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PREVAILING WAGES AND GOVERNMENT CONTRACTING COSTS A review of the research

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Executive summary

For over a hundred years, many state and local governments have required that companies that want to contract for public works must pay their workers a wage that reflects wages commonly received in the area. The federal government adopted its own prevailing wage requirement with the Davis-Bacon Act of 1931. At the heart of these laws is the conviction that government, as a major buyer in the construction sector, should not act to drive down wages. Indeed, the civic-minded reformers who initially pushed for prevailing wage laws believed that the government ought to use its buying power to enhance the welfare of workers and their families.

Critics of prevailing wage laws argue that they inflate government contract costs. But a growing body of economic studies finds that prevailing wage regulations do not increase government contracting costs. Some of these studies use a cross-sectional approach, which compares costs of contracts subject to a prevailing wage with costs of contracts that are not during a common time period, and others use a time-series approach, which examine whether contract costs have changed with the adoption or repeal of a prevailing wage requirement. These studies also show that prevailing wage laws provide social benefits from higher wages

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and better workplace safety, increase government revenues, and elevate worker skills in the construction industry.

The issue, however, remains contentious. The current research counters the findings of a set of (mostly earlier) studies that relied on hypothetical models. The model works like this: the authors calculate a wage increase attributable to the prevailing wage regulation and then, assuming that the entire wage increase is passed through to the government in higher contract costs, calculate the higher contract costs. The wage increase calculation in these studies is typically flawed, but the most notable problem is the unquestioned assumption that higher wages lead to higher contract costs. Obviously, a study that presumes, without examination, that higher wages lead to higher contract costs tells us little about whether that is in fact the case. There are many reasons why higher wages do not necessarily lead to higher contract costs, and the findings of current research suggest that other factors erase much or all of the hypothetical additional costs the earlier models assume.

Although a few recent studies have adopted this “wage differential approach,” most modern literature has favored econometric approaches to compare situations where prevailing wages are applied and where they are not. These studies, more sophisticated in analytical terms, have found no statistical relationship between prevailing wage laws and contract costs, with only two exceptions. The first exception was a national study by Fraundorf et al. (1984) of construction costs in rural areas. The authors found sizable cost differences between government contracts that were subject to federal prevailing wage rules and private contracts that were not. As the first of the econometric studies, Fraundorf continues to be among the most commonly cited in the literature. But subsequent studies discovered that the authors left out a key variable—differences between public and private building design specifications—that would have controlled for the difference in public versus private construction costs. Once these differences are accounted for, later studies do not replicate the Fraundorf conclusion and find no impact of prevailing wages on contract costs.

The second exception in the modern econometric literature is a study of low-income housing construction in California. The study found that affordable housing

construction projects subject to prevailing wage laws were substantially more expensive for the government than projects that were not. Because this study is relatively new, scholars have not yet explored the reasons why the findings contradict the rest of the econometric literature. If labor-intensiveness, skill, and material-saving technologies are sufficiently different in the construction of subsidized housing than in the construction of public buildings or highways, then it is possible that prevailing wage regulations would affect this sector differently. However, the study’s findings seem implausible, since the cost estimates of the preferred model exceed possible savings in labor costs. Because scholars have not yet replicated the study, it is unclear if the findings relate to idiosyncrasies in the data and methodology, or to the peculiarities of subsidized housing construction.

With these exceptions, the modern econometric literature finds no cost impact on public construction associated with the implementation of prevailing wage regulations. The literature suggests a number of possible reasons for the absence of a link between prevailing wage laws and overall contract costs.

- Prevailing wage regulations do not, in all cases, increase wages. Public contractors may pay at prevailing wage rates without the regulation.
- Average labor costs, including benefits and payroll taxes, are roughly one-quarter of construction costs. Thus, even if a prevailing wage regulation raised wages by 10%, the impact on contract costs would be less than 2.5%. Thus, even if there is an increase in contract costs it is likely to be small—to the point of being undetectable.
- Improved productivity can offset higher wages. Better-skilled workers attracted by the higher wage might complete the job in less time, or firms looking to reduce their higher labor costs might utilize labor-saving technologies.
- Higher wage costs might be offset through “factor substitution,” i.e., the substitution of more expensive labor with, say, less-expensive materials. As a practical matter, this point assumes that workers are roughly of the same skill level. But it shows that worker wages

are only one of the avenues contractors can use to win project bids.

- Contractors might absorb the higher wage costs and pay for them out of their profits rather than pass them on to the government.

Some recent studies have expanded the analysis of prevailing wage regulations to determine whether they have indirect costs or benefits for the economy and society. These studies have found that prevailing wage laws can enhance state tax revenues, industry income, and non-wage benefits for workers; lower future maintenance and repair costs; reduce occupational injuries and fatalities; and increase the pool of skilled construction workers—to the benefit of both the public and the construction industry.

At this point in the evolution of the literature on the effect of prevailing wage regulations on government contract costs, the weight of the evidence is strongly on the side that there is no adverse impact. Almost all of the studies that have found otherwise use hypothetical models that fail to empirically address the question at hand. Moreover, the studies that have incorporated the full benefits of higher wages in public construction suggest that there are, in fact, substantial, calculable, positive benefits of prevailing wage laws.

Introduction

Prevailing wage laws require that contractors on public works projects pay their workers at least the locally prevailing wages and fringe benefits paid on similar projects in the area. Kansas was the first state to adopt a prevailing wage law, in 1891, as part of a broad-based effort by the Republican legislature to confront the social costs of 10-12 hour workdays, child labor, and downward wage pressure (Phillips 1998). New York followed suit in 1894, Oklahoma in 1909, Idaho in 1911, Massachusetts in 1914, and New Jersey in 1923. The first and most significant of the federal laws establishing the prevailing wage rule was the 1931 Davis-Bacon Act,¹ which requires payment of wages “prevailing” in a local area to workers on federally financed construction projects worth at least \$2,000.² Davis-Bacon gained bipartisan support during the Great Depression, when unscrupulous contractors

won bids based on low pay for workers (Gujarati 1967) and then delivered shoddy workmanship. It is named for its two Republican co-sponsors and was signed by President Herbert Hoover.

Under Davis-Bacon, the prevailing rate is the rate paid to at least 50% of workers in a construction occupation for a local area. If there is no single rate for at least 50% of workers in that occupation, then the prevailing wage is the average rate paid in the area for that occupation. States, counties, and cities have adopted their own prevailing wage legislation, and policies vary widely. Prevailing wages in states and localities might be set as the local union wage rate, the average wage for construction occupations in the area, or a combination of the two.

Thirty-two states and the District of Columbia currently have prevailing wage laws. Nine states had laws but repealed them, starting with Florida (1979) and Alabama (1980) (Kelsay et al. 2004; Phillips et al. 1995).³ Repeals have relied on arguments that prevailing wage rates increase costs on public construction contracts (Phillips 1998), and assertions that repeal will save 15-25% on construction costs are commonly echoed in the news media. These claims, however, do not stand up to serious examination of the relationship between prevailing wage laws and government contract costs.

A growing body of economic analysis finds that prevailing wage regulations do not inflate the costs of government construction contracts. A simple premise underlies the hypothesis that prevailing wages raise costs: the laws result in higher wage costs for contractors, and contractors pass these costs on to the government. Although this seems like a plausible outcome, there are many reasons why the costs to the government might be the same regardless of the wage differences. For example:

- Contractors might pay the wages required under prevailing wage laws even if the law does not require it.
- Labor costs are not the dominant costs in government construction contracts. Even including benefits and payroll taxes, labor costs are roughly 20-30% of construction contracts, according to the Census of Construction (Phillips 1998).⁴ Thus, for example, if labor costs are 25% of total costs and prevailing wage rules

raise wages by 10%, the impact on contract costs would be no more than 2.5%. Thus, even if there is an increase in contract costs, it is likely to be small—to the point of being undetectable in some instances and/or by some studies.

- Higher wages might be offset by a rise in productivity. Prevailing wages can attract better-skilled, more productive workers, or firms may rely on higher managerial productivity or invest in labor-saving technologies to offset higher labor costs (Philips 1996).
- Higher wage costs might also be offset through “factor substitution,” i.e., substituting more expensive labor with, say, cheaper materials.⁵
- Contractors not subject to prevailing wage laws might retain the money they save in wages as higher profits rather than passing the savings on to the government. Alternatively, contractors paying prevailing wages might absorb the higher wage costs, paying for them out of their profits rather than passing them on.⁶

As with any economic analysis examining the impact of a policy on an economic outcome, the challenge is to isolate the impact of the policy from all of the other factors that might influence the outcome. Take, for example, a study that compares the costs of two sets of construction contracts, one set subject to prevailing wage rules and one set not. The difference in the costs of these contracts is influenced by many factors other than the prevailing wage. If, for example, more of the contracts subject to the prevailing wage happen to be for taller buildings, or are completed during a building boom when construction costs are higher, or use more expensive building materials, those contracts might be more expensive for reasons unrelated to prevailing wage regulations. The studies described below take a variety of approaches to this challenge—ranging from ignoring it to using sophisticated econometric techniques to control for the differences. As scholars have engaged in this work over the years they have learned from their predecessors and refined their techniques for identifying the factors that influence contract costs and improving ways to account for them.

The approaches researchers have taken to study this question fall into three main categories:

- **The wage differential approach.** Compare wage levels in contracts subject to prevailing wage laws with wage levels in contracts not subject to the laws, and assume that all additional wage costs are passed through to the government by contractors.⁷
- **Cross-sectional analysis.** Compare contracts subject to the prevailing wage and contracts not subject to the prevailing wage in the same time period. Typically these studies compare the costs of government contracts in states and other jurisdictions with prevailing wage laws with contracts in places without prevailing wage laws. Some studies, however, compare public and private contracts. In addition, in some jurisdictions, some public contracts are subject to prevailing wage laws and some aren't. For example, a local school construction contract might be subject to prevailing wage requirements if the state funds over half the cost but not subject to the requirement if the state pays less than half. Some studies have used these situations to compare the costs of public contracts within the same jurisdiction.
- **Time series analysis.** Compare government contract costs in time periods with a prevailing wage requirement and costs in time periods without one.

The wage differential approach to evaluating the impact of prevailing wage laws

The wage differential approach consists essentially of two steps. First, researchers examine the relationship between prevailing wage regulation and wage rates. Are wages higher on contracts subject to prevailing wage rules? Second, the higher wages that are calculated are then presumed to be passed through to the government in higher contract costs.

In 1979 the General Accounting Office (today the Government Accountability Office, or GAO) used the wage differential approach in studying a sample of 30 federal projects subject to Davis-Bacon, estimated to value about \$25.9 million (GAO 1979). The GAO concluded that,

due to incorrect procedures used by the Department of Labor, wages paid were actually higher than prevailing wage levels in 12 of the projects. Wages on the other 18 projects were lower than the prevailing rate. For the 12 projects set at higher rates, wages were about 36.8% above the prevailing wage rate.⁸ The higher prevailing wage rate was presumed to have been passed through in higher contract costs, driving up total construction costs by an average of 3.4% and raising federal construction costs by \$228 million to \$513 million annually.

The Mackinac Center for Public Policy (Vedder 1999) employed a wage differential approach to calculate costs of prevailing wages on Michigan government construction. The author used a sample of wages paid in the Detroit area suburbs to calculate a 40% difference between market and prevailing rates, a premium that would, hypothetically, drive up construction costs in Michigan by 10%.⁹ Applying this 10% to state construction costs and non-construction capital outlays resulted in an estimate of \$275 million in additional costs due to state prevailing wages.

Keller and Hartman (2001) attributed a 17% wage difference between public and private construction contracts to the state prevailing wage law. The authors compared a mean hourly rate of \$17 for school construction projects that paid prevailing wages and \$14.13 for private sector projects.¹⁰ The authors calculated a 2.25% increase in construction costs by applying the wage and benefit differences to the sample of total project costs, and then used simple accounting to conclude that prevailing wages cost the state an additional \$66.8 million over a six-year period.

A study by the Beacon Hill Institute found that the Department of Labor's Wage and Hour Division (WHD) incorrectly set hourly wages too high for nine major construction occupations. The authors compared average wages paid under the Davis-Bacon Act with wages for those occupations reported in the Bureau of Labor Statistics Occupational Employment Survey. The WHD set hourly wages an average of \$4.43, or 22%, above BLS average wages.¹¹ If these wage differences were applied to federal construction, government costs would increase by 9.9%. The authors estimate these differences to raise government construction costs by \$8.6 billion per year (Glassman et al. 2008).¹²

The Center for Government Research (CGR) estimated that prevailing wage laws increase total construction contract costs by 36% in New York State's metropolitan regions.¹³ CGR arrived at this estimate by comparing prevailing wage rates with the market rates of construction occupations. Prevailing wage data collected from the Department of Labor were compared with median wages of construction occupations in seven metropolitan areas in New York and outside the state.¹⁴ The authors then compared labor costs to total construction using a prototype project, or an imaginary model of average construction costs, and applied the markup rates to total construction costs.¹⁵ They concluded that prevailing wages raise total costs of a typical construction project in the New York metropolitan areas by about 36% (CGR 2008).

Wage differential studies are prone to two primary areas of criticism. The first is the way in which some of them calculate the additional wages resulting from prevailing wage regulations. The GAO and Beacon Hill studies' results are based on contracts in which, the authors assert, prevailing wages were miscalculated. But miscalculation of wages under prevailing wage laws is an implementation problem that does not reflect the merits of the laws themselves. Further, with regard to the GAO study, the Department of Labor and other critics argued in congressional testimony that the GAO's methodology was fraught with poor scholarship. Why did the agency exclude the 18 projects for which prevailing wages were set too low? The inclusion of these projects might have offered an entirely different picture of the net impact of the Davis-Bacon law. GAO also acknowledged that its sample of projects was too small for its calculations to have statistical validity. Mackinac (Vedder 1999) assumed that a wage differential in the Detroit suburbs would be the same in the rest of the state, but did not test this assumption.

The second and more fundamental criticism of these studies is how they allocate the higher wages they estimate to contract costs. These studies assume, rather than empirically examine, the relationship between higher wages and construction costs. In contrast to the other methodological approaches discussed in this review, the wage differential studies do not rely on natural experiments to compare costs of contracts subject to and not subject to

prevailing wage regulations. As a result, they are unable to control for other factors that influence construction costs. As outlined above, there are several reasons why higher wages might not be passed through and, thus, assuming that they are is not a safe assumption. The flawed assumptions of the wage differential approach, and the inability to control for other cost influences, limit its ability to determine with much validity whether prevailing wage laws raise government contracting costs.

Cross-sectional analysis

The existence of prevailing wage laws in some jurisdictions but not others and the fact that in some jurisdictions some public contracts are subject to the regulations but others are not create an opportunity for a natural experiment to study the impact of prevailing wage legislation on government construction costs. The cross-sectional approach used in the studies described here use econometric techniques to compare costs of construction when it is subject to prevailing wage rules with the costs when it is not. This method reduces the need to control for time effects and seasonality concerns within the construction industry, although it is necessary to control for regional differences.

In the first econometric cross-sectional study of prevailing wage laws and government construction costs, Fraundorf et al. (1984) collected a sample of construction data from rural counties across the country.¹⁶ They employed a multivariate regression model to compare costs of public construction contracts subject to federal prevailing wage regulation with costs of private construction contracts that were not. The model included controls for a range of factors: regional variation, project size, and building type. The results showed that public construction was an average of 26.1% more expensive than private construction. The authors acknowledged that this estimate seemed high. It was unlikely that prevailing wage laws would generate such a dramatic increase in contract costs, since labor costs at the time averaged 30% of total construction costs. However, they were unable to explain the discrepancy.

Prus (1996) replicated the Fraundorf model but was better able to isolate the effects of prevailing wages from other influences on construction costs. Rather than compare

federal projects with private construction, he compared costs of public and private projects in states where prevailing wage laws existed and places where they did not. He found that, even in non-prevailing wage states, government construction was 32% more expensive than private. This finding suggested that the earlier Fraundorf study had measured price differences between public and private construction attributable to causes other than prevailing wages. Controlling for construction cost differences between states, Prus did not find a statistically significant difference in construction costs in states with prevailing wage laws and those without.

In a study of construction costs in the Intermountain and Southwest regions, Phillips (1996) compared construction cost data in five states with prevailing wage laws with four states without prevailing wage laws.¹⁷ He found that costs were lower in the states with prevailing wage laws than in the states in the sample without them. The author attributed this finding to higher productivity among workers in states with prevailing wage laws.

Phillips (1998) conducted a study of school construction costs in the Great Plains states. New school construction data by school type showed that costs were not statistically different in states with prevailing wage laws than in states without them.

Prus (1999) examined both public and private school construction across the mid-Atlantic states with and without prevailing wage laws and across counties in Maryland with and without the laws. The study found that public schools cost more than private, irrespective of prevailing wage laws. In addition to this distinction, Prus identified region, the distinction between new and renovated buildings, building type, building material, and building size as important predictors of construction cost differences, but he found no evidence of an impact of prevailing wage laws.

Azari-Rad et al. (2002; 2003) used a national sample of school construction data to test whether public schools built under prevailing wages cost more than public schools that were not. The studies found that building type, project size, seasonal start times, and whether the school was a private or public building had a significant impact on contract costs. Azari-Rad et al. (2002) found that high schools cost 4.6% more than elementary and

middle schools. Azari-Rad et al. (2003) noted that public contract costs were 15.5% higher than private contracts in its sample of new school construction between 1991 and 1999. But controlling for construction costs among states, this study found that construction costs were not statistically different in states with or without prevailing wage regulations.

After Fraundorf, only one cross-sectional study has found prevailing wage regulations to be associated with higher government contract costs. A study by Dunn et al. (2005) concluded that prevailing wage rates in California raised public costs of low-income residential projects anywhere between 9% and 37%.¹⁸ In California, some public housing construction is exempt from the prevailing wage statute, so the researchers were able to compare construction costs between projects that were subject to prevailing wage regulation and projects that were not. The researchers used two different models. One model reported prevailing wages leading to an increase in contract costs of 9-11%. The results of the researchers' preferred model, which used voter data, salary data, and union information as instrumental variables across the California region, found that prevailing wage laws raised construction contract costs by as much as 19-37%.

Phillips (2006) found that states with prevailing wage laws had higher productivity, with about 13% to 15% more value-added per worker. The 31 states with prevailing wage laws had higher rates of construction training programs, and trainees were more likely to complete their programs compared to states without prevailing wage laws. This study suggested that productivity was a key reason why other studies could not find higher contract costs from prevailing wage laws.

The weight of the evidence from the cross-sectional studies is that prevailing wage regulations do not impact construction costs. All but two studies found that prevailing wages do not raise costs of government construction and, of those two, the findings from Fraundorf were not replicated when the model was improved, most notably by controlling for differences between public and private construction (other than prevailing wages). Researchers have speculated that the factors causing higher public costs include different building design specifications (Fraundorf 1984; Prus 1996); Azari-Rad

et al. (2002) suggested higher public costs might arise from spikes in demand created by government decisions to develop multiple projects. These spikes, referred to as "cost storms," were an example of government's power to affect market conditions in the construction industry through large capital investments.

Dunn et al. (2005) is the only study other than Fraundorf to employ modern econometric techniques that show cost effects of prevailing wage laws. Why this one study contradicts the general econometric literature is not yet known.¹⁹ It is possible that low-income subsidized housing construction might require less skill, lower costs of materials, and a larger share of labor in total cost compared to overall government construction. Labor-intensiveness, skill, and material-saving technologies involved in affordable housing construction might be sufficiently different from those used in other public building and road construction that the operation of prevailing wage regulations works differently in this sector. If this is the case, then prevailing wage regulations might operate differently in the affordable housing sector, which is a small share of government construction relative to construction on highways, schools, and infrastructure. However, the biggest weakness of the study is that a 19-37% difference in prevailing wage and non-prevailing wage contracts is implausible. Assuming that labor comprises a 25% share of total construction costs, a savings of that magnitude would seem highly unlikely. The Dunn study's unique findings might also be due to idiosyncrasies in the data used or methodology employed that may emerge as scholars attempt to replicate this result.

If these results are replicated, then the Dunn study may raise questions about prevailing wages in subsidized housing construction. However, it does not represent the rest of the current literature, which has shown that prevailing wage laws have no effect on contract costs.

Time series analysis

Another approach is to compare construction costs before and after the passage or repeal of a prevailing wage law. These studies generally account for time trends in the construction industry.

Thieblot (1986) used the opportunity of President Nixon's suspension of the Davis-Bacon Act in March

1971 to conduct such a before-and-after comparison. He examined federal construction projects that were re-bid during the 34-day suspension and compared the new bids to those originally submitted. Thieblot initially estimated the re-bids to have resulted in savings on federal construction costs of less than 1% but, once controls for inflation were factored in, the differences in the re-bids suggested a savings of 4.74%. Thieblot acknowledged the possibility of biased results because full disclosures of the original bids were made publicly available before the re-bid process; thus, bidders may just as likely have been responding to what they saw in their competitors' bids as to the rescission of the prevailing wage rule.²⁰ It was unclear if Thieblot's analysis measured the contractors' ability to use information to their advantage, or if the experiment captured the effects of the suspension of the Davis-Bacon Act.²¹ In effect, this study could not overcome the problem of controlling for the knowledge bidders had about their competitors' prior bids on the outcome of contract costs.

In a study of new school construction in British Columbia, researchers looked at six years of contract costs before and after the adoption of a prevailing wage law in 1992. Bilginsoy and Philips (2000) found that, without introducing any controls, prevailing wages correlated with 16% higher construction costs. Once the authors controlled for the business cycle, type of building, the number and size of the contractors, regional differences, and time trends, they found no statistically significant increase in construction costs. This indicated that the cost differences were explained by numerous factors other than the prevailing wage legislation.

Phillips (2001a) used a sample of 391 new school construction projects for a pooled cross-sectional time series approach to examine cost effects of prevailing wages in Kentucky, Michigan, and Ohio.²² He noted that urban schools cost 10.5% more than rural schools in the three-state region and that breaking ground in the fall added 10% to the total cost compared to projects started in the spring; such a (perhaps unexpected) finding highlights the importance of proper controls in these analyses. The study found no statistically significant increase in construction costs associated with prevailing wage laws.

In summary, with the exception of the 1986 Thieblot study, which faced a critical methodological challenge,

time-series studies generally find that prevailing wage laws do not increase construction costs.

Do prevailing wage laws have societal costs or benefits?

Recent case studies of prevailing wage legislation have analyzed not just costs to government, but also the wider costs or benefits to society. Some of these studies have shown that prevailing wage laws protect a state's economy, and that claims of government savings from the repeal of the legislation would pale in comparison to losses in revenues and income. These studies demonstrate implicit threats to the overall state economy, since income losses could lead to reduced consumer spending. Other studies show that prevailing wage laws discourage unscrupulous contractors who compete by hiring low-skilled labor, cheating on payroll taxes, or risking safety concerns at construction sites.

Belman and Voos (1995) concluded that the losses in income and state revenues from repeal of Wisconsin's prevailing wage law would far outweigh potential cost savings from lower wages. The study found that the proposed repeal resulted in \$123 million of income loss in construction and a net fiscal loss to the government of \$6.8 million after accounting for decreased contract costs and declines in tax revenue. Kelsay et al. (2004) calculated potential economic losses of between \$318 million and \$384 million with the repeal of the prevailing wage law in Missouri. This estimate included \$294 million to \$356 million in lost income, \$5.7 million to \$6.9 million in lost sales taxes, and \$17 million to \$21 million in lost income taxes. The authors calculated these figures based on low- to high-range annual earnings losses of \$1,010 and \$1,218 per construction worker.

Prevailing wage laws have been shown to have generally positive effects on the construction industry by expanding the pool of construction workers trained through apprenticeship programs. Studies have shown that apprenticeship training programs are fewer in states without prevailing wage laws. In Utah, state apprenticeships plummeted 40% following the 1981 repeal of prevailing wage laws (Philips et al. 1995). In Kansas, apprenticeships dropped 38% after the 1987 repeal. As part of the Kansas study, Philips (1998) conducted a cross-state examination

of construction apprenticeships in prevailing wage and non-prevailing wage states. Apprentices were in decline nationwide, but the number of apprenticeships in states with prevailing wages declined 27%, compared to 53% in non-prevailing wage states.

Researchers have also examined occupational injuries and prevailing wage legislation. One study showed that construction-related fatality rates were 25% lower among workers in states with prevailing wage laws. Fatality rates were even lower in states where prevailing wages were strongly enforced (Philips 2006). Azari-Rad et al. (2005) found that, between 1976 and 1999, states with prevailing wage laws experienced lower injury rates.²³ This was consistent with the hypothesis that injury rates are lower in states regulated by prevailing wage laws because the regulation encourages training and retention of experienced workers.

Prevailing wage laws have also been shown to protect the bottom line of a state's construction budget. In the decade following the 1981 repeal of prevailing wages in Utah, cost overruns tripled, and Phillips et al. (1995) attributed the trend in part to a rise in change orders

reflecting a shift to a low-skilled workforce and lower productivity. Data limitations have hindered further study of the question of cost overruns; most studies of contract costs use data from F.W. Dodge on the accepted bid prices,²⁴ but these data do not capture change orders associated with cost-overruns (Azari-Rad et al. 2002).

The absence of prevailing-wage-certified payrolls also appears to attract bidders who are tempted to evade their obligations to make payments for worker's compensation, Social Security, and unemployment insurance (Philips 2006).

Conclusion

An overwhelming preponderance of the literature shows that prevailing wage regulations have no effect one way or the other on the cost to government of contracted public works projects. And as studies of the question become more and more sophisticated, this finding becomes stronger, and is reinforced with evidence that prevailing wage laws also help to reduce occupational injuries and fatalities, increase the pool of skilled construction workers, and actually enhance state tax revenues.

Endnotes

1. The two other major federal laws are the Walsh-Healey Government Contracts Act of 1936, which covered employers that manufacture or supply materials to the federal government, and the Service Contract Act of 1965, which affects suppliers of personal and business services.
2. Congress extended the definition of “prevailing wage” in 1964 to include fringe benefits.
3. The others are Arizona, Colorado, Idaho, Kansas, Louisiana, New Hampshire, and Utah. Oklahoma’s law was invalidated by the courts in 1995.
4. Note that the total cost of construction contracts in this calculation excludes land acquisition, architectural design, or management fees.
5. Factor substitution assumes a homogenous labor pool, or similar skill sets among workers.
6. Belman and Voos cite an unpublished 1990 study for the Arizona District Council of Carpenters. The authors of the report found that, of the \$271,000 to \$350,000 saved in wages and benefits, only \$100,000 was passed on to the contracting agency.
7. Armand Thieblot discussed the wage differential approach in the book, *Prevailing Wage Legislation: The Davis-Bacon Act, State “Little Davis-Bacon Acts,” the Walsh Healey Act and the Service Contract Act*, University of Pennsylvania, Wharton School, 1986, p. 94.
8. Wage levels on the 12 projects ranged from 5% to 123% higher than the prevailing rate.
9. Labor costs were assumed to be about 25% of total construction.
10. Benefits under prevailing wages paid \$6.28 compared to \$4.67 in the private sector.
11. Wages were weighted according to the number of workers in the occupation and by metropolitan area.
12. This calculation assumes that labor comprises 50% of total construction costs. This determination was made following conversations with construction contractors. The authors do not state whether this estimate excludes profits or other items for contractors.
13. Prepared for the New York Economic Development Council.
14. Median wages were provided by the Bureau of Labor Statistics Occupational Employment Survey.
15. The authors state that productivity, cost of materials, and the labor share of construction costs would remain constant for purposes of the analysis.
16. The authors collected construction cost data from in-person interviews with contractors across the country, and selected a representative sample of 215 private and public nonresidential construction projects started in 1977 and 1978.
17. The states included in the study were New Mexico, Utah, Texas, Oklahoma, Wyoming, Nevada, Arizona, Colorado, and Idaho.
18. This range included results from variations on two different econometric models. The ordinary least squares model included two variations of the dependent variable, one with a restricted definition of construction costs that included only site preparation and building construction, and one that included all costs, such as site preparation, architect and design fees, and engineering management fees. These same dependent variables were tested in the instrumental variables model.
19. The authors have not yet made their data available.
20. As Thieblot wrote: “A disclaimer to this estimate is necessary, however, because the bid-rebid process was not pure. In addition to the time difference problem, all of the original bids were disclosed before rebids were made, which points to the high probability that some gamesmanship was at work in the process, independent of the prevailing wage rate elimination” (p. 105). Steve Allen (1983) noted Thieblot’s results were not an accurate measure of federal contract cost savings (pp. 716-7).
21. Steve Allen (1983) noted Thieblot’s results were not an accurate measure of federal contract cost savings (pp.716-17).
22. All three states had prevailing wage laws for school construction during some portions of the 1991-2000 study period.
23. Injury data were obtained from the Bureau of Labor Statistics, Survey of Occupational Injuries and Illnesses, 1976-99.
24. F.W. Dodge bid price data exclude management costs, architectural fees, and land acquisition.

Annotated bibliography

Allen, Steve. 1983. "Much Ado About Davis-Bacon: A Critical Review and New Evidence." *Journal of Law and Economics*. Vol. 26, No. 3, pp. 707-36.

Allen argues the Wage and Hour Division's wage determinations under the Davis-Bacon Act could affect construction costs, although the costs associated with errors in wage determinations may be lower than previously reported. Enforcement of prevailing wage laws could also affect total costs. Total construction costs would also be affected by factor substitution, although it's difficult to know the precise pattern as wages change.

Azari-Rad, Hamid, Peter Philips, and Mark Prus. 2002. "Making Hay When It Rains: The Effect Prevailing Wage Regulations, Scale Economies, Seasonal, Cyclical and Local Business Patterns Have on School Construction Costs." *Journal of Education Finance*. Vol. 23, pp. 997-1012.

In response to anecdotal evidence that school construction costs grew more rapidly than costs in the overall construction market, the authors examine the role of prevailing wage laws and inflationary pressures in school construction. In the model, dummy variables were used to identify public and private schools and the presence of prevailing wage laws. The results showed no significant cost differences in school construction projects related to prevailing wage laws. However, the decision by school districts to build numbers of schools at once creates "cost storms," overwhelming the local construction market by stimulating demand. The implications show that construction costs are strongly related to school district decisions on the size of the school, since economies of scale exist, but at some point the benefits will be offset by the market-crowding conditions associated with the demand for a large-scale project. Other findings showed significant cost effects for the business cycle and economies of scale. For example, the economies of scale statistic showed a 91% increase in cost every time the size of the school doubles.

Azari-Rad, Hamid, Peter Philips, and Mark Prus. 2003. "State Prevailing Wage Laws and School Construction Costs." *Industrial Relations*. Vol. 42, No. 3, pp. 445-47.

This 50-state study of school construction from 1991 to 1999 shows that prevailing wage laws have no signifi-

cant effect on school construction costs. The models included controls for business cycle, building size, school type, the season in which the project broke ground, and public vs. private funding. Controlling for other effects on construction costs, there was no statistically significant increase associated with prevailing wage regulations. The findings showed economies of scale, and that doubling the size of a school raised costs by 93%. New high schools were 5-8% more expensive, possibly because of the increased complexity of science labs, language centers, and recreational specifications. Public schools cost 15.5% more than private schools, independent of prevailing wage regulations. The results counter claims that taxpayers could build additional schools at less cost by repealing prevailing wage laws.

Azari-Rad, Hamid, Peter Philips, and Mark Prus. 2005. *The Economics of Prevailing Wage Laws*. Burlington, Vt.: Ashgate Publishers.

This book presents empirical evidence on the effects of prevailing wage laws on government costs and examines whether the laws have broader social costs or benefits. Experts on prevailing wages in the construction industry contributed chapters on construction costs, retention of a skilled workforce, occupational safety in the construction industry, pensions and benefits, and the impact of the repeal of prevailing wage laws on demand for public assistance.

Belman, Dale, and Paula Voos. 1995. *Prevailing Wage Laws in Construction: The Costs of Repeal to Wisconsin*. Milwaukee: Institute for Wisconsin's Future.

Belman and Voos found that the direct costs of repealing prevailing wage regulations outweighed the presumed savings in Wisconsin. The state would be faced with a net revenue loss of \$6.8 million annually. The calculation includes a loss of \$11.6 million in sales and income tax revenues and a full transfer to the state of the presumed savings of \$4.8 million. The authors question whether the savings would fully transfer to the government, however, citing evidence that contractors would pocket more than two-thirds of the savings. The authors note that net effects

didn't include projected costs to society and harm to the construction industry, such as reduced productivity, the transition to a low-skilled workforce, a rise in occupational injuries, and cutbacks in consumer spending. An estimated 100,000 construction workers and their families would also be expected to lose about \$123 million in income across the state.

Bilginsoy, Cihan, and Peter Philips. 2000. "Prevailing Wage Regulations and School Construction Costs: Evidence From British Columbia." *Journal of Education Finance*. Vol. 24, pp. 415-32.

Bilginsoy and Philips conducted a six-year analysis of the British Columbia prevailing wage law, established March 30, 1992. Half of the sample of 54 new public school construction projects commenced before the law went into effect, and half began afterward. When all controls were excluded from the model, prevailing wages appeared to raise construction costs by 16%. However, the results show no statistically significant increase in costs once business cycle, type of building, the number and size of the contractors, regional dummy variables, and time trends are factored in.

Center for Government Research. 2008. *Prevailing Wage in New York State: The Impact on Project Cost and Competitiveness*. Prepared for the New York State Economic Development Council. Rochester, N.Y.: Center for Government Research.

The Center for Government Research (CGR) estimated that prevailing wage laws raised construction costs by 36% in New York's metro regions. However, the study did not empirically test whether the increase was related to prevailing wage regulations. CGR assumes that the wage differences fully transfer in government costs. The model compared prevailing wage rates with the market rates of construction occupations in several metropolitan areas in New York and several others across the country. The study then compared labor costs to total construction costs using a prototype project, or a model created to mimic typical construction costs. It then applied the markup rates to total construction costs. The calculation assumed that productivity, material costs, and the labor share of construction remained constant.

Department of Fiscal Services. 1989. *Maryland's Prevailing Wage Law: A Study of Costs and Effects*. Annapolis, Md.: Department of Fiscal Services.

Maryland's prevailing wage laws were estimated to raise costs of state building construction 5-15% in metropolitan areas. At the time, public school construction projects were subject to state prevailing wage laws if the state funded at least 75% of the costs. The sample included 20 new and renovated school construction projects in 1987 and 1988, 14 of which were built under prevailing wage laws. Using a multiple regression model, DFS estimated prevailing wages increased costs by \$11 per square foot, or about 15%. But this first statewide study of prevailing wage laws and construction costs in Maryland was later found to have methodological problems regarding a small sample size and the lack of controls for new and renovated projects (see Prus 1999).

Dunn, Sarah, John Quigley, and Larry Rosenthal. 2005. "The Effects of Prevailing Wage Requirements on the Cost of Low-Income Housing." *Industrial & Labor Relations Review*. Vol. 59, No. 1, pp. 141-57.

In a study of prevailing wage laws and construction costs in the low-income housing sector, the authors used econometric approaches to measure the effect of prevailing wage laws on final project costs across California. The sample of 205 subsidized housing projects undertaken from 1997 to 2002 included a control group of 30 projects that were not subject to prevailing wage laws. Construction data were collected on projects approved and completed over a five-year period through May 1, 2002. Prevailing wage rates were paid on 175 of the 205 new public housing projects, although there was no attempt made to specify whether projects paid federal, state, or local prevailing wages. In California, some public housing construction was exempt from the statute, so prevailing wages were not paid on 30 of the projects. In the model preferred by the authors, instrumental variables (IV) were used to control for endogenous factors that affected prevailing wage laws across regions. The information for this variable was extracted from voter registration information, union membership, homeownership, age, and income data. The authors reasoned that political influences and economic conditions were likely to affect

whether a region adopted prevailing wage legislation. The IV model showed that prevailing wage laws raised costs of low-income residential projects 19-37%. The ordinary least squares model showed that prevailing wages raised contract costs 9-11%. The conclusion reports the range of results, rather than a confidence interval on the preferred model.

Fraundorf, Martha, and Mason Farell. 1984. “The Effect of Davis-Bacon Act on Construction in Rural Areas.” *Review of Economics and Statistics*. Vol. 142, No. 6.

In the first econometric study of prevailing wages and federal construction costs, the authors used construction data they had collected in 1977 and 1978 from in-person interviews with contractors working on 215 new non-residential buildings in rural areas across the country. About half (113) of the projects were federally funded and built under the Davis-Bacon Act, and the remainder (102) were private construction projects. The results showed that public projects—all of which were subject to the Davis-Bacon Act—were generally 26.1% more expensive than private construction. At the time, labor costs (including wages, benefits, and payroll taxes) comprised no more than 30% of total costs. The authors acknowledged that the estimate of 26.1% was high. Subsequent research (Prus 1996) determined that the authors had inadvertently excluded a key variable controlling for public versus private projects. Consequently, they had captured the differences between public and private costs, but were not able to isolate the effects of prevailing wage laws.

General Accounting Office. 1979. *The Davis-Bacon Act Should Be Repealed*. Washington, D.C.: GAO.

This study has been widely cited as evidence against prevailing wage laws, despite later criticisms over its methodology. The GAO argued that the Davis-Bacon Act should be repealed because it was inefficient and unnecessary and raised federal government costs by several hundred million dollars a year. In a sample of surveys collected on 30 federal projects, wages paid were higher than the prevailing rates in 12 of the projects, and lower in others. The GAO targeted the projects with higher wage rates to show a 3.4% increase in total construction costs, which would raise federal construction costs by \$228 million to \$513 million

annually. The study based its findings on simple accounting to show hypothetical savings from the repeal of the Davis-Bacon Act, but it was not able to establish a causal link between prevailing wage laws and government costs. The GAO acknowledged that the sample size was insufficient to calculate construction costs with any statistical validity. However, it stated that the random nature of the sample was representative of federal construction.

Glassman, Sarah, Michael Head, David Tuerck, and Pal Backman. 2008. *The Federal Davis-Bacon Act: The Prevailing Mismeasure of Wages*. Boston, Mass.: Beacon Hill Institute for Public Policy Research, Suffolk University.

This paper argues that the Davis-Bacon Act should be repealed on grounds that the wage determinations set by the Department of Labor (DOL) do not reflect the true wage prevailing in a local area. Prevailing wage rates set by the DOL were on average 13% higher than market rates, i.e., the average wages reported for construction occupations by the Bureau of Labor Statistics Occupational Employment Survey. This difference was then applied to the federal budget to estimate a 9.91% cost increase, or \$8.6 billion annually. The authors attributed the wage differences to unrepresentative surveys and measurements that resulted in an upward bias in wage estimates.

Gujarati, D.N. 1967. “The Economics of the Davis-Bacon Act.” *Journal of Business*. Vol. 40, No. 3, pp. 303-16.

Gujarati’s examination of prevailing wages across metropolitan and non-metropolitan counties found that prevailing wages are often set as the union wage for occupations in the construction industry. The author based this finding on 372 wage determinations from 300 counties from 1960 to 1961. The implication of the findings was that the Davis-Bacon Act inflates total contract costs because it favors union contractors who pay higher wages to workers. This study does not reflect the current decision-making process at the Department of Labor, nor does it reflect the present composition of unions in the construction industry.

Keller, Edward, and William Hartman. 2001. "Prevailing Wage Rates: Effects on School Construction Costs, Levels of Taxation and State Reimbursements." *Journal of Education Finance*. Vol. 27, pp. 713-28.

The authors showed that prevailing wage rates were an average of 17% higher in the public sector compared to wages in the private sector in Pennsylvania, and suggested that higher wages would result in sizeable cost burdens to the state. The average wage difference of \$2.87, and the difference in benefits of \$1.62, or 21.5% combined, would result in a total cost increase of \$75 million in school construction. The study uses a sample of school construction projects from 1992 to 1997 in which school districts covered 89% of the cost and the state covered the rest. This study examines the differences between wages paid on public and private construction contracts. It does not empirically observe how these costs would be passed through, but it assumes that lower wage costs would mean lower government costs.

Kelsay, Michael, Randall Wray, and Kelly Pinkham, 2004. *The Adverse Economic Impact From the Repeal of the Prevailing Wage Law in Missouri*. Working Paper, Department of Economics, University of Missouri.

An input-output analysis using RIMS II multipliers estimated total economic losses of between \$318 million and \$384 million annually from proposed repeals of prevailing wage laws. The breakdown included \$294-356 million in lost income, \$5.7-6.9 million in lost sales tax collections, and \$17.7-21.4 million in lost income taxes. The low and high numbers were based on estimated annual income losses of \$1,010-\$1,218 per construction worker. Additionally, the authors calculated societal impacts of better pay and benefit packages for workers under prevailing wage laws. The impacts for states without prevailing wage laws include the entry of smaller, less-experienced construction firms into the construction market; higher rates of employee turnover raised the risk that firms might hire unskilled workers more prone to injuries.

Kersey, Paul. 2007. *The Effects of Michigan's Prevailing Wage Law*. Midland, Mich.: Mackinac Center for Public Policy.

This report updates the previous Mackinac study but did not address the various criticisms over methodology.

The author takes the BLS median and adjusted wages for construction occupations and estimates that 10% of Michigan's construction funding could have been saved if the state's prevailing wage law were repealed.

Kessler, Daniel, and Lawrence Katz. 2001. "Prevailing Wage Laws and Construction Markets." *Industrial and Labor Review*. Vol. 54, No. 2, pp. 259-74.

The authors examine the time trends of the repeal of state prevailing wage laws on union and race characteristics in construction labor markets. Kessler and Katz use Census and Current Population Survey data and a fixed-effects econometric approach to analyze wages and unionization rates over time. The model compares relative wages for blue-collar construction and non-construction workers in repeal and non-repeal states over a 24-year period. The overall effect of prevailing wage laws on construction labor costs is small (2-4%), although this varies widely across groups. This calculation was based on a 10% estimated decline in union worker incomes. Because union members account for one-quarter of all construction workers, the total impact on labor costs was 2-4%. The results suggest the repeal of prevailing wage laws negatively affects union and white workers, while it may benefit black construction workers. This study is limited to an analysis of wages and does not include total construction costs in the empirical model.

Philips, Peter, Garth Magnum, Norm Waitzman, and Anne Yeagle. 1995. "Losing Ground: Lessons From the Repeal of Nine Little Davis-Bacon Acts." Working Paper, Department of Economics, University of Utah.

The repeal of prevailing wage laws was found to reduce worker earnings, cut worker training programs, increase occupational injuries, and increase cost overruns. These findings were based on an examination of the effects of prevailing wage laws in nine states that had repealed the legislation, nine other states that never had the legislation, and 32 states with prevailing wage laws. In the nine states that had repealed prevailing wage laws, worker earnings declined \$1,477 a year, a drop that would result in substantial losses in income and sales tax revenues to the state. Controlling for downward trends in construction training, state employment rates, and regional differences in training

availability, states that repealed prevailing wage laws reduced construction training by 40%. In the case of Utah, declines in training produced a substantial shift to low-skilled workers, declining productivity, and a tripling in cost overruns compared to the previous decade. Occupational injuries rose 15% in states that had repealed the legislation. Worker injuries were responsible for lost workdays and higher government costs for worker's compensation.

Philips, Peter. 1996. Square Foot Construction Costs for Newly Constructed State and Local Schools, Offices, and Warehouses in Nine Southwestern and Intermountain States: 1992-1994. Prepared for the Legislative Education Study Committee of the New Mexico State Legislature.

This study demonstrated that square foot construction could be less expensive in prevailing wage states compared to states without prevailing wage laws. The study took a cross-section of government construction projects across the Intermountain and Southwestern states, five of which had prevailing wage laws and four of which did not. The states were New Mexico, Utah, Texas, Oklahoma, Wyoming, Nevada, Arizona, Colorado, and Idaho. The data were disaggregated based on building type: offices, warehouses, elementary schools, middle schools, and high schools. Once the data were disaggregated by building type, the average square foot construction costs were shown to be \$6 less in the sample of states with prevailing wages laws. The results show that productivity may have played a major role in construction cost outcomes and that it can offset potential wage increases. Philips noted a 1979 BLS study of aggregated school construction costs that showed total labor costs were the same in the South and Northeast, although hourly wages were 50% higher in the Northeast. Productivity could explain why a higher hourly wage on school construction in the Northeast did not result in higher total labor costs. However, total labor costs were the same in the South and Northeast, despite the hourly wage differences.

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

In this case study, school construction costs, worker wages, and other societal costs were examined before and

after the 1987 repeal of prevailing wage laws in Kansas and compared with other Great Plains states. Philips used statistical methods to compare mean and median costs of new schools in Kansas and surrounding states from July 1991 to June 1997. Of 365 new elementary schools in the Great Plains states with prevailing wage laws, construction costs were not statistically different from zero controlling for other cost factors. Average construction earnings fell faster in Kansas and other surrounding states without prevailing wage laws after the 1987 repeal. After the repeal, real worker earnings fell 11% in Kansas and in surrounding states without prevailing wage laws, compared to a 2% decline in states with prevailing wage laws. The loss of earnings would have resulted in lost tax revenues to the state.

Collective bargaining in construction declined after the state's repeal, and this decline affected worker training, pay and benefits, occupational injuries, and lost time from work. Apprenticeship training programs declined in Kansas and surrounding states without prevailing wage laws from 1973 to 1990. In Kansas, apprenticeships slid 38%, from an annual average of 861 in the 1970s to an average of 530 in the first four years after the law was repealed. In the sample of states with prevailing wage laws, apprenticeships declined an average of 27% during the period, compared to a decline of 53% in states without prevailing wages.

Occupational injuries rose 19% in Kansas after the repeal of prevailing wage laws, or from 11 to 13 injuries per 100 construction workers. Philips compared the number of injury cases per worker from 1976 to 1991 using the Bureau of Labor Statistics industry survey of occupational injury and illness. Total injuries rose 26%, from 11 to 14 per 100 construction workers, and serious injuries rose 14%, from 4.7 to 5.3 injuries per 100 construction workers in states without prevailing wage laws. Annual average employer contributions toward pensions and health insurance in Kansas fell 17% after the repeal of prevailing wage laws, according to data obtained from the U.S. Department of Labor for the years 1982-86 and 1987-92. Philips attributes this drop to the shift away from collective bargaining following the repeal in Kansas.

Philips, Peter. 1999. Kentucky's Prevailing Wage Law: Its History, Purpose, and Effect. Working Paper, Economics Department, University of Utah.

Prevailing wage laws in Kentucky provided a unique sample because some projects were exempt from the law until it was reinstated in 1996. Kentucky did not repeal its law, but it exempted school construction from the statute. In 1982, schools and some city projects were exempt from the 1940 prevailing wage statute. It also exempted city, county, and regional governments from construction projects paid for with less than 50% of state funds. In 1996, it expanded its law to include public schools and most local and county construction projects. The study was in response to charges that prevailing wages discriminate against minority workers and arguments that the legislation reduced the number of entry-level jobs. Philips used statistical methods to analyze the relationship between prevailing wage laws and the racial composition of the construction industry. The results showed no measurable relationship between unemployment rates by race in construction and state prevailing wage laws.

Philips, Peter. 2001a. A Comparison of Public School Construction Costs in Three Midwestern States That Have Changed Their Prevailing Wage Laws in the 1990s: Kentucky, Ohio, and Michigan. Working Paper, Economics Department, University of Utah.

This study takes advantage of a natural experiment with the judicial suspension of the prevailing wage law in Michigan (1995-97), the adoption of prevailing wages for school construction in Kentucky (1996), and the repeal of prevailing wages for school construction in Ohio (1997). About half of the 391 new schools in the sample were built under prevailing wage legislation in those three states from 1991 to 2000. The study accounted for the problem of building costs climbing faster than inflation during the 1990s, and included controls for rising construction costs for new public schools in all three states from 1991 to 2000. The results showed that prevailing wage regulations did not raise construction costs with any statistical significance.

Other findings showed that urban schools cost 10.5% more than rural schools, controlling for other factors such as building size. Ohio schools cost 12.6% less than schools in Michigan; Kentucky schools cost 14.6% less. The decision over when to break ground was shown to affect total

cost: projects started in the fall added 10% to total costs compared to projects that broke ground in the spring.

Philips, Peter. 2001b. Four Biases and a Funeral: Dr. Vedder's Faulty Experiment Linking Michigan's Prevailing Wage Law to Construction Employment. Economics Department, University of Utah.

Examining a study by the Mackinac Center for Public Policy, Philips discovered that the data and structure of the methodology led to internal and external validity problems. Four primary biases were produced by the Mackinac research design, including the fact that results did not hold in other states. The biases were listed as the selection of 30-month-long time periods, a seasonal adjustment that did not reflect construction industry patterns, employment adjustments based on unseasonably warm weather on the end points of the data, and the inability to replicate the results in other states. Mackinac's hypothesis that employment increases after the repeal of prevailing wage laws and declines after their adoption was upheld in the case of Michigan, but Philips attributes this to pure luck. Contrary to Mackinac's findings, looking beyond Michigan employment actually declined in states that repealed prevailing wages. It also declined in Oklahoma, where the law was judicially annulled, and in Ohio, where school construction was exempt from prevailing wages. The states that repealed prevailing wage laws were Louisiana, Kansas, Colorado, New Hampshire, and Idaho. In Kentucky, where the law was applied to schools in July 1996, employment increased.

Philips, Peter. 2006. Construction: The Effect of Prevailing Wage Regulations on the Construction Industry in Iowa. Working Paper, Economics Department, University of Utah.

Productivity was found to play a major role in explaining why less expensive labor does not always result in lower government construction costs in the absence of prevailing wage laws. Using 2002 Census of Construction data, Philips compared average annual incomes of construction workers and the value-added per construction worker by state. Workers in states with prevailing wage laws earned more income, but they also had higher productivity. In prevailing wage states, construction workers earned an average of 15% more in wages and about 25% more in

Social Security, unemployment insurance, and worker's compensation. States with prevailing wage laws showed 13-15% more value-added per worker compared to states without the legislation. The result showed that prevailing wage laws raised productivity, possibly by inducing better management of projects, higher training standards, and more capital investment.

Prevailing wage laws also promoted collective bargaining activities that encouraged apprenticeship programs necessary to improve workmanship and expand the pool of skilled workers. On the other hand, states without prevailing wage laws faced higher costs of maintenance and repair and had transitioned to a low-wage, low-skill workforce. Non-prevailing wage states created an environment where contractors would cut corners on safety, training, and payroll regulations in an attempt to offer lower bids. In Iowa, an estimated 2,500 workers were misclassified as independent subcontractors in order to save on payrolls. The misclassification of workers deprives the state of worker compensation and unemployment insurance payments, and allows the contractor to dodge health insurance, pension, and Social Security contributions.

Prus, Mark. 1996. The Effect of State Prevailing Wage Laws on Total Construction Costs. Working Paper, Southern University of New York, Cortland.

Prus replicated the Fraundorf model and discovered that the study did not control for cost differences between public and private construction. Prus used multivariate analysis to compare construction costs in states with prevailing wage laws, rather than compare federal-level construction projects that were subject to the Davis-Bacon Act with private construction contracts. The data were obtained on offices, hospitals, schools, garages, and warehouses. Controls were included for building material, building type, and building height, and a dummy variable was used to mark new or renovated construction. The results showed that public construction was 32% more expensive than private construction in states without prevailing wage laws. Controlling for differences between public and private construction, there were no statistically significant cost effects related to prevailing wage laws. This study demonstrated that the Fraundorf study had captured the cost difference of public-private

construction rather than the effects of prevailing wages. Prus attributes the cost differences to government specifications and building design.

Prus, Mark. 1999. Prevailing Wage Laws and School Construction Costs: An Analysis of Public School Construction in Maryland and the Mid-Atlantic States. Prepared for the Prince George's County Council, Maryland.

Most of the schools built during the 1990s in Maryland were not subject to the state's prevailing wage laws, in effect since 1969. While the legislation covered most state-funded public school construction in the 1980s, changes in the formula and allocation of prevailing wage determinations in 1989 excluded most school construction from the prevailing wage requirements. The statute required the payment of prevailing wages for public construction projects that received 50% or more funding from the state, and for public school construction that received at least 75% from the state. The law was later changed to reduce the threshold for school construction to at least 50% funding from the state. In Maryland, Allegany County and Baltimore City had enacted prevailing wage laws for school construction and public works. The presence of prevailing wage laws in some places in Maryland and the region, but not others, allowed Prus to empirically examine the effects on government construction costs.

First, Prus replicated the methodology of a Maryland Department of Fiscal Services study and discovered that the authors had excluded controls to differentiate between new and renovated projects (see Department of Fiscal Services 1989). If this control were included, then the results did not show statistically significant increases in costs. The DFS model had overestimated costs because it included site preparation in the definition of cost and did not control for regional differences. The author noted that the most expensive school in the sample was built without prevailing wages.

In a separate experiment, Prus examined contract costs of schools built in Maryland with and without prevailing wage laws. The results showed no statistically significant effect on costs. The model included controls for building materials, types of school, a marker for new or renovated project, a marker for public or private school, and the

height of the building. Public schools were 40.6% more expensive than private schools regardless of prevailing wages, and economies of scale were evident. High schools were 33% more expensive than elementary schools. The results also show a doubling in the building size would raise costs by 68%.

A cross-state experiment compared square foot construction costs in Maryland and other mid-Atlantic states. Although construction costs appeared to be higher in prevailing wage states based on descriptive data, a linear regression model showed that the differences were related to regional factors. Prus concludes these considerable cost differences exist because school construction in the South was less expensive than in the northern states of the mid-Atlantic region. In addition to regional differences, building type and specifications also impacted total construction costs. Schools in the sample of prevailing wage states appeared to be 25% more expensive, until the data were disaggregated by school type. Elementary schools were cheaper while middle and high schools were more expensive in prevailing wage states. Costs of construction of public schools in states without prevailing wage laws were 11.3% higher per square foot than costs for private schools. Prus compared square foot construction costs by school type in prevailing wage and non-prevailing wage states. Using linear regression, he compared construction costs controlling for building type, size, and private vs. public schools. Controlling for other factors, prevailing wage laws were shown to have no statistically significant effect on costs.

Thieblot, Armand. 1986. *The Davis-Bacon Act, State "Little Davis-Bacon" Acts, the Walsh-Healey Act, and the Service Contract Act.* Philadelphia: Wharton School, University of Pennsylvania.

Thieblot conducted a time-series analysis of contract costs before and after President Nixon's temporary suspension of the Davis-Bacon Act. The author examined new bids submitted by contractors during the 34-day suspension in February and March 1971. The construction contracts that were re-bid were not yet awarded. The re-bids were estimated to save less than 1%, or about \$240 million a year on all federal construction contracts, compared to bids that were originally submitted. The in-

flation-adjusted estimate showed a 4.74%, or about \$1.1 billion, difference in the original and new bids. Thieblot acknowledged that results might be biased because full disclosures of the bids were given before the re-bid process and he was unable to control for contractors altering their bids in an attempt to game the system: "A disclaimer to this estimate is necessary, however, because the bid-rebid process was not pure. In addition to the time difference problem, all of the original bids were disclosed before rebids were made, which points to the high probability that some gamesmanship was at work in the process, independent of the prevailing wage rate elimination." It was unclear if Thieblot's analysis measured the contractors' ability to use information to their advantage, or if the experiment captured the effects of the suspension of the Davis-Bacon Act.

Vedder, Richard. 1999. *Michigan's Prevailing Wage Law and Its Effect on Government Spending and Construction Employment.* Midland, Mich.: Mackinac Center for Public Policy.

This study assumes prevailing wage laws impose additional costs on the state and lower construction employment in Michigan. The study's methodology relied on simple descriptive statistics and was criticized for numerous shortcomings. The results showed construction jobs grew by 11,000, or 13%, after the prevailing wage law was repealed, but critics cited methodological issues to refute this claim (see Philips 2001b). Using a series of hypothetical calculations and a finding that showed prevailing wage rates were 10% higher in the Detroit area, the study also estimated that prevailing wage laws raised construction costs by \$275 million: "If labor costs were 25 percent of the total value of a construction contract, and if average labor costs per hour were increased 40 percent by prevailing wage laws, this would drive up total construction by 10 percent. . . . Assuming a 10-percent differential. . . the state of Michigan could have saved about \$251 million by eliminating prevailing wage provisions." The study did not provide evidence that the wage difference in the Detroit area was representative of the rest of the state. It also did not provide any empirical support to show differences in wage rates would be passed through as government costs. Rather, it allocated wage differences to government costs without controlling for any other factors.

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