The Effect of State Prevailing Wage Laws on Total Construction Costs

by

Mark J. Prus
Department of Economics
SUNY, Cortland
Cortland, NY 13045
607-753-5758
PRUS@SNYCORVA.CORTLAND.EDU

Introduction

Prevailing wage laws have been a part of public policy in the United States at both the federal and state levels since the early part of this century. These laws require that construction workers be paid the "prevailing rate" when working on publicly funded construction projects. They were initially established to neutralize the government's monopsonistic power as a purchaser of certain types of construction labor and to support the social objective of maintaining a family wage.

Currently, the question of whether prevailing wage laws continue to make public policy sense is being debated. One of the most significant issues in this public policy debate is what impact prevailing wage laws have on publicly funded construction costs. Opponents of prevailing wage laws argue that they raise construction costs. Repeal of these laws would result in cost savings on the order of 20 to 30 percent according to some. If such savings were possible, it is argued, school districts could build five schools for the price of four.

Claims of cost savings from the repeal of prevailing wage laws, however, are generally based on analysis of the effect of higher wage rates on construction costs. Yet wage differences have a moderate effect on total construction costs. Labor costs are less than a third of total construction costs and have been falling. In 1972, for instance, in an analysis of school construction costs, John Olsen found that onsite wages and salaries excluding benefits were 28.2 percent of total costs. (Monthly Labor Review, 1979, p. 40) According to the Census of Construction, labor costs counting benefits on all types of construction were 30 percent of total costs in 1977 and had fallen to 26 percent by 1987.

A second problem leads us to question estimates of the impact of prevailing wage

legislation on construction costs based on an analysis of wage differences. Because they assume implicitly that the same number of hours of each type of labor will continue to be employed and that labor is of invariant productivity the impact on costs is driven by the wage differential. Neither of these assumptions are necessarily appropriate. The payment of prevailing wages may serve to attract workers with more experience and training. Increased labor productivity may result in fewer hours of labor being required thus offsetting the higher wage rate. For instance, Allen has shown that unionized labor in the construction industry is between 17 and 52 percent more productive than nonunion labor. (Allen, 1984) Additionally, higher wage rates may lead contractors to substitute capital or other inputs for labor, mitigating the impact of higher wages rates on total construction costs.

These possibilities, alone or in combination, make the assumptions underlying the analysis of construction costs based on wage differences inappropriate and cast doubt on the estimates of costs savings. Specifically, it is difficult to imagine how savings of 20 to 30 percent are possible . To get a true picture of the impact of prevailing wage legislation's impact on total construction costs, one could evaluate not only differences in wage rates, but also productivity differences, the incidence of substitution, administrative costs and other ways in which these laws's impact is either mitigated or enhanced. An alternative approach is to simply examine total construction costs directly and compare costs in the presence and absence of prevailing wage laws controlling for project differences.

Previous Estimates of Impact on Total Costs

Only one studies have attempted to estimate the impact of prevailing wage legislation based on actual total construction costs. Fraundorf, et. al., in "The Effect of the Davis-Bacon Act on Construction Costs in Rural Areas," examined 215 new, non-residential construction projects built in 1977 and 1978. (Fraundorf, 1983) Approximately half of these projects were federal projects built under the purview of the federal Davis Bacon Act specifying that prevailing wages be paid. The other half were privately owned projects constructed without the requirement that prevailing wages be paid. Data on total construction costs were then compared using multivariate regression analysis to control for the effects of factors other than the presence of prevailing wage requirements. This study controlled for differences in the type of structure, the types of materials used, and project size in an effort to focus on cost differences associated with labor cost differentials resulting from the dichotomy in regulatory regimes. It also attempted to control for regional differences in construction costs by grouping projects into four regions; Northeast, North Central, South and West. The dependent variable in their regression analysis was the natural log of the project's bid price deflated to 1977 dollars. The authors of the study found, somewhat surprisingly, that federal construction projects governed by Davis Bacon were 23 percent more expensive than private construction projects controlling for other cost influencing factors. When they re-estimate their basic model to correct for disproportionate response rates by region and building type, Fraundorf finds that the impact of Davis Bacon on total construction costs is as high as 30 percent. While they admit that these results are high, especially in light of a public-private wage differential estimated at 20 percent, they point out that

the results are consistent with other aspects of the data. In particular they do not find evidence of factor substitution which would mitigate the impact of prevailing wage requirements. However, this does not explain why the impact on total costs is greater than the wage differential. They explore other factors that might contribute to the higher costs of federal Davis Bacon projects such as record keeping and reporting, and decreased competition. Neither of these factors appear to significantly contribute to costs on federally funded construction. (Fraundorf, et. al, 1983, p. 145)

One possible problem with the Fraundorf study is that regional differences in construction costs may have been inadequately controlled for. Given the relatively small sample size, the authors of this study had to group construction projects into relatively broad regions. This creates the potential for comparing a private project in a low cost state such as Idaho with a public project in a high cost state such as California. Since both projects are considered to be in the same region the cost differential is incorrectly attributed to the impact of prevailing wages when in fact it is due to differences in the cost of living or cost of materials between Idaho and California. Another problem may result from the way in which building types were classified. Each construction project was placed into one of six categories; recreational buildings, storage facilities, industrial buildings, office-commercial, medical and other. These categories were then used to find matches between public and private construction projects. However, these six categories were sufficiently broad to allow rather dissimilar buildings to be considered comparable. For instance, in the category storage facilities, warehouses were grouped with barns as well as airplane hangars. Likewise office buildings were in the same category as restaurants. Differences in costs between public and private buildings may have resulted from differences in

structure type and not from prevailing wage requirements. (Fraundorf, 1982)

A second and potentially more serious problem with this study is that it fails to adequately isolate the impact of prevailing wage legislation on construction costs. Specifically, Fraundorf compares private projects constructed in the absence of prevailing wage legislation with federal (i.e., public) projects built using workers paid the prevailing wage. This comparison, while seemingly appropriate, contains the potential for confounding cost differences related to prevailing wage laws with cost differences resulting from other differences between private and public construction projects. The authors recognize this possibility when they point out, "If the government is more exacting than private owners in its quality standards, labor hours (and costs) and possibly material costs would be higher on government projects." (Fraundorf, 1983, p. 145) It may also be that the difference in bidding procedures for public and private contracts or differences in the time horizon of public and private owners may contribute to higher costs in the public sector. In other words, the cost differential that Fraundorf attributes to the effect of prevailing wage legislation may in fact be due to differences between public and private construction.

Estimating the Impact of State Prevailing Wage Laws

This study analyzes the impact of prevailing wage legislation on total construction costs using data on nonresidential construction in the United States. The data are from the F. W. Dodge Company, an organization that collects and disseminates data on construction projects to the construction industry. These data give information on construction costs at the start of the project, or bid price. They also contain information on detailed structure type, project location,

project scale, and technical characteristics of the project such as number of stories and type of frame. The Dodge data also distinguish between public, private and federal projects. One advantage of the Dodge data is that they report on a large number of construction projects allowing for a more appropriate geographical breakdown of projects. In addition, the Dodge data make it possible to compare construction costs on similar projects in the private and public sectors for states both with prevailing wage laws and without. This is essential if one is to sort out the cost differences associated with public construction from the cost differences associated with prevailing wage laws.

The Model

The model used here to estimate the effect of prevailing wage legislation on construction costs is :

$$C = a + b_1S + b_2T + b_3B + b_4A + b_5ST + b_6Altadd + b_7Pubcode + e$$

where C = start cost or bid cost; S = project scale as measured by square footage; T = a vector of dummy variables indicating detailed structure type; B = a vector of building material dummy variables; A = a vector of state dummy variables; ST = the number of stories; *Altadd* = a dummy variable indicating whether the project was an alteration or addition as opposed to new construction; and *Pubcode* = a dummy variable indicating that the project is public. This model is nearly identical to the one used by Fraundorf to estimate the impact of the federal Davis Bacon Act on total construction costs. It is appropriate for estimating the cost difference between public and private construction projects holding other factors such as building type, building materials, state in which the project is undertaken, building size and complexity constant. In

states with prevailing wage laws, the cost difference between public and private projects may be thought of as measuring the inflationary impact of the law.

Data

The most notable difference between the Fraundorf analysis and this study is the focus here on the impact of state prevailing wage laws, also known as little Davis Bacon acts, on costs. In the first instance, I selected construction projects in states that had prevailing wage laws in 1990. This focus on state prevailing wage laws's impact on costs, as opposed to Davis Bacon's impact, is useful for sorting out differences in costs associated with prevailing wage laws from cost differences between public and private buildings. Moreover, given that many states are currently considering reforms or repeal of their little Davis Bacon acts, the impact of state laws on construction costs is an important question to answer. The projects selected were nonresidential construction categorized as offices, hospitals, elementary schools, middle schools, secondary schools, garages and warehouses. These categories are similar to those used by Fraundorf, et al., but are more specific and consequently less likely to result in comparisons between dissimilar structures. For example, hospitals is a more detailed class of structures than medical buildings, and warehouses is similarly more specific than storage facilities. Unlike Fraundorf, I included both new construction and additions/alterations. In states with prevailing wage laws additions/alterations to public structures and roads are also covered.

The results of a multiple regression analysis using the natural log of real total project cost as the dependent variable indicate that, controlling for other relevant factors, in states that have prevailing wage laws public buildings are reported in Table 1. Public projects in states having

prevailing wage laws are 27.6 percent more expensive than private structures. These results are very similar to the results obtained by Fraundorf. in terms of the magnitude of the estimated impact. Given that the prevailing wage laws in these states apply to public projects, this estimated cost differential can be attributed to the law's existence.

This approach to estimating the impact of prevailing wage laws on construction costs, like the earlier study by Fraundorf is unable to distinguish between cost differences due to ownership differences and cost differences that result from prevailing wage requirements. By comparing public projects built in states where prevailing wage laws are in effect with private projects, the impact of the law is confounded with cost differences between public and private projects.

To illustrate the problem the model presented earlier was re-estimated using data on construction projects from states without prevailing wage laws. Similar controls were used to insure that public projects were being compared with similar private projects. The results of this regression are reported in the third column of Table 1. Once again, public projects are significantly more expensive (31.7 percent) than comparable private projects. But because the projects examined were located in states that currently do not have prevailing wage laws, the cost differential can no longer be attributed to the law's impact. This result lends support to the notion that the public may be a more exacting owner than the private sector. It also suggests that it is inappropriate to assume that the higher costs of public projects are attributable to the presence of prevailing wage laws. A more appropriate analysis recognizes that there are two different dimensions to construction cost differentials. On the one hand, comparisons of public projects versus private projects can determine the extent to which the government may be a more

exacting owner. The other dimension considers the presence or absence of prevailing wage legislation. Combining these two different dimensions creates four different possibilities; private projects built where no prevailing wage law exists, public projects with no prevailing wage law, private projects where prevailing wage laws exist, and public projects with prevailing wage laws. Only the last category of construction projects is directly affected by the presence of a prevailing wage law.

Table 1: Regression Results

Variable	States w/ Laws Coefficient	States w/o Laws Coefficient
SCHOOL	.586013**	.769542**
HGHSCHL	.712087**	.878536**
HOSP	1.077311**	1.229640**
WARE	.016312	.425241**
OFFICE	.242328**	.588873**
PUBCODE	.276200**	.317366**
STEELDUM	-.045994	-.081977
WOODFRM	.150933**	.061925**
CEMENTDM	.091849**	.118236**
LNSQFEET	.562699**	.581263**
STORIES	.071699**	.110672**
ALTADD	-.160042**	-.066969**
(Constant)	8.187471**	7.569623**
	Adjusted R^2 = .62534 N = 5136 F = 210.08747	Adjusted R^2 = .67164 N = 2717 F = 186.24560

Dependent Variable is ln(real total costs) where total costs are reported in 1994 dollars
** coefficient is significant at the .01 level
the coefficients for the state dummy variables are not reported

Thus, in order to appropriately assess the impact of prevailing wage legislation on construction costs, this category must be isolated from each of the other possibilities.

The model used here to estimate the effect of prevailing wage legislation on construction costs is :

$C = a + b_1S + b_2T + b_3B + b_4A + b_5 ST + b_6Altadd + b_7PW + b_8Pubcode + b_8Interact + e$

where C = start cost or bid cost; S = project scale as measured by square footage; T = a vector of dummy variables indicating detailed structure type; B = a vector of building material dummy variables; ST = the number of stories; A = a vector of state dummy variables; *Altadd* = a dummy variable indicating whether the project was an alteration or addition; *PW* = a dummy variable indicating the presence or absence of a prevailing wage law; *Pub* = a dummy variable indicating ; *Interact* = (*PW x Pubcode*). The key components of this model are the variables *PW*, *Pubcode* and *Interact*. In combination these three variables allow us to estimate the effect of prevailing wage laws separately from the effect of public ownership. The *Pubcode* variable estimates the cost differential that exists between public and private projects, ceteris paribus, regardless of whether a prevailing wage law is in effect. The *PW* variable estimates the effect of prevailing wage laws on construction projects in states with laws regardless of whether they are public or private. Finally, the *Interact* variable picks up the direct effect of prevailing wage legislation on public projects since it is equal to one only in those cases where there is a public project in a state with prevailing wages. This model was estimated using the combined data for states with and without prevailing wage laws. The results are reported in Table 2. The coefficient on the interaction term (*Interact*) is positive but statistically insignificant indicating that the direct effect of prevailing wage laws on the cost of public construction projects is negligible. The presence of

a prevailing wage law also does not appear to have any significant effect on the costs of construction projects. Public projects in all states, however, are significantly more expensive (25.9 percent) than private projects as indicated by the coefficient on the variable *Pubcode*.

Conclusions

The results of this multivariate analysis of the impact of state prevailing wage laws on total construction costs indicates that, in contrast to earlier academic analyses as well as some casual statements, there is no measurable cost difference between similar structures as a result of prevailing wage requirements. Consequently, reforming or repealing these laws will not lead to the kinds of substantial savings promised by proponents of repeal. At the same time there are significant measurable cost differences between public and private projects of a similar nature. Researchers and politicians both should try to determine 1). why this differential exists and how and 2). what steps could be taken to lessen the difference.

Table 2. Regression Results: Determinants of Construction Costs for All States

Variable	Coefficient
SCHOOL	.628581**
HGHSCHL	.747973**
HOSP	1.109748**
WARE	.132805**
OFFICE	.342607**
PUBCODE	.259601**
LAW	.180579
INTERACT	.050779
STEELDUM	-.053093*
WOODFRM	.118633**
CEMENTDM	.106521**
LNSQFEET	.569458**
STORIES	.081728**
ALTADD	-.128803**
(Constant)	7.952916**

Adjusted R Square = .63792
N = 7854
F = 224.18097

Dependent Variable is ln(real total costs) where total costs are reported in 1994 dollars
** coefficient is significant at the .01 level
the coefficients for the state dummy variables are not reported

References

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Biographical Sketch

Mark Prus is Associate Professor of Economics at the State University of New York, Cortland. He has published articles on wage and occupational structures in the *Cambridge Journal of Economics, Journal of Economic History, Quarterly Review of Economics and Finance, Journal of Socio-economics, Journal of Economics Issues, Social Science Journal*, and *Research in Economic History*.