Right-to-Work Legislation and the Manufacturing Sector

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This study extends the analysis of the impact of right-to-work legislation in very narrow areas—industrial composition, manufacturing income, employment and wages in the United States.

INTRODUCTION

Researchers have been long interested in evaluating the role right-to-work (RTW) laws play in wages, employment, firm location, industrial structure and other economic outcomes in states that have implemented these policies. These remain timely questions, because several state legislatures are currently considering RTW legislation. This study extends the analysis of the impact of RTW legislation in very narrow areas—industrial composition, manufacturing income, employment and wage rate in the United States. Examining more than a half century of changes, we seek to incorporate significantly more available information regarding a number of unsettled questions surrounding RTW laws.

The questions we ask are not new, but we focus on quantifying the changes to manufacturing associated with RTW laws in each of the 48 conterminous United States and the District of Columbia. These are among the questions facing citizens and public policy makers when considering their stance on changes to RTW legislation. However, they are not the only questions involving changes to RTW laws.

There are a great many additional issues, some purely economic, others beyond the traditional scope of economic analysis. This study will not address issues beyond the empirical matters mentioned. All research is limited in scope, and while the issues we examine are important, their relative importance cannot be determined without more comparative research. So, we cannot conclude from this work alone, the efficacy of the legislation, or even whether or not these issues are of primary importance to the evaluation of this issue.[1]

We begin by briefly reviewing RTW legislation, highlighting some regions of particular interest. This is followed by an explanation of the ambiguity present in economic theory regarding the effects of RTW legislation. This is then placed in the context of the existing body of research on the subject. We follow this with explicit economic modeling of the influence of RTW laws in the United States on the manufacturing share of income in each state's economy, manufacturing incomes. We end with conclusions, recommendations for further analysis and policy considerations.
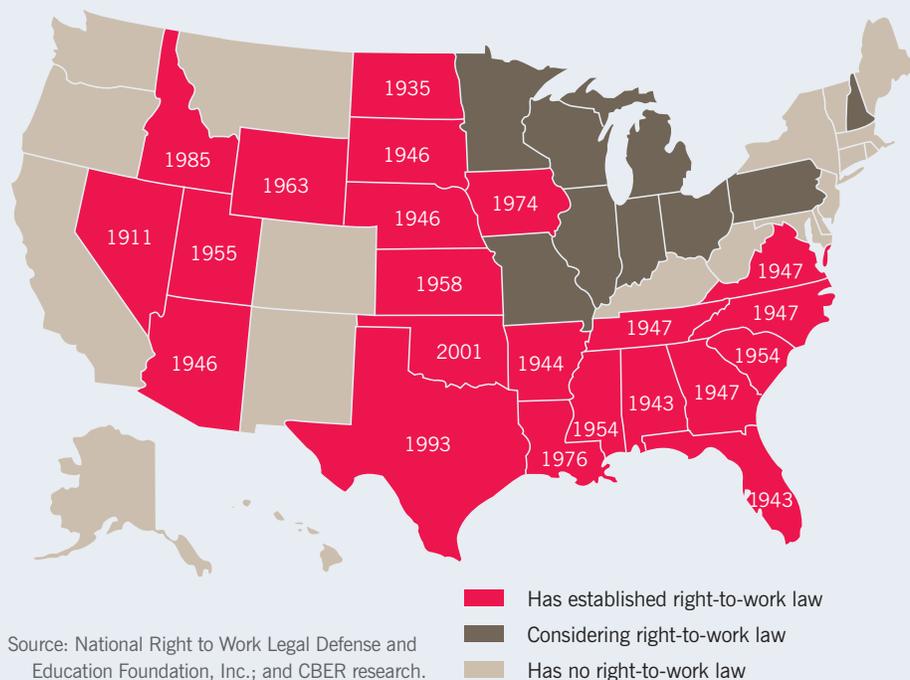
RIGHT-TO-WORK LEGISLATION

The National Labor Relations Act of 1935 (the Wagner Act) permitted unions to enforce membership by all employees represented by that union. Certain types of workers—management, railroad, domestic services and government employees—were exempt from the law.[2] In 1947, the Taft-Hartley Act eased this restriction, permitting some employees to avoid union membership and avoid paying union dues. However, the full implementation of the law required individual states to implement legislation to this effect. This has become known as right-to-work legislation.

The original states who adopted RTW policies were heavily concentrated in the southern and southwestern United States. At the time, these were places that were not heavily industrialized. Further, there appeared some cultural antipathy towards the labor movement in the South (Black 1989). In the Midwest, the state of Indiana passed RTW legislation in 1957 but rescinded private sector RTW in 1965. Since the Taft-Hartley Act, there has been slow adoption with 22 states currently having passed RTW legislation.

1. The political economy literature has also shown some interest in more fundamental issues regarding limits to the freedom of association and the specter of free riders enjoying the putative gains of union membership without suffering the costs (of dues).

2. Some states passed RTW laws prior to the Taft-Hartley Act.

1935
1946
1985
1963
1974
1911
1955
1947
1946
1958
1947
1947
2001 1944 1947
1946 1954
1993 1943 1947
1954
1976
1943

■ Has established right-to-work law
■ Considering right-to-work law
■ Has no right-to-work law

Source: National Right to Work Legal Defense and
Education Foundation, Inc.; and CBER research.

WHAT IS RIGHT TO WORK POLICY?

Right to work policy is essentially the right of an employee to work for a business without being obligated to join a labor union. Arkansas's state constitution offers a more technical definition:

No person shall be denied employment because of membership in or affiliation with or resignation from a labor union, or because of refusal to join or affiliate with a labor union; nor shall any corporation or individual or association of any kind enter into any contract, written or oral, to exclude from employment members of a labor union or persons who refuse to join a labor union, or because of resignation from a labor union; nor shall any person against his will be compelled to pay dues to any labor organization as a prerequisite to or condition of employment. (Arkansas Constitution, Amendment 34 § 1)

As of January 2012, 22 states have right-to-work policies in place and several states are considering the introduction of RTW policies.

Most right-to-work states introduced a RTW policy through state legislation, but five states (Arizona, Arkansas, Florida, Mississippi and Oklahoma) have RTW statutes amended to their state constitutions.

ECONOMIC THEORY AND RIGHT-TO-WORK LEGISLATION

Right-to-work legislation has been hypothesized to influences firm and worker behavior in ways that render aggregate theoretical predictions murky. As an example, Reed (2003) provides an excellent review of the complexity of economic theory. He presents differing theoretical arguments regarding the wage effects of RTW laws. First, the free riding by non-union workers may erode the strength of unions to bargain, reducing the wage premium for workers. Second, the increased requirement for effective unions under the RTW environment may motivate unions to demonstrate their effectiveness by securing higher wage and benefit gains.

Obviously, these two plausible explanations offer different predictions regarding the effect of RTW laws on wages. A full review of the existing theory is only of tangential interest to this primarily empirical work. We note however, that wages and benefits are not the primary cost differential between union and non-unionized firms. So other matters may play a bigger role in firm location decisions. For example, negotiating with unions is costly, and much of the cost increasing effects of unions are embedded in work rules, and decreased flexibility in hiring and discharge, not pay. This is especially true in those industries with higher levels of human capital, such as government and the service sector. In these sectors, unions do not appear to have generated a large wage differential, so the concerns of business are more frequently expressed as a concern over flexibility in work rules and hiring.

For the size and composition of industry, the theoretical explanations for RTW are only modestly less murky. RTW legislation may well have been influenced by initial union conditions (or local preferences). Thus, strong unions in industrialized states may have blocked the legislation, while less industrialized states would be more likely to endorse RTW legislation. These heavily industrialized states may enjoy manufacturing clusters that continued to attract new firms seeking the benefits of the cluster, and are therefore less sensitive to unionization.

Conversely, the convergence of state level industrial structure in the past half century would tend to push increased levels of more unionized industries (primarily manufacturing and transportation since mining, a heavily unionized industry is not particularly footloose) in states that had historically low levels of manufacturing. This well could have occurred without any consideration of RTW legislation.

The benefit of theoretical results regarding RTW legislation and industrial composition is fleeting. The only sure conclusion is that whatever preconceived notion an individual or group brings to the policy discussion is likely to find supportive theory. For our purposes, it is the empirics of the matter that are necessary to evaluate the role of the legislation.

EMPIRICAL FINDINGS RELEVANT TO THIS DISCUSSION

A large body of analysis has been performed regarding the effects and efficacy of right-to-work legislation. The bulk of the analysis, especially in recent years, has been supplied by advocacy groups. The

quality of these analyses range from very fine scholarly analysis to astonishingly biased creeds. I leave these un-reviewed, and instead focus on studies from within the peer-reviewed literature. Here, I focus on findings from a few recent studies.

Any analysis of the effects of RTW legislation faces considerable analytical challenge. The first is the difficulty in disentangling RTW effects from other factors. A study that examines the role of RTW that is absent of such issues as tax policy, weather and the like will be unable to tease out the influence of legislative change from these factors.

Louisiana-Mississippi border shows stark differences in manufacturing location; both are RTW states, but Louisiana has suffered a long history of antipathy towards business.

Stevans (2009) examined another important question surrounding RTW legislation at the state level. This study introduced a method for correcting for a problem known as endogeneity, which is the possibility of reverse causation in the adoption of a RTW law. Because it is possible that local factors (such as strong unions) prevent the passage of RTW laws, any test of RTW versus non-RTW states

the most heavily unionized private sector industry, manufacturing. We exclude mining, as it is not typically viewed as sufficiently footloose to be influenced by RTW laws, and we also exclude service and public sector employees who are also not a footloose sector. We examine the conterminous 48 states and the District of Columbia from 1929 through 2005.

We are attempting to estimate the incremental contribution of RTW laws on different measures of manufacturing. To do this, we construct a very basic treatment model from which to estimate impacts of RTW legislation:

$$Y_{i,t} = \alpha + \alpha_i + \beta\,(RTW_{i,t}) + \delta WY_{j,t} + \theta\gamma_{i,t-1} + \varepsilon_{i,t}$$

...where the dependent variable Y is the manufacturing share of income in state i, in year t or income in the manufacturing sector. These are estimated as a function of a common and fixed effects intercept $(\alpha + \alpha_i)$, a presence variable for right-to-work legislation (RTW), a first order spatial contiguity element to correct for spatial autocorrelation $(\delta WY_{j,t})$, a first order temporal autoregressive element $(\theta\gamma_{i,t-1})$, and a white noise error term, $\varepsilon_{i,t}$. [3]

A study that examines the role of right to work that is absent of such issues as tax policy, weather and the like will be unable to tease out the influence of legislative change from these factors.

While it is fairly straightforward to account for overall economic trends, tax policy and weather in a statistical model, it is far more difficult to measure the various and disparate elements of public policy that contribute to firm location decisions. One important attempt at this was provided by Holmes (1998), who measured firm location decision using RTW as a tool to measure other business friendly policies on firm location decision at the county level. This study was especially important in that it included other business-friendly policies (such as tax rates) in a carefully executed study of counties in different states, but with contiguous borders. This study used RTW legislation as a proxy for business-friendly legislation, and reports a very large increase in manufacturing employment in places with a RTW law, if accompanied by business-friendly policies and no unusual geographic complications. For example, Holmes notes the

is not a natural experiment, but is biased (statistically) either for or against finding effects. This problem has plagued RTW studies. Stevans found that there were no wage or employment effects of RTW legislation when correcting for the endogeneity problem. A concern with the Stevans study is the absence of strong analysis over time in the effects he measures.

There are many other studies, but the Holmes (1998) and Stevans (2009) studies provide some of the most careful treatment of the empirical problems, while framing the debate sufficiently for our purposes here. I now measure RTW and report the results using lessons from both authors.

MODELING INDUSTRIAL COMPOSITION AND RIGHT-TO-WORK LAWS

One purpose of this paper is to estimate how the share of heavily unionized industries may be influenced by right-to-work legislation within a state. We focus on

The choice of the fixed-effects model is motivated by a fundamental critique of earlier studies of RTW legislation that are the absence of controls for underlying conditions both to economic structure and cultural acceptance of unionization (see Reed 2003). The fixed-effects intercept then captures time invariant characteristics of each state, and permitting parsimony in the actual estimation (for which theory is again too ambiguous to provide reliable guidance on specification). Thus, the fixed-effects offer significant benefits over common or random effects as it controls the time invariant characteristics of the

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3. There are some considerations in the estimation process to be considered. The dependent variables in one estimation is industry share. This is problematic, as is the potential for non-spherical errors generated by the spatial interaction and autoregressive element of the modeling. To correct for these problems, we employ a panel corrected standard error (PCSE) estimate. This provides the efficiency enhancements not available through FGLS, while preserving consistency and unbiasedness in the estimates (see Park and Katz, 1995). Finally, the PCSE estimates are estimated with White's (1980) heteroskedasticity invariate, variance-covariance matrix. All dependent variables are estimated in first-differenced logarithmic form to ensure stationarity.

TABLE 1: Summary Statistics, 1929–2006 ($ Millions, Nominal)

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Manufacturing Share	0.17	0.16	0.52	0.02	0.09	0.50	2.80
Manufacturing Income	5,997,473	1,268,621	144,000,000	1,236	11,883,691	4	27
Right-to-Work States	0.27	0.00	1.00	0.00	0.44	1.05	2.10
Old South States	0.24	0.00	1.00	0.00	0.43	1.19	2.41
Manufacturing Income, 1947	3,865,163	2,347,648	24,052,176	262,002	4,700,227	2	9

conterminous states and the District of Columbia. The data appear in Table 1.

One further problem is the concern that RTW legislation is not spontaneously varying across states. If RTW legislation in a particular state is caused by some other factor, such as existing low rates of unionization or historical antipathy towards unions, the model will be biased (in a statistical sense) and not provide useful results.

To correct for this problem, we use a method designed to account for the predisposition of a state to adopt a RTW law. This is known as a correction for endogeneity, which in non-technical terms is a correction for the 'reverse causation' that might bias the model. This correction takes the form of modifying the dependent variables of industry income shares and the level of income, accounting for the level of manufacturing in a state immediately following the Second World War and whether or not the state was part of the Old South. To the layperson, these might seem fanciful elements to include in this type of study, but in truth, it is the presence of factors such as anti-union feeling in the Old South, and the strength of unions in the industrial states prior to the 1950s that require this sort of analysis. So any study that attempts to draw conclusions regarding the effect of RTW without addressing this problem should be viewed with some skepticism.

A key test of the value of these two metrics in accounting for such bias is that wages and manufacturing share were both strongly correlated with variables that accounted for states in the Old South and the level of manufacturing in the immediate post war

TABLE 2: Right-to-Work Effect on Manufacturing

	Manufacturing Share of Income (t-Value)	Manufacturing Aggregate Level of Income (t-Value)	Manufacturing Employment (t-Value)	Manufacturing Wage Rate (t-Value)
C	0.002018*** (3.25)	-0.038467*** (-9.8)	0.99*** (8.18)	0.03 (0.73)
Right to Work	0.000880 (1.13)	0.007671 (1.54)	0.015 (1.27)	0.0078 (0.66)
Spatial Correction	0.018874 (1.13)	-0.003496*** (-3.86)	-0.077*** (-7.76)	2,571.6 (0.49)
Trend	-6.76E-05*** (-4.25)	0.000723*** (14.1)	-0.0007*** (-4.97)	-0.0003 (-0.057)
Autocorrelations	0.057998 (0.96)	-0.000675 (-0.01)	0.27*** (8.52)	0.35* (1.69)
Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R²	0.04	0.23	0.24	0.00

Note: *** denotes statistical significance to the 0.01 level. * denotes statistical signifacance to the 0.10 level. Both models were statistically significant to the 0.01 level on the standard F-test.

years (1947). In other words, not making this correction would bias the study.[4]

ESTIMATION RESULTS

Our estimates of the right-to-work legislation on manufacturing share of income and aggregate manufacturing income are displayed in Table 2.

These provide empirical estimates of changes to industrial composition and manufacturing wages caused by of RTW legislation from 1929 through 2005. Overall, the industrial composition estimates offers a weak explanation for overall changes to the economy (manufacturing share). The income model performs fairly well in capturing changes to inflation-adjusted total manufacturing income when accounting for these state-specific conditions, surrounding state wages, trends, persistence and the endogeneity of RTW laws. Of primarily interest in this research is the role RTW laws play. In no model were estimates statistically

meaningful, so RTW legislation does not affect the size of the manufacturing share, inflation-adjusted wages for manufacturing workers, employment in manufacturing nor worker wage rates.

This analysis suggests RTW laws do not matter in explaining industrial structure across the United States. However, this is not a resolved issue because there is not purely empirical method of evaluating the endogeneity correction. Though these findings corroborate the most recent studies in this area (Stevans 2009), the outcomes here call for a more specific analysis of the legislation. In other words, I might be wrong.

A series of models that captures the relationship between two variables in which causation can run in either direction have seen widespread application. These models—developed by 2011 Nobel Laureate Christopher Sims—allow two variables to interact upon each other, permitting the analyst to decompose the relative effects on

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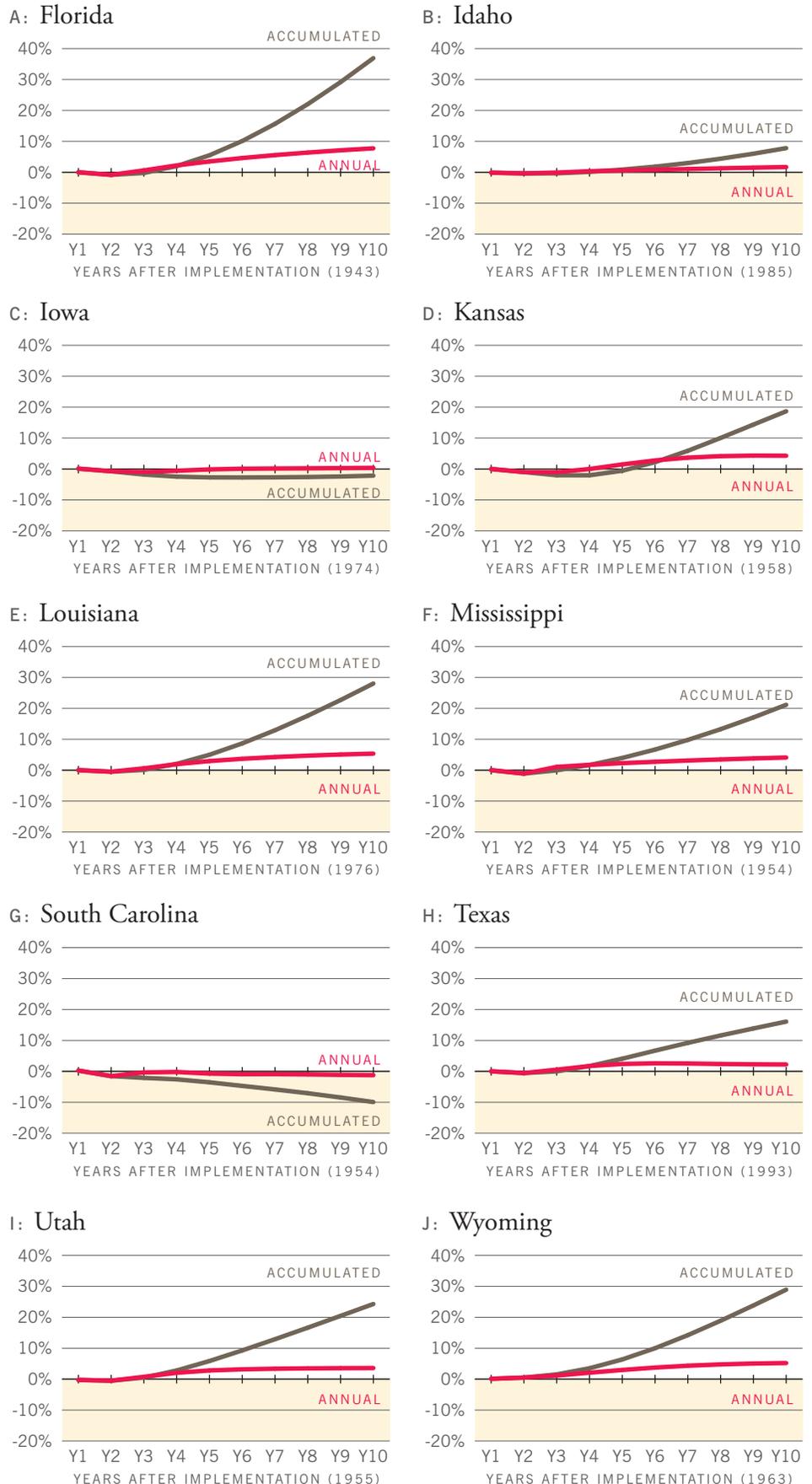4. This 'weak instrument test' passed for this model.

each other. To better understand the effect of this legislation on a particular state, we isolate our analysis to those states that have changed their RTW laws over the past half century. We can then confine our analysis to the ten states that have changed their legislation since our data began.[5]

To do so, we construct a model in which total manufacturing income (adjusted for inflation) is affected by the passage of a RTW law. To accomplish this we must translate the zero-or-one nature of the RTW law into a variable that can take any value between 0.0 and 1.0. To do this, we adapt a technique described by Duecker (2001) that replaces a qualitative variable (e.g. the yes/no conditions of RTW laws in a state) with a forecast. This adjustment unfortunately precludes using Indiana for the set of evaluated states because its forecast remained constant, despite a change in 1957 through 1965. Also, we have to isolate a second relationship between these variables that does not change through time and choose how long the effect of the change in a law should be modeled.[6] As with the earlier model, here we estimate the change to wages, not simply the level.

For each of the ten selected states, we can measure two factors. The first is the size of the change to manufacturing incomes (total, not per capita) of the introduction of a RTW law within a state. Second, we can estimate the share of the year-to-year change in these wages attributable to the passage of a RTW law. The share of year-to-year changes (variance) ranged from 14 percent to 46 percent in this sample of ten states. The impacts, both year-to-year and cumulative, appear in Figure 1.

These results paint an interesting story about the effect of RTW legislation within individual states. In seven of the ten states, the cumulative 10-year impact of RTW

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5. We exclude Oklahoma due to its recent change in 2001.

6. This is known respectively as estimating a cointegrating equation and determining optimal lag lengths (for which we minimized the Akaike Information Criterion).

FIGURE 1: First Ten Years of Accumulated Growth of Manufacturing Incomes and Annual Changes in Share Since the Introduction of Right-to-Work Law by State

A: Florida — YEARS AFTER IMPLEMENTATION (1943)
B: Idaho — YEARS AFTER IMPLEMENTATION (1985)
C: Iowa — YEARS AFTER IMPLEMENTATION (1974)
D: Kansas — YEARS AFTER IMPLEMENTATION (1958)
E: Louisiana — YEARS AFTER IMPLEMENTATION (1976)
F: Mississippi — YEARS AFTER IMPLEMENTATION (1954)
G: South Carolina — YEARS AFTER IMPLEMENTATION (1954)
H: Texas — YEARS AFTER IMPLEMENTATION (1993)
I: Utah — YEARS AFTER IMPLEMENTATION (1955)
J: Wyoming — YEARS AFTER IMPLEMENTATION (1963)

legislation was an increase in inflation-adjusted manufacturing incomes of between 15 percent and 40 percent. This suggests either a growth in the number of manufacturing jobs in these states, higher wages for existing manufacturing jobs or both. This results from an increase in manufacturing jobs, or wages, or potentially both. Interestingly, in all but one state, Wyoming, the impact in the first year was slightly negative, perhaps as evidence that poor economic times precipitated the legislative change. In Idaho, the cumulative effect over 10 years was an almost 8 percent increase in manufacturing incomes. However, in Iowa and South Carolina we find that manufacturing income declined over the 10-year period following introduction of the RTW legislation. These findings mimic those of Holmes (1998), who finds that while RTW as a proxy for business friendly policies boosts manufacturing share of an economy, but that important geographic idiosyncrasies exist.

SUMMARY

Right-to-work legislation is a politically tactile subject that has far reaching considerations and motivations. We acknowledge this and admit the facility of economic analysis to speak to these matters is limited. However, economic considerations in terms of the manufacturing share of the economy (a proxy for more manufacturing rather than less) and the growth of the industry in an absolute manner (total manufacturing incomes), manufacturing employment and manufacturing wages are matters that economists are particularly suited to address.

This study has attempted to evaluate some of these factors. This study is incomplete and does not fully evaluate all industries or all aspects of the workplace. As such, this study cannot be interpreted alone as a call for or against passage of a RTW law in Indiana. However, we can draw some conclusions from our reading of existing studies and the new analysis presented here.

Among these findings are:

- The impact of right-to-work legislation is difficult to disentangle from other business friendly policies. However, the more business-friendly a state is at any given time, the more muted the enactment of a RTW law is likely to be.

- The presence or absence of right-to-work legislation in a state is not a natural experiment, so any analysis that fails to attempt to control for this is inherently flawed. This includes simple comparisons of RTW states with non-RTW states on any issue.

- Our estimates of the impact of right-to-work laws on manufacturing, which accounted for factors that would lead to changes in legislation isolated no effect of RTW legislation.

- States that changed their right-to-work laws experienced significant variation in their manufacturing sectors, ranging from significant declines (greater than 10 percent over a decade) to very large gains (almost a doubling of manufacturing). These responses to the shock of a RTW law point to highly variable impacts of a change in legislation. One reasonable interpretation is that other factors matter more than RTW in determining the size of the manufacturing industry in a state.

- Overall, based on the experience in other states, right-to-work legislation is not likely to have an effect on the manufacturing industry in Indiana.

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