

Summer 2020

## State-Level Fiscal Policy and Economic Growth: Assessing Recovery from the 2007 Recession

Nathan Barron

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STATE-LEVEL FISCAL POLICY AND ECONOMIC GROWTH:  
ASSESSING RECOVERY FROM THE 2007 RECESSION

by

Nathan Barron

A Thesis  
Submitted to the Graduate School,  
the College of Arts and Sciences  
and the School of Social Science and Global Studies  
at The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Arts

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August 2020

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2020

*Published by the Graduate School*



## ABSTRACT

This research examines state-level fiscal policy responses to the 2007 recession, with a particular focus on the short- and long-run effectiveness of government spending at achieving economic growth. Using OLS regression models to test the impact of government spending, institutional constraints, and economic policy climates on economic growth, this research shows that government spending has a positive impact on growth that decreases into a negative impact over time. Additionally, institutional constraints are consistently found to hinder growth while the effects of policy climate are mixed.

## ACKNOWLEDGMENTS

I would like to acknowledge the members of my committee for their special contributions to this project, both conceptually and particularly. Many thanks are due to Dr. Iliyan Iliev, Dr. Troy Gibson, and especially Dr. Joe Weinberg as committee chair. I would additionally like to thank the host of faculty in the Political Science and Economics programs for their influences before and throughout the project.

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## LIST OF ABBREVIATIONS

<i>BEA</i>	U.S. Bureau of Economic Analysis
<i>DPI</i>	Disposable personal income
<i>GSP</i>	Gross state product
<i>OLS</i>	Ordinary least squares

## CHAPTER I - INTRODUCTION

Economic growth is a consistent priority to state policymakers (Mosora 2013). Especially looking to assign praise and blame to partisans (Brown 2010), voters consistently demonstrate care for unemployment rates (e.g. Crew and Weiher 1996; Ebeid and Rodden 2006; Jacobson 2006; Kenney 1983; Leyden and Borrelli 1995; Petzman 1987), tax rates (e.g. MacDonald and Sigelman 1999; Niemi et al. 1995; Petzman 1987), and economic growth (Chubb 1988; Ebeid and Rodden 2006; Kenney 1983; MacDonald and Sigelman 1999; Niemi et al. 1995; Petzman 1987). In addition to electoral concerns, state institutional characteristics (Brace 1991; Uppal and Glazer 2014) and fiscal and regulatory policies (Deskins et al. 2010; Kolko et al. 2013) have been shown to be significant determinants of a state's economic health.

Among the most common fiscal policies utilized for economic growth is government spending. Though the theoretical basis for the effectiveness of government spending in achieving economic growth is mixed (e.g. Keynes 1936; Friedman 1957), the weight of relevant literature is clear that government spending does have a positive relationship with economic growth (e.g. Atems 2019; Fishback and Kachanovskaya 2011; Gordon and Krenn 2020; Lin 1994; Wu, Tang, and Lin 2010), although this claim remains contested (e.g. Barro 1990; Conley and Dupor 2014).

This research explores the fiscal policy determinants of economic growth by examining state-level recovery from the 2007 recession, as well as states' post-recession trajectories. To do so, OLS regression models are constructed to test the impact of government spending, institutional constraints, and general and particular policy climates

on two measures of economic growth. Further, the short-run and long-run impacts of government spending are calculated and considered. Consistent with previous research, I find that government spending is positively related to economic growth, yet the impact decreases over time as it reaches a significantly negative impact in the long-run. As expected, institutional constraints on spending also have a consistently negative impact on economic growth. Further, policy climate is found to be insignificant in the short-run but has significant mixed long-run impacts. Taken together, this research shows that government spending is a viable policy option for short-run economic growth and that institutional constraints on government spending negatively impact a state's ability to effectively respond to economic crises.

## CHAPTER II - BACKGROUND

The economic history of the late 19<sup>th</sup> – and early 20<sup>th</sup>-centuries was marked for its volatility. Particularly, the United States faced seven panics from 1873 to 1929; five panics lead to a recession while two panics ushered-in a depression. The certainty of economic uncertainty that plagued the U.S. economy during that time was accompanied by an upheaval of political and economic thought. Proposed political solutions ranged from reforming agricultural lending and permitting the unlimited coinage of silver. However, the incremental reforms that were introduced proved to be too piecemeal to prevent the increasing avalanche of economic crises. During this time period, two gaping issues in the U.S. economy were made clear: (1) the U.S. economy was prone to crises, and (2) the U.S. economy was sluggish to emerge from crises.

During the Great Depression, British economist John Maynard Keynes (1883 – 1946) proposed a remedy to serial recession in his 1936 book *A General Theory of Employment, Interest, and Money*. Therein, he advocated for increased government spending *and* decreased government taxing to stimulate aggregate demand during recessing or depressing economic cycles, thus instigating economic growth until the market transitioned back into a booming cycle. His theory then extended into the booming cycle, wherein the government spending would be incrementally decreased and government taxing would be incrementally increased. Thus, market stabilization requires countercyclical government activity that involves a tradeoff between a reduced amplitude of recessions and a reduced amplitude of economic booms. One of the key instruments of stabilization is fiscal policy, which can be leveraged to manipulate aggregate demand to

instigate either expansion or contraction (Keynes 1936, 51). During times of economic recession, fiscal policy can be used to induce expansion through tax cuts and direct and indirect spending; during economic booms, fiscal policy can be used to induce contraction through increased taxing and reduced spending. Though Keynes remained adamant that government intervention in the markets was imperfect and only supplemental, he was convinced that countercyclical market intervention would best provide for the short-run stability of the markets and for the long-run growth of the economy.

Although Keynes ushered-in a new operating standard for economic policy, his proposal was not without dissent. Historical dissent reemerged from British economist David Ricardo (1772 – 1823), who argued that fiscal policy was unable to increase aggregate demand. Ricardo argued that consumers would respond to tax cuts and government indirect spending (e.g. stimulus payouts directly to consumers) by saving the money rather than spending it because they expect higher taxes in the future; thus, according to Ricardo, the fluctuation in fiscal policy would merely be handing money to people and their handing it back—a phenomenon termed Ricardian equivalence (Ricardo 1951). Because of this equivalence, he maintained that any observed countercyclicality was only natural, unaided growth – not an artificial stimulation of aggregate demand. In the 20<sup>th</sup> century, American economist Milton Friedman provided similar objections to Keynes’s proposed stimulation of aggregate demand. In his *Theory of the Consumption Function* (1957), Friedman argued that consumption remains relatively stable as households consider “permanent income,” or the average expected income over several years. He contended that households that receive some type of indirect government spending, e.g. a stimulus or tax cut, would maintain normal consumption habits even with

the irregular stimulus—a position that is similar to Ricardian equivalence, though nuancedly original. Further, in *Capitalism and Freedom* (1962), he contends that intervening fiscal policy ultimately breeds economic instability rather than Keynes's proposed stability. In addition to many other voices from both the economic left and the economic right, Ricardo and Friedman offer the most boisterous voices against the Keynesian approach.

When the U.S. economy collapsed in late 2007, the American response relied heavily on Keynes. Though the Federal Reserve Bank did adopt a monetarist response to the recession as for which Friedman advocated in his writings, the political response to the recession consisted primarily of fiscal policy adjustments—through increased government spending and reduced taxes. At the federal level, legislation like the Emergency Economic Stabilization Act of 2008 injected \$700billion of direct expenditure into stabilizing large banks, and the American Recovery and Reinvestment Act of 2009 injected \$787billion of direct and indirect spending into stabilizing the economy closer to the household-level. However, the state-level responses were mixed—including a variety of fiscal policy adjustments to government spending and taxing. The effects of different government spending strategies are demonstrated in Figures 1 and 2. This research attempts to explain the variation in state recoveries from the 2007 recession by testing Keynesian assumptions as they pertain to state-level political conditions for stabilization. Three domains of Keynesian application are investigated in this research: state government spending, restrictions on state government spending, and other non-spending state fiscal policies.

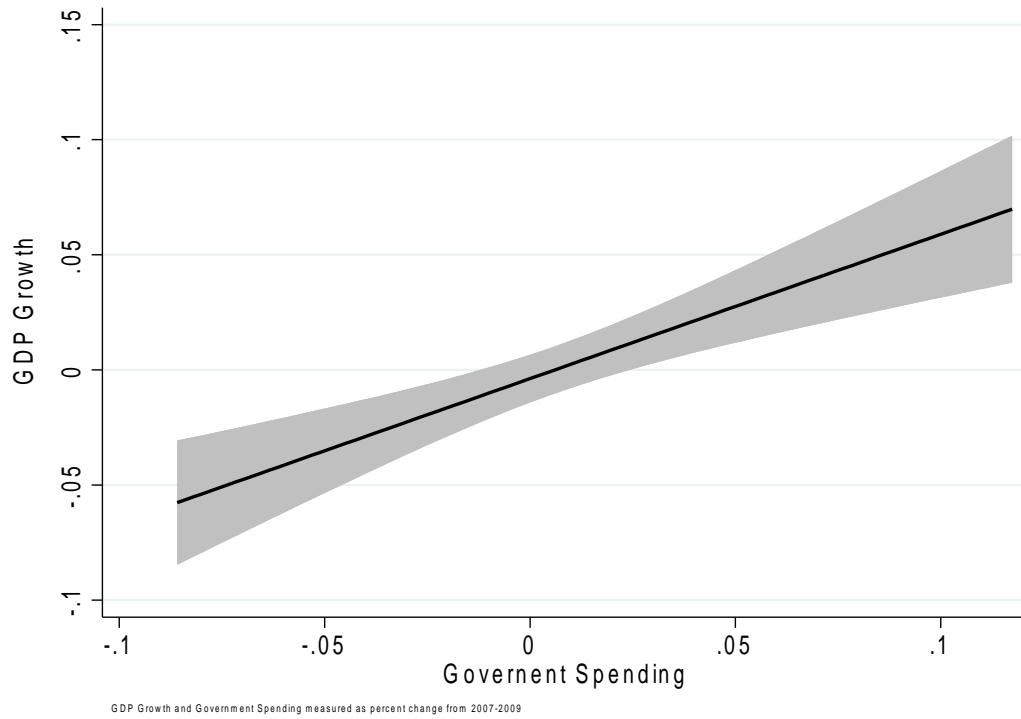


Figure 1. *Government Spending and GDP Growth across the U.S. States, 2007-2009*

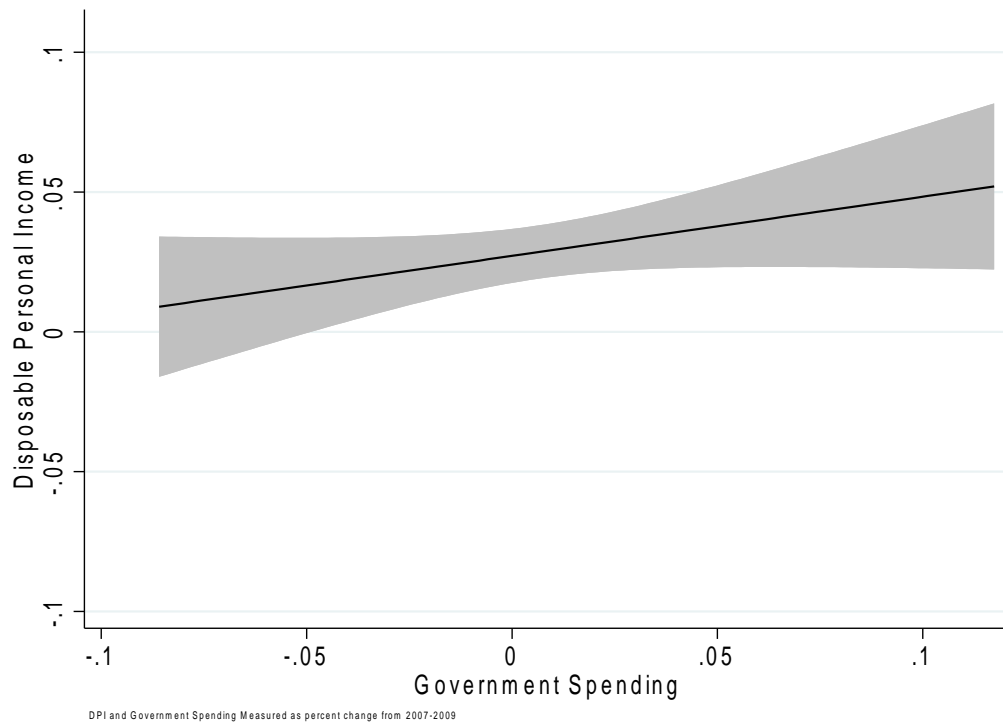


Figure 2. *Government Spending and DPI Growth across the U.S. States, 2007-2009*



## 2.1 Government Spending and Restrictions on Spending

The positive effect of government spending on economic growth has been noted throughout literature in both the U.S. (e.g. Eggertsson 2010; Gordon and Krenn 2010; Romer and Bernstein 2009) and comparative studies (e.g. Lin 1994; Wu, Tang, Lin 2010). The primary questions addressed in the economic literature concerns *how* and *how much* government spending affects economic growth.

Atems (2019) investigates the effects of state-level government spending shocks by utilizes newly-available quarterly state economic data in a structural panel VAR model. Atems found that the effect of government spending on economic growth (1) is positive yet decreases over time, and (2) depends on the state's "economic environment and institutional context" (65). The first finding is compatible with Fishback and Kachanovskaya (2011) who demonstrated the positive effect of federal spending on state personal income and private consumption during the Great Depression from 1930-1940. The second finding contrasts Clemens and Miran (2012), who found little significant effect of state balanced budget rules on state-level business cycles. Atems shows that states with mediumly stringent budget requirements demonstrate more effective government spending than states with either low or high stringency (2019, 74-77).

Evidence from comparative studies accentuates the positive impact of government spending on economic growth. Wu, Tang, and Lin (2010) conduct a panel Granger causality test using panel data on 182 countries from 1950 to 2004. They find that there is a positive relationship between government spending and economic growth across various measures of both government spending and economic growth. These results are consistent across national subgroups except for low-income countries; Wu, Tang, and Lin suggest

that low-income countries do not experience the positive correlation because of “inefficient governments and inferior institutions” (804). Lin (1994) corroborates these findings, with a caveat. While Lin shows that government spending has a positive impact on economic growth, he finds that this positive relationship only occurs in the short-run but not in the intermediate-run (83). This caveat echoes Keynes’s own concern expressed in his famous rebuttal to the long-run objection: “In the long run we are all dead” (Keynes 1924, 80).

However, objections to the findings of a positive relationship between government spending and economic growth are largely on two fronts: (1) government spending is inefficient at prompting economic growth, and (2) government spending is negatively related to economic growth. Conley and Dupor (2014) argue the former by calculating the American Recovery and Reinvestment Act’s (ARRA) impact on job growth. They find that, in addition to an imbalance between government jobs created and private sector jobs lost (though statistically insignificant), each job created by ARRA cost around \$200,000 even though the average salary was around \$60,000. However, a large portion of the literature maintains the objections raised by Ricardo and Friedman. The most notable advocate for Ricardian equivalence in recent analyses has been Harvard economist Robert Barro. Barro (1990) explores again the relationship between government spending and economic growth and private savings. Consistent with Ricardo’s theory, he finds negative relationship between government spending and economic growth and between indirect government spending (i.e. taxes) and private investment, suggesting that consumers save money from tax cuts rather than increasing aggregate demand. This point was reinforced in Barro and Redlick (2009) where he shows that changes in marginal tax rates are not significantly related to changes in GDP, contrasting both Keynes’s and Friedman’s

theories. Further, many contemporary policy advocates also contend that government spending is counterproductive when considering long-run effects, such as increasing debt and decreasing private investment (e.g. Alesina et al. 1999; Stratmann 2010). In order to minimize these negative effects, many states have restricted their spending abilities, primarily through balanced budget requirements.

Balanced budget requirements vary in their stringency, particularly concerning what budgets legislatures can approve, what budgets governors can approve, and whether deficit carryovers are allowed at the end of the fiscal year. Poterba (1994) has argued that more stringent budget requirements often lead to much faster deficit adjustments, when controlling for other partisan factors. However, this finding does not suggest that state governments with stringent balanced budget requirements are more responsive *in general*. For example, Primo (2006) finds that states with stringent balanced budget requirements constrain spending and are less responsive to economic fluctuations. The underlying logic of stringent states' reduced responsiveness is that those states have fewer tools with which to engage changing economic conditions. Fiscal restrictions limit *general* government spending but also *responsive* government spending.

In total, the existing literature seems to suggest that government spending has a positive relationship with economic growth, even if that positive relationship only exists in the short-run. Whether or not government spending has a long-run negative effect on growth, state politicians must make decisions during an economic recession that are aimed to stimulate state economies quickly and effectively in the short-run—once again highlighting Keynes's statement "In the long run we are all dead." However, some states face greater restrictions on how to fiscally respond to economic crises depending on the

stringency of state balanced budget requirements. Together, government spending and restrictions on government spending are expected to have positive and negative impact, respectively, on economic growth.

## 2.2 Hypotheses

Three relevant hypotheses emerge from the literature. Predicted directionality for each hypothesis is given in Table 1.

*H<sub>1</sub>: Government spending positively impacts economic growth.*

Though this point is contested in the literature, there are two major reasons why this hypothesis predicts a positive impact. First, this claim is supported throughout the literature on state-level analyses (e.g. Atems 2019; Eggertsson 2010; Fishback and Kachanovskaya 2011; Gordon and Krenn 2010; Romer and Bernstein 2009). Secondly, this claim is being tested for recovery from the 2007 recession (a period of only seven fiscal quarters, from 2007:q4 to 2009:q2), which positions this research exclusively in the short-run wherein we expect to see a positive relationship (Atems 2019; Lin 1994).

*H<sub>2</sub>: Restrictions on government spending negatively impacts economic growth.*

Primo (2006) serves as the basis for this hypothesis. First, it is expected that states with more stringent restrictions on government spending are less able to respond to economic crises, which is consistent with Primo (2006). This expectation is not inconsistent with Poterba (1994), who found that states with more stringent restrictions were quicker to make deficit adjustments—because those adjustments were often spending

cuts. Second, it is expected that states with fewer financial resources are less likely to be responsive to economic crises even when controlling for institutional restrictions, thus negatively impacting economic growth.

*H<sub>3</sub>: Pro-business policy climates positively impact economic growth.*

This hypothesis is largely based on the work of Kolko, Neumark, and Mejia (2011), who find that policy indexes that “[emphasize] taxes and costs [for businesses] predict growth of employment, wages, and output” (220). First, it is expected that indexed values of business-friendly policy climates and economic freedom would positively impact economic growth in the private sector (e.g. Badenhausen 2007; Stansel, Torra, and McMahon 2015). Second, it is expected that limited regulatory policy and low corporate tax rates would be also demonstrate a positive impact on economic growth.

Table 1

*Predicted Directionality for Hypotheses and Primary Source*

<i>Hypothesis</i>	<i>Concept</i>	<i>Predicted Direction</i>	<i>Primary Source</i>
H <sub>1</sub>	Government Spending	+	Atems (2019)
H <sub>2</sub>	Spending Restrictions	-	Primo (2006)
H <sub>3</sub>	Business-Friendly Policy Climate	+	Kolko, Neumark, and Mejia (2011)

## CHAPTER III - METHODOLOGY

The core of this study focuses on the fiscal determinants of state economic growth after the 2007 recession. Ordinary least squares (OLS) regression models are used to explain the percent change in GSP and percent change in disposable personal income from the beginning of the 2007 recession (2007:q4) to its end (2009:q2). Included in the models are testing variables for government spending, restrictions on government spending, and policy climates. Additionally, the original models are then expanded to test the long-run effects of during-recession spending by adjusting the time frame of the dependent variables. All models control for the severity of the recession by state (calculated from BEA 2020a) and the 2007 poverty rate by state (Sorens, Muedini, and Ruger 2008). Descriptive statistics for all variables are given in Table 2; a full list of variables and sources is given in Appendix A.

### 3.1 Dependent Variables

Two measurements are utilized for economic recovery: (1) percent change in real gross domestic product per state (GSP) in chained 2012 dollars from 2008:q1 to 2009:q3; and (2) percent change in disposable personal income per state (DPI) from 2008 to 2010. By including both GSP and DPI in the models, this research tests for aggregate- and household-level measures of economic recovery. Further, though the 2007 recession officially began in 2007:q4 and ended in 2009:q2, the official dates within those quarters are in the third month—meaning that the effects of the recession are not well-measured in 2007:q4 or 2009:q2. Additionally, DPI is only measured annually at the state level; percent

change in DPI is thus calculated from 2008 to 2009. For the long-run tests, the end time frames of the dependent analysis are shifted to the first quarters for 2010, 2012, 2014, 2016, and 2018 for GSP and the annual values for 2010, 2012, 2014, 2016, and 2018, as noted. Data is collected from the U.S. Bureau of Economic Analysis (2020a, 2020b).

## 3.2 Independent Variables

### 3.2.1 *Government Spending.*

To measure government spending, this study uses the percent change in total government and government enterprise spending by state (BEA 2020c) and state welfare spending as a percentage of state income in 2008 (Sorens, Muedini, and Ruger 2008). To measure restrictions on government spending, the total balances in state budget reserves in 2007 are utilized (Pew Charitable Trusts 2020) and a five-step interval measuring the stringency of balanced budget requirements is used (Rueben and Randall 2017).

### 3.2.2 *Policy Climates.*

Two models are deployed for each dependent variable: one model with two comprehensive index measures of business climate and one model with two policy-specific measures of business climate. For the indexed measures of business climate, the 2007 Forbes “Best States for Business” ranking (Badenhausen 2007) and the 2007 value of the Fraser Institute’s Economic Freedom ranking (Stansel, Torra, and McMahon 2015) are used. For the policy-specific measures, the state-level corporate tax rate and an index of regulatory policy are used (Stansel, Torra, and McMahon 2015).

Table 2

*Descriptive Statistics*

<i>Variable ID</i>	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Range</i>	<i>Mean</i>	<i>Stand. Deviation</i>
GSP	50	-0.09	0.14	0.23	-0.00	0.04
DPI	50	-0.11	0.04	0.15	-0.03	0.03
Severity	47	0.000	0.007	0.007	0.002	0.001
Poverty Rate	50	5.8	22.6	16.80	11.68	2.97
Gov. Spending	50	-0.09	0.12	0.21	0.01	0.04
Pub. Welfare	50	0.02	0.05	0.03	0.03	0.01
Budget Reserves	50	0	199.93	199.93	50.67	39.47
Balanced Budget	50	0	4	4	3.24	1.25
Forbes Rank	50	1	50	49	25.5	14.58
Economic Freedom	50	5.4	7.8	2.40	6.59	0.56
Tax Rate	50	0.16	0.44	0.28	0.24	0.06
Regulatory Policy	50	-0.36	0.22	0.58	0.04	0.13



## CHAPTER IV – RESULTS

Four models were tested for economic recovery from the recession (2008:q1 to 2009:q3); results are given in Table 3 and standardized coefficients are reported in parentheses. The results from the long-run analyses are given in Table 4 for GSP and Table 5 for DPI, with standardized coefficients are reported in parentheses.

### 4.1 Recovery from the 2007 Recession

#### 4.1.1 *Government Spending.*

Across each of the four models, government spending had a positive effect on economic growth, with beta weights ranging from 0.29 in Model 2 to 0.34 in Models 1 and 4 ( $p < 0.01$ ). Public welfare spending also had a consistently positive effect on economic growth across the four models, with beta weights ranging from 0.41 in Model 2 to 0.52 in Model 4 ( $p < 0.01$  in Models 1 and 3,  $p < 0.001$  in Models 2 and 4).

These findings on government spending are consistent with Atems (2019) and others who have shown a significantly positive relationship between government spending and growth. During the recession, state government's adjustment in government spending was significant in determining the speed of recovery in those states. Further, the total public welfare spending as a proportion of state income was also significant in determining the speed of recovery in those states.

Additionally, the total state budget reserves prior to the recession was significant in each of the models except for Model 4, with significant beta weights at 0.34 ( $p < 0.01$ ), 0.46 ( $p < 0.001$ ), and 0.27 ( $p < 0.05$ ) in Models 1-3, respectively. Additionally, increased

Table 3  
*Ordinary Least Squares (OLS) Regression*

	(1) GSP- Index	(2) GSP- Policy	(3) DPI- Index	(4) DPI-Policy
Severity	-11.35*** (-0.40)	-11.10*** (-0.39)	-8.62*** (-0.37)	-7.93** (-0.34)
Poverty Rate	-0.00*** (-0.35)	-0.00*** (-0.35)	-0.00* (-0.20)	-0.00 (-0.18)
Gov Spending	0.43** (0.34)	0.36** (0.29)	0.32** (0.32)	0.35** (0.34)
Public Welfare	1.90** (0.42)	1.84*** (0.41)	1.71** (0.47)	1.92*** (0.52)
Budget Reserves	0.00** (0.34)	0.00*** (0.46)	0.00* (0.27)	0.00 (0.24)
Balanced Budget	-0.01* (-0.18)	-0.01** (-0.22)	-0.00 (-0.14)	-0.00 (-0.15)
Forbes Rank	-0.00 (-0.06)	-	0.00* (0.23)	-
Econ. Freedom	-0.00 (-0.04)	-	0.01 (0.10)	-
Tax Rate	-	-0.11* (-0.17)	-	0.03 (0.05)
Reg. Policy	-	-0.04 (-0.14)	-	-0.01 (-0.03)
Constant	0.04	0.05*	-0.04	0.00
N	47	47	47	47
R <sup>2</sup>	0.79	0.81	0.74	0.71
Adj.-R <sup>2</sup>	0.74	0.77	0.68	0.65

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001 (two-tailed)

Note: Standardized coefficients are given in parentheses.

stringency in balanced budget requirements is demonstrated to have a significantly negative impact on GSP growth (beta weights at -0.18 and -0.22 in Models 1 and 2, respectively) and a non-significantly negative impact on DPI growth.

The findings on restrictions to government spending are consistent with the reasoning used by Primo (2006). Further, Poterbo's (1994) findings are better understood that, while states with stringent balanced budget requirements are likely to make deficit adjustments more quickly than states with less-stringent requirements, the nature of those adjustments are not always effective in responding to fiscal shocks due to economic crises.

#### *4.1.2 Policy Climate.*

Models 1 and 3 tested comprehensive indexed measures of policy climate while Models 2 and 4 test specific policy measures. Hypothesis 3 would suggest that there should be a negative relationship between growth and the Forbes Ranking (as the ranking is 1-50, with 1 being best for business and 50 being worst for business) and a positive relationship between growth and the Economic Freedom index. However, the Forbes' ranking's impact on DPI was the only significance found across Models 1 and 3 (beta weight: 0.23,  $p < 0.05$ ) with a negative impact (contrary to the hypothesis).

In Models 2 and 4, the predicted relationship between growth and tax rate is negative and the predicted relationship between growth and regulatory policy (measured as business-friendly regulatory policy) is positive. However, the only significant finding was the negative impact of the tax rate on GSP growth (beta weight: -0.17,  $p < 0.05$ ).

These findings do not provide strong support for Hypothesis 3. With incorrect directionality and limited significance, these findings suggest caution in considering non-spending fiscal policy determinants of economic growth.

## 4.2 Long-run Analyses

### 4.2.1 *Government Spending.*

The during-recession fiscal shock of state government spending has a consistently positive yet decreasing impact (beta weight from 2012 to 2018: 0.60 to 0.18, respectively for GSP, and 0.56 to -0.05, respectively for DPI) on economic growth over time. The positive impact on GSP remains significant over time though the positive impact on DPI loses significance in 2016. However, the effect of public welfare spending has a decreasing effect on growth over time, eventually transitioning from a significantly positive impact to a significantly negative impact for both GSP and DPI. The standardized coefficients over time are given in Figure 3.

This finding suggests that, for state-level recovery from a recession, Lin's (1994) timeline for transitioning from short-run benefits to long-run costs may be shorter than expected. Nonetheless, these findings confirm both Lin's and Keynes's arguments that government spending promotes significant growth in the short-run. Of course, this model does not account for the various intervening factors that transpire after the end of the recession; however, this is one of the strengths of this model—that we are able to isolate during-recession fiscal shocks to calculate its impact over time. While government spending may be a “quick fix” in the short-run, one-time government spending is not a sustainable source of economic growth in the long-run. Yet, states facing economic

Table 4  
*Extended Year Regression- GSP*

	GSP 2010		GSP 2012		GSP 2014		GSP 2016		GSP 2018	
Severity	-13.25*** (-0.49)	-12.62*** (-0.47)	-13.21* (-0.21)	-13.19* (-0.21)	-17.83* (-0.26)	-18.62** (-0.27)	-22.07** (-0.35)	-21.58** (-0.34)	-23.61** (-0.35)	-22.54** (-0.33)
Poverty Rate	-0.00*** (-0.13)	-0.00*** (-0.35)	-0.01** (-0.25)	-0.01*** (-0.30)	-0.01 (-0.16)	-0.01 (-0.20)	-0.00 (-0.12)	-0.00 (-0.16)	-0.00 (-0.07)	-0.00 (-0.10)
Gov Spending	0.37*** (0.31)	0.51*** (0.43)	1.21*** (0.45)	1.63*** (0.60)	1.18*** (0.39)	1.52*** (0.59)	0.87** (0.31)	1.20*** (0.43)	0.54 (0.18)	0.84** (0.28)
Public Welfare	1.51*** (0.35)	1.60*** (0.37)	2.96** (0.30)	2.53** (0.26)	1.25 (0.11)	0.44 (0.04)	-1.18 (-0.12)	-1.27 (-0.13)	-3.65* (-0.34)	-3.51** (-0.33)
Budget Reserves	0.00*** (0.29)	-	0.00*** (0.38)	-	0.00** (0.29)	-	0.00* (0.25)	-	0.00 (0.21)	-
Balanced Budget	-0.00 (-0.11)	-	-0.01 (-0.16)	-	-0.01 (-0.12)	-	-0.00 (-0.04)	-	-0.00 (-0.02)	-
Forbes Rank	-0.00* (-0.18)	-	-0.00 (-0.11)	-	-0.00 (-0.21)	-	-0.00* (-0.28)	-	-0.00** (-0.33)	-
Econ. Freedom	-0.01 (-0.17)	-	0.00 (0.01)	-	-0.01 (-0.21)	-	-0.03 (-0.21)	-	-0.05* (-0.30)	-
Constant	0.09	0.01	0.06	0.08	0.20	0.16**	0.48**	0.25***	0.72***	0.36***
N	47	47	47	47	47	47	47	47	47	47
R <sup>2</sup>	0.78	0.69	0.67	0.54	0.52	0.42	0.51	0.41	0.45	0.34
Adj.-R <sup>2</sup>	0.74	0.66	0.6	0.49	0.42	0.37	0.41	0.35	0.34	0.28

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01 (one-tailed)

Note: Standardized coefficients are given in parentheses.

Table 5

*Extended Year Regression - DPI*

	DPI 2010		DPI 2012		DPI 2014		DPI 2016		DPI 2018	
Severity	-3.66*	-3.49	-6.91	-6.94	-8.08	-7.91	-4.13	-2.75	-5.31	-4.37
	(-0.20)	(-0.19)	(-0.18)	(-0.18)	(-0.09)	(-0.06)	(-0.09)	(-0.06)	(-0.09)	(-0.07)
Poverty Rate	-0.00**	-0.00**	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
	(-0.25)	(-0.29)	(-0.14)	(-0.20)	(-0.07)	(-0.13)	(-0.09)	(-0.12)	(-0.02)	(-0.03)
Gov Spending	0.17*	0.34***	0.60**	0.94***	0.58**	0.97***	0.13	0.43	-0.14	0.19
	(0.21)	(0.43)	(0.35)	(0.56)	(0.29)	(0.49)	(0.07)	(0.21)	(-0.05)	(0.07)
Public Welfare	1.28***	1.38***	1.16	0.89	-0.33	-0.55	-2.56*	-2.16*	-4.85**	-4.53***
	(0.45)	(0.48)	(0.19)	(0.14)	(-0.05)	(-0.08)	(-0.36)	(-0.30)	(-0.49)	(-0.46)
Budget Reserves	0.00***	-	0.00***	-	0.00***	-	0.00*	-	0.00	-
	(0.44)		(0.47)		(0.42)		(0.28)		(0.18)	
Balanced Budget	-0.00	-	-0.01	-	-0.00	-	0.00	-	0.01	-
	(-0.06)		(-0.14)		(-0.09)		(0.01)		(0.10)	
Forbes Rank	0.00*	-	-0.00	-	-0.00**	-	-0.00**	-	-0.00***	-
	(0.24)		(-0.16)		(-0.31)		(-0.41)		(-0.45)	
Econ. Freedom	0.01*	-	-0.00	-	-0.02	-	-0.05**	-	-0.07**	-
	(0.23)		(-0.02)		(-0.18)		(-0.42)		(-0.43)	
Constant	-0.06	0.03	0.17	0.17***	0.41**	0.28***	0.74***	0.39***	1.07***	0.60***
N	47	47	47	47	47	47	47	47	47	47
R <sup>2</sup>	0.65	0.47	0.60	0.41	0.53	0.34	0.39	0.19	0.43	0.23
Adj.-R <sup>2</sup>	0.58	0.42	0.51	0.36	0.43	0.27	0.26	0.11	0.31	0.15

\* p&lt;0.10, \*\* p&lt;0.05, \*\*\* p&lt;0.01 (one-tailed)

Note: Standardized coefficients are given in parentheses.

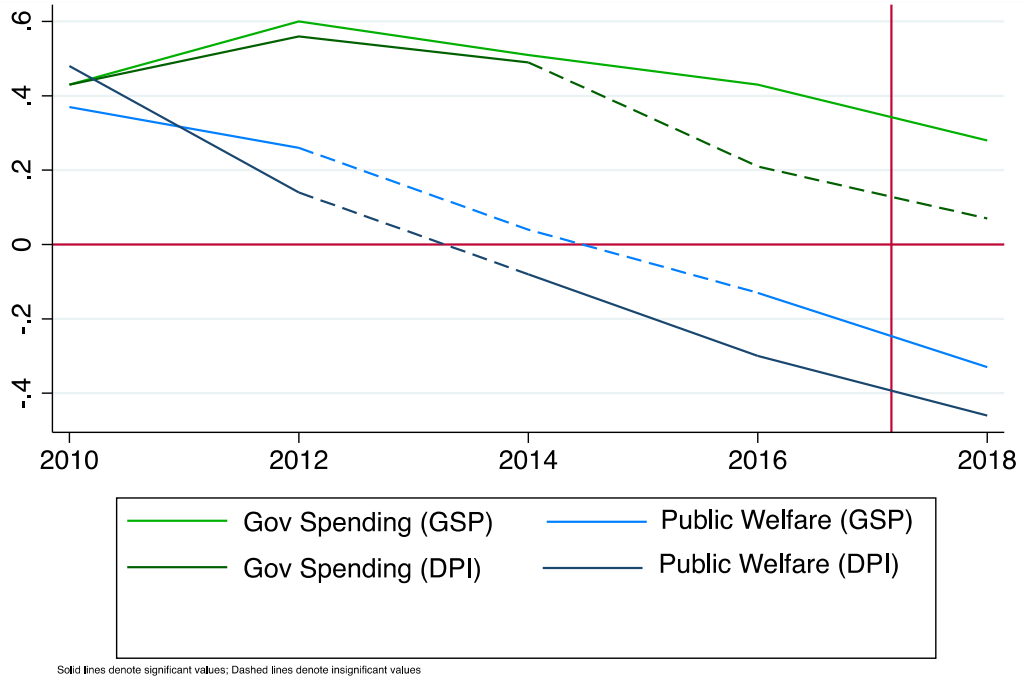


Figure 3. *Standardized Effect of Spending on Growth Over Time*

recession may be willing to sacrifice long-run strategies to emerge from recessions in the short-run.

#### 4.2.2 *Policy Climate.*

Once again, the findings on policy climate are mixed. Business friendly climates per Forbes' usually result in better economic growth as the negative relationship is mostly maintained across time for both GSP and DPI (except for DPI in 2010), though with varying degrees of significance. However, the effect of business-friendliness becomes robustly significant for DPI with time, reaching  $p < 0.001$  in 2018. Though the effects on

GSP are less pronounced (yet significant in 2016 and 2018), the household-level effects of business-friendly policy climates are clear and potent over time.

The findings for the economic freedom are less convincing. While demonstrating little or no significance in 2010, 2012, and 2014, the Economic Freedom index has a negative relationship with economic growth in GSP ( $p < 0.05$  in 2018) and DPI ( $p < 0.01$  in 2016 and 2018). These results further challenge Hypothesis 3, requiring a more nuanced view of policy climate. One possibility is that the divergent results from the Forbes index is a reflection of the different measures and weights that are used across policy advocacy groups. Because each model registers each variable's inflation factor less than 3, there is no expected issues of multicollinearity—meaning that the measures are satisfactorily dissimilar. Because the Fraser Institute (which is notably libertarian) and Forbes Magazine (which is usually noted as center-right) generally differ ideologically, there would be an expectation that the Fraser Institute's Economic Freedom index would “reward” fiscal conservatism while Forbes' “Best States for Business” may include a more moderated approach, particularly as they include measures of human capital in their index. Though this interpretation is made cautiously, it might be said that negative directionality for Economic Freedom is a negative relationship between fiscally conservative/libertarian policies and economic growth. However, this relationship must be understood in the context that moderate interpretations of economic policy are significant in the Forbes' measure.



## CHAPTER V – CONCLUSION

This research has examined the role of fiscal policy, institutional constraints on spending, and broader policy climate in economic recovery from recession. Findings suggest that spending helps states emerge from recession but may stunt growth in the long-run. As shown in Figure 3, the impacts of both total government spending and public welfare spending are positive and significant in the short-run; however, public welfare spending becomes negative and significant after 10 years – and total government spending seems to be on a similar trend. Even so, institutional constraints on government spending have a counterintuitively consistently negative impact on economic growth—demonstrating that, even though government spending hinders growth in the long run, institutional constraints have a lasting negative impact on a state’s growth. Thus, states that have institutional flexibility regarding their budgets and ability to fluctuate spending seem more likely to experience growth in both the short- and long-runs. Further, business-friendly policy climates are largely insignificant in the short-run while moderate policy climates have a significantly positive impact in the long-term.

In total, a mixture of both conservative (e.g. building balance reserves) and liberal approaches (e.g. government spending) can be helpful in responding to short-term recessions. While there is no greater evidenced fiscal policy response to recession than government spending and public welfare spending, it is important to recall that government spending is ultimately not a long-term solution.

APPENDIX A – Variables and Sources

Table A1.

*List of Variables and Sources*

<i>Variable ID</i>	<i>Description</i>	<i>Source</i>
GSP	Gross state product. From BEA as real GDP per state in chained dollars (2012); measured as percent change from 2008:q1 to 2009:q3	BEA (2020a)
DPI	Disposable personal income in millions of dollars; measured as percent change from 2008 to 2010	BEA (2020b)
Severity	Amplitude of greatest GSP decline between 2007:q4 and 2009:q2	Calculated from BEA (2020a)
Poverty Rate	Poverty rate by state; measured in 2007	Sorens, Muedini, and Ruger (2008)
Government Spending	Percentage change in government and government enterprise expenditures from 2008:q1 to 2009:q3	BEA (2020c)
Public Welfare	Government spending on public welfare as a percentage of state income; measured in 2007	Sorens, Muedini, and Ruger (2008)
Budget Reserves	Total state financial balance in 2007; measured in total days of budget expenditure	Pew Charitable Trusts (2020)
Balanced Budget	Stringency of balanced budget requirements; measured 0-4, 0= no requirements and 4=highly stringent	Rueben and Randall (2017)
Forbes Rank	Forbes' Best States for Business rank; measured 1-50	Badenhausen (2007)
Economic Freedom	Economic Freedom Score from Fraser Institute	Stansel, Torra, and McMahan (2015)
Tax Rate	Corporate tax rate	Stansel, Torra, and McMahan (2015)
Regulatory Policy	Regulatory Policy Component of the Economic Freedom Score	Stansel, Torra, and McMahan (2015)

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