The Impact of Right-to-Work Legislation on Kentucky's Economy

William T. Wilson, PhD
Managing Director & Chief Economist
Keystone India

Submitted to:

Office of State Budget Director
Commonwealth of Kentucky

January 11, 2006

Table of Contents

I. Introduction 4

II. Nature of the Right-to-Work Debate 5

III. Literature Review 7

IV. Methodology 8

V. Economic Impact of RTW 9

VI. Conclusion 10

Appendices:

Appendix I: About The Author 12
Appendix II: Memo on Right-to-Work Laws by Paul Coomes 13
Appendix III: The REMI Model 16

The Impact of Right-to-Work Legislation on Kentucky's Economy

I. Introduction

In September of 2001, the citizens of Oklahoma overcame powerful union opposition to approve a "right-to-work" provision for their state constitution. "Right-to-work" laws are state statutes or constitutional provisions that ban the practice of requiring union membership or financial support as a condition of employment. This successful campaign made Oklahoma the 22nd state to achieve right-to-work (RTW) status since this option was assured under the Taft-Hartley amendments to the National Labor Relations Act in 1947.

The Oklahoma story is only the latest evidence of a growing interest in reassessing the costs and benefits of laws that require labor union membership as a condition of employment. With increasing global competitiveness taking a toll on U.S. manufacturing jobs, and state governments and municipalities struggling to achieve greater operating efficiencies in the face of declining revenues and increasing costs, the consequences of required union membership becomes an important topic of academic research.

According to the U.S. Department of Labor's Bureau of Labor Statistics, in 2004, 12.5 percent of wage and salary workers were union members, down from 12.9 percent in 2003. Over ninety percent of Kentucky's wage and salary workers pay no dues to any union; they either work for themselves or negotiate individually with employers, and manage for the most part to do rather well. Fifteen percent of Kentucky's manufacturing sector are members of unions (the same ratio in the state's construction industry). In addition, Kentucky is home to 58,632 unionized state and local government employees, constituting 19.8 percent of the public sector workforce. Total union membership stands today at 164,000, or 9.6 percent of all workers employed in Kentucky during 2004.

Advocates of right-to-work laws point toward a growing body of evidence showing faster economic and employment growth in right-to-work states. This growth advantage—experienced predominantly by the southern and western states, which comprise the bulk of right-to-work states—has been in evidence since the passage of the Taft-Hartley Act in 1947.

Opponents of right-to-work laws, conversely, maintain that compulsory union support is vital to organized labor, which protects workers from the negative aspects of big business and market economies. In this view, firms seeking to maximize profits at the expense of rank-and-file workers are responsible for the slowdown in real earnings in some industries and the growing income inequality over the past quarter century.

This paper attempts to estimate the impact of right-to-work legislation on Kentucky's economy. In particular, close attention will be paid to the estimated changes on the state's output and labor markets and any tax revenue impact. Some highlights from the economic analysis are summarized below:

- Over 9,000 new jobs by 2010.
- An increase in Gross State Product of $2.7 billion by 2015.
- A rise in state revenue of $30 million and $86 million by FY2010 and FY2015, respectively.

Section II provides an overview of mandatory union membership and RTW statutes as background for the economic analysis that follows. Section III provides a brief review of the literature on the impact of RTW laws. Section IV discusses the methodology used in this paper while Section V summarizes the economic simulations of Kentucky becoming a right-to-work state. Section VI finishes with some concluding remarks.

II. Nature of the Right-to-Work Debate

Right-to-work is a labor law term used to describe state laws or state constitutional provisions that ban any requirement of union membership or financial dues obligations as a condition of employment. Currently RTW laws exist in 22 states.[1] A right-to-work law secures the right of individual employees to decide for themselves whether or not to join or financially support a union.

The opportunity to enact a right-to-work law is assured by Section 14(b) of the Federal Labor-Management Relations Act of 1947 (also called the Taft-Hartley Act). That section reads:

> *Nothing in this Act shall be construed as authorizing the execution or application of agreements requiring membership in a labor organization as a condition of employment in any State or Territory in which such execution or application is prohibited by State or Territorial law.*

Labor union officials contend that their union security and solidarity is jeopardized by allowing individual workers to opt out of any union membership or financial requirements. Right-to-work proponents, however, argue that these laws uphold the civil right of Americans to work without being forced to pay union membership dues or agency fees in order to continue working.

In order to understand the role of economic analysis in the RTW debate, it is important to understand the main arguments marshaled by both supporters and opponents of RTW laws. The primary argument of opponents is that workers benefit from union representation, and that therefore they should be required to pay the cost of this representation. Unions argue that RTW laws create "free riders," employees who receive the benefits of a bargaining contract while escaping any financial obligation to reimburse the union for the costs of collective bargaining.

[1] 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

To assess the merits of this claim, however, one must understand the nature of mandatory union membership as it relates to the rights and duties of workers covered by a collective bargaining contract. Most important is the fact that federal law grants unions "exclusive representation" privileges. This means that once a union is "recognized" (i.e., voted in by a majority of employees) it has the sole right to speak for the entire group of employees and negotiate on its behalf. Individual employee negotiations are prohibited. This is true even when individuals have neither voted for a union nor desire union representation. A right-to-work law does not affect this union privilege.

Exclusive representation therefore provides unions with total legal control in employee representation matters. Exclusivity not only makes it illegal for workers to bargain on their own, but also prevents them from hiring another union or agent to deal on their behalf with their employers. Exclusivity normally prevents any redress of a worker's problem without the union being present during an employer-worker meeting.

Supporters of RTW laws claim that because employees are prevented from selecting a competing representative during the union's period of exclusivity—that the union has in essence a monopoly on worker representation—the union is likely to be less accountable to its members. This means that the union may, with relative impunity, provide fewer services to employees or engage in political or social activities having nothing to do with workplace issues. Right-to-work advocates therefore argue that requiring unions to earn the voluntary support of workers is one way to assure that union policies reflect the interests of the represented workers.

One solution to the "free-rider" problem would be to eliminate exclusive representation and permit a union to represent only those employees desiring its representation. If a worker did not join and pay dues, the union would not be required to represent him, and the worker could negotiate his own employment relationship with the employer. Labor union officials, however, consistently refuse to support this alternative. They claim that exclusivity permits the union to wield the bargaining power necessary to balance the interests of workers with the interests of management. Unions rely on their status as the sole representative for all bargaining unit workers to justify the payment of forced union dues.

Supporters of RTW laws also take issue with the assumption, implicit in organized labor's "free rider" argument, that union representation benefits all employees in the negotiating unit. Supporters state that workers are often "captive passengers" rather than "free riders." They claim there is always a group of highly skilled or ambitious workers whose ability to get ahead is impeded by union contract restrictions such as rigid seniority clauses, which prevent them from competing for advancement.

The other major argument used by opponents of RTW laws is that working in a right-to-work state is "the right-to-work for less" or "the right-to-starve." This is shorthand for the idea that enactment of a right-to-work law will weaken the union's ability to protect workers from management exploitation, and therefore reduce the economic gains of workers.

The balance of academic evidence (see literature review in section III), however, concludes that RTW laws do not lead to a reduction in economic benefits for workers in RTW states and would not do so in Kentucky. In fact, there is evidence that RTW laws have produced significant benefits for workers in

those states. The debate surrounding RTW principles often centers on emotional rhetoric. This analysis, however, provides empirical evidence that will help both supporters and opponents of right-to-work to assess more accurately the impact of a RTW law on Kentucky workers and their families.

III. Literature Review

More than five decades of experience with RTW laws has yielded a large body of economic analysis of their impact on a variety of economic factors.

Right-to-work laws were enacted, in large part, to promote economic growth. Empirical evidence suggests that they have. The economies of RTW states have been growing faster than those of non-RTW states since the late 1940s. Much research attributes this phenomenon to employers seeking to avoid unions (Cobb, 1982; Newman, 1983; 1984; Cappelli and Chalykoff, 1985; Kochan et al., 1986; Reder, 1988). For a review of the pre-1980s literature see Moore (1985).

Survey research also indicates that RTW laws are important in industry location decisions (for a review of the literature see Cobb, 1982 and Calzonetti and Walker, 1991). Businesses often cite RTW laws or "favorable business climate" as major factors in location decisions. For example, Schmenner (1982) reports that in his survey of Fortune 500 firms a "favorable labor climate" was the most important factor in industry location followed by proximity to markets.

Critics of RTW legislation have often acknowledged the faster employment growth in RTW states, but counter that it comes at the expense of much lower wages and incomes.

The evidence in the literature, however, is to the contrary. Examining 311 U.S. metropolitan areas, James Bennett (1994) finds that while families living in non-RTW states have higher average nominal incomes, the average urban family in a RTW state has $2,852 more in after-tax purchasing power per year than the same family would have in a non-RTW state. This is because on average, residents in states without RTW laws pay 24.5 percent more for food, housing, health care, utilities, property taxes, and college tuition than those in RTW states. Moreover, Bennett finds evidence that the gap in living standards between RTW and non-RTW states appears to be growing over time.

Controlling for state economic conditions at the time states adopted RTW, Reed (2005) finds that RTW states have average wages that are significantly higher than non-RTW states. His results were robust across a wide variety of specifications. It is Reed's thesis that failing to control for initial economic conditions (RTW states were generally poorer than other states) is the reason why most studies did not find a positive wage impact for RTW.

Employing similar methodology for nine Midwestern states, David Kendrick (2001) finds inflation-adjusted, after-tax income to be $1,145 higher in RTW states (IA, KS, NE, ND) than in non-RTW states (IL, IN, MN, MO, WI).

In one of the most comprehensive studies contrasting the economic performance of RTW versus non-RTW states, William Wilson (2002) finds superior economic performance for RTW states over a broad cross-section of economic variables (GSP growth, payroll, manufacturing and construction employment growth, unemployment rate, per-capita disposable income growth, unit labor costs, poverty rate and income inequality).

Wilson found that from 1977 through 1999, annual Gross State Product increased one-half percent faster in RTW states than in non-RTW states. Employment grew almost one percent faster each year, on average, in RTW states from 1970-2000. *Manufacturing employment grew 1.7 percent faster in RTW states. RTW states created 1.43 million manufacturing jobs over the past three decades, while the non-RTW states lost 2.2 million manufacturing jobs.* The percentage of families living in poverty in RTW states dropped from 18.3 percent to 11.6 percent between 1969 and 2000 and income inequality was greater in non-RTW states by 2000.

In what is probably the most methodologically rigorous study on RTW's economic impact, Holmes (1998) finds a precipitous drop in manufacturing activity when crossing the border from a RTW into a non-RTW state. Holmes examined county-level job growth over the period 1947-92 and found that the manufacturing employment increased in the order of thirty to forty percent when one crossed into RTW states. Manufacturing employment declines by one-third as one moves from within 25 miles of the border in the RTW state to within 25 miles of the border in the non-RTW state. This amounted to a *one-half percent growth rate differential annually*, clearly significant when compounded over decades. While Holmes finds that interior counties of RTW states also have higher growth rates on average than those in non-RTW states, the difference is most pronounced at the border between RTW and non-RTW states.

This pattern persisted between individual adjacent RTW and non-RTW states along the entire border and not just in a few states. We expand upon Holmes' seminal work in the next section for the state of Kentucky.

IV. Methodology

As discussed in the previous section, the balance of scholarly research indicates that right-to-work laws are associated with more manufacturing employment than in states without them. Given that RTW status for Kentucky would likely create more manufacturing activity in Kentucky than we would see otherwise, the question is how much more? While it is impossible to predict this precisely, Paul Coomes[2] extends Holmes' methodology (see description in section III) by estimating the number of manufacturing jobs Kentucky would have had along its border counties if it had been a RTW state over the past thirty years.[3]

Summarizing Coomes, the best available research suggests that RTW status is worth at least one-half percentage point in terms of growth rates per year for manufacturing employment in the border counties. Coomes estimates the aggregated job gains at approximately 27,000 in the border counties of Kentucky over the upcoming three decades.

We used Coomes estimate to simulate the economic impact of Kentucky becoming a RTW state by augmenting Kentucky's manufacturing employment by 895 jobs per year over the next 30 years (totaling the estimated 27,000 jobs lost in the border counties over the last three decades). An operating assumption was made to reduce the amount of job growth in the initial year by ½ to account for enactment of a RTW law that would not be effective for the entire calendar year 2006. The forecasts for employment (manufacturing and total), Gross Regional Product, Personal Income and State Revenue from these annual job gains are provided in Section V.[4]

V. Economic Impact of RTW

The REMI model was used to simulate the economic impact of passing RTW legislation in Kentucky starting in 2006.[5] It is important to note that these figures are *net* estimates. That is, they represent the net change in employment, output and revenue as a direct result of RTW legislation.

The Economic Impact to Kentucky of Passing RTW Legislation

	FY07	FY08	FY10	FY15	FY20	FY25	FY30
Direct Jobs from RTW	895	1,790	3,580	8,055	12,530	17,005	21,480
Employment (direct and indirect)	2,390	4,766	9,439	20,880	32,150	43,510	55,115
Gross Regional Product (Mil 1996$)	241	498	1,068	2,732	4,767	7,225	10,162
Personal Income (Mil $)	92	193	428	1,204	2,267	3,678	5,537
State Revenue (Mil $)	6.4	13.6	30.3	86.4	165.0	271.5	414.2

As discussed in section IV, *The Direct Jobs from RTW* is estimated at 895 jobs per year, starting in FY 2007. By FY 2030 this figure rises to over 21,000 incremental jobs in manufacturing. To determine the total impact of these new manufacturing jobs on the Kentucky economy, the REMI model was used to simulate their impact over the next two decades in terms of changes in employment, gross state product, and personal income. Based on estimated values of these outputs, the state fiscal impact was estimated based on historical relationships between revenues and the economy.

Employment is the *total incremental increase* in state employment. Notice that this figure is approximately two and one-half times larger than the initial increase in manufacturing employment. These economic multipliers are a result of the additional spending and business activity generated from the initial increase in manufacturing employment. By the end of this decade nearly 10,000 jobs are expected to be created as a result of RTW. By FY 2030 this figure rises to about 55,000. Again, it is entirely possible that Kentucky could experience net job losses in manufacturing over this period. These results estimate that employment will be higher than it would have been otherwise if Kentucky had remained a non-RTW state.

---

[2]Dr. Paul Coomes is a Professor of Economics at the University of Louisville.

[3]See Appendix II for a more detailed description of Coomes' methodology.

[4]The employment increase was attributed to only the durable goods sector. Employment in the nondurable goods sector is assumed to continue contracting. Nevertheless, using identical employment growth across the state's entire manufacturing sector yielded similar results.

[5]See Appendix III for a description of the REMI model, as well as for a more comprehensive listing of the impacts.

Measured in 1996 dollars, *Gross Regional Product* shows the expected incremental increase in Kentucky's output of goods and services. GRP is expected to rise by $1.1 billion by the end of this decade and by $10.2 billion by FY 2030.

Personal income is estimated to rise by $0.4 billion dollars by the end of this decade and by almost $5.5 billion by FY 2030.

State Revenue is the estimated incremental increase in total state revenue from the increased economic activity. These figures are listed in nominal or current dollars. State revenue is forecast to rise by $6.4 million and $13.6 million in FY 2007 and FY 2008, respectively. Revenue is forecast to rise by an additional $86.4 million by FY 2015.

VI. Conclusion

The assumptions underlying our simulations were conservative given the balance of academic evidence accumulated over the past half century. Our assumed increased in manufacturing employment, for example, represents only one-quarter of one percent of Kentucky's total manufacturing employment. We also ignored the economic impact of RTW status on industries other than manufacturing. UPS, for example, the state's largest private employer and heavily unionized, is not accounted for in the economic simulations. Moreover, we did not take into account any impact on the state and local government's unionized work force. It is likely that RTW legislation in the public sector would lead to more competition and choice in these professions and industries, leading to higher productivity and a lower cost of living for state residents.

References

Bennett, James. "A Higher Standard of Living in Right-To-Work States." *National Institute for Labor Relations Research*, 1994. Springfield, Virginia.

Calzonetti, FJ. and Robert T. Walker. Factors Affecting Industrial Location Decisions: A Survey Approach." In *Industry Location and Public Policy*. Edited by Henry W. Herzog Jr. and Alan M. Schlottman. Knoxville: University of Tennessee Press, 1991: pp. 221-40.

Cappelli, Peter and John Chalyoff. "The Effects of Management Industrial Relations Strategy: Results of a Recent Survey." *Proceeding of the Thirty-Eighth Annual Meeting*. Madison, WI: Industrial Relations Research Association, 1985: pp. 171-80.

Cobb, James C. *The Selling of the South*. Baton Rouge, La: Louisiana State University Press, 1982.

Faith, Roger L. and Joseph D. Reid, Jr. "Right-to-Work and Union Compensation Structure." *Journal of Labor Research*, Spring 1987.

Holmes, Thomas J. "The Effects of State Policies on the Location of Manufacturing: Evidence from State Borders." *Journal of Political Economy 1998*, 106 (4): 667-705

Kendrick, David. "Midwest Right-to-Work States still Outperform Forced Union States in Jobs & Real Income." *National Institute for Labor Relations Research*, 2001. Springfield, Virginia.

Kochan, Thomas A., Robert B. McKersie, and John Chalyoff. "The Effects of Corporate Strategy and Workplace Innovation on Union Representation," *Industrial and Labor Relations Review 39*, July 1986: pp. 487-501.

Moore, William J. "The Determinants and Effects of Right-To-Work Laws: A Review of the Recent Literature." *Journal of Labor Research*, Summer 1998: pp. 445-469.

Moore, William J." The Effects of Right-to-work Laws: A Review of the Literature." *Industrial and Labor Relations Review 38*, July 1985: pp. 571-85.

Newman, Robert J. "Industry Migration and Growth in the South." *Review of Economics and Statistics 65*, February 1983: pp. 76-86.

Reder, Melvin W. "The Rise and Fall of Unions: The Public Sector and the Private." *Journal of Economic Perspectives 2*. Spring 1988: pp. 89-110.

Reed, Robert. "How Right-to-Work Laws Affect Wages." University of Oklahoma, 2005.

Schmenner, Roger W. *Making Business Location Decisions*. Englewood Cliffs, NJ: Prentice Hall, 1982.

Wilson, William T. "The Effect of Right-to-Work Laws on Economic Development." *A Mackinac Center for Public Policy Report*, June 2002.

APPENDIX I

About the Author

William T. Wilson
Managing Director & Chief Economist
Keystone India
910 N. Lake Shore Drive, Suite 2418
Chicago, IL 60611

Dr. Wilson has ten years experience providing consulting services to hundreds of clients world-wide. He has been responsible for economic, banking and financial consulting and forecasting for Fortune 500 clients in a wide variety of industries, including financial services, automotive, technology and professional services. As Chief Economist at Keystone, Dr. Wilson advises US based asset managers on investment opportunities in India, and US corporations on their strategies to engage in cross border trade with India.

Dr. Wilson is also considered an expert on how Right-to-Work laws impact economic growth. He has published several large studies comparing the economic progress between Right-to-Work and non-Right-to-Work states. He has also testified on the impact of free labor markets before the Michigan legislature.

Prior to joining Keystone, Dr. Wilson was the Chief Economist at Ernst & Young and was responsible for financial consulting for Fortune 500 clients. Before coming to Ernst & Young, he was Vice President and Senior Economist for Comerica Bank in Detroit. Before that he taught at the university level for seven years, including Purdue University, at which he holds a Ph.D. in economics. He was a popular professor, winning many teaching awards.

Dr. Wilson is one of the most visible business economists in the country and can be seen or heard on national and local television (e.g., CNBC, CNN) or radio on a regular basis discussing the economic issues of the day. Dr. Wilson is also a member of the Wall Street Journal's prestigious economic forecasting panel and has been recognized by the journal as a "star" forecaster in the past. He is known for making economics both fun and easy to understand and has presented hundreds of speeches to business groups.

Dr. Wilson recently published a business mystery, *The Blue Chip Murders*.

APPENDIX II

December 8, 2005

TO: Bob Cox
Office of Kentucky State Budget Director

FROM: Paul Coomes, Ph.D.
Professor of Economics
University of Louisville

RE: Anticipated effects of a right-to-work law in Kentucky

As requested, I have taken a look at the literature on state right-to-work laws and begun to think about how such legislations would affect economic activity in Kentucky. The best scholarly work indicates the right-to-work laws are certainly associated with more manufacturing employment than in states without them[1]. Given that RTW would likely induce more manufacturing activity in Kentucky than we would see otherwise, the question is how much more, and when? While it is impossible to predict this precisely, we can make a reasonable estimate by taking into account statistical findings in the literature, Kentucky's geographic position, and recent data on manufacturing.

Holmes (1998) examined county-level job growth over the period 1947-92 and found that "the expected manufacturing employment growth rate increases by 23.1 (percentage points) when one crosses into the probusiness (RTW state) side." This amount to a one-half percent growth rate differential annually, clearly important when compounded over decades. While he finds that interior counties of RTW states also have higher growth rates on average than those in states without RTW, the difference is most pronounced at the border between probusiness (RTW) states and antibusiness states. He classifies a county as a border county if the population centroid of the county is 25 miles or less from the state line.

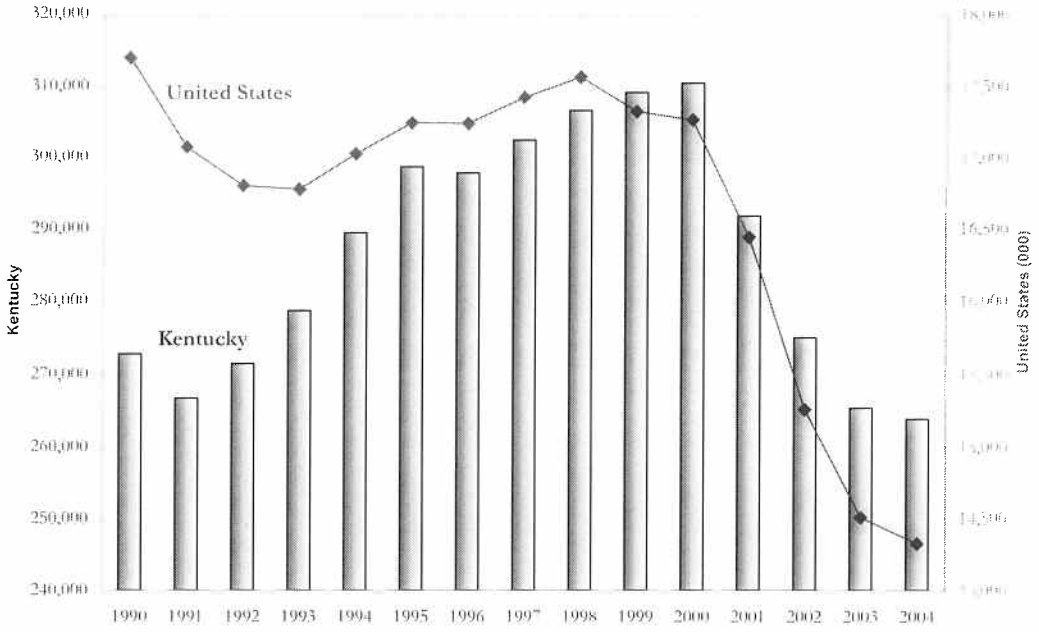
We can follow Holmes' procedure to roughly estimate the number of manufacturing jobs Kentucky would have had along its borders if it had been RTW over the period. In 2003, Kentucky's border counties accounted for 145,000 of the state's 274,000 total manufacturing jobs. The border counties accounted for 53 percent of all the manufacturing jobs in the state in 2003, down from a 65 percent share thirty-three years ago. Had the annual growth rate in the border counties been just one-half percentage point higher over that history, the state would have had 27,800 more manufacturing jobs today.

Given that manufacturing employment has been declining the past six years, both nationally and in Kentucky, it may seem unreasonable to expect RTW legislation to lead to the creation of this many new jobs. Note, however, that Kentucky's share of the national total continues

[1] Thomas Holmes. 1998. "The Effect of State Policies on the Location of Manufacturing: Evidence from State Borders," Journal of Political Economy, 106 (4): 667-705.

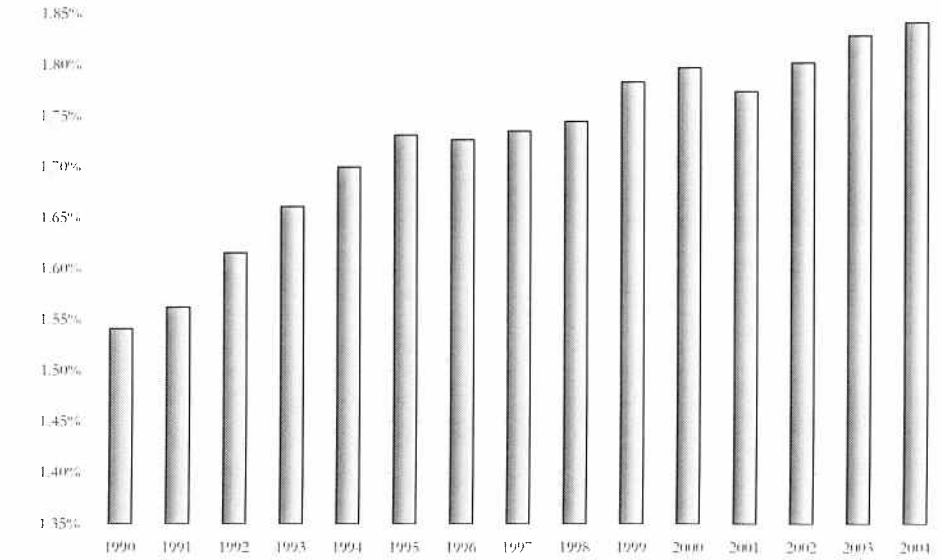
to rise, even through the recent recession. See accompanying charts, showing US Bureau of Labor Statistics data on average wage and salary employment in the US and Kentucky since

Manufacturing Jobs: Kentucky and United States



1990. Kentucky has benefited from its very central location, with resulting low transportation costs for heavy and expensive consumer goods like vehicles. It is valid to

Kentucky's Share of all US Manufacturing Jobs



argue that even if manufacturing employment in Kentucky falls over the next two decades, it is not likely to fall as much if RTW were in effect. The net difference represents a positive

economic impact on Kentucky. The best available research suggests that RTW is worth a half point bonus in terms of growth rates per year for manufacturing employment in border counties. In the case of negative growth rates, this implies the reduction would not be as severe if RTW were in place.

One way to simulate the effect of RTW in Kentucky is to perturb a regional model by adding 890 manufacturing jobs per year, which is the average increment from the above analysis over the next 30 years.

There are many caveats to consider here, as the Holmes paper points out. Nevertheless, I believe the approach is unbiased (if necessarily noisy).

I am not sure how RTW would affect industries other than manufacturing in Kentucky. For example, the state's largest private employer, UPS, is heavily unionized. Moreover, there are a number of public sector jobs that are dominated by unions, including public school teachers, firemen, policemen, and sanitation workers. RTW would lead to more competition and choice in these professions and industries, presumably leading to greater productivity and a lower cost of living in our region.

Appendix III

The REMI Model

Regional Economic Models, Inc. (REMI), based in Amherst, MA, produces economic modeling software that enables users to answer 'what if" questions about their respective economies. Each REMI model is tailored for specific geographic regions by using data, including employment, demographic, and industry data, unique to the modeled region.

The REMI model is a structural model and incorporates cause-and-effect relationships. The model shares two key underlying assumptions with mainstream economic theory: households maximize utility and producers maximize profits. In the model, businesses produce goods to sell to other firms, consumers, investors, governments, and purchasers outside the region. The output is produced using labor, capital, fuel, and intermediate inputs. The demand for labor, capital, and fuel per unit of output depends on their relative costs because an increase in the price of any one of these inputs leads to substitution away from that input to other inputs. The supply of labor in the model depends on the number of people in the population and the proportion of those people who participate in the labor force. Economic migration affects the population size. More people will move into an area if the real after-tax wage rates or the likelihood of being employed increases in a region.

Supply and demand for labor in the model determine the wage rates. These wage rates, along with other prices and productivity, determine the cost of doing business for every industry in the model. An increase in the cost of doing business causes either an increase in price or a cut in profits, depending on the market for the product. In either case, an increase in cost would decrease the share of the local and U.S. market supplied by local firms. This market share, combined with the demand described previously, determines the amount of local output. Of course, the model has many other feedbacks. For example, changes in wages and employment affect income and consumption, while economic expansion changes investment and population growth affects government spending.