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The Relationship Between Divided Government And Real Per Capita Gross State Product

Adrian Christopher Villasenor

University of Texas at El Paso, acvillasenor@miners.utep.edu

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THE RELATIONSHIP BETWEEN DIVIDED GOVERNMENT AND REAL PER CAPITA
GROSS STATE PRODUCT

ADRIAN CHRISTOPHER VILLASEÑOR

Department of Economics and Finance

APPROVED:

Nathan Ashby, Ph.D., Chair

Timothy P. Roth, Ph.D.

Charles Boehmer, Ph.D.

Patricia D. Witherspoon, Ph.D.
Dean of the Graduate School

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Adrian Christopher Villaseñor

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DEDICATION

To Sandra.
AMDG

THE RELATIONSHIP BETWEEN DIVIDED GOVERNMENT AND REAL PER CAPITA
GROSS STATE PRODUCT

By

ADRIAN CHRISTOPHER VILLASEÑOR, BA

THESIS

Presented to the Faculty of the Graduate School of

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ABSTRACT

This paper analyzes the relationship between divided government and real per capita gross state product in U.S. states using a panel study of data from all of the contiguous U.S. states, except Nebraska, for the period of 1990 to 2008. Some literature can be found on the relationship between divided government and economic growth at the national level. There is a lack of study of this relationship at the state level. Real per capita gross state product is the dependent variable in this study. Divided government, partisan control of the governor's office, partisan control of the state legislature, combined federal and state government expenditures as a percentage of gross state product, educational attainment levels, and population density are the independent variables. Average yearly temperature and the number of years that members of the highest court were allowed to hold their office were also included as variables in my original model. These variables were dropped when it became apparent that a fixed effects model was necessary for this study. The effect of average yearly temperatures became insignificant once dummies for years and states were introduced in the fixed effects model.

The results of this study indicate that there is no relationship between divided government and real per capita GDP. On the other hand the results do indicate that increases in government spending, as a percentage of GDP, will have an adverse effect on real per capita GDP. These results are tentative since it is possible that my model was incorrectly specified due to my inability to obtain a variable that would measure changes in capital infrastructure over time.

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CHAPTER 1

INTRODUCTION

When researching articles that examine the factors that affect economic growth, one can easily find literature on the relationship between economic growth and variables such as human capital, government spending, taxation, and investment. However, literature on the relationship between economic growth and state partisan politics is scarce. In spite of this scarcity, there is much political debate concerning the effects of partisan politics on the U.S. economy. Democrats and Republicans both claim that their respective policies are best for the economy. The purpose of this paper is to examine the relationship between divided government and real per capita gross state product in the contiguous states of the United States. Gross state product and per capita gross state product will hereafter be respectively referred to as gross domestic product and per capita GDP.

When a party holds control of both the governorship and the legislature it is referred to as unified government. Alesina and Rosenthal (1995) define divided government as “where one party holds the presidency and the other has a majority in Congress” (p.2). I adapt this definition of divided government to the state level by replacing the word *presidency* with *governor’s office* and the word *Congress* with *the state legislature*. Divided government is defined in this document as when one party holds the governor’s office and the other has a majority in the state legislature. I use Calcagno and Lopez’ (2010) method of measuring divided government and apply it to government at the state level. This method is described in Chapter 3 of my thesis.

Rogers (2005) refines the definition of divided government into *divided branch government* and *divided legislative government*. According to Rogers, “Divided branch government exists when an executive of one party faces a unified legislature of the opposite party. Divided

legislative government exists when each bicameral chamber is controlled by a different party” (p.217). Studies of partisan politics in the U.S. often focus on how unified Democrat government, unified Republican government, and divided government affect government spending, taxation, and government’s ability to pass important legislation and make difficult decisions.

Among the studies that examine the relationship between partisan government and economic growth, the Alesina and Rosenthal (1995) study is frequently cited. The authors examined the relationship between partisan politics and economic growth at the federal level and found that the economy decelerates during the first two years of Republican administrations and accelerates during this same time period for Democrat administrations. One cannot draw any decisive conclusion from the study regarding the long-term economic effects of partisan government. I believe that an examination of partisan politics at the state level may shed some light on the relationship between partisan politics and per capita GDP.

The U.S. economy does not operate in isolation from the rest of the world. Considering that the effects of foreign events are difficult to isolate from those of federal legislation, an examination of how partisan politics affects the economy at the state level is likely to render a better understanding of the relationship between economic growth and the three governing configurations of: unified Democrat government, unified Republican government, and divided government. Economic growth obviously leads to job creation and a higher standard of living in U.S. states. Given the lack of studies on the relationship between divided government and per capita GDP at the state level, my literature review focuses on how divided government is related to variables that affect economic growth.

I postulate that divided government may improve per capita GDP. My premise is that divided government will reduce the scope of government. I additionally postulate that divided government may provide better checks and balances than unified government.

Reductions in the growth of the scope of government may be related to decreases in legislative output that seem to be associated with divided government. Given the relatively high levels of the scope of combined federal, state, and local government during the last few decades, I conjecture that a deceleration in the growth of the scope of government will have a salutary effect on real per capita GDP. Conversely, any acceleration in growth of the scope of government will have a detrimental effect on real per capita GDP. Divided government should enhance checks and balances that reduce corruption. Reductions in corruption will have a positive effect on real per capita GDP.

1.1a Literature related to my First Hypothesis- Divided government reduces the scope of government.

My first hypothesis, divided government is likely to reduce the scope of government, is plausible given the outcome of studies done by Crain and Muris (1995) and Rogers (2005). Crain and Muris (1995) found that states in the U.S. with unified governments had higher expenditures and higher revenues than divided governments.

Rogers (2005) found that divided legislatures decrease legislative production by almost 30%. I hypothesize that reductions in legislative output will be associated with reductions in growth of the scope of government. I do not attempt to prove that a reduction in legislative output leads to less growth of government. This is an association that merits a study of its own.

Reed (2006) showed that Democrat control of the state legislature led to an increased tax burden (ratio of total state and local tax revenues to state Personal Income) and that the party of

the governor was of little consequence. If my second hypothesis that less government is better for economic growth holds true, the results of Reed's study would suggest that a divided government with a Democrat legislature would have lower growth than a divided government with a Republican legislature.

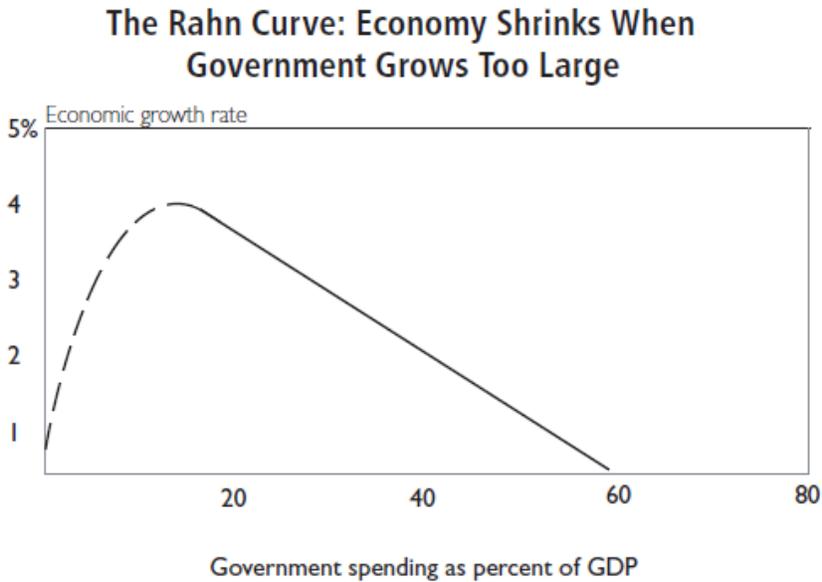
1.1b Literature related to my Second Hypothesis- Economic growth is impaired by the growth of government.

My second hypothesis, decreases in the rate of growth of the scope of government will have a salutary effect on economic growth, is based on the conjecture that governmental expenditures in the U.S. as a percentage of GDP have reached such high proportions that their marginal benefits of spending are outweighed by their marginal costs. I will present various studies that support my conjecture that increases in the size of government reduce economic growth as government spending reaches excessively high proportions of GDP.

Barro and Jong-Wha Lee (1994) observed that high ratios of government consumption (measured net of spending on defense and education) to GDP had a negative effect on economic growth. Mofidi and Stone (1990) found that a rise in transfer payments as a proportion of state and local expenditures had a negative effect on both net investment and employment in manufacturing.

Although the relationship between the development of human capital and economic growth through education and health care is evident, government's immoderate growth in the U.S. seems to have rendered true assertions by Mitchell (2005) that the federal government's role in these fields has led to great market distortions and a misallocation of resources that result from the "third-party payer" problem and bureaucracies that restrain innovation. Government spending in the U.S. requires taxes that discourage productive behavior, government programs such as

welfare and unemployment programs lead to an inefficient use of resources since they promote counterproductive behavior of choosing idleness over industry, and programs such as Medicaid lead to a misallocation of resources since they encourage people to reduce their reported incomes either by real means or by deception. Mitchell illustrates the concept that initially the benefits of government spending outweigh their associated costs but that increases in government spending beyond some point become counterproductive in terms of economic growth through the use of a Rahn Curve. The Rahn Curve, named after economist Richard Rahn, shows an inverted parabolic-like relationship between the growth rate and government spending as a percentage of GDP.



Source: Peter Brimelow, "Why the Deficit is the Wrong Number," *Forbes*, March 15, 1993.

Figure 1.1

Numerous studies support my conjecture that the scope of government in the U.S. has reached such proportions that most increases in government spending generally have greater economic costs than benefits. These studies indicate that reductions in government spending would probably improve our economy. Peden (1991) found that productivity was maximized

when government expenditures accounted for about 17% of U.S. GDP. He maintained that maximum productivity would be attained at about half the level of total government spending for 1986. Abrams (1999) provided evidence that reducing the share of U.S. government from 36.7% of GDP to 23% might reduce unemployment by 2.9%. Vedder and Gallaway (1998) indicated that the optimal size of the federal government is about 17.45% of GDP and that when government exceeds this size that the costs outweigh the benefits of governmental growth. Federal outlays have exceeded 20% of GDP since 1995. Scully (2000) found that total government taxation beyond 21% in the U.S. reduces economic growth.

Helms (1985) used data from 48 contiguous states in a time series-cross section approach to show that states using relatively higher amounts of taxes to fund transfer payment programs suffered a reduction in potential economic growth. Although Helms also did find that taxes used to finance public services might have benefits that outweigh their costs, there is the possibility that this relationship no longer holds given the relatively large increases in the size of government since the period studied by Helms. I conjecture that increases in the size of government are such that increases in the proportion dedicated towards transfer payments combined with a decrease in the marginal benefits of other governmental spending has led to a general condition where increases in the scope of government have had a detrimental effect on economic growth. State and local government expenditures have increased significantly since the period studied by Helms. Between 1965 and 1979, the period observed in Helm's study, state and local revenues as a percentage of U.S. GDP averaged 11.61%. From 1990 to 2009 the average was 13.40% with no year below 12.72%. Table 1.1 provides figures on the growth of local and state government as a percentage of GDP.

Table 1.1 The Growth of Local and State Government 1965-2009

Current tax receipts and GDP data were obtained from www.bea.gov. Last column calculated by the author.

Year	Current Tax Receipts	GDP	Current Tax Receipts as Percentage of GDP
1965	66,532	719,115	9.25%
1966	74,934	787,692	9.51%
1967	82,520	832,445	9.91%
1968	93,517	909,843	10.28%
1969	105,454	984,431	10.71%
1970	120,081	1,038,326	11.56%
1971	134,927	1,126,817	11.97%
1972	158,434	1,237,885	12.80%
1973	174,342	1,382,269	12.61%
1974	188,080	1,499,452	12.54%
1975	209,588	1,637,700	12.80%
1976	233,673	1,824,583	12.81%
1977	259,938	2,030,130	12.80%
1978	287,575	2,293,762	12.54%
1979	308,356	2,562,228	12.03%
1980	338,169	2,788,143	12.13%
1981	370,234	3,126,837	11.84%
1982	391,434	3,253,194	12.03%
1983	428,609	3,534,606	12.13%
1984	480,153	3,930,895	12.21%
1985	521,069	4,217,470	12.36%
1986	561,635	4,460,067	12.59%
1987	590,576	4,736,354	12.47%
1988	635,533	5,100,422	12.46%
1989	687,489	5,482,146	12.54%
1990	737,958	5,800,527	12.72%
1991	789,397	5,992,094	13.17%
1992	846,235	6,342,306	13.34%
1993	888,153	6,667,350	13.32%
1994	944,835	7,085,160	13.34%
1995	991,885	7,414,655	13.38%
1996	1,045,084	7,838,456	13.33%
1997	1,099,472	8,332,362	13.20%
1998	1,164,502	8,793,495	13.24%
1999	1,240,416	9,353,484	13.26%
2000	1,322,602	9,951,482	13.29%
2001	1,374,005	10,286,167	13.36%
2002	1,412,699	10,642,316	13.27%
2003	1,496,313	11,142,143	13.43%
2004	1,600,964	11,867,753	13.49%
2005	1,730,421	12,638,381	13.69%
2006	1,829,663	13,398,917	13.66%
2007	1,923,056	14,061,799	13.68%
2008	1,967,162	14,369,059	13.69%
2009	2,005,756	14,119,040	14.21%

As can be seen total government revenues as a percentage of GDP has grown considerably between the two periods of 1965-1980 and 1990-2007.

States have also increased their public welfare payments as a percentage of total general expenditures. This percentage was 11.7% during the period examined by Helms and increased to 13.0% for 1980-1990, and 16.6% for 1990-2007. See the Appendix for the Table of State and Local General Expenditures for the U.S. by Function, 1965-2007. Data from the Vedder and Gallaway (1998) study also provides evidence that both transfer payments and interest as a percentage of total federal spending increased considerably between 1947 and 1996. See Vedder and Gallaway's Table 3 in the Appendix.

The key to determining how unified Democrat government, unified Republican government, and divided government affect per capita GDP is tied to the effect that each one of these types of government configurations will have on spending. I do not attempt to show their effect in this study but do recommend that it be done as a future study. Other than the Crain and Muris (1995) and Alt and Lowry (1994) studies, which examined data from before the 1990s, I am unaware of the existence of more recent studies regarding the relationship between divided government at the *state* level and its effect on government spending.

1.1c Literature related to my Third Hypothesis- Divided government reduces corruption and thus improves economic growth.

Divided governments may improve the performance of the checks and balances that are designed to moderate legislation and prevent the abuse of power. Divided government may thus foster an environment with less corruption. Less corruption is associated with lower transaction costs. Alt and Lassen (2007) demonstrated that divided state government was associated with a reduction in corruption. It is self evident that corruption and trust are inversely related. Dincer

and Uslander (2010) demonstrated that in the U.S. trust had a positive effect on economic growth. Divided government will foster a political environment that enhances economic growth.

My hypotheses may be rendered false if the following hold true:

1. Divided government does not reduce the scope of government. This relationship is unknown.
2. Reductions in the rate of growth of the scope of government are not associated with improvements in economic growth. I am confident that this is not the case based on studies reviewed in this paper.
3. Divided government does not improve the functioning of checks and balances that reduce corruption. This relationship is unknown.
4. Corruption is not a significant problem in the U.S.

1.2 Regarding the Variables of Partisan Affiliation of Governor, Educational Attainment and Population Density

Partisan Affiliation of Governor

Over 80% of state governors have line-item vetoes. U.S. Senate Report 104-009 of the 104th Congress (1995) includes a table of data that shows 42 states gave governors line-item vetoes (the exceptions were Indiana, Louisiana, Maine, Nevada, New Hampshire, North Carolina, Rhode Island, and Vermont). Governors thus have much more power over budgets than presidents who do not have line-item veto power. I have made no conjecture as to the magnitude or sign of the coefficient for the variable of the partisan affiliation of the governor. Since divided government is a function of the partisan affiliation of a governor, the partisan affiliation of a governor must be included as a variable in this study.

Educational Attainment

I expected educational attainment levels to be directly related to real per capita GDP. Endogeneity is likely in this relationship. As a state's economy improves it will invest more in the education of its population, and as the population becomes more educated, the state will become more economically productive. In an international study, Barro (2001) found that both the quantity and quality of education were related to subsequent growth. Since this relationship is not the focus of my study, I will not delve into this relationship in my literature review. It is widely acknowledged that the quality of human capital is a key determinant of economic output. It is also well documented that educational attainment levels are directly related to income levels in the U.S. It is therefore logical that educational attainment levels are directly related to the quality of human capital. Firms pay higher wages to obtain the labor of more educated workers because they are more productive. A quick review of contemporary scholarly articles that examine the relationship between educational attainment and real per capita GDP reveals that researchers find either a positive or an insignificant relationship between educational attainment levels and economic growth.

Population Density

I expected population density to be positively related to real per capita GDP. More developed countries tend to have more urban populations and greater capital infrastructure. If U.S. states mirror nations in the relationship between urbanization and capital development, one would expect states with more urban populations to have a higher capital/labor ratio. I hoped that changes in population density in the U.S. during the 18 years observed would serve to some extent as a proxy for changes in capital infrastructure since I was unable to obtain data on the

capital infrastructure of U.S. states. I do not believe that the changes in population density served as a proxy for capital as you will see in my empirical results and conclusions.

The next section is a literature review. Following the literature review is a section describing the methodology used by this study. After the description of the methodology and data used in this study you will find the empirical results of the study, and finally a section on the conclusions of this study and suggestions for further examination.

CHAPTER 2

LITERATURE REVIEW

Due to the lack of literature available on the topic of how divided government is related to economic growth, I will also review literature that examines: divided government and the scope of government, various determinants of economic growth including the relationship between the scope of government and economic growth, divided government and corruption, and trust and economic growth. The literature reviewed for this paper is divided into three categories: State Level Studies, Federal Level Studies, and International Level Studies.

2.1 State Level Studies

Impact on Legislative Output

Bowling and Ferguson (2001) draw from data on all bills considered in each of the fifty states of the U.S. during the 1994 legislative session to examine among other things the effect of divided government on the passage of law in high conflict areas. They find that divided government reduces the chance of a bill passing in high conflict areas. They also identify redistributive legislation and regulatory legislation as being areas of high conflict that will suffer a larger negative impact in the legislative process due to partisan and ideological differences that intensify the conflict surrounding the passage of such a bill.

Rogers (2005) examined the legislative production of 141 bicameral legislative sessions of 23 states from 1981 through 1993 with a focus on the difference in effects between divided branch government and divided legislature government. He found no effect for divided branch government but did find that divided legislatures decrease legislative production by almost 30%.

Impact of Divided Government on Government Spending and Growth

Using a sample consisting of state fiscal data from 1982 through 1988, Crain and Muris (1995) found that states with unified governments had higher expenditures and higher revenues than divided governments.

Continuous one-party dominance of the executive and the legislative branches gives a 6 percent push to per capita expenditures (\$89) and a 17 percent push to revenues (\$324)...Democrat-dominated legislatures add 8 percent to revenues (\$146 per capita) compared to Republican-dominated legislatures. The majority party variable is not significant in the expenditure equation. (p. 329)

Alt and Lowry (1994) analyzed the effect of partisan control on state government spending, taxes, and the ability to make hard decisions. They drew their data from the 48 continental states for the period of 1968 through 1987. The authors found that Democrat governments targeted spending and taxes to higher shares of state personal income, while divided governments, especially in the case where different parties controlled each house of the legislature (split-legislatures), were less able to adjust to the revenue shocks that led to budget deficits.

The Composition of State Expenditures and Growth

Helms (1985) used annual data from the period of 1965 through 1979 for 48 states to demonstrate that, "A state's ability to attract, retain, and encourage business activity is significantly affected by its pattern of taxation" (p. 581). However, Helms cautioned that taxes could not be viewed in isolation from the public services that were funded by taxes and their value to businesses and citizens. He concluded that states that use a substantial amount of their taxes to fund transfer payments will suffer significantly in terms of economic growth. On the other hand, Helms also contended that certain public services have benefits that may outweigh their costs.

Mofidi and Stone (1990), through an analysis of data for all fifty states from 1962 to 1982, observe that both private investment and employment in manufacturing decline as a result of increases in transfer payments and increase with expenditures on education, health, and highways.

Impact of Divided Government on Corruption and Economic Growth

Alt and Lassen (2007) show that divided state government and elected rather than appointed state judges are associated with a reduction in corruption. Using data from U.S. states for the periods 1990–1994 and 1995–1999, Dincer and Uslaner (2010) demonstrate that trust and economic growth have a direct relationship. Their results show a ten-percentage point increase in trust increases the growth rate of GDP by 0.5 percentage points.

2.2 Federal Level Studies

It is worth examining the studies at the federal level with the understanding that the effects of divided government at the state level may differ from those at the federal level. Much of the research regarding divided government focuses on the ability (or lack thereof) of divided governments to pass significant legislation and the effect of divided government on spending. Since spending has increased at a faster rate than the growth of GDP, I believe it is not a far leap to conclude that “important” legislation will likely include provisions that increase the scope of government.

The Impact of Divided Government on Legislative Output

The conventional wisdom is that divided government inhibits the passage of important legislation, although there are authors such as Mayhew (1991) who maintain that divided government does not have an effect on the passage of important legislation. In the Mayhew study, to qualify as innovative policies the policies had to be (1) considered particularly

promising by contemporary experts, or (2) be considered to retrospectively count most in their areas by experts. Kelly (1993) examined the study done by Mayhew and refined the definition of innovative policy by requiring that the policies fulfill not one but both of the prior mentioned conditions. The more stringent rule set by Kelly led to different results. After making this refinement to the condition for being innovative, unlike Mayhew, Kelly demonstrated that “divided government *does* have a significant negative impact on the emergence of innovative policy” (p. 477).

Using a different statistical model, Howell et al. (2000) extended the analysis of Mayhew for laws enacted from 1945-1994. Howell et al. concluded that divided government reduced the “production of landmark legislation by about 30%, at least when productivity is measured on the basis of contemporaneous perceptions of legislative significance” (p.302).

Edwards et al. (1997) showed that divided government constrained the passage of important legislation that faces opposition by the executive branch. Edwards et al. analyzed data gathered from the Congressional Quarterly’s yearly Almanac on the legislative production of Congress for the years 1947 to 1992 and concluded that, “divided government inhibits the passage of important legislation” (p. 562).

Binder (1999) studied the ability of our federal political system to treat public problems. Using unsigned editorials from the New York Times between 1947 and 1996 as a means of quantifying the “systemic agenda”, she examined the link between intra-branch conflict and legislative output in proportion to the policy agenda of Congress. Binder concluded that it seems that intra-branch politics may be as important to explaining policy deadlock as inter-branch conflict.

John J. Coleman (1999) contends that the statistical evidence supports the notion that unified government is “more responsive to the public mood” and that parties “generate incentives to cooperation that help transcend some of the policymaking gaps created by the Constitution”; he concludes that unified government “is more likely to pass significant public policy” (p.821).

The Impact of Divided Government on Spending

Niskanen (2003) showed that for the forty years of federal government since the beginning of the Eisenhower administration through the Clinton administration, unified government was associated with greater government spending. He argues that there is a greater probability that major reforms passed by divided governments will be longer lasting since they require bipartisan support and unified governments are more likely to lead us into a major war.

Sundquist (1988) believes that the president and Congress must act in unison for government to function properly and he describes divided government as “characterized by conflict, delay, and indecision, and leading frequently to deadlock, inadequate and ineffective policies, or no policies at all” (p.629). Sundquist believes that healthy government is characterized by competition between the parties but that this competition best serves the country when it results in a unified government rather than a divided government that will be characterized by “unhealthy, debilitating conflict between the institutions of government themselves” (p.629). Sundquist contends that in turn, this debilitating conflict that results from the philosophical differences between the parties will result in deadlock that will only be broken when a problem confronting government has “deteriorated into a crisis” (p.629). Sundquist uses the difficulty of passing budgets during the Reagan presidency as an example of the failure of divided government since neither the Democrats nor Republicans took ownership for the budget

deficits; both parties pointed the finger of blame at each other for the failure to balance the budget.

The Impact of Partisan Politics on the Economy

At the national level, Alesina and Rosenthal (1995) analyzed the effect of partisan government on economic growth through an examination of U.S. economic growth from 1915 through 1988. They found that Republican administrations tend to have a decelerating effect on economic growth during the first two years of each term, whereas Democrat administrations have the opposite effect (an accelerating effect on economic growth) during the first two years of each term. Their study revealed that the particular party in control of the presidency has no significant effect on growth rates during the last two years of a presidential term. Alesina and Rosenthal (1995) found that differences in growth rates during the first two years is a result of uncertainty generated by competitive partisan politics in which Republicans target relatively lower inflation rates and Democrats target relatively lower unemployment rates. The respective targets of each party result in Republicans (Democrats) implementing economic policies that constrict (stimulate) aggregate demand. These policies have their effects during the first two years of a presidential term due to wage rigidity, but growth returns to its natural rate as wages adjust in the long term, years three and four of a presidential term.

Alesina and Rosenthal (1995) did not make studying the effects of divided government a central aspect of their study. They concluded that they did not believe that divided government at the federal level has the effects of gridlock on fiscal policy found by Alt and Lowry (1994) at the state level. Based on the findings of Fiorina (1992) and Mayhew (1991), Alesina and Rosenthal (1995) concluded that the effects of divided government in terms of government inaction would not be large.

Evidence from Hibbs (1977), a time-series analysis of quarterly postwar national unemployment data for the United States from 1948 to 1972, suggests that Democrat governments drive unemployment rates downward while Republican governments drive unemployment rates upward. These results are similar to those of Alesina and Rosenthal (1995).

The Size of Government and Economic Growth

Peden (1991) analyzed data from the U.S. economy from 1929-1986. Peden found that increases in productivity increase with government size up to approximately 17% of GDP, and beyond this optimal level of government size of approximately 17%, increases in the size of government reduce the growth of productivity. He concluded that the reduction in growth of productivity for the 1970s and 1980s “is the result of dramatic growth in government” (p.169). As can be seen from the data in Table 2.1, the size of government as a percentage of GDP has been quite large in recent years.

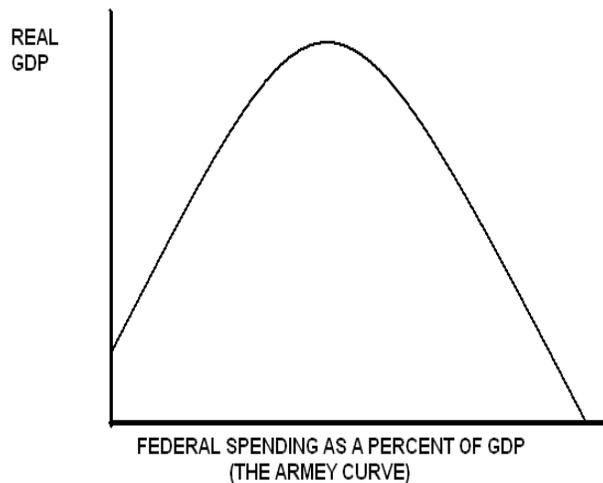


Figure 2.1

The Vedder and Gallaway (1998) study of variations of real gross domestic product in the U.S. from 1947-1987 produced data that suggests that reducing the growth of the scope of

federal government, especially in the area of transfer payments, would improve economic growth. Vedder and Gallaway use an Armeiy Curve, named after Richard Keith “Dick” Armeiy former U.S. House Majority Leader, to illustrate that real GDP is maximized at lower rates of federal government spending than the current levels. An Armeiy Curve shows the relationship between federal government spending and real gross domestic product by plotting real GDP on the vertical axis and federal spending as a percentage of GDP on the horizontal axis. The difference between an Armeiy Curve and a Rahn Curve is that a Rahn Curve plots the *rate of growth for real GDP* on the vertical axis while the Armeiy Curve simply plots *real GDP* on the vertical axis. The results of Vedder and Gallaway showed that the real GDP would peak when government spending was 17.45% of GDP, which was below actual federal government spending of 20 to 22 % that had occurred in recent years. Vedder and Gallaway point out that the last time federal government spending was less than 17.5% was 1965. The authors also emphasized that their Armeiy Curve analysis indicated that transfer payments reached their optimal size for output maximization at about 7.33 percent of GDP and that transfer payments of 11.5% at the time of their study accounted for a 4.2 percent gap from the optimal point.

2.3 International Level Studies

Education, Government Consumption, Gross Investment, and Growth

Barro (2001) conducted a panel study of 100 countries from 1965 to 1995 and found that both the quantity and quality of education were related to subsequent growth. Barro and Jong-Wha Lee (1994) examined data from 1965 to 1985 for 116 countries. They observed that both political instability and an overly high ratio of government consumption (measured net of spending on defense and education) to GDP had a negative effect whereas the ratio of gross domestic investment to GDP had a positive effect on the growth of per capita GDP.

The Size of Government and Economic Growth

When reading the following studies, bear in mind that actual measurements of total (federal, state, and local) government spending in the U.S. have exceeded 32% of GDP for every year from 1992 to 2008.

Table 2.1: Total Government Spending in the U.S.

Year	U.S. GDP \$ billions	Total Government Spending as a percentage of GDP
1992	6342.3	37.04
1993	6667.4	36.31
1994	7085.2	35.38
1995	7414.7	35.54
1996	7838.5	34.69
1997	8332.4	33.77
1998	8793.5	33.24
1999	9353.5	32.65
2000	9951.5	32.56
2001	10286.2	33.38
2002	10642.3	34.75
2003	11142.1	35.28
2004	11867.8	34.78
2005	12638.4	34.79
2006	13398.9	35.06
2007	14077.6	34.98
2008	14441.4	36.94

Source:

http://www.usgovernmentpending.com/us_20th_century_chart.html#usgs101

Landau (1983) examined the relationship between government consumption expenditures and per capita economic growth for 96 countries for various time periods ranging from the 1960s into the 1970s. He found a negative relationship between government consumption expenditures and the rate of growth of per capita GDP, but he did make the point that his conclusions were tentative due to the limitations of both his theory and the available data.

Abrams (1999) uses data from 1984-1993 for three groups of countries, (1) the G-7, (2) fifteen countries with populations over five million and per capita GDP in excess of \$15,000, and (3) the OECD countries to examine the relationship between unemployment rates and the size of government (the G-U curve). He concludes that as government outlays grow as a percentage of GDP, unemployment will rise with an accompanied loss of output. He estimates that a reduction of the U.S. government's average share of GDP from 36.7 to 23% would reduce the unemployment rate by approximately 2.9%. He uses Okun's law to claim that this 2.9% reduction in the unemployment rate corresponds to a potential 5.8% increase in real output.

Scully (2000) examined the relationship between Social Progress and Public Spending shares by examining data from 112 countries for the year of 1995. He constructed a relationship between government spending and a multidimensional quality of life index. Total U.S. government expenditure at the time according to Scully was actually 36.7% of GDP. This 36.7% level is way beyond the level of 21% that according to Scully is the limit at which the tax burden necessary to finance spending slows economic growth in the U.S. This 21% limit is below all the corresponding figures for years 1992-2008 in Table 2.1.

The study done by Gwartney et al. (1998) was done both at the national level and the international level. The authors' main contention was that excessively large government has reduced economic growth. The authors used two data sets. The first set of data included measures from 23 OECD countries for the period of 1960-1996. The second set of data included measures from 60 countries for the period of 1980-1995. The authors concluded,

There is overwhelming evidence that both the size of government and its expansion have exerted a negative impact on economic growth during the last several decades...All of the evidence suggests that the level of government that maximizes the performance of the economy would place government expenditures at 15 percent or less of GDP. (p.27)

Gwartney et al. point to the inverse relationship between increases in government outlays as a percentage of GDP and the growth rate of real GDP for the United Kingdom, Ireland, and New Zealand to support their contention that increases in the size of government in more developed countries crowds out investment, which in turn reduces productivity and the growth of real GDP. I have included reproductions of exhibits 9, 3A, 3B, 3C, and 3D from Gwartney et al. in the Appendix.

CHAPTER 3

DATA AND METHODOLOGY

Statistical analysis will be used to analyze the relationship between divided government and real per capita GDP. A model that analyzes the relationship between divided government and real per capita GDP is developed using the variables listed in Table 3.1. A table of descriptions of the unit measurement of variables can be found in the appendix.

Table 3.1: Variables, Mnemonics, Descriptions, and Sources of Data

Variable Mnemonic	Variable Description	Source of Data
Y	Real per Capita Gross Domestic Product	Website of the Bureau of Economic Analysis (2010)
DivG	Divided Government	Derived from data obtained from the National Conference of State Legislatures in conjunction with data from the website of the National Governors Association (2010)
RPC	Republican Party Control of the State Legislature as a Percentage	Derived from data obtained from the National Conference of State Legislatures (2010)
RPM	Dummy for Republican Majority (RPC>50)	Derived from data obtained from the National Conference of State Legislatures (2010)
RG, IG	Dummies for Republican and Independent Governors	Derived from data obtained from the National Governors Association (2010) website (http://www.nga.org)
GC	General Consumption Expenditures by Federal and State Government as a Percentage of GDP	Fraser Institute's Publication of Free the World.com. (2010)
EDUC	Educational Attainment	U.S. Census Bureau (2010)
PDEN	Population Density	Derived from data obtained from the U.S. Census Bureau (2010)
SPLEG	Divided Legislature Dummy- A distinct party controls each house of the legislature.	Derived from data obtained from the National Conference of State Legislatures in conjunction with data from the National Governors Association (2010) website

The data used in this model was obtained from a variety of sources. Real per capita GDP is in chained 2000 dollars and was obtained from the Bureau of Economic Analysis (2010).

Mr. Tim Storey of the National Conference of State Legislatures (2010) provided data on the partisan control of state legislatures. A measure of divided government was derived from this data using the Calcagno and Lopez (2010) method where n_{st} is defined as the total combined number of seats in the upper and lower legislative houses (indexed by state s and year t) and g_{st} is defined as the number of legislative seats possessed by the party of the governor. The variable of divided government is then defined as $DG_{st} = -\log [(g_{st} + 0.5) / (n_{st} - g_{st} + 0.5)]$ which increases logarithmically with the share of seats controlled by the party that opposes the governor. Republican Party Control of the State Legislature as a Percentage was calculated by taking the total number of seats that Republicans controlled in both houses of the legislature and dividing that number by the combined number of seats held by both Republicans and Democrats and then multiplying that number by 100.

Information on the partisan control of the governors' offices was obtained from the National Governors Association (2010) website. General consumption expenditures by government were taken from Economic Freedom of North America published by the Fraser Institute (Ashby et al. 2010). Data on educational attainment was obtained from the U.S. Census Bureau (2010) website. Educational attainment was measured as the percentage of the population twenty-five years old or over with a bachelor's degree or greater. Population and land area statistics were obtained from the U.S. Census Bureau (2010). I calculated population density by taking the total population of each state and dividing it by its total land area. For more information regarding measurements see Table: Unit Measurements of Variables in the Appendix.

The model was developed with the supposition that the coefficient for government spending (as a percentage of gross domestic) will be negative while all other coefficients will be positive, except for that of independent government, for which no assumption is made.

Equation (1) found below, represents the relationship between real per capita GDP assuming that the intercept and slope coefficients are constant across time and states and the error term captures differences over time and states. Per capita GDP is function of the lagged values (one year period) of the independent variables.

$$(1) Y_{i(t+1)} = b_1 + b_2 DivG_{it} + b_3 RG_{it} + b_4 IG_{it} + b_5 GC_{it} + b_6 EDUC_{it} + b_7 PDEN_{it} + u_{it}$$

The model above was checked for the presence of simultaneity. A Hausman Test indicated that the error term in the regression model is correlated with one or more independent variables thus rendering both OLS and Random Effects estimates biased and inconsistent. The null hypothesis of the test is that coefficients estimated by the efficient random effects estimator are the same as those estimated by the consistent fixed effects estimator. If the coefficients are the same, then the test will have an insignificant P-value, Prob>chi2 larger than .05, and it is safe to use random effects. However, if the P-value is significant, Prob>chi2 less than .05, then a fixed effects model is required.

One obvious shortcoming of my model is the lack of a variable that measures a state's natural resources (arable land, mineral, gas, and petroleum deposits, climate, water resources, geographic position that would provide an advantage in trade such as being a state having access to ocean ports or bordering Mexico and Canada...). Although natural resources should not vary significantly over the 18 years observed, NAFTA was implemented during this time period making geographic location an important variable.

Another shortcoming of my model resulted from my inability to find a source of data that would measure the stock of both private and public capital for states. The stock of capital is obviously an important factor in determining a state's real per capita GDP. This missing factor would likely vary overtime and would have a direct relationship with real per capita GDP.

Given the available data, Equation (2) found below, was used to take into account the shortcomings of the model of Equation (1).

$$(2) Y_{i(t+1)} = \alpha_1 + a_2D_{AZ} + a_3D_{AR} \dots + a_{47}D_{WI} + \lambda_0 + \lambda_1Dum1991 + \lambda_2Dum1992\dots \\ + \lambda_{18}Dum2008 + b_2DivG_{it} + b_3RG_{it} + b_4IG_{it} + b_5GC_{it} + b_6EDUC_{it} + b_7PDEN_{it} + u_{it}$$

This equation treats 1990 as the base year, whose intercept value is given by λ_0 . Seventeen dummies (*Dum*) for years 1991 to 2008 are provided. The equation uses α_1 to represent the intercept of the first state, Alabama, while dummies are provided for all other 46 states (for example D_{AZ} and D_{AR} correspond respectively to Arizona and Arkansas). The variable for Independent Governor (*IG*) dropped in the regression that used divided government (*DivG*) as a dependent variable because *IG* was perfectly correlated with divided government (*DivG*) being undefined for 4 years in Connecticut, 8 years in Maine, and 4 years in Minnesota. The results of Equation (2) are shown in Table 4.1 on the next page. An indicator for a Republican majority in the legislature (*RPM*), a continuous variable for Republican control of the state legislature (*RPC*), an indicator variable for a divided legislature (*SPLEG*), and an interactive term of Republican Governor * Republican Majority (*RGRPM*) are adapted into variations of Equation (2) for tables 4.2-4.5 on the next page.

CHAPTER 4

EMPIRICAL RESULTS

A descriptive summary of statistics used in regressions for this study is shown below in

Table 4.1.

Table 4.1: Summary Statistics of Variables

Variable	Observations	Mean	Std. Deviation	Min.	Max.
Y	846	30892.250000	6592.46	18094.00	59520.00
DivG	830	-0.062892	0.71	-2.32	1.89
RPC	846	46.817160	15.17	8.89	88.57
RPM	846	0.405437	0.49	0.00	1.00
RG	846	0.539007	0.50	0.00	1.00
DG	846	0.442080	0.50	0.00	1.00
IG	846	0.018913	0.14	0.00	1.00
GC	846	21.449720	3.90	12.18	39.01
EDUC	846	23.859480	5.04	11.40	38.70
PDEN	846	186.474400	250.35	4.67	1164.30
SPLEG	846	0.262411	0.44	0.00	1.00

Results of the fixed effects regression of Equation (2) with use of robust clustering are shown in the tables 4.2, 4.3, 4.4, 4.5, and 4.6. The first set of regressions, SET I, has results for all 47 states (all contiguous U.S. states except for Nebraska, which has a non-partisan legislature). The second set of regressions, SET II, has results for 31 states. Alt and Lowry (1994) considered the states that formed the Confederacy and states bordering the former Confederate states where Republicans failed to control even one chamber of the legislature to be in a different category. I therefore exclude the 11 states of the former Confederacy (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia) and bordering states in which Republicans failed to control even one chamber of the legislature when creating Set II.

Two Sets of Causality Tests with Per Capita GDP (Y) as the Dependent Variable

All regressions use lagged values of Right-Hand Variables. Lag period is one year. Y in time t+1 (the Left-Hand Variable) is a function of Right-Hand Variables in time t.

SET I (47 States)

SET II (31 States)

Table 4.2: A Regression with a Continuous Variable for Divided Government

Variable	SET I			SET II			
	Coefficient	t-Stat.	Prob.	Coefficient	t-Stat.	Prob.	
DivG	-23.31	-0.22	0.830	-82.86	-0.53	0.601	
RG	-257.96	-1.33	0.191	-172.98	-0.74	0.464	
GC	-488.73	-725	0.000	-504.31	-5.91	0.000	
EDUC	114.72	2.59	0.013	168.56	3.86	0.001	
PDEN	25.15	1.75	0.087	32.20	1.59	0.123	
Constant	29096.01	8.94	0.000	37144.58	7.11	0.000	
R-sq:				R-sq:			
within =	0.9185			within =	0.9270		
between =	0.4657			between =	0.3607		
overall =	0.5467			overall =	0.4341		
F(22,46) =	123.48	Prob > F =	0.000	F(22,30) =	153.07	Prob > F =	0.0000
Number of Observations:	830			Number of Observations:	558		

Table 4.3: A Regression with an Indicator Variable for a Republican Majority in the Legislature (RPM) and an Interaction Term for Republican Governor*Republican Majority (RGRPM)

Variable	SET I			SET II			
	Coefficient	t-Stat.	Prob.	Coefficient	t-Stat.	Prob.	
RPM	227.88	0.76	0.451	377.20	1.08	0.287	
RG	-130.47	-0.55	0.587	-106.12	-0.29	0.772	
IG	-559.85	-0.98	0.331				
RGRPM	-362.67	-1.32	0.193	103.58	-0.28	0.778	
GC	-499.39	-750	0.000	-519.63	-5.70	0.000	
EDUC	113.98	2.56	0.014	163.92	3.63	0.001	
PDEN	25.12	1.80	0.078	32.25	1.70	0.100	
Constant	39545.5	10.72	0.000	36128.49	7.44	0.000	
R-sq:				R-sq:			
within =	0.9195			within =	0.9275		
between =	0.4576			between =	0.3638		
overall =	0.5524			overall =	0.4367		
F(24,46) =	140.55	Prob > F =	0.0000	F(23,30) =	139.43	Prob > F =	0.0000
Number of Observations:	846			Number of Observations:	558		

Table 4.4: A Regression with an Indicator Variable for a Republican Majority in the Legislature dropping the Interaction Term RGRPM.

Variable	SET I			SET II		
	Coefficient	t-Stat.	Prob.	Coefficient	t-Stat.	Prob.
RPM	44.18	0.16	0.873	333.30	1.02	0.314
RG	-272.94	-1.42	0.164	-157.84	-0.70	0.492
IG	-651.41	-1.13	0.266			
GC	-492.99	-7.49	0.000	-518.32	-5.67	0.000
EDUC	115.57	2.61	0.012	163.54	3.64	0.001
PDEN	25.37	1.80	0.079	32.34	1.70	0.100
Constant	39539.6	10.70	0.000	36117.79	7.43	0.000
R-sq:			R-sq:			
within = 0.9190			within = 0.9275			
between = 0.4530			between = 0.3628			
overall = 0.5477			overall = 0.4356			
F(23,46) = 145.15 Prob > F = 0.0000			F(22,30) = 140.84 Prob F > 0.0000			
Number of Observations: 846			Number of Observations: 558			

Table 4.5: A Regression with a Continuous Variable for Republican Control of the Legislature.

Variable	SET I			SET II		
	Coefficient	t-Stat.	Prob.	Coefficient	t-Stat.	Prob.
RPC	-42.66	-2.48	0.017	-8.72	-0.38	0.709
RG	-217.48	-1.11	0.272	-168.22	-0.71	0.485
IG	-410.62	-0.82	0.418			
GC	-459.06	-7.23	0.000	-497.34	-5.71	0.000
EDUC	111.82	2.52	0.015	165.56	3.77	0.001
PDEN	22.71	1.54	0.130	30.15	1.42	0.166
Constant	40335.37	10.61	0.000	36727.49	6.69	0.000
R-sq:			R-sq:			
within = 0.9221			within = .09270			
between = 0.4309			between = 0.3650			
overall = 0.5409			overall = 0.4462			
F(23,46) = 137.39 Prob > F = 0.0000			F(22,30) = 146.74 Prob > F = 0.0000			
Number of Observations: 846			Number of Observations: 558			

In this study Maryland and West Virginia were the two states where Republicans failed to control a single chamber of the legislature. I also exclude Connecticut, Maine, and Minnesota, since they had independent governors and thus made impossible the calculation of the divided government. For Set II, the total number of states excluded from the original sample is 16 thus the difference is 31.

Results for Divided Government, Republican Majority, Partisan Affiliation of Governor, and Divided Legislative Government

Out of the eighteen years observed for 47 states, there were 830 observed measures of divided government using the logarithmic measure. Sixteen years dropped due to the existence of an independent governor. Had the cases of independent governors been included as cases of divided government, the total number of cases of divided government would have been 409 out of 846. As indicated by the low values of the t-statistics in Table 4.2, the estimated coefficients for divided government (DivG) are insignificant. The t-statistic for divided government is negative 0.22 for Set I, and negative 0.53 for Set II. Obviously, these results do not confirm my original expectation that divided government has a positive effect on real per capita GDP.

In order to determine whether or not the qualitative factors of Republican Governor and Republican Majority were independent of one another, the regressions in 4.3 included a term of interaction for these two variables (*RGRPM*). The test of the interaction coefficients for *RGRPM* fails to reject the null hypothesis of the independence of the qualitative factors Republican Governor (RG) and Republican Majority (RPM) at all conventional levels. The highest absolute value of the t-statistic for *RGRPM* was 1.32.

Low values of t-statistics also indicate that Republican control of the legislature (RPM), an indicator variable, had an insignificant effect on real per capita GDP. The highest absolute value

of the t-statistic for RPM was 1.08 (see Table 4.3, SET II). The coefficients for party denomination of the governor (*RG and IG*) were also insignificant.

The highest absolute value of the t-statistic for *RG* was 1.51 (see Table 4.6, SET I). The highest absolute value of the t-statistic for *IG* was 1.16 (see Table 4.6, Set I). It appears that the party denomination of a governor does not have a significant impact on real per capita GDP.

Results for Republican control of the legislature as a continuous variable (*RPC*) produced significant results at the ninety-five percent confidence interval (t-statistic = -2.48) with a coefficient of -42.66 when all 47 states were observed (see Table 4.5). However, once I excluded the 11 states of the former Confederacy, the two states bordering the south where Republicans failed to control a single house of the legislature, and the three states with Independent governors, the coefficient for the variable measuring Republican control of the legislature became insignificant (t-statistic = -0.38). I found these results to be surprising and interesting, but inconclusive. Further study is needed to determine whether or not Republican control of legislatures has a negative effect on real per capita GDP at the state level.

Table 4.6: A Regression with an Indicator Variable for Divided Legislative Government (SPLEG)

Variable	SET I			SET II		
	Coefficient	t-Stat.	Prob.	Coefficient	t-Stat.	Prob.
SPLEG	-56.42	-0.44	0.665	-191.41	-1.25	0.223
RG	-272.62	-1.51	0.137	-176.00	-0.78	0.439
IG	-734.16	-1.16	0.250			
GC	-509.11	-732	0.000	-558.22	-6.71	0.000
EDUC	108.18	2.68	0.010	144.68	4.24	0.000
PDEN	29.27	1.86	0.070	34.40	1.60	0.121
Constant	38238.93	10.26	0.000	28635.54	6.37	0.000
R-sq:				R-sq:		
within =	0.9241			within =	0.9347	
between =	0.4371			between =	0.3601	
overall =	0.5144			overall =	0.4218	
F(22,46) =	114.38	Prob>F = 0.0000		F(21,30) =	329.65	Prob > F = 0.0000
Number of Observations:	749			Number of Observations:	527	

As indicated by both low absolute values for the t-statistics of SPLEG in Table 4.6, the effect of having divided legislative government appears to be insignificant. This result runs counter to my original expectations. Given the findings of Rogers (2005) that divided legislatures reduce legislative output by almost 30%, I expected that the presence of divided legislatures would improve per capita GDP.

The coefficient for government consumption as a percentage of GDP (*GC*) is statistically significant at the .01 level for all ten regressions and has a negative effect as expected. It appears that for each increase of one percent in government consumption as a percentage of GDP, real per capita GDP will decrease by between \$459 and \$558. My results appear to confirm the findings of Abrams (1999), Gwartney et al. (1998), and Vedder and Galloway (1998) that excessive government spending will have a negative impact on GDP. The studies just mentioned focused on data at the national level. My study, which uses data from individual U.S. states, confirms an inverse relationship between total combined government spending and real per capita GDP. These results may be the most important outcome of this study. In spite of the shortcomings of my model, it appears to produce evidence that excessive government spending causes real per capita GDP to fall. My results in conjunction with those Helms (1985), Peden (1991), Abrams (1999), Gwartney et al. (1998), Vedder and Galloway (1998), and Scully (2000) support the contention of Daniel Mitchell (2005) that “A growing government is contrary to America’s economic interests ... government spending by its very nature is often economically destructive, regardless of how it is financed” (p.1).

As expected, educational attainment (*EDUC*) had a positive effect on real per capita GDP. Educational attainment varies in significance between the ninety-five and ninety-nine percent confidence interval. The t-statistics for educational attainment had a range from a low value of

2.52 to a high value of 4.24. It appears that every one percent increase (in the level of educational attainment for our population 25 years or older with a bachelor degree or greater) will cause real per capita GDP to increase by between \$108 and \$169. As expected, real per capita GDP increases with a more educated workforce.

The t-statistics for population density (*PDEN*) varied between a low of 1.42 and a high of 1.86. Given that the variable for population density was only significant at the 0.10 for six out of ten regressions and was insignificant for the other four regressions, I must conclude that population density failed to serve as a proxy for capital infrastructure.

I thank Dr. Charles Boehmer for his suggestion to include a linear regression with panel-corrected standard errors. This last regression indicates that divided government would have a statistically significant positive effect on real per capita GDP and the presence of a Republican governor would have a statistically significant negative effect. I present these results in Table 4.7. Since this regression is less restrictive than the fixed effects regression I do not make any conclusions based on these results but I present the results because they do indicate the possibility that divided government may in fact have a positive effect on real per capita GDP.

Table 4.7: A linear regression, correlated panels corrected standard errors (PCSEs) with a Continuous Variable for Divided Government

Variable	SET I			SET II		
	Coefficient	Z-Stat.	Prob.	Coefficient	Z-Stat.	Prob.
DivG	686.65	3.98	0.000	595.86	2.42	0.015
RG	-1029.16	-3.13	0.002	-1132.54	-3.60	0.000
GC	-636.08	-14.08	0.000	-831.49	-16.95	0.000
EDUC	768.95	9.84	0.000	707.60	7.83	0.000
PDEN	4.03	8.49	0.000	3.78	8.92	0.000
Constant	26614.78	9.61	0.000	31933.9	11.24	0.000
R-sq.= 0.6430			R-sq. = 0.5757			
Wald chi2(5) = 6446.56			Wald chi2(5) = 3004.07			
Number of Observations: 830			Prob > chi2 = 0.0000			
			Number of Observations: 558			

CHAPTER 5

CONCLUSIONS

The results of this study failed to demonstrate that divided government has an impact on real per capita GDP. There is the possibility that divided government has no effect on the scope of government and the performance of checks and balances. There is also the possibility that my model was incorrectly specified due to my inability to obtain a variable that would measure changes in capital infrastructure over time. The omission of this variable may have led to erroneous results. Further study with such a variable should lead to a better understanding of the relationship between real per capita GDP and divided government. Omitted-variable bias also puts into question the level of reliability of all other results of this study.

In spite of the great power that governors have over budgets, it appears that the partisan affiliation of a governor has no impact on real per capita GDP.

When all 47 states are taken into account, the continuous variable for Republican control of the legislature had a t-statistic of -2.48 and thus was significant. However, the regression for 31 states rendered a t-statistic of -0.38 for this same variable. Given that one coefficient is statistically significant while the other one is not, my study is inconclusive regarding the effect of the Republican control of the legislature. Further study is needed to determine whether or not there is a relationship between Republican control of state legislature and real per capita GDP.

The results produced in this study do indicate that increases in government consumption spending as a percentage of GDP are inversely related to real per capita GDP. These results had the greatest statistical significance. The negative effect of increased government spending on real per capita GDP supports the three contentions listed below that are put forward by those who argue that a reduction of government spending and regulation would promote economic growth.

1. An increase in government consumption is associated with a crowding out of private spending and investment, and redistribution of income. The redistribution of income leads to lower productivity (a movement inward from the production possibilities curve).
2. Increases in government spending are associated with larger government and greater regulation. Greater regulation leads to decreased productivity (a movement inward from the production possibilities curve).
3. Increases in government spending are associated with larger expansions of unemployment insurance and public health programs that reduce the incentive to seek employment and thus reduce productivity. As the government sector grows, unemployment thus rises and resources are used less efficiently (a movement inward from the production possibilities curve).

The key to determining how unified Democrat government, unified Republican government, and divided government affect per capita GDP is tied to the effect that each one of these types of government will have on spending. I recommend the aforementioned relationship as a subject for future study along with a study of the relationship between levels of legislative output and government spending.

Educational attainment as expected appears to have a positive effect on real per capita GDP. Educational attainment levels serve as a measure of the quality of human capital in a state. The results of this study failed to demonstrate a consistent relationship between population density and real per capita GDP. Changes in population density failed to serve as a proxy for changes in capital infrastructure.

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APPENDIX

Exhibits 3A, 3B, 3C, 3D, and 9 have been reproduced from Gwartney et al. (1998) with some cosmetic changes. Table 3 is from Vedder and Gallaway (1998). I claim full responsibility for any possible errors and omissions that may have occurred during the reproduction of these images and their modification.

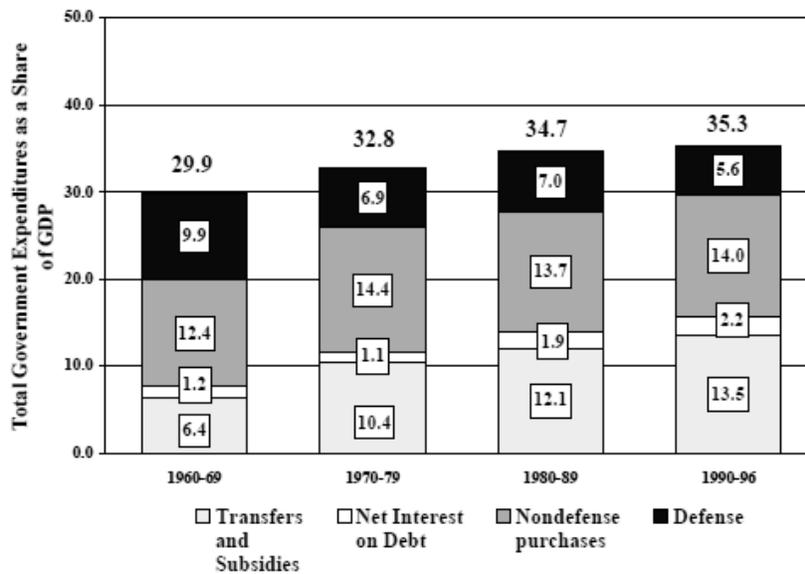
Exhibit 9. Comparing Periods of Expansion in Size of Government with Periods of Shrinkage in Size: The Cases of Ireland, New Zealand and United Kingdom

Country/Time Period	Government Outlays as a Percentage of GDP			Growth of Real GDP during Period
	Beginning of Period	End of Period	Change	
Ireland				
Periods of Expanding Government				
1960-1977	28.0	43.7	+15.7	4.3
1977-1986	43.7	52.3	+8.6	3.4
Period of Shrinking Government				
1987-1996	52.3	37.7	-14.6	5.4
New Zealand				
Period of Expanding Government				
1974-1992	34.1	48.4	+14.3	1.2
Period of Shrinking Government				
1993-1996	48.4	42.3	-6.1	3.9
United Kingdom				
Period of Expanding Government				
1960-1982	32.2	47.2	+15.0	2.2
Period of Shrinking Government				
1983-1989	47.2	40.7	-6.5	3.7

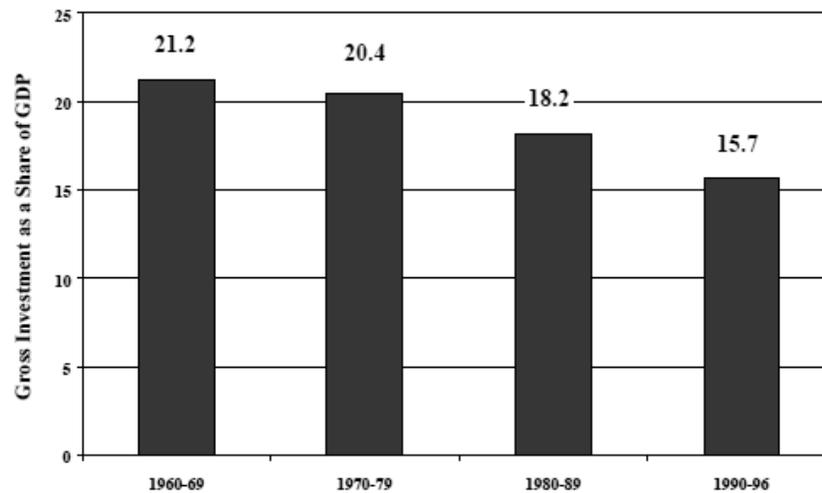
Source: Derived from *OECD Economic Outlook* and *OECD Historical Statistics*.

Exhibits 3A and 3B

(A) Government expenditures have risen substantially.

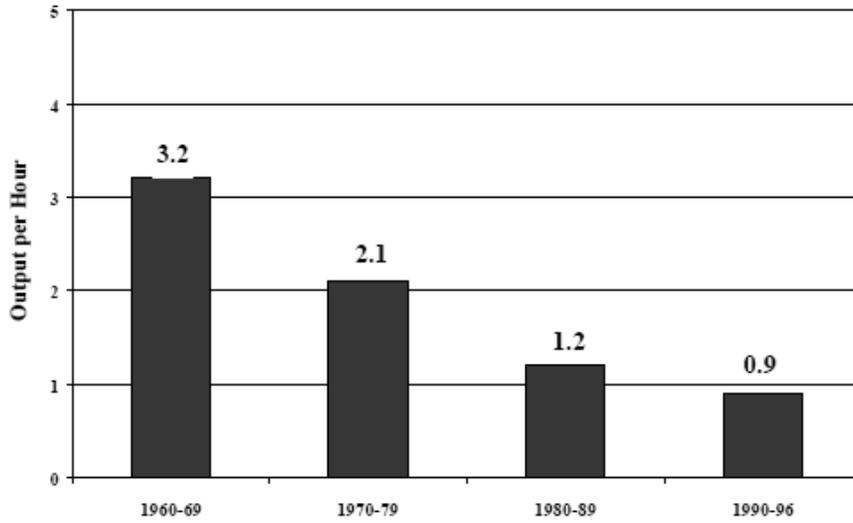


(B) Rising government expenditures have "crowded out" investment.

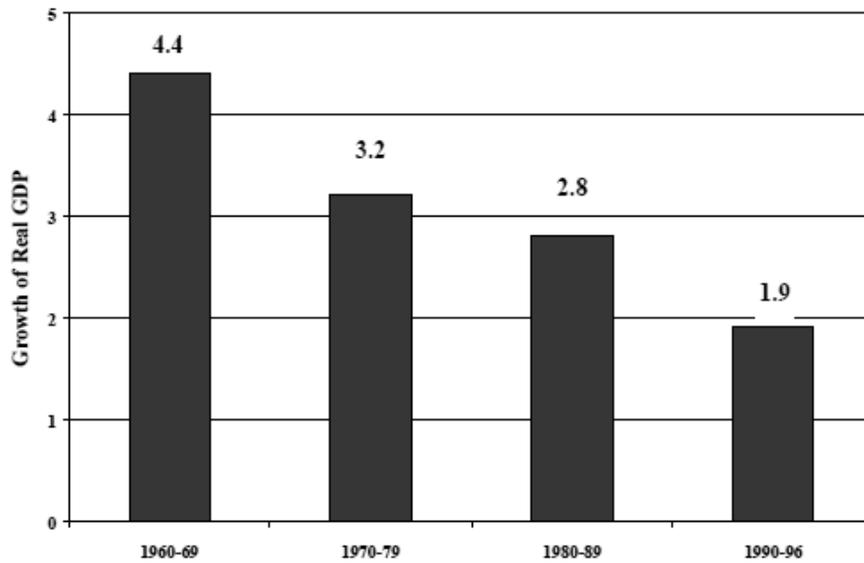


Exhibits 3C and 3D

(C) More government and less capital formation lead to slower growth of productivity.



(D) Lower productivity means less growth of real GDP.



**Table 3. Components of Federal Spending, 1947-1997,
as Percent of Total**

Year	Major Transfer Payments and Income Security	Defense	Net Interest Payments	Other
1947	10.14%	37.10%	12.17%	40.58%
1960	21.48%	52.16%	7.48%	18.87%
1970	29.70%	41.77%	7.36%	21.17%
1980	44.07%	22.68%	8.88%	24.37%
1985	43.96%	26.70%	13.68%	15.66%
1990	44.01%	23.88%	14.70%	14.70%
1996	55.71%	17.03%	15.45%	11.81%

Source: Vedder and Gallaway (1998)

Table of State and Local General Expenditures for the U.S. by Function, 1965-2007 (in Millions of Dollars)

Fiscal year	Total	Educational	Highways	Public Welfare	All other	Public Welfare as a percentage of Total	Averages for 1965-1980, 1980-1990, 1990-2007
1965-66.	82843	33287	12770	6757	30029	8.2%	
1966-67.	93350	37919	13932	8218	33281	8.8%	
1967-68.	102411	41158	14481	9857	36915	9.6%	
1968-69.	116728	47238	15417	12110	41963	10.4%	
1969-70.	131332	52718	16427	14679	47508	11.2%	
1970-71.	150674	59413	18095	18226	54940	12.1%	
1971-72.	168549	65813	19021	21117	62598	12.5%	
1972-73.	181357	69713	18615	23582	69447	13.0%	
1973-74.	198959	75833	19946	25085	78095	12.6%	
1974-75.	230722	87858	22528	28156	92180	12.2%	
1975-76.	256731	97216	23907	32604	103004	12.7%	
1976-77.	274215	102780	23058	35906	112472	13.1%	
1977-78.	296984	110758	24609	39140	122478	13.2%	
1978-79.	327517	119448	28440	41898	137731	12.8%	
1979-80.	369086	133211	33311	47288	155276	12.8%	Avg. 1965-1980=11.7%
1980-81.	407449	145784	34603	54105	172957	13.3%	
1981-82.	436733	154282	34520	57996	189935	13.3%	
1982-83.	466516	163876	36655	60906	205080	13.1%	
1983-84.	505008	176108	39419	66414	223068	13.2%	
1984-85.	553899	192686	44989	71479	244745	12.9%	
1985-86.	605623	210819	49368	75868	269568	12.5%	
1986-87.	657134	226619	52355	82650	295510	12.6%	
1987-88.	704921	242683	55621	89090	317527	12.6%	
1988-89.	762360	263898	58105	97879	342479	12.8%	
1989-90.	834818	288148	61057	110518	375094	13.2%	Avg. 1980-1990=13.0%
1990-91.	908108	309302	64937	130402	403467	14.4%	
1991-92.	981253	324652	67351	158723	430526	16.2%	
1992-93.	1030434	342287	68370	170705	449072	16.6%	
1993-94.	1077665	353287	72067	183394	468916	17.0%	
1994-95.	1149863	378273	77109	196703	497779	17.1%	
1995-96.	1193276	398859	79092	197354	517971	16.5%	
1996-97.	1249984	418416	82062	203779	545727	16.3%	
1997-98.	1318042	450365	87214	208120	572343	15.8%	
1998-99.	1402369	483259	93018	218957	607134	15.6%	
1999-							
2000.	1506797	521612	101336	237336	646512	15.8%	
2000-01.	1626066	563575	107235	261622	693634	16.1%	
2001-02.	1736866	594694	115295	285464	741413	16.4%	
2002-03.	1821917	621335	117696	310783	772102	17.1%	
2003-04.	1908543	655182	117215	340523	795622	17.8%	
2004-05.	2012110	688314	126350	365286	832161	18.2%	

2005–06. 2122967 728922 136495 371997 885552 17.5%

2006–07. 2265284 776626 144807 389123 954729 17.2%

Avg. 1990-
2007=16.6%

This table is modified from its original form in the Economic Report of the President 2010. Adrian Villasenor added the last two columns. Source: <http://www.gpoaccess.gov/eop/download.html>

Table: Unit Measurements of Variables

Variable Mnemonic	Variable Description	Unit of Measurement
Y	Real per Capita Gross Domestic Product	State Per Capita Gross State Product in 2000 Chained Dollars. This quantity is measured for a fiscal year.
DivG	Divided Government	The variable of divided government is defined as $DG_{st} = -\log [(g_{st} + 0.5) / (n_{st} - g_{st} + 0.5)]$ where n_{st} is defined as the total combined number of seats in the upper and lower legislative houses (indexed by state s and year t) and g_{st} is defined as the number of legislative seats possessed by the party of the governor.
RPC	Republican Party Control of the State Legislature as a Percentage	The percentage of seats held by Republicans of the total number of seats held by both Republicans and Democrats in both houses of the state legislature.
RPM	Dummy for Republican Majority (RPC>50)	A dummy indicating that Republicans held over 50% of the combined legislative seats of both houses of the state legislature.
RG, IG	Dummies for Republican and Independent Governors	A dummy indicating the party of the governor.
GC	General Consumption Expenditures by Government as a Percentage of GDP	Federal and State Government Consumption Spending as a Percentage of State Gross Domestic Product. This quantity is measured for a fiscal year.
EDUC	Educational Attainment	The percentage of population twenty-five years old and over with at least a bachelors degree.
PDEN	Population Density	Total population of the state divided by the total land area of the state.
SPLEG	Dummy for Divided Legislature	A distinct party controls each house of the legislature. Republicans control one house of the legislature and Democrats control the other house of the legislature.

CURRICULUM VITA

Adrian Christopher Villaseñor received his Bachelor of Arts in Economics from the University of California at Berkeley in 1984. He began his Master of Science in Economics at the University of Texas at El Paso in 2008. He currently teaches Geography, World History, U.S. Government, and Economics at Bel Air High School in El Paso, Texas, where he has been employed as a high school teacher by the Ysleta Independent School District since 2003.