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Changes in Public Sector Employment with a Focus on Wisconsin 1993 to 2004

By

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Executive Summary

This study examines patterns of total employment growth and growth in the public sector. We use data from the 50 states with a focus on the 1993 to 2004 time period. We define the public sector with respect to state government as well as local government with the latter including counties, municipalities, K-12 public schools and special districts. We maintain that given the labor intensive nature of the public sector we can assess the size of the government by monitoring public sector employment. Our key findings include:

- o The size of government in Wisconsin, as measured by public sector employment, is on par with the national average.

- o Wisconsin's growth in public sector employment is consistent with the average of the other 49 states.

- o Nationally, growth in state government employment has been stagnant for an extended period of time, whereas growth in local government has tended to more closely parallel total employment growth. For Wisconsin, the growth in state government employment places it near the bottom of the 50 states and near the average for local government.

- o In Wisconsin there has been significant investment in employment in the corrections sector. The bulk of employment growth in employment at the local level has been in the protective services and K-12 education.

- o Growth in public sector employment is highly correlated with total employment growth. The implication is that as the economy grows the demand for public services, particularly at the local level, also grows.

- o The growth rate in public sector employment tends to be lower than total employment growth.

The results clearly suggest that Wisconsin's public sector, as measured by employment, is not "out of control" and growth in the public sector is a natural by-product of growth in the overall economy.

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Introduction

Wisconsin bears the ugly burden of being labeled as a high tax and spending state. Waukesha County Executive Dan Vrakas, for example stated that "Wisconsin is one of the highest taxed states in the nation" (Feb 16, 2006).[1] It has been argued that the current taxation policy in Wisconsin is threatening the health of the state's economy. James S. Haney, president of Wisconsin Manufacturers & Commerce recently said "[o]ur high taxes are driving our young people to other states to find jobs. Our seniors are retiring away from their families. And, in the long run, high taxes slow job creation" (February 13, 2006).[2] This perception, whether it is true or not, has lead to several efforts over the past few years to "control" tax growth with the most recent effort being the Wisconsin Taxpayer Protection Act (WTPA). In the announcement of the proposed Wisconsin Taxpayers Protection Act (WTPA) State Senator Glenn Grothman (R–West Bend) called taxation levels in Wisconsin "out of control".[3,4]

The intent of this study is not to revisit the fiscal policies of the state and local government in Wisconsin but to offer an alternative way of thinking about the size of the public sector in Wisconsin. When we think about the contribution of various industries in the state we often think in terms of the number of jobs and level of income the industry contributes to the state's economy.[5] Thus for this study we want to look at the number of jobs that are attributable to the public sector. One could reasonably argue that looking at

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[1] Press release dated February 16, 2006 http://www.thewheelerreport.com/releases/Feb06/Feb14/0214vrakastpa.pdf

[2] Press release dated February 13, 2006 http://www.wmc.org/governmentaffairs/display.cfm?ID=124

[3] Press release dated February 9, 2006 http://thewheelerreport.com/releases/Feb06/Feb9/0209grothmanrelease1.pdf

[4] This perception, however, is somewhat distorted and paints an erroneous picture of the true situation in Wisconsin. As noted by Knapp and Berry (2003), when one considers just taxes as a source of public sector revenues, Wisconsin does tend to rank high.[4] But this view is telling only half of the story. State and local governments in Wisconsin generate revenues from two broad sources: taxes and fees/charges. Taxes include income, sales, property and corporate taxes and fees/charges includes licenses and registration fees, charges for state park passes and fines levied through the judicial system. If we consider all sources of revenue, Wisconsin does not appear to be out of line when compared to other states. The Rockefeller Institute of Government at State University of New York found that total revenues per capita in Wisconsin was $6,022 in 2002 compared to $5,909 for the national average and a ranking of 18th in the nation. When we consider the "ability to pay" Wisconsin fares even better. Again, according to the Rockefeller Institute state and local government revenues accounts for 20.5 percent of personal income in Wisconsin which is only slightly higher than the national average of 19.3 percent. If we compare to all other states Wisconsin ranks in the middle at 23.

As noted by Knapp and Berry (2003) the reason we tend to rank so highly on taxes is that we as a state have historical decided to rely on taxes for revenues and keep fees and charges as low as possible. For example, we do not have toll roads in Wisconsin, nor do we charge for library cards, our car registration fees are low relative to other states and our licenses fee structure tends to be low. Knapp and Berry (2003: p36) conclude that "[a]pproximately 30% of Wisconsin's higher taxes are due to "revenue mix," that is, fewer federal and miscellaneous dollars, and lower fees and charges for government services here compared to elsewhere."

Dale J. Knapp and Todd A. Berry. 2003. "Why Are Wisconsin's Taxes High?" Wisconsin Taxpayers Alliance. http://www.wistax.org/news_releases/2003/why%20high%20taxes.pdf

[5] See for example the study on the contribution of agriculture to the Wisconsin's economy by Deller (2004) and the collection of county-specific studies at http://www.uwex.edu/ces/ag/wisag/

public sector employment is looking too narrowly at the size of government. Government in Wisconsin has significant expenditures that are not related to public employees such as the contracting of road construction and health care programs such as BadgerCare. Public sector employment, however, accounts for the vast majority of government expenditures despite growing efforts to contract out services (Maher and Deller, 2004). Consider, for example, the City of Wauwatosa where in the budgeted 2006 fiscal year the wages and benefits of City employees account for 71.9 percent of total general fund expenditures. The public sector tends to be labor intensive and by examining public sector employment we introduce an alternative way of thinking about the question facing Wisconsin residents; is government too big in Wisconsin and are constitutional amendments necessary to bring it into line with the desires of Wisconsin residents?

We do this in four ways. First we look at general trends in terms of public and private sector employment over the 1979 to 2004 time period. This longer time period provides background in terms of how Wisconsin has historically compared to the US. Second, we compare Wisconsin to the other 49 states for a shorter time period, 1993 to 2004. Third, we provide a detailed comparison of Wisconsin to the US across a range of specific types of public employment such as corrections and education. We close this study with a discussion of very simple economic growth models where we look at the correlation between total employment growth and employment in the public sector.[6] We also include a more advanced statistical model of employment growth in an appendix to this applied study.

Trends in Public Sector Employment

To set the stage for further discussion consider first the long-term employment growth for the U.S. and Wisconsin from 1979-2004 (Figure 1). Over the entire period total employment in Wisconsin grew slightly more than 40 percent which is generally slower than the national rate of about 50 percent. Besides the overall level of growth a couple of patterns are worth mentioning. First, the recession of the early 1980s was particularly hard on Wisconsin and the recovery through the 1980s was slower than the U.S. Interestingly, however, the recession of the early 1990s did not impact Wisconsin in any measurable way. Indeed, job growth for Wisconsin and the U.S. were near parallel. The same can not be said for Wisconsin and the most recent recession. In addition, Wisconsin appears to have trailed behind the U.S. during the solid job growth of the last few years of the 1990s. Although Wisconsin has recently experienced reasonable employment growth, some might point to the fact that Wisconsin has modestly lagged behind the nation as evidence that something in Wisconsin is "broken" and the size of government is a major contributor.

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[6] The study reported here is an update of the study by Deller and Maher (2004) entitled "Employment in the Public Sector" Department of Agricultural and Applied Economics Staff Paper No. 474. University of Wisconsin – Madison. http://www.aae.wisc.edu/pubs/sps/pdf/stpap474.pdf

If we look at public sector employment growth we see a very different picture. Consider first state then local government employment. Wisconsin experienced very modest state government employment growth, particularly compared to the U.S. (Figure 2). Over the 25 year period state government employment at the national level grew about 40 percent but only 10 percent in Wisconsin with much of that growth occurring in the past four years. Below we will explore the specific sources of this growth at the state level. Given this slow growth it is difficult to imagine that the growth in state government is "out of control". When we examine local government employment we find that Wisconsin has closely paralleled the U.S. (Figure 3). Over the 25 year period local government employment grew by 48 percent while it grew by not quite 47 percent for the nation. There are two periods within the 25 year time frame where there was no growth and even modest declines in local government growth including the recession of the early 1980s and during the past three years. If we combine total, state and local government growth for Wisconsin onto one chart (Figure 4) we can again see that state government employment has been modest while local government employment and total employment have closely paralleled each other. Wisconsin's most recent recession is interesting in that while total employment stagnated from 1999 to 2003 and began to recover in 2004, local government employment did not show any evidence of slowing during the recession but has experienced a decline during the recovery. This may be due to the property tax freezes coupled with the freeze in state shared revenue that has been imposed on local governments over the past few years. It may also reflect growing interest among local governments to consider alternative methods of service delivery, including contracting out services and collaborating with neighboring communities.

One of the problems with looking at such a long time period is the potential for confusion introduced by having three separate recessions within the time period. In addition there have been significant changes in federal-state and state-local relationships during this time period. Perhaps the most fundamental change during this period was the devolution policy of the Reagan-Bush administrations aimed at shifting greater responsibilities to the states and local governments. This was followed by "tax revolts" highlighted by California's Proposition13 and the more recent passage and rescinding of Colorado's Taxpayers Bill of Rights (TABOR).   A recent study of the Wisconsin Shared Revenues Program by Deller and Maher (2006) documents that the changing political climate and fiscal realities have fundamentally altered the way in which local governments treat aids from the state.[7] State aids, which were once viewed as dependable are now viewed with uncertainty and treated as transitory as opposed to permanent. This shift may partially explain why we see a dip in public sector employment at the local level.

Thus for the remained of this study we will focus on the eleven year period 1993 to 2004. We select 1993 as the beginning of the study period because it is after the recession of the early 1990s, therefore,

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[7] Deller, Steven C. and Craig Maher. (2006, forthcoming). "A Model of Asymmetries in the Flypaper Effect." Publius: The Journal of Federalism.

avoiding any distortions related to the recession yet still giving us a reasonably long time frame to look for trends. In 1993 Wisconsin's economy was stable and there was limited discussion of property tax freezes and constitutional amendments to limit revenue and spending. We use 2004 to close the time period examined because it is the most current data available.

In Table 1 we provide three pieces of information: total employment growth over the 1993-2004 study period, growth in state government employment and growth in local government employment. Over the period total employment for the U.S. grew by 20.1 percent and Wisconsin grew by a more modest 17.2 percent, which places Wisconsin in the middle of the 50 states in terms of employment growth (rank 28) (Figure 5). Compared to our immediate neighbors, only Minnesota experienced a faster job growth rate at 20.8 percent, which ranks Minnesota 20th in the nation. Our other immediate neighbors, Illinois, Iowa and Michigan experienced growth rates slower than Wisconsin. The generally modest growth rate in the Midwest is more a reflection of the strong growth in the southern and southwestern states than fundamental weaknesses in the Midwest economy.

State government employment growth, also reported in Table 1 as well as Figure 6, was 10 percent nationally from 1993 to 2004 but only 5.4 percent for Wisconsin, which ranks Wisconsin 36th in the nation. In other words, only 14 states had a more modest level of growth in state employment. In fact, eleven states experienced net declines in state government employment during the period. (We will examine specific categories of state and local employment growth, and decline, below).

Local government employment has followed a different pattern than state government employment both nationally and in Wisconsin (Table 1, Figure 7). Nationally, local government employment, which includes counties, municipalities, special districts and public K-12 schools, grew by 21.3 percent at the national level and 16.0 percent in Wisconsin. Compared to the other 49 states, Wisconsin's growth in local government employment ranked 36th.   In other words, only 14 states experienced slower growth rates in local government employment; no states experienced a decline. The reasoning for the stark difference between state and local government employment trends centers on the nature of the services offered. As regions (in our case here states) grow the demand for public services also grows. But the types of public services that experience the greatest increase in demand tend to be offered by local governments. As a municipality grows in terms of population, employment and income the demand for police and fire protection services grows as does the pressure on the local public education system. New police and fire stations need to be built and staffed and new schools need to be built and staffed. State governments tend not to experience the same type of growth pressures. This is not to say state governments do not experience growth pressures, indeed, this simple analysis of employment levels tells us this is the case. The level of growth pressure is different between the two levels of government with more pressure placed on local governments.

We can see these differences in demand for state provided services verses locally provided services when examining the share of total employment that is in state and local government (Table 2, Figures 8 and 9). For the most current year, 2004, about three percent of total employment is attributable to state governments nationally and 2.9 percent for Wisconsin, which translates into a ranking of 37. Hawaii has the largest share with 8.8 percent of total employment and Nevada had the lowest at 2.1 percent. Hawaii is unique because the role of local government is very small (Figure 9), for example, all public K-12 school employees are employed by the state, not independent local school districts. At the national level local government accounts for 8.1 percent of total employment and in Wisconsin local government accounts for 8.0 percent and ranks 26th nationally. When we look at our immediate neighbors, Illinois, Iowa and Michigan have a larger share of total employment in local government and in Minnesota 7.9 percent of total employment is accounted for by local government. If employment is a reasonable proxy of the size of government then Wisconsin ranks close to the national average and does not appear to be "out of control".

We can also deduce from the analysis thus far that the share of employment in the public sector is declining over time. For Wisconsin, if total employment grew by 17.2 percent and state government employment grew by only 5.4 percent and local government employment grew by 16.0 percent, it must be the case that the share of total employment that is in the public sector is declining. But how does Wisconsin compare to the other 49 states as well as the national average? The percent change in the public sector share of total employment from 1993 to 2004 is provided in Table 3 and Figures 10 and 11. Nationally, state government employment as a share of total employment declined by 8.4 percent and for Wisconsin the decline was 10.1 percent which ranks Wisconsin 27th (Figure 10). For local governments the share of total employment actually increased at the national level by one percent and declined for Wisconsin by one percent, which ranks Wisconsin 32th nationally. If we go back to the longer-term analysis presented in Figure 4 and if we looked at say 2002 or 2003 this latter result might be different. This latter observation speaks to why it is important to look for trends in the public sector and not to overly focus on one particular period in time.

To gain insights into which types of public services are driving the overall levels of public sector employment discussed above, we break employment down into 32 separate categories for state and local governments combined (Table 4), as well as state (Table 5) and local (Table 6) government separated. First consider the distribution of state and local government employment across the 32 separate categories (Table 4). Both nationally and in Wisconsin, K-12 education accounts for the lion's share of public sector employment at 41 percent nationally and 41.7 percent for Wisconsin. Given the dominance of K-12 education in public sector employment and the reality that the bulk of public expenditures going to salaries and benefits, it becomes clear that if limits are placed on the ability to generate revenues, as is

proposed with the Wisconsin Taxpayers Protection Amendment, the bulk of the impact restrictions will fall on our public schools. The next highest single category of public sector employment is higher education (the University System and Technical Schools) accounts for 11.7 percent nationally and 15.1 percent for Wisconsin.

If we look at how these two sectors have changed over the 1993 to 2004 study period we can see strong growth at the national level. For K-12 educational employment directly related to instruction (teachers) grew by 28.4 percent nationally but only 18.3 percent for Wisconsin. Part of this slower growth in K-12 teacher employment is explained by the fact that Wisconsin grew slower overall than the nation (Table 1 and Figure 5). But the slower overall growth is not sufficient to explain all of the difference between the nation and Wisconsin. It is clear again that the revenue caps that have been in place in Wisconsin since the early 1990s are limiting their growth.[8] If we look at changes in employment in higher education over the study period we see that nationally, instructional employment (teaching faculty and staff) increased by 14.4 percent but actually declined by two percent in Wisconsin.[9] This decline has resulted in limiting the size of incoming classes thus limiting access to higher education for Wisconsin residents, increased teaching loads on academic staff and increased class sizes both of which hinders the quality of the educational experience.

A detailed discussion of all 32 categories of public sector employment is beyond the scope of this study and we encourage the reader to more closely examine the information contained in the tables. For discussion now if we limit attention to categories that account for more than two percent of total public sector employment and where there is an apparent large difference in changes over the study period between Wisconsin and the nation. Consider for example, corrections which accounts for about 4.5 percent of public sector employment for both the nation and Wisconsin. But over the 1993-2004 period employment in corrections grew by 27.6 percent nationally but by 75.1 percent for Wisconsin. On face value it appears Wisconsin is shifting resources away from higher education and putting those resources into corrections. This begs the question what is the long-term impact such a decision will have on the future of Wisconsin's economy and social well-being.

Other categories where Wisconsin appears to diverge from national trends are in highways where Wisconsin is investing more than the national average. In addition, there is a large increase in financial administration where Wisconsin increased by 27.1 percent while the nation increased by 16.6 percent. This latter result appears to be explained by the growing need for professional financial administration,

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[8] It should be noted that while the percentage change in K-12 education in WI has been slower over this eleven year period, WI still has a larger share of total local government employment in K-12 education when compared to the national average in 2004 (28.4% vs. 31.0%), the differences become nearly mute when instruction and other are combined (41.7% vs. 41.0%).

[9] Much like K-12 education, despite the lower growth, WI still has a greater percentage of public employment in higher ed (5.4% vs. 4.0%)

particularly at the local level (see Table 6). We also see significant differences in social insurance administration where there was a 17.2 percent decline nationally by a 22.6 percent increase in Wisconsin. Similarly, employment in the administration of public welfare programs increased by three percent nationally but 8.1 percent in Wisconsin. These differences could be explained by differences in how states elect to administer different programs with some states electing to privatize certain functions. Clearly, the level of analysis presented here is not sufficient to provide adequate insight into some of these differences.

Three areas that Wisconsin appears to be making a significant "disinvestment" in include parks and recreation where there was an increase of 12.8 percent national but a decline of 15.3 percent in Wisconsin, housing and community development with a national increase of 11.4 percent but a decline of 27.0 percent in Wisconsin and in natural resources where there was a modest increase of 3.3 percent nationally but a 10.1 percent decline in Wisconsin. This may be cause for concern because the programs and services offered in these categories often are aimed at enhancing the economic competitiveness of the state and local communities.. It should be noted, however, that the relative size of these program areas are small and modest declines in absolute numbers are translated into large percentage changes.

There are two general observations that can be drawn from the analysis. First, if one accepts the notion that public sector employment is a reasonable proxy to address the concerns centering on the size of government, then it is clear that the size of the public sector in Wisconsin is not "out of control." Indeed, Wisconsin appears to be near the national average and levels of growth are at or below the national average. Second, given the limited resources that the state has imposed upon itself, as it makes decisions to invest in one area, such as corrections, it must out of necessity make cuts in other areas. For Wisconsin those cuts have appeared to be in higher education, natural resource protection, parks and recreational, and housing and community development programs.

Public Employment and Economic Growth

One of the major thrusts of the current debate on the proposed Wisconsin Taxpayers Protection Amendment (WTPA), along with the TABOR proposal and property tax freezes, centers on the idea that the current level of taxation and spending is inhibiting the ability of Wisconsin's economy to grow and prosper. In other words, the public sector in Wisconsin is simply too big and is acting as a drain on the state's economy. To gain insights into if this statement is true we offer a set of simple statistical correlations relating growth in total employment to our different measures of public sector employment. To be consistent with the descriptive analysis presented in the previous section we have three measures of the public sector: public sector employment growth (1993-2004), public sector share of total employment at the beginning of the study period (1993), and the change in the public sector share of total

employment (1993-2004). We look state and local government separately so there are six specific correlations that we examine.

The results of the correlations are provided in Table 7 and scatter-plots of each of the statistically significant correlations are provided in Figures 12 through 15. Two of the three measures are correlated with total employment growth and include public sector employment growth and the change in public sector employment's share of total employment. The level of public sector employment at the beginning of the period is not correlated with total employment growth. In other words, having a high level of dependency on the public sector, at either the state or local level, does not influence subsequent total employment growth. This latter result is of particular importance because it directly calls into question the assertion that a large public sector in and of itself presents a hindrance to economic growth.

The two statistically significant sets of results have equally strong policy implications. The first is the strong positive relationship between the growth rate in public sector employment at both the state and local level and total employment growth (Figures 12 and 13). This has a logical and reasonable interpretation: as the overall economy grows the demand for public services grows in proportion. This result is particularly true for local governments. This result makes sense, as the economy grows there is a need for more teachers, police officers, fire fighters, highway maintenance crews and sanitation workers to name a few. The demand for services offered at the state level, such as environmental enforcement staff, public welfare administrators and corrections officers among others, also increases but at a more modest rate. It follows that if employment in the public sector does not increase in proportion to the growth in total employment then the ability of the public sector to meet the demands of residents will be greatly hindered. We can not deduce from the analysis presented here what the implications of artificial limits on the ability of the public sector to grow to meet increasing demands will have on the continued growth in total employment.

The second strong statistical result suggests that the growth rate in the size of the public sector needs to grow proportionately slower than growth in total employment (Figures 14 and 15). The negative relationship between the change in the public sectors share of total employment over the study period and total employment growth implies that growth in the public sector should be slower than growth in total employment. For example, if total employment growth over the period is 25 percent, public sector employment needs to grow at a rate slower than 25 percent. When we combine the two statistically significant results the policy implication: as total employment grows employment in the public sector will also grow but at a slower rate.

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Conclusions

The intent of this study is to update an earlier study of public sector employment by Deller and Maher (2004).[10] The analysis presented here has three major findings. First, despite Wisconsin's reputation as a high tax state with a large investment in the public sector the level of public sector employment in Wisconsin is only slightly higher than the national average and falls close to the middle of the distribution of all 50 states. If employment is a reasonable measure of the size of government, which we maintain it is, then the statement that the size of government in Wisconsin is "out of control" is not justified. Second, the relative size of the public sector does not appear to either positively or negatively impact the growth of total employment. Third, as the economy grows, as measured by employment, the size of government also grows. In essence, as the economy grows the demand for public services also grows. But the growth rate in public sector employment needs to be slower than the growth rate in total employment.

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[10] See footnote no. 6 above.

Appendix A: Panel Data Analysis of Employment Growth

The simple correlation analysis presented in the main body of the study provides us with a reasonable first test to determine if there is a relationship between the size of government, as measured by employment, and total employment growth. We saw that there are patterns in those relationships that have clear policy implications. Simple correlations, however, only tell us if two variables, in this case the size of government and employment growth, move together and if so do they move in the same or opposite directions. One of the difficulties with drawing inferences from simple correlation analysis is that employment growth is dependent upon numerous factors; correlation analysis masks the importance of other determinants.

A more "complete" analysis would use methods that control for other factors, hence separating out the specific affects of the public sector. We do this using a variation on regression analysis coupled with a panel data set of 17 years of annual data (1987 to 2004) for the 50 states. The model that we estimate can be expressed in general terms as:

$$\Delta E_{t,t-1} = f(X_{t-1}, PS_{t-1}) \hspace{2cm} \text{(A.1)}$$

where E is employment, PS are our measures of the public sector and X is a set of control variables that allow us to separate out the effect of the public sector. Given that we are using annual data at the state level the $\Delta E_{t,t-1}$ represents the percent change from one year (t-1) to the next (t). The explanatory variables are measured in the previous year (t-1). So, for example, the percent change in employment from 2003 to 2004 is a function of the control variables in 2003.

Model Specification

We estimate a simple linear representation of the general model outlined in eq.(A.1). The dependent variable is the annual percentage change in employment. As note in the main body of the study employment growth is but only one potential measure of economic growth. The independent variables include:

> ➢ Earnings per Job
> ➢ State Share of U.S. GSP
> ➢ Per Capita Income from Unemployment
> ➢ Per Capita Income from Retirement
> ➢ Ratio of Farm to non-Farm Proprietors
> ➢ Percent of Employment in Manufacturing
> ➢ ***Percent of Employment in State Government***
> ➢ ***Percent of Employment in Local Government***

Earnings per job is a proxy for the cost of labor and in traditional neoclassical firm location theory firms will tend to look for and expand in areas (states) with lower labor costs. The state's share of U.S. gross state product (GSP) is intended to capture the size of the state's economy. Agglomeration theory suggests that larger economies have a comparative advantage over smaller economies and once larger economies begin to growth there is a cumulative affect on subsequent growth patterns. Per capita income from unemployment insurance programs is intended to capture recessionary periods. Per capita retirement income identifies states that are experiencing high levels of retirement in-migration. These tend to be states located in warmer climates which are also faster growing states.[11] The ration if farm to non-farm proprietors is designed to capture the dependency of the state on agriculture while the percent of employment in manufacturing is designed to capture dependency on manufacturing. Since neither

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[11] It is of interest to note that many parts of the Upper Great Lakes states are retirement destination areas because of the natural resources (lakes, forests, etc.) and the large stock of recreational housing that is being converted into year-round homes.

agriculture nor manufacturing is a growing part of the U.S. economy we expect higher values of both these variables will have a dampening (negative) affect on employment growth. To be consistent with our other measures we use the percent of total employment in both state and local government.

Estimation Methods

Given the panel nature of the data, there are several options when selecting the appropriate estimation method including the Fuller-Battese, Fixed Effects and Random Effects models.

Fuller-Battese This is the simplest formulation and assumes that the error structure is well behaved and that there are no cross-sectional or time effects within the panel. In other words, individual state data and time periods are independent. The specific model to be estimated can be written:

$$y_{it} = \sum_{k=1}^{m} X_{itk}\beta_k + e_{it} \quad ; \quad i = 1,...,50; t = 1,...,17 \tag{A.2}$$

$$E(e_i) = 0$$
$$Var(e_i) = \sigma_e^2 \tag{A.3}$$
$$Cov(e_j, e_i) = 0, \forall j \neq i$$

In this formulation ordinary least squares (OLS) is acceptable.

Fixed Effects The Fixed Effects model assumes that either the cross sectional or time series components of the model are not independent or the statistical relationship varies across states or time. This is captured in the Fixed Effects model by including an intercept shifter in the form of:

$$\text{(One Way)} \qquad y_{it} = \alpha_o + \alpha_{i,or,t} + \sum_{k=1}^{m} X_{itk}\beta_k + e_{it} \tag{A.4}$$

In the one way there is an intercept shifter for *either* the cross sectors (50) or the time series (17)
It is also possible for the non-independence to run across space (states) and time (years) simultaneously. In other words, the intercept shifts need to be included for both space and time and can be expressed as:

$$\text{(Two Way)} \qquad y_{it} = \alpha_o + \alpha_i + \alpha_t + \sum_{k=1}^{m} X_{itk}\beta_k + e_{it} \tag{A.5}$$

In both the One Way Fixed Effects and Two Way Fixed Effects model the error variances are constant and assumed to be well-behaved (eq.(A.3)).

Random Effects The Random Effects model lifts the assumption of constant and well-behaved error variances and allows for a more complex error structure which can take the form of a One or Two Way relation following the same logic as the Fixed Effects model. These can be expressed as:

$$\text{(One Way)} \qquad y_{it} = \sum_{k=1}^{m} X_{itk}\beta_k + e_{it}; \quad e_{it} = \varepsilon_i + \upsilon_{it}; \text{ or } e_{it} = v_t + \upsilon_{it} \tag{A.6}$$

$$E(\varepsilon_i) = 0$$
$$Var(\varepsilon_i) = \sigma_\varepsilon^2$$
$$Cov(\upsilon_{it}, \varepsilon_i) = 0 \tag{A.7}$$
$$Var(\upsilon_{it} + \varepsilon_i) = \sigma_\varepsilon^2 + \sigma_\upsilon^2 = \sigma^2$$

The key here is that the error variances vary across group (cross section or time). Intercepts and slopes are constant across regions and time.

$$\text{(Two Way)} \qquad y_{it} = \sum_{k=1}^{m} X_{itk}\beta_k + e_{it}; \qquad e_{it} = \varepsilon_i + v_t + \upsilon_{it} \qquad\qquad \text{(A.8)}$$

The key here is that the error variances vary across groups (*both* cross section and time). Intercepts and slopes are constant across regions and time.

There are two test statistics that we can employ to help us determine which of the different specifications are appropriate and they include:

- F test compares FEM to OLS; a significant p-value favors FEM over OLS
- the Hausman test compares REM versus FEM; a significant p-value favors FEM over REM

For completeness we estimate and report all five specifications of the model as well as the appropriate test statistics.

Empirical Results

The results of this simple model are mixed in some regards, but support our prior expectations in other regards. Based on the R^2 and the F test for fixed effects and the Hausman test for random effects it appears that the Two Way Fixed Effects model may be the best performing model. Thus for brevity, we will limit our discussion to the results of that particular model. The Two Way Fixed Effects model explains about 70 percent of the variation in employment growth which is appreciably higher than another of the other specifications.

Earnings per job tends to have a positive affect on employment growth which challenges the idea from neoclassical location theory that firms will look to and expand in areas with lower wages. This result strongly suggests that such a view is too simplistic and the relationship between labor costs and regional economic growth are more complex. For example, earnings per job are reflective of labor productivity with more productive labor earning higher wages. These results suggest that firms are seeking out more productive labor and are willing to pay higher wages to have access to that labor. Other potential explanations are more focused on specific industries where faster growth sectors, such as health care, tend to pay higher wages.

The state's share of national gross product is negatively related to employment growth but the result is statistically weak (t statistical below 1.96). This result is opposite what we would expect and hints that smaller states may be catching up to larger states, or there is a process of convergence at play. Higher levels of income coming from unemployment insurance tends to lower employment growth as expected and higher levels of income from retirement sources are associated with higher employment growth, again as expected.

Higher dependency on both agriculture and manufacturing tends to associated with higher growth rates in total employment. This result is completely unexpected and is not consistent with the majority of the available empirical studies. While we have focused our discussion here on the Two Way Fixed Effects model, the result on manufacturing dependency is not stable across the alternative specifications thus casting doubt on this particular result. The result on agriculture, however, is more consistent and clearly warrants additional work.

Unlike the simple correlation analysis presented in the main body of this study, the share of total employment in state government appears to have a positive and statistically significant influence on total

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employment growth. The estimated coefficient on local government is positive, but statistically insignificant thus we can not reject the idea that the coefficient is zero, or the percent of total employment in local government has no influence on total job growth. Although the positive coefficient on state government is somewhat unexpected, the results consistently challenge the idea that "big government" hinders economic growth.

The results of this study provide an additional piece to a complex puzzle. The analysis is not sufficient to provide a definitive answer to the question, but it does raise serious objections to the idea that big government, as measured by employment, necessarily hinders economic growth.

Appendix Table: Change in Employment Model

Variable	Fuller	Fixed One	Fixed Two	Random One	Random Two
Intercept	-6.47E-03	-8.74E-02	-1.19E-01	4.39E-02	-6.47E-03
	(0.51)	(3.01)	(4.79)	(3.85)	(0.51)
Earnings per Job	7.94E-07	-5.74E-07	1.28E-06	-4.04E-07	7.94E-07
	(3.90)	(2.13)	(4.63)	(1.90)	(3.90)
State Share of U.S. GSP	-9.98E-02	-5.61E-01	-4.19E-01	-1.92E-02	-9.98E-02
	(1.64)	(1.53)	(1.58)	(0.34)	(1.64)
Per Capita Income from Unemployment	-1.30E-04	-6.00E-05	-1.30E-04	-4.00E-05	-1.30E-04
	(9.95)	(4.09)	(9.73)	(3.04)	(9.95)
Per Capita Income from Retirement	4.32E-06	6.69E-06	1.50E-05	-1.76E-06	4.32E-06
	(2.58)	(3.07)	(5.75)	(1.18)	(2.58)
Ratio of Farm to non-Farm Proprietors	1.74E-02	1.19E-01	8.55E-02	-1.21E-03	1.74E-02
	(1.92)	(5.06)	(4.85)	(0.13)	(1.92)
Percent of Employment in Manufacturing	-3.88E-02	9.11E-02	1.48E-01	-6.01E-02	-3.88E-02
	(1.63)	(1.56)	(3.36)	(2.52)	(1.63)
Percent of Employment in State Government	*5.72E-02*	*7.57E-01*	*4.44E-01*	*-1.84E-02*	*5.72E-02*
	(0.52)	*(2.80)*	*(2.23)*	*(0.17)*	*(0.52)*
Percent of Employment in Local Government	*2.51E-02*	*4.51E-01*	*2.31E-01*	*2.71E-02*	*2.51E-02*
	(0.31)	*(2.07)*	*(1.50)*	*(0.34)*	*(0.31)*
R square	0.1284	0.3457	0.6997	0.0787	0.1284
F test for fixed effects	--	4.74	21.69	--	--
Hausman test for random effects	187.69	--	--	68.5	187.69

t statistics in parentheses.

Figure 1: Total Employment Growth Index: 1979-2004
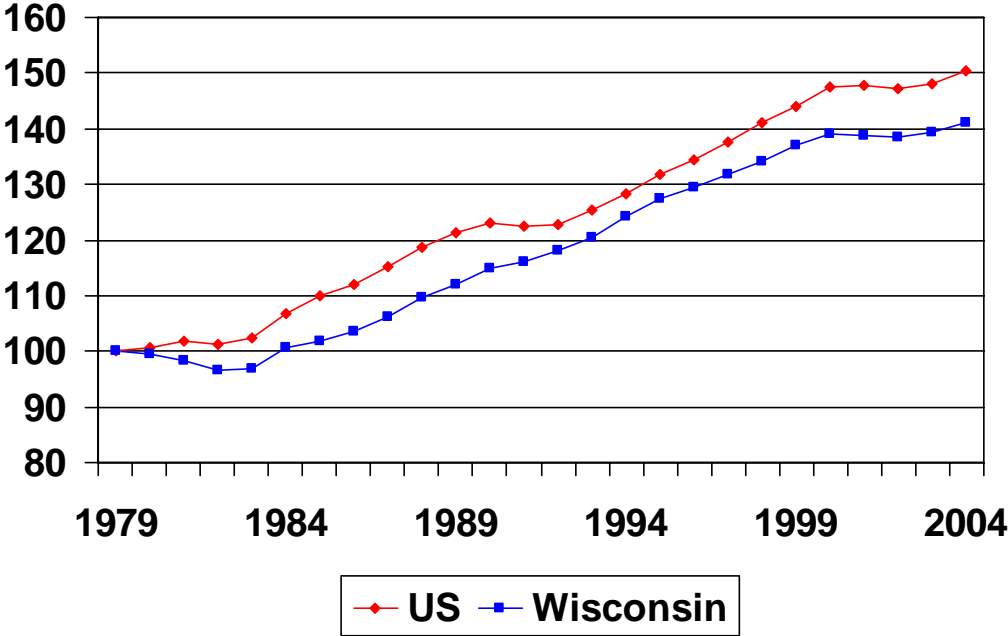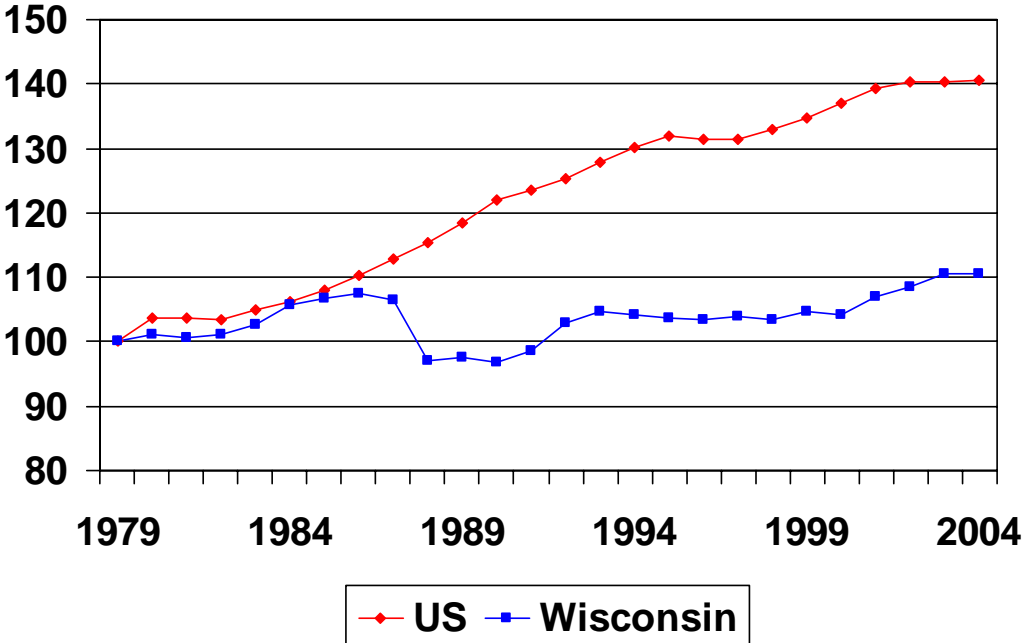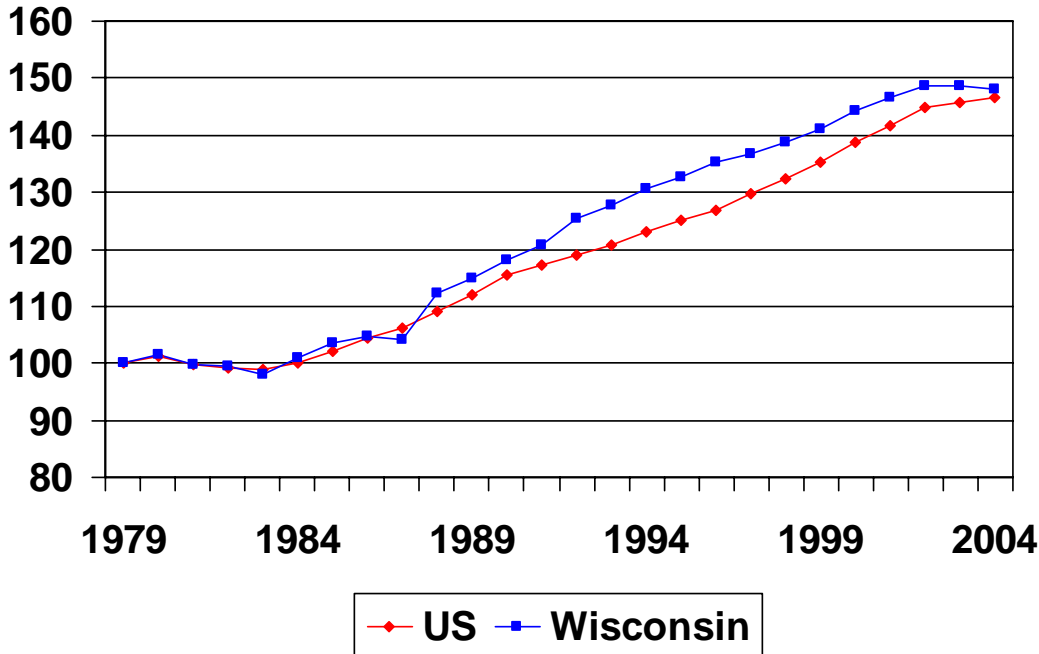

Figure 2: State Government Employment Growth Index: 1979-2004

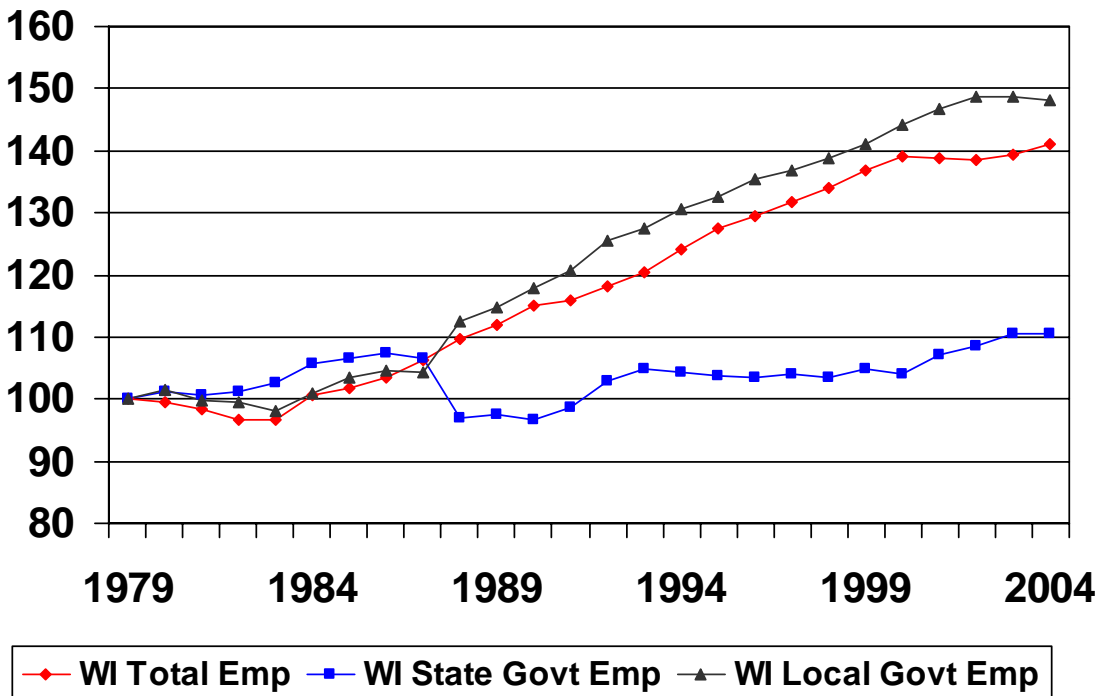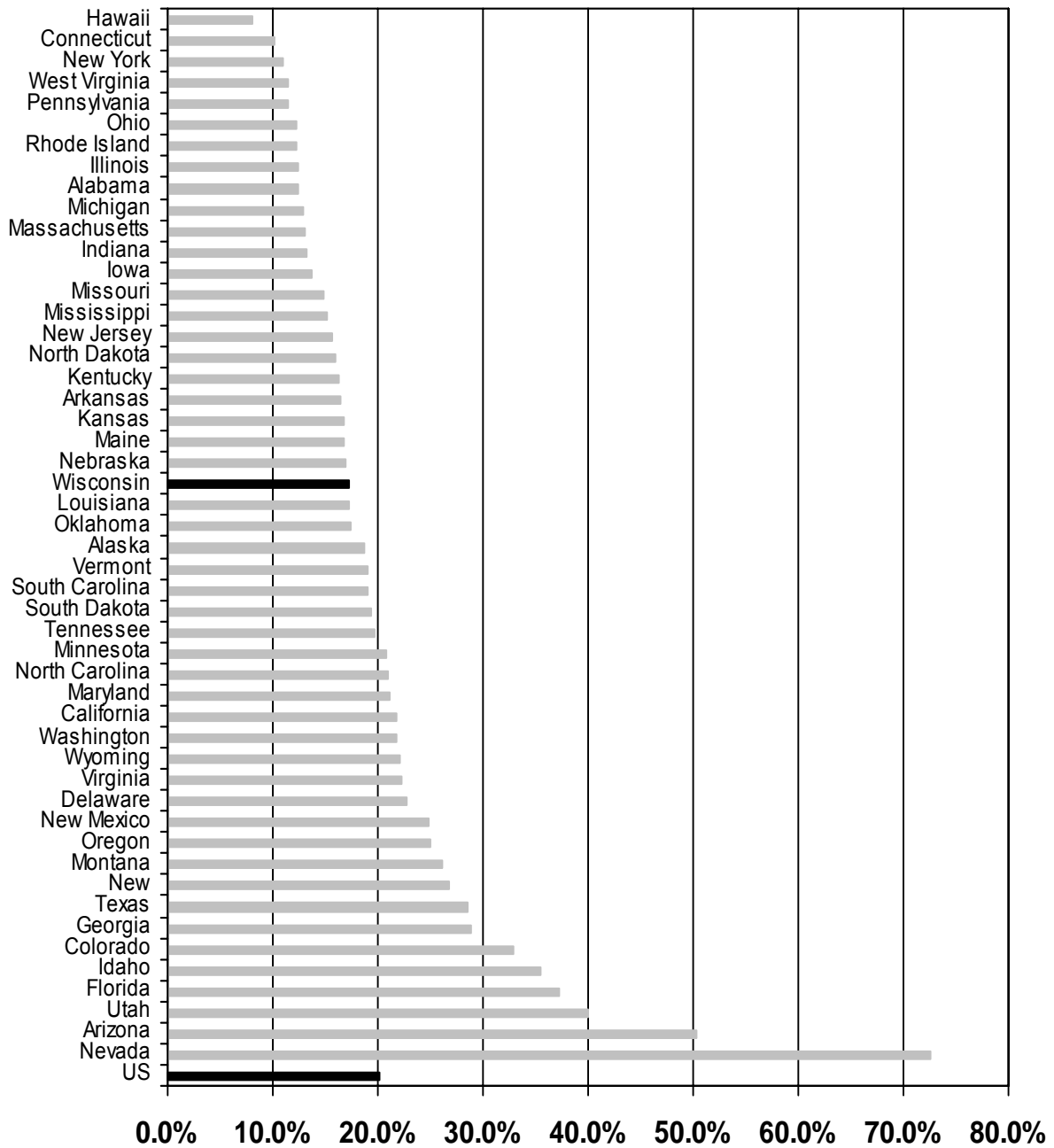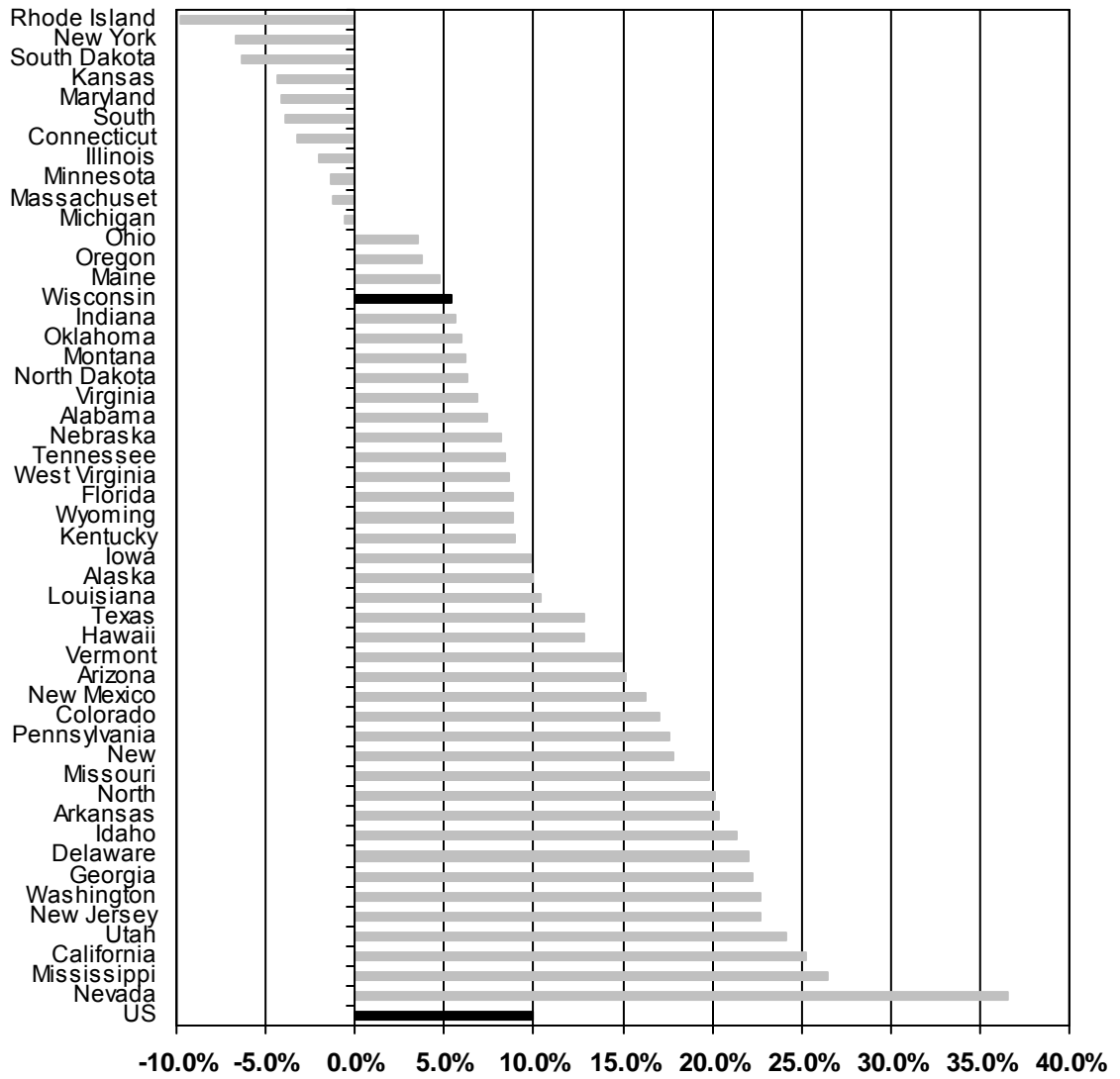**Figure 3: Local Government Employment Growth Index: 1979-2004**

Legend: US, Wisconsin

Figure 4: Wisconsin Employment Growth Indices: 1979-2004

Legend: WI Total Emp, WI State Govt Emp, WI Local Govt Emp

Table 1: Growth in Employment -- Percent Change 1993-2004

Total Employment			State Govt			Local Govt		
US	**20.1%**		**US**	**10.0%**		**US**	**21.3%**	
Nevada	72.6%	1	Nevada	36.6%	1	Nevada	64.6%	1
Arizona	50.4%	2	Mississippi	26.5%	2	Arizona	42.6%	2
Utah	40.0%	3	California	25.3%	3	New Mexico	36.7%	3
Florida	37.3%	4	Utah	24.2%	4	Idaho	36.5%	4
Idaho	35.5%	5	New Jersey	22.7%	5	Utah	35.5%	5
Colorado	32.9%	6	Washington	22.7%	6	Colorado	33.8%	6
Georgia	28.9%	7	Georgia	22.3%	7	Connecticut	32.2%	7
Texas	28.5%	8	Delaware	22.0%	8	New Hampshire	30.7%	8
New Hampshire	26.7%	9	Idaho	21.4%	9	North Carolina	29.8%	9
Montana	26.1%	10	Arkansas	20.4%	10	Texas	29.7%	10
Oregon	25.0%	11	North Carolina	20.1%	11	Virginia	29.3%	11
New Mexico	24.9%	12	Missouri	19.8%	12	South Carolina	28.5%	12
Delaware	22.7%	13	New Hampshire	17.8%	13	Washington	27.6%	13
Virginia	22.2%	14	Pennsylvania	17.6%	14	Florida	25.9%	14
Wyoming	22.1%	15	Colorado	17.0%	15	Georgia	25.5%	15
Washington	21.8%	16	New Mexico	16.3%	16	Missouri	25.4%	16
California	21.7%	17	Arizona	15.2%	17	Oregon	25.1%	17
Maryland	21.2%	18	Vermont	14.9%	18	California	25.0%	18
North Carolina	21.0%	19	Hawaii	12.8%	19	Tennessee	24.9%	19
Minnesota	20.8%	20	Texas	12.8%	20	Maryland	24.6%	20
Tennessee	19.7%	21	Louisiana	10.4%	21	Kansas	23.4%	21
South Dakota	19.3%	22	Alaska	10.0%	22	Kentucky	23.3%	22
South Carolina	19.0%	23	Iowa	9.8%	23	Rhode Island	23.3%	23
Vermont	19.0%	24	Kentucky	9.0%	24	Vermont	21.8%	24
Alaska	18.7%	25	Wyoming	8.8%	25	Mississippi	21.6%	25
Oklahoma	17.5%	26	Florida	8.8%	26	Arkansas	21.2%	26
Louisiana	17.3%	27	West Virginia	8.6%	27	North Dakota	19.7%	27
Wisconsin	**17.2%**	**28**	Tennessee	8.4%	28	Delaware	19.1%	28
Nebraska	17.0%	29	Nebraska	8.2%	29	Indiana	18.2%	29
Maine	16.8%	30	Alabama	7.4%	30	Oklahoma	17.4%	30
Kansas	16.8%	31	Virginia	6.8%	31	Maine	17.1%	31
Arkansas	16.5%	32	North Dakota	6.3%	32	South Dakota	17.1%	32
Kentucky	16.3%	33	Montana	6.2%	33	Alaska	16.3%	33
North Dakota	16.0%	34	Oklahoma	6.0%	34	Montana	16.1%	34
New Jersey	15.7%	35	Indiana	5.6%	35	Illinois	16.1%	35
Mississippi	15.1%	36	**Wisconsin**	**5.4%**	**36**	**Wisconsin**	**16.0%**	**36**
Missouri	14.8%	37	Maine	4.7%	37	Ohio	15.9%	37
Iowa	13.7%	38	Oregon	3.7%	38	Wyoming	15.2%	38
Indiana	13.2%	39	Ohio	3.5%	39	Louisiana	14.5%	39
Massachusetts	13.1%	40	Michigan	-0.6%	40	Alabama	14.1%	40
Michigan	12.9%	41	Massachusetts	-1.2%	41	Pennsylvania	14.0%	41
Alabama	12.5%	42	Minnesota	-1.4%	42	Minnesota	14.0%	42
Illinois	12.5%	43	Illinois	-2.0%	43	Massachusetts	13.8%	43
Rhode Island	12.3%	44	Connecticut	-3.2%	44	New Jersey	13.6%	44
Ohio	12.3%	45	South Carolina	-3.9%	45	Michigan	13.1%	45
Pennsylvania	11.5%	46	Maryland	-4.1%	46	Iowa	11.5%	46
West Virginia	11.4%	47	Kansas	-4.4%	47	Nebraska	10.4%	47
New York	11.0%	48	South Dakota	-6.3%	48	New York	9.2%	48
Connecticut	10.1%	49	New York	-6.7%	49	West Virginia	3.6%	49
Hawaii	8.0%	50	Rhode Island	-9.8%	50	Hawaii	1.3%	50

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Figure 5: Percent Change in Total Employment: 1993-2004

Hawaii
Connecticut
New York
West Virginia
Pennsylvania
Ohio
Rhode Island
Illinois
Alabama
Michigan
Massachusetts
Indiana
Iowa
Missouri
Mississippi
New Jersey
North Dakota
Kentucky
Arkansas
Kansas
Maine
Nebraska
Wisconsin
Louisiana
Oklahoma
Alaska
Vermont
South Carolina
South Dakota
Tennessee
Minnesota
North Carolina
Maryland
California
Washington
Wyoming
Virginia
Delaware
New Mexico
Oregon
Montana
New
Texas
Georgia
Colorado
Idaho
Florida
Utah
Arizona
Nevada
US

0.0%   10.0%   20.0%   30.0%   40.0%   50.0%   60.0%   70.0%   80.0%

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Figure 6: Percent Change in State Govt Employment: 1993-2004

Figure 7: Percent Change in Local Govt Employment: 1993-2004
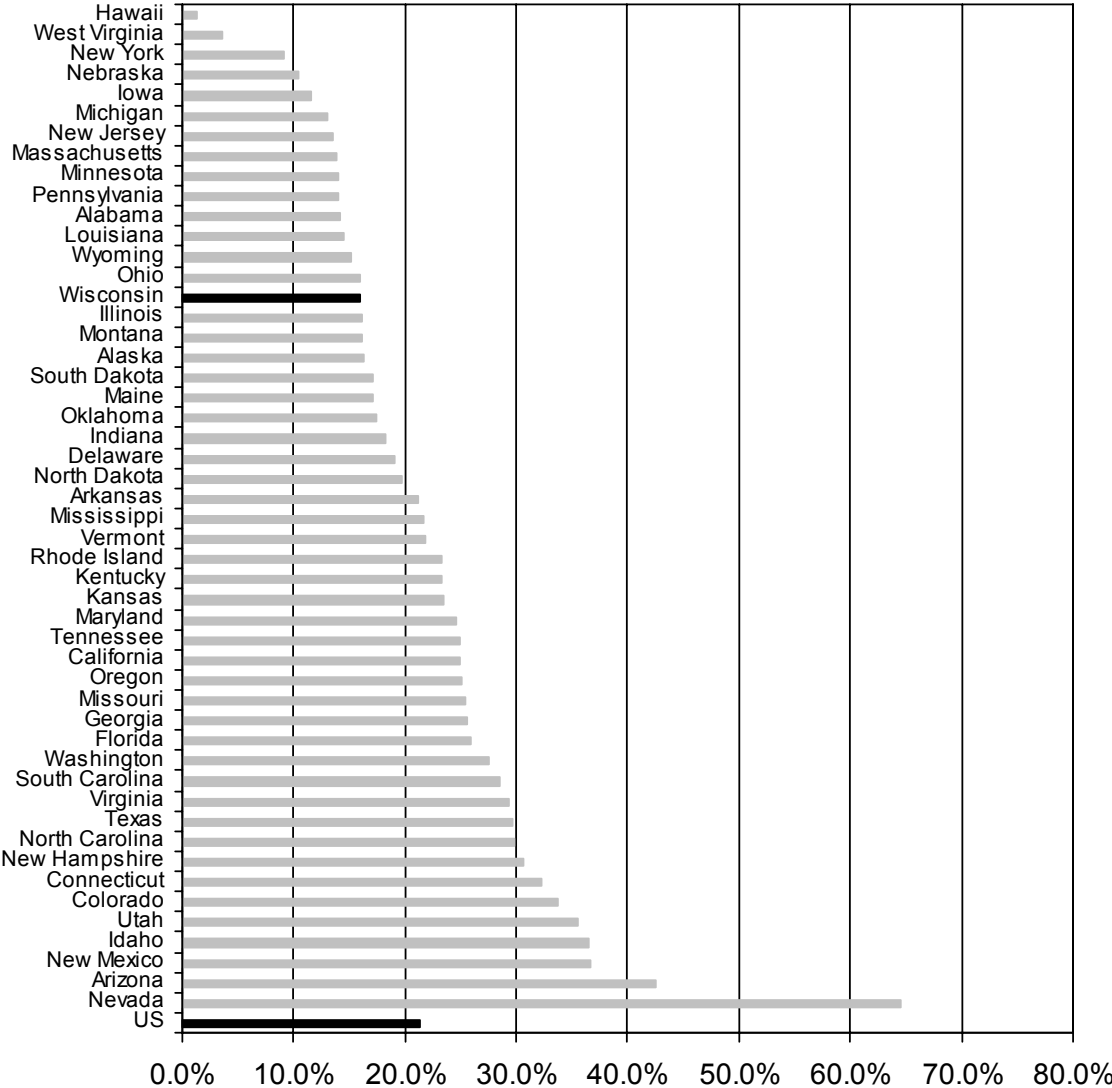
Table 2: Percent of Total Employment 2004

State Govt			Local Govt		
US	3.0%		US	8.1%	
Hawaii	8.8%	1	Wyoming	11.2%	1
New Mexico	6.6%	2	Mississippi	10.3%	2
Delaware	5.8%	3	New York	10.1%	3
Alaska	5.5%	4	Kansas	9.8%	4
West Virginia	5.2%	5	New Mexico	9.8%	5
Louisiana	4.8%	6	Louisiana	9.1%	6
North Dakota	4.7%	7	Texas	8.9%	7
Mississippi	4.6%	8	Nebraska	8.7%	8
Arkansas	4.5%	9	South Carolina	8.6%	9
Utah	4.3%	10	Alaska	8.6%	10
South Carolina	4.2%	11	Alabama	8.5%	11
Wyoming	4.2%	12	Idaho	8.5%	12
Montana	4.1%	13	Washington	8.5%	13
Alabama	4.1%	14	California	8.5%	14
Oklahoma	4.0%	15	Oklahoma	8.5%	15
Washington	4.0%	16	Arizona	8.4%	16
Kentucky	3.9%	17	South Dakota	8.4%	17
North Carolina	3.8%	18	Iowa	8.4%	18
Vermont	3.8%	19	North Carolina	8.3%	19
Idaho	3.6%	20	New Jersey	8.3%	20
Rhode Island	3.6%	21	Ohio	8.2%	21
Virginia	3.4%	22	Michigan	8.2%	22
Iowa	3.3%	23	Illinois	8.2%	23
Maine	3.3%	24	West Virginia	8.1%	24
Kansas	3.3%	25	Oregon	8.0%	25
Missouri	3.2%	26	**Wisconsin**	**8.0%**	**26**
Indiana	3.2%	27	Georgia	7.9%	27
Georgia	3.1%	28	Minnesota	7.9%	28
New Jersey	3.1%	29	North Dakota	7.8%	29
New Hampshire	3.1%	30	Montana	7.7%	30
Connecticut	3.1%	31	Virginia	7.6%	31
South Dakota	3.1%	32	Missouri	7.5%	32
Michigan	3.0%	33	Maine	7.5%	33
Oregon	3.0%	34	Colorado	7.5%	34
Maryland	3.0%	35	Tennessee	7.5%	35
Nebraska	2.9%	36	Indiana	7.4%	36
Wisconsin	**2.9%**	**37**	Kentucky	7.4%	37
Colorado	2.9%	38	Florida	7.4%	38
Massachusetts	2.8%	39	Connecticut	7.3%	39
Tennessee	2.7%	40	Arkansas	7.1%	40
Arizona	2.7%	41	Utah	7.0%	41
Ohio	2.7%	42	Maryland	7.0%	42
Pennsylvania	2.7%	43	Vermont	6.8%	43
Texas	2.6%	44	New Hampshire	6.8%	44
Minnesota	2.5%	45	Pennsylvania	6.8%	45
California	2.4%	46	Nevada	6.3%	46
New York	2.4%	47	Massachusetts	6.2%	47
Illinois	2.2%	48	Rhode Island	6.1%	48
Florida	2.1%	49	Delaware	4.4%	49
Nevada	2.1%	50	Hawaii	2.2%	50

Figure 8: Percent of Total Employment in State Govt: 2004
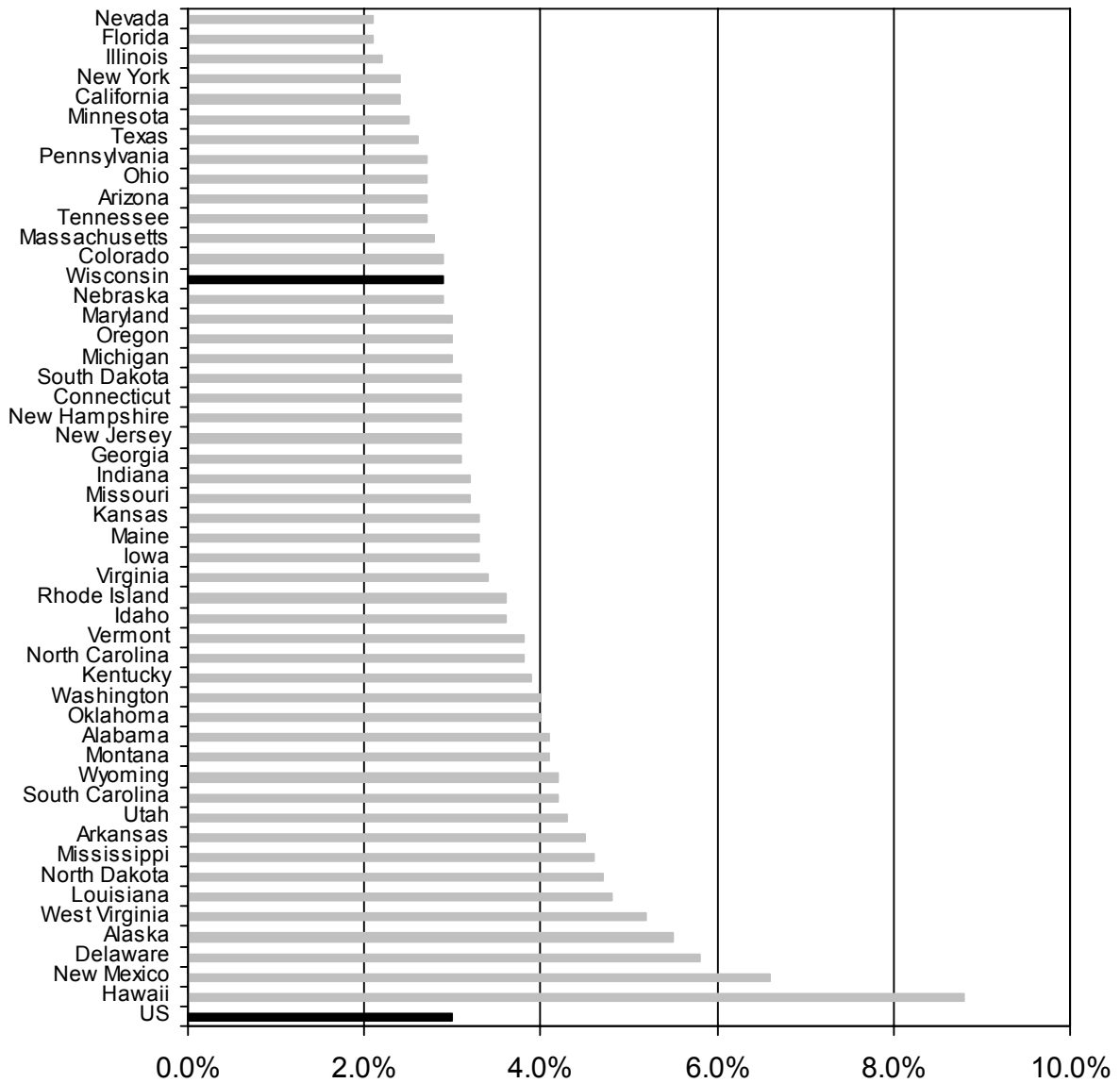
Figure 9: Percent of Total Employment in Local Govt: 2004

State	
Hawaii	
Delaware	
Rhode Island	
Massachusetts	
Nevada	
Pennsylvania	
New Hampshire	
Vermont	
Maryland	
Utah	
Arkansas	
Connecticut	
Florida	
Kentucky	
Indiana	
Tennessee	
Colorado	
Maine	
Missouri	
Virginia	
Montana	
North Dakota	
Minnesota	
Georgia	
Wisconsin	
Oregon	
West Virginia	
Illinois	
Michigan	
Ohio	
New Jersey	
North Carolina	
Iowa	
South Dakota	
Arizona	
Oklahoma	
California	
Washington	
Idaho	
Alabama	
Alaska	
South Carolina	
Nebraska	
Texas	
Louisiana	
New Mexico	
Kansas	
New York	
Mississippi	
Wyoming	
US	

Horizontal axis: 0.0%, 2.0%, 4.0%, 6.0%, 8.0%, 10.0%, 12.0%

Table 3: Percent Change is Public Share of Total Employment 1993-2004

	State Govt			Local Govt	
US	**-8.4%**		**US**	**1.0%**	
Mississippi	9.9%	1	Connecticut	20.1%	1
New Jersey	6.1%	2	Rhode Island	9.8%	2
Pennsylvania	5.4%	3	New Mexico	9.5%	3
Hawaii	4.5%	4	Missouri	9.3%	4
Missouri	4.4%	5	South Carolina	8.0%	5
Arkansas	3.4%	6	North Carolina	7.3%	6
California	3.0%	7	Kentucky	6.0%	7
Washington	0.7%	8	Virginia	5.7%	8
Delaware	-0.5%	9	Kansas	5.7%	9
North Carolina	-0.7%	10	Mississippi	5.7%	10
West Virginia	-2.5%	11	Washington	4.8%	11
Vermont	-3.4%	12	Indiana	4.3%	12
Iowa	-3.4%	13	Tennessee	4.3%	13
Alabama	-4.6%	14	Arkansas	4.1%	14
Georgia	-5.2%	15	Ohio	3.2%	15
Louisiana	-5.9%	16	Illinois	3.1%	16
Kentucky	-6.3%	17	North Dakota	3.1%	17
Indiana	-6.7%	18	New Hampshire	3.1%	18
New Mexico	-6.9%	19	Maryland	2.9%	19
New Hampshire	-7.1%	20	California	2.7%	20
Alaska	-7.4%	21	Vermont	2.4%	21
Nebraska	-7.6%	22	Pennsylvania	2.3%	22
Ohio	-7.8%	23	Alabama	1.4%	23
North Dakota	-8.4%	24	Texas	0.9%	24
Tennessee	-9.4%	25	Idaho	0.7%	25
Oklahoma	-9.7%	26	Colorado	0.7%	26
Wisconsin	**-10.1%**	**27**	Massachusetts	0.6%	27
Maine	-10.4%	28	Maine	0.2%	28
Idaho	-10.4%	29	Michigan	0.2%	29
Wyoming	-10.9%	30	Oregon	0.1%	30
Utah	-11.3%	31	Oklahoma	-0.1%	31
Michigan	-11.9%	32	**Wisconsin**	**-1.0%**	**32**
Colorado	-12.0%	33	New York	-1.7%	33
Connecticut	-12.1%	34	New Jersey	-1.9%	34
Texas	-12.3%	35	South Dakota	-1.9%	35
Virginia	-12.6%	36	Iowa	-1.9%	36
Massachusetts	-12.7%	37	Alaska	-2.0%	37
Illinois	-12.9%	38	Louisiana	-2.3%	38
Montana	-15.8%	39	Georgia	-2.7%	39
New York	-16.0%	40	Delaware	-2.9%	40
Oregon	-17.1%	41	Utah	-3.2%	41
Kansas	-18.1%	42	Nevada	-4.7%	42
Minnesota	-18.3%	43	Arizona	-5.1%	43
South Carolina	-19.3%	44	Minnesota	-5.6%	44
Rhode Island	-19.7%	45	Nebraska	-5.6%	45
Florida	-20.8%	46	Wyoming	-5.7%	46
Maryland	-20.8%	47	Hawaii	-6.2%	47
Nevada	-20.9%	48	West Virginia	-7.0%	48
South Dakota	-21.5%	49	Montana	-7.9%	49
Arizona	-23.4%	50	Florida	-8.3%	50

Figure 10: Change in State Govt Employment Share of Total Employment 1993-2004

Horizontal bar chart showing change in state government employment share of total employment from 1993 to 2004, by state.

States (top to bottom): US, Mississippi, New Jersey, Pennsylvania, Hawaii, Missouri, Arkansas, California, Washington, Delaware, North Carolina, West Virginia, Vermont, Iowa, Alabama, Georgia, Louisiana, Kentucky, Indiana, New Mexico, New Hampshire, Alaska, Nebraska, Ohio, North Dakota, Tennessee, Oklahoma, Wisconsin, Maine, Idaho, Wyoming, Utah, Michigan, Colorado, Connecticut, Texas, Virginia, Massachusetts, Illinois, Montana, New York, Oregon, Kansas, Minnesota, South Carolina, Rhode Island, Florida, Maryland, Nevada, South Dakota, Arizona

X-axis: -25.0%, -20.0%, -15.0%, -10.0%, -5.0%, 0.0%, 5.0%, 10.0%, 15.0%

Figure 11: Change in Local Govt Employment Share of Total Employment 1993-2004
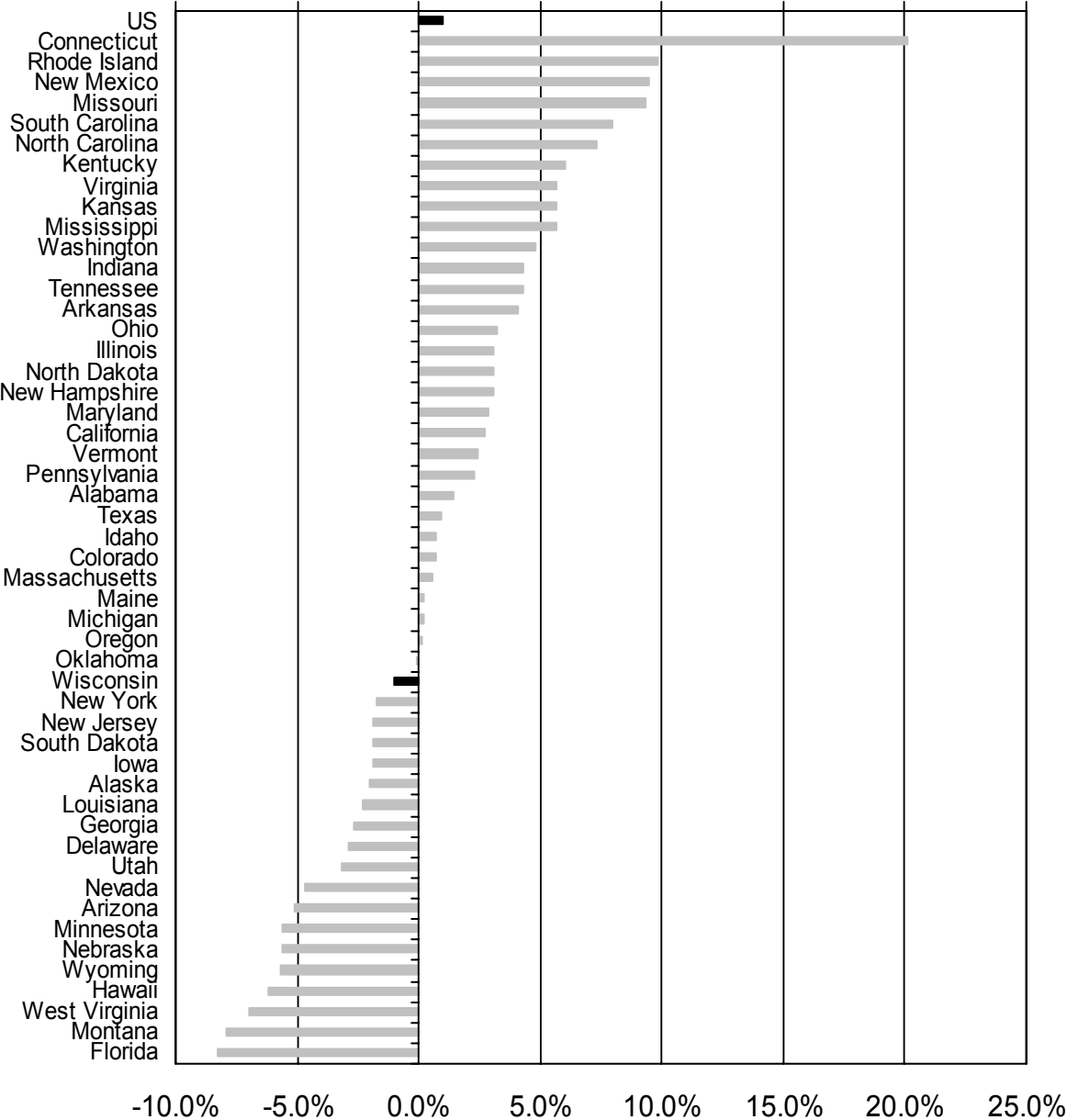
Table 4: Detailed State and Local Government Employment

	Percent Change 1993-2004		Share of Total 2004	
	US	WI	US	WI
Total	17.5%	10.7%	100.0%	100.0%
Financial administration	16.6%	27.1%	2.5%	2.5%
Other government administration	21.4%	15.2%	1.7%	2.0%
Judicial and Legal	33.3%	19.7%	2.6%	2.1%
Persons with power of arrest	22.4%	14.4%	4.2%	4.2%
Police - Other	27.0%	28.6%	1.4%	1.3%
Firefighters	23.1%	11.0%	1.9%	1.5%
Fire - Other	41.8%	31.0%	0.2%	0.1%
Correction	27.6%	75.1%	4.4%	4.6%
Highways	0.3%	6.4%	3.4%	4.0%
Air transportation	19.8%	22.7%	0.3%	0.1%
Water transport and canals	-3.8%	-39.3%	0.1%	0.0%
Public Welfare	3.0%	8.1%	3.2%	5.0%
Health	20.5%	45.9%	2.7%	2.6%
Hospitals	-12.2%	-67.4%	5.8%	1.6%
Social insurance administration	-17.2%	22.6%	0.6%	0.4%
Solid waste management	-0.6%	-11.7%	0.7%	0.5%
Sewerage	6.1%	-16.0%	0.8%	0.7%
Parks and recreation	12.8%	-15.3%	1.7%	1.2%
Housing and community developme	11.4%	-27.0%	0.7%	0.4%
Natural resources	3.3%	-10.1%	1.2%	1.1%
Water supply	10.6%	4.0%	1.0%	0.7%
Electric power	-4.1%	13.5%	0.5%	0.2%
Gas supply	5.9%	na	0.1%	0.0%
Transit	20.2%	3.1%	1.5%	0.8%
Elem & Sec Instructional	28.4%	18.3%	28.4%	31.0%
Elem & Sec - Other	28.0%	34.0%	12.6%	10.7%
Higher Ed Instructional	14.4%	-2.0%	4.0%	5.4%
Higher Ed - Other	19.8%	5.9%	7.7%	9.7%
Other education	-9.8%	-15.8%	0.6%	0.4%
Libraries	30.0%	7.2%	0.8%	0.9%
State liquor stores	-17.3%	na	0.0%	0.0%
All other and unallocable	-5.4%	3.3%	2.9%	4.1%

Full-time equivalent employment

Table 5: Detailed State Government Employment

| | Percent Change 1993-2004 | | Share of Total 2004 | |
	US	WI	US	WI
Total	7.6%	0.4%	100.0%	100.0%
Financial administration	8.2%	0.1%	4.0%	4.3%
Other government administration	15.2%	13.3%	1.3%	1.6%
Judicial and Legal	43.1%	2.9%	3.9%	2.9%
Persons with power of arrest	16.9%	7.2%	1.5%	0.9%
Police - Other	24.7%	7.0%	1.0%	0.5%
Firefighters	na	na	na	na
Fire - Other	na	na	na	na
Correction	26.9%	66.7%	11.0%	13.5%
Highways	-7.1%	-17.3%	5.7%	2.6%
Air transportation	18.9%	na	0.1%	na
Water transport and canals	3.1%	na	0.1%	na
Public Welfare	2.5%	7.9%	5.4%	1.9%
Health	7.0%	5.5%	4.2%	2.5%
Hospitals	-21.7%	-51.9%	9.5%	5.4%
Social insurance administration	-17.2%	22.6%	2.1%	1.5%
Solid waste management	57.7%	na	0.0%	na
Sewerage	27.1%	na	0.0%	na
Parks and recreation	-8.2%	-30.3%	0.8%	0.3%
Housing and community developmen	na	na	na	na
Natural resources	-1.6%	na	3.5%	na
Water supply	-29.1%	na	0.0%	na
Electric power	-30.7%	na	0.1%	na
Gas supply	na	na	na	na
Transit	59.4%	na	0.8%	na
Elem & Sec Instructional	64.6%	na	0.9%	na
Elem & Sec - Other	73.4%	na	0.3%	na
Higher Ed Instructional	13.8%	-6.4%	11.9%	15.9%
Higher Ed - Other	19.1%	4.2%	24.7%	32.8%
Other education	-9.8%	-15.8%	2.1%	1.6%
Libraries	-7.0%	na	0.0%	0.0%
State liquor stores	-17.3%	na	0.2%	0.0%
All other and unallocable	1.2%	14.2%	4.8%	8.5%

Full-time equivalent employment

Table 6: Detailed Local Government Employment

|	Percent Change 1993-2004		Share of Total 2004	
	US	WI	US	WI
Total	21.4%	14.5%	100.0%	100.0%
Financial administration	23.9%	58.9%	1.9%	1.9%
Other government administration	23.0%	15.6%	1.9%	2.2%
Judicial and Legal	27.6%	30.3%	2.1%	1.9%
Persons with power of arrest	23.0%	14.8%	5.2%	5.2%
Police - Other	27.5%	31.0%	1.6%	1.6%
Firefighters	23.1%	11.0%	2.5%	2.0%
Fire - Other	41.8%	31.0%	0.2%	0.2%
Correction	28.9%	99.0%	2.1%	1.8%
Highways	7.1%	12.5%	2.6%	4.4%
Air transportation	19.9%	22.7%	0.4%	0.2%
Water transport and canals	-7.9%	-39.3%	0.1%	0.0%
Public Welfare	3.4%	8.1%	2.3%	6.0%
Health	32.1%	64.7%	2.2%	2.7%
Hospitals	-3.1%	-85.9%	4.4%	0.4%
Social insurance administration	na	na	0.0%	0.0%
Solid waste management	-1.2%	-11.7%	0.9%	0.7%
Sewerage	5.9%	-16.0%	1.1%	1.0%
Parks and recreation	17.0%	-14.2%	2.0%	1.5%
Housing and community developmen	11.4%	-27.0%	1.0%	0.5%
Natural resources	26.6%	-10.2%	0.3%	0.4%
Water supply	10.9%	4.0%	1.4%	0.9%
Electric power	-2.1%	13.5%	0.6%	0.3%
Gas supply	5.9%	na	0.1%	0.0%
Transit	15.6%	3.1%	1.7%	1.1%
Elem & Sec Instructional	28.2%	18.3%	38.4%	40.9%
Elem & Sec - Other	27.7%	34.0%	17.0%	14.1%
Higher Ed Instructional	16.8%	11.3%	1.1%	2.1%
Higher Ed - Other	23.8%	14.7%	1.6%	2.3%
Other education	na	na	0.0%	0.0%
Libraries	30.3%	7.2%	1.1%	1.2%
State liquor stores	na	na	0.0%	0.0%
All other and unallocable	-10.2%	-5.9%	2.2%	2.7%

Full-time equivalent employment
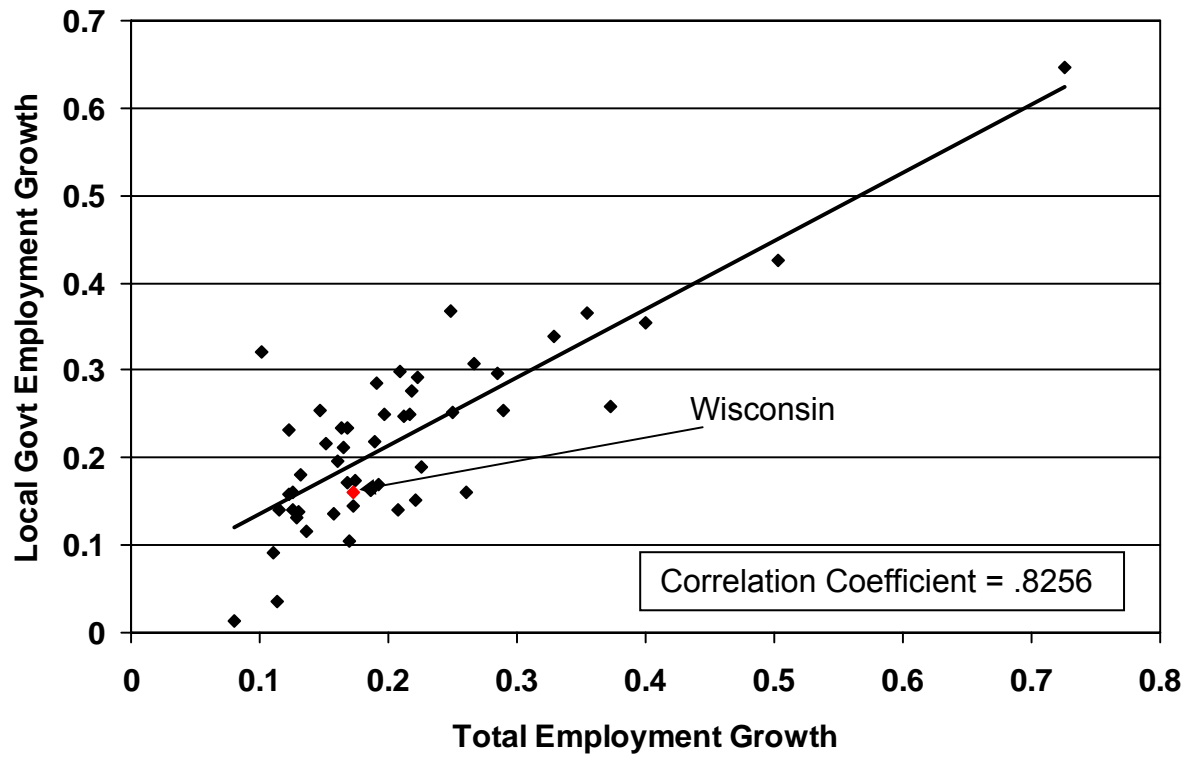
Table 7: Employment Growth Correlations

|	Total Job Growth Rate 1993-2004
State Govt Job Growth Rate 1993-2004	0.5148 (0.0001)
Local Govt Job Growth Rate 1993-2004	0.8256 (0.0001)
State Govt Job Share of Total 1993	-0.1142 (0.4296)
Local Govt Job Share of Total 1993	-0.0696 (0.6309)
Change in State Govt Share of Total Employment 1993-2004	-0.4087 (0.0032)
Change in Local Govt Share of Total Employment 1993-2004	-0.3289 (0.0197)

Figure 12: Simple Correlation between Total Employment Growth and State Govt Employment Growth: 1993-2004
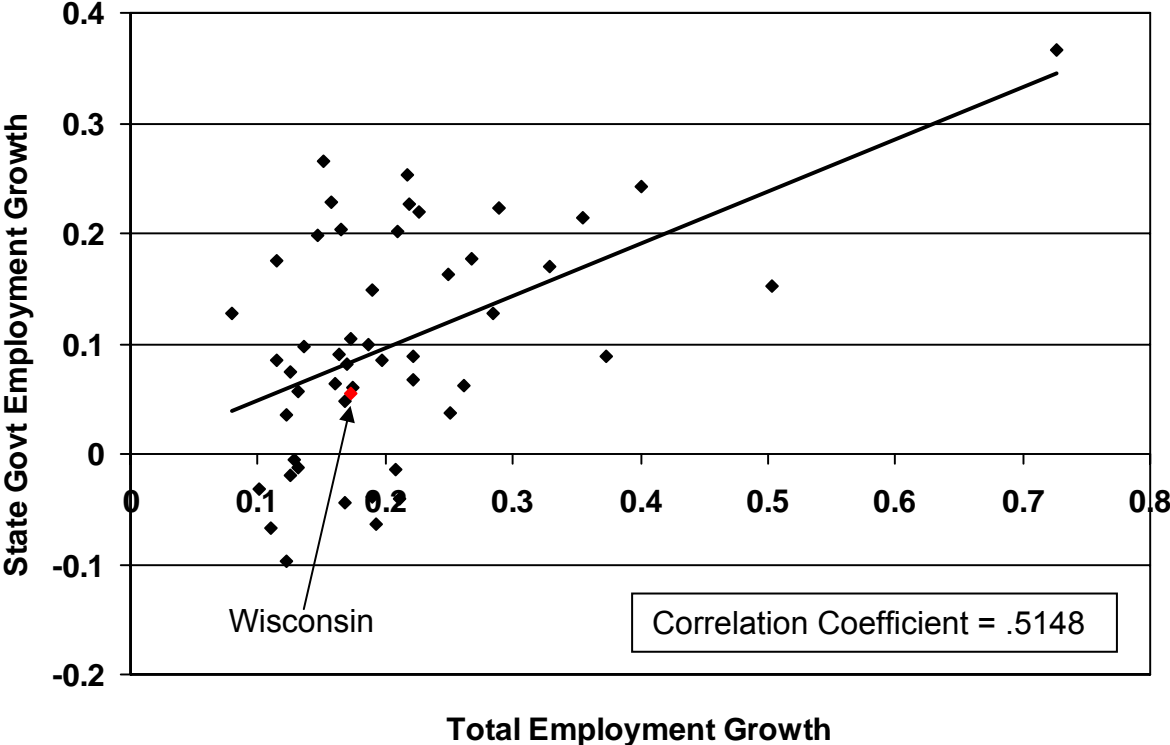
Figure 13: Simple Correlation between Total Employment Growth and Local Govt Employment Growth: 1993-2004

Correlation Coefficient = .8256

Figure 14: Simple Correlation between Total Employment Growth and Change in State Govt Share of Total Employment 1993-2004

Correlation Coefficient = -.4087

Wisconsin

Change in State Govt Share of Total Employment 1993-2004

Total Employment Growth
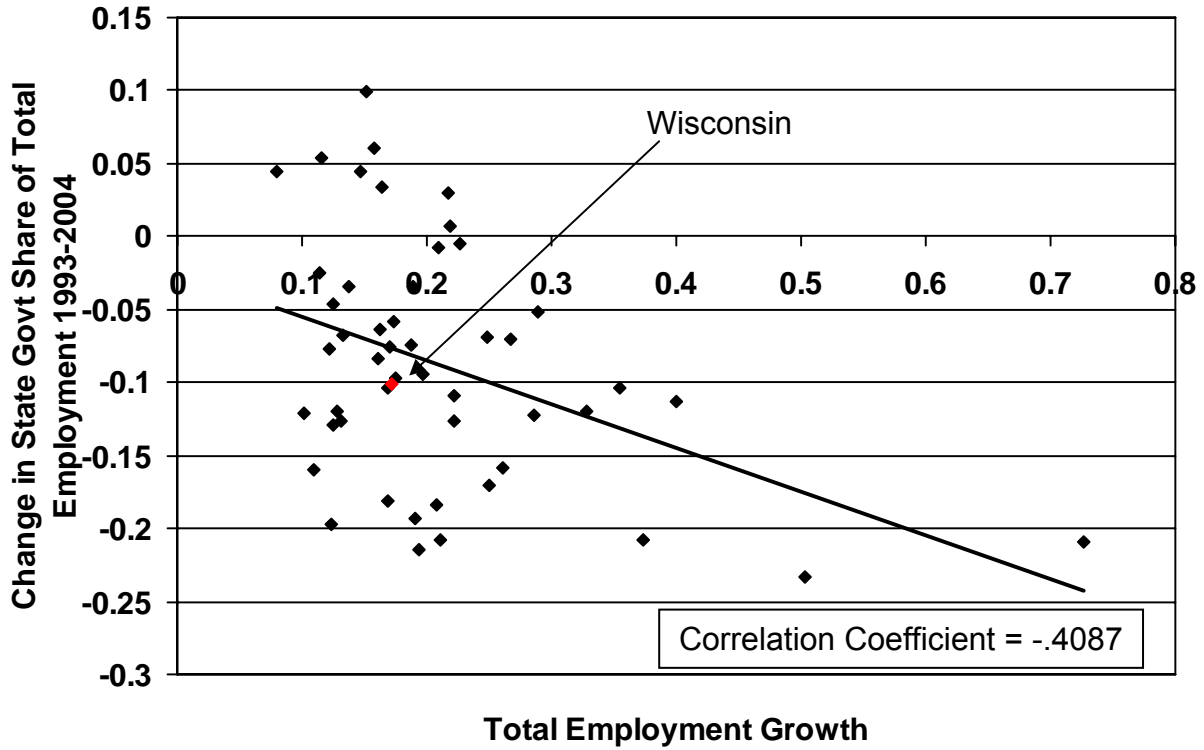
Figure 15: Simple Correlation between Total Employment Growth and Change in Local Govt Share of Total Employment 1993-2004