The Effect Of Public And Private Unions On State Economic Activity: Evaluating The Benefits To Organized Workers, Policymakers, And Companies

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ABSTRACT

Freeman and Medoff's analysis, "What Do Unions Do?" concluded unions were beneficial to organized workers, somewhat beneficial to the economy, yet not beneficial to the corporate bottom line. While there is some evidence to support these statements for 1983-1996, we determine that neither public nor private unions' presence are correlated with wage or growth benefits at the state level from 1992-2005. A reduction in private sector unionization increases state productivity, with no adverse impact on growth, wages or unemployment rates. Public unions are statistically less detrimental than private unions, particularly in regard to unemployment rates.

INTRODUCTION

*F*reeman and Medoff's, "*What Do Unions Do?"*, ignited a surge of literature regarding unions' effect on productivity, profit, and growth. They summarized their comprehensive study by claiming that unions are "Beneficial to organized workers, almost always: beneficial to the economy, in many ways: but harmful to the bottom line of company balance sheets…" (p. 190). Unions have experienced dramatic changes since their publication in 1984. The view of enhanced productivity and economic performance once afforded to unions has evaporated in the new era of outsourcing, importing, and frugal taxpayers. Private sector unions are reputed to inflate wages, deter capital investments, and shift rents from stockholders to workers, while public sector unions allegedly increase tax rates and depress growth. Private sector unionization has lost nearly 4 million members, while public sector unions have sustained the growth they accumulated in the late 1980s and 1990s.[1] In 2005, there was nearly the same number of union members in the public sector as there were in the private sector.

In this paper, we expand the analysis of a previous study[2] by comparing the impact of public and private unions on state economic growth, productivity, wages, and unemployment rates in two overlapping periods. The first period spans from 1983 through 1996 while the second covers 1992 through 2005. Since attitudes toward unions differ by state, a panel of 48 contiguous states is included in the survey. Subsequently, state level data on gross state product[3], wage inflation, productivity, and unemployment serve as the dependent variables in four distinct equations. In each equation, public and private unions' percentages of total employment are on the right side, along with some control variables.

Our objective is to consider the benefits of private and public unions to organized workers, the economy (as viewed by state policymakers), and the employers for whom they work, and to establish whether the impact of union

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[1] See Chart 1
[2] Pantuosco et al. 2002
[3] This number is now calculated as state GDP.

membership has changed over time. Our estimates reveal a significant difference between the effect of public unions and private unions on growth, productivity, and wages. With each measure of economic performance, private unions have a more negative effect compared to public unions. We conclude that private unions are not necessarily beneficial at the state level to workers in terms of higher wages, they inhibit economic growth, and hinder productivity in the establishments in which they operate. These results differ from the previous assertions of Freeman and Medoff and others.[4]

WHY USE STATE LEVEL DATA?

We recognize that measuring the causal effects of unions on productivity, particularly at the state level, is a difficult task. Most studies that attempt to gauge unions' impact on output do so by comparing union to non-union establishments cross-sectionally within industries. Researchers construct production functions to capture the effects of unions on profit, output, investment, growth etc. However, Hirsch (2004) lists several reasons why "one must exhibit caution" in drawing conclusions based on this type of analysis (p.13). He notes the potential bias from omitted variables, such as age of the plant. He also recognizes the potential bias from union status being endogenous, whereby unions may have greater rates of survival in industries that are less competitive. Thirdly, he questions the validity of results outside the sample area, suggesting that inferences may not be transferable across industries.

For these reasons, longitudinal surveys, comparing plant A at a time when no union was present to plant A after a union was organized, provide a more sound approach to determine the impact of union presence on economic performance. In other words, a time series may minimize some of the issues inherent in cross-sectional analysis. Using a time series approach controls for fixed factors that were present before and after unionization. While our study cannot provide reliable industry specific inferences, it can present generalizations of unions' impact on overall state economic performance. As union membership changes overtime, statistical procedures control for fixed factors. This allows the spillover effects of unions on wages, growth, and employment to be estimated (Pantuosco et al., 2001).

DESCRIPTIVE STATISTICS

As previously noted, the topography of unions has witnessed significant changes. In spite of the annual increases in U.S. employment, the number of union members employed in the private sector has decreased every year of our survey. In 1983, there were nearly 12 million employed private union members. By 2005, that number fell to nearly 8 million. Over the sample period (1983-2005), transportation, construction, manufacturing and mining witnessed double digit declines in the percent of employed union members. Public administration was the only sector to observe an increase in the percent of employed union members.[5]

Not only has union membership varied by industry, the percent of union workers have varied widely by state. In the public sector, between 1983 and 2005 Illinois experienced the largest growth with an 11 percent increase in the percent of employed in unions. Utah experienced the largest decline, with a 12 percent reduction in the percent of employed unionized.[6] Overall, the percentage of public sector workers in unions has remained virtually unchanged over the period standing at 36.5% in 2005.[7] Throughout the sample period, private sector unions experienced more than 15 percentage point reductions in the percent of the employed unionized in the industrial states of Pennsylvania, Indiana, and Wisconsin.[8] Private union growth was not present in any state as the overall membership rate fell from 16.5 to 7.8 percent nationally. The data clearly verify a holding pattern for public unions, and a free fall for private unions.[9]

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[4] Ibid 2
[5] See Table 1
[6] See Chart 2
[7] See Chart 1
[8] See Chart 3
[9] See Chart 1

METHODOLOGY

The objective of the analysis is to investigate the impact of private and public sector unions on four macroeconomic barometers between and within states over time. With this in mind, a panel is used to capture the cross-sectional and time-series components for the period 1992-2005 with the objective of comparing the new results to a previous study covering 1983-1996.[10] As it stands, each thirteen year sample follows a trough in the business cycle. As with any estimation technique, a panel model is subject to the econometric concerns of multicollinearity, heteroskedasticity, and autocorrelation. These issues are addressed using the following approaches: a parsimonious model was used to reduce the opportunities for multicollinearity; rates of change were incorporated to mitigate heteroskedasticity and autocorrelation; lagged variables were added to control for autocorrelation, and to provide a test for persistence.

Each of the four equations contains a constant term, a measure of public sector union density, private sector union density, and other economic variables helpful in explaining the behavior of the respective dependent variable.[11] Another econometric issue exposed by panel data is whether the model contains "fixed" or "random" effects. Since the data makes use of all states in the Continental US rather than a sample of a larger population, the fixed effects model is appropriate (Kennedy, 1998). Due to potential differences between states and over time, it may be necessary to introduce N-1 state dummies and T-1 time dummies. The fixed effects model econometrically accounts for these differences by making use of computational short cuts without incurring a loss in the number of observations.

Due to potential endogeneity of right-hand-side variables in three of the equations, two stages least squares was employed in their estimation. Each equation was estimated with and without fixed effects. The significance of the fixed effects components in the respective equations suggests that it is the preferred approach. In each case, tests were conducted to assess whether there were significant differences between the effect of public and private unionization.

We test for second order effects of unionization on productivity by including the squared terms for both public and private unionization. This allows us to determine if the direction of change measured is occurring at an increasing or decreasing rate, and if any optimum level of union density may exist.

THEORETICAL JUSTIFICATION OF MODEL

The first equation focuses on the determination of productivity growth:

[1] $PROD = b_0 + b_1*PUBUNION + b_2*PRIUNION + b_3*PUBUNION^2 + b_4*PRIUNION^2 + b_5*MANEMP + e$

PROD is the productivity growth rate; PUBUNION is the percent of employed workers who are public union members; and PRIUNION is the percent of employed workers who are private union members. MANEMP is the percentage of the employed working in the manufacturing sector. e is the error term. All data are annual by state.

The expected signs of the b_1 and b_2 coefficients are an empirical question. Studies estimating the impact of unions on productivity have yielded conflicting results. Using the manufacturing industry, Brown and Medoff (1978) provided evidence of a positive relationship between productivity and unions. Freeman and Medoff (1984) back this result with evidence from sector specific studies in construction, mining, and durable goods. They credit the collective voice of unions for improving the relationship between management and workers, leading to greater corporate productivity. But this optimistic claim has not persuaded everyone. Other researchers note even if unions appear more productive, productivity increases may stem from a wage effect or shock effect, or may be the result of biased surveys (see Addison and Hirsch, 1989; Hirsch, 1997, and Katz, 1986). In fact, some industry-level studies

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[10] An analysis of the results for this period can be found in Pantuosco et al. 2002.
[11] Each of the variables is defined in the Data Sources Appendix.

conclude that private sector unions are correlated with decreased productivity growth (Fuchs et al., 1998; Hirsch, 1991; Hirsch and Link, 1984; and Maki, 1973).

The productivity debate becomes more complicated when unions are disaggregated to the public/private sector levels. One could argue that public sector unions have more adverse effects on productivity than private sector unions. Where private unions have wage effects, some public unions cannot negotiate wages. Furthermore, private unions are forced to compete in the product market, while public unions operate in less competitive environments. However, many industry-level studies that focus on private sector unions determined a negative correlation between unions and productivity.[12] The empirical questions of, what are the impacts of public and private sector's unions on state level productivity, and how have their relationships changed over time, are unique to this study.

The second equation estimates GSP growth:

[2] $GSP = a_0 + a_1*PERCAPGSP + a_2*PUBUNION + a_3*PRIUNION + a_4*MANEMP + a_5*POP + e$

GSP is the growth rate of the gross state product; PERCAPGSP is the lagged state GSP per capita; and POP is the growth rate of the population.

Public sector unions have offsetting effects on state growth. On the positive side, public sector unionization coincides with more stable employment and employment growth (Allen, 1988). Yet tax increases that are necessary to support the increased level of public sector employment lower GSP growth. In the private sector, the evidence suggests that unions are negatively correlated with growth. Freeman and Medoff (1984) claim the monopoly wages obtained by unions decrease gross national product by 0.2 to 0.4 percent. Pantuosco, et al. (2001) concluded that private unions are correlated with lower GSP growth.

The state measure of lagged per capita GSP is added to the estimation to capture a possible convergence effect. The existence of a convergence effect suggests that states with higher levels of GSP per capita are expected to grow at a slower rate. Conversely those states with low per capita GSP will experience higher rates of growth (Barro and Sala-i-Martin, 1991).

The third equation addresses the determination of state unemployment rates:

[3] $UR = a_0 + a_1*PUBUNION + a_2*PRIUNION + a_3*WAGINF + a_4*GSP + a_5*LAGUR + a_6*MANEMP + e$

Where UR is the unemployment rate; WAGINF is the rate of wage inflation; LAGUR is the lagged unemployment rate.

The union monopoly theory suggests a positive relationship between private sector unions and unemployment rates. The root of unions' adverse affect on the labor market is their perceived positive relationship with wages. In 1986, Summers claimed that unions caused the natural rate of unemployment to rise. Since then, the natural rate has fallen along with union wage bargaining power.

Contrary to private unions, public sector unions may have positive employment effects. Allen (1988 p.272) states that "(public) unions reduce by a substantial amount the already low lay-off and unemployment probabilities in the public sector in contrast to the private sector, where rates are much higher under (private) unionism." Furthermore, public sector wage bargaining power is restricted by lawmakers. While public unions may strike, public perception of such a walkout tends to hurt the unions' cause.

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[12] See Hirsch, 1991; Hirsch and Link, 1984; and Maki, 1973.

The final equation estimates wage inflation in occupations covered by unemployment insurance:

[4] $WAGINF = a_0 + a_1*PUBUNION + a_2*PRIUNION + a_3*UR + a_4*MANEMP + e$

Unions are perceived as a cohesive entity with the ability to extract rents from employers. But the opportunities for unions to flex their bargaining muscles have diminished. Fewer industries are protected from international competition and government regulation, causing more firms to compete to survive. In competitive industries, unions are unlikely to obtain above market wages absent productivity gains. Furthermore, unions may be servicing workers whose marginal revenue product is not above the market wage. Since bargaining takes place at the group level rather than by individual, the more qualified workers may choose to enter the labor market in a non-union setting to maximize their earning potential. This adverse selection process may deter better than average workers from joining unions, since the union will likely suppress their wages. One must recognize that even if rents are obtained, the unions' gain come at an expense, and that expense can be capital improvements. Without innovative capital, unions are less likely to produce at a level that justifies their inflated wages.

Public sector unions are somewhat sheltered from the market pressures faced in the private sector. This protection allows public sector union members the freedom to strike without decreasing demand for their good or service. Freeman and Valletta (1988) suggest that the collective bargaining in the public sector promotes higher wages throughout the state. Zax and Ichniowski (1988) concur that the wage benefits of organized departments spread to the unorganized departments within city government.

While public unions are not subjected to external competitive pressure, their wage requests are not unchecked. In some states, public unions are not allowed to strike and wages are not an issue of contract negotiations. Also, fiscal restraints limit the governing body's ability to support a public union wage increase. Furthermore, Babcock and Engberg (1997) warn that even though unionized public sector workers are paid more than their non-union counterparts, it is unclear where the government finds the resources to compensate the unionized public employees. Non-union workers may subsidize union employees.

EMPIRICAL RESULTS

The empirical results can be seen in Tables 2 through 5. We begin with a discussion of the nonunion variables. In the model of economic growth, a convergence effect was not detected. In fact, evidence was found that states with higher per capita levels of GSP experienced more growth than those with lower levels of GSP per capita. As expected, population growth was found to be positively related to economic growth.

Persistence was found for the unemployment rate in that it was highly correlated with its lagged value. In addition, as one would expect, higher rates of economic growth were found to reduce the unemployment rate. With regard to the model of wage inflation, a significant relationship was detected between lower unemployment rates and wage inflation.

Viewpoint Of Unions: Unions And Wage Inflation

The goal of union organizers is to provide a better working environment, to increase membership, and to increases the compensation for its members. Furthermore, nearly all unions publish social agendas (see Pantuosco and Hill, 2003). The members' and the public's perception of their mission is important for their survival.

In our model, we associate the "benefits to organized workers" with higher wages. Equation 4 provides a measure of the spillover effects of union membership on state wage inflation. While union members desire above market wages, they want their benefits to spillover to the non-union sector and society. (see Freeman and Ichniowski, 1988; and, Zax and Ichniowski, 1988)

Our results in Table 2 indicate that neither public nor private unions have a significant effect on wage inflation in the sample period of 1992-2005. These estimates differ somewhat from the results found for the earlier

period (1983-1996) in which there was mixed evidence that public unions had some positive impact on wages. From the union's perspective, the lack of evidence of a positive correlation between union membership and wages is discouraging, although not surprising. The benefits to employees have apparently diminished. The private union members are forced to compete with non-union companies in the product market, placing downward pressure on wages. While public sector union members are in a zero sum game with tax payers, any increase in public employee wages must be met with an increase in tax revenue or diversion of funds from other forms of government spending.

Viewpoint Of State Policymakers: Unions And Economic Growth And Unemployment

The goal of government policy makers is to maximize the aggregate well-being of their constituents. If the voting constituents are satisfied, then the individual goal of the government official, "to be re-elected," will be met. Proven strategies to achieve this goal, and re-election, are high rates of state economic growth and low levels of unemployment. With this in mind, state officials must formulate a policy regarding their stance on the role of organized labor in their economy. Some of the tools that state governments can use to support their stance include right-to-work laws, public union organization laws, collective bargaining laws for public employees, favorable corporate tax rates, tax credits and discounts for non-union businesses.

Our results for the 1992-2005 period, displayed in Table 3, indicate that public unions have no discernible effect on economic growth while private unions have a negative effect on economic growth. This result differs somewhat from the earlier period in which public unions were found to have a small positive effect on economic growth (in the fixed-effects model) while private unions had little discernible effect. Furthermore, a significant difference was found between the impact of private and public unions with the former having an adverse effect on the performance of the economy.

As seen in Table 4, using the 1992-2005 sample, private unions were found to have an insignificant effect on unemployment while, in the model employing fixed effects, a higher percentage of public unions led to a slightly lower unemployment rate. This correlation concurs with the result pertaining to wage inflation, since unions were found not to have a significant effect on wages, one would not expect them to have a significant effect on unemployment. In the study of the 1983-1996 period, public union exhibited no effect on unemployment while higher rates of private unionization resulted in increased unemployment. Once again, in both periods a significant difference was found between the impact of private and public unions.

These results provide little to no support for the claim that unions are "beneficial to the economy, in many ways." While, public unions are statistically better for GSP and lead to lower unemployment than private unions, they cannot boast about their beneficial impact on state economic activity. State lawmakers should weigh the potential costs of a more unionized labor force on state economic activity against the potential benefits of public union voter support when they pen union-specific policies.

Viewpoint Of Business: Unions And Productivity

In earlier union literature, one of the proposed benefits of organized labor was their positive impact on productivity. Businesses prefer productive workers because of the assumed inherent relationship between productivity and profit. But, even if private sector unions enhance worker productivity, the improvement in worker output may not coincide with higher profits (Freeman and Medoff, 1984). Rents simply shift from owners to employees. From an owner's perspective, higher productivity is necessary to offset above market wages. Absent a productivity increase, union wages are destined to fall.

Our results in Table 5 suggest that, for both sample periods, private unions have a negative effect on productivity while public unions have no noticeable effect on productivity. There was a significant difference in the impact of private and public unions. Further, the results allow us to estimate an "optimal level" of unionization of

the private sector. Using the empirical results of the fixed effects model, it is estimated that increasing private union membership from its current levels will further reduce productivity growth until membership levels reach 20.3%[13].

Freeman and Medoff's claim that unions are "harmful to the bottom line of company balance sheets" appear to hold true, particularly for private unions. From a corporate perspective, union membership reduces productivity; however, unions are not commanding the wage premiums they did in earlier periods. In essence, markets appear more competitive.

SUMMARY AND CONCLUSIONS

The rate of unionization has changed significantly in recent decades with the share of workers in private sector unions shrinking while public sector unionization has been relatively stable. One would expect that the impact of unions on the economy would be affected as a result. We consider the differing impacts of private and public union on four measures of the economy at the state level – wage inflation, unemployment, productivity and economic growth, in two separate but overlapping periods for the continental United States. A significant difference between the effect of private and public unions were found in most cases. In particular, private unions were found to have a detrimental impact on productivity and economic growth in the most recent period without having any beneficial effect on wages. These results differ somewhat from studies conducted prior to 1983, when private unions were associated with improved productivity (Brown and Medoff, 1978; Freeman and Medoff, 1984) and displayed no adverse impact on growth.[14] Furthermore, empirical evidence suggests that increases in private sector unionization from their current rates would further hinder productivity growth.

From 1983-1996, public unions were correlated with higher wage growth, and lower unemployment rates. In the second sample period, these union membership and societal benefits diminished. We conclude, in regard to private and public union membership … "beneficial to organized workers," not necessarily: "beneficial to the economy," in very few ways: "harmful to the bottom line of company balance sheets," the evidence continues to support this claim.

DATA SOURCES

1.   Data on employment and unemployment are taken from the U.S. Department of Labor, Bureau of Labor Statistics.
2.   Gross state product (GSP) data are from the U.S. Department of Commerce, Bureau of Economic Analysis.
3.   Union membership data are from http://www.trinity.edu/bhirsch/unionstats/
4.   Wage data are from the U.S. Department of Labor, Employment, and Training Administration.

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[13] Optimization techniques suggest that the optimal level can be found by dividing the absolute value of the coefficient on private union membership by twice the coefficient on private union membership squared.
[14] See Table 3

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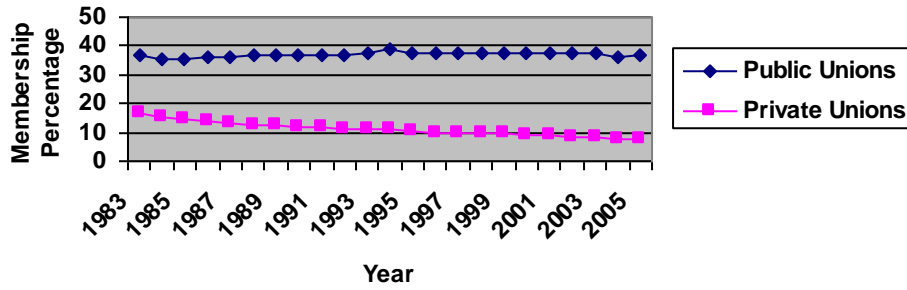
Chart 1

Public and Private Union Density 1983-2005
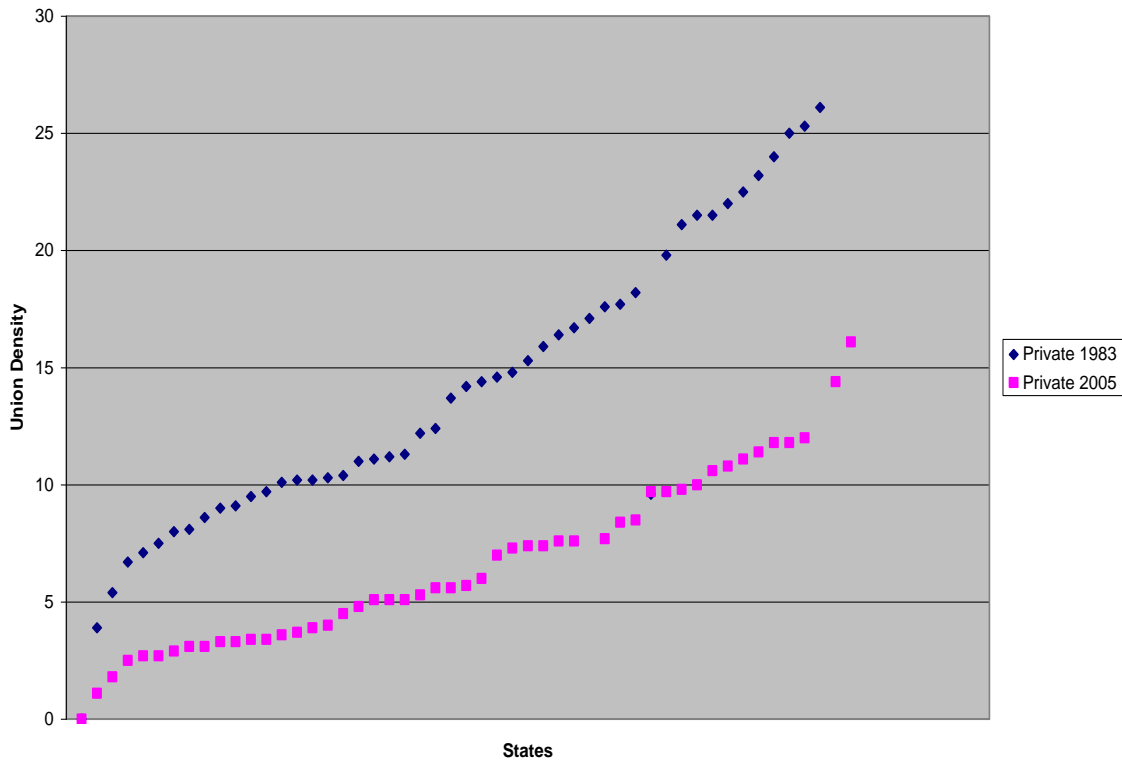

Chart 2

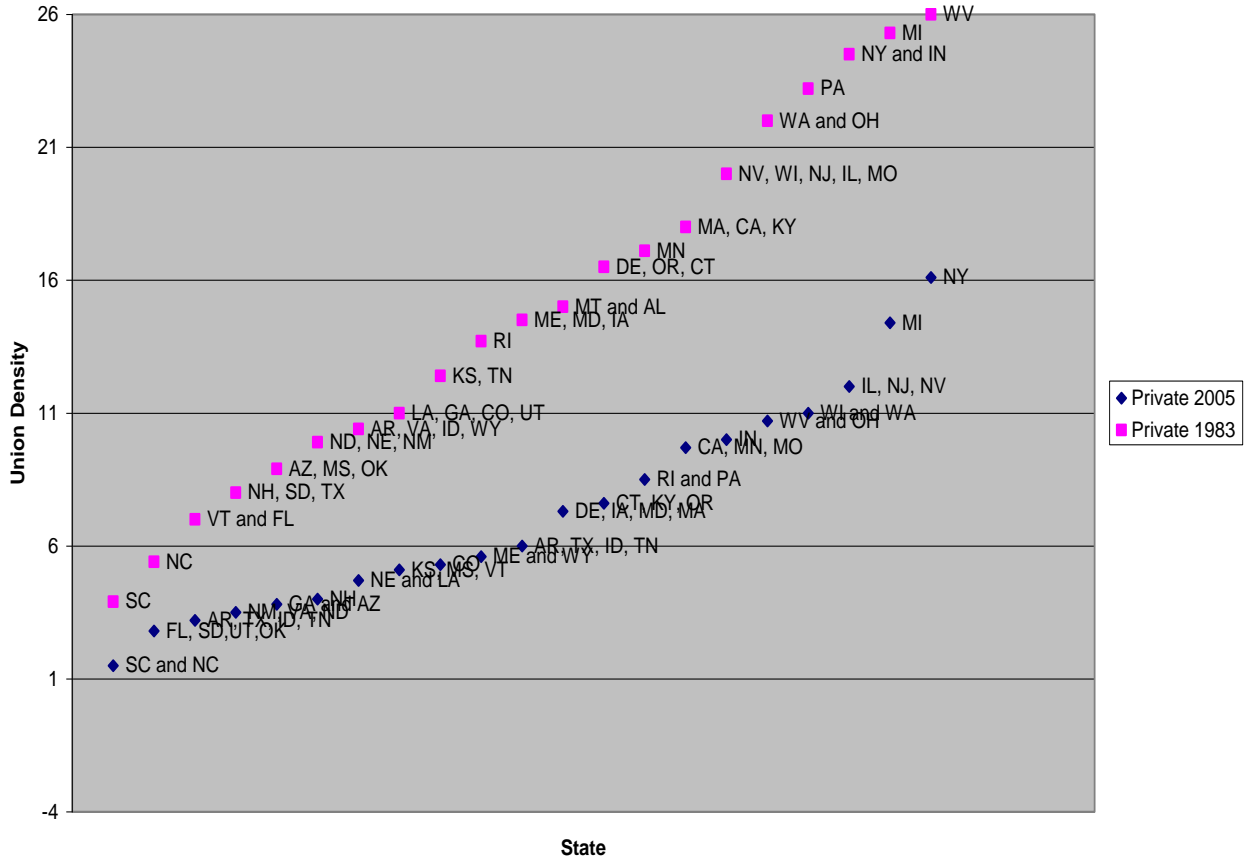**Private Unions 1983 and 2005**

Chart 3

Private Unions 1983 and 2005

Table 1
Union Members as a Percent of Employed by Industry

Industry Name	%Mem	%Mem
Agriculture	3.1	3.2
Mining	20.6	7.9
Utilities	39.0	28.8
Nondurable Goods Manufacturing	29.2	12.5
Durable Goods Manufacturing	25.9	13.4
Wholesale Trade	9.3	5.9
Retail Trade	8.6	5.3
Transportation & Warehousing	49.9	31.4
Finance & Insurance	3.4	2.1
Health Care & Social Assistance	9.7	9.1
Construction	28.0	14.2

Table 2
Public and Private Sector Unions and Wage Inflation
(absolute t-statistics)

	1983-1996		1992-2005	
Variable	**Wage Inf**	**Wage Inf (fixed)**	**Wage Inf**	**Wage Inf (fixed)**
Constant	3.614*		3.953*	
	(13.12)		(8.90)	
Public union	0.016*	-0.027	0.005	-0.001
	(3.79)	(1.40)	(0.78)	(0.03)
Private union	0.011	0.060	0.005	0.022
	(0.71)	(1.18)	(0.17)	(0.27)
UR	-0.245*	-0.379*	-0.186*	-0.330*
	(6.81)	(7.26)	(2.62)	(3.14)
UR(-1)				
wage inflation				
GSP growth				
%Manufacturing	0.054*	0.193*	0.015	0.098
	(5.58)	(3.89)	(0.75)	(1.27)
Public-Private Union	0.005	-0.087	0.000	0.023
$\square^2$	0.86	2.70***	0.00	0.06

where *** indicates significance at the 10% level; ** indicates 5% level; * indicates 1% level

Table 3
Public and Private Sector Unions and GSP Growth
(absolute t-statistics)

	1983-1996		1992-2005	
Variable	**GSP Growth**	**GSP growth (fixed)**	**GSP Growth**	**GSP growth (fixed)**
Constant	3.048[*]		4.622[*]	
	(3.78)		(8.33)	
Public union	0.005	0.074[***]	-0.006	-0.008
	(0.51)	(1.86)	(0.75)	(0.24)
Public union^2				
Private union	0.035	-0.147	-0.100[***]	-0.160[***]
	(1.27)	(1.44)	(3.38)	(1.76)
Private union^2				
GSP/capita (-1)	-1.188[*]	-7.887[*]	.040[*]	0.097[*]
(1000s)	(3.51)	(6.78)	(2.77)	(2.63)
Population growth	1.233[*]	2.137[*]	0.487[**]	0.515[*]
	(11.12)	(9.08)	(4.95)	(2.49)
%Manufacturing	0.074[*]	0.089	-0.067[*]	-0.143
	(3.65)	(0.71)	(3.03)	(1.43)
Public-Private Union	-0.03	0.221	-0.094	-0.152
$\Box^2$	14.36[*]	5.00[**]	7.13[*]	2.43[***]

where [***] indicates significance at the 10% level; [**] indicates 5% level; [*]indicates 1% level

Table 4
Public and Private Sector Unions And Unemployment Rates
(absolute t-statistics)

	1983-1996		1992-2005	
Variable	**UR**	**UR (fixed)**	**UR**	**UR (fixed)**
Constant	1.230[*]		1.403[*]	
	(7.52)		(10.52)	
Public union	-0.007[*]	-0.002	-0.003	-0.020[**]
	(2.78)	(0.21)	(1.53)	(2.51)
Private union	0.008	0.106[*]	0.007	0.028
	(0.97)	(3.85)	(0.89)	(1.38)
UR				
UR(-1)	0.806[*]	0.691[*]	0.835[*]	0.766[*]
	(45.60)	(27.96)	(51.53)	(36.93)
wage inflation	0.185[*]	0.172[*]	-0.061[*]	-0.048[*]
	(6.44)	(5.10)	(4.09)	(3.12)
GSP growth	-0.176[*]	-0.161[*]	-0.057[*]	-0.083[*]
	(13.80)	(11.25)	(5.56)	(7.60)
%Manufacturing	-0.017[*]	-0.013[*]	-0.012[**]	-0.100[*]
	(3.13)	(4.58)	(2.35)	(5.29)
Public-Private Union	-0.015	-0.108	-0.010	-0.048
$\Box^2$	2.19	14.28[*]	1.12	4.53[**]

where [***] indicates significance at the 10% level; [**] indicates 5% level; [*]indicates 1% level

Table 5
Public and Private Sector Unions and Productivity Growth
(absolute t-statistics)

	1983-1996		1992-2005	
Variable	**Productivity Growth**	**Productivity Growth (fixed)**	**Productivity Growth**	**Productivity Growth (fixed)**
Constant	1.295[***]		4.983[*]	
	(1.73)		(8.64)	
Public union	0.006	0.035	0.012	-0.045
	(0.17)	(0.36)	(0.43)	(0.70)
Public union^2	0.012	0.037	0.00006	0.0001
	(0.28)	(0.30)	(0.17)	(0.15)
Private union	-0.185[***]	-0.535[*]	-0.194[***]	-0.854[*]
	(1.86)	(2.92)	(1.76)	(4.84)
Private union^2	0.625[***]	1.550[*]	0.002	0.021[*]
	(1.65)	(2.65)	(0.41)	(2.73)
GSP/capita (-1) (1000s)				
Population growth				
%Manufacturing	0.056[*]	0.312[*]	-0.069[*]	-0.321[*]
	(3.01)	(3.43)	(3.31)	(5.21)
Public-Private Union	0.245	0.570	0.206	0.809
$\square^2$	2.87[***]	7.13[*]	2.73[***]	16.31[*]

where [***] indicates significance at the 10% level; [**] indicates 5% level; [*] indicates 1% level

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