

The Effect of Endogenous Right-to-Work Laws on Business and Economic Conditions in the United States: A Multivariate Approach

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A state's right to prohibit unions from compelling employees to pay dues even when they are covered by a collective bargaining agreement has its basis in the 1947 Taft-Hartley amendments to the National Labor Relations Act (1935). After the amendment's passage, twelve states passed "right-to-work" laws – as did ten more states in the intervening years. Although there has been considerable research on the effect of right-to-work laws on union density, organizing efforts, industrial development and some study of wage differences, there has been little or no examination of the legislation's influence on business and economic conditions across states. In this paper, the average differences in business conditions, employment, personal income, wages and salaries, and proprietors' income across states that have enacted right-to-work laws versus those states that did not, are examined assuming that the legislation is endogenous and controlling for state real economic growth, region, and year. Although right-to-work states may be more attractive to business, this does not necessarily translate into enhanced economic verve in the right-to-work state if there is little "trickle-down" from business owners to the non-unionized workers. While the number of self-employed is higher and business bankruptcies lower on average in right-to-work states, there is no significant difference in capital formation or employment rates, ceteris paribus. In addition, per-capita personal income and wages are both lower, yet proprietors' income is higher in right-to-work states.

1. INTRODUCTION

“Right-to-work” is the expression used 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 harder for unions to

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organize and attract new members in already unionized firms and impedes the growth of unions in new areas. *Proponents of right-to-work laws believe that states with these laws are more "business-friendly" and as a result, exhibit higher economic growth than states without such legislation.*¹

The 1947 Taft-Hartley amendments to the National Labor Relations Act of 1935 authorized a state's right to pass laws that proscribe unions from requiring employees to pay dues, even when the employees are covered by a collective bargaining agreement. After the amendment's passage, twelve states passed "right-to-work" laws, as did other states over the 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 little study of the right-to-work laws' effect on states' business formation and economic growth taking into account, (1) the notion that the law itself could be endogenous, and (2) the multi-faceted nature of the analysis. In this paper, we will examine the differences in business and economic conditions across states that have enacted right-to-work laws versus those states that do not have this legislation by using pooled data over the periods 1990, 1995, 2000-2005.³ The enacting of right-to-work laws across states will be treated as an endogenous event. The hypotheses will be tested using a multivariate approach which takes into account the inter-correlations amongst all of the criterion variables in testing differences across means.

2. BACKGROUND

Mishel (2001) examines the average effect of right-to-work laws on wages by controlling 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. He finds that the mean effect of working in a right-to-work state results in a 6 to 8 percent reduction in wages for workers in these states. Controlling for regional costs of living reduces this amount to approximately 4 percent. Alternatively, Reed (2003) also studies the wage effects

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.

³ These were the only years in which business conditions were available from the Small Business Administration.

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 Current Population Survey 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. Garofalo and Malhotra (1992) derive an empirical model which simultaneously traces the effect of Right-to-Work laws on the worker's decision to join the union, the union's decision to set the wage rate, and the firm's decision to employ inputs. Their model identifies two channels through which right-to-work laws affect these decisions: the wage effect and the productivity effect. The authors find that right-to-work laws tend to affect economic decisions through wages, because the effect of right-to-work laws on productivity is small in most states.

Proponents of right-to-work laws argue that workers should be free both to join unions and to refrain from joining unions. For this reason, they often refer to non-right-to-work states as "forced-union" states. They contend that it is wrong for unions to be able to force employers to include clauses in their union contracts which require all employees to either join the union or pay union dues as a condition of employment. Furthermore, they contend that in certain cases forced union dues are used to support political causes which many union members may oppose. Advocates also argue that right-to-work states experience higher economic growth and employment than do non-right-to-work states. For example, in recent years all of the new auto factories have been located in right-to-work states. Consider the following anecdotal comments about the superior economic position of right-to-work states,

The National Right to Work Committee has called attention to the fact that Right to Work states enjoy a higher standard of living than do non-Right to Work states. Families in Right to Work states, on average, have greater income and purchasing power than do those families living in non-Right to Work states, independent studies reveal. What's more, Right to Work states have greater economic vitality, official Department of Labor statistics show, with faster growth in manufacturing and nonagricultural jobs, lower unemployment rates and fewer work stoppages.⁴

and,

After weighing the pros and cons of Right to Work laws this paper finally concludes that Right to Work laws are a net benefit to a state and should be adopted because the benefits to a state's people outweigh the costs: Right to Work laws create jobs and spur economic activity (Cooper, 2004).

and,

Right-to-work makes unions more immediately accountable to their members so that they are more focused on basic workplace issues and less likely to make unreasonable demands. Businesses in right-to-work states tend to be more productive — without shortchanging workers — and this gives them a competitive advantage.⁵

Alternatively, opponents of right-to-work argue that the laws create a free-rider problem in which non-union employees benefit from collective bargaining without paying union dues. They also contend that outlawing compulsory union dues makes union activities less sustainable and it is more difficult for unions to organize and less attractive for people to join a union. For these reasons, right-to-work states are referred to as “right-to-fire” states. Business interests led by the U.S. Chamber of Commerce lobbied extensively for right-to-work legislation in the South (Miller and Canak, 1991). Organized labor has argued since the late 1970s that, while the National Right to Work Committee purports to engage in grass-roots lobbying on behalf of the “little guy,” it was actually formed by a group of Southern businessmen with the express purpose of fighting unions.⁶ Opponents further argue that because unions are weakened by these laws, wages and income are lower and worker safety and health is endangered in right-to-work states. The implication here is that although conditions may be more favorable towards business in these states, there is little or no “trickle-down” to the largely non-unionized workers because of a lack of collective bargaining in these states.

⁴ http://www.nrtw.org/b/rtw_faq.htm.

⁵ <http://www.mackinac.org/article.aspx?ID=8694>.

⁶ http://www.library.gsu.edu/dlib/iam/getBrandedPDF.asp?issue_id=1883.

Right-to-work states differ from non-right-to-work states in imperceptible ways, e.g., right-to-work states may be more “pro-business.” These unobservable differences may also entail the potential for new industry, the level of skill in the workforce, and the level of industrialization – a number of possibilities that would be picked-up by a right-to-work/non-right-to-work dummy variable in a regression.⁷ The National Right-to-Work Committee (an anti-union lobbying group) claims that right-to-work laws attract industry and stimulate economic growth (Holmes, 1998). This conclusion is based upon the strong growth of manufacturing jobs in the right-to-work states since WWII.⁸ However, finding that economic growth is greater in the right-to-work states does not imply that these laws lead to faster growth. There are underlying differences between right-to-work and non-right-to-work states and both right-to-work laws and business/economic outcomes may both be influenced by the same factors, such as,

- *The relative size of agricultural versus non-agricultural employment.* Historically, the right-to-work states have been more agricultural than the non-right-to-work states and the growth of manufacturing jobs in those states reflects the decline of agricultural jobs as agriculture has become less labor-intensive. The average proportion of agricultural to non-agricultural employment is .9 and .6 percent for right-to-work and non-right-to-work states, respectively (see Table 1).
- *The relative size of the service sector.* As manufacturing employment has declined, the service sector has grown to account for more than three-fourths of all jobs in the United States. Those states with a relatively large service sector tend to be less unionized because service workers are traditionally more difficult to organize than industrial workers. The average ratio of service workers to total employment is 43 and 36 percent for right-to-work and non-right-to-work states, respectively (see Table 1).
- *The growth in population.* States in the “sun-belt” or in the South/West have been gaining population and changes in population could affect economic variables such as wages. The average population growth over the period considered in this study is 3.2 and 1.9 percent for right-to-work and non-right-to-work states, respectively (see Table 1).
- *The educational attainment of the population—which is a proxy for the skill level of the workforce.* Does being “pro-business” mean that states are concerned about

⁷ Thanks to a referee for pointing this out.

⁸ Since 1947, manufacturing employment has increased 150% in the right-to-work states.

the quality of their workers, or does just the quantity matter? A more highly skilled workforce generally means higher wages, since professional workers have more human capital, but states that have industry which is predominantly non-professional may be more concerned about just ensuring that an adequate pool of workers exists.

While research exists regarding the impact of right-to-work laws on workers' earnings, there has really been no comprehensive study of the impact of right-to-work laws on business and labor markets across states. The empirical question here is whether differences in favor of right-to-work states in business/economic condition variables are a result of the genuine effect of right-to-work legislation or due to the existence of pro-business sentiment that would have led to right-to-work legislation anyway. This is after controlling for economic growth and other differences across states and time.

3. EMPIRICAL MODEL, DATA, AND HYPOTHESES

3.1. MODEL SPECIFICATION

The data used in this study was mostly collected from the U.S. Small Business Administration, Small Business Economic Indicators.⁹ The following business condition variables are measured by state over the years 1990, 1995, 2001-2005,

- number of employer firms,
- total self-employed workers (in occupation),
- the ratio of business formations (births) to number of firms, and
- the ratio of business bankruptcies to number of firms.

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 conditions, five additional economic variables that are measures of the overall economic verve of a state,

- the employment-to-population ratio,
- per-capita personal income,
- wages and salaries,
- proprietors' income, and
- the growth rate in state real GDP.

⁹ <http://www.sba.gov/advo/research/sbe.html>.

A complete description of the variables may be found in Appendix A and descriptive statistics are in Table 1. Where possible, variables in the models are expressed in natural logarithmic form.¹⁰

Table 1: Descriptive Statistics

	(nT=160)	(nT=232)
<i>Mean</i>	Right-to-Work State	Non-Right-to-Work State
Number of Employer Firms	93860.563	151499.302
Self-Employment (000s)	167.925	244.332
Ratio of Business Formations to # of Businesses	0.127	0.125
Ratio of Business Bankruptcies to # of Businesses	0.007	0.007
Employment Ratio	0.596	0.589
Per Capita Personal Income	\$25,831.61	\$30,028.46
Wages and Salaries	\$60,593,180.76	\$105,337,355
Proprietors' Income	\$8,658,677.96	\$15,992,469.03
Growth in State Real GDP	8.282	6.322
Ratio of Service Employment to Total Employment	0.429	0.358
Ratio of Farm to Non-Farm Employment	0.009	0.006
Ratio of College to High School Graduates	.272	.313
Population Growth	0.032	0.019
<i>Standard Deviation</i>	Right-to-Work State	Non-Right-to-Work State
Number of Employer Firms	85924.051	186819.870
Self-Employment (000s)	144.496	319.422
Ratio of Business Formations to # of Businesses	0.033	0.026
Ratio of Business Bankruptcies to # of Businesses	0.004	0.008
Employment Ratio	0.057	0.048
Per Capita Personal Income	\$5,245.73	\$7,017.36
Wages and Salaries	\$5,749,456.92	\$128,630,367
Proprietors' Income	\$7,286,608.65	\$23,585,658.43
Growth in State Real GDP	2.586	2.886
Ratio of Service Employment to Total Employment	.039	.043
Ratio of Farm to Non-Farm Employment	0.006	0.005
Ratio of College to High School Graduates	.037	.064
Population Growth	0.021	0.011

¹⁰ As will be seen, the measure of the probability, \hat{P}_t , is not in logarithmic form since it may contain zeroes and growth rate variables usually include some negative values.

Minimum	Right-to-Work State	Non-Right-to-Work State
Number of Employer Firms	15059.000	13176.000
Self-Employment (000s)	26.602	11.751
Ratio of Business Formations to # of Businesses	0.058	0.089
Ratio of Business Bankruptcies to # of Businesses	0.002	0.001
Employment Ratio	0.469	0.437
Per Capita Personal Income	\$13,089.00	\$14,493.00
Wages and Salaries	\$4,222,114	\$5,434,116
Proprietors' Income	\$914,447	\$930,424
Growth in State Real GDP	-1.739	-5.652
Ratio of Service Employment to Total Employment	.306	.297
Ratio of Farm to Non-Farm Employment	0.002	0.000
Ratio of College to High School Graduates	.194	.184
Population Growth	-0.040	-0.011
Maximum	Right-to-Work State	Non-Right-to-Work State
Number of Employer Firms	473936.000	1077390.000
Self-Employment (000s)	1038.962	2224.644
Ratio of Business Formations to # of Businesses	0.205	0.246
Ratio of Business Bankruptcies to # of Businesses	0.030	0.094
Employment Ratio	0.746	0.685
Per Capita Personal Income	\$37,974.00	\$53,594.00
Wages and Salaries	\$302,719,974	\$736,180,803
Proprietors' Income	\$38,487,000	\$147,658,680
Growth in State Real GDP	9.420	8.614
Ratio of Service Employment to Total Employment	.589	.459
Ratio of Farm to Non-Farm Employment	0.036	0.022
Ratio of College to High School Graduates	.399	.541
Population Growth	0.0987	0.085

Assuming a pooled, cross-sectional time series with $n \cdot T$ observations, p endogenous variables, $T-1$ year effects, and $r-1$ cross-sectional (regional) effects, our model may be specified in matrix form as,

$$(1) \quad Y\Theta = \bar{I}\bar{\beta}'_0 + \bar{R}\bar{\beta}'_1 + YR\beta_3 + RE\beta_4 + \varepsilon,$$

where Y is an $n \cdot T \times p$ matrix of endogenous variables (including a latent variable), \bar{I} is an $n \cdot T \times 1$ row vector of ones, \bar{R} is a $nT \times 1$ vector of zeroes and ones representing the right-to-work/non-right-to-work states, YR is a $n \cdot T \times (T-1)$ 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. $\bar{\beta}'_0$ is a $1 \times p$ vector of intercepts, $\bar{\beta}'_1$ is a $1 \times p$ vector of parameters, β_3 is a $(T-1) \times p$ matrix of parameters, and β_4 is $(r-1) \times p$. The $p \times p$ matrix, Θ , includes parameters of the endogenous variables indicating that equation (1) is a structural form. In other words, the system (1) can also have endogenous variables on the right-hand side.¹¹

In order to test multivariate hypotheses, there needs to be assumptions made about the errors. With p dependent variables, there are $n \cdot T \times p$ errors that are independent across observations but not across dependent variables,

$$(2) \quad E(\varepsilon\varepsilon') = \Sigma = I_{n \cdot T} \otimes \Omega,$$

where Ω is $p \times p$.

As mentioned previously, the essential empirical question is to determine whether real differences in favor of the right-to-work states exist in the business/economic condition variables such as firm “births,” bankruptcies, self-employment, state per-capita personal income, the employment-to-population ratio, wages and salaries, and proprietors’ income, while controlling for economic growth, differences across states, time, and incorporating the notion that right-to-work laws may depend upon a state population’s attitude toward business. The problem is that the enacting of right-to-work legislation and possibly some other variables may not be exogenous and treating them as such can lead to endogeneity bias in the estimation of equation (1).¹² Let REG_{it} be the real state economic growth rate. By appropriately restricting the matrix Θ , equation (1) can be rewritten as,

$$(3) \quad Y = \bar{1}\bar{\beta}'_0 + \bar{R}\bar{\beta}'_1 + \bar{R}\bar{E}G\bar{\beta}'_2 + YR\beta_3 + RE\beta_4 + \varepsilon.$$

$\bar{R}\bar{E}G$ is a $n \cdot T \times 1$ vector of state economic growth and $\bar{\beta}'_2$ is a $1 \times p$ parameter vector. Of course, the matrix Θ can also be restricted to include additional endogenous variables on the right-hand side of equation (3).

If the state sentiment is sufficiently pro-business, then $y^* > 0$ and the state may enact right-to-work legislation with the presence of such a law measured by the dummy variable $R = 1$,

¹¹ Of course, this is important for estimation issues.

¹² This leads to biased and inconsistent estimators.

$$\begin{aligned}
 & y_i^* = \bar{X}_i' \gamma + \eta_i, \\
 & y_i^* > 0, R = 1, \\
 (4) \quad & y_i^* \leq 0, R = 0, \\
 & \Phi = E \left(\begin{pmatrix} \varepsilon \\ \eta_i \end{pmatrix} (\varepsilon' \quad \eta_i) \right) = \begin{bmatrix} \Sigma & E(\varepsilon \eta_i) \\ E(\eta_i \varepsilon') & 1 \end{bmatrix}
 \end{aligned}$$

Since y_i^* is in equation (3), equation (4) is a reduced form and \bar{X}_i' is a vector of exogenous variables/instruments including both the factors that influence a state's population proclivity towards business and the exogenous time and regional variables in the matrices YR and RE , respectively (see Appendix B). Φ is the variance-covariance matrix in which the errors from equation (3) and equation (4) are assumed to be correlated. An important issue here is the incorporation of the notion that the measured effects of legislation ($\bar{\beta}_1'$) may be due to the effect that the presence of such a law merely proxies the existence of pro-business sentiment.

3.2. DATA ISSUES

Dumond, Hirsch, and MacPherson (1999) controlled for the 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. It was decided to "proxy" these 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*. This should be sufficient to capture differences across regions and/or states.

The list of the 22 states with right-to-work laws may be found in Table 2. 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.¹³ That leaves us with a total of 392 observations ($n \cdot T = 49 \cdot 8$).

¹³ It is important to note that the model estimates do not change whether these states are included or not.

Table 2: 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

3.3. HYPOTHESES

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

$$(5) \quad H_{01} : \bar{\beta}_1 = 0.$$

Failing to reject the overall null hypothesis (5) would lend empirical support for the belief that the enactment of right-to-work laws and a state's attitude towards business has no perceptible effect on business and economic conditions across states – controlling for economic growth, regional differences and time. If the null hypothesis (5) is rejected, then the individual parameter estimates must be examined.

4. EMPIRICAL RESULTS

The estimation and testing of equation (3) is done according to the procedure developed in Heckman (1978) and is a three-stage process.¹⁴ First, the business sentiment equation (4) is estimated using Probit analysis to generate the \hat{P}_i (probabilities).¹⁵ Moreover, since there are other endogenous factors on the right-hand side of equation (3), instruments must also be created for these variables. In the second stage, the probabilities and predicted values are substituted for the individual elements in \bar{R} and the endogenous right-hand side variables in equation (3) to produce consistent parameter estimates (Heckman, 1978). Finally, the system is estimated taking into account the inter-equation correlations. The following variables comprise the vector of exogenous regressors that were used as instruments in order to estimate equations (3) and (4) (see Appendix A),

- the ratio of farm to non-farm employment by state,
- the ratio of service to total employment by state,
- the change in population by state,
- the ratio of college to high school graduates by state,
- year (1990, 1995, 2000-2005), and
- U.S. Census region.

According to the above discussion, these regressors are all factors that play a long-term role in influencing a state's economic conditions and its attitude towards business formation.

The Probit estimation results are in Table 3. The signs of the estimated coefficients indicate that,

- a higher ratio of farm to non-farm employment is associated with a higher likelihood that a state will be pro-business,
- a higher proportion of service workers is associated with a higher likelihood that a state will be pro-business,
- states that realize the largest population changes tend to be more pro-business,
- a higher proportion of college graduates to high school graduates is associated with a *lower* likelihood of a pro-business attitude.

In the last case, it appears that pro-business states are more interested in ensuring an adequate labor pool rather than maintaining a highly

¹⁴ Heckman's procedure is two-stage and the third stage was added for efficiency.

¹⁵ \hat{P}_i is a non-linear function of the exogenous variables.

educated/skilled workforce. Moreover, the significance of the Probit results indicates that the measured effect of right-to-work laws is not a consequence of the legislation itself, but likely due to the influence of pro-business sentiment. In Table 3, the parameter estimates for the regional and yearly variables are omitted for reasons of brevity.¹⁶

Table 3: Probit Estimation Results

Number of Observations Used: 392
Model Convergence Status
 Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics					
Criterion	Intercept Only	Intercept and Covariates			
AIC	532.128	437.450			
SC	536.099	493.048			
-2 Log L	530.128	409.45			
Testing Global Null Hypothesis: BETA=0					
Test	Chi-Square	DF	Pr > ChiSq		
Likelihood Ratio	120.6770	13	<.0001		
Score	107.9716	13	<.0001		
Wald	92.3326	13	<.0001		
Analysis of Maximum Likelihood Estimates					
Parameter	DF	Standard Estimate	Wald Error	ChiSq	Pr>ChiSq
Intercept	1	-6.6379	0.9433	49.5156	<.0001
Ratio of Farm to Non-Farm Employment (FNF_{it})	1	0.0532	0.0077	47.7355	<.0001
Ratio of Service to Total Employment (SVE_{it})	1	3.0588	0.7919	14.9215	0.0001
Population Growth ($POPG_{it}$)	1	0.0410	0.0265	2.4022	0.1212
Ratio of College to High School Graduates (CHS_{it})	1	-2.3024	0.4964	21.5172	<.0001

The three-stage results for the right-to-work parameter estimates using both the dummy variable and correcting for endogeneity are presented in Table 4, along with the multivariate test of the null hypotheses in (5) above.¹⁷ It is important to remember that both sets of results incorporate *ceteris paribus*, e.g., economic growth, regional differences, and time are all controlled-for.

¹⁶ Estimates of these parameters will be made available upon request from the author.

¹⁷ The complete set of parameter estimates is available from the author upon request.

Table 4: 3SLS Estimation Results

$H_0 : \bar{\beta}_1 = 0$			* - Statistically Significant at .10
Num DF			** - Statistically Significant at .05
Den DF			*** - Statistically Significant at .01
F Value***			
9	3367	14.47	
Dependent Variable	Not-Corrected Coefficient of Right-to-Work Dummy	Corrected for Endogeneity Coefficient of Probability	
<i>State Business Conditions</i>			
Number of Employer Firms (NEF_{it})	0.196522 (0.112156)*	-0.01641 (0.010519)	
Self-Employment (SE_{it})	0.361278 (0.115736)***	0.01057 (0.002652)***	
Ratio of Firm Births to Number of Firms ($BFNF_{it}$)	0.012074 (0.021793)	-0.00252 (0.001556)	
Ratio of Bankruptcies to Number of Firms ($BBNF_{it}$)	-0.21180 (0.074128)***	-0.00474 (0.001722)***	
<i>State Economic Conditions</i>			
Employment Rate (EMP_{it})	0.026865 (0.008927)***	0.00021 (0.000210)	
Per Capita Personal Income (PI_{it})	-0.06477 (0.016742)***	-0.00416 (0.000336)***	
Wages and Salaries (WS_{it})	0.140106 (0.122635)	-0.02338 (0.002575)***	
Proprietors' Income (PRI_{it})	0.273307 (0.120733)**	0.01941 (0.002622)***	
Real GDP Growth (RGR_{it})	-1.25247 (0.808004)	-0.00897 (0.085164)	

The multivariate results for testing the overall hypothesis of no effect of right-to-work legislation across the dependent variables indicate that the null hypothesis in (5) cannot be accepted at the .01 level of significance. While the initial implication here is that there is a significant mean difference in the

business and economic condition variables between right-to-work versus non-right-to-work states, it may seem initially 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 superior business conditions and a higher standard of living than do non-right-to-work states.¹⁸ However, this conclusion is premature, since failing to reject the alternative hypothesis indicates that individual parameter estimates must be examined.

If right-to-work states enjoy better business conditions relative to the non-right-to-work states, then the parameter estimates of the right-to-work indicators for the dependent variables number of businesses, self-employment, and the ratio of business formations to the number of firms should all be positive and statistically significant, while the right-to-work coefficient for the bankruptcy ratio should be negative and significant, *ceteris paribus*. For the results that treat right-to-work legislation as endogenous, this is generally not the case. The right-to-work parameter estimates, corrected for endogeneity (third column) of self-employed persons and the ratio of bankruptcies to total firms, both have the correct sign (positive and negative, respectively) and are statistically different from zero. However, in the same column, the coefficients of number of businesses and the ratio of business formations to the total number of firms not only do not have the correct sign, but also are both statistically insignificant. Thus, a one-unit increase in the probability that a state will enact a right-to-work law has no influence on the number of businesses and the ratio of firm “births” to the number of firms, *ceteris paribus*. In other words, there appears to be no more business capital formation in the right-to-work states than in the non-right-to-work states. On the other hand, the parameter estimates of the right-to-work dummy variable that has *not* been corrected for endogeneity (second column), are close to what would be expected if business conditions in right-to-work states were superior to non-right-to-work states. The estimated coefficients of the right-to-work dummy for the business conditions number of businesses and self-employment have a positive sign and are statistically significant, while the bankruptcy variable is negative and significant. The ratio of business formations to the number of firms has the correct sign, but is not statistically significant.

As far as economic conditions are concerned and given the many assertions regarding the notion that right-to-work states have a higher standard of living, we would expect the adjusted means of the economic condition variables to be significantly greater in the right-to-work states relative to the non-right-to-work

¹⁸ “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.

states. The only possible exception to this might be wages and salaries. As mentioned above, some studies have found wages to be higher and others have observed wages to be lower in right-to-work states. In any event, the states' economic conditions do not consistently conform to this premise—in either the right-to-work parameter estimates corrected for endogeneity or the dummy variable case. For the case of correction for endogeneity, an increase in the probability that a state is right-to-work,

- has no influence on employment,
- is associated with a decrease in per-capita personal income and wages/salaries,
- is associated with an increase in proprietors' income, and
- has no effect on economic growth.

For the case that has not been corrected for endogeneity, the parameter estimates for the dummy variable indicate that,

- average employment rates are higher in right-to-work versus non-right-to-work states,
- average per capita income is lower in right-to-work relative to non-right-to-work states,
- there is no significant difference in average wages/salaries between right-to-work and non-right-to-work states,
- average proprietors' income is higher in right-to-work relative to non-right-to-work states,
- there is no significant difference in average real state GDP growth rates between right-to-work and non-right-to-work states.

5. CONCLUSION

One might expect that right-to-work legislation would help “revive” a state's economy because businesses would be more amenable to moving to those states with right-to-work laws. While the results of this study empirically support that right-to-work states are likely to have more self-employment and less bankruptcies on average relative to non-right-to-work states, there is certainly no more business capital formation as measured by the number of businesses and the ratio of firm “births” to total firms in right-to-work states. Moreover, from a state's economic standpoint, being right-to-work yields little or no gain in employment and real economic growth. Wages and personal income are both lower in right-to-work states, yet proprietors' income is higher, *ceteris paribus*. As a result, while right-to-work states may maintain a

somewhat better business environment relative to non-right-to-work states, these benefits do not necessarily translate into increased economic verve for the right-to-work states as a whole—there appears to be little “trickle-down” to the largely non-unionized workforce in these states.

In addition to the economic caveats, some further discussion is necessary regarding self-employment. While more self-employed in the right-to-work states may be viewed as a “good” thing, there have been many questions raised by the entrance into self-employment. A fundamental query 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, or dissatisfaction with previous employment (Blanchflower, 2004). The results of this study seem to indicate support for the latter—*a larger number of self-employed exists contemporaneously with lower per-capita personal income and wages in the right-to-work states.*

Appendix A: Variable Descriptions

(Variables are 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)
$BFNF_{it}$	- $\frac{\text{Business Formations}}{\text{Number of Firms}}$
$BBNF_{it}$	- $\frac{\text{Business Bankruptcies}}{\text{Number of Firms}}$
EMP_{it}	- Employment Rate (Employment to Population Ratio)
PI_{it}	- Per Capita Personal Income (\$)
WS_{it}	- Wages and Salaries (\$)
PRI_{it}	- Proprietors' Income (\$)
RGR_{it}	- Average Annual Growth in State Real GDP (%)
SVE_{it}	- $\frac{\text{Service Employment}}{\text{Total Employment}}$
FNF_{it}	- $\frac{\text{Farm Employment}}{\text{Non-Farm Employment}}$
$POPG_{it}$	- Average Annual Growth in State Population
CHS_{it}	- Ratio of College to High School Graduates
YR	- Yearly Dummy Variables for 1990, 1995, 2000-2007
RE	- Regional Dummy Variables for New England, Middle Atlantic, South Atlantic, East South Central, East North Central, West North Central, West South Central, Mountain, and Pacific

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, the employment rate, and the growth in state real GDP, which were obtained from <http://www.bea.gov/regional/spi/>.

Appendix B: Equation System

The individual equations specified as a structural form in (3) and (4) are,¹⁹

$$\begin{aligned}
 EMP_{it} &= \beta_{10} + \beta_{11} RTW_{it} + \beta_{12} RGR_{it} + YR\bar{\beta}_{13} + RE\bar{\beta}_{14} + \varepsilon_{1it} \\
 NEF_{it} &= \beta_{20} + \beta_{21} RTW_{it} + \beta_{22} RGR_{it} + YR\bar{\beta}_{23} + RE\bar{\beta}_{24} + \varepsilon_{2it} \\
 SE_{it} &= \beta_{30} + \beta_{31} RTW_{it} + \beta_{32} RGR_{it} + YR\bar{\beta}_{33} + RE\bar{\beta}_{34} + \varepsilon_{3it} \\
 BFN_{it} &= \beta_{40} + \beta_{41} RTW_{it} + \beta_{42} RGR_{it} + YR\bar{\beta}_{43} + RE\bar{\beta}_{44} + \varepsilon_{4it} \\
 BBN_{it} &= \beta_{50} + \beta_{51} RTW_{it} + \beta_{52} RGR_{it} + YR\bar{\beta}_{53} + RE\bar{\beta}_{54} + \varepsilon_{5it} \\
 PI_{it} &= \beta_{60} + \beta_{61} RTW_{it} + \beta_{62} RGR_{it} + YR\bar{\beta}_{63} + RE\bar{\beta}_{64} + \varepsilon_{6it} \\
 WS_{it} &= \beta_{70} + \beta_{71} RTW_{it} + \beta_{72} RGR_{it} + YR\bar{\beta}_{73} + RE\bar{\beta}_{74} + \varepsilon_{7it} \\
 PRI_{it} &= \beta_{80} + \beta_{81} RTW_{it} + \beta_{82} RGR_{it} + YR\bar{\beta}_{83} + RE\bar{\beta}_{84} + \varepsilon_{8it} \\
 RGR_{it} &= \beta_{90} + \beta_{91} RTW_{it} + \beta_{92it} y_{it}^* + YR\bar{\beta}_{93} + RE\bar{\beta}_{94} + \varepsilon_{9it} \\
 y_{it}^* &= \delta_0 + \delta_1 FNF_{it} + \delta_2 SVE_{it} + \delta_3 POPG_{it} + \delta_4 CHS_{it} + \delta_5 RGR_{it} + \varepsilon_{10,it}
 \end{aligned}$$

¹⁹ The last equation with the endogenous latent variable, y_{it}^* , is the structural form. The reduced form appears in equation (4).

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