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Abstract

The 1947 Taft-Hartley amendments to the National Labor Relations Act (1935) authorized a state's right to prohibit unions from requiring a worker to pay dues, even when the worker is covered by a collective bargaining agreement. Within a short time of the amendment's passage, twelve (12) states passed "right-to-work" laws, as did ten (10) more states in the intervening years. Although there has been considerable research on the influence of right-to-work laws on union density, organizing efforts, industrial development and some study of wage differences, there has been no examination of the legislations' effect on business and economic conditions across states. In this paper, the average differences in business conditions, personal income, and employment across states that have enacted right-to-work laws versus those that do not have this legislation are examined using a Multivariate Analysis of Variance (MANOVA). Our most notable result is the finding that although right-to-work states may be more attractive to business, this does not necessarily translate into enhanced economic viability for all sectors in the right-to-work state. Not only are personal income and employment lower, but there are no significant differences in the number of firms and business formations between right-to-work and non-right-to-work states.

Keywords: right-to-work laws, business formation, employment, Multivariate Analysis of Variance (MANOVA)

JEL Codes: C30, C50, J51, J58, K31

Introduction

"Right-to-work" is the phrase that is used by opponents of unionization to describe what is known as "open shops." Under state right-to-work laws, union membership is not a requirement for employment and workers can choose whether they want to be in a union even if the company is unionized. This makes it more difficult for unions to organize and attract new members in already unionized firms and inhibits the growth of unions in new areas. Proponents of right-to-work laws believe that states with these laws are more "business-friendly" and thus exhibit higher economic growth than states without such legislation.[1]

The 1947 Taft-Hartley amendments to the National Labor Relations Act (1935) authorized a state's right to pass laws that prohibit unions from requiring a worker to pay dues, even when the worker is covered by a collective bargaining agreement. Within a short time of the amendment's passage, twelve (12) states passed "right-to-work" laws, as did many other states in the intervening years.[2] Although there has been considerable research on the influence of right-to-work laws on union density, organizing efforts, industrial development (Moore (1998) and Moore and Newman (1985)), and wages (Mishel (2001)), there has been no study of the right-to-work laws' effect on business formation and economic growth. In this paper, we will examine the differences in business conditions, personal income, and employment across states that have enacted right-to-work laws versus those states that do not have this legislation, using pooled data for every state over the periods 1990, 1995, 2000-2005. The data will be analyzed using a Multivariate Analysis of Variance (MANOVA) which allows us to consider a joint

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[1]   See the website http://www.nrtw.org/b/rtw_faq.htm of the National Right to Work Legal Defense Foundation, Inc. and the website http://www.right-to-work.org/ of the National Right to Work Committee.
[2]   Currently, there are 22 states: Alabama, Arizona, Arkansas, Florida, Georgia, Idaho, Iowa, Kansas, Louisiana, Mississippi, Nebraska, Nevada, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, and Wyoming.

distribution of the endogenous variables and to test for differences simultaneously. To our knowledge, this is the most comprehensive study of the effectiveness of right-to-work laws that currently exists in the literature.

Background

Mishel (2001) examines the average effect of right-to-work laws on wages. He controls for differences in the cost of living throughout the United States, thereby making wages comparable in various parts of the country and also examines how metropolitan areas located in both right-to-work and non-right-to-work states affect wages. Mishel (2001) finds that the mean effect of working in a right-to-work state results in a six (6) to eight (8) percent reduction in wages for workers in these states. Controlling for regional costs of living reduces this amount to approximately four (4) percent. Reed (2003) also studies the wage effects of right-to-work laws. Using state-level data, he finds that right-to-work states have average wages that are significantly higher than non-right-to-work states, with results that are robust across a wide variety of specifications. An important distinction of this study is that it controls for state economic conditions at the time states adopted right-to-work legislation. States that adopted right-to-work laws were generally poorer than other states and the failure to control for these initial conditions may be the reason why previous studies have not identified a positive wage impact for right-to-work states. Using CPS data for 1977-2002, Farber (2005) tests the standard wage determination model's prediction that the threat of union organization increases nonunion wages and reduces the union/nonunion wage differential. Estimates focusing on two states' introduction of right-to-work laws depict that in one state the law was associated with a statistically significant drop in nonunion wages.

The only study that comes close to examining differences in economic conditions, other than wages, is by Abraham and Voos (2000). The authors accomplish an empirical examination of whether or not stockholder wealth rises in response to passage of a right-to-work law. Stockholder wealth rose when Louisiana passed such a law in 1976 and when Idaho did so in 1985-1986. Presumably this occurred because investors anticipated higher future profits with weaker labor unions or a lower probability of future organization. The results from this study show that these laws indeed hamper labor union activity.

While research exists regarding the impact of right-to-work laws on workers' earnings, there has really been no study of the impact of right-to-work laws on business and labor market conditions across states. We will attempt to fill this void by examining, from a multivariate perspective, whether differences exist in variables such as firm "births," terminations, bankruptcies, self-employment, proprietors' income, state per capita personal income, and employment rates between right-to-work and non-right-to-work states, *ceteris paribus*.

Empirical Model, Data, and Hypotheses

Model Specification

The data used in this study was mostly collected from the United States Small Business Administration, Small Business Economic Indicators.[3] The business condition variables measured by state over the years 1990, 1995, 2001-2005 are,

- number of employer firms,
- total self-employed (in occupation),
- number of business formations (births),
- number of business terminations,
- number of business bankruptcies, and
- proprietors' income.[4]

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[3]   http://www.sba.gov/advo/research/sbe.html

It is important to note that this data is measured for all businesses, not just what is considered "small," e.g., less than 100 employees. In addition to the business condition variables, we used two additional factors that are measures of the overall economic viability of a state,

- per capita personal income, and
- the employment rate (employment to population ratio).

A complete description of the variables may be found in Appendix A.[5] All variables are expressed in natural logarithmic form.

Since several dependent variables will be fitted to the same effects (right-to-work v. non-right-to-work), tests can be made involving the parameters of several dependent variables. Assuming we have a pooled, cross-sectional time series with $n \cdot T$ observations, p dependent (endogenous) variables, k_1 covariates, $T - 1$ year effects, and $r - 1$ regional effects, our model may be specified in matrix form as,

$$Y = \vec{R}\vec{\beta}_1' + C\beta_2 + YR\beta_3 + RE\beta_4 + \varepsilon , \tag{1}$$

where Y is an $n \cdot T \times p$ matrix of dependent variables, R is an $n \cdot T \times 1$ vector of the right-to-work dummy variable, C is an $n \cdot T \times k_1$ matrix of covariates, YR is an $n \cdot T \times (T - 1)$ matrix of year effects (dummy variables), RE is an $n \cdot T \times (r - 1)$ matrix of regional effects (dummy variables) and ε is an $n \cdot T \times p$ matrix of random errors. For multivariate tests, there needs to be assumptions made about the errors. We assume that with p dependent variables, there are $n \cdot T \times p$ errors that are independent across observations but not across dependent variables,

$$Var(\varepsilon) = I_{n \cdot T} \otimes \Omega ,$$

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[4] The data on proprietors' income was taken from http://www.bea.gov/regional/spi/. It also would have been nice to have corporate profits by state, but that information does not exist.

[5] Although it is not listed here, we also use Proprietors' Income as a dependent variable.

where Ω is $p \times p$.   We assume, using the specification in equation (1), that there are covariates on the right hand side. Equation (1) will be estimated two ways: by using both per capita income and the employment rate as covariates or controlling factors and then assuming that there are no covariates, e.g., all eight of the variables mentioned above are treated as endogenous with just the right-to-work, year, and regional dummies as exogenous variables.

Data Issues

Dumond, Hirsch, and MacPherson (1999) controlled for the regional cost of living in their study of the effect of right-to-work laws on wages using the Department of Housing and Urban Development "Fair Market Rents" for Metropolitan Statistical Areas (MSA). Since it is well known that there is no universally accepted method of adjusting for regional costs of living and it is impossible to test the accuracy of using an index based on fair market rents, this same method will not be used. We decided to "proxy" differences across regions/states by using a set of regional dummy variables based upon the U.S. Census Bureau, *Census Regions and Divisions of the United States*. These should be sufficient to capture differences across regions and/or states.

The list of the twenty-two (22) states with right-to-work laws may be found in Table I. The pooled data is from 1990, 1995, 2000 to 2005 and there are only two states that have enacted this legislation during this time period: Oklahoma and Texas. Since we would like to ensure that states have sufficient time to adjust to legislative changes, these two states will be omitted from this analysis.[6] That leaves us with a total of 392 observations ($n \cdot T = 49 \cdot 8$).

[Insert Table I Here]

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[6] It is important to note that the model estimates do not change whether these states are included or not.

Hypotheses

In a MANOVA, the overall null hypothesis involves testing the equality of mean vectors. We would like to test whether there is a mean difference in all of the endogenous variables between the right-to-work (RTW) and non-right-to-work (NRTW) states,

$$H_0 : \bar{\mu}_{RTW} = \bar{\mu}_{NRTW}$$
$$H_A : \bar{\mu}_{RTW} \neq \bar{\mu}_{NRTW},$$
(2)

where $\bar{\mu}'_{RTW}$ and $\bar{\mu}'_{NRTW}$ are both 8×1 vectors containing the population means of the above named dependent/endogenous variables,

- number of employer firms,
- total self-employed (in occupation),
- number of business formations (births),
- number of business terminations,
- number of business bankruptcies,
- proprietors' income,
- per capita personal income, and
- the employment to population ratio.

Analogously, the model specified in equation (1) can be used to test the null hypothesis,

$$H_0 : \bar{\beta}_1 = 0$$
$$H_A : \bar{\beta}_1 \neq 0.$$
(3)

Of course, if we fail to reject the omnibus null hypothesis, this would indicate that the enacting of right-to-work laws has had no perceptible effect on business and economic conditions across states--controlling for regional differences and time. If the null hypothesis were to be rejected, then the alternative is to determine which variables do exhibit mean differences and what the magnitude of those differences are between the right-to-work and non-right-to-work states.

Empirical Results

As mentioned previously, equation (1) (above) will be estimated two ways. First, per capita personal income and the employment rate will be regarded as explanatory variables along with the exogenous right-to-work, year and regional dummies. In other words, we would like to determine if right-to-work legislation has had any influence on business condition variables, (number of employer firms, total self-employed, number of business formations, number of business terminations, number of business bankruptcies, and proprietors' income) across U.S. states, controlling for or holding constant per capita personal income, employment, year, and the regional effects.[7] In the second case, the only explanatory variables are the exogenous right-to-work, year and regional dummy variables—the business condition variables along with the overall measures of economic conditions by state (per capita personal income and the employment rate) are all treated as dependent/endogenous variables.

There are four multivariate statistics that are computed in SAS 9.1 to test the null hypothesis of no overall effect of right-to-work (hypotheses (2) and (3) above),[8]

- Wilks' lambda,
- Pillai's trace,
- Hotelling-Lawley trace, and
- Roy's maximum root.

The numerical values for each of these statistics and their associated *P* values are in Table II. The MANOVA results for the first case noted above (including per capita personal income and the employment rate as explanatory variables) are found in the top table, while the results for the second case (per capita personal income and the employment rate are treated as dependent

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[7]   Of course, we do realize that if per capital personal income and the employment rate are truly endogenous, then treating them as explanatory variables may introduce endogeneity bias.

[8]   See SAS Products, SAS Stat, SAS Stat Users' Guide, Proc GLM, Syntax, MANOVA Option, SAS Institute, Inc., Cary, NC , 2003.

variables) are in the bottom table. It is clear from both sets of results that the null hypothesis in both (3) and (4) above cannot be accepted. While the implication here is that there is a significant difference amongst the business and economic condition variables between right-to-work versus non-right-to-work states (in both cases), it may initially seem that the proponents of right-to-work laws may be right in saying that right-to-work laws help to "revive" state economies and that right-to-work states exhibit a higher standard of living than do non-right-to-work states.[9] However, this conclusion may be premature, since any inferences cannot be made without examining the nature of the differences in the business and economic conditions, which is what we will now present.

[Insert Table II Here]

The estimates of the right-to-work regression parameter are presented in Table III for each of the aforementioned cases. It is interesting to note that in Case I, essentially all of the right-to-work parameter estimates business condition variables are statistically significant (except bankruptcies) with the expected sign. Thus, when per capita personal income and employment are held constant or controlled-for across states, then right-to-work states do impart a better business environment--there are more firms, more business formations and terminations[10], more self-employment and higher proprietors' income in right-to-work states as compared to non-right-to work states, *ceteris paribus*. Of course, the results in Case II provide a different representation of the economic viability of right-to-work states. When both per capita income and the employment rate are treated as dependent variables, then states that have enacted right-to-work laws do not fare as well as those states that did not. One would expect that right-

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[9]   *Unions Try to Hang On as Open Shop Laws Gain Ground*, **U.S.A. Today**, Money Section, Thursday, July 26, 2007, pp. 1B-2B, and http://www.nrtw.org/b/rtw_faq.htm.

[10]   More business terminations are not necessarily a "bad" thing, since more terminations indicate a more dynamic business sector.

to-work legislation would help "revive" a state's economy because businesses would be more amenable to moving to states with right-to-work laws. According to the results of this study, this perception does not have any empirical support. As may be seen in Table III, there is no statistically significant difference in the mean number of employer firms and business formations between right-to-work and non-right-to-work states. Moreover, the overall measures of economic conditions across states are both lower in the right-to-work states—average per capita personal income is 6.7 percent lower and the average employment rate is 5.8 percent lower in the right-to-work states, controlling for year and regional differences.[11]

[Insert Table III Here]

Another result from Table III that deserves comment is the difference in the right-to-work parameter estimate for the self-employment variable in Cases I and II. Self-employment is 33.8 percent higher in right-to-work states when per capita personal income and the employment rate are controlled for.[12] When these two are considered dependent variables, self-employment is 39.3 percent higher in the right-to-work states.[13] Of the many questions raised by entrance into self-employment, a fundamental one concerns the reasons behind the self-employment decision. While some argue that people have been "pulled" into entrepreneurship by the guarantee of independence, self-development or exploring a market opportunity, others present reasons that individuals have been "pushed" into it because of restructuring and downsizing, unemployment,

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[11]   The reader will note that these percentages are different from the parameter elasticity estimates in Table III. When there are dummy variables with a log-transformed dependent variable, the parameter estimate is not interpreted as an elasticity. The percentage impact of the dummy variable on the dependent variable is computed as,

$$g = 100 \left(\exp(b - V(b)/2) - 1 \right),$$

where the V(b) is the squared standard error of the estimate. See Halvorsen and Palmquist (1980) and Kennedy (1981) for more information on this transformation.

[12]   Ibid.

[13]   Ibid.

or dissatisfaction with previous employment (Blanchflower (2004)). The results in this study seem to indicate support for the latter—a larger number of self-employed exists contemporaneously with lower per capita personal income and employment in the right-to-work states.

Conclusion

The diverse results between the two models can be clarified. In the first case where per capita income and employment are on the "right-hand" side of the equation, any "trickle-down" that may result from improved business conditions are controlled for. Thus, business conditions are more favorable in the right-to-work relative to the non-right-to-work states because the overall economic measures of personal income and employment are held constant across all states. Once those overall measures are considered as dependent variables, the improved economic position of the right-to-work states dissipates somewhat. The implication here is that although right-to-work states may be more attractive to business, this does not necessarily translate into enhanced economic viability for everyone in the state. Not only are personal income and employment lower, but there are no significant differences in the number of firms and business formations between the right-to-work and non-right-to-work states.

The issue of which is the "correct" model may be answered from an econometric standpoint. All of the eight dependent variables in Case II can be considered endogenous. As such, if any appear on the "right-hand" side of the equation, then the potential exists for bias due the correlation of the endogenous variable/s with the error term. Therefore, we conclude that the second model is the least problematic and yields results that support the contention that right-to-work states are no better than non-right-to-work states (and sometimes worse) in attracting new businesses, creating employment, and generating product and income.

Table I

Right-to-Work States

State	Years Enacted/Amended
Alabama	1953
Arizona	1946, 1948, 1982
Arkansas	1944, 1947
Florida	1968, 1974, 1977
Georgia	1947
Idaho	1986
Iowa	1947, 1977, 1978
Kansas	1958, 1975
Louisiana	1976
Mississippi	1960
Nebraska	1946, 1947, 1961, 1977
Nevada	1952
North Carolina	1947
North Dakota	1948, 1987
Oklahoma	2001
South Carolina	1954
South Dakota	1946, 1947, 1955
Tennessee	1947
Texas	1993
Utah	1955
Virginia	1947, 1954, 1956, 1970, 1973
Wyoming	1963

Table II

MANOVA Results

Case I – With (Controlling For) Per Capita Personal Income and the Employment Rate

MANOVA Test Criteria and Exact F Statistics for the Hypothesis of No Overall Right-to-Work State Effect H = Type III SSCP Matrix for R_to_W_State E = Error SSCP Matrix					
Statistic	**Value**	**F Value**	**Num DF**	**Den DF**	**Pr > F**
Wilks' Lambda	0.77882243	13.06	8	368	<.0001
Pillai's Trace	0.22117757	13.06	8	368	<.0001
Hotelling-Lawley Trace	0.28398973	13.06	8	368	<.0001
Roy's Greatest Root	0.28398973	13.06	8	368	<.0001

Case II – Without Per Capita Personal Income and the Employment Rate

MANOVA Test Criteria and Exact F Statistics for the Hypothesis of No Overall Right-to-Work State Effect H = Type III SSCP Matrix for Right-to-Work State E = Error SSCP Matrix					
Statistic	**Value**	**F Value**	**Num DF**	**Den DF**	**Pr > F**
Wilks' Lambda	0.81620643	13.81	6	368	<.0001
Pillai's Trace	0.18379357	13.81	6	368	<.0001
Hotelling-Lawley Trace	0.22518025	13.81	6	368	<.0001
Roy's Greatest Root	0.22518025	13.81	6	368	<.0001

Table III

Regression Results

(All Variables are Expressed in Natural Logarithm Units)

Case I: Per capita personal income and employment rate treated as explanatory variables
Case II: Per capita personal income and employment rate treated as dependent variables

Dependent Variable	Case I Right-to-Work Parameter Estimate	Case II Right-to-Work Parameter Estimate
	(Standard Errors in Parenthesis)	
NEF_{it} Number of Employer Firms	.1925 (.0924)**	.1670 (.1101)
SE_{it} Number of Self-Employed Persons	.2961 (.0975)***	.3381 (.1141)***
BF_{it} Number of Business Formations	.2266 (.0999)**	.1770 (.1175)
BT_{it} Number of Business Terminations	.2815 (.0955)***	.2626 (.1116)**
BB_{it} Number of Business Bankruptcies	-.1015 (.1125)	-.0443 (.1302)
PRI_{it} Proprietors' Income	.3331 (.0971)***	.2404 (.1185)**
PI_{it} Per Capita Personal Income	n/a	-.0689 (.0167)***
EMP_{it} Employment Rate	n/a	-.0595 (.0183)***

** - Statistically Significant at $\alpha = .05$
*** - Statistically Significant at $\alpha = .01$

Variable Descriptions

(All variables are measured by state over the years 1990, 1995, 2000-2005)

RTW_{it} - Right-to-Work Law Enacted in State ($=1$, zero (0) otherwise)

NEF_{it} - Number of Employer Firms

SE_{it} - Number of Self-Employed Persons (000s)

BF_{it} - Number of Business Formations (Births)

BT_{it} - Number of Business Terminations

BB_{it} - Number of Business Bankruptcies

PRI_{it} - Proprietors' Income ($)

PI_{it} - Per Capita Personal Income ($)

EMP_{it} - Employment Rate (Employment to Population Ratio)

Note: The data for all variables were obtained from http://www.sba.gov/advo/research/sbe.html except for Per Capita Personal Income, Proprietors' Income and the Employment Rate which were attained from http://www.bea.gov/regional/spi/.

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