



Are Mandated Health and Safety Committees Substitutes for or Supplements to Labor Unions?

Author(s): David Weil

Source: *ILR Review*, Vol. 52, No. 3 (Apr., 1999), pp. 339-360

Published by: Sage Publications, Inc.

Stable URL: <http://www.jstor.org/stable/2525139>

Accessed: 15-06-2017 02:41 UTC

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://about.jstor.org/terms>



Sage Publications, Inc. is collaborating with JSTOR to digitize, preserve and extend access to *ILR Review*

ARE MANDATED HEALTH AND SAFETY COMMITTEES SUBSTITUTES FOR OR SUPPLEMENTS TO LABOR UNIONS?

DAVID WEIL*

A subject of recurring debate in both academia and the business world is whether workplace committees and other forms of employee participation are substitutes for or supplements to labor unions. One well-established effect of unionization is increased enforcement of government labor policies such as OSHA; this study investigates the enforcement effects of mandated safety and health committees. A comparison of OSHA inspection records for the two years preceding and following the implementation of committee mandates in Oregon in 1991 shows that mandated committees significantly increased the differences between union and nonunion workplaces in OSHA enforcement, with enforcement strengthening considerably in union workplaces but edging upward only slightly in nonunion workplaces. The committees thus appear to have acted more as supplements to than substitutes for labor unions.

Should the shop committee be a substitute for the union, and thus make the plant or concern the final unit of organization on the part of the men, or should it be a supplement to the union and perform certain functions while retaining the wider organizations?

Paul Douglas, "Shop Committees:
Substitute for, or Supplements to Trade Unions?" (1921)

[Works] councils appear capable of making an efficiency contribution to the performance of advanced industrial democracies improving both individual firm productivity and the effectiveness of state regulation (economic or social) of firms.

Joel Rogers and Wolfgang Streeck,
Works Councils (1995)

The use of works councils, labor/management committees, and other forms of worker participation as a means to improve employment outcomes has been a subject of recurring debate for much of this century. Interest in workplace councils has more recently fueled debate among aca-

demics as well as in public policy circles, most notably during the deliberations of the Clinton administration's Commission on the Future of Worker-Management Relations (1994a, b) and in the Congressional debate over amending the National Labor Relations Act to permit companies to cre-

*The author is Associate Professor of Economics at the Boston University School of Management. This

research was supported by funds from the Economic Policy Institute and the National Science Founda-

Industrial and Labor Relations Review, Vol. 52, No. 3 (April 1999). © by Cornell University.
0019-7939/99/5203 \$01.00

ate workplace committees to address productivity and related issues in nonunion environments (via the so-called TEAM Act).

A considerable literature has emerged estimating the productivity implications of various employee participation efforts (for example, Levine and Tyson 1990; Eaton and Voos 1992; Kelley and Harrison 1992). Far fewer studies, however, have looked at the impact of employee involvement on the effectiveness of state regulation. The exception to this neglect has been studies of the impact of unionization on the enforcement of labor policies.

In an earlier study (Weil 1996), I reviewed a wide variety of cases in which labor unions raise the level of regulatory activity relative to nonunion workplaces. Among the sources of regulatory activity that apparently are responsive to the presence of unions are OSHA, MSHA, FLSA, ERISA, unemployment insurance (filing for benefits), workers' compensation, and the WARN Act. Under each of the workplace regulations, labor unions appear to play the role of a regulatory agent, by increasing the likelihood that workers exercise their rights under labor statutes. In particular, Weil (1991, 1992) demonstrated large and statistically significant union/nonunion differences in employee participation in OSHA inspections, as well as higher levels of enforcement intensity, citation rates, and penalties, in manufacturing and construction workplaces.

Workplace committees (such as mandated safety and health committees) may play a role similar to that of unions by providing a solution to the public goods problem that arises in the exercise of worker rights granted under a wide variety of labor policies. Specifically, by aggregating pref-

erences of workers and providing in-house capacities to monitor and improve public policy outcomes (in labor standards and safety and health, for example), committees may promote better workplace outcomes than would occur if such decisions were left to individual workers. Committees in this way could act as agents ensuring compliance with public policies, just as labor unions do (as shown in previous studies). As such, committees may be substitutes for labor unions. Alternatively, mandated committees might enhance and strengthen the role that unions play in regulatory activities. In this way, they could serve as supplements to unions.

This paper examines the impact of mandated safety and health committees on OSHA enforcement activity as a test of the potential role of committees in enhancing government regulatory efforts. It assesses the impact of committees by examining experiences in Oregon after safety and health committees were mandated in private sector workplaces in 1990. Oregon OSHA enforcement exhibited large union/nonunion gaps prior to imposition of committee mandates. If mandated committees function as workplace agents as described above, the gap between union and nonunion OSHA enforcement should shrink following imposition of a committee mandate; committees can then be viewed as substitutes for unions in this realm. Alternatively, if mandated committees fail to play this role in nonunion workplaces, the gap between union and nonunion enforcement should either remain the same or—if committees act to supplement the activities of unions—grow.

Individual Rights, Collective Agents, and Enforcement

In an analysis of the economics of works councils, Freeman and Lazear (1995) showed that mandating such forms of participation may be optimal from a social welfare perspective. In their model, the collaboration engendered by works councils increases the total economic rents created by a firm. Since such councils will also affect the distribution of rents—assuming

tion, Division of Law and Social Science. The author thanks James Rebitzer, Shulamit Kahn, Paula Voos, Dale Belman, Steven Hecker, Marc Weinstein, and participants at seminars at MIT, the University of Minnesota, and the University of Notre Dame for comments on earlier versions of this paper, and Igor Choodnovskiy for computer programming assistance.

Copies of the computer programs used to generate the results presented in the paper are available from the author.

that the share of surplus captured by employees is a positive function of the degree of influence provided to workers—the degree of authority voluntarily ceded by employers will be less than is socially optimal, since employers capture a shrinking share of the growing pie. As a result, social efficiency can be increased by mandating councils, even though employer rents might be lower than in a world either absent such councils or with voluntary councils having reduced worker influence.¹

The efficacy of mandating councils or committees from the point of view of social regulation must be approached from a somewhat different vantage point. In a world of severely limited resources, government enforcement agencies cannot monitor all of the workplaces under their purview. OSHA, for example, has never had more than 2,000 compliance officers to monitor the more than six million establishments under its purview. Assuming that there are social efficiencies to be gained from the enforcement of public policy standards, reliance on other means to improve compliance with standards can improve social welfare.

One avenue for improved enforcement created under many labor statutes is to provide workers with rights to help achieve policy goals (Edwards 1993). Federal workplace statutes provide a wide variety of rights, ranging from the right to take civil action against an employer for violation of a statute (a common enforcement feature of Civil Rights regulations like Title VII and the American with Disabilities Act), the right to instigate a government enforcement action (see below), and combinations of rights to private and government agency action (such as is found under the Fair Labor Standard Act).²

¹This result arises in part because of the functional form assumed by Freeman and Lazear of the joint gains produced by councils with differing levels of power or discretion. Their results are also symmetric from the point of view of workers: workers would choose to establish councils with more influence than is socially optimal because of their interests in maximizing their share of rents.

²See U.S. General Accounting Office (U.S. GAO) (1994) for a detailed listing of employee rights under

Two rights in particular created under the OSHA Act provide employees a means of initiating and participating in key aspects of enforcement efforts. First, the Act provides employees a right to trigger enforcement actions by the agency. In 1997, there were a total of 20,029 complaint inspections under OSHA, constituting about 22% of all inspections carried out by the agency.³ OSHA also provides workers with an opportunity to have a representative accompany the OSHA compliance officers during the workplace tour and in the closing conference following completion of the inspection. This so-called “walkaround” right provides employees a direct opportunity to call attention to specific workplace problems, or offer an employee perspective on problems cited in the inspection (employers are also allowed to accompany inspectors). Issues regarding assessment of violation(s) severity, abatement plans, and penalty levels are discussed in the course of the workplace tour and at the closing conference. As a result, the employee representative can have important effects on enforcement outcomes (Lofgren 1989). Workers in the United States exercised this right to participate in inspections about 21% of the time in 1993.

Various studies indicate that the propensity to exercise rights varies along systematic lines across different groups. (See, for example, Hoyman and Stallworth [1981] and Shavell [1984] in regard to the propensity to file civil litigation; Peterson [1992] in regard to the likelihood of pursuing grievances in union workplaces; and Feuille and Delaney [1992] and Chachere and Feuille [1993] on filing grievances in nonunion workplaces.) This literature suggests that factors related to the individual (sex, education, background), the workplace environment (size, degree of conflict, manage-

the 28 most important federal statutes administered by the U.S. Department of Labor.

³This figure includes all enforcement actions for all federal- and state-administered OSHA programs. Figures are from OSHA Integrated Management Information System, reported on the OSHA Web site (www.osha.gov).

ment and union policies), and the specific grievance or civil problem involved affect under what circumstances individuals exercise their rights.

The degree to which individual employees exercise rights granted them under labor regulations like OSHA can be expected to depend on the perceived benefits versus costs of exercising rights from the perspective of an individual worker. The benefits of exercising a right are a function of the impact of a given piece of labor legislation on the outcome of concern to the worker. For example, initiating an OSHA inspection potentially improves working conditions for the worker by diminishing or removing the risk of an injury or illness. The greater the level of perceived risk faced by the worker, the more likely he or she is to initiate an inspection or otherwise seek to effect redress of the problem.

In order to ascertain the magnitude of these benefits, workers must acquire information on the *current* and *legally permissible* level of a regulated outcome. The costs of exercising rights are primarily a function of the costs of gathering this information. These are composed of the costs associated with (a) obtaining information regarding the existence of basic rights under OSHA as well as the standards to which employers are held accountable;⁴ (b) gathering information on the current state of occupational risks, which may be difficult if these risks are not fully perceived or appreciated (Viscusi 1983; Viscusi and O'Connor 1984); and (c) learning about the specific details of how the law is administered (for example, the procedures to initiate a complaint inspection). In addition to information-related costs, workers face costs arising from potential employer discrimination (the economic losses associated with

retaliatory reassignment or, in the extreme, being fired) as well as the potential cost of job loss arising from the chance that OSHA compliance will force a firm to reduce employment in the long run.

The decision facing a worker on whether or not to exercise a right is represented diagrammatically in Figure 1. The horizontal axis, X , represents the difference between current workplace conditions (for example, exposure to a health risk) and the regulatory standard for that risk for workplace j , where $X_j < 0$ if the current conditions present risks below permissible levels (that is, the firm goes beyond compliance required by the standard); $X_j = 0$ if the current conditions are equal to the required risk level (the firm is exactly in compliance); and $X_j > 0$ if the current conditions present risks beyond the permissible level (the firm is out of compliance).

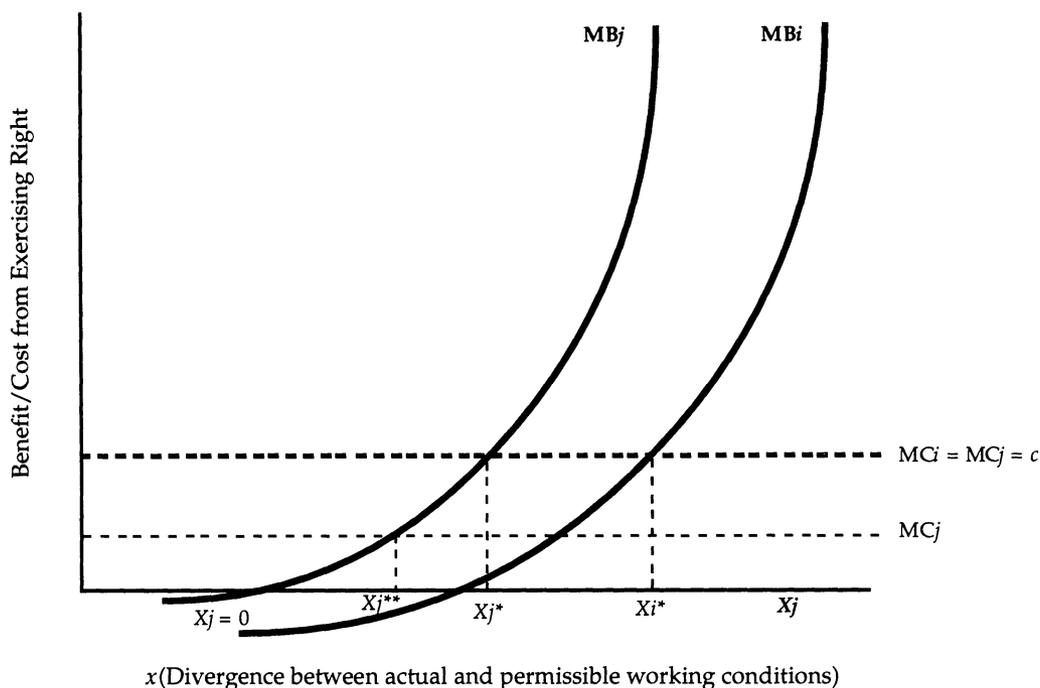
Given this definition of X_j , the figure presents two marginal benefit functions. The lower function (MB_i) represents the marginal worker i in a workplace j who has the highest individual preference for compliance with safety and health standards. The marginal benefit of exercising a right that moves the firm into greater compliance with the standard is positive and increasing in X_j .

Since a violation of an OSHA standard typically affects many workers and is often associated with violations of other standards that might not directly affect the worker triggering the inspection, employee exercise of workplace rights displays positive externalities. Because of this, the marginal benefit for the workplace as a whole is always higher than that of the marginal worker for any X_j . The upper marginal benefit function i_j in Figure 1 represents workers at the workplace as a whole (MB_j), and reflects the vertical aggregation of benefits for all affected workers for any given state X_j .

Figure 1 presents a simple case in which the costs of exercising a right are invariant across the different levels of X_j and the same for an individual worker as they are for the workplace as a whole (the upper dotted line, where $MC_i = MC_j = c$). If rights

⁴This is a recurring problem under OSHA. A survey of OSHA compliance officers by the GAO concluded that "many OSHA inspectors believe workers' participation [in OSHA] is limited by their lack of knowledge about their rights and lack of protection from employer reprisal" (U.S. GAO 1989).

Figure 1. Threshold Model of Worker Exercise of Rights.



are vested at the individual level, worker i will choose to exercise the rights at the state of the workplace X_i^* where $MB_i = c$. Given that the decision is made by the marginal worker with the greatest preference for safe workplace conditions (that is, the lowest tolerance for current conditions being out of compliance), X_i^* represents the threshold level of non-compliance that will trigger the exercise of rights for that workplace, when left to the decision of individual workers.

Given the public good character of the benefits ensuing from the exercise of rights, X_i^* is not optimal for the workplace as a whole, because the marginal worker decides only on the basis of his or her individual preference. Accounting for all workers in the workplace, the optimal threshold in Figure 1 is X_j^* , where $X_i^* > X_j^*$. That is, the exercise of a right at the individual level leads to a “higher” threshold (lower compliance with standards) than would prevail

if the preferences of all workers were considered. Workplace rights therefore will be under-utilized, because the collective benefits arising from their action are not factored into the individual decision. Note also that if the marginal cost curve for a group of workers, MC_j (the lower dotted horizontal line in Figure 1), is lower than that faced by an individual—because of scale economies in the collection of information—the divergence between the individual threshold for exercising the right, X_i^* , and the new collective threshold, X_j^* , grows even further.

Workplace Agents and the Exercise of Rights

A collective workplace agent can potentially solve the problem described above. It can do so first by internalizing the positive externality to workers arising from a claim as a representative of all workers in the

unit. A workplace agent can also gather and disseminate information, thereby lowering the cost of information acquisition faced by individuals. The specific elements required of such an agent are straightforward:

- (1) Interests allied with workers—specifically, an interest in representing the collective preferences of workers in regard to working conditions;
- (2) A means of efficiently gathering and disseminating information on rights, administrative procedures, and the nature of workplace risks;
- (3) A method of providing protection from employer discrimination against individual workers for their exercise of rights.

Conceivably, a safety and health committee could fulfill these roles. First, by representing all workers, it can vertically aggregate preferences for the public goods represented by workplace regulations, following the model of public goods described in Samuelson (1955). Second, a well functioning committee can provide information on job risks as well as OSHA rights, thereby lowering MC_j . Finally, a safety and health committee might provide a protective shield for individual workers, who might therefore be more inclined to report problems before, during, or after inspections than they would be in the absence of such a committee (U.S. GAO 1989). As a result, mandating committee structures could improve social efficiency to the extent that those committees fill the functions described above.

Labor unions can also fulfill all three of the above conditions for the exercise of rights via their basic agency functions.⁵ As the elected representative of workers, a union has incentives to act on behalf of the collective interests of members in the bar-

gaining unit. This means that a union will pursue a legal claim based not on the preferences of an individual worker at the margin, but rather on inframarginal evaluations of those benefits.⁶ Unions also offer individual workers assistance in the actual exercise of their rights. This may result from the operation of committees established under collective bargaining, such as safety and health committees, or via the help of union staff who can trigger inspections. Most important, unions can substantially reduce the costs associated with potential employer discrimination by helping affected employees use anti-discrimination provisions of OSHA and providing protection via collective bargaining agreements regulating dismissals. This formal protection provides security unavailable in many nonunion workplaces, even where a grievance procedure exists (Feuille and Delaney 1992).

We return, then, to the question of whether workplace committees, councils, and similar forms of participation play a role in workplace regulation that makes them substitutes for or supplements to labor unions. If they are substitutes, mandating institutions like workplace safety and health committees should reduce observed union/nonunion gaps in regulatory enforcement for workplaces of comparable characteristics. On the other hand, if committees are not capable of fulfilling the

⁵Williamson (1985:254) points out, "Unions can... serve as a source of information regarding employee needs and preferences." The role of unions in providing basic agency functions also is discussed in Freeman and Medoff (1984), particularly in regard to personnel practices and benefits.

⁶Median voter models of union behavior predict that union leaders tend to pursue policies reflective of more senior members of the unit, which might not be synonymous with the public goods solution to benefit valuation. Alternatively, principal/agent divergences in interest may also lead away from optimal behaviors from the perspective of collective worker interests. For example, the union may have incentives to "overuse" certain rights for strategic reasons unrelated to workplace regulation (as a source of pressure in collective bargaining or strikes, for instance). However, principal/agent divergences in behavior may be moderated both through electoral processes and by worker recourse via duty of fair representation claims, which tend to induce unions to pursue activities consonant with the preferences of represented workers.

three roles described above, union/non-union gaps in enforcement should change little. Finally, if committee mandates have little effect in nonunion workplaces but serve to energize or strengthen union workplace committees, the union/nonunion gap will widen after mandates are imposed.

Data and Methodology

History and Structure of the Oregon Mandates

A small number of states have required workplace safety and health committees for a significant period of time. In Washington State, such regulations go back as far as 1945—predating passage of OSHA itself. Alaska initiated committee requirements for employees in the pulp, paper, and paperboard mill industries in 1973 (U.S. GAO 1992b; Meridian Research 1994). More recently, the number of states mandating some form of employee involvement in safety and health has risen dramatically, to over twenty at the beginning of 1997.

In 1989, responding to a crisis in funding for the state's worker compensation system, Oregon Governor Neil Goldschmidt created a labor/management task force to recommend substantial legislative reform of that system. Negotiations on the task force led to draft legislation that included mandated joint safety and health committees (as well as provisions regarding increases in the state budget for safety and health training and enforcement) as concessions to labor in exchange for substantial restrictions in the workers' compensation system.⁷ Thus, rather than being insti-

tuted because both labor and management believed in the benefits of safety and health committees, the committee mandate was seen by business groups as a concession that was necessary in order to achieve containment of workers' compensation costs (Hecker 1994).⁸

The *Oregon Safe Employment Act* of 1990 requires every public or private employer of more than 10 employees to establish and operate a safety committee. Employers with 10 or fewer employees may also be required to establish committees if they fall into certain high-risk categories (*Oregon State Law*, Chapter 654.176). Additional rules promulgated by the director of OR-OSHA require specific committee attributes. For example, committees must have equal numbers of management and employee representatives (volunteers or representatives designated by their peers), and all safety and health committee members must receive training. The rules also require regular meetings and order employers to compensate committee members at their regular wage for their participation in these meetings. Finally, the rules establish such committee "duties" as finding ways to involve employees in safety and health programs, undertaking hazard assessment and control, reviewing the em-

standard Industrial Classification (SIC) for the most recent year in which data were available. The legislation had relatively little impact for a number of reasons. First, the requirements were difficult to implement, given the firm's need to calculate its injury rate level relative to its SIC cohort. Linking committee requirements to these levels meant that a company could dissolve committees if its injury rate fell below the threshold level in subsequent periods. Second, the state placed a low priority on enforcement of the committee requirements (see Hecker 1994).

⁸The latitude to innovate in this manner arises because of Oregon's status as an "18(b)" state. In accordance with 18(b) provisions, Oregon's OSHA program is governed by the administrative and enforcement policies of the Oregon Occupational Safety and Health Division (OR-OSHA) and not of federal OSHA. This means that OR-OSHA's specific enforcement and administrative policies have taken a path very different from that of federally based OSHA programs.

⁷This was the second time Oregon experimented with safety and health committees. The first effort to require joint safety and health committees in Oregon was a law passed in 1981 that permitted the director of the Oregon Workers' Compensation department to require workplaces with 10 or more employees to establish a safety committee. The legislation restricted the requirements to cases where the employer's lost workday incidence rate exceeded three-quarters of the average incidence rate for the employer's Stan-

employers' safety and health program, and conducting inspections at regular intervals (Oregon Occupational Safety and Health Division 1993).

Data

The OSHA Integrated Management Information System (IMIS) contains information on all inspections conducted by federal- and state-administered OSHA programs. The data base provides information on workplaces inspected by OSHA (for example, establishment and company size, location, union status, SIC classification), characteristics of the inspection (such as length and extensiveness), penalty and violation outcomes, and other administrative characteristics.

In order to study the impact of safety and health committees, I extracted data for the state of Oregon for two time periods: 1988–89, the years preceding the reforms, and 1992–93, the first two complete years when safety and health committees were mandated. These extracts contain all inspections ($N = 23,536$) conducted by the Oregon OSHA program for the entire time period under study. The period 1990–91 was not included because of the transitional nature of committee mandates during those years (see below).

Methodology

The passage of mandated safety and health committees in Oregon provides a unique, although not ideal, experiment to test the effects of committee requirements on the exercise of employee rights. Observed changes in enforcement levels can be attributed to mandated committees if three conditions are confirmed: committee mandates were widely implemented in workplaces; OSHA enforcement policies were unchanged following passage of the committee mandates; and other factors affecting enforcement levels remained unchanged. Although the first assumption is plausible, changes in federal and state OSHA policies complicate assessment of the effects of the committee mandates.

Using a “pre/post” event structure assumes that employers moved into reasonably high levels of compliance with mandates following their imposition. This assumption is consistent with the history of committee mandates in Oregon. The state agency vested with enforcement responsibility (the Department of Insurance and Finance) made enforcement of the committee requirements a high priority in inspection activities immediately following passage of the reforms (Pompeii 1992). Hecker (1994) found evidence of high compliance levels during the first two full years of committee requirements. In 1992, only 373 of 5,721 inspections (6.5%) resulted in citations for failure to establish joint safety and health committees. In 1993, the number of citations fell to 325 out of 5,542 inspections (5.9%). It therefore seems likely that enforcement effects will be found to have arisen from committee mandates by 1993, even given the relatively short duration of committee mandates.⁹

Presenting a more serious difficulty in comparing pre- and post-committee mandate enforcement outcomes is the fact that federal health and safety-related penalty policies changed at almost the same time that committee mandates were imposed in Oregon. The Omnibus Budget Reconciliation Act of 1990, passed by Congress and implemented in March 1991 (the same month that committee requirements came into play in Oregon), allowed OSHA to levy maximum fines some seven times the size allowed under the original OSHA act. The Act also sets a minimum fine of \$5,000 for so-called “willful” violations of standards

⁹Violations of other provisions related to specific aspects of committees were also uncommon, as the following table from Hecker (based on Table 2, p. 18) indicates:

Violations of Provisions Regarding:

Year	Total Inspections	Member-ship	Chair-person	Duties/ Training	Other Functions
1992	5,721	58	24	24	544
1993	5,542	85	38	35	618

(where an employer knowingly and flagrantly fails to comply with a safety or health standard of significant consequence). Although proposed penalties often have been reduced when contested by employers (U.S. GAO 1992a), the effect of these federal policy changes was to raise average penalty levels precisely at the time the new Oregon laws took effect.

In addition, Oregon enforcement policy did not remain constant over this time period. The state OSHA program increased its staff by 73 employees at the same time that it initiated voluntary consultation programs for employers (Hecker, Gwartney, and Barlow 1995). The composition of industries targeted for OSHA enforcement also changed somewhat between the two periods. As a result, a pre/post study structure for examining violations and penalties will also pick up changes arising from both committee and federal and state OSHA policy shifts.

Since the only change in OSHA policy that should affect union/nonunion enforcement differentials is the imposition of a committee mandate, comparing union/nonunion differentials prior to and following passage of the committee mandate is a way to test its impact. This component of the overall change in enforcement levels can be directly measured using the OSHA IMIS data.

OSHA enforcement outcomes, ENF (triggering inspections, participation in inspections, detection of violations, penalty levels), are a function of three main factors,

$$(1) \quad ENF = g(R, C, G),$$

where R is a vector of variables relating to the workplace factors that influence employee exercise of rights (for example, demographic characteristics of the work force, presence of safety and health committees, unionization), C is a vector measuring factors associated with the workplace's state of compliance with OSHA standards (for example, employer size, industry), and G is a vector of variables related to explicit and implicit policies of OSHA at the time of the workplace inspection (for example, scope of inspection, health versus safety focus).

The above analysis suggests that $\delta ENF / \delta R > 0$, since enforcement activity increases where employees are more likely to exercise their designated rights, *ceteris paribus*. One would also expect $\delta ENF / \delta C < 0$, since improved compliance with standards should lead to lower levels of enforcement activity, although the partial derivative $\delta ENF / \delta G$ is of indeterminate sign since changing administrative policies may either increase or decrease enforcement effort.

Since our interest is in the particular effect of committee mandates on comparative enforcement in union and nonunion establishments, we transform the general equation in (1) to create a regression model for the pre- and post-mandate periods focusing on the first vector of variables, R .

The empirical task is to separate out the impact of committee mandates on union/nonunion differentials in OSHA enforcement from the impact of other causal factors (C and G in equation 1) that were also shifting over time. This can be accomplished by estimating the determinants of enforcement prior to and following passage of committee mandates, and then using these estimates to calculate change in the union/nonunion differential between the two periods under study. The specific procedure used here follows Oaxaca's method (1973) for decomposing wage differentials in the study of labor market discrimination.¹⁰

The empirical results that follow test for changes in the union/nonunion enforcement differential in the period prior to and following mandated committees. Specifically, I test three hypotheses,

H_0 : $\beta_U^{PRE} = \beta_U^{POST}$ (no impact of mandated committees),

H_1 : $\beta_U^{PRE} > \beta_U^{POST}$ (mandated committees as substitutes for unions),

H_2 : $\beta_U^{PRE} < \beta_U^{POST}$ (mandated committees as supplements to unions),

where β_U (PRE/POST) represent the estimated union/nonunion differentials on

¹⁰The approach is described in the Appendix.

enforcement, and therefore H_0 corresponds to no change in relative enforcement, H_1 indicates a reduction in the gap (suggesting that committees and unions are substitutes), and H_2 indicates a widening in the gap (suggesting that committees are supplements to unions).

The change in the enforcement gap is estimated using two procedures. First, data for the pre- (1988–89) and post- (1992–93) committee mandate periods are separated, and the following regression model is estimated for each dataset:

$$(2) \quad \text{ENF}^{\text{PRE,POST}} = \alpha + \beta_1 \text{UNION} + \beta_2 \text{SIZE1} \\ + \beta_3 \text{SIZE2} + \beta_4 \text{MULTI} + \beta_5 \text{PREVINS} \\ + \beta_{6-9} \text{OSHACHAR} + \beta_n \text{INDUSTRY},$$

where ENF = seven different enforcement outcomes, described in the following section; UNION = dummy variable for union status of the inspected establishment (1 if union); SIZE1 = establishment size (number of workers); SIZE2 = firm size (number of workers); MULTI = dummy variable for single-plant versus multi-plant company (1 if multi-plant); PREVINS = dummy variable to capture previous OSHA inspections at establishment (1 if previous inspections at establishment); OSHACHAR = four variables capturing OSHA inspection characteristics (see next section for details); and INDUSTRY = ten industry dummy variables.

The two sets of regression estimates for each enforcement outcome provide the union coefficients necessary to estimate the change in the union/nonunion enforcement differentials—that is, for each of the seven enforcement outcomes, the difference between β_U^{PRE} and β_U^{POST} is directly calculated.

In addition to the union status variable, the regressions include variables to capture factors related to a workplace's compliance with OSHA standards at the time of inspection (C). These variables include establishment and firm size, both of which have previously been found to be positively correlated with investment in safety and health practices and OSHA compliance (for example, Sims 1988; Smith 1979); dummies to capture industry-level correlates of the

incentives to comply with standards;¹¹ and a variable for whether the firm operates at a single location or multiple locations, included because of the higher incentives for compliance found in multi-site operations (Viscusi 1986). Also included are variables capturing the changing characteristics of OSHA policy, G , such as the type of inspection, the extent of the inspection, and whether or not it was the first inspection of a workplace.¹²

The second procedure is to pool the pre/post data and use an interaction term to capture the change in the union coefficient. The difference between β_U^{PRE} and β_U^{POST} is directly estimated using an interaction term between union status and whether the specific inspection occurred before or after the committee mandate (Committee Mandate = 1 for post-mandate time period, 0 if prior to the mandate). This procedure imposes the restriction that the values for all enforcement determinants other than unionization are constant across the two periods. If this restriction is valid, the specification should lower the variance in the estimates of the key variable and result in more efficient parameter estimates. I discuss estimates using both procedures in the empirical results section.

Empirical Results

The major enforcement variables under study are summarized in the upper portion of Table 1, which provides overall mean levels of the enforcement variables, hours devoted to inspections, violations detected during inspections, and penalty levels. Table 1 also presents the frequency of other specific enforcement activities, including the type of inspection conducted, the scope of inspection activities, and the frequency of employee interviews and participation

¹¹Both 1- and 2-digit SIC dummies were employed. The level of industry detail did not affect the central findings of the study.

¹²These variables are used as independent variables reflective of OSHA administrative policy because they are set in OSHA's office prior to initiation of the inspection action.

Table 1. Oregon OSHA Enforcement, 1988–89/92–93: Sample Means.
(Standard Deviations in Parentheses)

Variable	Mean Values			1988–89/92–93 Difference
	Full Sample	1988–89	1992–93	
OSHA Enforcement Activity				
Hours/Inspection	31.7 (53.9)	30.1 (47.6)	33.2 (59.2)	3.1**
Total Violations/Inspection	2.7 (3.9)	2.4 (3.5)	2.9 (4.2)	0.5**
Serious Violations/Inspection	1.0 (2.0)	.7 (1.5)	1.2 (2.3)	0.5**
Average Penalty/Violation (1988 \$)	102.0 (454.5)	87.4 (339.3)	115.7 (540.9)	28.3**
Serious Penalty/Violation (1988 \$)	139.1 (497.3)	119.1 (380.8)	157.9 (585.8)	38.8**
Serious/Total Violations	.29	.24	.30	0.06**
Inspection Type (%)				
Fatality/Catastrophe	1.9	1.5	2.3	0.8**
Complaint	14.2	12.5	15.7	3.2**
Programmed	76.7	77.8	75.7	-2.1**
Other	7.2	8.2	6.3	-1.9**
Employee Interview (%)	80.4	82.6	78.3	-4.3**
Employee Representative during OSHA Inspection (%)	26.6	23.2	29.8	6.6**
Number of Inspections	23,536	11,434	12,102	
Characteristics of Inspected Workplaces				
Establishment Size (no. employees)	55.6 (367.0)	49.5 (262.4)	61.4 (444.7)	11.9**
Firm Size (no. employees)	877.3 (17,346.7)	846.5 (15,173.5)	906.5 (19,175.5)	60.0
Multiplant Companies (%)	45.5	51.4	39.9	-11.5**
Unionization Rate (% Union)	19.3	18.7	19.9	1.2**
Industry Composition (%)				
Manufacturing	15.8	13.2	18.3	5.1**
Construction	31.4	32.4	30.4	-2.0**
Service	12.4	11.0	13.9	2.9**
Logging	15.0	22.1	8.3	-13.8**
Transportation	5.6	5.5	5.6	0.1
Wholesale/Retail Trade	12.5	9.7	15.0	5.3**
Public Sector	2.7	2.3	3.1	0.8**
Agriculture/Mining/Other	4.6	3.8	5.4	1.6**

Source: OSHA Integrated Management Information System.

*Statistically significant at the .10 level; **at the .05 level (two-tailed tests).

in inspection activities. The lower half of the table provides characteristics of the inspected establishments in the sample.¹³

¹³In 335 of the 23,536 inspections in the sample, union status could not be determined. These observations were not included in the subsequent analysis.

Table 1 shows that the level of OSHA enforcement increased significantly over the two time periods studied. In the later period, the average OSHA inspection lasted about three hours longer; detected about .5 more violations per inspection, including .5 additional serious violations per in-

Table 2. Oregon OSHA Enforcement: Mean Union/Nonunion Differentials.
(Standard Deviations in Parentheses)

Enforcement Variable	1988-89			1992-93			Total Differ. ($Xu^{un} - Xu^{non}$)
	Union	Nonunion	Diff. (Xu^{un})	Union	Nonunion	Diff. (Xu^{non})	
(1) Incidence of Complaint Inspections	.195	.110	.085	.195	.148	.047	-.038
(2) Incidence of Walkaround Inspections	.479	.177	.302	.555	.241	.341	.039
(3) Hours/Inspection	40.36 (81.43)	27.92 (35.19)	12.44** (1.80)	48.71 (99.28)	30.05 (43.33)	18.66** (2.073)	6.22** (2.74)
(4) Violations/Inspection	2.50 (4.41)	2.38 (3.30)	.12 (.10)	3.09 (5.52)	2.99 (3.76)	.10 (.119)	-.02 (.156)
(5) Serious Violations/Inspection	0.84 (1.79)	0.73 (1.43)	.11** (.04)	1.47 (3.33)	1.18 (2.03)	.29** (.071)	.18** (.082)
(6) Penalty/Violation (\$1988)	117.86 (421.64)	81.25 (318.44)	36.61** (9.70)	165.55 (868.76)	105.98 (425.95)	59.57** (18.25)	22.96 (20.67)
(7) Penalty/Serious Violation (\$1988)	150.37 (453.80)	113.09 (363.19)	37.28** (10.52)	205.39 (897.00)	149.88 (482.92)	55.51** (18.95)	18.23 (21.67)
Number of Inspections	2,138	9,203	11,341	2,406	9,454	11,860	23,201

Source: OSHA Integrated Management Information System.

*Statistically significant at the .10 level; **at the .05 level (two-tailed tests).

spection; and resulted in increased penalties for average and serious violations of health and safety standards. Furthermore, in the later period, 15.7% of OSHA inspections were triggered by employees (via complaint inspections), versus 12.5% in 1988-89. Workers also designated employee representatives to accompany OSHA inspectors in 29.8% of inspections in the later period, representing an increase of 6.6% over the earlier period. These changes are all statistically significant ($p < .05$).

Table 2 reports the mean union/nonunion differentials for the pre- (1988-89) and post- (1992-93) committee mandate periods for seven enforcement variables. The final column presents the difference in union/nonunion differences between the two periods. These results are discussed in detail below.

Complaint Inspections

The most direct measure of the impact

of mandated safety and health committees on the exercise of rights pertains to the right to initiate an OSHA inspection (via "complaint" inspections) and the right to participate in OSHA inspections via a designated representative (the "walkaround" right). The overall incidence of complaint inspections increased following passage of the committee mandate, rising from 12.5% in 1988-89 to 15.7% ($p < .05$) of all inspections in 1992-93 (Table 1). This change arose primarily from an increase in the incidence of complaint inspections in the nonunion sector, which rose from 11% to almost 15% (see row 1 of Table 2). Because the overall incidence of complaint inspections remained constant across the two periods of time in the union sector, the union/nonunion gap in complaint inspection incidence narrowed following passage of the committee mandate (see the final column in the row 1 of Table 2).

As a direct test of whether this narrowing

of the gap arose from changes directly related to the committee mandate, logit regression models are used to estimate the determinants of complaint inspections for a subset of the determinants listed in (2) for the pooled dataset and for the data broken into two separate time periods. Only those factors determined in advance of the inspection are included, since the dependent variable measures an enforcement outcome arising from the pre-inspection activities of the parties. The complete set of estimated coefficients for the pooled sample is presented in column (1) of Table 3.

The negative sign of the interaction coefficient indicates that the union/nonunion gap in the probability of receiving a complaint inspection *decreased* following passage of committee mandates. Using the coefficients from the logit function, the probability of receiving a complaint inspection can be calculated for the pre- and post-committee mandate periods holding other determinants constant at their mean values.¹⁴ These estimates (presented in the first row of Table 5) suggest that the union/nonunion gap in the probability of a complaint inspection declined by about .011 following passage of the committee mandate, although this change was not statistically significant.

Using the unrestricted regression model to estimate the probability of complaint inspections yields a similar estimate of the union/nonunion gap. The estimates are presented in the second column of Table 5. Evaluating the two regressions at mean values of the other variables results in an estimated change in the union/nonunion gap of $-.01$ ($p < .05$).

Table 3. Enforcement Determinants: Logit Estimates, 1988–89/1992–93.

Independent Variable	Dependent Variable	
	(1) Complaint Inspection	(2) Employee Representative at Inspection
Interaction ($\beta_v^{pre} - \beta_v^{post}$)	-.1236 (.1015)	.186** (.073)
Committee Mandate Dummy	.271** (.056)	.307** (.042)
Union	.385** (.079)	1.203** (.055)
Establishment Size (employees)	.0002** (.0001)	.0005** (.00007)
Company Size (000s employees)	.00001 (.00001)	.00001** (.000005)
Multiplant Firm	-.051 (.047)	-.034 (.033)
Health Inspection	-.792** (.051)	-.886** (.061)
Previous Inspection	-.780** (.123)	.278* (.119)
Full Inspection	—	.412** (.047)
Complaint Inspection	—	.109* (.052)
Accident Inspection	—	-.012 (.121)
Industry Controls	Yes	Yes
Intercept	-1.197** (.071)	-1.867** (.066)
Log Likelihood	-19,204	-27,277
Sample Size	23,201	23,201

Source: OSHA Integrated Management Information System.

*Statistically significant at the .10 level; **at the .05 level (two-tailed tests).

¹⁴The values of the coefficients in Table 3 evaluated at their means are used in the following function to estimate probabilities of complaint inspections and employee representation in OSHA inspections: $p(\text{Comp}_j | x_1, \dots, x_n) = [e^{\alpha + \beta_1 x_1 + \dots + \beta_n x_n} / (1 + e^{\alpha + \beta_1 x_1 + \dots + \beta_n x_n})]$, where $\text{Comp}_j = 0, 1$ complaint inspection (1 if complaint inspection, 0 otherwise); x_1, \dots, x_n = independent variables; and $\alpha, \beta_1, \dots, \beta_n$ = estimated coefficients of independent variables.

In 1988–89, a complaint inspection was .085 more likely in a union workplace than in a nonunion workplace. Based on the estimates presented in Table 5, the imposition of a committee mandate led to about a 13% reduction in the union/nonunion difference in the likelihood of a complaint inspection. Committees are therefore associated with an increase in nonunion workers' exercise of their com-

Table 4. OSHA Enforcement Determinants, Oregon: OLS Estimates, 1988–89/1992–93.

Independent Variable	Dependent Variables (Enforcement)				
	(1) Hours/ Inspection	(2) Violation/ Inspection	(3) Serious Viol./ Inspect.	(4) Penalty/ Viol. (1988\$)	(5) Penalty/ Serious Viol.(1988\$)
Interaction ($\beta_U^{PRE} - \beta_U^{POST}$)	5.319** (1.641)	.181 (.119)	.241** (.064)	24.082* (14.543)	21.114 (15.863)
Union	9.623** (1.236)	-.052 (.090)	.034 (.048)	24.436** (10.955)	22.856* (11.950)
Committee Mandate	-0.093 (.838)	.106* (.061)	.269** (.033)	28.034** (7.431)	36.060** (8.105)
Est. Size (no. employees)	.014** (.001)	.0003** (.0001)	.0002** (.00004)	.011 (.008)	.013 (.009)
Firm Size (no. employees)	-.00001 (.00002)	.00001** (.000001)	-.00001** (.000001)	-.0002 (.0002)	-.0003 (.0002)
Multiplant Firm	-.644 (.674)	-.393** (.049)	-.101** (.026)	10.011* (5.970)	8.206** (6.512)
Full Inspection	23.28** (.910)	3.123** (.066)	1.017** (.035)	16.381** (8.063)	55.096** (8.795)
Complaint Inspection	20.033** (1.044)	1.499** (.076)	.641** (.041)	38.802** (9.258)	61.793** (10.099)
Accident Inspection	93.643** (2.374)	1.430** (.172)	1.354** (.092)	959.820** (21.037)	1073.66** (22.947)
Health Inspection	30.923** (1.074)	.916** (.078)	.294** (.042)	-20.924** (9.516)	-8.823 (10.380)
Previous Inspection	2.131 (2.331)	.126 (.169)	.042 (.090)	3.711 (20.657)	-1.854 (22.533)
Industry Controls	Yes	Yes	Yes	Yes	Yes
Intercept	3.551** (1.278)	.360** (.093)	.039 (.049)	18.475 (11.326)	16.156 (12.354)
Adjusted R ²	.160	.1480	.0846	.0911	.0940
Sample Size	23,201	23,201	23,201	23,201	23,201

Source: OSHA Integrated Management Information System.

*Statistically significant at the .10 level; **at the .05 level (two-tailed tests).

plaint inspection rights relative to unionized workers.¹⁵

¹⁵The restricted and unrestricted enforcement determinant equations can be tested for the null hypothesis that the parameters in the two periods have not changed. Chow tests performed on the restricted and unrestricted regressions for the various outcomes allow one to reject the null hypothesis that the parameters have remained the same across the two periods. Nonetheless, both the separate and pooled regressions result in very similar estimates of the change in the union differentials following passage of a committee mandate.

Walkaround rights. The overall incidence of employee participation in inspections via the “walkaround” right rose from 23.2% prior to committee mandates to nearly 30% following passage of the mandates (Table 1). Row 2 of Table 2 shows that the incidence of walkaround inspections rose in both union and non-union workplaces between 1988–89 and 1992–93. Because the incidence increased more rapidly among unionized workplaces, the union/nonunion incidence gap grew by .039 over the two

Table 5. Estimated Change in Union/Nonunion Gap Arising from Committee Mandates.

Enforcement Variable	Comparative Estimates of Union Gap	
	(1) Pooled Equation ^a (Restricted)	(2) Separate Equations ^b (Unrestricted)
(1) Change in Probability of Complaint Inspections ^c	-.011	-.01
(2) Change in Probability of Employee Representation during Inspection ^c	.03**	.03**
(3) Hours/Inspection	5.319** (1.641)	7.804** (1.748)
(4) Violation/Inspection	.181 (.119)	.161 (.127)
(5) Serious Violation/Inspection	.241** (.064)	.213** (.068)
(6) Penalty/Violation (1988\$)	24.082* (14.543)	24.915 (15.477)
(7) Penalty/Serious Violation (1988\$)	21.114 (15.863)	22.971** (10.437)

Source: OSHA Integrated Management Information System.

*Statistically significant at the .10 level; **at the .05 level (two-tailed tests).

^aBased on regression results in Table 4.

^bUnrestricted union gap estimates based on separate regression estimates for 1988–89 and 1992–93 periods for each enforcement outcome. The change in the union gap is calculated as the difference between the estimated union/nonunion coefficient in each period (see text). Full regression results are available from the author.

^cEstimated change in the probability of outcome between the two periods; all other parameters evaluated at their means.

periods (final column of row 2, Table 2).¹⁶

Table 3 reports logit estimates of the probability that employees exercise their right to a walkaround inspection for the pooled sample, controlling for the complete set of factors listed in (2) and including a pre/post mandate dummy and an interaction term to capture $\beta_U^{\text{PRE}} - \beta_U^{\text{POST}}$.

¹⁶Union workplaces experienced increases in overall rates of walkarounds from about 48% to 55.5%. This increase was most dramatic among smaller establishments (those with 1–99 and 100–249 employees). In fact, the incidence of walkarounds actually fell among the union establishments with more than 500 employees. On the other hand, nonunion use of walkarounds increased at statistically significant levels for all size groups. However, the largest increases occurred (as in the case of complaint inspections) among the largest establishments, where the incidence of walkarounds almost doubled from 17.7% to 33.3%.

Column (2) reports a coefficient for the interaction term (.186) that is positive and statistically significant at the .05 level. The change in probability represented by this coefficient is presented in the second row of Table 5, as well as a union/nonunion enforcement gap estimate based on separate 1988–89 and 1992–93 logit regressions. These results imply that passage of the legislation increased the union/nonunion gap in the probability that a worker was involved in an inspection by .03 ($p < .05$), all other factors held constant. Since the pre-mandate gap in union/nonunion walkaround incidence equals .302, the union effect on employee representation grew by about 10% following passage of committee requirements, all other factors held equal. Because the walkaround right offers a particularly useful index of the impact of a mandated committee on the individual employee's "threshold" for exer-

cising rights, I come back to this particular result below.

Inspection duration. OSHA inspections of otherwise comparable workplaces may vary dramatically in the time devoted to them by an OSHA inspector, the employer, worker representatives, and the work force itself (see Lofgren 1989). Holding constant the size of the workplace, inspection time can be used as a proxy for inspection intensity. A safety and health committee's knowledge of the workplace and their higher level of involvement in the actual conduct of the inspection could lead to more intense enforcement efforts and therefore increased time devoted to inspections. This potential impact of mandated committees is suggested by row 3 of Table 2, which indicates that the mean union/nonunion difference in the length of inspections following passage of the mandates grew by about 6.2 hours.

Column (1) of Table 4 presents OLS results for the determinants of hours per inspection for the pooled dataset, using the determinants specified in (2). The interaction variable indicates a 5.3 hour increase in the difference in the number of hours spent on inspections in union versus nonunion workplaces, holding other factors constant. This large and statistically significant effect ($p < .01$) implies that the union/nonunion gap in the length of inspections almost doubled following the passage of a committee mandate, increasing from the 12.4 hour mean union/nonunion difference in 1988–89. The unrestricted case in which enforcement determinants are regressed separately for the pre- and post-mandate periods yields an even larger estimate of $\beta_{U}^{\text{PRE}} - \beta_{U}^{\text{POST}}$. Row 3, column (2) of Table 5 provides the estimated union effect for the separate regressions, showing that the union/nonunion inspection length differential increased by almost eight hours, representing a 63% rise in the union/nonunion gap from its 1988–89 level.¹⁷

¹⁷Applying the decomposition equation derived in the Appendix to the regression results further illuminates the causes of these striking changes in the

Violations detected. A growing union/nonunion gap in both the probability of worker involvement in an inspection and inspection length could affect the relative detection of violations of safety and health standards, all else equal. A simple comparison of average violation detection rates provides evidence consistent with this prediction. Rows 4 and 5 of Table 2 report overall violation and serious violation rates arising in union and nonunion workplace inspections for the pre- and post-mandate periods.¹⁸ The average union/nonunion gap shrank slightly for overall violations, while it grew in the case of serious violations.

The OLS results controlling for the other potentially confounding factors associated with these average changes are presented in columns (2) and (3) of Table 4. The union/nonunion differential rose by .18 for total violations detected per inspection, and by .24 for total serious violations detected per inspection, holding other factors constant. The magnitude of this increase in union/nonunion differentials is large: for total violations, the committee mandate is associated with a 150% increase in the size of the differential over its 1988–89 level of .12; for serious violations, the union/nonunion gap almost tripled from its 1988–89 level of .11. Table 5 presents estimates of the change in the union/nonunion gaps yielded by separate regressions for the two time periods, indicating comparable and statistically significant increases

union/nonunion enforcement gap. Plugging the regression estimates of Table 4 into equation (A6) from the Appendix demonstrates that almost the entire change in inspection hours arising from unionization results from the change in the union differential (that is, pre/post-mandate union *coefficients*) rather than from the change in the *level* of unionization between the two periods. The same result holds for the other enforcement outcomes discussed below. Complete decomposition results are available from the author.

¹⁸Violations of OSHA standards are rated according to their severity by inspectors as "non-serious," "serious," or "willful." For this analysis, willful violations (the most egregious violations of standards, accounting for about 2% of all violations) are grouped with serious violations.

($p < .01$) in the gaps for both total and serious violations.

This large growth in union/nonunion violation differentials in the post-mandate period is particularly striking because of the secular decline in fatality and injury rates over the period under study in Oregon. The number of industrial fatalities dropped from 7.9 per 100,000 workers in 1986 to 5.1 in 1990, while the incidence of lost workday cases (cases per 100 full-time employees) fell from 5.7 in 1986 to 4.8 in 1990 (Pompeii 1992). This implies that the increase in the union/nonunion violation gap represents higher violation detection rates in the union sector rather than a worsening of workplace safety and health conditions over the two time periods.

Penalties received. The sizes of OSHA penalties are determined in part by administrative policies regarding minimum fines for violations of different levels of severity; each of the violation categories “non-serious,” “serious,” and “willful” has a specific penalty range. Administrative policy also dictates different modifications to penalty levels depending on workplace size, previous history of the employer, number of workers exposed to the hazard, and other factors.

Nonetheless, OSHA inspectors are granted considerable discretion in assessing penalties for specific violations and for the inspection as a whole. This means that employers and—if present—employees or their representatives can have an impact on penalty levels. Union participation in inspections, for example, affects the level of penalties assessed in manufacturing and construction industries. It is therefore conceivable that mandated safety and health committees influence penalty procedures. The results of the previous section indicate that one impact of mandated health and safety committees is increased detection of violations and therefore presumably higher *total* penalties per inspection. It is also conceivable, however, that mandated safety and health committees also lead to increases in penalties paid *per violation* of a given standard for the reasons described above.

As mentioned above, federal penalty

policies led to increases in the maximum allowable penalty per violation. Thus, as shown in Table 1, average penalties and serious penalties per violation both increased sizably over the study period. However, nothing in this change in penalty policies should affect the *relative* penalties per violation paid in union versus nonunion workplaces.

Table 2 reports mean penalty levels (penalty per violation and penalty per serious violation) for union and nonunion workplaces in 1988–89 and 1992–93 (both measured in 1988 dollars). The results indicate an increase in the difference between penalties paid by union and nonunion employers. When other confounding factors are controlled for, the growth in estimated union/nonunion differentials persists for both average penalties per violation and average penalties per serious violation of standards. For the pooled sample (Table 4), the passage of committee mandates is associated with a statistically significant ($p < .10$) and positive increase in penalties per violation in union versus nonunion workplaces of \$24.10 and an increase in the union/nonunion gap of average serious penalties per violation of \$21.11. Compared to mean 1988–89 differentials, the union/nonunion differentials on penalties grew by about 66% for average penalties and 57% for serious penalties. Separate regressions for the two periods (Table 5) result in estimates of comparable magnitude.

What Is Driving the Growing Differentials?

The growth in union/nonunion differentials found in all areas of enforcement except for complaint inspection incidence suggests that the “mandated committees as supplements” effect outweighs the “mandated committees as substitutes” effect. However, the magnitude of these separate effects remains of interest: even if committees on average widen the enforcement gap, it might still be the case that they result in important changes in nonunion workplaces.

Table 6. Walkaround Inspection Incidence in Manufacturing, 1988–89 versus 1992–93: Oregon versus Federal States.

Size (no. employees)	Walkaround Inspections (% of all Inspections)		Difference
	1988–89	1992–93	
Oregon			
Overall	23.2	29.8	6.6**
1–99	22.5	29.9	7.4**
100–249	33.8	40.9	7.1**
250–499	44.4	43.7	-0.7
500+	49.2	49.8	0.6
N	11,434	12,102	
Union			
Overall	47.9	55.5	7.6**
1–99	44.4	52.6	8.2**
100–249	57.0	65.2	8.2**
250–499	64.9	64.4	-0.5
500+	65.3	59.2	-6.1**
N	2,138	2,406	
Nonunion			
Overall	17.7	24.1	6.4**
1–99	18.2	25.3	7.1**
100–249	18.8	22.7	3.9**
250–499	15.4	21.9	6.5**
500+	17.7	33.3	15.6**
N	9,203	9,454	
Federal States			
Overall	22.7	22.8	0.1
1–99	20.3	21.4	1.1**
100–249	27.9	27.4	-0.5*
250–499	39.2	37.8	-1.4**
500+	49.0	45.8	-3.2**
Union	50.2	51.5	1.3**
Nonunion	9.5	9.6	0.1
N	115,242	94,296	

Source: OSHA Integrated Management Information System.

*Statistically significant at the .10 level; **at the .05 level (two-tailed tests).

Because of the contemporaneous change in other Oregon OSHA policies regarding enforcement, one cannot gauge the separate impact of mandates on union and nonunion workplaces as opposed to the *relative* change examined above. However, examination of one aspect of enforcement activity—workers' decision to accompany OSHA personnel in the course of an inspection (the "walkaround right")—does provide insight into what is driving the growth in union/nonunion differentials.

Exercise of the walkaround right can be framed in the decision-making model depicted in Figure 1. Selecting a person to serve as the employee-designated agent to accompany OSHA inspectors arises from decisions made by the work force. Comparing the pre- and post-mandate exercise of this right therefore provides a measure of the degree to which committees change the threshold point at which workers exercise the right. What is more, since exercise of the walkaround right arises from choices made by workers, not by OSHA personnel, it should not be affected by other committee policy changes initiated in 1991. In fact, Oregon OSHA policy requires inspection personnel to interview employees on an individual basis if there is not an employee-designated party to accompany the inspector. The OSHA IMIS data code such interviews separately, so the walkaround measure is a reliable indicator of the presence of an employee-designated representative. Moreover, there were no changes in OSHA administrative protocols regarding the walkaround right over the time period under study (Hecker, Gwartney, and Barlow 1995).

Table 6 presents the results of analysis of the incidence of walkarounds in union and nonunion workplaces, holding constant establishment size during the two time periods. As already shown in Table 2, walkarounds increased for both groups in the aggregate. But the composition of that increase differs strikingly between union and nonunion workplaces. On the union side, the largest increases in walkaround rights occurred among the smallest workplaces, where the incidence increased by almost .08 for workplaces with fewer than 100 workers. On the other hand, the incidence declined by .06 for the largest union workplaces. In contrast, the incidence of walkaround inspections increased for all nonunion workplaces between the two time periods. Most dramatically, the incidence of walkarounds almost doubled for the largest nonunion workplaces in the sample, from .177 to .333. Thus while the size of the increase in walkaround incidence was greater in union than in nonunion work-

places among smaller workplaces (driving the overall widening of the gap), among the largest workplaces, passage of the committee mandate was associated with a reduction in the union/nonunion gap.

In order to test whether these results arise from committee changes as opposed to other shifts over the time period, we can compare them with changes in the incidence of walkarounds in a set of states that did *not* have a change in committee requirements over the same time period. A natural comparison group is the set of states that are administered by the national offices of OSHA (so-called "Federal States"). These states offer a useful benchmark because they are subject to a common set of enforcement and administrative policies (those set by OSHA at the national level) as opposed to states like Oregon, which are allowed to modify their procedures to some extent because of their federally approved status as state-administered OSHA programs (see footnote 8).

The lower portion of Table 6 presents the incidence of walkarounds among the "Federal States" group. The table indicates that the overall incidence of walkarounds remained relatively unchanged overall between 1988–89 and 1992–93. Comparing the two periods by size of establishment groups reveals, in fact, a modest decline in walkaround incidence for three of the four size groups. The incidence of walkarounds rose slightly in Federal States among union workplaces, from 50.2% of inspections in 1988–89 to 51.5% in 1992–93, but far less dramatically than over the same period in Oregon (where walkaround incidence rose from 47.9% to 55.5%). In contrast, although walkaround incidence increased in Oregon from 17.7% to 24.1% between 1988–89 and 1992–93 among nonunion workplaces, it remained basically unchanged among the Federal States comparison group over the same period.

The Oregon walkaround evidence offers insight into the more general impact of committee mandates within union and nonunion workplaces. It seems reasonable to expect that one of the early effects of newly formed committees is to lower the thresh-

old for exercise of the walkaround right. Expanding use of this right may therefore roughly parallel the formation or activation of committees. This suggests that the mandates led to different foci of growth in committee activity in union versus nonunion workplaces. On the union side, committee mandates led most dramatically to an expansion of health and safety committees in small workplaces where they might not have existed prior to unionization, while larger union workplaces were much more likely already to have had health and safety committees in place (Planek and Kolosh 1993). This interpretation of the evidence is also consistent with the positive relationship between establishment size and union enforcement effects found in other studies of OSHA (for example, Weil 1991, 1992).

On the nonunion side, a major impact of a committee mandate seems to have been providing an impetus for committee formation among larger establishments. Two factors may account for this effect. First, because large establishments tend to receive greater regulatory scrutiny in general, health and safety committees are more likely to form in those workplaces, given the strong external incentives to comply with the mandate. Second, the cost of exercising rights for workers is lower in larger workplaces because the threat of employer discrimination tends to be less and the pool of potential volunteers for committee activity larger than in a small, nonunion workplace.¹⁹

Committee formation, however, is not synonymous with committee effectiveness. Studies of health and safety committees in the union sector find that they often take considerable time to become effective at

¹⁹The threat of discrimination is lower in large than in small workplaces because of the higher potential costs faced by employers for taking such actions, which are illegal under most labor policy statutes like OSHA. In addition, workers in a large workplace are better able than those in a small workplace to maintain their anonymity if they choose to exercise their rights.

undertaking their responsibilities (Kochan, Dyer, and Lipsky 1977; Tuohy and Simard 1993). It is therefore probably the case that the Oregon committee mandate strengthened committees that existed prior to passage of committee mandate legislation—particularly those in larger unionized workplaces. The growth in union/nonunion enforcement differentials following passage of the Oregon committee mandate is consistent with this interpretation and indicates the difficulty of moving committees from an elementary level of activity to the more sophisticated level envisaged by the legislation.

Conclusion

The data show that in Oregon the overall effect of a health and safety committee mandate was to widen differences between union and nonunion levels of OSHA enforcement in the workplace. This suggests that mandated safety and health committees' "supplement to unions" effect dominates their "substitutes for unions" effect. Across a variety of enforcement measures, the only case in which the committee mandate led to a decrease in the union/nonunion gap was the probability that a complaint inspection was filed, and that effect was very small, and not statistically significant at conventional levels.

It could be that the reported results are a product of transitional factors. The first impact of mandatory committees could be to encourage the use of the most basic rights (that is, the right to initiate an inspection or to accompany OSHA representatives during their inspection). The more complex tasks of committees, reflected in their impact on other enforcement outcomes, might require greater levels of experience and skill. If so, unionized workplaces might have a head-start in their ability to undertake basic activities, so that they pull away from nonunion workplaces shortly after a mandate is imposed, but nonunion workplaces may begin to "catch up" over the longer term. A study of data from the Workplace Industrial Relations Survey conducted in the United Kingdom provides

some support for this interpretation. The study reports that joint health and safety committees with employee representatives appointed by unions *as well as* joint committees in which unions did not participate in the selection of employee representatives led to reductions in workplace injuries relative to those achieved in workplaces in which management alone determined health and safety policy (Reilly, Paci, and Holl 1995).

An alternative explanation of the Oregon experience is that safety and health committees can only go so far in a workplace that lacks an *independent* representative of the work force. That is, union health and safety committees may be more effective at providing workplace public goods and lowering the costs associated with the exercise of rights by providing better protection against employer discrimination aimed at those who use those rights. If so, the union/nonunion differentials documented above would indicate inherent disparities in the performance of health and safety committees in union versus nonunion workplaces. The latter explanation is consistent with Canadian evidence on committee effects on safety and health outcomes. In particular, evaluations of mandated health and safety committees in Ontario and Quebec show the persistence of union/nonunion gaps in regulatory enforcement and in the self-reported effectiveness of committee activities over a long period of time (Bernard 1995; Tuohy and Simard 1993).

Ongoing experience with mandated committees in Oregon and other states will therefore be important in measuring the long-term consequences of mandates. The lessons from the Oregon experience to date, however, echo the conclusion drawn by Paul Douglas in 1921. At the close of his article, "Shop Committees," Douglas wrote:

Modern industry needs both the shop committee and the trades union, since both are necessary for the effective carrying out of the relationship between workmen and employer.... The relationship of the two bodies, in other words, is properly complementary, and not mutually exclusive. We can only hope that in

practice this harmonization will be secured. (p. 107)

In nonunion environments, mandated workplace committees may partially satisfy the need for workplace public goods. How-

ever, in these settings mandated committees do not provide a full solution to the problem of workplace public policy provision. Apparently, a combination of workplace institutions is necessary to fully address public policy concerns.

APPENDIX

The Oaxaca procedure can be applied to the estimation of mandated committees on union/nonunion enforcement differentials as follows. Assume that pre- and post-mandate enforcement can be modeled as

Pre-Mandate Enforcement Determinants:

$$(A1a) \quad ENF^{PRE} = \alpha^{PRE} + \beta_U^{PRE} UNION^{PRE} + \beta_K^{PRE} X_K^{PRE}$$

Post-Mandate Enforcement Determinants:

$$(A1b) \quad ENF^{POST} = \alpha^{POST} + \beta_U^{POST} UNION^{POST} + \beta_K^{POST} X_K^{POST}$$

where β_U (PRE/POST) represent the estimated union/nonunion differentials on enforcement and β_K are the estimated effects of a vector of variables X_K associated with both compliance-related outcomes and government policies (that is, the types of variables associated with C and G in equation 1). The average difference in pre- and post-committee mandate requirements is therefore

$$(A2a) \quad \widehat{ENF}^{PRE} = \alpha^{PRE} + \beta_U^{PRE} UNION^{PRE} + \beta_K^{PRE} X_K^{PRE}$$

$$(A2b) \quad \widehat{ENF}^{POST} = \alpha^{POST} + \beta_U^{POST} UNION^{POST} + \beta_K^{POST} X_K^{POST}$$

If the determinants of enforcement in the period following mandated committees are similar to those prior to the mandates, it should be true that

$$(A3) \quad \widehat{ENF}^{POST} = \alpha^{PRE} + \beta_U^{PRE} UNION^{POST} + \beta_K^{PRE} X_K^{POST}$$

The overall change in enforcement outcomes can

be decomposed into the following:

$$(A4) \quad \widehat{ENF}^{PRE} - \widehat{ENF}^{POST} = \frac{\widehat{ENF}^{PRE} - \widehat{ENF}^{POST}}{(\widehat{ENF}^{PRE} - \widehat{ENF}^{POST}) + (\widehat{ENF}^{POST} - \widehat{ENF}^{POST})}$$

Substituting (A2) and (A3) into (A4) gives

$$(A5) \quad \widehat{ENF}^{PRE} - \widehat{ENF}^{POST} = [(\alpha^{PRE} + \beta_U^{PRE} UNION^{PRE} + \beta_K^{PRE} X_K^{PRE}) - (\alpha^{PRE} + \beta_U^{PRE} UNION^{POST} + \beta_K^{PRE} X_K^{POST})] + [(\alpha^{PRE} + \beta_U^{PRE} UNION^{POST} + \beta_K^{PRE} X_K^{POST}) - (\alpha^{POST} + \beta_U^{POST} UNION^{POST} + \beta_K^{POST} X_K^{POST})]$$

Finally, rearranging terms in (A5), focusing particularly on the coefficients of the union variables, provides the following:

$$(A6) \quad \widehat{ENF}^{PRE} - \widehat{ENF}^{POST} = [(\beta_U^{PRE} - \beta_U^{POST})(UNION^{POST}) + (\beta_K^{PRE} - \beta_K^{POST})(X_K^{POST}) + (\alpha^{PRE} - \alpha^{POST})] + [\beta_U^{PRE}(UNION^{PRE} - UNION^{POST}) + \beta_K^{PRE}(X_K^{PRE} - X_K^{POST})]$$

The first term in equation (A6) provides the direct estimate of the change in enforcement attributable to the shift in the union coefficients—that is, the relative increase, decrease, or lack of change in the union/nonunion gap in enforcement, and similar changes for other enforcement determinants. The second term represents the portion of enforcement change arising from shifts in the levels of variables between the two periods (including the density of unionization).

REFERENCES

Bernard, Elaine. 1995. "Canada: Joint Committees on Occupational Safety and Health." In Joel Rogers and Wolfgang Streeck, eds., *Works Councils: Consultation, Representation, and Cooperation in Industrial Relations*. Chicago: University of Chicago Press, pp. 351-74.

Chachere, Denise, and Peter Feuille. 1993. "Grievance Procedures and Due Process in Nonunion Workplaces." *Proceedings of the Forty-Fifth Annual Meeting*. Madison, Wis.: Industrial Relations Research Association, pp. 446-55.

Commission on the Future of Worker-Management Relations. 1994a. *Fact Finding Report*. Washington, D.C.

_____. 1994b. *Report and Recommendations*. Washington, D.C.

Douglas, Paul. 1921. "Shop Committees: Substitute for, or Supplements to Trade Unions?" *Journal of Political Economy*, Vol. 29, No. 2 (February), pp. 89-107.

Eaton, Adrienne, and Paula Voos. 1992. "Unions and Contemporary Innovations in Work Organization, Compensation, and Employee Participation." In Lawrence Mishel and Paula Voos, eds., *Unions and Economic Competitiveness*. Armonk, N.Y.: M.E. Sharpe, pp. 173-215.

Edwards, Richard. 1993. *Rights at Work: Employment Relations in the Post-Union Era*. Washington, D.C.: Brookings Institution.

Feuille, Peter, and John Delaney. 1992. "The Individual Pursuit of Organizational Justice: Grievance Procedures in Nonunion Workplaces." *Research in Personnel and Human Resources Management*, Vol. 10, pp. 187-232.

Freeman, Richard, and Edward Lazear. 1995. "An Economic Analysis of Works Councils." In Joel

- Rogers and Wolfgang Streeck, eds., *Works Councils: Consultation, Representation, and Cooperation in Industrial Relations*. Chicago: University of Chicago Press, pp. 27–50.
- Freeman, Richard, and James Medoff. 1984. *What Do Unions Do?* New York: Basic Books.
- Hecker, Steven. 1994. "Legally Mandated Joint Safety and Health Committees: The Oregon Experience in Comparative Perspective." Paper presented at the Conference on Labor Participation and Health and Safety, Higgins Labor Research Center, University of Notre Dame, April 16.
- Hecker, Steven, Patricia Gwartney, and Amy Barlow. 1995. *Declining Occupational Injury Rates in Oregon*. Eugene, Ore.: Labor Education and Research Center, University of Oregon.
- Hoyman, Michele, and Lamont Stallworth. 1981. "Who Files Suits and Why: An Empirical Portrait of the Litigious Worker." *University of Illinois Law Review*, Vol. 198, No. 1, pp. 115–59.
- Kelley, Maryellen, and Bennett Harrison. 1992. "Unions, Technology, and Labor Management Cooperation." In Lawrence Mishel and Paula Voos, eds., *Unions and Economic Competitiveness*. Armonk, N.Y.: M.E. Sharpe, pp. 247–86.
- Kochan, Thomas, Lee Dyer, and David Lipsky. 1977. *The Effectiveness of Union-Management Safety and Health Committees*. Kalamazoo, Mich.: Upjohn Institute for Employment Research.
- Levine, David, and Laura D'Andrea Tyson. 1990. "Participation, Productivity, and the Firm's Environment." In Alan Blinder, ed., *Paying for Productivity: A Look at the Evidence*. Washington, D.C.: Brookings Institution, pp. 183–243.
- Lofgren, Don J. 1989. *Dangerous Premises: An Insider's View of OSHA Enforcement*. Ithaca, N.Y.: ILR Press.
- Meridian Research, Inc. 1994. "Review and Analysis of State-Mandated and Other Worker Protection Programs." Final Report Prepared for Office of Program Evaluation, Directorate of Policy, Occupational Safety and Health Administration.
- Oaxaca, Ronald. 1973. "Male-Female Wage Differentials in Urban Labor Markets." *International Economic Review*, Vol. 14 (October), pp. 693–709.
- Oregon Occupational Safety and Health Division. 1993. *Workplace Safety Committees: A Basic Guide to Developing and Implementing an Occupational Safety and Health Committee*. Salem, Ore.: OR-OSHA Resource Center.
- Peterson, Richard. 1992. "The Union and Non-union Grievance System." In David Lewin, Olivia Mitchell, and Peter Sherer, eds., *Research Frontiers in Industrial Relations and Human Resources*. Madison, Wis.: Industrial Relations Research Association.
- Pompeii, John. 1992. "Testimony on the Comprehensive Occupational Safety and Health Reform Act." Presented to the U.S. House of Representatives, Committee on Education and Labor.
- Reilly, Barry, Pierella Paci, and Peter Holl. 1995. "Unions, Safety Committees, and Workplace Injuries." *British Journal of Industrial Relations*, Vol. 33, No. 2 (June), pp. 275–88.
- Rogers, Joel, and Wolfgang Streeck. 1995. "The Study of Works Councils: Concepts and Problems." In Rogers and Streeck, eds., *Works Councils: Consultation, Representation, and Cooperation in Industrial Relations*. Chicago: University of Chicago Press, pp. 3–26.
- Samuelson, Paul. 1955. "Diagrammatic Exposition of a Theory of Public Expenditure." *Review of Economics and Statistics*, Vol. 37, pp. 350–56.
- Shavell, Steven. 1984. "A Model of the Optimal Use of Liability and Safety Regulation." *RAND Journal of Economics*, Vol. 15, pp. 271–80.
- Sims, Robert Hamilton. 1988. "Hazard Abatement as a Function of Firm Size: The Effects of Internal Firm Characteristics and External Incentives." Ph.D. diss., RAND Graduate Institute.
- Smith, Robert. 1979. "The Impact of OSHA Inspections on Manufacturing Injury Rates." *Journal of Human Resources*, Vol. 14, No. 2, pp. 145–70.
- Tuohy, Carolyn, and Marcel Simard. 1993. *The Impact of Joint Health and Safety Committees in Ontario and Quebec*. Study prepared for the Canadian Association of Administrators of Labour Law, Unpublished manuscript.
- U.S. Government Accounting Office. 1989. *How Well Does OSHA Protect Workers from Retributions? Inspector Opinions*. GAO/T-HRD-90-8.
- _____. 1992a. *Occupational Safety and Health: Penalties for Violations Are Well below Maximum Allowable Penalties*. GAO/HRD-92-48.
- _____. 1992b. *Occupational Safety and Health: Worksite Safety and Health Programs Show Promise*. GAO/HRD-92-68.
- _____. 1994. *Workplace Regulation: Information on Selected Employer and Union Experiences*. GAO/HEHS-94-138.
- Viscusi, W. Kip. 1983. *Risk by Choice: Regulating Health and Safety in the Workplace*. Cambridge, Mass.: Harvard University Press.
- Viscusi, W. Kip, and Charles O'Connor. 1984. "Adaptive Responses to Chemical Labeling: Are Workers Bayesian Decision Makers?" *American Economic Review*, Vol. 74, No. 5, pp. 942–56.
- Weil, David. 1991. "Enforcing OSHA: The Role of Labor Unions." *Industrial Relations*, Vol. 30, No. 1 (Winter), pp. 20–36.
- _____. 1992. "Building Safety: The Role of Construction Unions in the Enforcement of OSHA." *Journal of Labor Research*, Vol. 13, No. 1 (Winter), pp. 121–32.
- _____. 1996. "Regulating the Workplace: The Vexing Problem of Implementation." In David Lewin, Bruce Kaufman, and Donna Sockell, eds., *Advances in Industrial and Labor Relations*, Vol. 7. Greenwich, Conn.: JAI Press, pp. 247–86.