Prevailing Wage Laws and the California Economy

Michael Reich, Ph.D.
Professor
Institute of Industrial Relations
University of California

Berkeley, CA 94720 mreich@econ.berkeley.edu February 1996

Michael Reich is a Professor of Economics at the University of California at Berkeley, where he has served on the faculty since 1974, as well as Research Director of the National Center for the Workplace. He holds a B.A. in Mathematics from Swarthmore College and a Ph. D. in Economics from Harvard University, where he studied labor economics with John T. Dunlop, former United States Secretary of Labor. Reich has published eight books and monographs and over fifty articles, including studies of racial inequality and of segmented labor markets in the U.S. A 1985 ranking of the best young economists in the U.S. placed him at no. 33.

Reich's recent research has focused on the causes and consequences of high performance workplaces, with a particular interest on the development of worker skills and rewards in Japanese and U.S. employment systems. He has recently completed a book-length manuscript on this topic (co-authored with his Berkeley colleagues Clair Brown and Lloyd Ulman).

Reich served from 1986 to 1994 as the Editor of the scholarly journal Industrial Relations and recently finished a term as Associate Director of the Institute of Industrial Relations at UC Berkeley. He is a member of the American Economic Association and the Industrial Relations Research Association.

1. Introduction

The Department of Industrial Relations proposes to change the computation of prevailing wages from a modal to a weighted average methodology and to eliminate the payment of predetermined wages (i.e., the so-called "double asterisk"). DIR claims that such a change will reduce labor costs on the state's public works projects by 20 percent, which translates into annual savings of $200 million for the state and state agencies, and DIR contends further that this change will not cause adverse effects to private persons or businesses.[1] The primary rationale for the change is to lower labor costs, from union wage levels, to reflect the lower wage rates paid on nonunion private construction projects. A secondary rationale is to reduce the cost of determining prevailing wages by aligning state methodology with Federal methodology and making use of federal surveys.[2]

DIR cites numerous academic studies, reports of the Legislative Analyst, and its own studies to support its claims. Despite these efforts, the DIR analysis is seriously flawed, drawing upon incorrect data and ignoring important costs that will be generated if the proposal is implemented. I discuss here: errors in DIR's estimates of savings on labor costs, implied but

unrecognized increases in survey data costs for the state, reduced tax revenues, disparate impacts upon minorities, effects upon productivity of labor on public works that offset reduced wages, and undiscussed costs upon health and safety, training, benefits and pension fund safety, as well as training and skill formation.

I conclude that DIR has not presented a coherent and careful analysis of the effects of the proposed rulemaking change and that it omits many significant costs. At present, the California economy is undergoing a healthy recovery, and the construction sector, which is vital for private and public investment, is recovering as well. The DIR proposal requires considerable further analysis because it places a key segment of the economic recovery at risk.

2. Errors in DIR's cost-saving estimates

Problems with DIR's calculations:

The DIR cost saving figure of $200 million is based primarily upon an estimate of a 20 percent decline in the prevailing wage, which is in turn based upon data on modal and average wages in employer surveys that DIR conducted in three rural California counties in the late 1980s. In reviewing these survey results, I find that the method used by DIR to compute the percentage wage changes of switching from a modal to a weighted average methodology contains a major error, and produces results that violate elementary-school arithmetic.

DIR's error can be seen on pp. 10, 12 and 14 of the rulemaking file, Appendix A, which display survey results for the three counties: Amador, Nevada and Tulare counties respectively. On the Amador County page, the largest percentage difference between mode and mean of any of the crafts is 21.6 percent, for laborers, and only one other craft has a difference in double-digits. Clearly, the overall weighted average for all crafts will be much less than 21.6. Yet the method of calculation used by DIR produces an average 28.79 percent difference!

The DIR error is introduced when the weighted average is computed because the weights used in the calculation appear in percentages that add to 100, rather than as decimals that add to 1.00, and no correction is made in the final figure. As a result, the reported weighted average difference is 100 times larger than what would be obtained with a correct arithmetic approach. Eliminating this error reduces the estimated wage change to essentially zero and erases the purported savings claimed by DIR. But this is not the only problem with DIR's calculation.

Examination of the survey data indicates that they contain severe shortcomings. My examination of the findings from these surveys indicate internal inconsistencies and lack of representativeness. The inconsistencies include numerous examples in individual crafts and counties in which the mean basic hourly wage rate was higher than the mode.[3] Yet modal rates are generally thought to be union rates, which generally are higher than nonunion rates. These inconsistencies cast doubt upon the reliability of these data.

Whether wage reductions would occur depends upon having reliable and representative survey

data. DIR does recognize that the results from these three counties will not be representative of more populated areas of the state. Yet it persists in concluding that wage rates will fall overall by 20 percent (DIR, p. 4) to estimate a cost saving of $200 million. It then uses this estimate again, but recognizes that it is unrepresentatively high.[4] Because most other estimates are under 10 percent, DIR arbitrarily selects a "midpoint" estimate of 10 percent. DIR then tries another gimmick. Drawing upon a short-run labor demand elasticity of .5, DIR implicitly critiques its own 20 percent savings figure by arguing that a cut in wages of 20 percent would cause construction employers to increase their labor requirements by 10 percent, thereby eliminating half of the purported savings.[5] DIR then arbitrarily combines an excessive labor cost proportion figure (of 33 percent, see below) to this wage reduction estimate to again compute a savings of $160 million, which it suggests provides a lower-bound. DIR goes on to congratulate itself for using two very different methods and yet obtaining very similar estimates.

This is illogical. A lower-bound estimate of cost savings should be zero, according to the survey estimates discussed above (as well as the careful study by Prus, 1996, which disentangles public and private construction cost figures). A more reasonable short-run direct public cost savings estimate can be derived by using the conventional 22 percent labor cost ratio and an 8 percent wage reduction estimated by Philips (1996; see below). This estimate would come to $40 million. Even this lower estimate has to be modified to account for collateral state tax revenue losses, increased burdens upon public hospitals for those who lose health-care coverage and additional adverse impacts upon the private workforce and businesses.[6] DIR clearly needs to improve its own data collection and analysis procedures, as well as its cost estimates, so that it can accurately determine the effects of its proposals.

Comparisons with Federal prevailing wage rates:

DIR's surveys and studies indicate that Federal prevailing wages already are very close to state prevailing wages as determined by the current modal method.[7] These comparisons suggest that wage reductions are likely to be significantly less than the 20 percent figure discussed earlier.

Labor costs constitute a declining share of total construction costs:

Cost savings from a change in prevailing wage methodology depend not only upon wage rates, but also upon the ratio of labor costs to total costs. Although DIR states that a ratio of 22 percent is standard, the DIR document employs a much higher and arbitrary ratio of 33 percent.[8] The 22 percent figure is based upon a Federal census of construction in 1987. Projections into future years should recognize that the labor cost proportion has been falling, partly because annual real wage increases in construction have been negative, and partly because labor productivity growth in construction has been positive.[9] Consequently, DIR's estimates of cost savings are likely to be overstated for future years.

How much will construction wages fall?

A recent analysis of construction wage rates in different states with alternative policy regimes on prevailing wage laws indicates that the shift to a weighted average methodology is likely to reduce the annual wages of California construction workers by about 8 percent (Philips, 1996).

This study uses microdata from the 1990 Census, holds constant many individual characteristics as well as region of the country, and obtains statistically significant results.

Remarkably, Philips found that the wage reduction spilled over to all construction workers in the state, not just those on publicly financed projects. This result indicates both that the cost of lower earnings to private workers exceeds direct cost savings to the state and that revenue losses because of lower sales and income tax collections may be considerable. The revenue implications are discussed further in section 4 below.

3. Additional data collection costs generated by the rulemaking change

DIR's approach to new data requirements is internally inconsistent. One the one hand, DIR claims that switching to the weighted average will bring Federal and state methodologies in line with each other and eliminate the state's need to duplicate surveys already carried out by the Federal government. On the other hand, DIR also recognizes that Federal methodology actually consists of using union rates from collective bargaining agreements (CBAs) and that the state would need to conduct many expensive surveys to implement its new approach. Although the effects of a switch to a weighted average methodology on prevailing wage determinations remains unresolved by DIR's own data, there is no doubt that the switch will generate substantial new costs to conduct the numerous periodic wage surveys called for by the new method.[10]

The required surveys need to be representative of wages and benefits for comparably skilled workers in each construction occupation category and local economic area. About 4,000 different determinations must be obtained every six months and sample sizes of actual respondents in each of the state's 58 counties must be large enough so that each survey renders statistically significant results. Household-based surveys are more costly than the current approach of employer-based surveys but may be much more reliable because employers face payroll-tax related incentives to under-report wages, benefits and employment. The annual budget to conduct a large household survey and analyze its findings would easily be many millions of dollars and is beyond the state's current in-house capabilities.

An advantage of the current modal system is that it does not require large-scale surveys. Written contracts, when they exist, provide information that is both reliable and much less costly to obtain. Collective bargaining agreements provide much of the database for the current modal methodology.

4. Impact on tax revenues

How much might state tax revenue fall? The major components are changes in sales tax revenue and income tax revenue. A reduction of 20 percent in wage rates for public works (DIR's estimate) is likely to spill over onto the remainder of the construction labor market, causing a reduction of construction workers' average earnings, from about $28,000 in 1995 to 80 percent of that figure, or $21,600. In this range, construction workers would fall into a lower state income tax bracket, in most cases falling by 2 percent. The result is a reduced tax liability of $432 per worker up to $21,600 of earnings, and a reduced tax liability of 6 percent (the average

tax rate) on the earnings loss, or $384. Adding these two figures together, we get a revenue loss of $816. Using the November 1995 figure of 512,000 construction jobs in California yields a reduction in revenue of just under $418 million.[11] The reduction in sales tax receipts is likely to be nearly as large.[12]

A drop in wage rates of 8 percent (Philips' estimate) will cause a smaller reduction in tax revenue, approximately $167 million less in income tax receipts. Against this loss there is a gain in tax revenue created by the earnings from the additional employers' hires of 4 percent (using a demand elasticity of .5 as discussed earlier). This effect restores about $16 million of the lost revenue, leaving a net loss of over $150 million in income tax receipts and again a similar amount in sales and use tax receipts.[13]

An additional consideration applies to these calculations. The proposed rules changes will adversely affect union pension funds (see the discussion in section 7 below) and consequently investment in state construction bonds by union pension funds will also

decrease. Innovative programs to invest union pension fund assets directly in housing and other sectors will also be affected.

5. Impacts upon minorities

How might the representation of minorities in construction be affected? Currently, blacks and Hispanics constitute 10.7 and 29.0 percent of registered apprentices, respectively, compared to 7 percent and 26 percent of the state population.[14] The black representation has been constant in recent years while the proportion of Hispanics has been increasing steadily. Using a different dataset, Bilginsoy (see section 8 below) finds that minorities comprise 21 percent of new apprentices nationwide.

A cross-tabulation of California construction apprentices and race/ethnicity status, taken from the 1990 Census Public Use Microdata Sample (PUMS) and conducted by the present author indicates similar findings: blacks constituted 9.5 percent of construction apprentices in 1990, while Hispanics constituted 25.3 percent. (See attached tables.) These findings, together with adverse effects of the rule change upon apprenticeships, indicate substantial adverse employment impacts upon the minority population. The earnings impact will also be adverse, since the earnings of black journeymen in California in 1990 averaged $20,900, compared to $16,500 for all employed blacks; the comparable figures for Hispanics are $17,570 and $13,500. (Computed from California PUMS extracts and the Statistical Abstract).

6. Productivity effects

DIR's internal documents recognize that the skill, efficiency and quality of the work performed by construction workers play a crucial role in determining actual labor costs on a given construction project.[15] Yet DIR makes no effort to incorporate these factors into its analysis. How much could productivity fall? The only careful studies are Allen's examination of union-nonunion

productivity differences, based upon data from the early 1970s to the late 1980s. (Allen, 1984; 1988; 1994). Allen finds union-nonunion productivity differentials when prevailing wages do not apply, with productivity differentials of about 20 percent offsetting the 20 percent union-nonunion wage differential in construction. In other words, paying higher wages does not translate into higher labor costs, as higher-paid union workers are more trained (more on this below) and therefore better skilled, and because employers adjust by better managing their workforce and by utilizing more capital equipment per worker. [16]

Similar evidence arises from interstate comparisons of highway building costs conducted by this author. States with the highest prevailing wages experience dollar costs per mile that are generally comparable to those in states with no prevailing wage coverage and the lowest wages. These results hold even in a multivariate regression equation that controls for the rate of urbanization in the state and the proportion of bridge or overpass miles in total highway miles. [17]

Although such results may appear surprising to some, they are predicted by economic theory. [18] Indeed, recent developments in economic theory and evidence have discovered significant complementarities between capital equipment and skilled labor but not between capital equipment and unskilled labor. Economic theory also predicts that training will not be provided by employers in the absence of long-run employment relations. These findings suggest that institutional mechanisms that provide a long-run supply of higher-paid but also higher-skilled labor provide benefits to the economy as a whole. A simple example would be craft workers whose skills are utilized by employers in other industries when seasonal or cyclical downturns occur in construction.

7. Health care coverage and pension benefits

The DIR statement of reasons for changing the method of determining prevailing wages does not discuss how employee benefits -- primarily health care coverage and pension plan contributions -- will be affected. Yet, as Petersen (1996) shows, the impact on this important component of total compensation will be both certain and radical: virtually all workers on prevailing wage projects will lose much of their private health and retirement benefits, and a very large proportion will lose them entirely. The effects upon the state's already-overburdened system of county hospitals and upon future retirees will be dramatic.

At present, virtually all unionized construction workers receive health and retirement benefits worth approximately $4.40 per hour, while only 18.5 percent of nonunion construction workers receive any benefits, and those who do receive much less than $4.40. In 1992, collectively-bargained funds paid health and welfare benefits of $1.15 billion and pension benefits of $1.13 billion, compared to $233 million in benefits paid by nonunion construction funds in California. [19] The sharp contrast between the two sectors arises from the short-run character of construction employment as well as the relatively small size of most construction companies. The high burden upon of providing benefits faced by individual employers means that multi-employer programs are necessary to collect and pool insurance and retirement funds. In the U.S., such multi-employer plans almost always arise through the process of collective bargaining and are often administered under union auspices.

The new rules would eliminate benefits except when unionized workers constitute the overwhelming majority of a locality's construction workforce. But union workers constitute 25 to 30 percent of statewide construction employment.[20] Even when unionized workers predominate, a weighted average calculation will probably lower the value of their estimated benefits in excess of $1.00 per hour. As a conservative estimate, assume that unionized workers account for half of the prevailing worker hours in a given year, and that half of those workers lose their benefits entirely while the remainder lose an average of $1.00 per hour. The total would then be approximately $160 million, but at least half and more likely three-fourths of this amount represents health care costs that would be shifted to the public sector.

8. Training and skill formation

How much will training fall? Using state data, I calculate that the construction industry accounts for 70.8 percent of all the registered apprentices in California.[21] The total number of apprentices declined from 49,484 in 1990 to 35,542 in 1993, and then increased to 38,768 by the end of 1994 (ibid.). Nearly all of these apprentices are unionized.

Bilginsoy (1996) draws upon national data on apprenticeships supplied by the Bureau of Apprenticeship and Training and uses a methodology similar to that of Philips (1996). This study is the first to employ microdata on the characteristics of individual apprentices and classification of state prevailing-wage regimes. Comparing states with modal regimes to those with weighted average regimes, and statistically holding all other variables constant, Bilginsoy finds a reduction of apprenticeships of 13 percent, an increase in dropout rates from apprentice programs of 18 percent, and larger changes for minorities and women. These findings suggest that long-run skill formation will drop significantly.

These effects are troubling because they represent future declines in skills of California workers. In the short run, California construction can draw upon the substantial stock of highly skilled journeymen in the state, few of whom are likely to emigrate to other areas. Neighboring states that have repealed state Davis-Bacon laws, such as Utah, continue to be able to draw upon the products of California training programs, employing California workers on short-run contracts. This "free riding" has occurred in states in other regions of the U.S. because their neighbors generate a nearby skilled pool of construction labor. No such possibility is available for California, and even experienced and unemployed construction workers in Mexico do not obtain the requisite skills.

Many economists have pointed out that real earnings levels have been falling for the 80 percent of the U.S. population that do not graduate from a four-year college program, and that the U.S. economy requires higher levels of work-based training to reverse this trend.[22] Although some nonunion employers provide a structured training program, including through multi-employer associations, these do not and will not substitute in quantity or quality for current levels of training. The demise of construction apprentice programs that is likely to occur will make a bad situation even worse.

9. Workplace safety

Construction injury rates remain above those for other industries. Using a methodology similar to his colleagues Philips and Bilginsoy, Waitzman (1996) has calculated that the proposed switch in prevailing wage methodology will increase injuries by 8 percent and severe injuries by 5 percent. These increases result from less attention to safety and from reduced enforcement of health and safety laws. Weil (1992), for example, found that unionized worksites are three times more likely to call in safety inspectors than comparable nonunion worksites. The increased injuries, and their attendant human and economic costs (including higher workers compensation premiums) should be considered in making policy changes.

10. Conclusion: Maintaining the economic recovery in California

The California economy is currently undergoing a vigorous economic recovery, led in by the expansion of business fixed investment in structures and equipment and by increased demand from the rest of the nation for the products of California businesses.[23] The recovery is apparent in the growth of gross state product and total employment. It is less apparent in the state unemployment rate, which continues to be one of the highest in the nation, and in continued declines in real earnings for most workers.

The economic recovery in California began later than in the rest of the nation because of the restructuring required by reductions in the defense/aerospace sector, closings of military bases, overbuilding of commercial and industrial structures in the 1980s and the drag of high housing prices. But just as the recovery began later than in the rest of the nation, it is expected to end later as well.[24] Since most forecasts suggest that the national economic recovery will not end soon, we can expect that California's will continue as well.

The California construction industry is growing along with the rest of the state economy. Construction employment grew 4.4 percent between 1993 and 1994 and was forecast to grow 5.9 percent in 1995 and 6.1 percent in 1996 (Economic Report of the Governor 1995, Table III-4). Actual growth from November 1994 to November 1995 has been measured as 6.5 percent (BNA, Daily Labor Report, February 1, 1996). Employment in heavy construction -- mainly public works and utilities -- grew by 2.6 percent in 1994.

The California recovery has generated additional demands to maintain and expand the public infrastructure of the state, which were already strained by increases in seismic upgrading requirements and by increased prison construction. The recent quadrupling in Caltrans' estimates of the cost of retrofitting the bridges of the Bay Area will generate still more fiscal demands and underscores the need for maintaining and replenishing the state's skilled construction workforce. Yet Federal funds for Federal public works or for matching state projects are not expanding, and although the State's fiscal capacity to support public works is growing, competition to allocate state funds in other areas is also growing. In this environment, it is understandable that the State should seek to reduce costs in every area, and that taxpayers and consumers of state-provided goods would endorse supposed "reform" efforts that promise to save public funds. In so doing, however, public policy should not reduce the capacity of public works spending to provide the infrastructure upon which continued economic growth depends. Reforms also should not generate

hidden or indirect costs upon the public or the public purse that would eliminate projected "savings" and injure the health of the state's economy.

Public sector construction can continue to support economic growth only if institutional features specific to the construction industry labor market remain in place so that it can perform efficiently. These institutions involve the continuing ready availability of a supply of skilled construction labor and of efficient means to match workers and jobs. Prevailing wage laws, union hiring halls and structured apprenticeship training have constituted critical components of these institutions, and more so in California than in many other states in the nation.

While the dismantling of these institutions in other states has been shown to have moderately harmful effects, the impacts in California could be much larger. The size of the California economy relative to its neighbors within the U.S., the large geographic distances to sources of substitutable labor within the U. S., and the small distance from the Mexican labor market represent features that are not shared by other states and which put California at greater risk. It is not prudent to ignore the economic risks that would be generated by restructuring prevailing wage laws in California in the manner now suggested by DIR.

References

Allen, Steven G. 1984. "Unionized Production Workers are More Productive," Quarterly Journal of Economics, 99, 2: 251-74.

Allen, Steven G. 1988. "Declining Unionization in Construction: the Facts and the Reasons," Industrial and Labor Relations Review, 41, 3: 343-59.

Allen, Steven G. 1994. "Developments in Collective Bargaining in Construction in the 1980s and the 1990s." Pp. 411-66 in Paula Voos, ed. Contemporary Collective Bargaining in the Private Sector. Industrial Relations Research Association Series.

Belman, Dale and Paula Voos 1996. "Prevailing Wage Laws in Construction: the Costs of Repeal to Wisconsin." Working Paper,

The Institute for Wisconsin's Future.

Brown, Clair and Michael Reich 1989. "When Does Union-Management Cooperation Work? A Look at NUMMI and GM-Van

Nuys." California Management Review, 31, 4:26-44.

Brown, Clair, Michael Reich and David Stern 1993. "Becoming a High-Performance Work Organization: the Role of Security,

Employee Involvement and Training." International Journal of Human Resource Management, 4, 2:247-75.

Brown, Clair, Michael Reich and David Stern 1994. "Training Structures, Skill Formation and Wage Profiles in Japan and the U.

S." Industrial Relations Research Association, Proceedings of the 48th Annual Meetings.

Brown, Clair and Michael Reich 1995. "Employee Voice and Training in Career Development." Industrial Relations Research

Association, Proceedings of the 49th Annual Meetings.

Bilginsoy, Cihan 1996. "Apprenticeship Training and Prevailing Wage Laws."

Working Paper, Economics Department,

University of Utah.

Borjas, George 1996. Labor Economics. McGraw-Hill.

California Department of Finance 1995. California Statistical Abstract. State of California.

Council of Economic Advisers 1995. Economic Report of the President 1995. U.S. Government

Printing Office.

Economic Report of the Governor 1995. Office of the Governor, State of California.

Hamermesh, Daniel 1986. "The Demand for Labor in the Long Run." In Orley Ashenfelter and

Richard Layard, eds. The

Handbook of Labor Economics. North-Holland.

Hamermesh, Daniel 1993. Labor Demand. Princeton University Press.

Krueger, Alan and Lawrence Summers 1987. "Reflections on the Inter-Industry Wage Structure."
In K. Lang and J. Leonard, eds.

Unemployment and the Structure of Labor Markets. Basil Blackwell.

Peterson, Jeffrey 1996. "The Effects for California Construction Workers from Changing the
Method of Calculating Prevailing
Fringe Benefits." Unpublished paper, School of Public Health, University of California at
Berkeley.

Philips, Peter 1996. "Results of a Multivariate Regression Analysis of Construction Worker
Incomes with a Focus on the

Implementation of Prevailing Wage Policies." Working Paper, Economics Department,
University of Utah.

Philips, Peter et al. 1995. Losing Ground: Lessons from the Repeal of Nine "Little Davis-Bacon"
Acts. Working Paper,
Economics Department, University of Utah.

Prus, Mark 1996. "The Effect of Prevailing Wage Laws on Total Construction Costs." Working
Paper, Department of Economics,

SUNY Cortland.

U.S. Bureau of the Census, Census of Population 1990: Public Use Microdata Sample (PUMS). Machine-readable data.

U.S. Bureau of Labor Statistics 1981. Productivity and the Economy: a Chartbook, BLS Bulletin 2084. U.S. Government Printing Office.

Waitzman, Norman 1996. "Workers Beware: The Relationship Between the Structure of State Prevailing Wage Laws and Injuries in Construction, 1976-91." Working Paper, Economics Department, University of Utah.

Weil, David 1992. "Building Safety: the Role of Construction Unions in the Enforcement of OSHA." Journal of Labor Research, 13, 3.

[1] DIR Memorandum from Dorothy Vuksich to Director Lloyd Aubry, November 21, 1995, Rulemaking file, Appendix A, page 2.

[2] "The amended regulation will make it easier to adopt rates determined for federal public works projects when appropriate. This will reduce duplication of effort in the area of wage investigations and thereby reduce the burden upon the regulated public." DIR, Initial Statement of Reasons, p. 3.

[3] In the Amador County August 1987 survey of 23 craft categories, the mean was higher than the mode in 7 crafts and equal to the mode in another 4. The sample size was less than 10 in 8 of the 23 crafts, suggesting high standard errors for the estimates. Although means and modes are displayed, standard error statistics are not provided, so that we cannot know whether mean-mode differences are statistically significant. Inconsistencies between the mode and the mean were also present in cells with large sample sizes (DIR Rulemaking Appendix A, p. 11).

In the Nevada County August 1987 survey of 18 craft categories, only 6 have the expected negative wage change and 11 have sample sizes of 10 or less (DIR Rulemaking Appendix A, p. 13). In the Tulare County January 1988 survey of 19 craft categories, only 9 have the expected negative wage change and sample sizes are 10 or less in 7 categories. Among 124 surveyed carpenters, the mean was 49.9 percent higher than the mode. Altogether, over 33 of the 60 wage change estimates in these three surveys do not have the expected sign.

[4] The State's Legislative Analyst very recently criticized DIR's estimate of cost savings noting that "while there would be savings resulting from the proposed change, the DIR estimate overstates the magnitude of the potential savings because it extrapolates data from three rural [and far less unionized] counties . . . ." Hill, Analysis of the 1996-97 Budget Bill.

[5] Philips et al. (1995) use this .5 estimate to calculate the net impact of prevailing wage laws on total wages. For recent research in this area, see Hamermesh, 1993; Borjas, 1996 for surveys of the literature.

[6] Longer-run estimates of cost savings will be much smaller than short-run effects as productivity falls because of declines in the supply of skilled construction workers. See below.

[7] DIR Memorandum from Maria Robbins to Lloyd Aubry and R.W. Stranberg, May 7, 1993, page 635 in the rulemaking file and Attachment A, "Comparison of Federal/State Published Rates," pp. 639-58. The arithmetic errors described above are present in the tables here as well, but because most entries are close to or equal to zero, are not consequential.

[8] DIR cites an estimate of one-third mentioned in testimony by Bernard Anderson, Assistant Secretary of Labor. However, Anderson's estimate is not supported by the Department of Labor's own data.

[9] See BLS 1981, Chart 6, for evidence of long-term trends of declining onsite labor requirements for new construction, disaggregated for 9 types of construction projects. The value of capital goods per worker in construction grew by 130 percent (in constant dollars) between 1950 and 1983, as reported in Table 900 of the Statistical Abstract of the United States 1986.

[10] "Should the State modify the definition of prevailing rate from a modal rate to a weighted average, statewide-all-craft wage surveys would be necessary. Adopting the Federal rates would not fulfill the requirements of a weighted average definition... In the absence of a protest, Federal Davis-Bacon rates are set by adopting CBA rates." DIR Memorandum from Maria Robbins to Lloyd Aubry and R.W. Stranberg, May 7, 1993, page 635 in the rulemaking file.

[11] This estimate must additionally be modified to reflect the reduction in adjusted gross income, which will differ from the

reduction in total income. The order of magnitude will remain the same, however.

[12] In 1993-94 state sales and use tax revenues amounted to $14.8 billion, while personal income tax revenues (including those on unearned income) amounted to $17.6 billion. Workers receiving construction-level wages do very little saving out of earnings. Putting all these factors together suggests that sales and income tax effects will be broadly similar. Economic Report of the Governor 1995, Table 36.

[13] Belman and Voos (1996) calculate sales and income tax revenue losses if Wisconsin were to repeal prevailing wage laws and also find that revenue losses substantially exceed cost savings, creating net adverse effects upon the state budget.

[14] Statistical Abstract of California 1995, Table C-16.

[15] "...unless other factors such as skill, efficiency and overall quality of construction are held constant, total labor costs may not be reduced." Ibid.

[16] Allen (1994) also suggests that union-nonunion productivity differentials narrowed during the 1980s; a prudent estimate today would be about 10 percent.

[17] More precisely, the coefficient on the log wage is positive and statistically significant in an equation in which the dependent variable is total miles constructed per worker.

[18] Contemporary economic theory recognizes that a competitive economy can travel on a high-wage, high-productivity path (or equilibrium), or on a low-wage, low-productivity path. The path that is followed depends to a great extent upon public policy. See, e.g., Brown and Reich, 1989; Brown, Reich and Stern, 1993; Brown and Reich, 1994; Brown and Reich, 1995.

[19] These figures are from Petersen (1996), p. 8 and are based upon Form 5500 data provided to the Pension and Welfare Benefits Administration of the U.S. Department of Labor.

[20] Union-provided figures on the number of workers paying into benefit funds, well over 30 percent of construction employment, are substantially larger than the number of union workers found through the Current Population Survey, just under 25 percent. Both numbers may be accurate because they refer to different time periods. The CPS data are based upon monthly averages, whereas benefit fund contributions derive from annual data. Over the course of a year an average individual worker may move in and out of the construction industry many times and on average will not be counted in each of the monthly surveys, but will appear in the funds' data. Recent research in labor economics has discovered surprisingly large flows in and out of jobs, relative to total employment.

Equally important, calculations of unionization rates should properly define the boundaries of the industry. Many of the workers in residential construction, which is predominantly nonunion, do not have the skills needed in large-scale public works projects and should be excluded from the calculation.

[21] California Statistical Abstract 1995, Table C-15.

[22] See, for example, the publications of the National Center for the Workplace.

[23] Council of Economic Advisers 1995; Economic Report of the Governor 1995.

[24] The Economic Report of the Governor forecasts personal income growth in 1996 in the 5-6 percent range, which is 1-2 percent over the forecast for the U.S.