic growth, including two periods of recession and subsequent recovery, as established by the National Bureau of Economic Research (NBER). Sample data were in finalized form, with any figures stated in currency adjusted for inflation and presented in real chained 2009 dollars based on the Bureau of Economic Analysis' Chained Consumer Price Index for All Urban Consumers (C-CPI-U, US). The sample size was composed of seven variables, for each of the 48 contiguous U.S. states, for 11 consecutive years, for a total of 3,696 observations. Permission for access to the data information on federal agency websites was not required under Title 17 U.S.C., Section 105.

Phasing of Research Methodology

The research methodology incorporated an analysis process structured in two phases. The initial phase of the research methodology, addressing Research Question 1, replicated the econometric modeling structure developed by Connaughton and Madsen (2012) who used a longitudinal modeling design structure to observe impacts of the 2007 to 2009 recessionary period of time on job loss and employment levels within the all inclusive population of 50 U.S. states. Connaughton and Madsen measured the net change in state-level employment during both the initial 2000 to 2007 prerecession expansionary and the 2007 to 2009 recessionary period of time, with linear comparisons being made between the selected time periods and the encompassing 2000 to 2009

decade. In Connaughton and Madsen's study, the independent variable, the net percentage change in jobs, was regressed against various economic factors to observe if relationships existed that explained the observed fluctuations in the state employment levels during the three periods of time.

I expanded and modified Connaughton and Madsen's (2012) model by replacing the dependent variable, the percentage change in jobs growth by state, with the percentage change in fiscal imbalance ratios by state for years 2000, 2007, 2009, and 2010. The independent variables were replaced with those year 2000 economic factors of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States--variables that were better aligned with a study of the aggregate fiscal imbalances dynamic. In addition, the 11-year time period of observation in this model was segregated into relative and specific periods of cyclical change: (a) the 2000 to 2007 prerecession expansionary subperiod, (b) the 2007 to 2009 recession subperiod, (c) the 2007 to 2010 postrecession recovery subperiod, and (d) the comprehensive period of time encompassing the entire 2000 to 2010 range of years.

Multiple regression analyses were performed employing all variables to determine if relationships exist that might explain how changes in economic factors are related to changes in fiscal imbalance disparities within and between the 48 contiguous U.S. state jurisdictions during different stages of the economic cycle.

In the second phase of the research methodology analysis, addressing Research Question 2, I focused on determining if potential relationships between the set of independent variables and the single dependent variable were either strengthened or weakened over time, and which independent variables best related to a state's fiscal imbalance throughout the proposed 11-year period. The determination of either a strengthening or weakening in the potential relationships was made by observing annual fluctuations in the R^2 measures from one year to the next. R^2 measures the degree of relationship between the set of independent variables and the dependent variable. This measurement described, more specifically, what percentage of variation in fiscal imbalance from one state to another was explained by the set of independent variables (Pallant, 2010).

During a similarly structured econometric study, Borcherding and Deacon (1972) assessed the determinants of variation within the economic variables of state government tax capacity, per capita incomes, and governmental spending by measuring the coefficient of variation, also known as the coefficient of dispersion, within of cross-sectional economic data at the state level (p. 894). In a later econometric study of regional income inequality in Brazil, Azzoni (2001) used economic factor measurements to analyze cyclical oscillations in income inequality over a 47-year period for potential relationships to changes national economic growth rates (p. 133). Similar to these studies, the purpose of Research Question 2 was to observe how the statistical variation in aggregate fiscal imbalance levels fluctuates annually, and to determine which economic factor variables had the greater relational strength to these fluctuations.

The datasets necessary to construct the variables for both phases of the study were obtained from those federal agencies responsible for compiling and reporting economic data. All quantitative variables were derived from federally provided secondary data—data collected by other federal entities for purposes other than this specific study. Access to the datasets was gained through the use of publicly-available internet download sites. Per Title 17 U.S.C., Section 105, information posted on these web sites is in the public domain and may be used or reproduced without specific permission (See disclaimer at: http://www.bea.gov/faq/index.cfm?faq_id=147#sthash.vnG9Sfx7.dpuf).

Definition of Research Variables

The research models included the dependent variable, the net change in fiscal imbalance ratio (Y_1), and the following independent variables: (a) the unemployment percentage rate by state$_i$ (X_1), (b) the percentage of the population over age 65 by state$_i$ (X_2), (c) the level of per capita income by state$_i$ (X_3), (d) the percent of state$_i$ population below the federal poverty level (X_4), (e) the Kauffman Index for Entrepreneurial Activity by state$_i$ (X_5), and (f) per capita GSP by state$_i$ as a percentage of per capita GDP in the United States - GDP$_{US}$. The operational definitions of these variables are as follows:

1. *Net change in fiscal imbalance ratio*: Dependent variable (Y_1) – a fiscal imbalance ratio represents the quotient of total federal expenditure support received by a state divided by the total federal tax revenues generated by a state jurisdiction's fiscal capacity and subsequently collected by the Department of the Treasury. In this study, states were classified as being in a fiscal surplus position when their fiscal imbalance ratios are less than 1.00—

representing a lesser amount of federal expenditure support being received by the state than was generated in federal tax revenue. Conversely, states were classified as being in a fiscal deficit position when the fiscal imbalance ratio is greater than 1.00—representing a greater amount of federal expenditure support being received from the federal government than was generated in federal tax revenue. Figure 6 reflects the structural components of a fiscal imbalance ratio:

$$\text{Fiscal Imbalance Ratio} = \frac{\left[\begin{array}{c}\text{Support Contracts}\\ \text{Grants}\\ \text{Direct Payments}\\ \text{Loans, Insurance, Other}\end{array}\right]\ \left\{\begin{array}{c}\text{Total Federal}\\ \text{Spending}\\ \text{Received by}\\ \text{State}_i\end{array}\right.}{\left[\begin{array}{c}\text{Corporate Income Taxes}\\ \text{Personal Income Taxes}\\ \text{Gift Taxes}\\ \text{Excise and Other Taxes}\end{array}\right]\ \left\{\begin{array}{c}\text{Federal}\\ \text{Revenues}\\ \text{Produced and}\\ \text{Collected from}\\ \text{State}_i\end{array}\right.}$$

Figure 6. Components of a fiscal imbalance ratio.

2. *Unemployment percentage rate by state$_i$*: Independent variable (X_1) – represents each state's respective unemployment level.
3. *Percentage of state$_i$ population age 65+*: Independent variable (X_2) – represents the percentage of state population over the age of 65.
4. *Per capita income by state$_i$*: Independent variable (X_3) – represents the dollar amount of per capita income per state.

5. *Percent of population below the poverty level by state$_i$*: Independent variable (X_4) – represents the percent of the state population level below the federal poverty level.
6. *Kauffman Index of Entrepreneurial Activity index by state$_i$*: Independent Variable (X_5) – represents the index of entrepreneurial activity for the base year 2002.
7. *Per capita GSP by state$_i$ as a percentage of per capita GDP$_{US}$*: Independent Variable (X6) – represents an index of GSP per state divided by $GDP_{US.}$

Theoretical Basis for Lagging of Independent Variables

Many regression models are intrinsically static and include variable comparisons that are instantaneous in nature, meaning they are derived from the same time period (Studenmund, 2000, p. 177). This instantaneous time concept is illustrated in the following multiple variable regression line equation where the subscript *t* is similar for each variable representing an instantaneous time reference:

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \ldots + \beta_k X_{kt} + \varepsilon_t \quad (1)$$

Y is the observed score of the dependent variable, α represents the y-intercept, β equals the regression coefficients, *X* is the observed score on the independent variable, and ε is the error or residual term. However, the implication of instantaneous relationships is not always applicable in many econometric scenarios as these forms of study may require an analysis which allows for a period of time to occur between a change in the predictor variables and the responsive change in the dependent variable. Economic equations may include one or more lagged independent variables as illustrated

in the following equation where the subscript *t-1* reflects that the measurement of variable X_1 occurs during the time period preceding period *t*:

$$Y_t = \alpha + \beta_1 X_{1(t-1)} + \beta_2 X_{2t} + \ldots + \beta_k X_{kt} + \varepsilon_t \quad (2)$$

The use of lagged variables has been prevalent in many academic fields of study. Singh, Singh, and Shinde (2011) incorporated lagged variables during their studying the effects of irrigation infrastructure construction on reservoir inflow projections. El-Din and Smith (2002) used lagged variables to establish a neural network model of projecting sewage effluent inflows into wastewater treatment facilities following heavy rainfall events. Beck and Katz (2011) proposed the use of lagged variables to measure the time between a political administration's date of election and any resulting impact the new administration may have its promise to decrease unemployment (p. 335). In all of these studies, dynamic regression analysis observed changes in the value of a dependent variable based on previous values of one or more independent variables.

In this analysis of potential relationships occurring between the dependent and independent variables, I used a time series observation of all variables. The six predictor variables in this study represented changes in economic factors which may not have prompted a measurable change in the dependent variable until a future period of time. Due to this delayed impact, the regression models used were constructed using a one-year lagged basis (*t-1*) for the independent variables as the underlying economic impact of changes in these factors on fiscal imbalances levels may be delayed by one year.

Procedure for Data Collection

The sequential procedure for sample data collection began with receiving approval from Walden University's Institutional Review Board (IRB) to ensure the study complies with the university's ethical standards and federal regulations (IRB #10-09-14-0092133). The specific sample data for the study were obtained from publicly available database sources made available by the federal and state government agencies responsible for compiling and archiving historical economic data. When appropriate, these agencies report economic data with adjustments made for seasonal variations, or in terms of constant dollars referenced to a given year. Accordingly, sample data adjusted for seasonal variances remained intact; however, sample data stated in terms of constant dollars to a specific year were recalibrated back to the original raw data format so that accurate measurements of change could be calculated.

Multicollinearity

Multicollinearity exists when there is a high correlation between two or more predictor variables in a regression model. Perfect multicollinearity exists when at least one predictor is a perfect linear combination with other predictors—a relationship making it impossible to obtain unique quantifications of the regression coefficients as there would be an infinite number of coefficient combinations that could work equally as well (Field, 2013, p. 324). I tested for multicollinearity by utilizing the variance inflaton factor (VIF) indicators in SPSS, and the related tolerance statistic, to observe whether a predictor had a strong linear relationship with the other predictors. VIF measured the impact of collinearity amoung the variables. Unfortunately, there is no formal VIF measure that

determines the absolute presence of multicollinearity. In general, my testing for multicollinearity performed within the following paramters:

1. If VIF values wee greater than 10, then there was concern for multicollinearity (Bowerman & O'Connell, 1990; Myers, 1990).
2. If the average of VIF values were greater than 1 then the regression might be biased (Bowerman & O'Connell, 1990).
3. If the tolerance statistic was below 0.2, the measure would indicate a potential problem (Menard, 1995).

In addition, I performed a Durbin-Watson calculation to test for serial correlation between errors. Using a 4-point scale, the Durbin-Watson tests whether adjacent residuals are correlated (Durbin & Watson, 1951; Field, 2013). A value of 2 indicates the residuals are uncorrelated, a value greater than 2 indicates a negative correlation, and a value of less than 2 indicates a positive correlation.

Data Analysis Plan

Descriptive Data Analysis

The compiled explanatory variable data were input into IBM SPSS Statistics version 21.0 for Windows. Descriptive statistics analyses were performed to the compiled data to detail the demographics within the population and the research variables with percentages and frequencies being computed for all categorical data. Means and standard deviations were calculated for continuous data of interest pertaining to the net change in fiscal imbalance ratio, the unemployment percentage rate by $state_i$, the percentage of the population over age 65 by $state_i$, the level of per capita income by $state_i$,

the percent of $state_i$ population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by $state_i$, and the per capita GSP by $state_i$ as a percentage of per capita in the United States - GDP_{US} (Howell, 2010).

Preanalysis Data Screening

The compiled data were reviewed for accuracy, missing data, and the presence of any data outliers. Descriptive statistics and frequency distributions were constructed to ascertain that calculated results were within a prescribed range of values and that the data is not distorted by extreme cases (Howell, 2010). The existence of outliers was determined by the analysis of standardized values for each variable measurement. Outliers serve as possible indicators of potential problems within the data, and provide researchers with opportunity to closely examine the processes used to discover any possible shortcomings (Field, 2013). Any measurement value falling above a *z*-score of 3.29, or falling below a *z*-score of -3.29, were be classified as an outlier (Field, 2013; Tabachnick & Fidell, 2012). Any occurrence classified as an outlier was investigated to determine possible significance of the statistical anomaly.

Research Questions

Research Question 1: Quantitative - Is there a relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per

capita GDP in the United States, during the four measurement time periods of: (a) the 2000 to 2007 pre-recession expansion, (b) the 2007 to 2009 economic recession, (c) the 2009 to 2010 post-recession recovery, and (d) the entire 2000 to 2010 11-year period?

***H*1$_0$1:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2007 expansionary period of time.

***H*1$_A$1:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2007 expansionary period of time.

***H*1$_0$2:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate

by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2007 to 2009 recessionary period of time.

***H*1$_A$2:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2007 to 2009 recessionary period of time.

***H*1$_0$3:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2009 to 2010 recovery period of time.

***H*1$_A$3:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by

state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2009 to 2010 recovery period of time.

***H*1$_0$4:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2010 encompassing period of time.

***H*1$_A$4:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2010 encompassing period of time.

To address Research Question 1 and the subsequent four hypotheses, four multiple linear regression analyses were conducted. The purpose of these analyses was to examine the impact of a state's fiscal condition, as represented and measured by the

independent variables in the year 2000 on subsequent fluctuations in fiscal imbalance between the years of interest. Multiple linear regressions are an appropriate analytical methodology to use when the objective of the research is to assess the level of relationship among a set of dichotomous independent predictor variables on an interval/ratio dependent variable. The following multiple regression equation was used:

$$y = b_0 + b_1x_1 + b_2x_2 + \ldots e$$

y = the percent change in fiscal imbalance, b_0 = constant (which includes the error term), b_1 = first regression coefficient, b_2 = second regression coefficient, and so on, while each x = one of the independent variables, and e = the residual error (Tabachnick & Fidell, 2012).

In each of the four regression analyses, the independent variables were economic factor measurements taken from the year 2000 for each state. These economic factors included the percentage of unemployment, the percentage of the population over 65 years of age, the level of per capita income for the state, the percentage of population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity, and the per capita GSP as a percentage of national GDP. While the independent variables remained identically constant in regressions one through four, the dependent variable was slightly different for each regression. The dependent variable measured the change in fiscal imbalance for the period under observation, and was calculated as the percent of change in state-level fiscal imbalance ratios from one date to the next. For Hypothesis 1, the dependent variable measurements were the changes in the percentage of fiscal imbalance from 2000 to 2007. For Hypothesis 2, the dependent variable measurements were the

changes in the percentage of fiscal imbalance from 2007 to 2009. For Hypothesis 3, the dependent variable measurements were the percentage change from 2009 to 2010, and Hypothesis 4 examined the percentage change in fiscal imbalances from 2000 to 2010. Thusly, Research Question 1 examined how well the economic measurements taken at year 2000 influence changes in fiscal imbalance in the subsequent years.

Multiple regression—the forced entry method—was be used (Studenmund & Cassidy, 1987). The multiple regression forced entry method forced all independent predictor variables simultaneously into the model (Studenmund & Cassidy, 1987). Variables were then evaluated based on what each contributed to the prediction of the dependent variable that is different from the predictability provided by the other predictors (Tabachnick & Fidell, 2012). The *F* test was used to assess whether the set of independent variables collectively predicted the dependent variable. R^2 - the multiple correlation coefficient of determination - was reported and used to determine how much each state's change in fiscal imbalance could be accounted for by the specified set of independent variables (Statistic Solutions, 2013). The *t*-test was be used to determine the significance of each predictor and beta coefficients were used to determine the extent of prediction for each independent variable. For significant predictors, for every one unit increase in the predictor, the dependent variable increased or decreased by the number of unstandardized beta coefficients (Statistic Solutions, 2013).

Prior to the regression analysis, the assumptions of normality, homoscedasticity, and absence of multicollinearity were assessed. Normality is the assumption that there is a normal distribution of error about the regression line. Homoscedasticity assumes that

scores are equally distributed about the regression line from one end to another. Both normality and homoscedasticity were assessed by visual examination of residual scatter plots (Stevens, 2009). The absence of multicollinearity assumes that independent variables are not too related and will be assessed using Variance Inflation Factors (VIF). VIF values over 10 will suggest the presence of multicollinearity (Statistic Solutions, 2013; Stevens, 2009).

Research Question 2

How does the relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States fluctuate throughout the years 2000-2010?

***H*2$_0$:** The relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States does not fluctuate throughout the years 2000-2010.

***H*2$_A$:** The relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the

Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States fluctuates throughout the years 2000-2010.

To examine Research Question 2, eleven multiple linear regressions were conducted. The ultimate goal of these analyses extended a step further. The purpose of the analysis of Research Question 2 was to discover whether the relationship between the set of independent variables and the single dependent variable either strengthened or weakened over time, and to possibly determine which independent variables best related to a state's fiscal imbalance throughout the proposed 11-year period.

To examine this effect, the annual data for each state's fiscal imbalance were collected and used as the outcome or dependent variable. The annual data for each state's unemployment percentage rate, the percent of the population of age 65+, the level of per capita income, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP as a percentage of per capita GDP in the United States were collected and used as the predictor or independent variables. This annual data were used once for each year from 2000 to 2010, thereby creating a model for each respective year which examined the relationship between the set of independent variables and the dependent variable for all 48 contiguous U.S. states. Thus, eleven total regression analyses were conducted.

Next, the R^2 for each of the eleven multiple regression analysis was gathered. The R^2 measured the degree of relationship between the set of independent variables and the dependent variable. This measurement described, more specifically, what percentage of

variation in fiscal imbalance from one state to another was explained by the set of independent variables (Pallant, 2010). If the R^2 increased for each subsequent year, the relationship was viewed as strengthening over time. However, if the R^2 decreased for each subsequent year, the relationship was viewed as weakening over time. R^2 values were plotted against time to provide a visual representation of the effect of time on the relationship between the independent and dependent variables.

Next, significance levels and standardized beta coefficients for each independent variable were examined for each year. Examination of *p* values provided insight into which of the independent variables most strongly influenced fiscal imbalance for each year. At times, certain variables might have been significant predictors in one year's analysis, yet may no longer have had a significant level of predictive ability in following years. To measure for strength variations within the independent variables, significant predictors were assessed for the strength of their correlation for each year. If a set of predictors were significantly related to the dependent variable for several years, examination of the standardized beta coefficient (β) allowed a description of how the strength of these relationships fluctuated from one year to the next. Research Question 2 examined the fashion in which relationships between yearly state-wise demographics and fiscal imbalance changed throughout time.

Prior to any of the regression analysis, the assumptions of multiple regressions were assessed. Both normality and homoscedasticity were assessed by visual examination of residual scatter plots (Stevens, 2009). The absence of multicollinearity was assessed using Variance Inflation Factors (VIF). VIF values over 10 will suggest the

presence of multicollinearity (Stevens, 2009). Using the VIF measure in this fashion, no relationships indicated a violation of multicollinearity.

Threats to Validity

Validity is a critical aspect necessary to validate the findings or "goodness of fit" of a quantitative study. Moskal, Leydens, and Pavelich (2002) stated that validity represents "the degree to which the evidence supports that the interpretations are correct and the manner in which the interpretations are used is appropriate" (p. 351). There are several forms of validity: (a) those which may question the accuracy of the study data, or (b) those that may question the manner in which statistical analysis is used to adequately describe the outcome of a study.

Validity refers to the ability of the researcher to establish sufficient controls over experimental procedures, treatments, and research design to afford a level of confidence that relational or causal inferences between the dependent and independent variable data in an experiment are valid. In this study, the explanatory variables under observation were considered economically relational within the public sector industry. However, to ensure that a sufficiently high degree of internal relationship existed between the various factors, Cronbach's Alpha coefficient test was performed on the dependent and independent variables to seek a measure of internal consistency between the factors being observed. According to Zinbarg, Revelle, Yovel and Li (2005), Cronbach's Alpha coefficient test utilizes the formula $\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N-1) \cdot \bar{c}}$ Symbol *N* represents the number of items under observation, $\bar{c}$ represents the average covariance between the items, and $\bar{v}$ represents the average variance. Mathematically, if the average covariance is relatively

low, the alpha will be low; if the average correlation is high, the corresponding alpha will be higher as well. A higher alpha score allowed for a greater the level of confidence being placed in the internal consistency of the data.

Ethical Considerations

The data selected, compiled, and analyzed for this study were extracted from publicly available economic and financial data compiled and presented by a number of governmental agencies. All selected data for each state jurisdiction were collected and compiled with no reference or disclosure of the names of any individuals for confidentiality purposes. All data and other economic information were encrypted and stored on a private, password-protected computer. In addition, a duplicate copy of the data was stored on an external backup hard drive, as well as a DVD kept in a securely locked safe at on offsite location. There were no human subjects involved with this study. I received approval by Walden University's Institutional Review Board (IRB) to conduct research through IRB #10-09-14-0092133.

Implications for Social Change

This research promotes positive social change through an increased awareness of how fluctuations in economic factors affecting fiscal imbalances between and within state-level jurisdictions within the United States. Public sector officials are tasked not only with promoting the economic well-being of their constituency, but also with minimizing fiscal disparities between economic regions within the country so that the allocation of tax burden and the distribution of public goods and services are equitable. This is particularly important to those state jurisdictions which experience a higher rate of

fiscal disparity during times of economic stress. With a enhanced understanding of the impacts that certain economic factors have on the economic quality of life of individuals, state lawmakers, administration officials, planners, and financial executives might work together to develop a comprehensive plan to create a positive environment within the country.

Summary and Transition

Chapter 3 sets out the research methodology to be used in the study to determine the relationships between key economic factors and the levels of aggregate fiscal imbalance in the United States. The methods of inquiry included the use of several multiple regression processes at various points in time to determine how fiscal imbalance levels fluctuated during periods of cyclical economic volatility, and how the relationship between these economic factors either strengthened or weakened over time. By studying the results of these analyses, decision makers might gain an understanding of the interplay between fluctuations in key economic variables and corresponding fluctuations in fiscal imbalances within and between states. Chapter 4 includes the presentation and statistical analysis of the data, while chapter 5 indentifies the significant findings, the summary, conclusion, the recommendations, and the implications for social change.

Chapter 4: Results

Introduction

Chapter 4 was structured to provide a review of the study's purpose, the research questions and hypotheses, the data collection and preparation process, and the results of the appropriate analyses performed to test the null hypotheses. Chapter 4 includes a section on the descriptive statistical analyses and the regression analyses corresponding to this study. At the end of the chapter, a summary of key findings is provided.

The analysis and presentation of sample data were structured around the study's research questions and the associated statistical hypotheses. The purpose of this study was to observe and measure for possible relationships between state-level fiscal imbalance levels and certain key economic factors relative to each individual state's economic environment. Prior to the examination of the of the research questions, economic and demographic data pertaining to both state-level fiscal imbalance levels and the related independent variables were presented to provide the appropriate context and background information. A quantitative longitudinal design, employing a TSCS econometric model, was used to examine relationships and patterns through a statistical analysis of the sample data. Two research questions and five hypotheses outlined the focus and direction of the study and were answered in this chapter.

Review of Research Questions

The first research question pertained to the existence of possible relationships between the dependent variable, fluctuations in state-level fiscal imbalance ratios, and the year 2000 independent variables of the unemployment percentage rate by state, the

percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United. The four related hypotheses addressed the observation of possible relationships occurring during four relative and specific periods of cyclical economic change: (a) the 2000 to 2007 prerecession expansion subperiod, (b) the 2007 to 2009 recession subperiod, (c) the 2007 to 2010 postrecession recovery subperiod, and (d) the comprehensive period of time encompassing the entire 2000 to 2010 range of years.

The focus of the second research question was to determine if potential relationships between the set of independent variables and the single dependent variable were either strengthened or weakened over time, and which independent variables best related to a state's fiscal imbalance throughout the proposed 11-year period. To address the related hypothesis of the existence of a relational strengthening or weakening over time, a determination of either a strengthening, a weakening, or no change in the potential relationships was made by observing annual fluctuations in the R^2 measure from one year to the next. R^2 measured the degree of relationship between the set of independent variables and the dependent variable.

The information in Chapter 4 includes the specific data collection procedures, a report of descriptive statistics that characterized the sample data, and a report of the statistical analysis findings and results. The chapter concludes with a summary of the answers to the research questions.

The procedure for the statistical analysis is organized in the following sections:

1. Data collection and preparation.
    a. Fiscal years applicable to the study.
    b. Variable naming conventions.
    c. Source of archival data.
2. Research Question 1.
    a. Data screening and descriptive statistics for Research Question 1.
    b. Description of procedure for Research Question 1 analytics.
    c. Summary of Research Question 1 regressions.
3. Research Question 2.
    a. Data screening and descriptive statistics for Research Question 2.
    b. Description of procedure for Research Question 2 analytics.
    c. Summary of Research Question 2 regressions.
    d. Additional statistical information.
4. Summary.

Data Collection and Preparation

Fiscal Years Applicable to Study

The data used to investigate the research questions and related hypotheses were obtained from publicly available information for the years 1999 through 2010. Accordingly, the results of this study may not be inferred to be relevant to an earlier or later period of time. Due to a 2010 budgetary cost reduction action taken by the U.S. Congress, the federal government no longer publishes the Consolidated Federal Funds Report (CFFR) — a document that previously provided the required data to accurately

calculate state-level fiscal imbalance ratios. Should data become available for years subsequent to 2010 in the future, an expanded examination of the post-2007 recession fluctuations in the study variables could be possible.

Archived data for the independent variables were collected for fiscal years 1999 through 2009 as the independent variables are lagged by a period of one year from the dependent variable. Archived data used to construct the dependent variable, the fiscal imbalance ratios by state and by year, were collected for the years 2000 through 2010. For presentation purposes, the lagged 1999 to 2009 independent variables were assigned column headings illustrated by the use of a fiscal year factor of $t + 1$. For example, the 1999 data for unemployment ratios by state were presented under the column headings of fiscal year 2000 to better coordinate the visual and computational comparisons of the lagged independent variables to the fiscal year 2000 data of the dependent variable.

Variable Naming Conventions

In the interest of specificity and the improvement of presenting statistical data, Table 5 lists the assigned variable naming conventions used in this study.

Table 5

Variable Naming Conventions

Naming convention	In-text reference
FIB	Fiscal imbalance ratio
UERate	Unemployment percentage rate by $state_i$
%StatePop65+	Percent of $state_i$ population age 65+
PerCapInc	Per capita income by $state_i$
PPOV	Percent of $state_i$ population below the federal poverty level
KIEA	Kauffman Index for Entreprenurial Activity by $state_i$
%GSP	Per capita GSP by $state_i$ divided by per capita GDP_{US}

Sources of Archival Data

The archived data for the study variables were obtained as follows:

1. Fiscal imbalance ratio (FIB): The quotient representing each state's fiscal imbalance ratio was calculated by dividing the total federal spending by state by the total federal revenues collected by state for each of the 48 contiguous state jurisdictions. The data required for the quotient numerator, Federal Spending by State, were obtained from the U.S. Census Bureau Consolidated Federal Funds Report (CFFR) for each year of the study (Retrieved from http://www.census.gov/govs/pubs/topic.html#federal_ programs on October 10, 2014). The data required for the quotient denominator, Federal Revenues Collected by State, were obtained from the Internal Revenue Service Data Book for each year (Retrieved from http://www.irs.gov/uac/SOI-Tax-Stats-IRS-Data-Book on October 10, 2014). Both datasets were available via

internet download, with all datasets residing in the public domain under Title 17 U.S.C, Section 105. The data presented in Appendix A represent the calculations of 2000 to 2010 fiscal imbalance ratios for all states using the applicable dataset information.

2. Unemployment percentage rate by state (UERate): The data pertaining to the unemployment percentage rate by state were obtained from the U.S. Department of Labor, Bureau of Labor and Statistics website (Retrieved from http://www.bls.gov/lau /#tables for 2000-2010 and http://www.bls.gov/schedule/archives/ laus_nr.htm#1999 for 1999 on October 10, 2014). The data were available via internet download, with all datasets residing in the public domain under Title 17 U.S.C, Section 105. The data presented in Appendix B represent the collected data by state.
3. Percent of state population over age 65 (%StatePop65+): The data pertaining to the percent of a state population over age 65 were obtained from the U.S. Census Bureau, Population Division website (Retrieved from http://www.census.gov/popest/ data/intercensal/ state/ST-EST00INT-02.html on October 10, 2014). The data were available via internet download, with all datasets residing in the public domain under Title 17 U.S.C, Section 105. The data presented in Appendix C represent the collected data by state.
4. Per capita income by state (PerCapInc): The data pertaining to the per capita income levels by state were obtained from the U.S. Bureau of Economic Analysis website (Retrieved at

http://bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1 on October 10, 2014). The data were available via internet download, with all datasets residing in the public domain under Title 17 U.S.C, Section 105. The data presented in Appendix D represent the collected data by state.

5. Percent of state population below the federal poverty level (PPov): The data pertaining to the percent of state population below the federal poverty level were obtained from the U.S. Census Bureau, U.S. Department of Commerce website (Retrieved at http://www.census.gov/prod/2013pubs/acsbr12-01.pdf for 2000-2010 and http://www.census.gov/prod/2003pubs/c2kbr-19.pdf for 1999 on October 10, 2014). The data were available via internet download, with all datasets residing in the public domain under Title 17 U.S.C, Section 105. The data presented in Appendix E represent the collected data by state.
6. Kauffman Index of Entrepreneurial Activity (KIEA): The data pertaining to the Kauffman Index for Entrepreneurial Activity were obtained from Ewing Marion Kauffman Foundation website (Retrieved from http://www.kauffman.org/~/media/kauffman_org/research%20reports%20and% 20covers/kiea/state9613.xlsx on October 10, 2014). The data were available via internet download, with written permission being obtained for the presentation and use of the data in this study. The data presented in Appendix F represent the collected data by state.

7. Per capita GSP by state as a percentage of the U.S. GDP (GSP %): The data pertaining to the GSP by state, in addition to the U.S. GDP, for each year were obtained from the U.S. Bureau of Economic Analysis website (Retrieved at http://bea.gov/itable/iTable.cfm?ReqID=70&step=1#reqid=70&step=1&isuri=1 on October 10, 2014). The data were available via internet download, with all datasets residing in the public domain under Title 17 U.S.C, Section 105. The GSP by state as a percentage of U.S. GDP was calculated by dividing each state GSP factor by the applicable U.S. GDP factor for each year of the study. The data presented in Appendix F represent the collected data by state.

Research Question 1

Research Question 1: Quantitative - Is there a relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the four measurement time periods of: (a) the 2000 to 2007 prerecession expansion, (b) the 2007 to 2009 economic recession, (c) the 2009-2010 postrecession recovery, and (d) the entire 2000 to 2010 11-year period?

***H*1$_0$1:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment

percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2007 expansionary period of time.

***H*1$_A$1:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2007 expansionary period of time.

***H*1$_0$2:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2007 to 2009 recessionary period of time.

***H*1$_A$2:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2007 to 2009 recessionary period of time.

***H*1$_0$3:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2009 to 2010 recovery period of time.

***H*1$_A$3:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as

a percentage of per capita GDP in the United States, during the 2009-2010 recovery period of time.

***H*1$_0$4:** There is no statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2010 encompassing period of time.

***H*1$_A$4:** There is a statistically significant predictive relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the 2000 to 2010 encompassing period of time.

Data Screening and Descriptive Statistics for Research Question 1

Prior to analyses, data were screened for accuracy, missing data, and outliers or extreme cases. Descriptive statistics and frequency distributions were conducted to determine that responses were within the possible range of values and that the data were

not distorted by outliers. The presence of outliers was tested by the examination of standardized values, with observed values which fell above 3.29 and values that fell below -3.29 being designated as outliers. Using these criteria, data for Mississippi showed that the fiscal imbalance difference for 2000 to 2007 for this state were outside of the acceptable range of values. Further analysis was conducted to verify and confirm the accuracy of original data, and to triangulate the original source data to other federal government datasets available in the public domain. I found, through this additional analysis, that the State of Mississippi began receiving significant federal procurement contracts for shipbuilding in 2001 which increased the level of federal spending received from 2001 going forward. This increase in procurement spending by the federal government through the years 2000 to 2007 accounted for the unusual variance for year 2000. Accordingly, I made the determination to retain the measurement in the dataset for further analysis. Table 6 presents the descriptive statistical information for the Research Question 1 dataset.

Table 6

Descriptive Statistics for Research Question 1

					SK		*Rku*	
	Min	*Max*	*M*	*SD*	Statistic	*SE*	Statistic	*SE*
FIB 2000-2007	-0.324	0.936	0.197	0.209	0.601	0.343	2.684	0.674
FIB 2007-2009	0.047	0.959	0.466	0.205	0.287	0.343	-0.277	0.674
FIB 2009-2010	-0.306	0.457	0.056	0.145	0.436	0.343	0.617	0.674
FIB 2000-2010	-0.063	1.574	0.720	0.380	0.216	0.343	-0.541	0.674
UERate	0.025	0.066	0.040	0.010	0.357	0.343	-0.483	0.674
%StatePop65+	0.087	0.181	0.127	0.016	0.435	0.343	1.839	0.674
PerCapInc	$25,589.36	$48,684.20	$33,929.30	$5,014.81	0.642	0.343	0.500	0.674
PPov	0.065	0.199	0.120	0.032	0.745	0.343	0.046	0.674
KIEA	0.001	0.005	0.003	0.001	0.413	0.343	-0.414	0.674
%GSP	0.674	1.463	0.949	0.164	0.795	0.343	0.880	0.674

Note. $N = 48$. *SK* = skewness; *Rku* = kurtosis.

Description of Procedure for Research Question 1 Analytics

To address Research Question 1, four multiple linear regression analyses were conducted—one regression analysis for each of the four time periods under observation. The purpose of the analysis of Research Question 1 was to examine the impact of a state's economic conditions in the year 2000 on fluctuations in fiscal imbalance levels between the years of interest. In each analysis, the independent variables were measures taken from the year 2000 for each state. These included the percentage of unemployment, the percentage of the population over 65 years of age, the level of per capita income for the state, the percentage of population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity, and the per capita GSP, and were identical in regressions one through four. The dependent variable for each regression was the measure of change in fiscal imbalance as observed from one date to the next. Thus, a

separate regression was performed to examine each of the four time periods in question: (a) the 2000 to 2007 prerecession expansion, (b) the 2007 to 2009 economic recession, (c) the 2009 to 2010 postrecession recovery, and (d) the entire 2000 to 2010 eleven year period.

Analytics for Hypothesis 1.

The purpose of the first multiple linear regression model was to examine the effect of the independent variables on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2000 to 2007. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.189 to 4.942, all tolerance statistics were above 0.1, and the average VIF score was 2.741. These measurements provided confirmation that collinearity was not a problem in this model (Bowerman & O'Connell, 1990; Menard, 1995; Myers, 1990). Table 7 presents the relative coefficients and collinearity statistics to the independent variables.

Table 7

Coefficient Summary for Regression 1: 2000 to 2007

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	.760	.480	1.584	.121	-.209	1.728		
UER	-.293	4.318	-.068	.946	-9.013	8.426	.476	2.099
%StatePop65+	-2.123	1.911	-1.111	.273	-5.983	1.736	.836	1.197
PerCapInc	2.240E-05	.000	1.761	.086	.000	.000	.202	4.942
PPov	.513	1.668	.307	.760	-2.856	3.882	.296	3.380
KIEA	-28.937	33.485	-.864	.393	-96.561	38.687	.841	1.189
%GSP	-1.077	.334	-3.228	.002	-1.750	-.403	.275	3.642

Note. Dependent variable FIB: 2000 to 2007; F (6, 41) = 2.041, p = .082, R^2 = .230.

The results of the multiple linear regression to determine the impact of state economic conditions in the year 2000 on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2000 to 2007 did not indicate a significant model, F (6, 41) = 2.041, p = .082, R^2 = .230. As such, no further inferences could be made. Utilizing $\alpha = 0.05$ level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, with the p-value of .082 >.05, the null hypothesis was not rejected. As such, no further inferences could be made. Results of the first linear regression are presented in Table 8.

Table 8

Summary of Regression 1 Results: 2000 to 2007

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.480	0.230	0.117	0.197	2.075	0.474	47	2.041	0.082

Note. (a) Dependent Variable: FIB 2000 to 2007; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Analytics for Hypothesis 2.

The purpose of the second multiple linear regression model was to examine the effect of the independent variables on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2007 to 2009. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.189 to 4.942, all tolerance statistics were above 0.1, and the average VIF score was 2.741. These measurements provided confirmation that collinearity was not a problem in this model. Table 9 presents the relative coefficients and collinearity statistics to the independent variables.

Table 9

Coefficient Summary for Regression 2: 2007 to 2009

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.187	.485	2.447	.019	.207	2.166		
UER	3.637	4.365	.833	.409	-5.177	12.452	.476	2.099
%StatePop65+	-3.503	1.932	-1.813	.077	-7.405	.399	.836	1.197
PerCapInc	1.109E-05	.000	.862	.393	.000	.000	.202	4.942
PPov	-.546	1.686	-.324	.748	-3.951	2.860	.296	3.380
KIEA	-13.253	33.850	-.392	.697	-81.614	55.108	.841	1.189
%GSP	-.733	.337	-2.174	.036	-1.414	-.052	.275	3.642

Note. Dependent variable FIB: 2007 to 2009; F (6, 41) = 1.475, p = .211, R^2 = .178.

The results of the multiple linear regression to determine the impact of state economic conditions in the year 2000 on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2007 to 2009 did not indicate a significant model, F (6, 41) = 1.475, p = .211, R^2 = .178. As such, no further inferences could be made. Utilizing $\alpha = 0.05$ level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, given that the p-value of .211 >.05, the null hypothesis was not rejected. As such, no further inferences could be made. Results of the second linear regression are presented in Table 10.

Table 10

Summary of Regression 2 Results: 2007 to 2009

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig.*
1	0.421	0.178	0.057	0.199	2.022	1.972	47	1.475	0.211

Note. (a) Dependent Variable: FIB 2007 to 2009; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Analytics for Hypothesis 3.

The purpose of the third multiple linear regression was to examine the effect of the independent variables on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2009 to 2010. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.189 to 4.942, all tolerance statistics were above 0.1, and the average VIF score was 2.741. These measurements provided confirmation that collinearity was not a problem in this model. Table 11 presents the relative coefficients and collinearity statistics to the independent variables.

Table 11

Coefficient Summary for Regression 3: 2009 to 2010

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	-.081	.341	-.237	.814	-.770	.609		
UER	3.463	3.073	1.127	.266	-2.744	9.669	.476	2.099
%StatePop65+	.196	1.360	.144	.886	-2.551	2.943	.836	1.197
PerCapInc	-1.923E-06	.000	-.212	.833	.000	.000	.202	4.942
PPov	.736	1.187	.620	.539	-1.662	3.134	.296	3.380
KIEA	.711	23.834	.030	.976	-47.422	48.845	.841	1.189
%GSP	-.055	.237	-.231	.818	-.534	.425	.275	3.642

Note. Dependent variable FIB: 2009 to 2010; F (6, 41) = 1.583, p = .177, R^2 = .188.

The results of the multiple linear regression to determine the impact of state economic conditions in the year 2000 on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2009 to 2010 did not indicate a significant model, F (6, 41) = 1.583, p = .177, R^2 = .188. As such, no further inferences could be made. Utilizing $\alpha = 0.05$ level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, with the p-value of .177 >.05, the null hypothesis was not rejected. As such, no further inferences could be made. Results of the third linear regression are presented in Table 12.

Table 12

Summary of Regression 3 Results: 2009 to 2010

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig.*
1	0.434	0.188	0.069	0.140	2.298	0.990	47	1.583	0.177

Note. (a) Dependent Variable: FIB 2009 to 2010; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Analytics for Hypothesis 4.

The purpose of the fourth multiple linear regression was to examine the effect of the independent variables on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2000 to 2010. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.189 to 4.942, all tolerance statistics were above 0.1, and the average VIF score was 2.741. These measurements provided confirmation that collinearity was not a problem in this. Table 13 presents the relative coefficients and collinearity statistics to the independent variables.

Table 13

Coefficient Summary for Regression 4: 2000 to 2010

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.865	.829	2.251	.030	.192	3.539		
UER	6.807	7.460	.912	.367	-8.259	21.872	.476	2.099
%StatePop65+	-5.430	3.302	-1.645	.108	-12.099	1.238	.836	1.197
PerCapInc	3.156E-05	.000	1.436	.159	.000	.000	.202	4.942
PPov	.703	2.882	.244	.808	-5.117	6.523	.296	3.380
KIEA	-41.478	57.854	-.717	.477	-158.316	75.359	.841	1.189
%GSP	-1.865	.576	-3.235	.002	-3.029	-.701	.275	3.642

Note. Dependent variable FIB: 2000 to 2010; F (6, 41) = 2.970, p = .017, R^2 = .303.

The results of the multiple linear regression to determine the impact of state economic conditions in the year 2000 on the percentage change in state-level aggregate fiscal imbalance ratios between the years of 2000 to 2010 indicated a significant model, F (6, 41) = 2.970, p = .017, R^2 = .303. The R^2 value of .303 suggested that approximately 30.3% of fluctuations in the 2000-2010 fiscal imbalances were due to the six independent variables. Examination of the individual predictors suggested a significant relationship per capita GSP by state divided by per capita GDP_{US} and the percentage change in state-level aggregate fiscal imbalance between the years of 2000 to 2010 only (t = -3.235, p = .002). The beta value (B = -1.865) for this relationship indicates that for every unit of increase in the ratio of per capita GSP by state divided by per capita GDP_{US} there was a decrease of 1.865 units in the fiscal imbalance from 2000 to 2010. Using $\alpha = 0.05$ level of significance, there existed sufficient evidence to conclude that at least one of the

predictors is useful for predicting a change in fiscal imbalance. Accordingly, given that the *p*-value of .017 < .05, the null hypothesis was rejected. Results of the fourth linear regression are presented in Table 14.

Table 14

Summary of Regression 4 Results: 2000 to 2010

Model	*R*	R^2	*Adjusted* R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig.*
1	0.550	0.303	0.201	0.340	2.025	6.796	47	2.970	0.017

Note. (a) Dependent Variable: FIB 2000 to 2010; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Summary of Research Question 1 Regressions

The purpose of the Research Question 1 analysis was to examine and identify the possible relationships and impacts of a state's fiscal condition, as represented and measured by the six independent variables in the year 2000, on subsequent fluctuations in fiscal imbalance variables during the four measurement time periods of: (a) the 2000 to 2007 prerecession expansion, (b) the 2007 to 2009 economic recession, (c) the 2009 to 2010 postrecession recovery, and (d) the entire 2000 to 2010 11-year period. The summary results of the four linear regressions and the findings for rejecting or not rejecting the four null hypotheses were as follows:

1. The focus of the first null hypothesis ($H1_0 1$) was on a possible relationship between impacts of a state's fiscal condition, as represented and measured by

the six independent variables in the year 2000, on subsequent fluctuations in fiscal imbalance variable between the years of 2000 to 2007. The hypothesis was addressed using a forced entry multiple linear regression model that concluded that the overall regression was not significant, F (6, 41) = 2.041, p = .082, R^2 = .230. Utilizing α = 0.05 level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, with the p-value of .082 >.05, the null hypothesis $H1_0$1was not rejected.

2. The focus of second null hypothesis ($H1_0$2) was on a possible relationship between impacts of a state's fiscal condition, as represented and measured by the six independent variables in the year 2000, on subsequent fluctuations in fiscal imbalance variable between the years of 2007 to 2009. The hypothesis was addressed using a forced entry multiple linear regression model that concluded that the overall regression was not significant, F (6, 41) = 1.475, p = .211, R^2 = .178. Utilizing α = 0.05 level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, given that the p-value of .211 >.05, the null hypothesis $H1_0$2 was not rejected.
3. The focus of third null hypothesis ($H1_0$3) was on a possible relationship between impacts of a state's fiscal condition, as represented and measured by the six independent variables in the year 2000, on subsequent fluctuations in fiscal imbalance variable between the years of 2009 to 2010. The hypothesis

was addressed using a forced entry multiple linear regression model that concluded that the overall regression was not significant, F (6, 41) = 1.583, p = .177, R^2 = .188. Utilizing α = 0.05 level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, with the p-value of .177 >.05, the null hypothesis $H1_0 3$ was not rejected.

4. The focus of the fourth null hypothesis ($H1_0 4$) was on a possible relationship between impacts of a state's fiscal condition, as represented and measured by the six independent variables in the year 2000, on subsequent fluctuations in fiscal imbalance variable between the years of 2009 to 2010, F (6, 41) = 2.970, p = .017, R^2 = .303. The R^2 value of .303 suggested that approximately 30.3% of fluctuations in the 2000 to 2010 fiscal imbalances were due to the six independent variables. Examination of the individual predictors suggested a significant relationship per capita GSP by state divided by per capita GDP in the United States and the percentage change in state-level aggregate fiscal imbalance between the years of 2000 to 2010 only (t = -3.235, p = .002). The beta value (B = -1.865) for this relationship indicated that for every unit of increase in the ratio of per capita GSP by state divided by per capita GDP in the United States there was a decrease of 1.865 units in the fiscal imbalance from 2000 to 2010. Using α = 0.05 level of significance, there existed sufficient evidence to conclude that at least one of the predictors is useful for

predicting a change in fiscal imbalance. Accordingly, given that the *p*-value of .017 < .05, the null hypothesis $H1_0 4$ was rejected.

Research Question 2

How does the relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States fluctuate throughout the years 2000 to 2010?

***H*2$_0$:** The relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States does not fluctuate throughout the years 2000 to 2010.

***H*2$_A$:** The relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States fluctuates throughout the years 2000 to 2010.

Data Screening and Descriptive Statistics

The dataset for Research Question 2 consists of the measures of both dependent and independent variables for each of the individual years occurring within the eleven year period of 2000 to 2010. In contrast to the dependent variable measurements used in Research Question 1 which measured the net change in fiscal imbalance levels during four given multi-year periods of time, the dependent variable measurements used for Research Question 2 are the actual measurements of state-level fiscal imbalance for each individual year under observation. Accordingly, Table 15 presents the descriptive statistical information for the dataset specific to Research Question 2.

Table 15

Descriptive Statistics for Research Question 2

					SK		*Rku*	
	Min	*Max*	*M*	*SD*	Statistic	Std. Error	Statistic	Error
FIB	.31	4.31	1.3001	.62795	1.296	.106	1.925	.212
UERate	.02	.14	.0512	.01770	1.629	.106	3.689	.212
%StatePop65+	.09	.18	.1278	.01553	-.066	.106	.864	.212
PerCapInc	$25,589.36	$57,722.55	$37,225.63	$5,725.55	.744	.106	.495	.212
PPov	.05	.22	.1265	.03130	.495	.106	-.221	.212
KIEA	.00	.01	.0030	.00092	.654	.106	.868	.212
%GSP	.65	1.46	.9547	.16417	.754	.106	.443	.212
Valid N								

Note. $N = 528$. *SK* = skewness; *Rku* = kurtosis.

Description of Procedure for Research Question 2 Analytics

To examine Research Question 2, eleven multiple linear regressions were conducted. My analysis of Research Question 2 aimed to discover whether the relationship between the set of independent variables and the single dependent variable

was either strengthened or weakened over time, and which independent variables best related to a state's fiscal imbalance throughout the proposed years.

In order to assess this effect, each state's ratio of fiscal imbalance was used as a dependent variable, while the data for each state's unemployment percentage rate, the percent of the population of age 65+, the level of per capita income, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP as a percentage of per capita GDP in the United States were used as independent variables. Data for each year from 2000 to 2010 were used to create eleven individual multiple linear regression models, one model for each year, with my examining the relationships between the dependent and independent variables for each state.

Regression model 1: Year 2000.

The purpose of the first multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2000. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.189 to 4.942, all

tolerance statistics were above 0.1, and the average VIF score was 2.741. These measurements provided confirmation that collinearity was not a problem in this model. Table 16 presents the relative coefficients and collinearity statistics to the independent variables.

Table 16

Coefficient Summary for Regression 1: 2000

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.239	.752	1.647	.107	-.280	2.759		
UERate	2.342	6.774	.346	.731	-11.338	16.021	.476	2.099
%StatePop65+	2.717	2.998	.906	.370	-3.338	8.772	.836	1.197
PerCapInc	-3.052E-05	.000	-1.529	.134	.000	.000	.202	4.942
PPov	4.676	2.617	1.787	.081	-.609	9.961	.296	3.380
KIEA	62.300	52.532	1.186	.242	-43.790	168.389	.841	1.189
%GSP	-.397	.523	-.758	.453	-1.454	.660	.275	3.642

Note. Dependent Variable: FIB 2000; F (6, 41) = 10.664, p <.000, R^2 = .609.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2000 indicated a significant model, F (6, 41) = 10.664, p < .000, R^2 = .609. The R^2 value of .609 suggested that approximately 60.9% of fiscal imbalance in 2000 was due to the six independent variables. However, examination of the individual predictors showed no significant relationships, and as such, no further inferences could be made. Results of the first linear regression are presented in Table 17.

Table 17

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2000

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig.*
1	0.781	0.609	0.552	0.309	1.699	10.002	47	10.664	0.000

Note. (a) Dependent Variable: FIB 2000; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 2: Year 2001.

The purpose of the second multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2001. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.173 to 5.691, all tolerance statistics were above 0.1, and the average VIF score was 2.911. These measurements provided confirmation that collinearity was not a problem in this model.

Table 18 presents the relative coefficients and collinearity statistics to the independent variables.

Table 18

Coefficient Summary for Regression 2: 2001

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	1.563	.920	1.699	.097	-.295	3.421		
UERate	-4.646	8.476	-.548	.587	-21.763	12.471	.504	1.983
%StatePop65+	1.895	3.365	.563	.576	-4.900	8.691	.852	1.173
PerCapInc	-1.415E-05	.000	-.633	.530	.000	.000	.176	5.691
PPov	5.852	2.870	2.039	.048	.055	11.648	.310	3.221
KIEA	55.746	62.156	.897	.375	-69.782	181.273	.806	1.240
%GSP	-.952	.624	-1.524	.135	-2.213	.309	.240	4.159

Note. Dependent variable: FIB 2001; F (6, 41) = 9.094, p = .000, R^2 = .571.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2001 indicated a significant model, F (6, 41) = 9.094, $p < .000$, $R^2 = .571$. The R^2 value of .571 suggested that approximately 57.1% of fiscal imbalance in 2001 was due to the six independent variables. Examining the individual predictors showed only a significant relationship between the percentage of state population below the poverty level and the fiscal imbalance for the year 2001 (t = 2.039, p = .048). The beta value (B = 5.852) for this relationship indicated that for every unit of increase in the percentage of state population below the poverty level there was a

change of 5.852 units in the fiscal imbalance for 2001. Results of the second linear regression are presented in Table 19.

Table 19

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2001

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.756	0.571	0.508	0.353	1.951	11.927	47	9.094	0.000

Note. (a) Dependent Variable: FIB 2001; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 3: Year 2002.

The purpose of the third multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2002. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.138 to 6.550, all

tolerance statistics were above 0.1, and the average VIF score was 3.088. These measurements provided confirmation that collinearity was not a problem in this model. Table 20 presents the relative coefficients and collinearity statistics to the independent variables.

Table 20

Coefficient Summary for Regression 3: 2002

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	2.879	.942	3.055	.004	.976	4.782		
UERate	-20.034	7.865	-2.547	.015	-35.917	-4.150	.631	1.584
%StatePop65+	-.730	3.835	-.190	.850	-8.475	7.015	.721	1.386
PerCapInc	-7.535E-07	.000	-.030	.976	.000	.000	.153	6.550
PPov	8.409	3.059	2.749	.009	2.231	14.588	.334	2.998
KIEA	-57.780	67.322	-.858	.396	-193.739	78.179	.879	1.138
%GSP	-1.593	.698	-2.283	.028	-3.002	-.184	.205	4.871

Note. Dependent variable: FIB 2002; F (6, 41) = 10.232, p = .000, R^2 = .600.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2002 indicated a significant model, F (6, 41) = 10.232, $p < .000$, $R^2 = .600$. The R^2 value of .600 suggested that approximately 60.0% of fiscal imbalance in 2002 was due to the six independent variables. Examination of the individual predictors showed significant relationships between the fiscal imbalance for the year 2002 and the unemployment percentage rate (t = -2.547, p = .015), the percentage of state population below the poverty level (t = 2.749, p = .009), and the per

capita GSP for state divided by per capita GDP for the US (t = -2.283, p = .028). For the relationship with the unemployment percentage rate, the beta value (B = -20.034) indicates that for every unit of increase the unemployment percentage rate there was a change of -20.034 units in fiscal imbalance for 2002. Similarly, the beta values for the percentage of state population below the poverty level (B = 8.409) and the per capita GSP for state divided by per capita GDP for the US (B = -1.593) indicated that for one unit of change in each of these variables there are changes of 8.409 units and -1.593 units, respectively, in the fiscal imbalance for 2002. Results of the third linear regression are presented in Table 21.

Table 21

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2002

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.774	0.600	0.541	0.365	2.119	13.679	47	10.232	0.000

Note. (a) Dependent Variable: FIB 2002; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 4: Year 2003.

The purpose of the fourth multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2003. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.297 to 7.622, all tolerance statistics were above 0.1, and the average VIF score was 3.401. These measurements provided confirmation that collinearity was not a problem in this model. Table 22 presents the relative coefficients and collinearity statistics to the independent variables.

Table 22

Coefficient Summary for Regression 4: 2003

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.725	1.248	1.382	.174	-.796	4.245		
UERate	-21.130	7.676	-2.753	.009	-36.633	-5.628	.691	1.448
%StatePop65+	.524	4.511	.116	.908	-8.587	9.634	.685	1.459
PerCapInc	2.178E-05	.000	.686	.497	.000	.000	.131	7.622
PPov	11.726	3.552	3.301	.002	4.553	18.899	.301	3.321
KIEA	-15.273	90.842	-.168	.867	-198.733	168.187	.771	1.297
%GSP	-1.668	.867	-1.925	.061	-3.418	.082	.190	5.258

Note. Independent variable: FIB 2003; F (6, 41) = 8.828, p = .000, R^2 = .564.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2003 indicated a significant model, F (6, 41) = 8.828, $p < .000$, $R^2 = .564$. The R^2 value of .564 suggested that approximately 56.4% of fiscal imbalance in 2003 was due to the six independent variables. Examining the individual predictors showed significant relationships between the fiscal imbalance for the year 2003 and the unemployment percentage rate (t = -2.753, p = .009) and the percentage of state population below the poverty level (t = 3.301, p = .002). For the relationship with the unemployment percentage rate, the beta value (B = -21.130) indicates that for every unit of increase the unemployment percentage rate there was a change of -21.130 units in fiscal imbalance for 2003. Similarly, the beta value for the percentage of state population below the poverty level (B = 11.726) indicated that for one

unit of change in this variable there was a change of 11.726 units in the fiscal imbalance for 2003. Results of the fourth linear regression are presented in Table 23.

Table 23

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2003

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.751	0.564	0.500	0.412	1.835	15.929	47	8.828	0.000

Note. (a) Dependent Variable: FIB 2003; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 5: Year 2004.

The purpose of the fifth multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2004. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of

multicollinearity, thereby violating the assumption. VIFs ranged from 1.184 to 6.958, all tolerance statistics were above 0.1, and the average VIF score was 3.172. These measurements provided confirmation that collinearity was not a problem in this model. Table 24 presents the relative coefficients and collinearity statistics to the independent variables.

Table 24

Coefficient Summary for Regression 5: 2004

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.574	1.229	1.281	.207	-.908	4.056		
UERate	-20.731	7.555	-2.744	.009	-35.988	-5.474	.684	1.462
%StatePop65+	1.907	4.524	.422	.676	-7.229	11.043	.775	1.291
PerCapInc	2.389E-05	.000	.745	.461	.000	.000	.144	6.958
PPov	9.438	3.410	2.768	.008	2.551	16.324	.318	3.141
KIEA	119.698	68.310	1.752	.087	-18.257	257.652	.845	1.184
%GSP	-1.790	.896	-1.999	.052	-3.599	.019	.200	4.995

Note. Independent variable: FIB 2004; F (6, 41) = 9.134, p = .000, R^2 = .572.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2004 indicated a significant model, F (6, 41) = 9.134, p < .000, R^2 = .572. The R^2 value of .572 suggested that approximately 57.2% of fiscal imbalance in 2004 was due to the six independent variables. Examining the individual predictors showed significant relationships between the fiscal imbalance for the year 2004 and the unemployment percentage rate (t = -2.744, p = .009) and the percentage of state population below the poverty level (t = 2.768, p = .008). For the

relationship with the unemployment percentage rate, the beta value (B = -20.731) indicated that for every unit of increase the unemployment percentage rate there was a change of -20.731 units in fiscal imbalance for 2004. Similarly, the beta value for the percentage of state population below the poverty level (B = 9.438) indicated that for one unit of change in this variable there was a change of 9.438 units in the fiscal imbalance for 2004. Results of the fifth linear regression are presented in Table 25.

Table 25

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2004

Model	R	R^2	Adjusted R^2	SE of estimate	Durbin-Watson	SS	df	F	Sig
1	0.765	0.572	0.509	0.429	1.740	17.692	47	9.134	0.000

Note. (a) Dependent Variable: FIB 2004; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 6: Year 2005.

The purpose of the sixth multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2005. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the

data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.349 to 6.819, all tolerance statistics were above 0.1, and the average VIF score was 3.303. These measurements provided confirmation that collinearity was not a problem in this model. Table 26 presents the relative coefficients and collinearity statistics to the independent variables.

Table 26

Coefficient Summary for Regression 6: 2005

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.982	1.484	1.336	.189	-1.015	4.978		
UERate	-19.721	9.463	-2.084	.043	-38.831	-.611	.631	1.584
%StatePop65+	3.573	5.335	.670	.507	-7.202	14.348	.742	1.349
PerCapInc	7.782E-06	.000	.226	.822	.000	.000	.147	6.819
PPov	9.294	3.890	2.389	.022	1.439	17.149	.311	3.219
KIEA	-10.565	95.564	-.111	.913	-203.560	182.430	.653	1.531
%GSP	-1.665	1.021	-1.632	.110	-3.726	.396	.188	5.316

Note. Dependent variable: FIB 2005; F (6, 41) = 6.513, p = .000, R^2 = .488.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2005 indicated a significant model, F (6, 41) = 6.513, $p < .000$, $R^2 = .488$. The R^2 value of .488 suggested that approximately 48.8% of fiscal imbalance in 2005 was due to the six independent variables. Examining the

individual predictors showed significant relationships between the fiscal imbalance for the year 2005 and the unemployment percentage rate (t = -2.084, p = .043) and the percentage of state population below the poverty level (t = 2.389, p = .022). For the relationship with the unemployment percentage rate, the beta value (B = -19.721) indicated that for every unit of increase the unemployment percentage rate there was a change of -19.721 units in fiscal imbalance for 2005. Similarly, the beta value for the percentage of state population below the poverty level (B = 9.294) indicated that for one unit of change in this variable there was a change of 9.294 units in the fiscal imbalance for 2005. Results of the sixth linear regression are presented in Table 27.

Table 27

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2005

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.699	0.488	0.413	0.485	1.950	18.862	47	6.513	0.000

Note. (a) Dependent Variable: FIB 2005; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 7: Year 2006.

The purpose of the seventh multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2006. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The

assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.230 to 6.861, all tolerance statistics were above 0.1, and the average VIF score was 3.377. These measurements provided confirmation that collinearity was not a problem in this model. Table 28 presents the relative coefficients and collinearity statistics to the independent variables.

Table 28

Coefficient Summary for Regression 7: 2006

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	-.425	1.612	-.264	.793	-3.680	2.829		
UERate	11.939	7.263	1.644	.108	-2.730	26.608	.559	1.788
%StatePop65+	6.312	6.094	1.036	.306	-5.995	18.619	.759	1.317
PerCapInc	2.049E-05	.000	.535	.596	.000	.000	.146	6.861
PPov	6.781	4.671	1.452	.154	-2.653	16.215	.296	3.384
KIEA	122.360	88.638	1.380	.175	-56.648	301.368	.813	1.230
%GSP	-1.844	1.183	-1.559	.127	-4.234	.545	.176	5.684

Note. Dependent variable: 2006; F (6, 41) = 6.359, p = .000, R^2 = .482.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2006 indicated a significant model, F (6, 41) = 6.359, p = .004, R^2 = .482. The R^2 value of .482 suggested that approximately 48.2% of fiscal imbalance in 2006 was due to the six independent variables. Examining the individual predictors revealed no significant relationships, and as such no further inferences could be made. Results of the seventh linear regression are presented in Table 29.

Table 29

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2006

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.694	0.482	0.406	0.548	1.988	23.736	47	6.359	0.000

Note. (a) Dependent Variable: FIB 2006; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 8: Year 2007.

The purpose of the eighth multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2007. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of

homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.098 to 7.877, all tolerance statistics were above 0.1, and the average VIF score was 2.933. These measurements provided confirmation that collinearity was not a problem in this model. Table 30 presents the relative coefficients and collinearity statistics to the independent variables.

Table 30

Coefficient Summary for Regression 8: 2007

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	1.586	1.140	1.391	.172	-.716	3.888		
UERate	-11.312	7.624	-1.484	.146	-26.709	4.085	.694	1.441
%StatePop65+	3.325	4.354	.764	.449	-5.467	12.118	.911	1.098
PerCapInc	2.545E-05	.000	.862	.393	.000	.000	.127	7.877
PPov	6.055	3.461	1.749	.088	-.935	13.045	.336	2.973
KIEA	45.856	77.178	.594	.556	-110.007	201.720	.784	1.275
%GSP	-2.337	.909	-2.570	.014	-4.173	-.501	.167	6.002

Note. Dependent variable: FIB 2007; F (6, 41) = 6.942, p = .000, R^2 = .504.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2007 indicated a significant model, F (6, 41) = 6.942, p < .000, R^2 = .504. The R^2 value of .504 suggested that approximately 50.4% of

fiscal imbalance in 2007 was due to the six independent variables. Examining the individual predictors showed significant relationships between the fiscal imbalance for the year 2007 and the per capita GSP for state divided by per capita GDP for the US (t = -2.570, p = .014). For the relationship with per capita GSP for state divided by per capita GDP for the US, the beta value (B = -2.337) indicated that for every unit of increase the unemployment percentage rate there was a change of -2.337 units in fiscal imbalance for 2007. Results of the eighth linear regression are presented in Table 31.

Table 31

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2007

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.710	0.504	0.431	0.420	1.990	14.606	47	6.942	0.000

Note. (a) Dependent Variable: FIB 2007; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 9: Year 2008.

The purpose of the ninth multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2008. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of

homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.178 to 6.868, all tolerance statistics were above 0.1, and the average VIF score was 3.121. These measurements provided confirmation that collinearity was not a problem in this model. Table 32 presents the relative coefficients and collinearity statistics to the independent variables.

Table 32

Coefficient Summary for Regression 9: 2008

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	2.182	1.048	2.083	.044	.066	4.298		
UERate	-16.472	6.016	-2.738	.009	-28.623	-4.322	.849	1.178
%StatePop65+	.980	4.174	.235	.815	-7.449	9.410	.771	1.296
PerCapInc	3.678E-05	.000	1.559	.127	.000	.000	.146	6.868
PPov	6.923	2.779	2.492	.017	1.311	12.535	.411	2.433
KIEA	-92.058	66.443	-1.386	.173	-226.242	42.126	.843	1.186
%GSP	-2.539	.767	-3.309	.002	-4.088	-.989	.173	5.765

Note. Dependent variable: FIB 2008; F (6, 41) = 8.499, p = .000, R^2 = .554.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2008 indicated a significant model, F (6, 41) =

8.499, $p < .000$, $R^2 = .554$. The R^2 value of .554 suggested that approximately 55.4% of fiscal imbalance in 2008 was due to the six independent variables. Examining the individual predictors showed significant relationships between the fiscal imbalance for the year 2008 and the unemployment percentage rate ($t = -2.738$, $p = .009$), the percent of population below the federal poverty level ($t = 2.492$, $p = .017$), and per capita GSP for state divided by per capita GDP for the US ($t = -3.309$, $p = .002$). For the relationship with the unemployment percentage rate, the beta value ($B = -16.472$) indicated that for every unit of increase the unemployment percentage rate there was a change of -16.472 units in fiscal imbalance for 2008. For the relationship with the percent of population below the federal poverty level, the beta value ($B = 6.923$) indicated that for every unit of increase the unemployment percentage rate there was a change of 6.923 units in fiscal imbalance for 2008. Similarly, the beta value for per capita GSP for state divided by per capita GDP for the US ($B = -2.539$) indicated that for one unit of change in this variable there was a change of -2.539 units in the fiscal imbalance for 2008. Results of the ninth linear regression are presented in Table 33.

Table 33

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2008

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.745	0.554	0.489	0.372	2.408	12.703	47	8.499	0.000

Note. (a) Dependent Variable: FIB 2008; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 10: Year 2009.

The purpose of the tenth multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2009. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.122 to 7.041, all tolerance statistics were above 0.1, and the average VIF score was 3.225. These measurements provided confirmation that collinearity was not a problem in this model. Table 34 presents the relative coefficients and collinearity statistics to the independent variables.

Table 34

Coefficient Summary for Regression 10: 2009

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	2.218	1.413	1.570	.124	-.635	5.071		
UERate	-13.663	5.752	-2.376	.022	-25.278	-2.047	.891	1.122
%StatePop65+	2.138	6.000	.356	.723	-9.980	14.255	.752	1.330
PerCapInc	3.240E-05	.000	.920	.363	.000	.000	.142	7.041
PPov	7.176	4.273	1.679	.101	-1.454	15.807	.396	2.526
KIEA	68.330	84.190	.812	.422	-101.695	238.355	.761	1.314
%GSP	-2.579	1.110	-2.322	.025	-4.822	-.336	.166	6.018

Note. Dependent variable: FIB 2009; F (6, 41) = 5.684, p = .000, R^2 = .454.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2009 indicated a significant model, F (6, 41) = 5.684, $p < .000$, $R^2 = .454$. The R^2 value of .454 suggested that approximately 45.4% of fiscal imbalance in 2009 was due to the six independent variables. Examining the individual predictors showed significant relationships between the fiscal imbalance for the year 2009 and the unemployment percentage rate (t = -2.376, p = .022) and per capita GSP for state divided by per capita GDP for the US (t = -2.322, p = .025). For the relationship with the unemployment percentage rate, the beta value (B = -13.663) indicated that for every unit of increase the unemployment percentage rate there was a change of -13.663 units in fiscal imbalance for 2009. Similarly, the beta value for per capita GSP for state divided by per capita GDP for the US (B = -2.579) indicated that for

one unit of change in this variable there was a change of -2.579 units in the fiscal imbalance for 2009. Results of the tenth linear regression are presented in Table 35.

Table 35

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2009

Model	*R*	R^2	Adjusted R^2	*SE* of estimate	Durbin-Watson	*SS*	*df*	*F*	*Sig*
1	0.674	0.454	0.374	0.531	2.079	21.176	47	5.684	0.000

Note. (a) Dependent Variable: FIB 2009; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Regression 11: Year 2010.

The purpose of the eleventh and final multiple linear regression was to examine the effect of the independent variables on the state-level fiscal imbalance during the year 2010. Prior to analysis, the assumptions of the multiple linear regressions were assessed. Prior to analysis, the assumptions of the multiple linear regressions were assessed. The assumption of normality was assessed, and subsequently met, using a normal P-P plots which resulted in the data not deviating greatly from the normal line. The assumption of homoscedasticity was assessed, and subsequently met, using a residuals scatterplot; the data did not deviate greatly from a rectangular distribution. The absence of multicollinearity was assessed, and met, through examination of variance inflation factors (VIFs), where any VIF greater than 10 was considered to possess high levels of multicollinearity, thereby violating the assumption. VIFs ranged from 1.055 to 5.502, all

tolerance statistics were above 0.1, and the average VIF score was 2.665. These measurements provided confirmation that collinearity was not a problem in this model. Table 36 presents the relative coefficients and collinearity statistics to the independent variables.

Table 36

Coefficient Summary for Regression 11: 2010

	Unstandardized coefficients				95.0% CI for B		Collinearity statistics	
Variable	B	*SE*	*t*	*Sig.*	Lower bound	Upper bound	Tolerance	VIF
(Constant)	3.220	1.829	1.761	.086	-.474	6.913		
UERate	-8.697	4.449	-1.955	.057	-17.681	.287	.871	1.148
%StatePop65+	1.535	6.363	.241	.811	-11.315	14.386	.848	1.179
PerCapInc	1.197E-05	.000	.325	.746	.000	.000	.182	5.502
PPov	6.512	4.819	1.351	.184	-3.221	16.245	.358	2.792
KIEA	-76.648	108.287	-.708	.483	-295.337	142.041	.948	1.055
%GSP	-2.127	1.013	-2.098	.042	-4.173	-.080	.232	4.314

Note. Dependent variable: FIB 2010; F (6, 41) = 4.798, p = .000, R^2 = .413.

Results of the multiple linear regression to determine the impact of state conditions on fiscal imbalance for the year 2010 indicated a significant model, F (6, 41) = 4.798, p < .000, R^2 = .413. The R^2 value of .413 suggested that approximately 41.3% of fiscal imbalance in 2010 was due to the six independent variables. Examining the individual predictors showed significant relationships between the fiscal imbalance for the year 2010 and per capita GSP for state divided by per capita GDP for the US (t = -2.098, p = .042). The beta value for per capita GSP for state divided by per capita GDP

for the US (B = -2.127) indicated that for one unit of change in this variable there was a change of -2.127 units in the fiscal imbalance for 2010. Results of the eleventh, and final, linear regression are presented in Table 37.

Table 37

Multiple Linear Regression With State Conditions and Fiscal Imbalance for 2010

Model	R	R^2	Adjusted R^2	SE of estimate	Durbin-Watson	SS	df	F	Sig
1	0.642	0.413	0.327	0.596	2.173	7.000	47	4.798	0.000

Note. (a) Dependent Variable: FIB 2010; (b) Predictors: (Enter method), %GSP, %StatePop65+, UER, KIEA, PPov, PerCapInc.

Summary of Research Question 2 Regressions

The purpose of Research Question 2, and its related hypothesis, was to analyze the relationships between the outcome and predictor variables to determine if these relationships have fluctuated over the eleven-year period under observation. Multiple linear regressions were run for each of the eleven individual years. For each year's multiple linear regression, tables containing the relative coefficient summaries and linear regression results have been provided to illustrate the statistical relationship between state-level fiscal imbalance and the six independent variables.

Table 38 contains a summary of the year-to-year data obtained from each of the eleven multiple regressions.

Table 38

Listing of R^2 Measures From 2000 to 2010

Year	*R*	R^2	AdjustedR^2	*SE* of estimate	Durbin-Watson	*SS*	*F*	*Sig.*
2000	0.781	0.609	0.552	0.309	1.699	10.002	10.664	0.000
2001	0.756	0.571	0.508	0.353	1.951	11.927	9.094	0.000
2002	0.774	0.600	0.541	0.365	2.119	13.679	10.232	0.000
2003	0.751	0.564	0.500	0.412	1.835	15.929	8.828	0.000
2004	0.765	0.572	0.509	0.429	1.740	17.692	9.134	0.000
2005	0.699	0.488	0.413	0.485	1.950	18.862	6.513	0.000
2006	0.694	0.482	0.406	0.548	1.988	23.736	6.359	0.000
2007	0.710	0.504	0.431	0.420	1.990	14.606	6.942	0.000
2008	0.745	0.554	0.489	0.372	2.408	12.703	8.499	0.000
2009	0.674	0.454	0.374	0.531	2.079	21.176	5.684	0.000
2010	0.642	0.413	0.327	0.596	2.173	7.000	4.798	0.000

Table 38 includes the measurement of R^2, or the coefficient of determination, representing the degree of relationship between the set of independent variables and the dependent variable for each of the eleven years under observation. My comparison of these values measures, more specifically, how the percentage of variation in fiscal imbalance from one state to another was explained by the set of independent variables (Pallant, 2010). If the R^2 measurement increased for each subsequent year, the relationship was viewed as strengthening over time. However, if the R^2 measurement decreased for each subsequent year, the relationship was viewed as weakening over time.

In Figure 7, R^2 values were plotted against time to provide a comparative representation of the effect of time on the relationship between the independent and dependent variables.

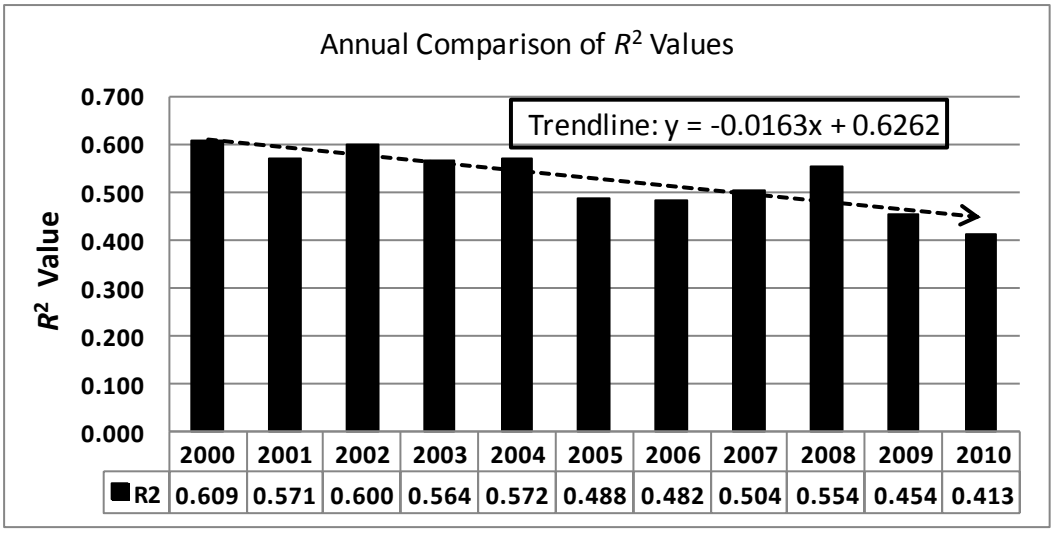


Figure 7. Annual measures of R^2 with linear trend line.

The R^2 values measured in each of the eleven multiple regressions fluctuated over time, with annual values decreasing from 2002 to 2010 with a linear trend slope of y = -0.0163x + 0.6262. The negative slope of the linear trend line reflects the long-term weakening of the relationship between the dependent and independent variables. The Research Question 2 null hypothesis ($H2_0$) states that the relationship between fiscal imbalance levels and the six independent variables does not fluctuate throughout the years 2000 to 2010. However, the resulting analysis illustrated in both Table 38 and Figure 7 reflects fluctuations in the value of R^2 during the eleven-year time period. Accordingly, the null hypothesis $H2_0$ was rejected.

The second step in the supporting analysis of Research Question 2 was an examination of the fashion in which relationships between yearly state-wise

demographics and fiscal imbalance change throughout time. Significance levels and unstandardized beta coefficients for each independent variable were examined for each year. Examination of *p*-values provided insight into which of the independent variables most strongly influenced fiscal imbalance for each year. At times, certain variables may be significant predictors in one year's analysis, and may no longer have a significant level of predictive ability in following years. In this way, significant relationships may be examined as they fluctuated throughout time. In addition, significant predictors will be assessed for the strength of their correlation for each year. If a set of predictors were significantly related to the dependent variable for several years, examination of the unstandardized beta coefficient (B) allowed a description of how the strength of these relationships fluctuate from one year to the next. Table 39 includes the significance levels, or *p*-values, of the independent variables over time.

Table 39

Summary of Predictor Variable p-values 2000 to 2010

Variable	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
UERate	.731	.587	.015	.009	.009	.043	.108	.146	.009	.022	.057
%StatePop65+	.370	.576	.850	.908	.676	.507	.306	.449	.815	.723	.811
PerCapInc	.134	.530	.976	.497	.461	.822	.596	.393	.127	.363	.746
PPov	.081	.048	.009	.002	.008	.022	.154	.088	.017	.101	.184
KIEA	.242	.375	.396	.867	.087	.913	.175	.556	.173	.422	.483
%GSP	.453	.135	.028	.061	.052	.110	.127	.014	.002	.025	.042

Only three of the predictor variables have significance levels which fluctuate at or below $p < .05$ level of significance, as highlighted by the shading of these values in Table

39, at various times during the eleven year period: (a) the unemployment rate (UERate), (b) the percent of state population below the federal poverty level (PPov), and (c) the percent of state GSP divided by the GDP in the United States (%GSP). None of the *p*-values related to the remaining three independent variables, the percent of state population of age 65+ (%StatePop65+), the level of per capita income (PerCapInc), and the Kauffman Index for Entrepreneurial Activity (KIEA), fell below the criteria $\alpha = 0.05$ level of significance, therefore there existed insufficient evidence to conclude that at least one of these three remaining independent variables was useful for predicting a change in fiscal imbalance. Table 40 includes the annual *p*-values and B-coefficient values for each of the three independent variables having a demonstrated predictive relationship with state fiscal imbalance levels.

Table 40

Summary of p-values and B-coefficients for Significant Predictors

Variable		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
UER	*p* -value			.015	.009	.009	.043			.009	.022	
	B-coefficient			-20.034	-21.130	-20.731	-19.721			-16.472	-13.663	
PPov	*p* -value		.048	.009	.002	.008	.022			.017		
	B-coefficien		5.852	8.409	11.726	9.438	9.294			6.923		
%GSI	*p* -value			.028					.014	.002	.025	.042
	B-coefficient			-1.593					-2.337	-2.539	-2.579	-2.127

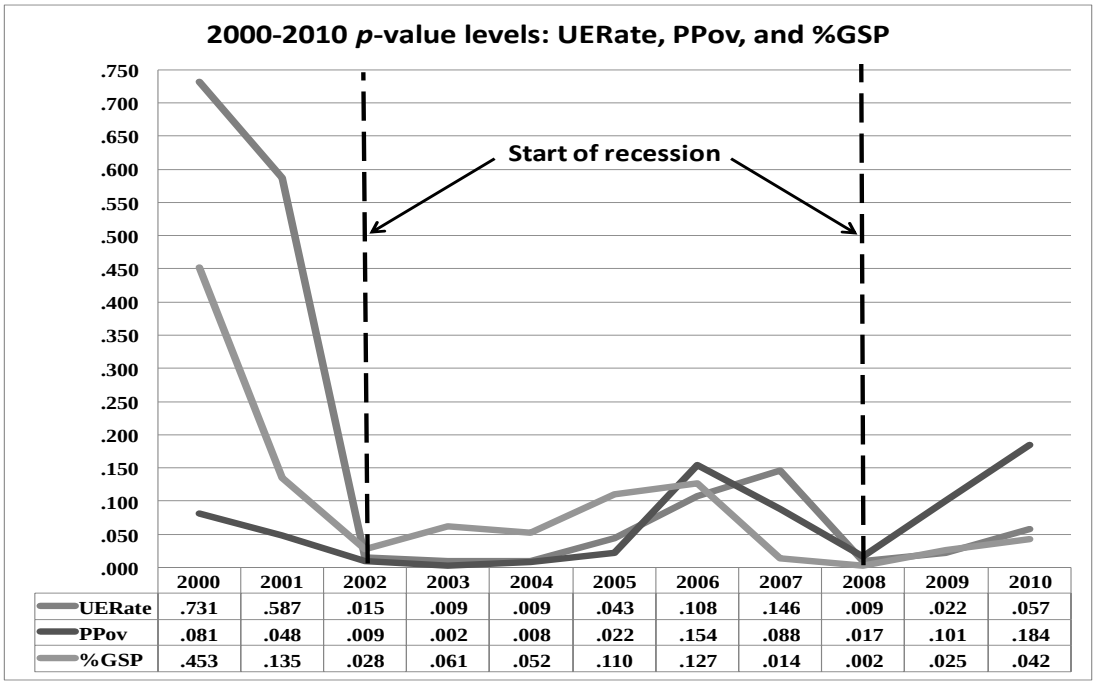
In Table 40, the annual B-coefficient measurements represent the level of relationship between the predictor variables and fiscal imbalance levels in the following manner:

1. The independent variable representing the unemployment rate (UERate) had the highest significant predictive relationship with fiscal imbalance levels during the years 2002 to 2005, and again in the years 2008 to 2009. The B-coefficient measures ranged from B = -21.130 in 2003 to B = -13.663 in 2009.
2. The independent variable representing the percent of population under the federal population level (PPov) had a significant predictive relationship with fiscal imbalance levels during the years 2001 to 2005, and again in 2008. The B-coefficient measures ranged from B = 11.726 in 2003 to B = 5.852 in 2001.
3. The independent variable representing the ratio of state GSP to GDP in the United states in 2002, and again in the years 2007 to 2010. The B-coefficient measures ranged from B = -2.579 in 2009 to B = -1.593 in 2002.

Additional Statistical Information

Figure 8 is a graphical presentation of the *p*-value levels of these three independent variables as they related to fluctuations in state level fiscal imbalance. I was interested in observing how the *p*-values of these three predictors fluctuated over the eleven-year period, and how the variation in significance levels values may converge or diverge over time. Interestingly, the plotted values on Figure 8 fluctuated with near-convergence in the measure of statistical dispersion between the three variables possibly occurring in both 2002 and 2008—the initial dates of the two most recent economic recessions as determined by the National Bureau of Economic Research (National Bureau of Economic Research, 2014).

The initial date of the two economic recessions is illustrated in Figure 8 by the inclusion of the two vertical lines at each of the years. In both cases, the slope of each predictor variable's plotted line of the *p*-value was negative prior to the 2002 economic recession, turning positive after the start of the subsequent recovery period, turning negative again prior to the 2008 economic recession, and finally turning positive as the recovery period of the 2008 economic recession commenced. This same convergence phenomenon appears in Table 40 where years 2002 and 2008 are the only years in which all three of the predictor variables meet significance at $p < .05$.



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
UERate	.731	.587	.015	.009	.009	.043	.108	.146	.009	.022	.057
PPov	.081	.048	.009	.002	.008	.022	.154	.088	.017	.101	.184
%GSP	.453	.135	.028	.061	.052	.110	.127	.014	.002	.025	.042

Figure 8. *p*-value levels of significant independent variables over time.

This convergence/divergence dynamic potentially illustrated the potential cyclical nature of the three independent variables on the dependent variable. However, the analysis of the factors attributing to the conversion of these variables at the time point when an economic recession commences is beyond the scope of this study. Future research might highlight the interactions between economic factors and fiscal imbalance levels as they pertain to their relationship with cyclical economic downturns.

Summary

The research was designed to examine the extent to which the relationship between fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States does not fluctuate throughout the years 2000 to 2010.

The initial step of the analysis indicated the first three of the four individual null hypotheses pertaining to Research Questions 1 ($H1_0 1$, $H1_0 2$, and $H1_0 3$) were not rejected as the independent variables did not have a significant relationship with fluctuations in fiscal imbalance levels during the three periods of time: (a) 2000 to 2007, (b) 2007 to 2009, and (c) 2009 to 2010. However, the analysis indicated that the independent variables did have a significant relationship with fluctuations in fiscal imbalance levels during the encompassing 2000 to 2010 period of time. Accordingly, the null hypothesis $H1_0 4$ was rejected.

The second step of the analysis, pertaining to Research Question 2 indicated that the strength of the relationship between the predictor variables and the outcome variable, measured on an annual basis, both strengthened and weakened during at various time points during 2000 to 2010. The measurement of R^2, or the coefficient of determination, represented the degree of relationship between the set of independent variables and the dependent variable. This measurement described, more specifically, the percentage of variation in fiscal imbalance from one state to another was explained by the set of independent. If the R^2 measurement increased for each subsequent year, the relationship was viewed as strengthening over time. However, if the R^2 measurement decreased for each subsequent year, the relationship was viewed as weakening over time. The results of the analysis illustrated that the measurement of R^2 varied over the eleven year period, with both strengthening and weakening fluctuations observed on a cyclical basis. Accordingly, the null hypothesis $H2_0$ was rejected.

Finally, an analysis was made to determine which of the predictor variables and which independent variables best related to a state's fiscal imbalance throughout the proposed years. An analysis of each of the six predictor variable p-values and corresponding beta-coefficient measurements, I determined that only three of the independent variables had significance levels which fluctuate below $p < .05$ level of significance at various times during the eleven year period: (a) the unemployment rate (UERate), (b) the percent of state population below the federal poverty level (PPov), and (c) the percent of state GSP divided by the GDP in the United States (%GSP).

Chapter 5 is the concluding chapter of the study on cyclical economic impacts on aggregated fiscal imbalance levels in the United States. The chapter contains the summary and conclusion, as well as recommendations for future research. Chapter 5 will also include further comments on the findings of the study, with recommendations for action, and perspectives on positive social change.

Chapter 5: Summary, Conclusion, and Recommendations

Introduction

The purpose of this quantitative research was to provide a deeper understanding of the impact of cyclical changes in the economic environment on aggregated fiscal imbalance levels across the 48 contiguous U.S. states. This study was conducted to achieve the following objectives: (a) the initial phase of this study was to measure, describe, regress, and analyze how the independent variables of the unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States may be related to state-level fiscal imbalances across the United States prior to, during, and immediately following the 2007 to 2009 economic recession, and (b) the second phase of the analysis was to measure, describe, regress, and analyze how the relationship between unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States and state-level fiscal imbalances is either strengthened or weakened over time and, accordingly, which economic factors best relate to a state's fiscal imbalance throughout the proposed 11-year period.

In the first phase of the statistical results, the analysis resulted in the determination that the predictor variables did not have a statistically significant

relationship with fluctuations in fiscal imbalance levels during the following three consecutive periods of time: (a) 2000 to 2007, (b) 2007 to 2009, and (c) 2009 to 2010. However, statistical testing resulted in the determination that the annual measures of all predictor variables did have a statistically significant relationship with the annual measurements of fiscal imbalance levels over the comprehensive 11-year period under observation.

In the second phase of analysis, I observed that the strength of the relationships between the independent and dependent variables both strengthened and weakened, as demonstrated by the fluctuations in the R^2 values, on a year-to-year basis. In addition, three of the predictor variables, the unemployment rate, the percent of population below the federal poverty level, and the ratio of GSP to GDP in the United States, were found to have an individually significant relationship with fiscal imbalance levels at various points between 2000 and 2010.

Interpretation of the Findings

The 2008 economic recession has been the most severe recession since World War Two as evidenced by a doubling of the unemployment rate, numerous quarters of negative GDP growth during 2008 and 2009, and over 8 million jobs lost (Connaughton & Madsen, 2012, p. 177). While this information is critical to national level decision makers, the implication for state-level public entities is varied as evidence of regional differences in economic performance during national business cycles suggests that the correlation between economic characteristics and economic sustainability vary across regions (Garrett, Wagner, & Wheelcock, 2005, p. 1).

Due to the variety of economic factors between states, in both number and complexity, researchers investigating recessionary economic impacts have employed several types of explanatory variables identified as having an influence on state-level economic performance (Connaughton & Madsen, 2012, p. 178). Berryman and Kaserman (1993) studied employment level fluctuations in the manufacturing sector to explain state economic growth from 1929 to 1987. Furthermore, Levernier, Partridge, and Rickman (1990) studied economic, demographic, and labor variables with regional dummy variables to measure economic impacts by region. Moreover, Connaughton and Madsen (2012) observed percent change in jobs by state, state-level productivity, the percent of state population with a 4-year college degree, and other factors with dummy variables included to observe regional effects on unemployment during the 2008 to 2009 economic recession (p. 182).

One economic phenomenon that received no mention in these previous studies was the impact of cyclical economic fluctuations on state-level fiscal imbalances. Buchanan (1950) called attention to fiscal imbalances between subordinate units in a federal polity by suggesting that fiscal systems in each subunit government is limited by its geographical boundaries, thereby restricting its taxing authority to withdraw resources for the financing of public services only from those within its boundaries (p. 584). Buchanan (1950) further stated that if "subordinate units are required independently to finance certain traditionally assigned functions, fiscal inequalities among those units will be present…there will be differences in the number of public services performed…and in the burden of taxes levied" (p. 584). This theoretical gap in the literature piqued my

interest as the concept of fluctuating fiscal inequalities between states is an important factor in economic development policies aimed at providing a similar level of public goods and services for a similar public cost across regions. Accordingly, the development of the research questions in this study was to measure how fiscal imbalance levels fluctuate during a cyclical economic period of time and to observe which economic variables may be related to these fiscal imbalance fluctuations.

To study cyclical economic impacts on fiscal imbalance levels, I developed two sets of research questions and five sets of hypotheses—four hypotheses addressing Research Question 1 and one hypothesis addressing Research Question 2. Existing datasets from four federal government agencies and one private entity were obtained, organized, and categorized by state government for the analysis. The findings and interpretations for each research question are discussed in the following sections.

Research Question 1

In Research Question 1, I queried the following: Is there a relationship between fluctuations in the dependent variable, the percentage change in state-level aggregate fiscal imbalance ratios, and the year 2000 independent variables of unemployment percentage rate by state, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States, during the four measurement time periods of: (a) the 2000 to 2007 prerecession expansion, (b) the 2007 to 2009 economic

recession, (c) the 2009-2010 postrecession recovery, and (d) the entire 2000 to 2010 11-year period?

The line of inquiry and the structural format of Research Question 1 replicated the model developed by Connaughton and Madsen (2012) who studied state-level impacts of the 2008 economic recession on job losses and unemployment levels. While conceptually formulated around Connaughton and Madsen's model, this study replaced job loss as the outcome variable with fiscal imbalance fluctuations, while simultaneously adopting predictor variables that might be related to shifts in the components used in calculating a state's fiscal imbalance level. In addition, I expanded the period of time under observation to include the 2009 to 2010 recovery period. This additional time observation adds to the body of literature by analyzing not only the negative economic impacts of the 2008 recession, but also the subsequent recovery period.

In Research Question 1, one hypothesis was assigned to each of the four time measurement periods. The purpose of this assignment was to separately measure the level of relationship between the independent and dependent variables during different stages of a cyclical economic cycle. Each hypothesis was constructed to address the potential existence of a significant predictive relationship between state-level economic factors and the percent fluctuation in state-level fiscal imbalance levels during its assigned period of time.

The data used in Hypothesis 1did not support the existence of a significant predictive relationship between the dependent variable fluctuations in fiscal imbalance levels from 2000 to 2007 and the fiscal year 2000 independent variable economic factors.

The results of the multiple linear regression model concluded that the overall regression was not significant (F (6, 41) = 2.041, p = .082, R^2 = .230). Using α = 0.05 level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, with the p-value of .082 >.05, the null hypothesis $H1_0$1was not rejected.

The data used in Hypothesis 2 did not support the existence of a significant predictive relationship between the dependent variable fluctuations in fiscal imbalance levels between 2007 and 2009 and the fiscal year 2000 independent variable economic factors. The results of multiple linear regression model that concluded that the overall regression was not significant (F (6, 41) = 1.475, p = .211, R^2 = .178). Using α = 0.05 level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, given that the p-value of .211 >.05, the null hypothesis $H1_0$2 was not rejected.

The data used in Hypothesis 3 did not support the existence of a significant predictive relationship between the dependent variable fluctuations in fiscal imbalance levels during 2009 to 2010 and the fiscal year 2000 independent variable economic factors. The results of multiple linear regression model that concluded that the overall regression was not significant (F (6, 41) = 1.583, p = .177, R^2 = .188). Using α = 0.05 level of significance, there existed no evidence to conclude that at least one of the predictors is useful for predicting a change in fiscal imbalance. Accordingly, with the p-value of .177 >.05, the null hypothesis $H1_0$3 was not rejected.

Finally, the data used in Hypothesis 4 did support the existence of a significant predictive relationship between the dependent variable fluctuations in fiscal imbalance levels from 2000 to 2010 and the fiscal year 2000 independent variable economic factors. Based on the results of the multiple linear regression model, I concluded that there was a significant predictive relationship between the six independent variables in the year 2000 and subsequent fluctuations in fiscal imbalance variable between the years of 2009 and 2010 (F (6, 41) = 2.970, p = .017, R^2 = .303). Using $\alpha = 0.05$ level of significance, there existed sufficient evidence to conclude that at least one of the predictors was useful for predicting a change in fiscal imbalance. Accordingly, given that the p-value of .017 < .05, the null hypothesis $H1_0 4$ was rejected.

The implication of these results suggested that, while the independent variables had a significant predictive relationship with fiscal imbalance levels over the entire 11-year period of 2000 to 2010, the fluctuations in fiscal imbalances occurring during the various stages of the economic cycle were not significantly aligned enough to the predictor variables existing in 2000 to allow any inferences of relationship during the three subperiods of time.

At the time of developing Research Question 1, I also considered that the strength of relationship between the outcome and predictor variables might fluctuate on an annual basis rather than during multiyear periods of time. In addition, I considered that the predictor variables might each have their own levels of relational significance with fiscal imbalance levels that could possible strengthen and weaken at different annual time points independent of the other independent variables.

Accordingly, I again expanded previous research by adding Research Question 2 to study how the strength of relationship between fiscal imbalance levels and the individual independent variables may strengthen or weaken over time, and which independent variable may be significant predictors in one year's analysis and may no longer have a significant level of predictive ability in following years. In this way, significant relationships were examined as they fluctuate on a year to year basis.

Research Question 2

In Research Question 2, I asked the following: How does the relationship strength between the dependent variable, fiscal imbalance, and the independent variables of unemployment percentage rate, the percent of state population of age 65+, the level of per capita income by state, the percent of state population below the federal poverty level, the Kauffman Index for Entrepreneurial Activity by state, and the per capita GSP by state as a percentage of per capita GDP in the United States fluctuate throughout the years 2000 to 2010?

The analysis of Research Question 2 included the analysis, on a year by year basis, of the statistical relationships between state-level fiscal imbalances and each respective state's economic conditions. I used the R^2 measure during each year as the measure of strength between all variables. Thus, I plotted the R^2 values graphically to observe and measure possible fluctuations in relationship strength evidence by corresponding fluctuations in R^2 values year to year. As shown in Figure 7, the R^2 values did vary year to year, thus possibly proving that the relational strength fluctuated during the 2000 to 2010 period of time. In addition, the analysis of the significance levels of

each predictor variable reflected that different variables have greater levels of statistical significance in one year, with a lesser degree of significance in subsequent years.

The implication of the analysis of Research Question 2 may highlight that different economic factors may have different levels of sensitivity to cyclical changes in the economic environment—sensitivities that create a different level of responsive volatility to economic swings than do other economic factors. For example, the varied and volatile plot lines of *p*-values in Figure 8, the appearance and disappearance of significance levels of the three independent variables, the unemployment rate, the percent of population under the federal poverty level, and the ration of individual GSP over GDP in the United States as reflected in Table 40 may be interpreted that different economic factors respond to cyclic economic subperiods of time. One possible implication is that the results of the two research questions are related. In Research Question 1, there was no significant relationship measured during the three subperiods of time, yet there was a significant relationship over the 11-year period of time. In Research Question 2, the predictor variables phased-in and -out of significance during shorter periods of time, all the while there was a measureable level of relational strength during the entire 11-year period. Further research might illuminate possible relationships between these models.

Limitations of the Study

The scope of this study was limited to an analysis of potential relationships between fluctuations in various economic factors and simultaneous fluctuations in state-level fiscal imbalances, across the 48 contiguous U.S. states, during the years 2000 to 2010. While the population of 48 U.S. states is finite due to the contiguity requirement of

economic factors in one state impacting economic factors in adjacent or other contiguous states, the period of time over which relationships are observed and measured could be expanded outside of the 11-year period used in this study. In addition, the model used for this study could be applied to other contiguous hierarchical public entity units such as an analysis of economic factor and fiscal imbalance relationships on a state/county level.

Finally, this study was somewhat limited in scope by the unavailability of federal data for years subsequent to 2010. Improved data availability of the economic datasets used in this study could enhance the ability of analyzing fiscal imbalance fluctuations is into future years as the federal government refines and sophisticates its data collection and archiving processes to make available to the public the critical economic data needed to accurately measure federal spending on the state level.

Recommendations for Future Study

The purpose of Research Question 1 was to measure, describe, regress, and analyze how fluctuations in state-level fiscal imbalances across the United States may be related to year 2000 economic factors prior to, during, and immediately following the 2007 to 2009 economic recession. The model for the analysis was a replication of the econometric model used by Connaughton and Madsen (2012) the purpose of which was a regression of a fixed set of predictor variables from a base year against fluctuations in a dependent variable, GDP, during subsequent periods of time. Rather than holding the predictor variables fixed at the year 2000 base measurements, I would recommend a similar study be performed that would compare and regress fluctuations in the predictor variables during the same time intervals as fluctuations in fiscal imbalance levels. The

purpose of this analysis would be to observe possible relationships in the fluctuations of all variables during similar time intervals and if any resulting fluctuations might result in a higher level of significant relationship between the independent and dependent variables than was observed in this study.

Further research is encouraged in the area of determining if other economic or demographic factors may have significant relationships on fiscal imbalance level fluctuations, and how these fluctuations combined with the predicator variables in this study may act as precursors to an upcoming economic recession event. Figure 7 in this study represented a graphical illustration of convergence of significance levels in three of the predictor variables, the unemployment rate, the percent of population below the federal poverty level, and state-level GSP as a percentage of GDP in the United States, precisely at the time when an economic recession commenced. Possible further research could expand the time period under observation to include several past economic recession events while simultaneously focusing on these same three variables to observe if a similar conversionary phenomenon exists.

Implications for Positive Social Change

This focus of this study centered on fiscal imbalance variances that exist between the 48 contiguous U.S. states. Each individual state government has its own demographic and socioeconomic mix of factors which generate differing levels of both jurisdictional tax revenue production and constituent demand for public goods and services. As demonstrated in this study, the measured levels of jurisdictional fiscal imbalance across the 48 contiguous U.S. states was consistent, yet ever-changing, over the 2000 to 2010

period of time. The sheer number of possible economic factors that impact jurisdictional fiscal capacities and expenditure demand levels make the development of a measurement methodology of regional disparity difficult. Previous researchers have attempted various econometric models to study relationships between various economic variables in an effort to assess the various dimensions of fiscal imbalances (Connaughton & Madsen, 2009; Crain & Lee, 1999; Moon, 2003). Buchanan (1950) acknowledged the variances in governance structure and economic composition of individual sublevel entities and subsequently proposed a methodology of correcting fiscal imbalances by taking surplus fiscal balance from wealthier states to subsidizing poorer state economies. While Buchanan's methodology may artificially mitigate a certain level of fiscal imbalance, the subsidization is a postfacto treatment of an adverse economic symptom. The subsidization does nothing to observe, understand, or treat the basal causes of fiscal imbalance.

Accordingly, this study was needed to observe and understand how certain specific economic variables impacting aggregated fiscal imbalance levels fluctuate within the population of U.S. states—fluctuations that may, in turn, cause relative imbalances in the quality of life and economic potential in all regions over time. Based on the findings of this study's research questions, in particularly how the unemployment rate, the percentage of the population living with an income under the federal poverty level, and the level of GSP per GDP in the United States are related to fluctuations in fiscal imbalance, public sector decision makers might implement new fiscal policies which address job creation, business incubation, and the expansion of economic development

into those geographical areas which experience a higher level of fiscal imbalance fluctuation than other jurisdictions. By encouraging an examination of the underlying economic causes of fiscal imbalances between and across state jurisdictions, one could potentially influence the fiscal imbalance disparities apparent between jurisdictions by mitigating the misalignment in the allocation of tax burden and the disbursement of critically needed social support services. Doing so might enhance the quality of life and economic stability of all state jurisdictions as a whole.

Conclusion

The defining characteristic of public sector economics is the continual struggle between the demands placed on governmental entities to provide public goods and services and the desires of the constituency and the fiscal capacity of public jurisdictions to finance those demands (Joyce & Pattison, 2010). This opening sentence to Chapter 1 is both profound and an acceptable summary of the results of this study. Atkins (2008) stated that fiscal inequity between governments is a fact in America with taxation rates varying between jurisdictions while local governments provide different mixes of goods and services to their citizens (p. 53). Ladd (2005) described fiscal disparity as a comparison of a public entity's ability to raise revenue against the expenditure burden placed upon it (p. 144).

Does this fiscal disparity represent a negative or positive dynamic of public sector economic policy? Atkins (2008) stated that the tolerable margin of economic diversity among local governments is a political and societal decision.(p. 53). Tiebot (1956) suggested that individuals "vote with their feet" and will simply move to a jurisdiction

which offers a desirable mix of public goods and services at a price acceptable to the individual. Both Atkins and Tiebot describe an individual willing to accept some degree of fiscal disparity that matches the individual's own level of fiscal tolerance.

However, as demonstrated in this study, fiscal imbalance levels are not static and do, indeed, fluctuate over time. Cyclical economic impacts on jurisdictional economic factors cause fluctuations in both the ability of a jurisdiction and its citizens to raise public funds and the demand level for public goods and services. With economic factors differing between jurisdictions, the level of fiscal disparity in one community may vary significantly from its jurisdictional peers. This disparity level may or may not be exacerbated by cyclical shocks to an individual jurisdiction's economic environment. It is this jurisdictional variance which potentially causes varying quality of life levels for individuals depending on the fiscal status of the jurisdiction in which they live—a surplus or a deficit jurisdiction in terms of fiscal imbalance.

Public policy makers interested in leveling the economic field in and between their sublevel political units have an interest in softening or mitigating wide variations in fiscal imbalance swings through cyclical economic periods. While Buchanan (1956) suggested that surplus jurisdictions simply donate their excess fiscal surplus to those less fortunate jurisdictions, this subsidization model is only treating the symptom of fiscal imbalance fluctuations. Through the analysis of economic factors which are related to cyclical swings in fiscal imbalance disparity, and through the development of sound fiscal policies designed to minimize the volatility of those economic factors most sensitive to cyclical economic swings, public decision makers may make definitive

progress towards narrowing the dispersion of fiscal imbalances in and between sublevel jurisdictions in the years to come.

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Appendix A: Fiscal Imbalance Ratios 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	1.5484	1.7436	1.8386	2.0590	2.1119	2.0619	1.9805	1.9831	1.9527	2.7210	2.8396
Arizona	1.1617	1.1657	1.3959	1.6272	1.6563	1.5299	1.4202	1.3530	1.5166	1.9470	2.0338
Arkansas	0.8357	0.8752	0.9325	0.9240	0.9472	0.8490	0.7762	0.8213	0.8470	1.0612	1.0232
California	0.6796	0.7117	0.8885	0.9653	0.9767	0.9106	0.8477	0.8294	0.9429	1.3062	1.2212
Colorado	0.6133	0.6749	0.7201	0.8558	0.8673	0.8253	0.8136	0.7671	0.7878	1.2422	1.2647
Connecticut	0.4838	0.5276	0.6394	0.7380	0.7231	0.6671	0.6069	0.5970	0.7144	0.9531	1.2723
Delaware	0.3344	0.4177	0.4043	0.4829	0.4711	0.4154	0.3398	0.3698	0.3068	0.5947	0.5269
Florida	0.9531	1.0021	1.1091	1.2421	1.2933	1.1643	1.0872	1.0778	1.1156	1.5949	1.6765
Georgia	0.6956	0.8052	0.8509	0.9131	0.9335	0.9059	0.8627	0.9450	1.0738	1.4107	1.5269
Idaho	0.9562	0.9339	1.2151	1.2808	1.3840	1.2291	1.2017	1.2129	1.3054	2.1718	2.2925
Illinois	0.5211	0.5754	0.6302	0.6898	0.7082	0.6778	0.6330	0.6546	0.7464	0.9995	0.9903
Indiana	0.8475	0.9581	1.0059	1.0744	1.1779	1.1217	1.0982	1.1075	1.2216	1.4522	1.3528
Iowa	1.0071	1.1668	1.2929	1.2054	1.3390	1.1851	1.2548	1.1742	1.2156	1.6673	1.6146
Kansas	0.8004	0.9077	1.0738	1.1735	1.2034	1.0901	1.0694	1.0191	1.1331	1.7034	1.5433
Kentucky	1.3657	1.4537	1.6662	1.8530	1.8107	1.8204	1.7322	1.5519	2.0958	2.1452	2.4492
Louisiana	1.6022	1.4474	1.3231	1.5920	1.6201	1.5451	2.5520	1.2779	1.2628	1.3863	1.5396
Maine	1.4092	1.4256	1.7358	1.9188	1.9802	1.9862	1.7426	1.8842	1.7774	2.3325	2.4838
Maryland	1.0891	1.1158	1.1897	1.5070	1.5828	1.4249	1.4733	1.3149	1.4392	2.0716	2.0192
Massachusetts	0.6348	0.6352	0.7862	0.9146	0.8994	0.8673	0.8218	0.8161	0.8863	1.1966	1.1545
Michigan	0.6187	0.7427	0.8431	0.8936	0.9489	0.9458	0.9617	1.0247	1.2449	1.6414	1.6901
Minnesota	0.4162	0.4354	0.4653	0.4763	0.4958	0.4627	0.4428	0.5092	0.4720	0.6754	0.6525
Mississippi	1.8811	2.1692	2.3645	2.4118	2.4955	2.9551	4.3096	2.8169	2.3704	3.4206	3.4552
Missouri	0.8779	0.9325	1.0292	1.1509	1.1932	1.2204	1.1756	1.1440	1.2595	1.5333	1.5260
Montana	1.6100	1.9588	2.2359	2.2908	2.3912	2.1729	1.9629	1.8788	1.8762	2.6414	2.6893
Nebraska	0.7591	0.8210	0.9260	0.7933	0.8195	0.7930	0.8013	0.7344	0.7366	1.0201	0.9371
Nevada	0.7253	0.7825	0.8843	0.8836	0.9605	0.8431	0.7636	0.7887	0.9722	1.3721	1.5349
New Hampshire	0.7305	0.7703	0.9428	0.9977	1.1080	1.0154	0.9739	1.0494	0.9690	1.3552	1.3531
New Jersey	0.4535	0.4900	0.5552	0.6205	0.6067	0.5747	0.5645	0.5257	0.5883	0.7788	0.6809
New Mexico	2.3352	2.5776	2.4457	2.9878	3.2831	3.1021	2.7867	2.6860	2.4187	3.3548	3.6723
New York	0.5766	0.5954	0.7087	0.8186	0.8369	0.7296	0.7115	0.6449	0.7580	1.0079	1.0103
North Carolina	0.9203	0.9494	1.0078	1.0703	1.0232	0.9775	0.8940	0.8677	0.9497	1.3391	1.5767
North Dakota	1.8253	2.0214	2.3683	2.1040	2.1362	2.2564	1.8939	1.8488	1.7647	2.0938	2.0301
Ohio	0.6470	0.7231	0.7600	0.8200	0.8331	0.8043	0.8913	0.9947	0.8159	1.0418	0.9997
Oklahoma	1.0785	1.0738	1.3372	1.2862	1.3049	0.9694	0.9335	1.0464	1.0515	1.5440	1.6443
Oregon	0.8248	0.9273	1.0786	1.2117	1.1584	1.1561	1.0202	1.0757	1.0532	1.5455	1.6072
Pennsylvania	0.8343	0.9079	1.0013	1.1044	1.0804	1.0464	1.0073	1.0426	1.0429	1.2727	1.4327
Rhode Island	0.8327	0.9081	0.9447	0.9276	0.9649	0.8672	0.8435	0.7585	0.8463	1.0557	1.1188
South Carolina	1.3549	1.5096	1.7211	1.8693	1.9568	1.8880	1.0875	1.8077	1.9054	2.6341	2.6829
South Dakota	1.2499	1.4697	1.7672	1.8378	2.0043	1.9460	1.8256	1.7375	1.7594	1.9430	2.2084
Tennessee	0.9142	1.0065	1.0963	1.2085	1.2347	1.1481	1.0676	1.0777	1.1919	1.5562	1.5456
Texas	0.6979	0.6982	0.8429	0.9895	0.9291	0.8777	0.8138	0.7621	0.8911	1.1326	1.1934
Utah	1.0014	1.1700	1.3492	1.4508	1.4264	1.2725	1.1868	1.1390	0.9995	1.4507	1.7404
Vermont	0.9697	1.1045	1.3671	1.4638	1.5045	1.4027	1.4627	1.4658	1.6337	2.1066	2.3079
Virginia	1.2519	1.3870	1.5010	1.7508	1.9278	1.7471	1.6811	1.7762	1.7726	2.6546	2.3481
Washington	0.7085	0.8306	0.9502	1.0349	1.0634	1.0074	0.8492	0.9131	0.8437	1.3699	1.4542
West Virginia	2.3403	2.4611	2.7113	2.9453	2.9050	2.9411	2.6232	2.6169	2.6149	3.1281	3.5848
Wisconsin	0.6771	0.7424	0.8325	0.8853	0.9090	0.8888	0.8291	0.8721	0.8805	1.5858	1.4358
Wyoming	1.3660	1.2106	1.3402	1.5581	1.4973	1.5495	1.3068	1.1334	1.1636	1.6376	1.6216

Source: Authors calculations.

Appendix B: Unemployment Rate by State 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	0.048	0.041	0.047	0.049	0.055	0.049	0.037	0.035	0.035	0.054	0.104
Arizona	0.044	0.040	0.047	0.048	0.057	0.048	0.047	0.040	0.037	0.070	0.105
Arkansas	0.045	0.042	0.047	0.056	0.060	0.056	0.050	0.053	0.054	0.055	0.076
California	0.052	0.049	0.054	0.060	0.069	0.060	0.053	0.048	0.056	0.079	0.120
Colorado	0.029	0.027	0.038	0.056	0.062	0.056	0.051	0.043	0.040	0.051	0.083
Connecticut	0.032	0.023	0.031	0.048	0.055	0.048	0.049	0.045	0.047	0.060	0.086
Delaware	0.035	0.033	0.035	0.039	0.040	0.039	0.040	0.035	0.035	0.054	0.082
Florida	0.039	0.038	0.047	0.045	0.052	0.045	0.036	0.034	0.043	0.070	0.110
Georgia	0.040	0.035	0.040	0.049	0.047	0.049	0.053	0.047	0.048	0.068	0.103
Idaho	0.052	0.046	0.049	0.044	0.052	0.044	0.035	0.028	0.031	0.054	0.080
Illinois	0.043	0.045	0.054	0.062	0.069	0.062	0.057	0.044	0.053	0.068	0.108
Indiana	0.030	0.029	0.042	0.054	0.055	0.054	0.054	0.050	0.046	0.063	0.105
Iowa	0.025	0.028	0.033	0.047	0.046	0.047	0.042	0.037	0.039	0.042	0.063
Kansas	0.030	0.038	0.043	0.055	0.058	0.055	0.051	0.044	0.041	0.047	0.074
Kentucky	0.045	0.042	0.052	0.053	0.064	0.053	0.061	0.058	0.056	0.070	0.106
Louisiana	0.051	0.050	0.054	0.054	0.062	0.054	0.112	0.038	0.037	0.049	0.069
Maine	0.041	0.033	0.037	0.047	0.052	0.047	0.051	0.049	0.049	0.057	0.083
Maryland	0.035	0.036	0.041	0.043	0.045	0.043	0.041	0.039	0.035	0.048	0.077
Massachusetts	0.027	0.027	0.037	0.050	0.059	0.050	0.048	0.048	0.045	0.058	0.086
Michigan	0.038	0.037	0.052	0.072	0.072	0.072	0.067	0.071	0.073	0.089	0.141
Minnesota	0.028	0.031	0.038	0.046	0.050	0.046	0.041	0.041	0.047	0.056	0.079
Mississippi	0.051	0.057	0.056	0.069	0.062	0.069	0.101	0.066	0.062	0.072	0.100
Missouri	0.034	0.033	0.045	0.060	0.057	0.060	0.052	0.050	0.053	0.063	0.096
Montana	0.052	0.048	0.045	0.039	0.043	0.039	0.036	0.032	0.036	0.049	0.064
Nebraska	0.029	0.028	0.031	0.040	0.041	0.040	0.038	0.031	0.031	0.035	0.049
Nevada	0.044	0.045	0.053	0.042	0.053	0.042	0.045	0.043	0.049	0.079	0.126
New Hampshire	0.027	0.027	0.034	0.037	0.045	0.037	0.037	0.036	0.034	0.041	0.066
New Jersey	0.046	0.037	0.043	0.047	0.058	0.047	0.046	0.046	0.044	0.058	0.095
New Mexico	0.056	0.050	0.049	0.057	0.061	0.057	0.050	0.039	0.035	0.050	0.074
New York	0.052	0.045	0.049	0.055	0.064	0.055	0.051	0.045	0.047	0.057	0.088
North Carolina	0.032	0.037	0.056	0.053	0.065	0.053	0.053	0.049	0.049	0.069	0.108
North Dakota	0.034	0.029	0.028	0.036	0.036	0.036	0.035	0.033	0.032	0.033	0.040
Ohio	0.043	0.040	0.044	0.062	0.062	0.062	0.058	0.055	0.058	0.070	0.106
Oklahoma	0.034	0.031	0.037	0.048	0.057	0.048	0.044	0.042	0.041	0.039	0.071
Oregon	0.057	0.051	0.064	0.072	0.082	0.072	0.062	0.054	0.053	0.072	0.111
Pennsylvania	0.044	0.042	0.048	0.054	0.057	0.054	0.049	0.045	0.044	0.056	0.084
Rhode Island	0.041	0.042	0.045	0.051	0.055	0.051	0.051	0.050	0.055	0.085	0.115
South Carolina	0.045	0.036	0.052	0.069	0.069	0.069	0.069	0.064	0.056	0.075	0.118
South Dakota	0.029	0.027	0.031	0.038	0.037	0.038	0.036	0.032	0.029	0.032	0.051
Tennessee	0.040	0.040	0.047	0.055	0.059	0.055	0.054	0.051	0.050	0.071	0.108
Texas	0.046	0.044	0.050	0.059	0.067	0.059	0.053	0.048	0.043	0.052	0.080
Utah	0.037	0.034	0.044	0.049	0.056	0.049	0.041	0.028	0.027	0.033	0.082
Vermont	0.030	0.027	0.033	0.035	0.045	0.035	0.036	0.039	0.040	0.046	0.068
Virginia	0.028	0.023	0.032	0.037	0.041	0.037	0.035	0.031	0.032	0.042	0.072
Washington	0.047	0.050	0.062	0.060	0.074	0.060	0.055	0.050	0.046	0.058	0.098
West Virginia	0.066	0.055	0.052	0.051	0.059	0.051	0.049	0.047	0.043	0.043	0.083
Wisconsin	0.030	0.034	0.044	0.049	0.056	0.049	0.048	0.047	0.048	0.051	0.091
Wyoming	0.049	0.038	0.039	0.040	0.045	0.040	0.038	0.031	0.028	0.033	0.073

Appendix C: Percent of Population Older Than Age 65 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	0.1300	0.1305	0.1307	0.1307	0.1311	0.1311	0.1318	0.1324	0.1331	0.1350	0.1364
Arizona	0.1316	0.1301	0.1296	0.1290	0.1292	0.1293	0.1296	0.1294	0.1302	0.1325	0.1356
Arkansas	0.1416	0.1398	0.1392	0.1387	0.1386	0.1382	0.1383	0.1391	0.1400	0.1418	0.1431
California	0.1100	0.1062	0.1059	0.1059	0.1062	0.1064	0.1072	0.1075	0.1089	0.1108	0.1127
Colorado	0.1005	0.0967	0.0961	0.0962	0.0972	0.0984	0.0997	0.1015	0.1030	0.1051	0.1075
Connecticut	0.1428	0.1380	0.1372	0.1364	0.1361	0.1358	0.1356	0.1354	0.1365	0.1389	0.1405
Delaware	0.1302	0.1299	0.1300	0.1303	0.1309	0.1317	0.1326	0.1348	0.1367	0.1400	0.1421
Florida	0.1814	0.1752	0.1732	0.1713	0.1699	0.1684	0.1671	0.1654	0.1662	0.1692	0.1719
Georgia	0.0977	0.0958	0.0955	0.0955	0.0960	0.0961	0.0973	0.0989	0.1000	0.1023	0.1046
Idaho	0.1135	0.1127	0.1128	0.1133	0.1138	0.1143	0.1149	0.1163	0.1172	0.1194	0.1221
Illinois	0.1234	0.1207	0.1202	0.1197	0.1199	0.1200	0.1203	0.1205	0.1215	0.1231	0.1244
Indiana	0.1250	0.1237	0.1234	0.1231	0.1233	0.1234	0.1236	0.1243	0.1254	0.1273	0.1286
Iowa	0.1493	0.1490	0.1486	0.1481	0.1478	0.1474	0.1471	0.1470	0.1474	0.1481	0.1484
Kansas	0.1334	0.1324	0.1316	0.1306	0.1302	0.1301	0.1300	0.1301	0.1302	0.1308	0.1314
Kentucky	0.1245	0.1249	0.1247	0.1244	0.1248	0.1251	0.1262	0.1276	0.1287	0.1307	0.1322
Louisiana	0.1147	0.1158	0.1159	0.1160	0.1163	0.1163	0.1169	0.1199	0.1200	0.1213	0.1223
Maine	0.1399	0.1439	0.1440	0.1440	0.1441	0.1445	0.1451	0.1469	0.1492	0.1528	0.1562
Maryland	0.1154	0.1132	0.1132	0.1130	0.1133	0.1137	0.1142	0.1149	0.1165	0.1193	0.1213
Massachusetts	0.1392	0.1353	0.1340	0.1332	0.1329	0.1327	0.1327	0.1328	0.1337	0.1356	0.1368
Michigan	0.1240	0.1227	0.1227	0.1228	0.1233	0.1240	0.1249	0.1265	0.1291	0.1328	0.1357
Minnesota	0.1226	0.1207	0.1202	0.1201	0.1204	0.1207	0.1211	0.1221	0.1234	0.1256	0.1273
Mississippi	0.1212	0.1208	0.1208	0.1208	0.1213	0.1216	0.1226	0.1233	0.1239	0.1256	0.1271
Missouri	0.1364	0.1349	0.1344	0.1338	0.1337	0.1335	0.1337	0.1343	0.1353	0.1371	0.1387
Montana	0.1328	0.1342	0.1351	0.1358	0.1362	0.1369	0.1377	0.1394	0.1410	0.1437	0.1463
Nebraska	0.1370	0.1356	0.1351	0.1344	0.1334	0.1327	0.1325	0.1327	0.1333	0.1340	0.1347
Nevada	0.1146	0.1098	0.1105	0.1112	0.1124	0.1124	0.1117	0.1112	0.1118	0.1142	0.1174
New Hampshire	0.1204	0.1197	0.1189	0.1187	0.1190	0.1208	0.1214	0.1237	0.1265	0.1302	0.1332
New Jersey	0.1361	0.1322	0.1313	0.1305	0.1300	0.1296	0.1295	0.1298	0.1309	0.1329	0.1340
New Mexico	0.1149	0.1171	0.1187	0.1193	0.1203	0.1210	0.1227	0.1245	0.1260	0.1285	0.1307
New York	0.1335	0.1291	0.1291	0.1292	0.1294	0.1298	0.1304	0.1305	0.1316	0.1332	0.1343
North Carolina	0.1248	0.1203	0.1201	0.1202	0.1210	0.1212	0.1216	0.1230	0.1239	0.1258	0.1277
North Dakota	0.1458	0.1473	0.1475	0.1473	0.1468	0.1463	0.1454	0.1453	0.1451	0.1457	0.1452
Ohio	0.1334	0.1328	0.1326	0.1325	0.1328	0.1329	0.1332	0.1342	0.1357	0.1380	0.1395
Oklahoma	0.1336	0.1322	0.1319	0.1312	0.1312	0.1314	0.1315	0.1322	0.1324	0.1336	0.1344
Oregon	0.1312	0.1280	0.1276	0.1275	0.1280	0.1293	0.1301	0.1312	0.1325	0.1348	0.1373
Pennsylvania	0.1583	0.1561	0.1552	0.1542	0.1534	0.1523	0.1516	0.1513	0.1516	0.1530	0.1537
Rhode Island	0.1158	0.1451	0.1433	0.1415	0.1401	0.1393	0.1388	0.1393	0.1398	0.1419	0.1434
South Carolina	0.1218	0.1211	0.1215	0.1218	0.1226	0.1234	0.1249	0.1274	0.1291	0.1318	0.1344
South Dakota	0.1438	0.1431	0.1427	0.1421	0.1417	0.1412	0.1408	0.1412	0.1415	0.1425	0.1429
Tennessee	0.1242	0.1237	0.1239	0.1238	0.1243	0.1246	0.1255	0.1272	0.1284	0.1308	0.1328
Texas	0.1006	0.0994	0.0988	0.0984	0.0985	0.0987	0.0991	0.0997	0.1002	0.1014	0.1025
Utah	0.0871	0.0852	0.0851	0.0851	0.0854	0.0857	0.0866	0.0875	0.0873	0.0883	0.0894
Vermont	0.1228	0.1274	0.1276	0.1279	0.1285	0.1295	0.1307	0.1331	0.1358	0.1398	0.1429
Virginia	0.1127	0.1119	0.1120	0.1122	0.1128	0.1128	0.1138	0.1147	0.1162	0.1188	0.1207
Washington	0.1142	0.1123	0.1119	0.1119	0.1126	0.1131	0.1140	0.1152	0.1165	0.1185	0.1210
West Virginia	0.1510	0.1533	0.1537	0.1537	0.1541	0.1541	0.1545	0.1554	0.1567	0.1586	0.1596
Wisconsin	0.1317	0.1309	0.1304	0.1301	0.1302	0.1303	0.1305	0.1311	0.1320	0.1340	0.1355
Wyoming	0.1160	0.1171	0.1183	0.1183	0.1196	0.1202	0.1209	0.1211	0.1211	0.1221	0.1225

Appendix D: Per Capita Income 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	$29,214	$30,025	$30,450	$30,788	$31,279	$32,479	$33,016	$33,592	$33,966	$33,679	$32,930
Arizona	$31,055	$32,354	$32,444	$32,481	$32,823	$34,014	$35,456	$37,005	$37,177	$35,749	$33,972
Arkansas	$27,151	$27,775	$28,430	$28,556	$29,404	$30,277	$30,604	$31,337	$32,326	$32,357	$31,629
California	$38,101	$40,678	$40,612	$40,299	$40,718	$41,807	$42,620	$44,243	$44,739	$43,581	$41,569
Colorado	$39,031	$41,728	$42,005	$40,934	$40,599	$41,002	$42,006	$43,180	$43,745	$43,378	$41,515
Connecticut	$48,684	$51,446	$52,125	$50,966	$50,551	$52,544	$53,482	$55,887	$57,723	$56,085	$53,712
Delaware	$37,305	$39,131	$40,569	$41,195	$40,970	$41,904	$42,002	$42,886	$42,534	$41,463	$40,841
Florida	$34,661	$36,050	$36,440	$36,575	$36,848	$38,339	$39,673	$41,145	$41,298	$39,710	$37,340
Georgia	$33,698	$34,955	$35,258	$35,192	$35,167	$35,461	$36,094	$36,573	$36,851	$35,738	$34,330
Idaho	$29,489	$30,793	$31,062	$31,171	$31,245	$32,592	$32,781	$34,031	$34,249	$32,775	$31,629
Illinois	$38,363	$40,151	$40,253	$40,190	$40,058	$40,720	$41,234	$42,720	$43,820	$43,310	$41,544
Indiana	$33,011	$34,275	$34,171	$34,062	$34,078	$34,698	$34,431	$35,166	$35,263	$34,944	$33,679
Iowa	$32,170	$33,628	$33,826	$34,360	$34,408	$36,299	$36,092	$36,729	$38,188	$39,415	$38,713
Kansas	$33,868	$35,068	$35,508	$35,204	$35,510	$35,968	$36,550	$38,234	$39,350	$40,572	$38,737
Kentucky	$28,898	$30,403	$30,645	$30,869	$30,839	$31,600	$31,928	$32,593	$32,852	$32,817	$32,290
Louisiana	$27,833	$28,713	$29,915	$30,211	$30,378	$30,997	$32,123	$35,264	$37,114	$37,775	$36,378
Maine	$31,676	$33,049	$33,711	$34,161	$34,898	$35,693	$35,277	$36,246	$36,810	$36,632	$36,808
Maryland	$40,900	$43,074	$43,917	$44,610	$45,330	$47,082	$47,927	$49,308	$50,041	$49,758	$49,238
Massachusetts	$43,250	$46,852	$47,432	$46,721	$46,853	$48,082	$48,829	$51,009	$52,099	$51,482	$50,304
Michigan	$35,315	$36,593	$36,046	$35,741	$35,903	$36,148	$36,040	$35,977	$36,131	$35,574	$34,168
Minnesota	$37,530	$39,410	$39,727	$39,892	$40,626	$41,501	$41,278	$42,070	$43,112	$43,040	$41,202
Mississippi	$25,589	$26,290	$27,156	$27,303	$27,694	$28,432	$29,332	$29,772	$30,572	$30,639	$30,249
Missouri	$32,817	$34,143	$34,305	$34,535	$35,006	$35,689	$35,766	$36,571	$37,136	$37,359	$36,323
Montana	$27,635	$28,763	$29,511	$29,781	$30,732	$31,644	$32,254	$33,440	$34,583	$34,677	$33,651
Nebraska	$34,216	$35,315	$35,974	$36,084	$37,523	$37,900	$37,929	$38,251	$39,852	$40,493	$39,428
Nevada	$36,940	$38,047	$37,879	$37,539	$38,440	$40,170	$42,220	$42,369	$42,356	$39,910	$36,839
New Hampshire	$38,799	$41,792	$41,896	$41,715	$41,667	$43,016	$42,962	$44,281	$44,978	$44,351	$43,788
New Jersey	$44,656	$47,737	$48,035	$47,745	$47,560	$48,522	$48,981	$51,121	$52,492	$51,798	$50,303
New Mexico	$27,043	$28,549	$30,063	$30,348	$30,347	$30,914	$31,821	$32,534	$33,134	$33,378	$32,491
New York	$41,335	$43,044	$43,236	$42,500	$42,663	$44,185	$45,392	$47,626	$50,064	$49,173	$47,882
North Carolina	$32,884	$33,964	$33,934	$33,587	$33,619	$34,689	$35,329	$35,936	$36,365	$35,706	$34,934
North Dakota	$29,454	$31,542	$31,622	$31,915	$34,109	$33,553	$34,534	$34,916	$37,451	$40,854	$40,005
Ohio	$33,873	$34,892	$35,061	$35,184	$35,344	$35,748	$35,814	$36,575	$36,898	$36,363	$35,511
Oklahoma	$28,331	$30,237	$31,664	$31,690	$31,981	$32,872	$34,088	$35,867	$35,908	$37,612	$34,636
Oregon	$33,513	$35,193	$34,960	$34,621	$34,773	$35,558	$35,591	$36,821	$37,108	$36,748	$35,621
Pennsylvania	$35,458	$37,162	$37,548	$37,864	$38,166	$39,028	$39,292	$40,508	$41,386	$41,167	$40,632
Rhode Island	$35,268	$36,819	$37,622	$38,433	$39,178	$39,920	$39,934	$41,248	$42,283	$41,815	$41,257
South Carolina	$29,464	$30,630	$30,802	$30,902	$31,003	$31,574	$32,104	$33,066	$33,536	$33,136	$32,376
South Dakota	$31,870	$33,234	$33,901	$33,686	$35,824	$36,700	$36,576	$36,044	$38,546	$40,332	$39,161
Tennessee	$32,457	$33,506	$33,524	$33,723	$34,045	$34,794	$34,690	$35,190	$35,416	$35,038	$34,412
Texas	$32,852	$34,552	$35,388	$34,570	$34,643	$34,984	$36,325	$37,703	$38,220	$39,629	$36,931
Utah	$29,066	$30,198	$30,635	$30,538	$30,344	$30,999	$32,194	$33,784	$34,873	$34,243	$32,412
Vermont	$33,196	$34,803	$35,740	$35,980	$36,755	$37,972	$37,765	$39,079	$40,092	$40,122	$39,527
Virginia	$37,888	$39,565	$40,147	$40,409	$41,424	$42,474	$43,556	$44,719	$45,531	$44,871	$44,063
Washington	$38,630	$40,067	$39,622	$39,513	$39,936	$41,318	$41,179	$42,662	$44,415	$44,134	$42,112
West Virginia	$25,936	$26,938	$27,753	$28,494	$28,497	$28,711	$28,861	$30,005	$30,269	$30,950	$31,226
Wisconsin	$34,574	$35,823	$36,335	$36,644	$36,913	$37,585	$37,586	$38,566	$39,058	$38,710	$38,364
Wyoming	$33,659	$35,270	$36,611	$36,933	$38,458	$40,147	$42,880	$47,163	$47,462	$49,035	$43,454

Appendix E: Percent of Population Under Federal Poverty Level 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	0.1610	0.1560	0.1650	0.1660	0.1710	0.1610	0.1700	0.1660	0.1690	0.1570	0.1750
Arizona	0.1390	0.1560	0.1370	0.1420	0.1540	0.1420	0.1420	0.1420	0.1420	0.1470	0.1650
Arkansas.	0.1580	0.1700	0.1540	0.1530	0.1600	0.1790	0.1720	0.1730	0.1790	0.1730	0.1880
California.	0.1420	0.1370	0.1280	0.1300	0.1340	0.1330	0.1330	0.1310	0.1240	0.1330	0.1420
Colorado.	0.0930	0.0870	0.0960	0.0970	0.0980	0.1110	0.1110	0.1200	0.1200	0.1140	0.1290
Connecticut.	0.0790	0.0770	0.0730	0.0750	0.0810	0.0760	0.0830	0.0830	0.0790	0.0930	0.0940
Delaware.	0.0920	0.0930	0.0980	0.0820	0.0870	0.0990	0.1040	0.1110	0.1050	0.1000	0.1080
Florida.	0.1250	0.1280	0.1250	0.1280	0.1310	0.1220	0.1280	0.1260	0.1210	0.1320	0.1490
Georgia.	0.1300	0.1260	0.1170	0.1270	0.1340	0.1480	0.1440	0.1470	0.1430	0.1470	0.1650
Idaho.	0.1180	0.1140	0.1200	0.1380	0.1380	0.1450	0.1390	0.1260	0.1210	0.1260	0.1430
Illinois.	0.1070	0.1110	0.1120	0.1160	0.1130	0.1190	0.1200	0.1230	0.1190	0.1220	0.1330
Indiana.	0.0950	0.1010	0.0980	0.1090	0.1060	0.1080	0.1220	0.1270	0.1230	0.1310	0.1440
Iowa.	0.0910	0.1000	0.0970	0.1120	0.1010	0.0990	0.1090	0.1100	0.1100	0.1150	0.1180
Kansas.	0.0990	0.0950	0.1130	0.1210	0.1080	0.1050	0.1170	0.1240	0.1120	0.1130	0.1340
Kentucky.	0.1580	0.1640	0.1540	0.1560	0.1740	0.1740	0.1680	0.1700	0.1730	0.1730	0.1860
Louisiana.	0.1960	0.2000	0.1910	0.1880	0.2030	0.1940	0.1980	0.1900	0.1860	0.1730	0.1730
Maine.	0.1090	0.1010	0.1060	0.1110	0.1050	0.1230	0.1260	0.1290	0.1200	0.1230	0.1230
Maryland.	0.0850	0.0930	0.0810	0.0810	0.0820	0.0880	0.0820	0.0780	0.0830	0.0810	0.0910
Massachusetts.	0.0930	0.0960	0.0870	0.0890	0.0940	0.0920	0.1030	0.0990	0.0990	0.1000	0.1030
Michigan	0.1050	0.1010	0.1060	0.1100	0.1140	0.1230	0.1320	0.1350	0.1400	0.1440	0.1620
Minnesota.	0.0790	0.0690	0.0780	0.0850	0.0780	0.0830	0.0920	0.0980	0.0950	0.0960	0.1100
Mississippi.	0.1990	0.1820	0.1860	0.1990	0.1990	0.2160	0.2130	0.2110	0.2060	0.2120	0.2190
Missouri.	0.1170	0.1120	0.1170	0.1190	0.1170	0.1180	0.1330	0.1360	0.1300	0.1340	0.1460
Montana.	0.1460	0.1340	0.1460	0.1460	0.1420	0.1420	0.1440	0.1360	0.1410	0.1480	0.1510
Nebraska.	0.0970	0.0960	0.1030	0.1100	0.1080	0.1100	0.1090	0.1150	0.1120	0.1080	0.1230
Nevada	0.1050	0.0990	0.0970	0.1180	0.1150	0.1260	0.1110	0.1030	0.1070	0.1130	0.1240
New Hampshire	0.0650	0.0530	0.0600	0.0640	0.0770	0.0760	0.0750	0.0800	0.0710	0.0760	0.0850
New Jersey	0.0850	0.0790	0.0790	0.0750	0.0840	0.0850	0.0870	0.0870	0.0860	0.0870	0.0940
New Mexico	0.1840	0.1800	0.1770	0.1890	0.1860	0.1930	0.1850	0.1850	0.1810	0.1710	0.1800
New York	0.1460	0.1310	0.1340	0.1310	0.1350	0.1420	0.1380	0.1420	0.1370	0.1360	0.1420
North Carolina	0.1230	0.1310	0.1410	0.1420	0.1400	0.1520	0.1510	0.1470	0.1430	0.1460	0.1630
North Dakota	0.1190	0.1160	0.1210	0.1250	0.1170	0.1210	0.1120	0.1140	0.1210	0.1200	0.1170
Ohio.	0.1060	0.1110	0.1100	0.1190	0.1210	0.1250	0.1300	0.1330	0.1310	0.1340	0.1520
Oklahoma	0.1470	0.1380	0.1550	0.1500	0.1610	0.1530	0.1650	0.1700	0.1590	0.1590	0.1620
Oregon.	0.1160	0.1320	0.1340	0.1320	0.1390	0.1410	0.1410	0.1330	0.1290	0.1360	0.1430
Pennsylvania.	0.1100	0.1050	0.1070	0.1050	0.1090	0.1170	0.1190	0.1210	0.1160	0.1210	0.1250
Rhode island	0.1190	0.1070	0.1200	0.1070	0.1130	0.1280	0.1230	0.1110	0.1200	0.1170	0.1150
South Carolina	0.1410	0.1440	0.1340	0.1420	0.1410	0.1570	0.1560	0.1570	0.1500	0.1570	0.1710
South Dakota	0.1320	0.1150	0.1160	0.1140	0.1110	0.1100	0.1360	0.1360	0.1310	0.1250	0.1420
Tennessee.	0.1350	0.1350	0.1430	0.1450	0.1380	0.1450	0.1550	0.1620	0.1590	0.1550	0.1710
Texas.	0.1540	0.1510	0.1500	0.1560	0.1630	0.1660	0.1760	0.1690	0.1630	0.1580	0.1720
Utah.	0.0940	0.0880	0.0860	0.1050	0.1060	0.1090	0.1020	0.1060	0.0970	0.0960	0.1150
Vermont.	0.0940	0.1070	0.1040	0.0850	0.0970	0.0900	0.1150	0.1030	0.1010	0.1060	0.1140
Virginia.	0.0960	0.0920	0.0930	0.0990	0.0900	0.0950	0.1000	0.0960	0.0990	0.1020	0.1050
Washington.	0.1060	0.1160	0.1080	0.1140	0.1100	0.1310	0.1190	0.1180	0.1140	0.1130	0.1230
West Virginia	0.1790	0.1860	0.1720	0.1720	0.1850	0.1790	0.1800	0.1730	0.1690	0.1700	0.1770
Wisconsin	0.0870	0.0890	0.0980	0.0970	0.1050	0.1070	0.1020	0.1100	0.1080	0.1040	0.1240
Wyoming.	0.1140	0.1140	0.1140	0.1100	0.0970	0.1030	0.0950	0.0940	0.0870	0.0940	0.0980

Appendix F: Kauffman Index of Entrepreneurial Activity 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	0.0020	0.0023	0.0023	0.0019	0.0009	0.0030	0.0017	0.0025	0.0010	0.0021	0.0021
Arizona	0.0018	0.0040	0.0046	0.0030	0.0033	0.0033	0.0032	0.0030	0.0046	0.0049	0.0046
Arkansas	0.0032	0.0034	0.0037	0.0018	0.0030	0.0041	0.0047	0.0037	0.0034	0.0039	0.0036
California	0.0036	0.0028	0.0028	0.0040	0.0038	0.0039	0.0032	0.0035	0.0040	0.0044	0.0041
Colorado	0.0042	0.0034	0.0045	0.0039	0.0040	0.0035	0.0053	0.0028	0.0034	0.0043	0.0038
Connecticut	0.0030	0.0018	0.0036	0.0018	0.0016	0.0023	0.0027	0.0029	0.0021	0.0030	0.0029
Delaware	0.0013	0.0025	0.0013	0.0013	0.0017	0.0015	0.0016	0.0019	0.0014	0.0020	0.0030
Florida	0.0030	0.0031	0.0027	0.0030	0.0029	0.0030	0.0028	0.0034	0.0036	0.0037	0.0044
Georgia	0.0026	0.0027	0.0023	0.0022	0.0033	0.0037	0.0033	0.0044	0.0040	0.0059	0.0044
Idaho	0.0041	0.0044	0.0043	0.0031	0.0035	0.0045	0.0047	0.0037	0.0046	0.0037	0.0045
Illinois	0.0022	0.0024	0.0027	0.0024	0.0025	0.0027	0.0026	0.0018	0.0024	0.0026	0.0024
Indiana	0.0038	0.0030	0.0023	0.0024	0.0025	0.0023	0.0029	0.0021	0.0024	0.0028	0.0028
Iowa	0.0025	0.0039	0.0032	0.0020	0.0034	0.0024	0.0034	0.0031	0.0026	0.0019	0.0023
Kansas	0.0024	0.0025	0.0033	0.0033	0.0025	0.0025	0.0025	0.0022	0.0025	0.0025	0.0023
Kentucky	0.0018	0.0019	0.0033	0.0029	0.0028	0.0026	0.0018	0.0024	0.0032	0.0036	0.0025
Louisiana	0.0032	0.0029	0.0020	0.0026	0.0040	0.0026	0.0032	0.0030	0.0044	0.0026	0.0043
Maine	0.0028	0.0034	0.0026	0.0025	0.0028	0.0040	0.0036	0.0042	0.0027	0.0038	0.0034
Maryland	0.0033	0.0029	0.0022	0.0035	0.0036	0.0029	0.0042	0.0027	0.0032	0.0023	0.0029
Massachusetts	0.0012	0.0016	0.0015	0.0019	0.0022	0.0019	0.0023	0.0035	0.0024	0.0028	0.0033
Michigan	0.0022	0.0025	0.0022	0.0025	0.0028	0.0019	0.0023	0.0016	0.0029	0.0028	0.0030
Minnesota	0.0024	0.0019	0.0020	0.0035	0.0027	0.0028	0.0031	0.0029	0.0031	0.0021	0.0022
Mississippi	0.0038	0.0038	0.0034	0.0021	0.0022	0.0038	0.0039	0.0052	0.0030	0.0036	0.0017
Missouri	0.0020	0.0024	0.0022	0.0027	0.0023	0.0023	0.0019	0.0025	0.0024	0.0015	0.0027
Montana	0.0041	0.0050	0.0031	0.0045	0.0072	0.0056	0.0049	0.0060	0.0040	0.0053	0.0047
Nebraska	0.0021	0.0034	0.0033	0.0034	0.0031	0.0034	0.0023	0.0028	0.0031	0.0027	0.0020
Nevada	0.0020	0.0020	0.0020	0.0027	0.0028	0.0026	0.0035	0.0033	0.0030	0.0038	0.0038
New Hampshire	0.0025	0.0022	0.0026	0.0025	0.0028	0.0021	0.0028	0.0021	0.0028	0.0027	0.0028
New Jersey	0.0020	0.0022	0.0023	0.0024	0.0027	0.0024	0.0030	0.0024	0.0026	0.0028	0.0033
New Mexico	0.0042	0.0045	0.0031	0.0036	0.0056	0.0050	0.0045	0.0035	0.0025	0.0058	0.0026
New York	0.0029	0.0031	0.0026	0.0031	0.0025	0.0024	0.0028	0.0033	0.0035	0.0040	0.0034
North Carolina	0.0032	0.0030	0.0027	0.0037	0.0026	0.0026	0.0023	0.0020	0.0032	0.0023	0.0025
North Dakota	0.0040	0.0043	0.0018	0.0025	0.0042	0.0022	0.0032	0.0029	0.0025	0.0028	0.0032
Ohio	0.0028	0.0020	0.0020	0.0018	0.0022	0.0025	0.0027	0.0022	0.0019	0.0019	0.0027
Oklahoma	0.0029	0.0022	0.0029	0.0037	0.0030	0.0047	0.0041	0.0043	0.0034	0.0030	0.0047
Oregon	0.0045	0.0040	0.0033	0.0028	0.0037	0.0032	0.0033	0.0038	0.0035	0.0037	0.0038
Pennsylvania	0.0014	0.0017	0.0017	0.0014	0.0022	0.0016	0.0018	0.0017	0.0015	0.0014	0.0020
Rhode Island	0.0014	0.0014	0.0014	0.0013	0.0020	0.0032	0.0024	0.0028	0.0021	0.0025	0.0024
South Carolina	0.0022	0.0019	0.0016	0.0026	0.0027	0.0024	0.0025	0.0018	0.0026	0.0025	0.0023
South Dakota	0.0034	0.0036	0.0036	0.0034	0.0032	0.0030	0.0031	0.0041	0.0029	0.0030	0.0043
Tennessee	0.0020	0.0025	0.0013	0.0029	0.0028	0.0026	0.0023	0.0025	0.0044	0.0033	0.0036
Texas	0.0028	0.0033	0.0039	0.0036	0.0043	0.0037	0.0035	0.0030	0.0029	0.0037	0.0045
Utah	0.0028	0.0035	0.0025	0.0030	0.0030	0.0034	0.0038	0.0029	0.0034	0.0040	0.0036
Vermont	0.0036	0.0039	0.0031	0.0028	0.0032	0.0042	0.0055	0.0038	0.0042	0.0027	0.0037
Virginia	0.0017	0.0018	0.0020	0.0025	0.0026	0.0028	0.0022	0.0028	0.0022	0.0020	0.0027
Washington	0.0029	0.0023	0.0035	0.0023	0.0033	0.0042	0.0023	0.0027	0.0022	0.0027	0.0024
West Virginia	0.0020	0.0018	0.0012	0.0015	0.0026	0.0020	0.0017	0.0019	0.0008	0.0017	0.0035
Wisconsin	0.0015	0.0045	0.0024	0.0028	0.0027	0.0034	0.0027	0.0027	0.0029	0.0017	0.0030
Wyoming	0.0051	0.0042	0.0034	0.0034	0.0034	0.0042	0.0048	0.0032	0.0043	0.0027	0.0033

Note. Printed with permission: See Fairlie (2014).

Appendix G: GSP as a Percentage of GDP in the United States 2000 to 2010.

State	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Alabama	0.7625	0.7487	0.7516	0.7642	0.7693	0.7882	0.7857	0.7733	0.7622	0.7659	0.7607
Arizona	0.8809	0.8760	0.8726	0.8704	0.8865	0.8732	0.8900	0.8985	0.8987	0.8706	0.8213
Arkansas	0.7376	0.7180	0.7136	0.7213	0.7367	0.7502	0.7652	0.7691	0.7618	0.7811	0.7823
California	1.0568	1.0912	1.0727	1.0747	1.0863	1.0933	1.1040	1.1130	1.1174	1.1211	1.1043
Colorado	1.1090	1.1306	1.1230	1.0999	1.0826	1.0646	1.0750	1.0553	1.0529	1.0671	1.0687
Connecticut	1.3256	1.3588	1.3596	1.3359	1.3281	1.3726	1.3672	1.3877	1.4213	1.4074	1.3826
Delaware	1.4633	1.4561	1.4333	1.3733	1.3718	1.3927	1.3666	1.3595	1.3322	1.2622	1.3467
Florida	0.8655	0.8604	0.8674	0.8739	0.8785	0.8835	0.8998	0.8996	0.8890	0.8570	0.8284
Georgia	1.0340	1.0202	1.0140	0.9946	0.9818	0.9653	0.9634	0.9396	0.9279	0.9066	0.8992
Idaho	0.7358	0.7846	0.7539	0.7542	0.7522	0.7522	0.7598	0.7639	0.7617	0.7581	0.7447
Illinois	1.1041	1.1055	1.0994	1.0872	1.0814	1.0763	1.0685	1.0772	1.0749	1.0608	1.0657
Indiana	0.9287	0.9252	0.9017	0.9116	0.9243	0.9253	0.8975	0.8895	0.9014	0.9023	0.8699
Iowa	0.8732	0.8906	0.8758	0.8921	0.9134	0.9523	0.9525	0.9411	0.9628	0.9453	0.9637
Kansas	0.9027	0.8963	0.8981	0.8987	0.9013	0.8791	0.8793	0.8877	0.9103	0.9233	0.9128
Kentucky	0.8515	0.7995	0.8016	0.8084	0.8060	0.7984	0.7969	0.7973	0.7774	0.7831	0.7744
Louisiana	0.9722	0.9128	0.9294	0.9303	0.9491	0.9538	0.9763	1.0031	0.9475	0.9523	1.0003
Maine	0.7952	0.8038	0.8114	0.8265	0.8283	0.8316	0.8085	0.8001	0.7908	0.7981	0.8103
Maryland	1.0304	1.0245	1.0528	1.0669	1.0667	1.0799	1.0852	1.0812	1.0881	1.1094	1.1374
Massachusetts	1.1769	1.2286	1.2352	1.2216	1.2301	1.2315	1.2231	1.2195	1.2405	1.2528	1.2587
Michigan	0.9716	0.9507	0.9199	0.9346	0.9343	0.9054	0.8955	0.8675	0.8536	0.8295	0.7921
Minnesota	1.0515	1.0771	1.0718	1.0808	1.0972	1.0967	1.0908	1.0619	1.0473	1.0615	1.0517
Mississippi	0.6741	0.6547	0.6490	0.6481	0.6605	0.6534	0.6466	0.6524	0.6569	0.6679	0.6669
Missouri	0.9449	0.9354	0.9263	0.9216	0.9230	0.9133	0.8992	0.8829	0.8714	0.8897	0.9006
Montana	0.7253	0.7168	0.7300	0.7351	0.7470	0.7482	0.7525	0.7524	0.7733	0.7720	0.7769
Nebraska	0.9298	0.9368	0.9496	0.9527	0.9877	0.9753	0.9690	0.9728	0.9740	0.9927	1.0261
Nevada	1.1208	1.0870	1.0666	1.0592	1.0550	1.0887	1.1128	1.0908	1.0723	1.0300	0.9578
New Hampshire	0.9549	0.9712	0.9648	0.9762	0.9902	0.9868	0.9826	0.9722	0.9636	0.9604	0.9823
New Jersey	1.1774	1.1893	1.1931	1.1981	1.2005	1.1882	1.1838	1.1889	1.1960	1.2098	1.1957
New Mexico	0.8661	0.8542	0.8612	0.8647	0.8674	0.8852	0.8569	0.8419	0.8283	0.8355	0.8552
New York	1.1671	1.1718	1.2100	1.2015	1.1841	1.1924	1.2158	1.2259	1.2306	1.2231	1.2771
North Carolina	0.9647	0.9540	0.9467	0.9451	0.9409	0.9316	0.9400	0.9454	0.9295	0.9233	0.9277
North Dakota	0.7900	0.7976	0.8211	0.8574	0.8948	0.8691	0.8750	0.8902	0.9076	0.9909	1.0347
Ohio	0.9569	0.9479	0.9345	0.9468	0.9442	0.9393	0.9289	0.9123	0.8988	0.8980	0.8843
Oklahoma	0.7597	0.7604	0.7857	0.7808	0.7803	0.7806	0.7855	0.8095	0.8153	0.8453	0.8465
Oregon	0.8212	0.8597	0.8387	0.8423	0.8512	0.8997	0.8864	0.9333	0.9447	0.9934	1.0128
Pennsylvania	0.9435	0.9402	0.9560	0.9562	0.9560	0.9480	0.9381	0.9340	0.9402	0.9554	0.9660
Rhode Island	0.9149	0.9203	0.9340	0.9501	0.9637	0.9771	0.9685	0.9768	0.9471	0.9372	0.9671
South Carolina	0.8271	0.8139	0.8114	0.8126	0.8169	0.7894	0.7809	0.7691	0.7675	0.7589	0.7466
South Dakota	0.7870	0.8126	0.8068	0.8994	0.9069	0.9065	0.8940	0.8729	0.8986	0.9422	0.9810
Tennessee	0.9041	0.8797	0.8758	0.8887	0.8937	0.8959	0.8766	0.8654	0.8411	0.8477	0.8402
Texas	1.0143	0.9992	1.0119	1.0036	0.9785	0.9829	0.9634	0.9776	0.9934	0.9966	1.0076
Utah	0.8681	0.8638	0.8749	0.8664	0.8576	0.8617	0.8699	0.9019	0.9276	0.9014	0.8996
Vermont	0.8059	0.8175	0.8357	0.8491	0.8656	0.8731	0.8642	0.8540	0.8420	0.8567	0.8652
Virginia	1.0582	1.0457	1.0652	1.0555	1.0634	1.0745	1.0838	1.0725	1.0647	1.0708	1.0969
Washington	1.1578	1.1274	1.0888	1.0859	1.0767	1.0531	1.0795	1.0765	1.1152	1.1268	1.1243
West Virginia	0.7399	0.7163	0.7179	0.7171	0.7038	0.6979	0.6977	0.6933	0.6846	0.7097	0.7271
Wisconsin	0.9469	0.9378	0.9387	0.9454	0.9519	0.9509	0.9433	0.9358	0.9283	0.9239	0.9287
Wyoming	1.1195	1.1211	1.1906	1.1822	1.1873	1.1892	1.2025	1.3016	1.3340	1.4445	1.4490

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Curriculum Vitae

DOUGLAS A. MERRIMAN, CPA

SUMMARY OF QUALIFICATIONS

- Seasoned executive with proven effectiveness and achievement in strategic financial management and analysis.
- Proven strengths in vision development, streamlining organization structure, and team leadership.
- Proactively protects and cultivates the financial strength and long-term sustainability of the organization.
- Highly creative and resourceful approaches to obtaining and keeping a highly credible profile within the organization, among peers, and with the public.

LISTING OF PROFESSIONAL EXPERIENCE

DEPUTY CITY ADMINISTRATOR/DIRECTOR OF FINANCE
CITY OF OAK HARBOR, WASHINGTON 1997 to Present

- Chief Financial Officer responsible for the oversight and administration of the organization's overall financial functions encompassing accounting and budgeting, treasury management and corporate investing, credit and debt structuring, risk management and insurance, taxation, customer receivables and credit collections, internal audit, and information services functions. Responsible for internal operational and logistical functions including competitive bid processing, records archiving, professional services contracts, administration, and clerical staff/reception.

MANAGER - DEPARTMENT OF BUDGET AND ACCOUNTING SERVICES
CITY OF BELLINGHAM, WASHINGTON 1994 to 1997

- Chief Accounting Officer responsible for oversight and management of the Budget and Accounting Services Department including all accounting, budgeting, debt management, tax reporting, accounts payable and receivables, and payroll functions. Directed daily work production, resolved departmental issues, and provided professional support and guidance to senior accountants and support staff. Hired, trained, evaluated, and coached all department personnel.

CERTIFIED PUBLIC ACCOUNTANT
DELOITTE & TOUCHE/JOHN KINGMA & ASSOC., CPAs 1990 to 1993

Worked in public accounting to obtain required experience hours for full licensure as a Certified Public Accountant. Hired on an interim basis by Deloitte and Touche at the manager level to provide audit and management services to financial industry and other corporate clients.

ASSISTANT VICE PRESIDENT / CORPORATE CONTROLLER
INTERWEST SAVINGS BANK 1983 to 1989

Corporate Controller of all corporate-wide accounting, investing, debt management, and financial reporting for Savings Institution of 28 branches located throughout the state of Washington. Responsible for 22 member staff of the corporate Finance Division consisting of all accounting, financial reporting, accounts receivable and payable, payroll, central purchasing, and data processing personnel.

U.S. ARMY PARATROOPER: AIRBORNE INFANTRY June 1976 – June 1979
Units Served: 82nd Airborne Division, Ft. Bragg, North Carolina; 172nd Arctic Brigade, Ft. Richardson, Alaska.

EDUCATION

Walden University
PhD - Applied Management and Decision Sciences, Finance Specialization. 2015.
Dissertation Title: "Cyclical Economic Impacts on Aggregated Fiscal Imbalance Levels in the United States".

University of Maryland University College
Master of Science in Management, Finance Concentration. 2004.
Activities and Societies: Phi Kappa Phi Honor Society

Central Washington University
Bachelor of Science, Accounting. 1983.

United States Military Academy Preparatory School (USMAPS)
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1977 – 1978

LICENSES & MEMBERSHIPS

Certified Public Accountant - State of Washington - 1986

- Washington Society of Certified Public Accountants

Advanced Certified Public Finance Administrator - 2011

- Association of Public Treasurers of the United States and Canada
- Washington Finance Officers Association

Certified Public Fund Investment Manager - 2010

- Association of Public Treasurers of the United States and Canada – Past President of the Washington State Chapter, 2010-2011

Certified Fraud Examiner - 2001

- Association of Certified Fraud Examiners

CURRENT & PREVIOUS COMMUNITY ACTIVITIES

- Greater Oak Harbor Chamber of Commerce - Finance Committee
- Armed Services YMCA - Board of Directors, Finance Chairman
- United Way of Island County - Budget and Allocations Committee
- Oak Harbor Christian School – Elected School Board Member