

INTRODUCTION

As a public policy, legislation on the payment of prevailing wages to construction workers raises issues that include the level of government expenditures, economic growth rates, the economic well-being of employees, and potential shortages of qualified workers. These interrelated issues concern specific economic variables. Does a prevailing wage law affect the wages of all or just some construction workers? If prevailing wage laws change construction wages, what are the consequent employment effects? What happens to construction-worker training programs and worker productivity when prevailing wages are paid? Are the costs of state and local public works projects higher or lower with prevailing wages? These questions, and many more, are discussed when prevailing wage laws are the focus of legislative discussion. These are not questions of theory, rather they are issues of concern in the construction industry. During the summer of 1999, the University of Idaho Center for Business Development and Research initiated an inquiry, funded by the North Idaho Central Labor Council, into the effects of repealing Idaho's prevailing wage law. Our objectives included estimating the economic consequences of prevailing wage law repeal on Idaho construction trades employees, county and state economies, and state public works expenditures.

Past studies of the effects of prevailing wage laws in other states supported the hypothesis that that legislation increased wages in covered industries (i.e., industries whose employees are covered by unemployment compensation). Those results suggested that for the period from 1911 to 1985 wages in the building trades for Idaho's public works projects were above those in non-covered portions of the construction industry. In his studies, Peter Philips (1995, 1998, 1999) found a substantial wage advantage to the existence of a prevailing wage law and a statistical penalty associated with the repeal of prevailing wage legislation. In his employee compensation regression analysis Philips used variables for trend rates of growth, regional location, and business cycles. Our findings on the

Philips, Peter. *Kansas and Prevailing Wage Legislation*. Report prepared for the Kansas Senate Labor and Industries Committee. 1998.

_____. *Kentucky's Prevailing Wage Law: Its History, Purpose and Effect*. 1999.

Philips, Peter, Garth Mangum, Norm Waitzman, and Anne Yeagle. *Losing Ground: Lessons from the Repeal of Nine "Little Davis-Bacon" Acts*. Salt Lake City: University of Utah, 1995. Economics Department Working Paper.

construction earnings effects of Idaho's prevailing wage law repeal were consistent with Philips's findings.

For our second study objective we extended our analytical scope beyond that of the Philips studies to include estimations of the changes in county and state overall economic activity in terms of the variations in trend growth rates for output, value added, earnings, and employment in all business sectors. The estimates of the macroeconomic aggregates were obtained using IMPLAN (Impact Analysis for Planning) modeling techniques.

Our third research issue was whether there was a decline in the level of occupational maturity of construction workers relative to industry standards. Occupational maturity is measured by injury rates in the construction industry. The hypothesis is that construction firms will use lower-cost, inexperienced construction workers, with a consequent increase in on-the-job injuries.

A fourth research objective was to test the hypothesis that declines in construction wages and productivity have resulted in higher total costs for public works projects funded by the State of Idaho. One of the justifications for repealing prevailing wage laws is the belief that costs of public works construction projects would decline based on the assumption that wages could be reduced without comparable reductions in productivity. Efficiency wage theory links pay with labor productivity, specifically higher pay results in increased employee productivity. If the proponents of repeal are correct, repeal would lower pay rates without significant declines in productivity and result in lower public works project total costs. Philips presented some evidence in support of his hypothesis that repeal of Utah's prevailing wage law did not lead to decreased public works project costs.

A BRIEF HISTORY OF PREVAILING WAGE LAWS

Samuel Gompers, as president of the American Federation of Labor, visited Topeka, Kansas, in February 1891, to speak on labor issues. At that time the labor organization's legislative aims included the establishment of an eight-hour workday, the elimination of child labor, the elimination of convict labor, and implementation of prevailing wages on public works projects. These objectives were based in the belief that American labor markets should provide skilled workers with living wages and time for family, while children should be free to

pursue an education. Goods produced by convict labor (convicts were required to earn their keep) were sold at reduced prices, having the net effect of depressing wage levels and unfairly competing with private sector businesses. Gompers, in arguing for a prevailing wage, made the case that government was being asked to set a good example for the private sector. His position was that government, as a major purchaser of construction for public works, should not benefit at the expense of wage earners.

Kansas enacted legislation for an eight-hour workday and prevailing wages in March 1891. The Kansas wage law was later upheld by the U.S. Supreme Court in *Ashby v. Kansas*. New York became the second state to pass a prevailing wage law (1894) followed by Oklahoma (1909), Idaho (1911), Arizona (1912), New Jersey (1913), and Massachusetts (1914). Subsequently, three federal laws combined to provide the legal basis for prevailing wages at the national level. They were the Davis–Bacon Act (1931), the Walsh–Healy Public Contracts Act (1936), and the Service Contract Act (1965). Because the constitution’s tenth amendment constrains the federal government’s ability to dictate contract terms for state government projects, state and municipal governments were required to institute their own prevailing wage laws, where they chose to do so. From 1891 through 1969, 41 states and the District of Columbia enacted prevailing wage laws.

Prevailing wage laws were designed to protect local labor markets from the effects of competitive bidding on government-financed projects and to maintain local wage scales. As a rule, construction contractors obtain work through a competitive-bid process, the contract being awarded to the lowest bidder. Historically, state and federal governments were concerned that out-of-state firms would low-bid a project by bringing in low-wage employees. The specific goal of the Davis–Bacon Act was to prevent the federal government from reducing local area construction wages. Prevailing wages are determined by examining the local labor market wages for each job classification (e.g., laborers would be paid at local laborers’ scale, equipment operators at local operators’ scale, electricians at local electricians’ scale).

The rationale for prevailing wage laws was also founded on stimulating economic growth. Without a prevailing wage law the generally lower wages discouraged individuals from acquiring the human capital necessary for the highly

skilled building trades. In states with prevailing wage laws there were more apprenticeship training and safer workplaces, more construction workers with pensions and health insurance coverage, and employees whose higher productivity earned higher incomes.

Despite these economic advantages, beginning in 1979 there were widespread efforts to repeal existing prevailing wage laws. Changes in the dominant political philosophy and government budgetary difficulties are often cited as the cause of the repeal movement. Between 1979 and 1988, nine states repealed their prevailing wage laws. Florida was the first to repeal its Davis–Bacon legislation, followed in 1980 by Alabama. Utah was the third state to repeal, but only after vetoes from its governor. Arizona repealed its statute in 1984, followed by Idaho, Colorado, and New Hampshire in 1985. Kansas, the first state to have a prevailing wage law, repealed its law in 1987, with Louisiana following in 1988. In 1995, the Oklahoma law was judicially overturned because the state’s prevailing wage survey was unconstitutionally over-reliant on the federal survey.

Idaho’s prevailing wage law, enacted in 1911 as a part of eight-hour work-day legislation, was amended several times during the period from 1911 to 1965. Efforts to repeal this law and to pass a state “right to work” law began in 1979, and by 1985 both of these legislative initiatives were successfully enacted. In repeal discussions, market economists argued that substantial savings on public construction costs would be the result. Several studies of the impacts of repeal have not found conclusive evidence that the repeals have saved a significant amount of public funds.

METHODS AND DATA SOURCES

Our research employed statistical trend and regression analyses, comparisons of predicted values with actual data, and IMPLAN input–output modeling of county and state income impact assessments using multiplier-based predictions. A substantial portion of the economic impact on wages, earnings, and employment is measured by deviations in the trends. In dynamic economies there are constant changes in prices, the allocation of resources, and overall growth. In trend analyses historical data are used to estimate underlying economic structures and links. Changes in those underlying structures cause deviations from older trends and the establishment of new trends. The purpose of our trend analysis was to predict what would have happened if the repeal had not oc-

curred. Regression analyses identify the underlying economic structures and links. Regression coefficients and the tests for statistical significance indicate which variables are important in explaining a wage or employment level, how important those variables are, and how well the theory fits the facts. Using the regression equation, we predicted future wage and employment levels.

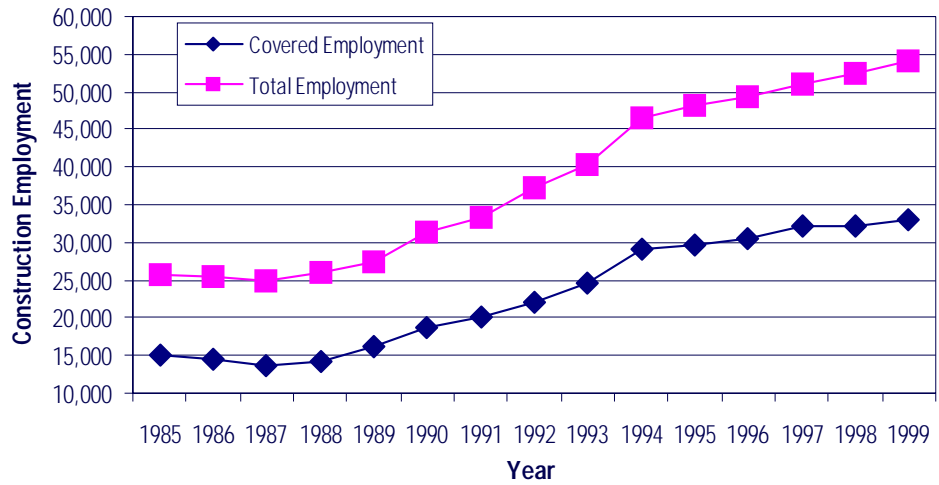
The IMPLAN input-output system is a technique for assessing the impact of economic changes on a regional economy, such as industry growth or decline. Originally developed by the U.S. Forest Service, the IMPLAN modeling system incorporates the economic links within and among a region's industries, households, and export sectors. Using the multiplier analysis associated with this economic modeling system, we predicted the changes in the industries that constituted the region's economy. Our estimated changes were stated in terms of income, employment, and industry outputs.

The majority of the data for the project was obtained from federal and state government sources, including Regional Economic Information Systems (REIS) and other U.S. Bureau of Economic Analysis units, the Idaho Industrial Commission, the Idaho Department of Labor, and the U.S. Bureau of the Census. Our final results were dependent on the quality and quantity of data available from those sources. State government agencies were unable to provide data on many aspects of the economic activity related to employee organizations and public project costs.

Our overall objective was to estimate the economic consequences of repeal of the prevailing wage law on Idaho construction trades employees, Idaho county and state economies, and state public works expenditures. In order to analyze the effects of the changes in the economy specifically associated with the repeal it was necessary to divide them according to all the economic variables that showed variation during the study period. The business cycle is extremely important in explaining overall economic activity. As measured by total non-farm employment, the Idaho economy began a serious decline in 1979 when the employment growth rate slipped from 7.9% to 2.0%. In the next three years, non-farm employment actually declined further, followed by three years of slow growth and another decline beginning in 1986. Because of the very poor performance of the state's economy, Idaho's population grew at rates less than 1% for

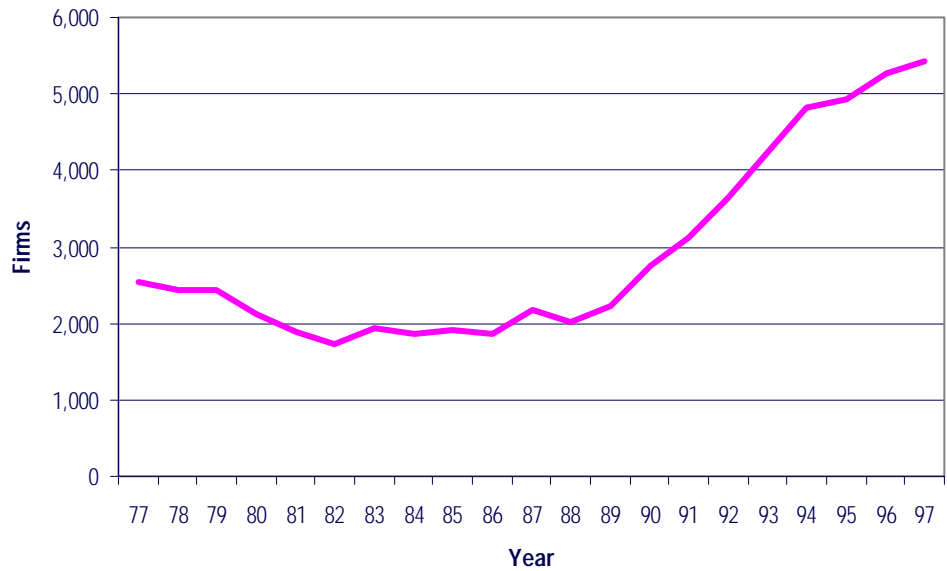
RESULTS

Figure 1. Covered and Total Construction Employment, in Idaho, 1985–1999



Sources: Idaho Department of Employment and U.S. Bureau of Economic Analysis REIS

Figure 2. Construction Firms, in Idaho, 1977–1997



Source: U.S. Bureau of the Census. *County Business Patterns*.

Figure 3. Regression Analysis of Unemployment Rate after Prevailing Wage Law Repeal

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.700524
R Square	0.490734
Adjusted R Square	0.434149
Standard Error	946.2706
Observations	21

	Coefficients	Standard Error	t Stat	P-Value	Lower 95%	Upper 95%
Intercept	4,908.772	1,251.496346	3.922323	0.000998	2,279.474	7,538.071
Dummy	943.2479	469.4802858	2.009132	0.059762	-43.0943	1,929.59
Idaho Unemployment	-375.43	161.7189163	-2.32149	0.032194	-715.189	-35.6705

the period from 1983 through 1989, actually declining in 1986 and in 1987. The severity of the long recession was reflected in double-digit declines in housing starts for 1978 through 1982, followed by additional declines in 1985 through 1988. Construction employment fell from 1979 through 1983, and again in 1986 and 1987, as shown in Figure 1. We examined the construction industry's wage and employment levels and trends, taking into account the shift from a severe recession to a prolonged, strong recovery.

An interesting aspect, shown in Figure 1, was the growing difference between covered employment (i.e., covered by unemployment compensation) and total employment (i.e., covered and uncovered employment). Proprietorships were included in total, but not covered, employment and accounted for the difference in the two statistical series. Most likely, this growth correlated with economic expansion, but also may be explained partly by the increased number of construction workers establishing their own businesses (as contractors), possibly in response to the change in wages associated with the repeal.

To test our hypothesis that a large number of individuals were foregoing wage employment at existing construction firms and establishing their own businesses, data on the total number of construction firms were obtained for the years 1977 to 1997 (Figure 2). The data, which did not capture many of the marginal construction firms, showed a decline in the number of construction firms from 1977 through 1982, followed by a relative constancy in the number of firms until 1986, the year after the repeal was passed. The fewest number of firms was 1,736 in 1982. From 1986 until 1997 the number of construction firms increased every year, with the exception of 1988. In 1986 there were 1,869 construction firms, and by 1997 there were 5,436—a 191% increase.

Using a regression analysis to statistically separate the effects of the business expansion from repeal on the number of construction firms, the two factors were found to account for about 44% of the changes in the number of construction firms over the time period. The regression results (Figure 3) indicated that both the unemployment rate as an index of the business cycle and the variable for repeal were statistically significant. The variable for repeal suggested that 943.2 more construction firms were estimated to have been the result of the repeal of the prevailing wage law. These variables provided strong statistical support to our hypothesis that individuals went into business for themselves, a form of occupational mobility.

Figure 4. Construction Firms, in 1980 and 1990

	Workers		Wages	
	1980	1990	1980	1990
Idaho Firms Working in Idaho				
Construction employees	15,691	17,475	\$228,513,514	\$364,664,853
Average wage per worker			\$14,563	\$20,868
Average wage per worker (in \$1999)			\$29,233	\$26,408
Idaho Firms Working Outside Idaho				
Construction employees	1,245	1,670	\$24,168,252	\$40,107,252
Average wage per worker			\$19,412	\$24,016
Average wage per worker (in \$1999)			\$38,966	\$30,392
Total Idaho Firms				
Construction employees	16,936	19,145	\$252,681,766	\$404,772,105
Average wage per worker			\$14,920	\$21,142
Average wage per worker (in \$1999)			\$29,948	\$26,756
Out-of-State Firms Working in Idaho				
Construction employees	472	325	\$6,829,564	\$8,978,040
Average wage per worker			\$14,469	\$27,625
Average wage per worker (in \$1999)			\$29,044	\$34,959

Source: U.S. Bureau of Economic Analysis REIS. *Journey to Work*. 1980 and 1990.

To shed light on the effect of the prevailing wage law's repeal on the participation of out-of-state firms in Idaho construction, we examined census data on commuting obtained from the 1980 and 1990 censuses (Figure 4). Fewer out-of-state construction firms were taking bids in Idaho in 1990 than in 1980. The out-of-state firms working in Idaho paid more in 1990 than in 1980 (after adjusting for inflation). Furthermore, more Idaho firms were working out-of-state in 1990 than in 1980, but their wages had fallen sharply, even on those projects conducted out-of-state. The commuting data suggested a change in behavior by Idaho firms engaged in construction projects within and outside the state. Some firms headquartered outside Idaho worked on projects within Idaho between the census years before and after the repeal of the prevailing wage law.

The employment and wage data from the 1980 and 1990 censuses indicated the number of workers employed by Idaho construction firms increased from 15,691 to 17,475. Using the wage and employment data, the average annual wage rose from \$14,563 to \$20,868. When these averages were adjusted for inflation, the real wages paid by Idaho firms on in-state projects fell 9.7%. The comparable data on employment and wages for Idaho firms working on projects outside Idaho showed employment increasing from 1,245 to 1,670, and the annual average real wage falling 22.0%.

The census commuting data suggested that fewer out-of state construction firms were taking bids in Idaho, with employment at those firms declining from 472 to 325. However, for those out-of-state firms who worked on projects in Idaho, the data indicated they were paying 20.4% more in real wages in 1990 compared to 1980. Moreover, the annual average real wage paid by out-of-state firms on projects in Idaho were 24.5% higher than what Idaho firms paid on projects in Idaho and suggested that out-of-state firms had underbid Idaho firms on certain types of in-state construction projects even though the out-of-state firms had higher labor costs. One possible reason for the bidding success of out-of-state firms was the level of labor skills that were no longer available in the Idaho labor force making it difficult for an Idaho firm to submit a bid. Alternatively, it may have been the case that the relatively higher wage labor employed by out-of-state firms was sufficiently more productive to result in lower production costs for out-of-state firms.

In the University of Utah economic study of the repeal of nine prevailing wage laws, Philips et al. (1995) reported the results of their regression analysis using an extensive data set that included 27,778 observations of annual construction earnings, cross-classified by state and type of construction contractors, for the period from 1975 through 1991. Using the statistically derived importance of their regression equation factors, Philips et al. reported the estimated effects on annual earnings, employment, and tax revenues of the laws' repeals. Using data for the State of Idaho and the regression model's results, we estimated the impacts on average annual earnings, employment, and state tax revenues for 1986 (the first year after the law's repeal) through 1999. The numbers reported in Figure 5 have not been adjusted to correct for the relatively long timespan. To correct for time, we would have had to enter a price index to adjust an estimated number, then use an interest rate adjustment that would have caused the estimated value to move in the opposite direction. As a general rule, over the long run, the negative and positive effects of interest rate and price index adjustments tend to cancel one another.

The results shown in Figure 5 are from the regression model analyzing the effects solely in Idaho of prevailing wage law repeal on construction earnings, adjusting for regional differences in average earnings and normal growth trends. The average annual earnings of \$33,005 was the estimated starting point, from which \$79 was subtracted because the average income level of Idaho's mountain state location is less than the national average (regional control variable).

The next adjustment was to compensate for the economic impact on earnings of having had the prevailing wage law repealed. Nine states never had a prevailing wage law; thirty-two states still have one. Idaho is one of nine states that repealed its prevailing wage law.

The next adjustment to the income or earnings level was for a secular or normal growth trend for the economy. In the Utah study, construction earnings or incomes were predicted to increase each year at the rate of \$225 per year. This increase would occur simply with the passage of time, most likely linked to productivity and price level changes.

An unemployment rate adjustment was the last element in the explanatory equation, and it captured the effects of the business cycle experienced in Idaho. In 1986 the predicted average annual earnings was \$26,238.07, which is \$6,766.93 less than the starting point. The magnitude of the predicted "Lost Income" varied between \$6,337.62 and \$8,539.73 over the forecast period. The income loss shows

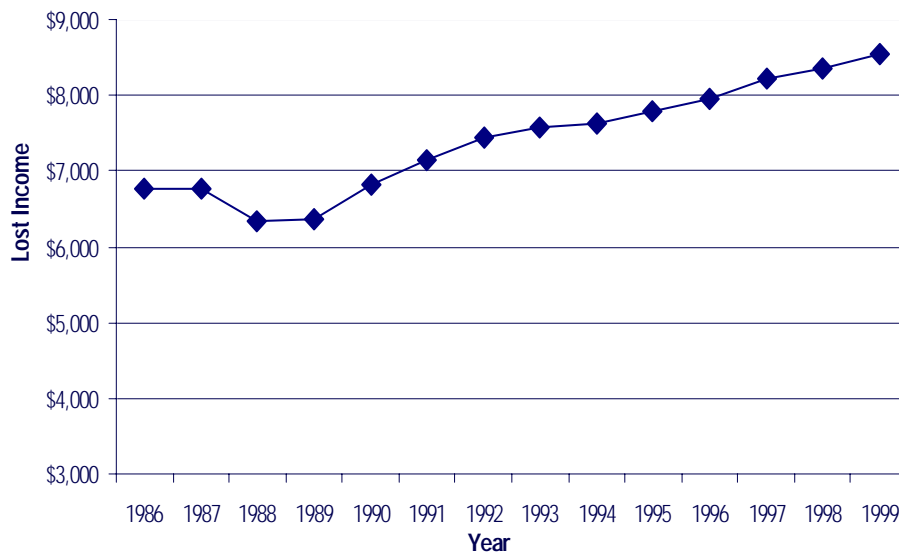
Figure 5. Regression Model for Idaho, Based on Philips's Regression Equation, 1986–1999

Year	Starting Point	Regional Control Variable	Repeal	Secular Trend	Unemployment Adjustment	Predicted Average Annual Income	Predicted Lost Income
1986	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$2,700.00)	(\$2,637.93)	\$26,238.07	\$6,766.93
1987	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$2,925.00)	(\$2,425.68)	\$26,225.32	\$6,779.68
1988	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$3,150.00)	(\$1,758.62)	\$26,667.38	\$6,337.62
1989	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$3,375.00)	(\$1,546.37)	\$26,654.63	\$6,350.37
1990	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$3,600.00)	(\$1,788.94)	\$26,187.06	\$6,817.94
1991	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$3,825.00)	(\$1,879.90)	\$25,871.10	\$7,133.90
1992	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$4,050.00)	(\$1,970.87)	\$25,555.14	\$7,449.87
1993	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$4,275.00)	(\$1,879.90)	\$25,421.10	\$7,583.90
1994	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$4,500.00)	(\$1,697.98)	\$25,378.02	\$7,626.98
1995	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$4,725.00)	(\$1,637.33)	\$25,213.67	\$7,791.33
1996	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$4,950.00)	(\$1,576.69)	\$25,049.31	\$7,955.69
1997	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$5,175.00)	(\$1,607.01)	\$24,793.99	\$8,211.01
1998	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$5,400.00)	(\$1,516.05)	\$24,659.95	\$8,345.05
1999	\$33,005.00	(\$79.00)	(\$1,350.00)	(\$5,625.00)	(\$1,485.73)	\$24,465.27	\$8,539.73

a generally upward trend (Figure 6). The downstream impacts of the lower income levels would have included lower levels of spending, a lower growth trend in state economic activity because of the lost spending, and a lowered level of taxes paid by construction workers.

In our regression model predictions there were employment changes associated with the prevailing wage law repeal in Idaho. There is substantial evidence that prevailing wage laws are statistically correlated with higher wages, and lower wages are recorded in states without coverage by such legislation. Because of the law's repeal, wages in the construction industry are lower and employment should be higher. Market economists associate lower wages with higher levels of employment, rather than higher profitability for construction contractors. Our model's employment projections indicated that the average level of employment across the various components of the construction industry declined by 2.7% in 1986. Those components were viewed as either an industry or occupation class of construction workers, such as plumbers and pipe fitters. One of the major reasons for this decline in employment was the recession in the Idaho economy. During the remainder of the forecast period employment in construction was predicted to have been higher than it would have been without the repeal, except in 1990. The percentage increases in employment from lower wages ranged from less than one-tenth of 1% in 1991 to 7% in 1988. Since 1995 the percentage increases in employment have been between 4% and 6%. The

Figure 6. Predicted Lost Average Yearly Income, per Worker, as a Result of the Repeal of Idaho's Prevailing Wage Law, 1986–1999



employment gains associated with the lower wages caused by the repeal were adjusted for secular growth and the business cycle.

In order to verify the results obtained in the Philips study, we developed and tested a comparable model for only the Idaho economy. The income or wage analysis in the Philips study used a very large, multistate data set that began in 1975 and spanned 16 years. Because of the information contained in that data set, a regional component in the predicted state construction wage

level was identifiable. In a complementary analysis we used a data set spanning 1969 through 1997 to statistically estimate the income or wage effects for only the State of Idaho's repeal of the act.

In order for the state to compensate for the tax revenue lost since the repeal, the savings on public works projects would have to have been more than \$25 million. Effectively, government agencies would have to have saved \$1.8 million on average per year on construction projects just to break even with the lost tax revenues.

To ensure comparability of the current results with that of the Philips study, we used the same explanatory variables, with the exception of the regional control variable. The explanatory power of the included variables in the Idaho equation accounted for two-thirds of the observed changes in construction wages or income.

As shown in Figure 7, for our Idaho analysis the comparable starting point, or intercept term, was \$33,283 or \$278 more than the Philips study results. Possible reasons for this difference are our exclusion of the regional control variable and the influence of the other states in the Philips database. Given the relative size of the Idaho economy, it is not surprising that other, much larger states have a larger role in determining the relative importance of wage variables.

Another difference in the results may have been caused by the effects of time on earnings. The secular trend in income or wages in the Philips study was positive and statistically significant. In our study, the secular trend in wages was not statistically significant. This result was unexpected and suggested that in a dynamic, growth economy such as Idaho's, construction workers' earnings were not keeping pace with the general trend rate of growth in the earnings or income experienced by other workers in the economy. Either construction worker income was not in step with inflation or there was no trend increase in productivity.

Figure 7. Predicted Lost Income in Idaho, CBR Study Regression Equation

SUMMARY OUTPUT

Regression Statistics

Multiple R	0.834344
R Square	0.696131
Adjusted R Square	0.659666
Standard Error	1177.291
Observations	29

	Coefficients	Standard Error	t Stat	P-Value	Lower 95%	Upper 95%
Intercept	33,283.37	2,016.851	16.50264	5.95E-15	29,129.59	37,437.14
Time=T	37.1254	67.03198	0.553846	0.584605	-100.929	175.1803
Dummy	-4,236.44	1,243.379	-3.4072	0.002227	-6,797.23	-1,675.65
Idaho U	-265.105	243.9293	-1.08681	0.287489	-767.486	237.2766

As with the Philips study the variable measuring the impact of repeal was statistically significant. However, for our study the estimated impact of repeal was \$4,236, or three times larger than that found in Philips's multistate analysis. This larger figure suggested that in the case of Idaho's construction workers, the repeal has had a much larger negative effect on wages than that experienced in other areas of the country. The small estimated difference associated with repeal found in the Philips estimates may have been attributable to the smaller wage or income impacts in other, larger states, and overwhelmed the effects noted in Idaho. Clearly, the repeal of the prevailing wage law was more important in explaining Idaho construction wage changes than it was in the Philips construction wage study.

The final component explaining the wage or income levels of Idaho's construction workers was the business cycle as indexed by the state's unemployment rate. The estimated coefficient for the unemployment rate was a negative \$265, or \$38 less than the Philips result, and implied that as the unemployment rate increased, the earnings of construction workers declined, an expected result. Rising unemployment rates generally mean less demand for workers and declining earnings; falling unemployment rates are associated with rising wages.

Overall, the results of our study were consistent with the findings of the Philips study. The two analyses of construction worker earnings supported each other, lending further credibility to the statistical results. If there were a notable difference, it was in the effects of the time trend for earnings.

In order to understand the relative income changes for construction workers in Idaho as compared to the national averages, we calculated their price-adjusted, or real, earnings from 1969 to 1997. The data presented in Figure 8 indicate Idaho construction workers were receiving earnings below the national average through the 1970s, then in the 1980s improved their position relative to the national average. Since the passage of the prevailing wage law repeal in 1985, the price-adjusted earnings of Idaho construction workers has shown a steady decline, with the largest difference occurring in 1997.

To put this difference in earnings in context, we calculated the real earnings of non-construction workers. Figure 9 shows the national non-construction workers' average earnings consistently above those of Idaho's workers. The national trend showed a more rapid increase than that in Idaho. From a competitive perspective, Idaho most likely will begin to experience labor shortages in the construction industry because real earnings in other occupations and other parts of the country have been growing, while the real earnings of construction workers have been in decline.

A significant change in analysis occurred when we shifted our focus from average annual construction earnings to total earnings in Idaho. The earnings reported in Figure 10 are in thousands of dollars: the total construction earnings for the last three years of the 1990s were in excess of \$1.5 billion. Using these data and the structures in the Philips study, we generated comparable estimates of the loss to state government tax revenues associated with the income loss realized by Idaho construction workers. The estimated income loss (reported in Figures 10 and 11) generated by our regression model combined the \$1,350 wage reduction predicted by the Philips model with the actual level of employment. The gain in employment (see Figure 10) was the predicted growth in construction jobs generated by this portion of the regression analysis, as applied to the actual level of employment in the construction industry. The increase in earnings was associated with the increase in employment brought about by lower wages. The net income gain was the difference between the lost income from the repeal and the income gained from the higher employment linked to the lowered wages.

However, throughout the time period (1985–1999) the total loss of income for construction workers due to prevailing wage law repeal was larger than the

Figure 8. Real Earnings per Construction Worker, U.S. and Idaho Averages, 1969–1997 (base year=1992)

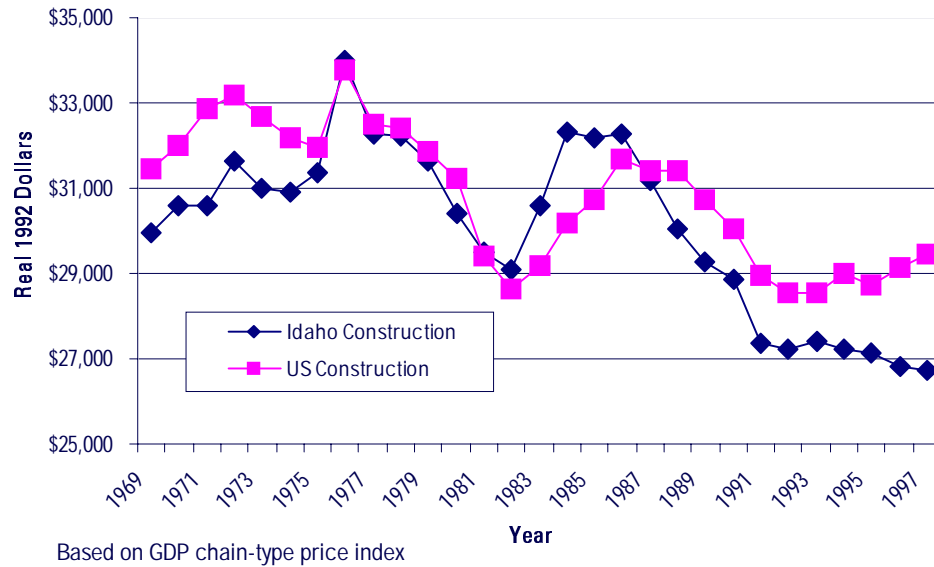


Figure 9. Real Earnings per Nonconstruction Worker, U.S. and Idaho Averages, 1969–1997 (base year=1992)

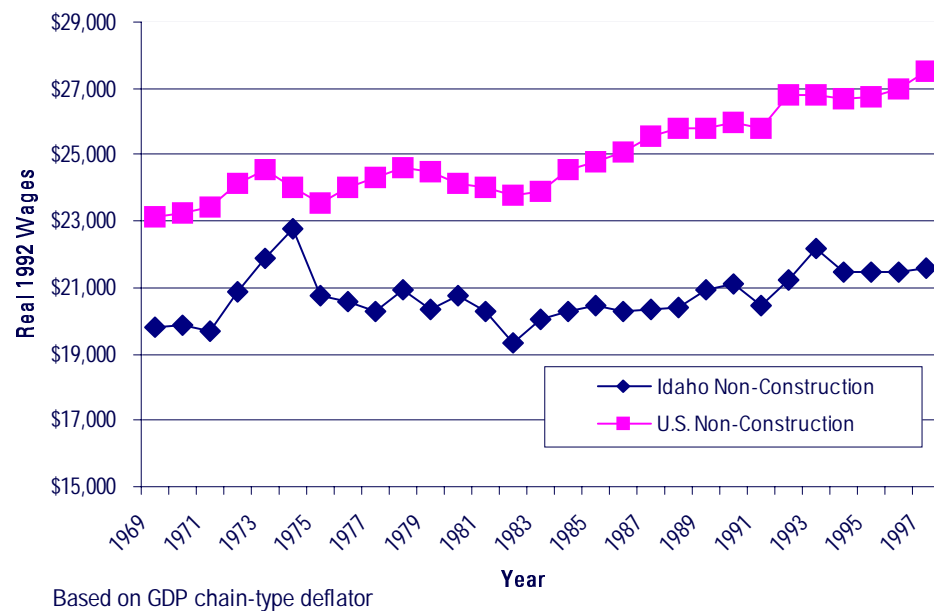


Figure 10. Estimated Lost General Fund Tax Revenues, in Idaho, 1985–1999

Year	Earnings (in \$1,000)	Em- ploy- ment	Lost Income	Gains in Em- ploy- ment	Average Earnings	Increase in Earnings	Net Income Gain	Taxes Lost		
								Income	Sales	Total
1985	\$647,072	15,067	(\$57,977,513.77)	270	\$42,946	11,576,118	-46,401,396	-1,014,486	-1,856,056	-2,870,541
1986	\$663,223	14,612	(\$61,275,051.33)	261	\$45,389	11,865,059	-49,409,992	-1,080,263	-847,426	-1,927,689
1987	\$641,791	13,721	(\$63,145,386.63)	245	\$46,774	11,481,641	-51,663,746	-1,129,538	-886,080	-2,015,618
1988	\$670,727	14,205	(\$63,743,854.28)	254	\$47,218	11,999,306	-51,744,548	-1,150,075	-829,835	-1,979,910
1989	\$723,391	16,067	(\$60,781,592.71)	287	\$45,023	12,941,465	-47,840,128	-1,155,682	-778,808	-1,934,490
1990	\$843,033	18,716	(\$60,808,642.34)	335	\$45,043	15,081,860	-45,726,782	-1,172,853	-751,512	-1,924,365
1991	\$886,492	20,216	(\$59,198,862.29)	362	\$43,851	15,859,342	-43,339,520	-1,151,547	-714,022	-1,865,569
1992	\$1,015,466	22,139	(\$61,921,455.35)	396	\$45,868	18,166,687	-43,754,769	-1,135,745	-719,852	-1,855,597
1993	\$1,131,393	24,631	(\$62,010,496.93)	441	\$45,934	20,240,621	-41,769,876	-1,089,599	-689,766	-1,779,365
1994	\$1,329,855	28,983	(\$61,943,354.73)	519	\$45,884	23,791,106	-38,152,249	-1,034,206	-670,272	-1,704,478
1995	\$1,408,809	29,633	(\$64,181,559.41)	530	\$47,542	25,203,593	-38,977,966	-1,053,794	-681,258	-1,735,052
1996	\$1,451,034	30,595	(\$64,026,667.76)	547	\$47,427	25,958,998	-38,067,669	-1,058,004	-602,112	-1,660,116
1997	\$1,520,143	32,198	(\$63,736,662.22)	576	\$47,212	27,195,358	-36,541,304	-1,044,787	-564,477	-1,609,264
1998	\$1,574,868	32,227	(\$65,971,762.80)	577	\$48,868	28,174,391	-37,797,372	-1,094,872	-581,363	-1,676,235
1999	\$1,633,926	32,920	(\$67,004,851.15)	589	\$49,633	29,230,931	-37,773,920	-1,097,049	-580,458	-1,677,507
TOTAL										-25,345,253

(Based on Philips regression equation)

Figure 11. Total Taxes Lost as a Result of Repeal of Idaho's Prevailing Wage Law, 1986–1999

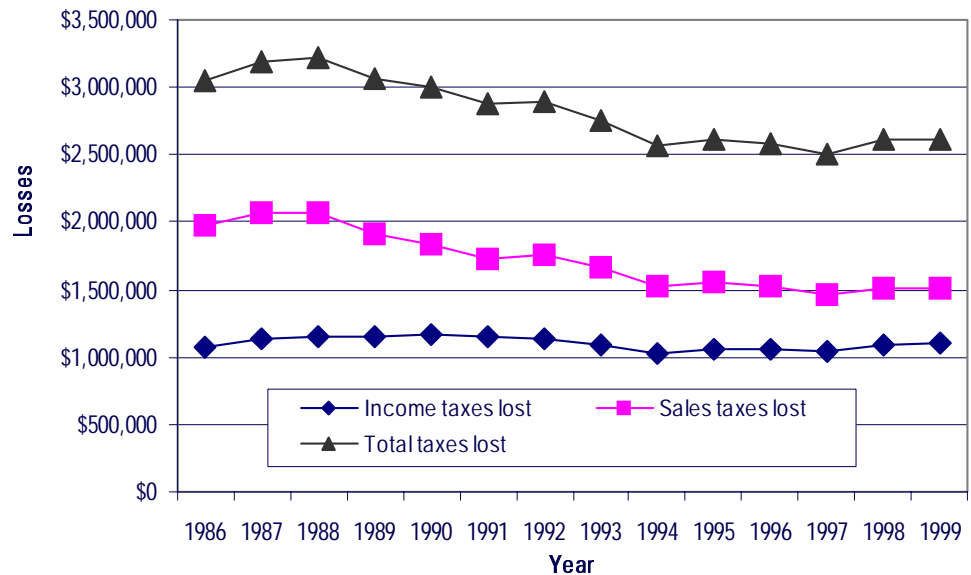


Figure 12. Net Loss of Income and Employment Due to Repeal of the Prevailing Wage Law, in Idaho, 1999

	Direct	Indirect	Induced	TOTAL
Employee Compensation	\$20,882,011	\$4,663,837	\$4,903,093	\$30,448,942
Employment	1,251	270	292	1,813
Total Personal Income	\$25,026,724	\$6,386,074	\$6,026,959	\$37,439,757
Sales	\$200,000,005	\$18,756,705	\$16,933,188	\$235,689,898
Total Value Added	\$43,342,292	\$10,255,103	\$10,293,006	\$63,890,402

total incomes earned by the additional construction workers linked to the lower wages resulting from the repeal. Employment in construction would have increased due to normal growth and the overall economic expansion. The total earnings for construction workers were lower than they otherwise would have been. Because of this earnings penalty or loss, retail businesses have lost sales, and the state has lost revenue from both sales and income taxes. Over this period the state lost a total of \$25,345,253 in taxes. The smallest tax loss year was 1997 with a potential \$1,609,264 that were never realized as revenue for the state's general tax fund, and the largest amount of foregone tax revenues was \$2,015,618 in 1987 (two years after repeal). In order for the state to compensate for the tax revenue lost since the repeal, our analysis suggested that the savings on public works projects from the changes in construction earnings only would have to have been more than \$25 million. Effectively, government agencies would have to have saved \$1.8 million on average per year on construction projects just to break even with the lost tax revenues.

The lost business sales associated with repeal retarded the growth in the state's economy. Idaho's current business expansion would have been even more robust if it had enjoyed the higher level of sales lost due to the repeal. To check our estimates of the total tax effect of the repeal we generated an IMPLAN model of Idaho's economy to identify the overall effects of the change in economic activity. The market economists, the advocates for repeal, claimed that a substantial net savings on the costs of public works projects would accrue to government agencies. However, when construction earnings declined, construction families spent less, and Idaho's businesses lost sales revenue. The direct spending changes (first column of Figure 12) from our IMPLAN estimates used a net income loss of \$8,540 per construction worker (see Figure 5, page 10). The indirect and induced estimates were the downstream effects of those changes and were the earnings, employment, sales, and output lost when businesses lost sales and cut back their level of operations. Using the proportions of income spent on sales, an average sales tax rate, and an average income tax rate, the total sales tax loss associated with the IMPLAN estimate for 1997 was \$575,458; the income taxes lost were \$1,085,755; the total tax loss was \$1,660,827. Our two very different methods of estimating tax revenue losses were quite close in magnitude—compare our \$1,660,827 with the Philips-based 1997 total tax loss figure of \$1,609,264 (Figure 10).

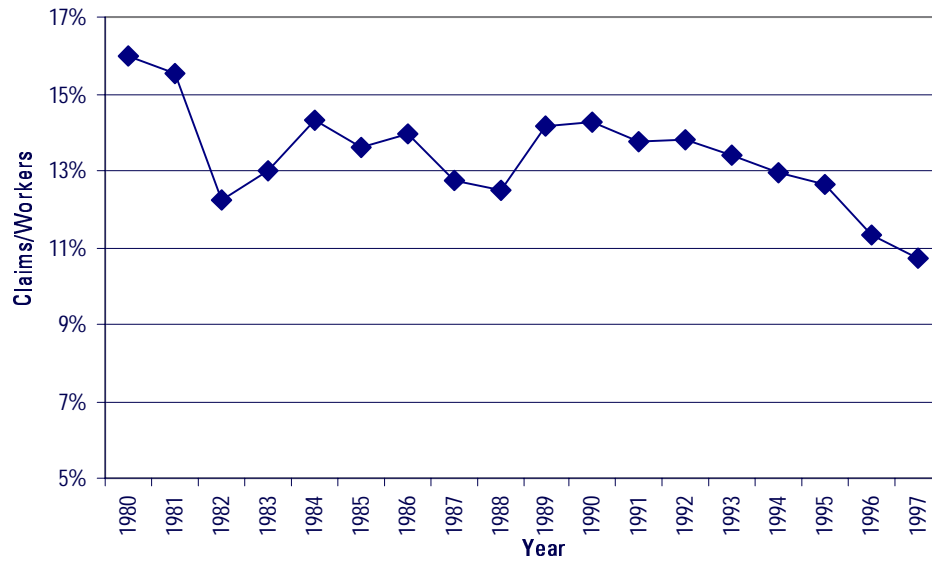
What is interesting about the use of IMPLAN is the estimate of the loss of business activity not obtained using the regression approach. The IMPLAN model estimated that, because of the downstream effects of losses of construction worker income, \$235,689,898 in Idaho business sales never occurred. Furthermore, \$63,890,402 of Idaho's production of goods for the marketplace, as measured by value added, were lost. The lost taxes, lost business sales, lost production, and downstream jobs are the actual economic cost of the repeal.

As noted in our discussion of Figure 1, there has been a growing number of proprietorships in the construction industry, suggesting that individuals gaining experience in construction may have been migrating away from traditional employment relationships. When wages decline in Idaho relative to the returns available in other states or for occupational choices, economic theory presumes that people will go where they can reap higher returns. This theory suggests that experienced construction employees may look elsewhere to maximize their returns, resulting in a less experienced workforce in Idaho's construction industry.

In an effort to examine other aspects of the occupational maturity or experience level, we acquired data on construction industry injury rates. The economic argument is that less experienced workers have less expertise or human capital and are less productive. Moreover, less experienced workers would commit more errors as they learn by doing, and some of those errors would result in injuries. We attempted to estimate the effects of the repeal on occupational injury rates using a statistical analysis, without finding a statistically significant relationship. The percentage of construction-based worker's compensation claims had a general downward trend (Figure 13), reflected the national trend, and may have been due to changing construction methods, national worker safety programs, and differences in program administration. Overall, the variations in the gross on-the-job injury rates, as measured by worker's compensation claims, did not support the hypothesis that the number of inexperienced workers had increased workplace errors. Moreover, the lost wages and medical costs (Figure 14) were volatile over time and showed no clear trends.

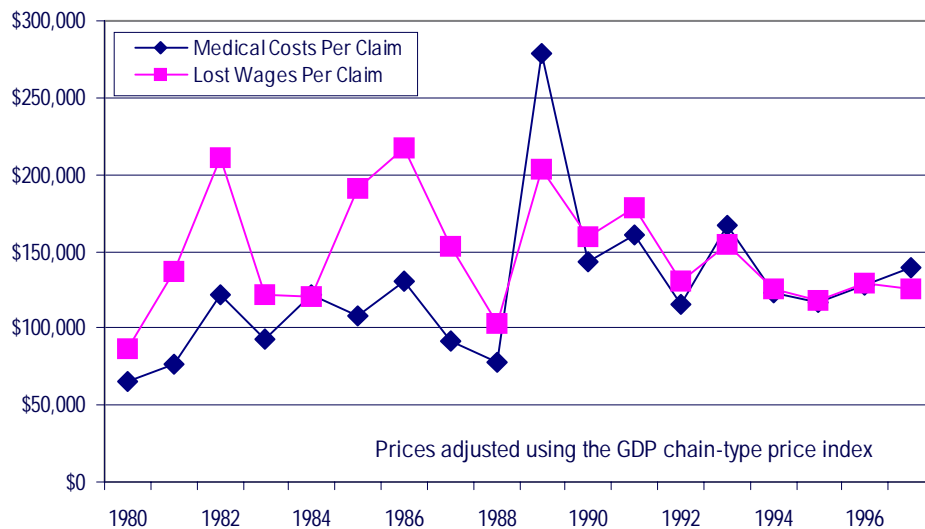
In an attempt to explain the changes in the numbers of worker's compensation claims, a regression analysis was used to determine which underlying factors were important in statistically determining the observed trends. Because of the overall volatility in the injury claims data, we adjusted the number of

Figure 13. Worker's Compensation Claims, Construction, in Idaho, as a Percentage of National Total Construction Workers, 1980–1997



Sources: Idaho Industrial Commission and U.S. Bureau of Economic Analysis REIS

Figure 14. Real Lost Wages and Medical Costs per Worker's Compensation Claim, Residential Construction, 1980–1997 (in \$1996)



claims to an average claim rate, then examined Idaho's claim rate as compared to the nation's average claim rate. Due to several legislative factors and the institution of new methods of production, both the average claim rates for Idaho and the nation declined over our time period. However, the statistical analysis indicated that Idaho's claim rate behaved differently than the nation's.

The results of the regression equation appear in Figure 15. It is important to note that all factors or variables included in the regression equation met the standard tests for statistical significance, as did the overall equation. A time trend, Idaho's business cycle, and the prevailing wage law's repeal were found to explain the differences between Idaho's and the nation's injury claim rates. The largest coefficient, and thus most important factor in the statistical explanation of the difference in claim rates, was repeal of the prevailing wage law. The magnitude and positive sign of this variable indicated that for those years without a prevailing wage law, Idaho's injury claim rate exceeded the nation's claim rate. The small, negative coefficient for the time trend suggested that the difference between Idaho's and the nation's injury claim rate was slowly shrinking. Possible or likely reasons for Idaho's claim rate approaching the nation's claim rate in the long term were compliance with statutes, and the diffusion of new construction technologies.

The negative coefficient for the unemployment rate suggests that when Idaho's economy was slowing, there was a slight increase in the difference between the state's and the nation's claim rates. It may have been that shortcuts on

Figure 15. Predicted Workers' Compensation

SUMMARY OUTPUT
Regression Statistics

Multiple R	0.595044
R Square	0.354077
Adjusted R Square	0.224893
Standard Error	0.009836
Observations	19

	Coefficients	Standard Error	t Stat	P-Value	Lower 95%	Upper 95%
Intercept	0.133276	0.023979	5.557968	5.48E-05	0.082166	0.184387
Dummy	0.014545	0.008313	1.749618	0.100608	-0.00317	0.032264
Idaho Unemployment	-0.00507	0.002607	-1.94379	0.070924	-0.01062	0.000489
Time	-0.002	0.000849	-2.35132	0.032794	-0.00381	-0.00019

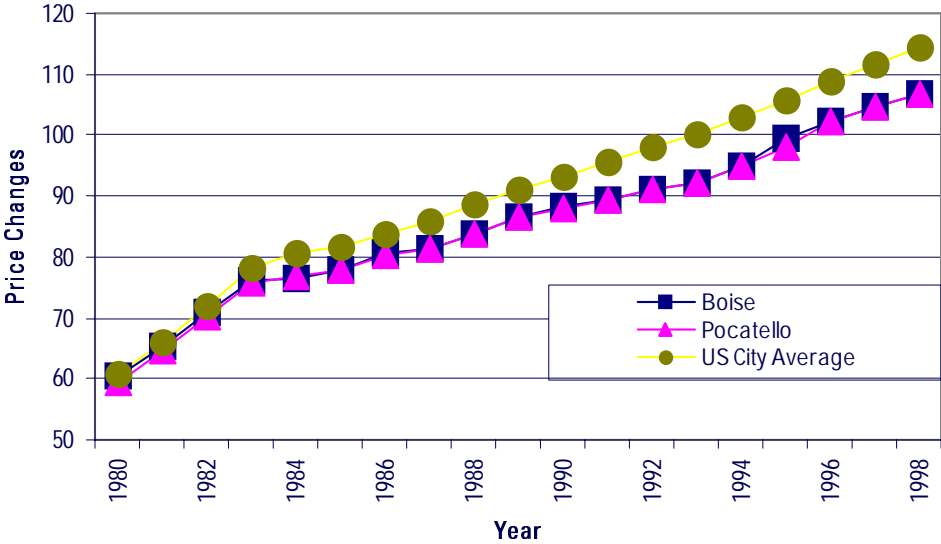
job sites or the use of lower-priced labor were undertaken to keep construction costs down and profits up, and those shortcuts and low-wage labor caused a small increase in injury claim rates. Further information on the behavior of worker's compensation claim attributes are in the appendix.

To test our hypothesis that there have been declines in construction worker productivity, as evidenced by the increase in total costs for public works projects in Idaho, we acquired R. S. Means construction price index information. One of the justifications for repealing prevailing wage laws is the belief that costs of public works construction projects would decline because wages could be reduced without reductions in the overall productivity of the labor force. In his studies Philips (1995) found that although project bid prices decreased, cost overruns increased from 2% of the projects before Utah's repeal to over 7% after repeal, suggesting illusory cost savings. Moreover, in two other studies Philips was unable to find statistical evidence between school construction costs and prevailing wage laws, which meant that he could not predict lower construction costs with the repeal of a prevailing wage law. In his studies of the economic implication of prevailing wage laws Marc J. Prus (1999) confirmed the hypothesis that there was no measurable or statistically significant increase in construction costs associated with prevailing wage regulations. Finally, the Federal Highway Administration nationwide construction-cost survey for the period 1980 through 1993 found that although prevailing wage law states had higher wages, the number of labor hours per mile were 58% below the national average, and the highway cost per mile was 11% below the national average. Because these previous studies examined data from all parts of the nation while focusing on Kansas, Kentucky, Maryland, and Utah, there was reason to conclude that an analysis of Idaho public works projects would arrive at the same result, if project-specific construction cost data were available.

Mainstream economic theories link pay with productivity in what is called the "efficiency wage hypothesis," specifically higher pay means higher employee productivity. If lower wages and productivity declined less than wages fell, there would have been a decline in overall project costs (as purported by repeal advocates). One of the difficulties with using the construction index was that it is comprised of combined wage and productivity changes, and the two effects are inseparable in the information supplied.

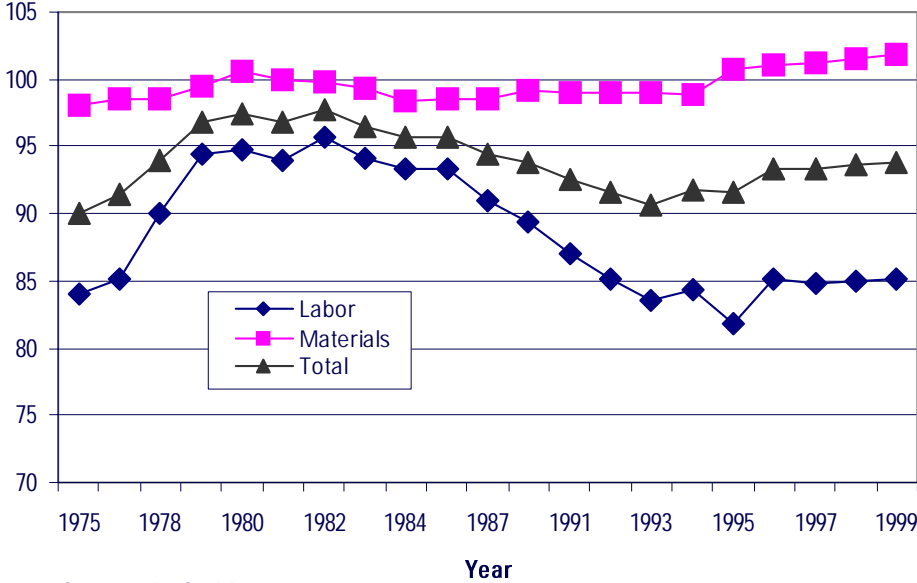
Prus, Mark J.. *Prevailing Wage Laws and School Construction Costs*. Report prepared for the Prince George's County (MD) Council. 1999.

Figure 16. Idaho Construction Price Index as Compared to the National Average, 1980–1998



Source: R. S. Means

Figure 17. Boise Construction Price Index as Compared to the National Average, 1975–1999



Source: R. S. Means

The values of the national average and sample Idaho city construction cost indices (Figure 16) showed rapid increases in the early 1980s, a leveling in the mid-1980s, then a return to a trend rate of increase for the latter 1980s and the 1990s. Since the passage of the repeal in 1985 the construction cost indices for Idaho cities seemed to parallel the national city average and suggested that there may have been a decline in wages, productivity, or both, and that little has changed since.

The relative cost of construction materials showed a remarkable stability over the period from 1975 to 1999 (Figure 17), suggesting that materials costs in the Boise area have been changing at the same rate as the national city average. However, of late, Boise seems to have experienced a slightly faster rate of growth than the national average in building material costs, most likely attributed to that area's rapid economic and population expansions.

The relative costs of labor on Boise construction projects showed a slightly different pattern. Taking into account the estimated wages and productivity of labor, Boise's construction labor costs showed a sharp decline for the decade beginning shortly after the passage of the repeal. In 1995 there was a spurt in relative labor costs, and since then labor costs in Boise (relative to the national city average) have been quite stable. The deviation of trends noted in Figure 16 apparently was linked to a labor cost difference. The pattern strongly suggested that there were initial cost savings associated with the repeal-based lower wages, and that wage increases and worker productivity declines were beginning to occur in the construction industry. The data displayed in Figure 8 (page 15) clearly showed that Idaho real earnings declined for most of the 1990s and led to our conclusion that, compared to national averages, productivity of construction workers in Boise was falling.

Many of the debates over the consequences of prevailing wage laws and their repeals focused on the potential for reduction in government construction expenditures, changes in overall economic growth, reductions in construction worker earnings, and in the longer term potential shortages of qualified workers. In several previous studies statistical support was found for the hypothesis that prevailing wage legislation increased construction earnings, while a statistical penalty was associated with the repeal of prevailing wage legislation when com-

CONCLUSIONS

pared to having never had such a law. In our study we included IMPLAN modeling techniques to estimate the changes in the level of overall economic activity. Using this procedure the downstream effects of repeal were estimated to cause declines in trend growth rates for output, value added, earnings, employment, as well as state general tax revenues. The fundamental issue remained whether the state realized a positive net benefit from repealing its prevailing wage law.

If repeal advocates were correct, progress toward significant reduction in the costs to the state of public works projects should have been realized. Comparing the R. S. Means data on the indices of labor, materials, and total construction costs in the Boise area with construction deviation of trends strongly suggested that there were initial public works cost savings associated with the repeal of Idaho's prevailing wage law. However, the further we progressed in time since the repeal, lower wages could have been correlated with declines in worker productivity. The data clearly showed Idaho real earnings declining for most of the 1990s and the R. S. Means labor cost component rising. The obvious conclusion was that, compared to national averages, productivity of construction workers in Boise was falling. We concurred with the result of the Philips study—there may not have been a cost savings to repealing the prevailing wage law.

On the cost side of the government revenue benefit–cost equation were the tax revenues lost because construction workers were paid less and consequently spent less. We estimated the general fund losses using both the Philips method and IMPLAN and arrived at essentially the same result. Although it was difficult to find any benefit from repeal, the cost was in excess of \$1.8 million per year. Furthermore, the IMPLAN estimates clearly indicated losses of business sales, production, and jobs. Those losses to Idaho businesses and households slowed the rate of economic growth.

The long-term productivity declines for construction workers were partially the result of a decline in the level of occupational maturity of construction workers. Using construction industry injury rates as an index of workers' experience, we found repeal of the prevailing wage law a statistically significant explanation for Idaho's claim rate being higher than the nation's claim rate. Moreover, efficiency wage theory provided a basis for linking lower pay rates to declines in productivity, mitigating the savings in public works project costs. Philips (1995, 1998) presented evidence denying support of the hypothesis that repeal of the

prevailing wage law in Utah and Kansas resulted in cost savings on public works projects. That result was supported by Philips's (1999) and Prus' (1999) studies of Kentucky's and Maryland's experiences, respectively, with prevailing wage laws.

An interesting aspect of these data was the growing difference between covered construction employment and total construction employment—proprietorships were included in total, but not covered, employment. We concluded that since repeal of the prevailing wage law, a number of construction workers entered the construction industries as contractors (sole proprietorships).

It was quite likely that construction workers were establishing their own businesses in response to the decline in wages associated with the repeal. Individuals experienced in construction may have been migrating away from traditional employment relationships, paying themselves a wage, and claiming the

The lost taxes, lost business sales, lost production, and downstream jobs are the actual economic cost of the repeal.

profits of ownership. Others noting the declining wages sought the higher returns available in other states or occupations. Census commuting data indicated that the growth in the number of Idaho construction firms resulted in decreased wages and lost contracts to higher-wage, out-of-state firms. Because of the diffusion of production methods throughout the industry, this result suggested those out-of-state firms had a competitive bidding advantage over Idaho firms. This advantage may have been apparent in the quality and skills of its employees. Recent news reports included a growing interest in labor shortages and in licensing building contractors, supporting the hypothesis that people responded in many ways to the depressed wages in the construction industry.

In our analysis, and the studies conducted by Philips and Prus, it has been difficult to establish any long-term net gain from the repeal of the prevailing wage laws. It has not been difficult to show long-term losses to state governments, construction workers, and the overall state economy—as opposed to the economic Rational Choice Model that requires that benefits outweigh costs.