

Unions and Employment Growth: Evidence from State Economic Recoveries

Robert Krol · Shirley Svorny

Published online: 11 July 2007
© Springer Science + Business Media, LLC 2007

Abstract We test the hypothesis that in an economic recovery, unionization negatively affects job creation. We examine state-level job growth following two recent recessions, those with troughs in November 1982 and March 1991. In the five years following the troughs, we assess whether variations across states in union membership and right-to-work laws affect the rate of job growth. We find evidence that links union influence to slower job growth during an economic recovery, a finding consistent with previous studies reporting that unions negatively affect average employment and employment growth.

Keywords Union · Employment growth · State Economic Recoveries · Economic recovery

Introduction

As labor markets recover from economic downturns, characteristics of regional labor markets may influence the rate at which unemployment declines. Herein we use state-level data to test the hypothesis that in an economic recovery, union influence negatively affects job creation. Despite extensive research on how unionization affects employment, there is no evidence on the relationship between unionization and employment growth during an economic recovery. We observe job growth following two recent recessions, those with troughs in November 1982 and March 1991.¹ In the five years after each trough, we examine whether variations across states in union membership and right-to-work laws affect the rate of job growth.

¹Data limitations prevent us from examining the 2001 recession.

R. Krol (✉) · S. Svorny
California State University, Northridge, CA 91330, USA
e-mail: robert.krol@csun.edu

Union Effects

There are several ways unions are likely to influence employment growth during an economic recovery. First, unions raise the costs of turnover, making firms wary about hiring under uncertainty. Second, in a recovery, hiring takes place when wages fall or demand increases. Union pressures can reduce hiring in both cases. If union contracts keep wages from falling in a recession, the market process that encourages hiring and begins the process of recovery is impeded. Alternatively, if firms have an increase in demand, union workers with significant market power may negotiate a wage increase. Such an increase would deter hiring as well.

Turnover Costs High turnover costs are an employment hurdle to firms, especially during an economic recovery. Firms weigh the benefits of hiring additional workers against the expected costs of laying those same workers off when demand declines. When turnover costs are relatively high, firms likely wait longer to hire, to ensure that the increase in demand is not short-lived.

The lag in hiring under conditions of costly turnover is suggested by models emphasizing the role of uncertainty (Dixit and Pindyck 1994; Bentolila and Bertola 1990). Dixit and Pindyck note that investments in new workers are partly irreversible because of the high costs of hiring, training, and dismissal. Uncertainty—a characteristic of the early stages of a recovery—raises the costs of hiring decisions. A firm will only hire if the marginal product of the incremental worker is expected to be sufficiently above the real wage to cover turnover costs and the associated risk. As uncertainty declines, the profit-maximizing wedge between the workers' marginal product and real wage declines and more workers are hired.

Bentolila and Bertola (1990) also assess the consequences of hiring under uncertainty. In an attempt to explain labor market effects in Europe, they model labor demand and find that firing costs are influential in hiring decisions when the timing of future product demand increases is uncertain. The empirical implication is that states with relatively high dismissal costs are likely to experience slower job growth during a recovery.

Unions raise dismissal costs because they make it relatively difficult to lay workers off. For example, most collective bargaining agreements attempt to protect union members from unjust discharge, raising the costs of dismissal. In addition to protections from unjust discharge, union workers are more likely to be eligible for severance pay when fired, further raising dismissal costs. The Bureau of Labor Statistics reports that in 2000 31% of union workers were eligible for severance pay compared to 19% of nonunion workers (BLS 2003). Thus, in states where many workers belong to unions or where unions are strong (states without right-to-work laws), turnover costs will be relatively high. Knowing that dismissing an employee will be difficult or expensive should limit employment growth in the early, uncertain stages of a recovery.

Wage Pressures In many cases, wage flexibility is an important factor in economic recovery (for an interesting application to recent recoveries, see Grobar 1996), so union contracts may affect the recovery rate. After a recession, if union contracts limit the downward adjustment of wages, labor market adjustments would be slower.

Wage rigidities in union contracts would preclude, or at least attenuate, the wage adjustments that promote hiring.

On the other hand, upward pressures on wages by current employees when demand increases may slow employment growth in a recovery. In a recovery, as demand picks up, union workers may use their market power, which in part derives from high hiring and firing costs and the threat of strike, to negotiate wage and benefit increases. This outcome favors current employees at the expense of job creation that would benefit the unemployed, as in Lindbeck and Snower's (2001 and 1988) insider/outsider model.

Related Research

Considerable evidence exists on how unions affect employment. Studies using establishment-level data generally find that unionized firms experience slower employment growth.² Nickell and Layard (1999) present evidence that unions raise unemployment in OECD countries. Employment protection legislation, of the type often attributed to unions, has been linked to lower average employment and lower employment turnover (Lazear 1990; Chen et al. 2002), longer employment adjustment lags (Hamermesh 1988), and higher rates of unemployment (Millard and Mortensen 1997; Montgomery 1989).

To date, no one has examined the effect of unionization on the rate of growth of employment during an economic recovery. Such information would add to the literature that documents how labor market conditions in general and unionization, in particular, affect employment.

State-level Variations in Labor Market Conditions

We take advantage of state-level variations in labor market conditions to test the hypothesis that unionization slows job growth in a recovery. Table 1 shows considerable variation in union membership across US states. In 1983 (the closest date to the 1982 trough for which data are available), union employment as a share of total employment (union density) ranged from nearly 30% in Hawaii and New York to just over 5% in North and South Carolina. Between 1983 and 1991, union density had declined for every state but New Hampshire. In 1991 density was highest, again, in Hawaii and New York and lowest in North and South Carolina.

Just as union membership varies across states, so does employment growth following a recession. Table 1 shows the variation in employment growth three years out (other time periods show similar variability). Three years after the November 1991 trough, employment had grown 15% in Idaho, Nevada, and Utah, but had declined in California, Connecticut, New Jersey, and New York. Three years after

²Wooden and Hawke (2000), Dunne and Macpherson (1994), Bronars et al. (1994), Long (1993), Leonard (1992), and Blanchflower et al. (1991) find a negative relationship. An exception is Blanchflower and Burgess 1996, who do not find a significant negative relationship.

Table 1 State right-to-work laws, union membership, and employment growth after trough

State	RTW status ^a	Union density		Employment growth ^b	
	Yes=1	1983 (%)	1991 (%)	1982 (%)	1991 (%)
Alabama	1	16.9	13.3	11.2	6.5
Alaska	0	24.8	21.5	12.7	8.0
Arizona	1	11.5	7.7	27.0	11.2
Arkansas	1	11.0	10.2	11.5	9.4
California	0	21.9	18.3	11.5	-2.2
Colorado	0	13.6	9.9	8.1	12.4
Connecticut	0	22.7	19.0	10.0	-2.6
Delaware	0	20.1	16.8	15.0	1.2
Florida	1	10.2	8.7	19.3	8.1
Georgia	1	11.9	6.8	18.6	9.5
Hawaii	0	29.2	29.0	8.8	0.1
Idaho	0/1	12.5	8.9	7.9	15.9
Illinois	0	24.2	21.0	5.0	3.5
Indiana	0	24.9	19.3	9.6	8.4
Iowa	1	17.2	13.8	4.0	5.8
Kansas	1	13.7	12.0	7.4	6.1
Kentucky	0	17.9	13.3	9.6	8.2
Louisiana	1	13.8	7.8	0.0	6.6
Maine	0	21.0	18.3	12.1	2.5
Maryland	0	18.5	14.2	14.4	0.8
Massachusetts	0	23.7	17.5	11.7	1.0
Michigan	0	30.4	24.7	15.8	6.1
Minnesota	0	23.2	21.5	11.3	7.8
Mississippi	1	9.9	8.2	8.9	12.1
Missouri	0	20.8	14.1	10.8	6.0
Montana	0	18.3	17.3	1.6	11.6
Nebraska	1	13.6	10.8	6.1	6.5
Nevada	1	22.4	18.3	15.1	15.0
New Hampshire	0	11.5	11.6	21.3	7.0
New Jersey	0	26.9	24.3	11.5	-0.2
New Mexico	0	11.8	8.8	12.3	11.3
New York	0	32.5	29.2	8.2	-2.1
North Carolina	1	7.6	5.2	15.0	8.6
North Dakota	1	13.2	9.5	1.4	8.4
Ohio	0	25.1	20.7	9.3	4.8
Oklahoma	0	11.5	10.2	-2.0	4.6
Oregon	0	22.3	19.0	9.9	8.4
Pennsylvania	0	27.5	20.3	5.7	1.0
Rhode Island	0	21.5	20.8	13.8	1.1
South Carolina	1	5.9	5.2	13.4	5.1
South Dakota	1	11.5	8.8	7.6	11.9
Tennessee	1	15.1	11.0	12.2	10.4
Texas	1	9.7	6.5	8.7	6.6
Utah	1	15.2	9.4	13.3	14.1
Vermont	0	12.6	11.6	12.0	6.3
Virginia	1	11.7	8.7	16.6	5.0
Washington	0	27.1	22.9	11.2	5.5
West Virginia	0	25.3	19.4	0.9	5.7
Wisconsin	0	23.8	20.9	8.6	7.6
Wyoming	1	13.9	12.3	-1.6	5.9

^a Idaho passed RTW legislation in 1985.

^b Three years post-trough

the March 1982 trough, employment had grown over 20% in Arizona and New Hampshire, but had declined in Oklahoma and Wyoming.

Table 1 also indicates which states have right-to-work laws that prohibit requiring union membership or union dues obligations as a condition of employment. As right-to-work laws limit union power, they give us an additional measure, beyond union density, of union presence and influence.

Empirical Tests

To assess how unionization affects job growth after a recession, we estimate the following cross-sectional equation using ordinary least squares:

$$\% \Delta E_{ij} = \alpha + \beta U_j + \gamma X_j \quad (1)$$

Here, $\% \Delta E_{ij}$ is the cumulative employment growth i years after the recession trough for state j , measured as the percentage change. We examine the November 1982 and March 1991 troughs (as defined by the National Bureau of Economic Research) separately and report estimates for values of i from one to five years. To control for variations across states in patterns of job loss, we include the size of the state-specific, 1-year pre-trough employment change in our regressions.

These troughs give us two very different recoveries to study. One year after the 1982 trough, aggregate employment had grown more than 3%. In contrast, aggregate employment fell in the year following the 1991 trough by 0.2%. U_j measures union presence in state j (either by union density or a dummy variable equal to one for states with right-to-work laws). X_j is a vector of control variables.

The coefficient of interest is β , because it indicates how unionization affects job growth during a recovery. When union presence is measured as the union share of total state employment, we expect β to be negative. If our hypothesis is correct, states with greater union density experience slower job growth. When union presence is measured by a right-to-work dummy variable, we expect a positive β . If our hypothesis is correct, states with right-to-work laws experience relatively faster job growth after a recovery.³

Right-to-work laws can be considered exogenous with respect to current economic conditions as, for most states, they have been in place since the 1950s (Wilson 2002). We conducted a Hausman test (Spencer and Berk 1981) to examine the exogeneity of the unionization rate with respect to the economic recoveries studied. In every case, the results reject the hypothesis that unionization is influenced by the recovery.

The control variables include measures of industry structure, the composition of the labor force (age and education), the size of state government (state government expenditures as a share of state personal income one year prior to the trough), a measure of state unemployment benefits, the drop in employment one year prior to the trough, and state size (log of population).

We control for the structure of the state economy with four measures of industry output: the percent of gross state product in agriculture, mining, manufacturing, and services. Some industries, for example, manufacturing, are likely more cyclical than

³Data sources are listed in the Appendix.

others or recover at different speeds. The industry output variables control for industry composition effects that might influence employment growth after a trough.

With observations on 50 states, we are limited in selecting controls for labor market characteristics. We use two measures, both of which attempt to capture the human capital of the labor force—the percent of the labor force between 45 and 65 years of age and the percent of the population with a college degree. Because good job matches are harder to find, the optimal job search is longer for individuals whose human capital is relatively large. As a result, we expect both measures are negatively related to the rate of growth of employment following a recession.

The size of a state's government is included as an additional control variable because states with large governments have larger public sector unions. By including state government size in the regression, we avoid the concern that the total unionization variable (which includes unionized public employees) is capturing the effect of a large state government rather than the effect of unions on state employment practices.

To control for state unemployment benefits, we use the benefit–cost rate—the dollar value of all benefits as a percentage of all wages paid to covered workers. For the 1991 recession, we use state rates for 1990. Because this measure is not available prior to 1984, it is not included in the 1982 regressions. Where unemployment benefits are relatively generous, workers may search longer, slowing the employment growth in a recovery. Empirical evidence, summarized in Decker (2003) confirms that the generosity of unemployment compensation lengthens unemployment spells. We expect this variable's coefficient to be negative.

States that experience larger drops in employment in a recession should see faster growth once the trough has passed. Because this drop has been entered as a positive number, we expect a positive coefficient on the variable that measures the percent change in state employment one year prior to the trough.

Finally, we include the log of state population as a measure of state size. Large states may be less affected by aggregate shocks because of their relative size and diversity. Alternatively, there may be political dynamics associated with state size that affect union influence.⁴

Results

Tables 2 and 3 display our empirical results. The *p* values are based on heteroskedastic-consistent standard errors (White 1980). Table 2 shows results when the union share of total employment is used to measure union influence. In Table 3, the union share is replaced by a right-to-work dummy (=1 in right-to-work states). Columns 1–5 of each table show the regressions following the trough of the 1982 recession. The heading 82+ (*n*) means that the dependent variable measures employment growth from the trough in 1982 to *n* year(s) later, *n*=1, 2,...5. Similarly, Columns 6–10 of each table show regressions on employment growth following the 1991 trough.⁵

⁴Evidence from cities suggests that the size of a political jurisdiction affects both participation and the influence of special interests, including unions. See Oliver (2000) and Trejo (1991).

⁵We conducted a Chow test to determine whether or not the data on the two recoveries should be pooled into a panel. In every case the Chow test rejects pooling.

In almost every regression, the union variables have the expected negative sign and are significant. The larger coefficients over time capture a cumulative effect. States with relatively high shares of their labor force in unions recover more slowly, holding other state characteristics constant (Table 2). States with right-to-work laws recover faster (Table 3). This suggests that the union influences discussed earlier are important considerations in state cyclical adjustments.⁶

Of the control variables, the coefficients of the industry mix variables are often significant; however, their signs and significance differ between the two recessions. This confirms the importance of including these variables to control for the unique characteristics of each recession.

The coefficient of the percent of the population between 45 and 65 years of age is negative and almost always significant. The sign conforms to our expectation that human capital increases the optimal duration of job search. The percent of the adult population who are college graduates is never significant, nor is the size of government or the generosity of state unemployment compensation benefits.

The coefficient of the variable that measures the drop in employment in the year prior to the trough is significant in the 1991 regressions, but not in the 1982 regressions. Where it is significant, it has the expected sign; bigger drops in employment are followed by more sizeable recoveries.

The coefficient of the population variable is almost always negative. It is significant more often than not in the 1991 regressions. Interestingly, larger states appear to have more difficulty recovering. Perhaps unions are better able to influence public policy in these states.

Conclusion

We assess the employment effects of unions by examining employment growth across states in the five years following the recessionary troughs of 1982 and 1991. Two measures of unionization are used: union density—union employment as a share of total state employment—and whether or not a state has a right-to-work law which restricts union power. Examining employment growth one to five years after the troughs, we find that, with both measures of unionization, union power slows job growth during an economic recovery.

Previous studies have found negative employment effects associated with union density and power. Our specific focus has been on how job growth is affected in an

⁶For the 1991 recovery, we also examined the impact of state laws with respect to employment-at-will. Generally the effects were negative; rules that limit employment-at-will led to slower employment growth after a trough, but the coefficients were almost always insignificant. The employment-at-will data were taken from Dertouzos and Karoly (1992). We also examined the relationship between union presence and the size of employment loss in the downturn preceding each trough. We expected to find a larger drop in states with heavy union presence, due to (1) wage rigidities and (2) less hiring due to high union costs of dismissal and increased product market uncertainty. Our expectations were confirmed for the period that preceded the 1991 trough; the employment drop was larger in states with heavy union presence. However, our expectations were not confirmed for the period preceding the 1982 trough. The employment decline preceding the 1982 trough was smaller in states with greater union presence. Both results are statistically significant.

Table 2 Empirical results: effect of union membership

	82+1	82+2	82+3	82+4	82+5	91+1	91+2	91+3	91+4	91+5
Constant	0.131**	0.261***	0.397***	0.486***	0.616***	0.019	0.079	0.167	0.19	0.154
% Emp. unionized	-0.085**	-0.182**	-0.253**	-0.322**	-0.391***	-0.028	-0.141***	-0.280***	-0.389***	-0.514***
% emp. in Ag	-0.165*	-0.352**	-0.890***	-1.22***	-1.39***	0.387***	0.464***	0.629***	0.825***	0.982***
% Emp. in mining	-0.146***	-0.226**	-0.403***	-0.767***	-0.965***	0.029	0.047	0.145	0.229	0.295
% Emp. in Mfg	0.013	0.024	-0.052	-0.111	0.173	0.087*	0.195**	0.340***	0.491***	0.641***
% Emp. in services	0.123*	0.250**	0.226	0.327	0.444**	0.027	0.208**	0.654***	1.049***	1.49***
% Workers 45–64 years old	-0.526***	-0.979***	-1.18***	-1.18**	-1.31**	-0.209	-0.442	-0.910***	-1.12**	-1.39***
Gov't exp./PI (trough, 1 year)	0.702*	0.435	0.951	1.56	1.9	0.116	0.176	0.320	0.169	0.423
% College degree	-0.041	0.083	0.063	-0.063	-0.209	-0.010	-0.034	-0.225	-0.231	-0.135
Unemp. comp/ wages '90.						0.001	0.001	-0.001	-0.004	-0.009
% Change emp. (1 year pre-trough)	0.209**	0.184	0.017	0.020	-0.170	0.475***	0.760***	1.023***	1.355***	1.70***
Population (ln)	4E-4	4E-4	-0.003	-0.006	-0.010	-0.001	-0.005	-0.009*	-0.012**	-0.012*
R bar squared	0.49	0.47	0.46	0.63	0.67	0.58	0.58	0.62	0.63	0.65
SE of estimates	0.02	0.03	0.04	0.05	0.06	0.01	0.02	0.03	0.03	0.04
Observations	50	50	50	50	50	50	50	50	50	50

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

Table 3 Empirical results: effect of right-to-work laws

	82+1	82+2	82+3	82+4	82+5	91+1	91+2	91+3	91+4	91+5
Constant	0.140**	0.305***	0.437***	0.545***	0.695***	0.042	0.144	0.254*	0.309***	0.292
Right-to-work	0.009**	0.016*	0.025*	0.031*	0.036*	-0.000	0.006	0.018*	0.026**	0.037***
% Emp. in Ag	-0.164	-0.359*	-0.892***	-1.22***	-1.40***	0.381***	0.417**	0.522**	0.677**	0.780*
% Emp. in mining	-0.142***	-0.219**	-0.390***	-0.752***	-0.948***	0.032	0.063	0.174	0.269	0.347
% Emp. in Mfg	0.025	0.039	-0.022	-0.077	-0.134	0.082*	0.185**	0.334***	0.483***	0.637***
% Emp. in services	0.095	0.182	0.138	0.211	0.302	0.015	0.165	0.585***	0.954***	1.37***
% Workers 45–64 years old	-0.580***	-1.14***	-1.37***	-1.42***	-1.62***	-0.272	-0.648**	-1.21***	-1.53***	-1.89***
Gov't exp./PI (trough, 1 year)	0.471	-0.175	0.206	0.567	0.665	0.013	-0.173	-0.216	-0.570	-0.478
% College degree	-0.017	0.102	0.118	-0.006	-0.147	-0.033	-0.085	-0.265	-0.286	-0.178
Unemp. comp/ wages '90						0.000	-0.005	-0.012	-0.019	-0.029
% Change Emp. (1 year pre-trough)	0.223**	0.217	0.060	0.076	-0.101	0.457***	0.666***	0.833***	1.092***	1.35***
Population (ln)	-0.001	-0.003	-0.008	-0.013*	-0.018*	-0.001	-0.007*	-0.013**	-0.018***	-0.02***
R bar squared	0.48	0.44	0.44	0.61	0.65	0.57	0.52	0.53	0.54	0.55
SE of estimates	0.02	0.03	0.04	0.05	0.06	0.01	0.02	0.03	0.04	0.05
Observations	50	50	50	50	50	50	50	50	50	50

* $p < 0.10$
 ** $p < 0.05$
 *** $p < 0.01$

economic recovery. The results provide further evidence of the negative employment effects of unionization. Our findings are consistent with various economic models that predict the consequences of union power on job creation and economic activity.

Acknowledgement We thank David Denholm of the Public Service Research Foundation for providing the union data used herein.

Appendix

Table 4 Data sources

Data	Source
Employment	Bureau of Labor Statistics
Gross state product shares for agriculture, mining, manufacturing and services	Bureau of Economic Analysis, Regional Accounts Data
Workers 45–64 years of age	US Statistical Abstract
College degrees, percent of persons 25 and older	US Statistical Abstract
Government expenditures	US Statistical Abstract
Unemployment compensation benefits/total wages	US Department of Labor, included in Table 3, “State Unemployment Compensation and Workers’ Compensation Programs: A Review of Major Legislative Changes, Program Costs and Suggested Reforms,” The National Foundation for Unemployment Compensation and Workers’ Compensation, for the United States Small Business Administration, Office of Advocacy, RS 171, 1996
Personal income	Bureau of Economic Analysis
Population	Bureau of Economic Analysis

References

- Bentolila, S, Bertola G (1990) Firing costs and labor demand: how bad is eurosclerosis? *Rev Econ Stud* 57:381–402 (July)
- Blanchflower DG, Burgess SM (1996) Job creation and job destruction in Great Britain in the 1980s. *Ind Labor Relat Rev* 50:17–38 (October)
- Blanchflower DG, Millward N, Oswald AJ (1991) Unionism and employment behavior. *Econ J* 101:815–834 (July)
- Bronars SG, Deere DR, Tracy JS (1994) The effects of unions on firm behavior: an empirical analysis using firm-level data. *Ind Relat* 33:426–451 (October)
- Bureau of Labor Statistics (2003) National compensation survey: employee benefits in private industry in the United States, 2000. Bulletin 2555. Washington, DC: US Department of Labor (January 2003)
- Chen Y-F, Snower D, Zoega G (2002) Labor market institutions and macroeconomic shocks. London: Center for Economic Policy Research, discussion paper series no. 3480 (August)
- Decker PT (2003) Testimony before the house ways and means subcommittee on human resources hearing on unemployment benefits and ‘returns to work’. Available at <http://waysandmeans.house.gov/hearings.asp?formmode=view&id=312>
- Dertouzos JN, Karoly LA (1992) Labor market responses to employer liability. RAND Institute for Civil Justice, R-3989-ICJ, Santa Monica, CA

- Dixit AK, Pindyck RS (1994) *Investment under uncertainty*. Princeton University Press, Princeton, NJ
- Dunne T, Macpherson DA (1994) Unionism and gross employment flows. *South Econ J* 60:727–738 (January)
- Grobar L (1996) Comparing the New England and Southern California regional recessions. *Contemp Econ Policy* 14:71–84 (July)
- Hamermesh, DS (1988) The demand for workers and hours and the effects of job security policies: theory and evidence. In: Hart RA (ed) *Employment, unemployment and labor utilization*. Unwin Hyman, Boston, pp 9–32
- Lazear, EP (1990) Job security provisions and employment. *Q J Econ* 105:699–726 (August)
- Leonard JS (1992) Unions and employment growth. *Ind Relat* 31:80–94 (Winter)
- Lindbeck A, Snower DJ (2001) Insiders versus outsiders. *J Econ Perspect* 15:165–188 (Winter)
- Lindbeck A, Snower DJ (1988) *The insider–outsider theory of employment and unemployment*. MIT Press, Cambridge, MA
- Long RJ (1993) The effect of unionization on employment growth of Canadian companies. *Ind Labor Relat Rev* 46:691–703 (July)
- Millard SP, Mortensen DT (1997) The unemployment and welfare effects of labour market policy: a comparison of the USA and the UK. In: Snower DJ, Mortensen DT (eds) *Unemployment policy: government options for the labour market*. Cambridge University Press, Cambridge, pp 545–572
- Montgomery E (1989) Employment and unemployment effects of unions. *J Labor Econ* 7:170–190 (April)
- Nickell S, Layard R (1999) Labor market institutions and economic performance. In: Ashenfelter O, Card D (eds) *Handbook of labor economics*, vol. 3C. Elsevier, Amsterdam, pp 3029–3084
- Oliver JE (2000) City size and civic involvement in Metropolitan America. *Am Polit Sci Rev* 94:361–373 (June)
- Spencer DE, Berk KN (1981) A limited information specification test. *Econometrica* 49:1079–1085 (July)
- Trejo SJ (1991) Public sector unions and municipal employment. *Ind Labor Relat Rev* 45:166–180 (October)
- White H (1980) A heteroskedastic-consistent covariance matrix estimator and a direct test of heteroskedasticity. *Econometrica* 48:827–838 (May)
- Wilson WT (2002) The effect of right-to-work laws on economic development. Mackinac Center for Public Policy. Available at <http://www.mackinac.org> (posted, June 2002)
- Wooden M, Hawke A (2000) Unions and employment growth: panel data evidence. *Ind Relat* 39:88–107 (January)