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State Spending and Economic Growth: An Exploratory Analysis

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An Exploratory Analysis

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Introduction:

A continuing debate in public policy concerns how to set priorities for spending public funds. Citizens and policymakers alike have different opinions about how to define the "public good" and differing opinions on how to best accomplish their respective beliefs about what constitutes the "public good." The goal of this paper is to explore how differing state and local fiscal policies impact various indicators of conditions in states' economies. The indicators examined are widely referenced measures of economic output (the percent change in gross state product, GSP), economic inequality (the Gini coefficient), the prevalence of poverty (poverty rates), and the absence jobs for those who are looking for work (unemployment rates) in each of the fifty states and Washington, D.C. The reasoning behind selecting these four imperfect measurements is to see if state and local spending affect the economies of the states in different ways that may be the focus of policymakers' and citizens' priorities. The objective of this paper is to see if and maybe how states and local governments can impact the indicators at the state level, which then help produce the aggregate national economy. These four imperfect measurements of economic performance will, hopefully, together form a more accurate and comprehensive picture of the states' economic condition and the quality of life that their citizens experience.

The question of how state and local governments spend their money is important because such choices can have a substantial impact on the overall economic performance as well as on citizens' lives in the society. Figure A (below) shows the relative size of governments' spending from 1900 through 2012. Net state and local spending has increased as a percentage of the national GDP, even as federal intergovernmental transfers have decreased over the same period of time. Not only does this mean that state and local government spending is a significant factor

in the national economy, it also implies that states and local governments are becoming more
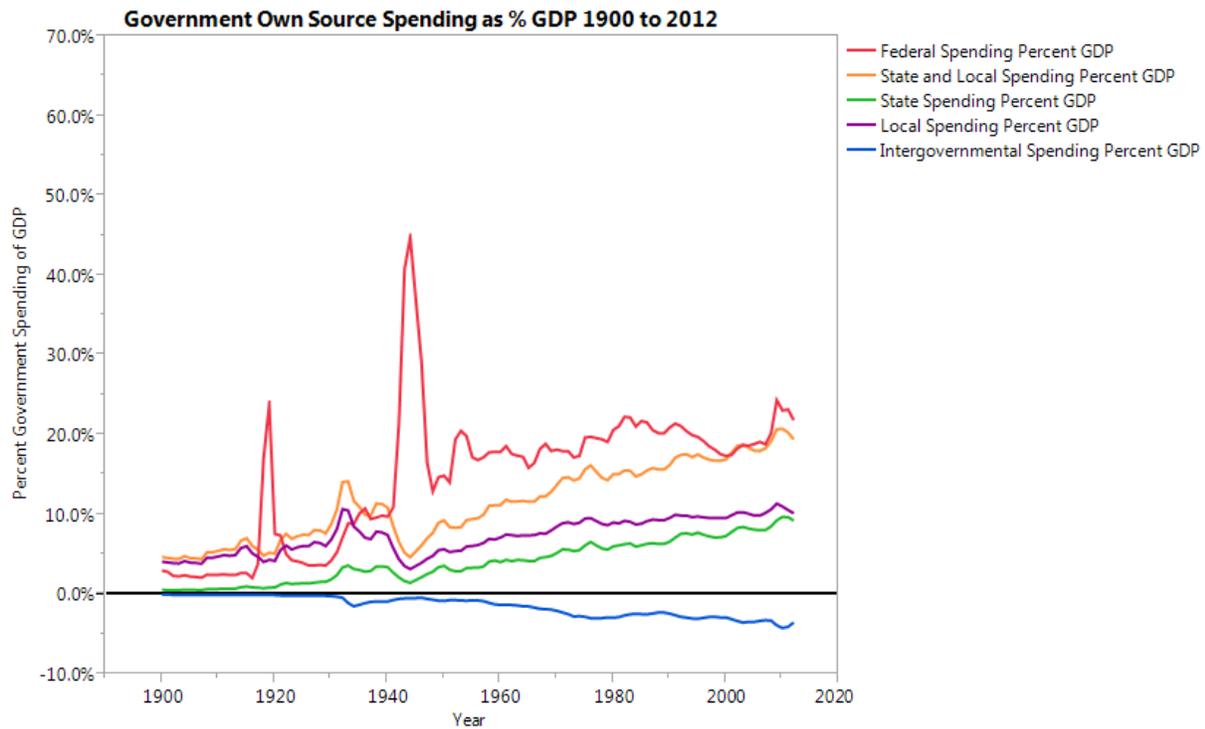

Figure A, *Source: usgovernmentspending.com*

financially independent from the federal government. This can entail far reaching changes in the

United States in terms of the dynamics between state and local and the federal government.

In addition to being influential in the economy, the money that is spent by the

government comes from involuntary contributions by taxpayers. Because the government is

funded by involuntary contributions from peoples' pockets, it is the duty of government budget

policymakers to spend that money in ways that are actually beneficial for the public that would

not otherwise be done voluntarily in the market system. Because of the influence of the public

sector on all other sectors of the economy and the fact that the general public is counting on their

tax dollars to be spent effectively and efficiently on improvements in society, this line of

research could be fruitful for policymakers and citizens alike.

This paper will begin with a brief overview of economic development and the various measurements that will be used in the analysis. It will then continue with an overview of the explanatory variables and the data, followed by three hypotheses about spending strategies that governments use to improve economic conditions in society. The hypotheses that will be examined are traditional methods of economic development spending, infrastructure development, and investment in human capital. The analysis will use sets of twenty, seventeen, fifteen, twelve, ten, five, four, three, two, one, and zero forward lagged dependent variables to effectively make the explanatory variables lagged in the past. For brevity's sake only twenty, fifteen, ten, five, and one year forward lags will be reported in this report. The paper will then go through the analysis, the key themes that were found in the results, and conclude with policy implications and caveats to the research.

Economic Development, A Brief Overview:

The essential process of an economy is to take raw materials and discovered knowledge, and to recombine them with energy and labor to produce different products that are in demand or are otherwise desired by the general public (Beinhocker, 2006; Ayres and Warr, 2010). There is much debate about what constitutes economic performance. Economic well-being is, ultimately, a relatively subjective concept that depends on individuals' tastes, preference, and tolerances for exchange. What is valuable to one person will not necessarily be valuable to another. The opinions regarding what growth and economic health entails are not bound by the physical limitations of the environment or the social demands and needs that inevitably limit the opinions as to what is feasible, practical, and desirable. People can demand the impossible, the unhealthy, and the dysfunctional. When all social, economic, technological, and environmental limitations are factored, the realm of viable opinions on economic development becomes

significantly smaller. Natural laws of society, economies, environments, and technology limit what can be done for people in a society and the ways they can be appropriately and consensually approached (Beinhocker, 2006).

In order to register the effects of state and local fiscal policy on a state's economy, four measurements of economic well-being will be used. For this paper, the economies of the states will be measured in terms of percent change in output from year to year (percent change in Gross State Product), the equality of the distribution of income (the states' Gini coefficients), the amount of poverty present in the state (the poverty rate), and the number of people out of work and continuing to look for work (the unemployment rate). The data was collected from the US Census Bureau, the Bureau of Economic Analysis, Sam Houston State University, and the Bureau of Labor Statistics.

Figure B shows the sum of all the states' changes in real GSP from 1988 through 2012. You can see how the economies of the states have fluctuated significantly from 1988 through 2012 without the effects of inflation. This suggests a sensitive economic system where small
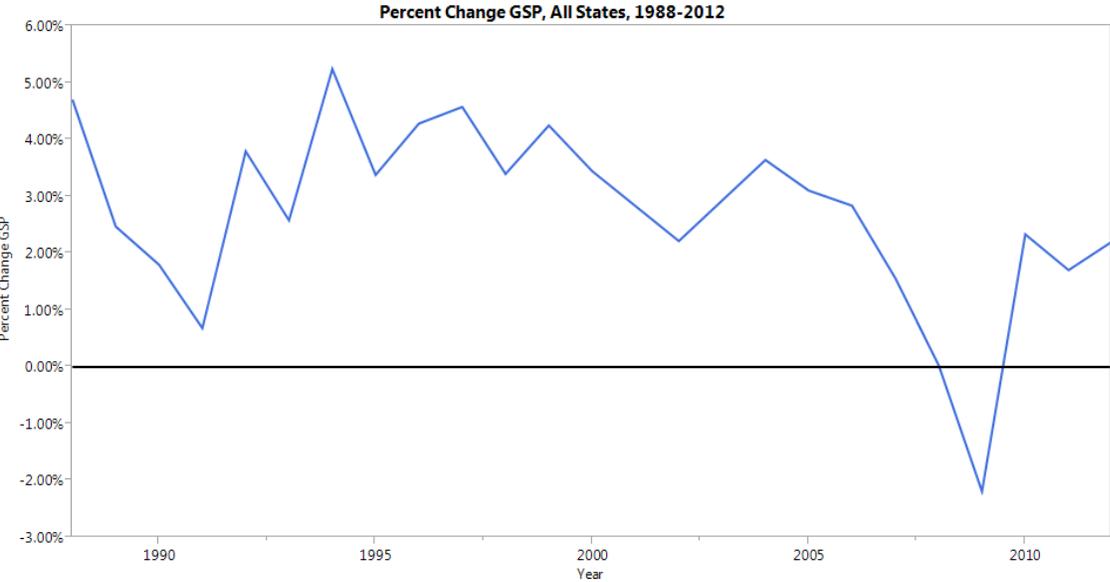

Figure B, *Source: Bureau of Economic Analysis*

changes in demand, supply, or any other factor may have significant impacts on the states'

economies. It also shows that there is a small percentage range in which economies grow, as

demonstrated by the fact that the range is between about -2.5 percent and 5 percent. It is possible

to make out the Great Recession in the data and can see that the states haven't recovered all of

the lost growth yet.

The second dependent variable is the Gini coefficient (Figure C). It measures the

distribution of income in the states, ranging from 0.0 (most equal) to 1.0 (most unequal). The

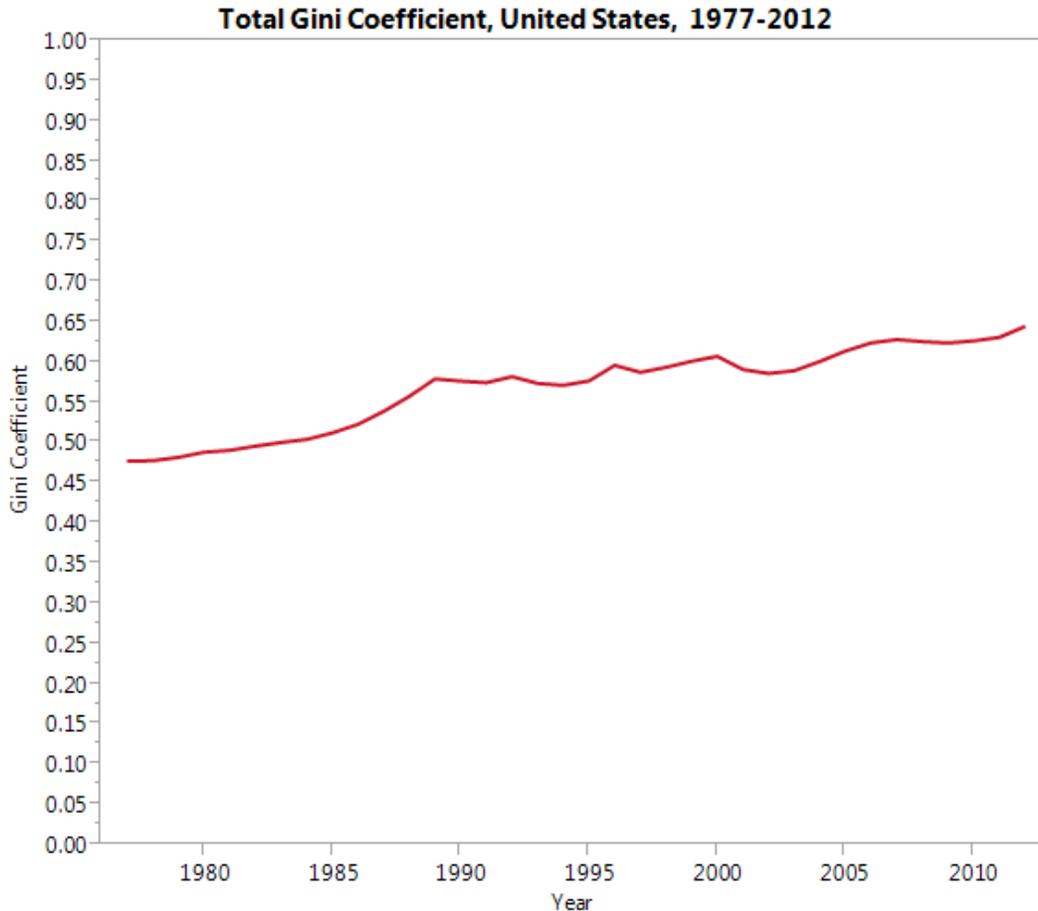Gini Coefficient shows to whom the money is flowing to in the given state economy. It could be

Figure C, *Source: Sam Houston State University*

significant to policymakers because their constituents may value relative income equality. There

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are also economic arguments that extreme cases of income inequality are not healthy for a society or an economy, because fewer people are able to spend on goods and services and participate fully in the market. Income inequality can also lead to a need for public assistance in order to survive, which is drawn from other groups in society by the government. Figure C indicates that inequality at the state level has increased slightly over the past thirty-five years, although the changes may be more dramatic on the individual state level. Policymakers and policy researchers may debate the causes of these increases. Because there is a mix of wealthy and non-wealthy states in this list of states which reduced their Gini coefficient, the cause of this reduction is unclear. However, it could imply that a lower Gini coefficient is not antithetical to the change in percent GSP or to the wealth that is present in a state.

The next measurement that will be used as a dependent variable in measuring the economic condition of the states is the poverty rate. Figure D illustrates the poverty rate for all fifty US states and D.C. Poverty is a difficult thing to measure and define, due to the partially subjective line that one draws between being "poor" and being "near-poor" (if one is counting
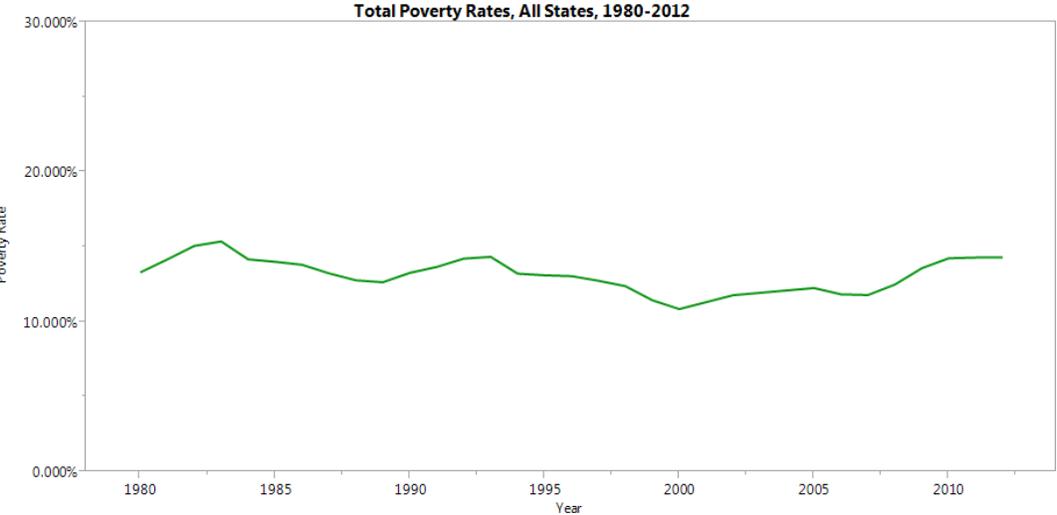

Figure D, *Source: US Census Bureau*

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the near poor to begin with). The data that will be used comes from the US Census Bureau's Current Population Survey. In all, the Census Bureau has forty-eight thresholds to define poverty or near poverty. For the purposes of this paper, we will just keep to the official Federal level of poverty, which was last updated in 1981 by interagency committee meetings. Poverty could be a significant measurement of economic and social health because people who are poor are usually less able to participate in the market and are more vulnerable to a series of physical and psychological health problems that ultimately may cost the economy and the government money in the form of welfare benefits and physical and psychological health problems amongst the population.

In Figure D we can see that poverty in the American states is just under 15 percent and has been relatively flat for a lengthy period of time. On the individual state level, there is much more diversity and variability though. This speaks to the diversity of the American states relative to each other and shows the various geographical, social, political, technological, and cultural systems within the United States working to produce the American economy. It also hints at the disconnection between a measurement such as GSP and the real condition of the citizens in the economy of the state. GSP may have gone up to the point where the percentage changes in GSP are shrinking due to the larger denominator. But these charts show that wealth does not behave as water does. Rising tides of wealth do not, it seems, raise all boats.

The final measurement of economic well-being that will be used in this analysis is the unemployment rate of the state.   Unfortunately, the state level data only goes back to 1999, so this analysis will have fewer lags on the dependent variables than the others. Figure E shows that unemployment has increased since the Great Recession of 2007-08 and has yet to drop back

down to pre-recession levels.

Figure E, *Source: US Bureau of Labor Statistics*

The reason unemployment is considered in this model is because the number of jobs present in the market puts money into the hands of consumers while producing goods and services without the government necessarily having to intervene in the market. With more people employed in the economy, the government can avoid having to pay people unemployment insurance, welfare benefits, or have to work with the physical and psychological problems related to poverty. If the wages are sufficiently high enough, they can save the government money on welfare payments as well.

We can clearly see a series of trends in the dependent variables over time from when we have data. Real GSP has been increasing at steady rates while the levels of inequality have increased dramatically. Poverty remains persistent in the American states (although it is highly varied across the states) and unemployment levels have yet to reach pre-Great Recession levels for many. It is hoped that these four variables, regressed individually with the state spending function variables and the controls will provide a comprehensive enough picture of the state of

the states' economies without having too many variables. The percent change in real GSP captures overall economic output, the Gini coefficient shows to whom the money is going in the economy, the poverty rate indicates what percentage of the population that is poor in the states, and the unemployment rate shows how many people are out of work and looking for work. The explanatory and control variables are next. For the sake of brevity and simplicity, the associated graphs have been placed in the appendix of this report.

Methodology:

As previously mentioned, the four economic indicators, the percent change in real GSP, the Gini coefficient, the state's poverty rate, and the unemployment rate will act as dependent variables in a panel data linear regression model in this analysis. The equation is as follows:

(1) $$y_{it+n} = \alpha + \beta x_{it} + \gamma c_{it} + \varepsilon_{it}$$

Y is the dependent variable with forward lags (thus making the explanatory variables lagged in the past), alpha is the constant, beta times x _it are the explanatory variables at state i, time t after n periods. Gamma times c _it are the control variables for state i, time t minus n lags. Epsilon is the error term for state i, time t. The purpose is to see whether state spending by their functional categories affects any of these economic indicators. The controls for this analysis were the size of the population (Figure F) and the ideological beliefs of the citizen population and state governments, as measured by Dr. William Fording's scale of political ideology (Figure G). They were each chosen because they could have significant effects on the amount of resources present for the state and the spending and policy priorities of the state governments. As we can see, the population of the states has increased over the past several decades. While this graph represents all of the states' populations totaled together, it does not reveal the population dynamics on the state level which would reveal a more uneven spread of the population across the states. The

larger states by population tend to be located at geographic locations that have easy access to trade and commerce (such as the east and west coasts or the central Midwest) while most of the population growth has been in southern and western states, most likely created by an aging
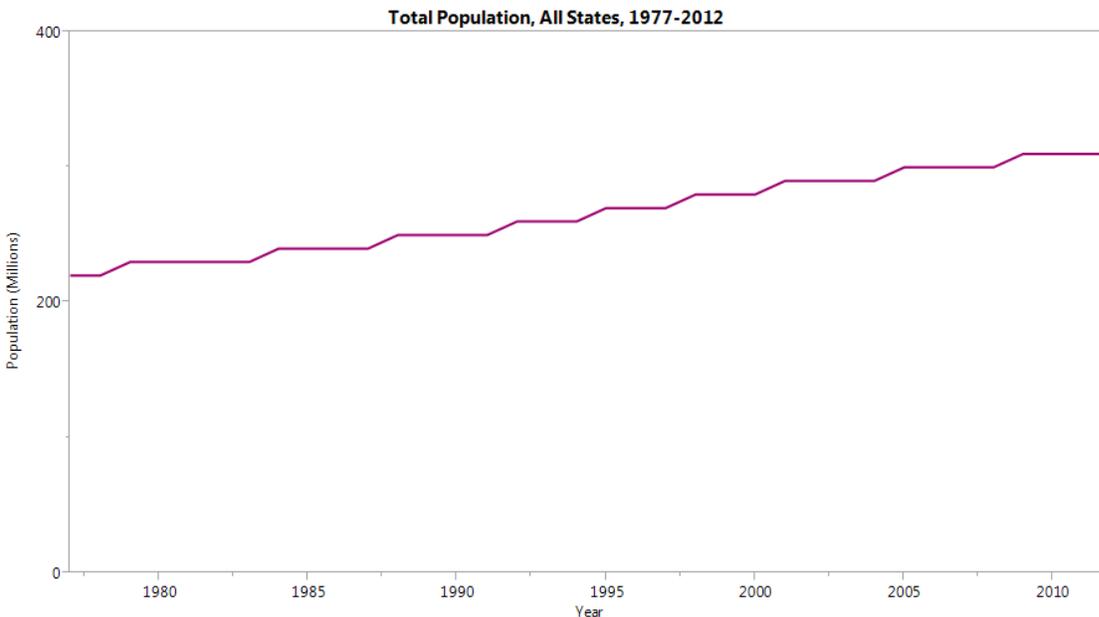

Figure F, *Source: US Census Bureau*

population heading south and a Latin American immigrant population headed north.

For ideology, Fording's dataset of citizens' and state governments' ideological composition were used (Figure G). It measures where the citizenry and the government falls on a scale from 0 (most conservative) to 100 (most liberal). It could be significant for this analysis because the ideology of the citizens and the government they elect affect the budget priorities of the state and local governments. Citizens' beliefs are generally moderate between extreme liberalism and extreme conservatism. Citizen ideology is also a decent predictor of state governments' ideological composition on average. However, many notable exceptions are present, and there is presently more of a trend towards state governments being more conservative than their citizens' explicitly expressed preferences.

The explanatory variables that were used in this analysis were the percent of the budget that each spending category occupied. They were chosen based on whether they were expected to affect the economic indicators. The spending categories used were divided into three categories, depending on how they fit into traditional strategies for fueling economic growth. The three categories that were used were spending on direct economic development programs and basic infrastructure, and spending on human capital development, and both groups joined together into one regression equation. The variables that were used in economic development and the infrastructure associated with it are the percent of the operating budget for air transportation (airports), highway construction and maintenance, sewerage construction and maintenance, public housing construction and maintenance, and water transportation (ports and canals). The variables that were used for human capital categories were the percentage of the budget used by elementary and secondary education, higher education, and total welfare
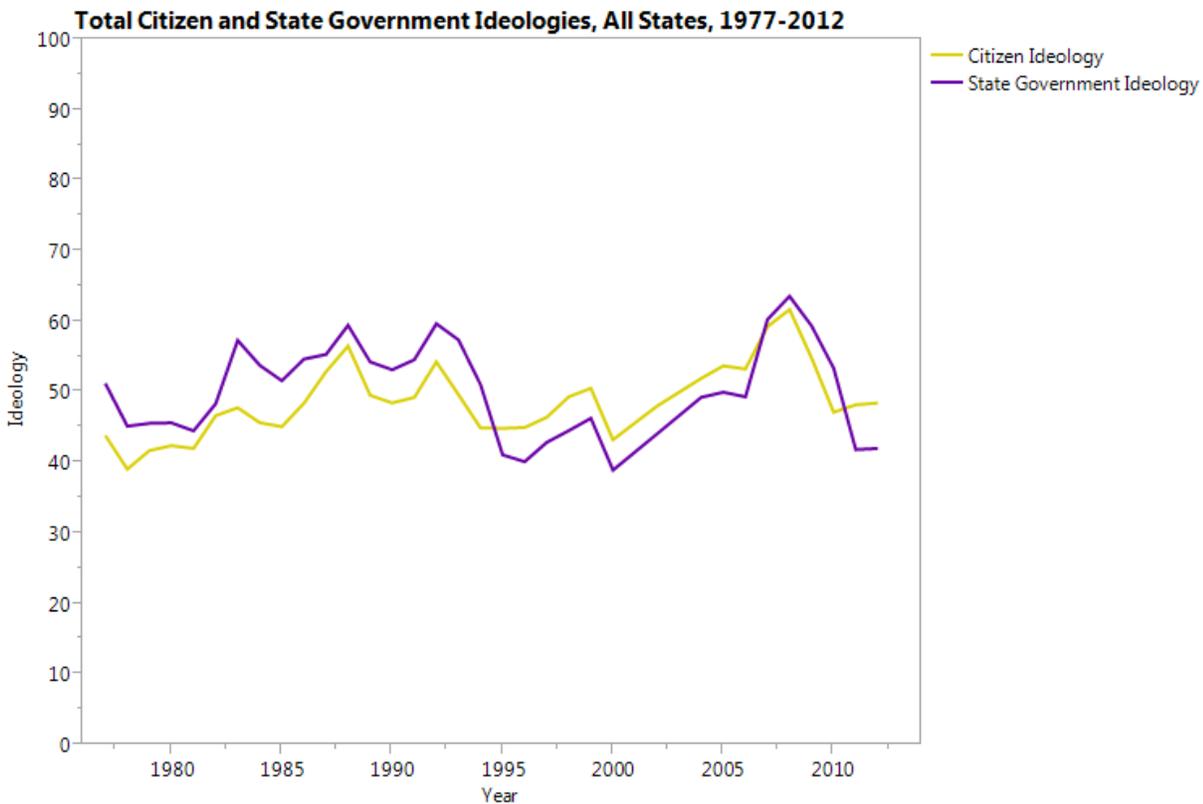

Figure G, *Source: William C. Fording*

spending. In each of these regression models, all other government spending functions were totaled into one variable to capture the state and local spending on corrections, financial and judicial administration costs, public buildings, libraries, natural resource preservation, parking, parks and recreation, police, fire departments, building inspections, and the interest that is paid on their respective debts. The data was broken into three datasets, one containing state and local spending combined into one value, another for just state spending, and another for just local government spending. Each dataset had the same battery of regressions and forward lagged dependent variables (past lagged explanatory variables) applied to them, testing for their effects on the percentage change in real GSP, the Gini coefficient, the poverty rate, and the unemployment rate. The model attempts to capture all of the states' own-source spending in the general budget for the state and local governments totaled throughout the states.

Figure H through J in the appendix shows how states plus local governments, states separate from local governments, and local governments separate from states have spent their budgets. It is interesting to note that local governments spend most of their money on elementary and secondary education while many states spend most of their money on public welfare or the other spending categories. What this could mean is that state governments are not presently investing in the long term economic benefits of well-funded schools and seem, in many cases, to be focused on covering shorter term expenses and spending functions. This may have longer term economic consequences for the state governments as the consequences for this shorter term oriented spending will likely be felt decades after the spending choices were made.

It is important to note that this analysis is not including spending on healthcare and hospitals by state and local governments, since a lot of this money is not raised and spent directly by the states or local governments, but instead, comes to their budgets in the form of federal

outlays or citizen payments. Because of the strong federal component to healthcare in the United States, and because spending on healthcare and hospitals only goes far enough to satisfy demand, healthcare and hospital spending have been excluded in this model, in spite of their abilities to fuel economic growth, development, and quality of life in a given area. For the sake of parsimony and to focus on the effects of state and locals' independent spending in their economies, they have been dropped from the list of explanatory variables in the model.

This paper will now move into a discussion of the results of the regressions that were used on the data. For brevity's sake in the appendix, the tables of complete results will not be found in this report, but may be requested from the author. This paper will go over the most significant of the results for each of the three data sets using each of the four dependent variables with twenty, seventeen, fifteen, twelve, ten, seven, five, four, three, two, one, and zero lagged years on the forward lagged dependent variables. This is to capture how spending in the past affects the dependent variables in the present at various points in time.

Analysis:

There are over four-hundred regression equations in this analysis. Because of this number, there is a probability for many false positive results to occur. To correct for this, a Bonferroni correction could have been used to reduce the P-value threshold needed to accept the results as statistically valid (Weisstein, 2015). However, because reducing the P-value does not necessarily rule out the probability that there are false positives present in the analysis and may lose sight of real significant effects, it was not done in this analysis. This should be noted as a possible limitation of this research.

The first test that was conducted on the data was a pairwise correlation test to test for multi-collinearity among the explanatory variables, the dependent variables, and then among the

explanatory and dependent variables together. There was no significant collinearity, although it was interesting to see that percent change in GSP was very slightly negatively associated with the Gini coefficient and the poverty rate. This implies that states can be rich but still have significant amounts of inequality and poverty within their borders. This is interesting because it hints that economic growth does not necessarily mean to the alleviation of poverty or improvements in quality of life for the general public. Percent change in real GSP had a stronger negative correlation with the unemployment rate. This is to be expected, because when people are not employed in the economy producing goods and services, the economy is also unlikely to be doing well in general. Poverty was also more positively connected to the Gini coefficient, implying that poorer states are also the more equal states. It is important to note that this connection may be because the larger, wealthier states are also the less equal states on average (as seen in the pairwise correlation test between population and the Gini coefficient value). The strongest connection among the dependent variables was the positive correlation between unemployment and poverty.

For the control and explanatory variables, there was very little connection among the spending functions. It was interesting to see that highway funds were negatively associated with population size, probably because the states with the largest highway systems could also the least populated ones. Most of the physically largest states, which need more highways to simply transit the state, also tend to have smaller population densities. States such as Wyoming or Montana likely have more highways to build and maintain than states such as Rhode Island or Connecticut, even though the latter have significantly more people in them than the former. For that matter, states such as New York or Illinois may be large physically and by population. But these states have their populations concentrated in very small geographic areas, making the need

for highway spending less than the larger, less densely populated states. The notable exception

to this rule is California, which spends significantly on highways and is the most populous state.

Highway funding was also negatively associated with welfare spending. This may be because

the states with more highway spending percentages also have fewer people living in poverty to

provide for. Again, states such as Wyoming or Montana have more highway than they have

people to care for. Even a state like Wyoming, with such a high Gini coefficient, only has a total

of about six-hundred thousand people living within it. Their needs for welfare spending could be

outstripped by their need for roads in order to accommodate transcontinental freight and the

mobility of their citizenry, unlike states such as Rhode Island or Connecticut, which may have

less of a need for highway and more people in need of public assistance. Overall, it was good

that there was so little collinearity among the variables, which means that the analysis could

continue without complications.

In the actual regression, there were a number of interesting and statistically significant

results to report. For the purposes of brevity, this paper will highlight a few of the most

significant findings. However, you may see the full results with all the lags, dependent variables,

upon request to the author.

Control Variables:

Population in general did not have a strong effect on the percent change in real GSP.

However, it did have a significant impact on the Gini coefficient, the poverty rate, and the

unemployment rate, increasing each of these indicators. What this seems to imply is that larger

states have more diverse populations than smaller states. What the data seems to indicate is that

larger states by population have more inequality, higher percentages of poverty, and more

unemployment than less populated states. This isn't terribly surprising because of the possibility

for there being more perceived opportunity in the more populated states. This attracts more people from diverse socio-economic backgrounds to the states and increases the percentages of poverty, unemployment, while raising Gini coefficients. Very wealthy people may also live in these more populated states, which would explain the higher Gini coefficients in the states as well. However, these findings could affect how those state and local governments with larger populations administer and budget for their pieces of society.

The ideological composition of the citizenry also had little long term effect on the percent change in real GSP, although there were some short term results that implied that a more conservative citizen base increased the percent in GSP growth. However, the ideological compositions of state governments were not significant factors in determining percent change in real GSP growth. More liberal citizens are also significantly associated with more unequal societies, while more conservative governments preside over less unequal societies. This may be because some of the most unequal states are also some of the most liberal, such as California, New York, and Connecticut, while some of the more equal states (or recently equal states) are more conservative. Examples of this latter category include Alaska, Mississippi, and West Virginia. This may be because of several factors, such as the fact that the more equal states are less populous than the more unequal states, thus reducing the diversity of the state population in terms of income inequality. It also could because the more liberal states have historically seen an influx of more poor people into them, such as the mass migration of African Americans from the Southern states in the early 20th century while also being home to some of the wealthier citizens in the country. This interpretation is complicated by further findings that states with higher poverty rates tended to have more a more conservative citizenry while states with more liberal governments (as opposed to citizen bases) were also associated with higher poverty rates.

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It remains unknown as to what the precise relationship between poverty and the ideologies of the governments and citizenry. Unemployment was not significantly related to either the citizens' ideology or to the state governments' ideology, which suggests that it is a non-ideologically based condition in society.

Explanatory Variables:

The actual spending categories that were used had varying levels of effect at various times in the lagged regressions. What was interesting was that it seemed to matter whether it was the state or the local governments who were doing the spending. The magnitudes of effect, the sign of the effect, which lags were significant, and which lags all could have been altered by the spending occurring on the state or local levels. For example, local spending on welfare contributed to statistically significant increases in the percent change in real GSP, decreases in the Gini coefficient, reductions in the poverty rates, and reductions in the unemployment rates of the states, but state level spending sometimes had the opposite effects or statistically insignificant effects on the dependent variables (see Tables 1 and 2).

One hypothesis for these puzzling results is that there are differences in the ways that the local governments spend on welfare versus the state governments. Different programs and different legal structures create

Total Welfare, Local Spending				
	*=<0.05	**=<0.01	***=0.001	blank=n.s.
Lag	Percent Change GSP	Gini Coefficient	Poverty Rate	Unemployment Rate
20	+*	-***	-***	NA
15		-***	-***	NA
10	+**	-***	-***	-**
5	+**	-***	-***	-***
1	+***	-***	-***	-***

Table 1, *Source: US Census Bureau*

different incentive structures in which people operate. These differences in local and state

programs' regulations and requirements for welfare recipients may change the effects that are

seen in the economic indicators. The

local levels of government may

also have a better understanding of the

conditions that are present and can

adjust their programs more effectively

to their local needs, which ultimately

Total Welfare, State Spending				
	*=<0.05	**=<0.01	***=0.001	blank=n.s.
Lag	Percent Change GSP	Gini Coefficient	Poverty Rate	Unemployment Rate
20	-*	-*		NA
15	-***	+**		NA
10	-***	+**		
5	-***	+***		
1	-***	+***		-***

Table 2, *Source: US Census Bureau*

can improve the states' economies.

  In addition to differences in the effects of welfare spending, we can also see that there are

differences in how spending in elementary and secondary education between state and local

governments affects the indicators differently at the state level (Tables 3 and 4). In each of these

cases the sign and significance of the coefficient changed as well. This may, again, have

something to do with the types, quality, and nature of the programs and legal requirements that

are in place. These regulations are not captured in this study explicitly. However, we may be

looking at the impacts of these

differences in the impacts of these

spending priorities on the economic

indicators.

Elementary and Secondary Education, Local Spending				
	*=<0.05	**=<0.01	***=0.001	blank=n.s.
Lag	Percent Change GSP	Gini Coefficient	Poverty Rate	Unemployment Rate
20		-**		NA
15	+*	-**	-**	NA
10	+**	-***	-**	
5	+**	-***	-***	-***
1	+***	-***	-***	-***

Table 3, *Source: US Census Bureau*

It seems that, like with welfare

spending, that local government

spending on education had an overall more significant effect on the economic indicators than

state level spending. It was interesting to see that state level spending on elementary and

secondary level education actually had negative effects on the percent change in real GSP at the state level, increases in the Gini coefficient, poverty rates and mixed effects on the unemployment rates of the states. This adds credence to the hypothesis that it is how programs and legal requirements are crafted that has some of the real impacts on how effective government programs are at shaping the quality of life for the citizens living in their jurisdiction. While budget priorities are significant indicators of the priorities of governments, how they spend the money and enable or disable actions through legal requirements also seems to be significant as well. If we think of money as acting like the blood that fills and gives life to a part of our body, the design of the body part itself on the macro and micro levels matter to what that body part does and how well it's going to fulfill its purpose relative to keeping the body healthy, whole, and able to thrive. Governments can most certainly fund poorly designed, poorly conceived or poorly executed programs, just as easily as blood can flow to the arms of a person born without fingers. Such programs aren't going to be any more helpful to the society and its economy than the person's fingerless hand is going to be

Elementary and Secondary Education, State Spending			
*=<0.05	**=<0.01	***=0.001	blank=n.s.
Lag	Percent Change GSP	Gini Coefficient	Poverty Rate	Unemployment Rate
20	-***	+***	+***	NA
15	-***	+***		NA
10	-***	+***	+***	+**
5	-***	+***		
1	-***	+***	-*	-***

Table 4, *Source: US Census Bureau*

helpful to them at grasping objects in spite of the flow of resources to them. This suggests that not only do policymakers have to be conscientious about how and how much they fund programs and policies, but that they also have to be conscientious about how those policies and programs are crafted and designed according to the purpose they are intended to fulfil, the needs and wants

that are present in the given societal situation, the conditions that are present, and micro level laws of how societies and people operate as well.

This is just one sampling of the significant results that were found in this analysis. Another one of the surprising results from this analysis was how important local highway spending was to increasing the percent change in real GSP, reducing the Gini coefficient, reducing long term poverty, and reducing unemployment at the state level, relative to the state level spending. Tables 5 and 6 show the basic results from the highway regressions. Even stranger, state level only spending on highway construction yielded very few statistically significant effects on the growth in percent real GSP in the long term. This may be because states could be overspending on state level

Total Highway Spending, Local Spending				
	*=<0.05	**=<0.01	***=0.001	blank=n.s.
Lag	Percent Change GSP	Gini Coefficient	Poverty Rate	Unemployment Rate
20	+**	-***	-**	NA
15	+***	-***	-**	NA
10	+***	-***		-***
5	+***	-**		-***
1	+***	-***		-***

Table 5, *Source: US Census Bureau*

highway construction while neglecting to maintain the existing infrastructure.

There can only be so much road connectivity within a state before the law of diminishing marginal returns starts to take effect.

Total Highway Spending, State Spending				
	*=<0.05	**=<0.01	***=0.001	blank=n.s.
Lag	Percent Change GSP	Gini Coefficient	Poverty Rate	Unemployment Rate
20				NA
15		-**		NA
10			+**	-***
5	-**	+**	+***	-***
1		-***	+***	-***

Table 6, *Source: US Census Bureau*

Furthermore, wider roads may reduce congestion in some situations. But this may prove to be a cost to the states' economies for the sake of saving citizens' time and preserving local environmental conditions. There may very well be other methods for reducing the negative

temporal and ecological effects of congestion which come at less cost to the states' coffers

and economies than expanding highways. Some ideas include tolls, incentives to reduce

vehicle miles travelled, or changes to non-fossil fuel vehicles.

With local only spending, highway construction only had significant effects on the states'

percent changes in real GSP. This may be explained by the fact that highway construction brings

in companies and people who spend and do business with local companies, which then increases

state real GSP. It probably isn't a wise choice to use highway construction as a long term

method for improving the economy, due to the diminishing marginal returns that come from new

highway construction. But when the local government takes the lead in highway spending,

perhaps with the state acting as a coordinating agent, highways seem to be able to yield

significantly more positive effects at the state level than state level spending.

It should be noted that state highway spending also had statistically significant effects on

state poverty rates, while local spending on highways was less statistically significant up until

the later periods. The results of the regression of highway spending to state poverty rates may

provide a clue about the Gini coefficient puzzle, especially when taken with the rises in real GSP

in the states with highway construction. Rising tides don't raise all boats, it seems, as the

economy seems to work in a more complex and dynamic manner than this simple analysis

captures.

Conclusion:

In conclusion, the dynamics of how sub-federal governments impact the local, state and,

perhaps, even the national economy, appears to be a fruitful field for study by researchers and

can yield some possible benefits for the sub-federal and, perhaps, the federal government as well,

in terms of how legislators and agencies design, implement, and evaluate projects and programs in the context of their individual and regional economy.

One of the most significant themes of these research findings were that the intention, legal design of the policy or program, and execution of the policy or program matter and influence the economic indicators that were used in significant ways that the budgetary priorities don't necessarily capture. This could account for the counter-intuitive results that were found in the analysis. Indeed, the structure of the laws, in terms of incentives, allocations, quantities, and qualities also affect the economic outcomes. Policymakers would do well to conscientiously consider what they're actually intending to do, what is really present in a given social or economic situation, how they're going to go about accomplishing those goals, whether their methodology is based on sound logic and evidence, and whether or not they're implementing or carrying out those plans appropriately and effectively.

Another recommendation that could be inferred from the results is that there could be room for a greater amount of coordination and partnership among the governments of the United States in providing services effectively and efficiently. While this may mean a possible increase in the size of government to accommodate the necessities of the coordination efforts, it may overall save tax payers money and help boost the economy in terms of these four measurements of economic health. By coordinating their efforts with an especial attention to the conditions, needs, and reasonable wants of the local units of society, the governments might be able to save on waste, unnecessary redundancy, and make sure that goods and services are getting to people who need and/or want them. Further research would be needed to determine how much could be saved how to effectively implement this kind of regimen deliberately and conscientiously.

A third key take away point from this research is for policymakers in the legislature and executive, or in the bureaucracy to be cognizant and conscientious about what their priorities and decisions do to the economy and their long term standing in the society as government officials, elected, appointed, or hired. The actual intentions, desires, and priorities of elected officials matter, in terms of producing better economic and, indeed, social results through government policy. A doctor who is going to be more successful at curing patients isn't likely to go into the office without the intention to do no harm and with the honest intention to help. It may be wise for policymakers to mimic a doctor's deliberate attitude and intention in order to achieve better results for themselves and the general public.

Using the medical metaphor again, no doctor would also seek to work without a solid understanding and comprehension of the human body, its interrelated systems, what it needs independently of the patients' wants, and what the individual patients ultimately want done. A series of indicators to assess not only economic, but also social and environmental well-being and health needs to be assembled in order to help orient policymakers relative to the society and its systems that they're practicing on and with, just as there are measurements and indicators of physical health relative to the body and its systems. Standard procedures and methodologies can then be discovered to determine a general outline of what works and what doesn't work for the society, dependent upon feedback from the members of society themselves to provide better service in an efficient and cost effective manner. A dialogue can then be initiated between the governed population and the people in government to figure out what the public needs and wants explicitly and implicitly from the economy and their respective governments.

When making these new indictors, officials and policymakers should consider a broader definition of economic health and well-being than just percentage changes in GSP. This is

because it does not reflect the full picture of what is happening in their economies and to their citizens. Indeed, the health of a complex system of systems such as society cannot likely be summed up by just one simple and imperfect indicator that can be maximized or minimized. A possible model for how we can develop these monitoring systems and how to execute them is how our own bodies register their own internal conditions independently of our knowledge and direct consciousness. There are many ways that our own bodies maintain their own homeostasis in energy efficient and effective manner that ensure our own survival. Perhaps the functions of the human body and other organisms may yield solutions for how to monitor, evaluate, and maintain relative homeostasis within the government relative to the society and the environment as an organization and within our society inclusive of the governments of our society relative to the environments in which we inhabit as individuals and as a society.

Caveats:

There are some significant shortcomings to this model which will likely affect the overall results, but may prove useful as avenues for future research. The most glaring instance comes from the fact that this analysis is missing the regulatory side of the law and government policy; the incentive structures, the phrasing, and the organizational aspect to programs, agencies, and projects. This study only covered the fiscal area of policy which, while significant, doesn't grasp the legal and organizational structures which also likely have a significant influence on producing a healthy, thriving economy on the state and local levels.

Another caveat to this research was the exclusion of federal and health and hospital spending, which do indeed have significant economic impacts in many states and localities. It is hypothesized that this federal spending, if used appropriately by the local and state governments, could actually add to the magnitude of effect levied by the state and local governments funding

their own independently. However, it could also decrease the overall size of the national pie if those funds are taxed in inappropriate manners or used in ineffective ways.

A third caveat is the concept of non-linearity that is more than likely present in real world economic settings. This study only did a linear regression, which assumes, among other things, that the values continue in their directions ad-infinitum at the same coefficient. It is possible that the real relationships among these variables is non-linear, which means that an additional dollar spent on function X may have a different effect than a second dollar or one dollar taken away. It is tempting to think of the world in this simple, linear fashion. However, there very well may be single straws that can break a camel's back in state and local fiscal policy, or increase yields by disproportionately high amounts to what was put in.   Therefore, one cannot make specific judgements from this paper as to how things precisely work in government fiscal policy, the economy, or in how the fiscal policy relates to the economic measurements that are chosen.

This final point leads into the fourth main caveat of this research, that is, the lack of attention that was paid towards the revenue generating strategies of the states. This process could very well be a complement paper to this one that could, perhaps, be done as an integrated whole one day. Sadly, due to lack of space and time, the revenue generating policies of the state and local governments were left out of this analysis, leaving another hole for future research to fill.

The final limitation in this research is the lack of the Bonferroni correction to reduce the probability of a false positive result. While this may not be significant to the research, it should still be noted that this was not done in the analysis, thus, leaving open the possibility of false positives in the final results.

Summary:

In sum, there are many ways to define the public good and a healthy economy that public officials and policymakers have to consider when making decisions. They must choose what they want to prioritize and how to go about accomplishing those ends. All of their decisions have consequences in the economy and in the society, which then have to be tracked and adapted to in order to maintain a kind of healthy homeostasis that permits the society and its individual and organizational constitutes to function. Not all growth helps the general public (as demonstrated by the negative relationship between the percent change in real GSP and the Gini coefficient) and policymakers must choose whom they're going to support within a society and how they are supporting them.

In addition, coordination and timing among the governments were two key policy tactics that can be employed among the various governments of the United States and, possibly, the international system as a whole. From looking at the data, it seems that the bigger results are found from the actions of the state and local governments especially, which then aggregate to the higher levels of the system and become more than their own individual parts when coordinated and orchestrated among themselves effectively. The biggest impacts seem to happen on the local level, which then translate to contributions to the larger aggregate picture of the state, the region, the nation, and the world as a whole. All of these working parts can, hypothetically, be made more self-aware and conscious of how their actions are impacting the others around them. This then opens up the possibility of finding better solutions to the common and uncommon social, economic, and environmental problems that we face as a human society living on this little planet in the middle of a vast ocean of space and time.

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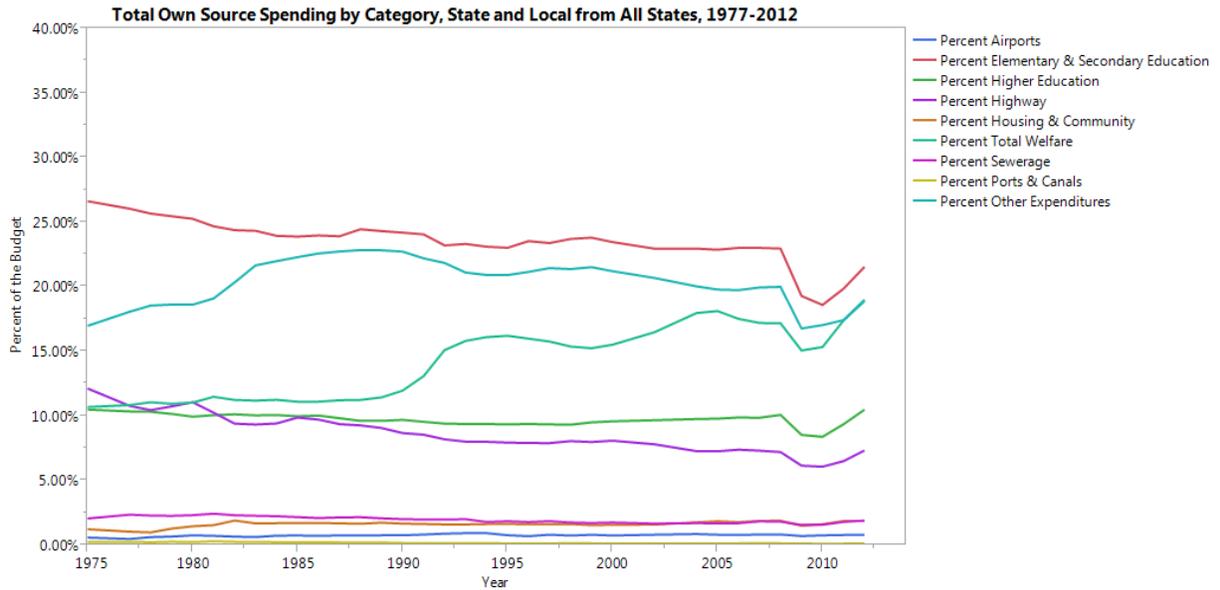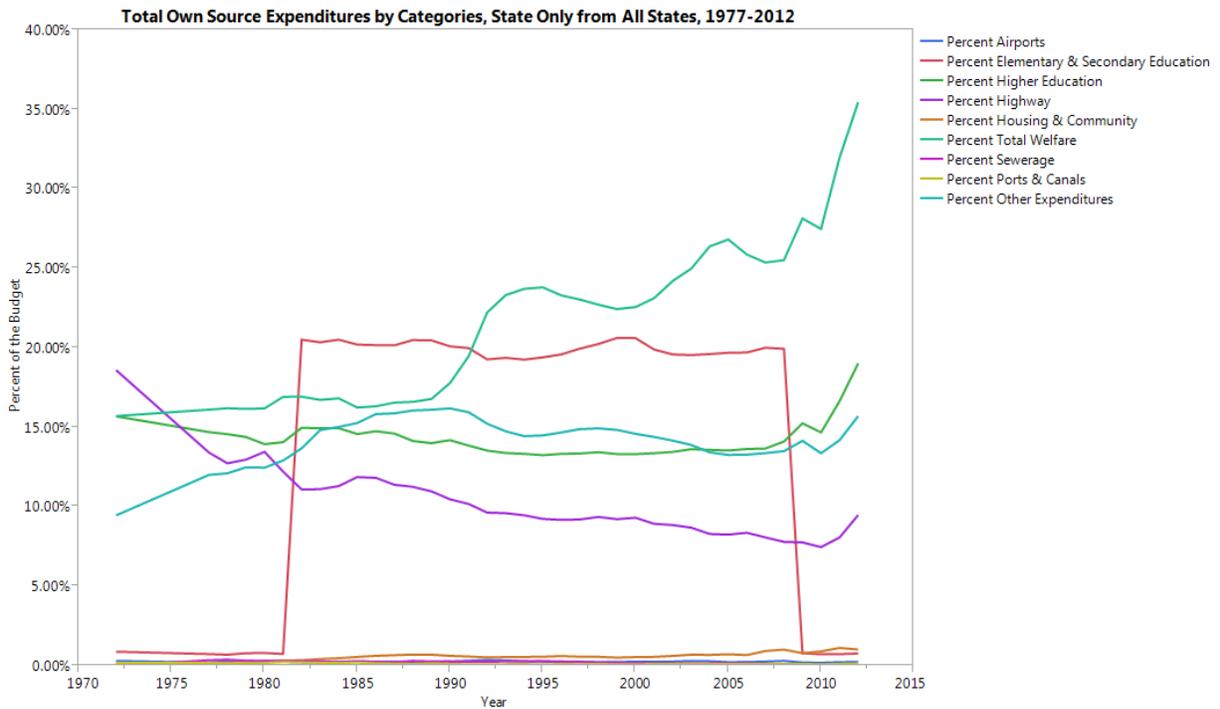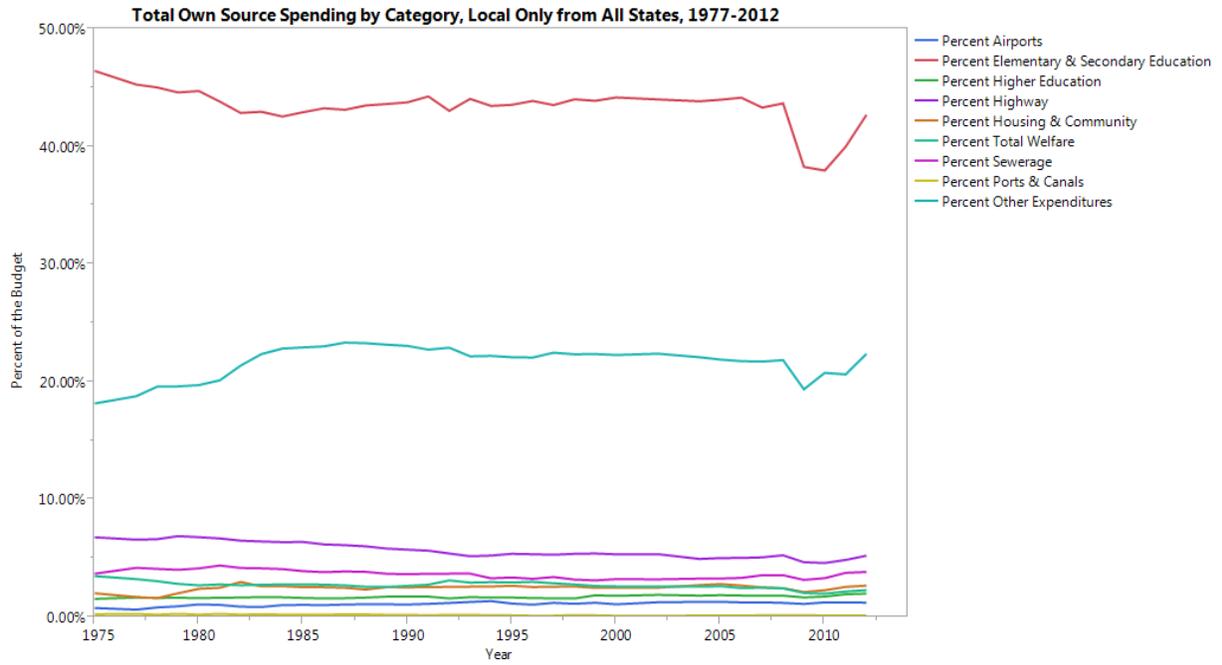# Appendix

Figure H, *Source: US Census Bureau*

Figure I, *Source: US Census Bureau*

Figure J, *Source: US Census Bureau*