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EMPLOYEE INVOLVEMENT PROGRAMS
AND FIRM PERFORMANCE

by

John Thomas Delaney* Casey Ichniowski**
and David Lewin***

*John Thomas Delaney
Graduate School of Business
Columbia University
New York, New York 10027

**Casey Ichniowski
Graduate School of Business
Columbia University
New York, New York 10027

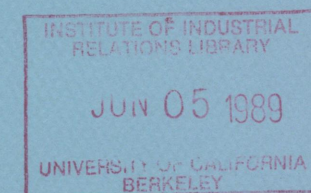
***David Lewin
Graduate School of Business
Columbia University
New York, New York 10027

and

Associate Director
Institute of Industrial Relations
U.C.L.A.

Visiting Professor
Anderson Graduate School of Management
U.C.L.A.

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JOHN THOMAS DELANEY

CASEY ICHNIOWSKI

and DAVID LEWIN *

**Graduate School of Business
Columbia University
New York, New York 10027**

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EMPLOYEE INVOLVEMENT PROGRAMS AND FIRM PERFORMANCE

Union and nonunion employers have adopted employee involvement and participation initiatives in order to enhance organizational performance. These programs, with such names as quality of working life (QWL), quality circles (QC), and labor-management participation teams, however, have not been uniformly successful. While some employee involvement (EI) initiatives seem to have improved firm performance, others have been abandoned after meeting employee resistance or disrupting workplace operations (see Walton, 1985).

In nonunion settings, EI may promote better performance when it occurs in conjunction with other workplace practices, such as flexible work deployment and assignment systems or complaint resolution procedures, that are designed to motivate employees and respond to their needs. In unionized settings, EI programs may be implemented to enhance worker productivity and offset some of the labor cost increases associated with collective bargaining (see Kochan, Katz, and McKersie, 1986). In both settings, improvements in organizational performance are due to increased labor productivity; productivity is stimulated by greater worker commitment and motivation and more opportunities for workers to use their skills and knowledge.

This study investigates the relationship between EI and the performance of U.S. businesses. In particular, we consider whether effects of EI on firm performance vary with the union status of the business or with the extent of decision-making authority that is granted to employees by the EI program.

DATA AND SAMPLE

Data for this study were collected as part of a larger study of human resource management (HRM) policies and the economic performance of U.S. business units. Information on the financial performance of business units, contained in Standard and Poor's COMPUSTAT II data file for 1986, was merged with responses to a survey of HRM policies followed by these businesses during that year. Overall, a sample of 495 business units reported human resource data that could be merged with financial performance information (for a discussion of the questionnaire and characteristics of responding and nonresponding firms, see Delaney, Lewin, and Ichniowski, 1988).

Responses from a sample of 227 business units in the manufacturing sector are analyzed in this study. The sample is restricted to these business units because data on potentially important determinants of firm performance, such as measures of market power, are available only for manufacturing industries. In addition, this approach should reduce the extent of unobserved heterogeneity that would occur in a sample of manufacturing and nonmanufacturing firms. Finally, we focus on EI programs covering manufacturing and production workers. These sample restrictions serve to reduce problems that could confound estimates of the relationship between EI and firm performance.

In this study we use a business unit's return on capital assets (ROA) as the measure of firm performance. ROA, defined as the ratio of net income to identifiable assets, is calculated

from the COMPUSTAT II data file. A dummy variable indicating the presence of an employee involvement or participation initiative is created from our questionnaire.¹

As noted above, empirical evidence of the effects of EI programs on firm performance is mixed. Studies by Kochan and his associates provide the most rigorous tests of the effects of EI or QWL efforts on the economic performance of firms (for a review, see Kochan, Katz, and McKersie, 1986). While that research reveals little or no efficiency gains, it suggests that better established participation initiatives could have larger effects than the relatively limited EI programs that have been studied (see Katz, Kochan, and Keefe, 1987; Katz, Kochan, and Gobeille, 1983; Shuster, 1983; Rosenberg and Rosenstein, 1980).

To address this issue, we use survey information on the amount of workplace decision making authority granted to employees by EI programs. Specifically, based on responses to another participation question, we categorize the EI programs in our sample as having high or low decision making authority.² Differences in firm performance may occur across high and low authority EI programs because employees may respond more favorably to an initiative that gives them more voice in workplace decisions than a program that gives them little say in work-related decisions.

Our analysis also includes a more precise measure of union status than has been employed in other studies. We classify firms into three union status categories: (1) Firms having only

unionized manufacturing and production employees are referred to as "totally unionized firms;" (2) Firms having both unionized and nonunion manufacturing and production workers are referred to as "double-breasted firms," and: (3) Firms having only nonunion manufacturing and production workers are referred to as "totally nonunion firms." This specification allows us to identify differences in EI-induced effects on ROA that occur between unionized firms with nonunion operations and totally unionized firms.

EMPLOYEE INVOLVEMENT AND UNION STATUS

Table 1 presents information on the EI programs for manufacturing and production workers in totally unionized, double-breasted, and nonunion manufacturing firms.³ In addition, the data indicate the extent to which EI initiatives affect the unionized and nonunion operations of double-breasted firms. The table suggests three observations. First, within double-breasted businesses, unionized and nonunion employees appear to have the same likelihood of coverage by an EI program. Unionized and nonunion workers were treated differently in only three of the 54 double-breasted businesses. In the other double-breasted firms either both groups of employees were covered by an EI program or none of the employees were covered by such an initiative. Because of this finding, the three firms having different EI policies for their unionized and nonunion operations will be excluded from our multivariate analyses.

[INSERT TABLE 1 ABOUT HERE]

Second, the incidence of EI programs is similar across the union status categories, though the proportions are slightly larger in firms having some unionized workers than in totally nonunion firms. Third, while none of the EI programs in the sample gave complete decision making authority to employees, more than one-half of the programs in double-breasted firms and 41 percent of the programs in totally nonunion firms gave employees high decision making authority. In contrast, only one of the five initiatives in totally unionized workplaces gave high decision making authority to workers. Thus, it appears that workers are granted more decision making authority by EI plans implemented in businesses with nonunion operations.

Data not presented in the table on worker participation in EI programs amplify this difference. High worker participation is defined to occur where 40 percent or more of a business unit's manufacturing employees are covered by the EI program. Using this definition, high participation occurs in 45.1 percent of the EI programs in totally nonunion firms and in 20 percent or less of the EI programs in double-breasted or totally unionized firms. In other words, although union status does not appear to affect the implementation of EI initiatives, EI programs appear to provide workers with more decision making authority and to cover more workers in firms with nonunion employees than in firms with unionized employees. Given these observations, we turn to an assessment of the ways in which union status and EI initiatives can influence firm performance.

THEORETICAL FRAMEWORK

Research on employee involvement suggests that EI programs influence firm performance through their effects on workplace efficiency. In particular, EI programs have been asserted to increase the contribution, commitment and motivation of workers. Below, we assume that EI initiatives with various characteristics are possible indicators of productivity enhancement.

An economic analysis of EI is more complex in unionized settings than in nonunion settings. In a unionized environment the productivity improvements stimulated by EI programs are probably combined with relative increases in labor costs. In addition, the possible efficiency effects of EI programs, as well as the wage and nonwage effects of unions can affect different measures of firm performance in different ways. In this study, we investigate the effects of EI and union status on return on capital assets (ROA). Labor cost and productivity differentials will affect both the total profits and the capital stock components that comprise this particular index of firm performance.

Assuming that EI programs reflect productivity differences, especially labor productivity differences, and that EI programs in unionized businesses indicate some combination of labor productivity and cost differentials, several distinct "EI-union status" cases can be developed. The simplest case involves the effect of EI in nonunion environments. If a totally nonunion business implements a successful EI program (one that enhances

labor productivity), ROA will increase relative to ROA in nonunion environments having no EI program (i.e., no productivity effect). Output will be produced with relatively less labor input, so that profits increase with no change in capital stock.

The impact of an equivalent productivity-enhancing EI program on ROA in totally unionized businesses is less clear, however, because unionization should alter labor costs. In this case, differences in union behavior and differences in assumptions about the nature of the production process will alter theoretical predictions. However, Clark's (1984) derivation of the effects of changes in labor costs and productivity on ROA illustrate several key dynamics. Clark considers, among other theoretical possibilities, a monopoly union, "on-the-demand-curve," framework with a constant elasticity of substitution, and constant returns to scale production technology. In this case, if d^L is a labor productivity differential (due to EI or other union policy), and the union also raises labor costs, then the change in ROA due to union-related EI and labor cost differentials ($\eta_{ROA,u}$) will be:

$$(\eta_{ROA,u}) = \alpha m[1 - \sigma] - d^L \quad (1)$$

where α = labor's share; m = markup; and σ = the elasticity of capital-labor substitution. This change in ROA is less positive than an equivalent EI-related productivity effect in a nonunion business because labor costs increase under unionism. These effects may lead to a decrease in ROA relative to the "no EI-nonunion" base case, depending in particular on σ , because

capital stock is the denominator of this performance measure. Where σ is less than one, $\eta_{\text{roa},u}$ will likely be positive, although it could turn negative. Where σ is greater than one, $\eta_{\text{roa},u}$ will be negative.

The ultimate effect of productivity and labor cost differentials on ROA critically depend on σ because capital investment is the denominator of this index. If σ varies across totally unionized businesses and partially unionized businesses, then $\eta_{\text{roa},u}$ will differ between these two kinds of firms. For example, double-breasted businesses and totally unionized businesses may respond differently to labor cost changes due to unionism. In most companies, the total change in capital stock resulting from a change in labor costs is comprised of a scale and a substitution effect. A double-breasted firm may not substitute capital for labor in its unionized operations. However, when there is a relative increase in labor costs. Instead, it may choose to deplete the capital stock of its unionized operations. If so, σ will be lower, and $\eta_{\text{roa},u}$ will be more positive in double-breasted businesses than in totally unionized businesses exhibiting a more substantial substitution effect.

Double-breasted firms, however, may demonstrate different patterns of capital investment. It may be easier for these firms to expand their existing nonunion operations than it is for totally unionized firms to create new nonunion facilities. If, for these reasons, the rate of capital investment for the business as a whole is greater for double-breasted businesses

than for totally unionized businesses, the preceding theoretical predictions are reversed.

Nevertheless, holding all factors other than wages fixed, a given EI-related productivity effect will have its largest positive effect on ROA in nonunion establishments that suffer no labor cost disadvantage. The same EI-induced productivity effect will have a less positive impact on ROA in totally unionized or partially unionized businesses than in totally nonunion businesses because collective bargaining typically increases labor costs. Whether the partially unionized business with a productivity-enhancing EI initiative, the totally unionized business with a productivity-enhancing EI initiative, or the nonunion business without EI exhibits the highest ROA depends critically on how capital investment changes in response to increases in the relative price of labor under unionism. To assess these possibilities, estimates of the effects of EI and union status on ROA are presented in the next section.

EMPIRICAL ESTIMATES

Reduced form equations of the following general form are used to estimate the effects of EI and union status on ROA:

$$\text{ROA} = f(\text{EI, UNION, Product market characteristics, Labor Market Characteristics}) \quad (2)$$

EI is measured with a single dummy variable and with two mutually exclusive decision making authority variables. Union status is measured with dummies for totally unionized businesses and double-breasted firms. Since the theoretical discussion

suggests that EI should vary across the different union status categories, the ROA equation will also be estimated with interactions between the EI variables and the union status variables.

[INSERT TABLE 2 ABOUT HERE]

Table 2 presents empirical estimates for three different specifications of the EI and union status variables in the ROA equation. In model (1), the EI variable and the two union variables are constrained to have independent, additive effects. EI has no significant effect on ROA when it is assumed that participation program effects are the same in all union status environments.

Model (1) indicates that ROA is lower in totally unionized firms than in nonunion firms. The difference in ROA between double-breasted and nonunion firms, however, is not significant. Based on our theoretical discussion, the significantly lower ROA among totally unionized firms is consistent with a union-related wage differential in combination with a value of the elasticity of capital-labor substitution greater than one.⁵

The EI and the union status variables are constrained to have independent, additive effects in model (2). In this specification, however, EI programs with high and low levels of employee decision making authority are allowed to have different effects on ROA. While the point estimate on the high authority variable is greater than the coefficient on the low authority variable, both coefficients are insignificant. The model (2) results also indicate that totally unionized firms have lower ROA

than nonunion firms.

Complete interactions between union status and EI decision making authority are estimated in model (3). This model reflects the theoretical arguments that EI may have different effects because of EI-induced productivity differences and because of the labor cost differences associated with unionism. The non-union sample provides the simplest test of the extent to which EI programs enhance productivity because union wage effects do not affect firms' decisions. If EI improves productivity in these environments, ROA will be higher where EI programs exist. The coefficients for low-authority and high-authority EI programs in nonunion firms, however, are both insignificant. As a result, there is no evidence that EI affects ROA in nonunion firms.

EI programs may not have equivalent productivity effects in all environments. For example, if unions facilitate efforts to coordinate EI initiatives and assure workers that EI serves their interests, then an EI-related labor productivity differential could be greater in unionized firms. However, the model (3) coefficients provide no evidence of higher ROA for double-breasted or totally unionized businesses with EI programs. While the point estimates for double-breasted firms are positive in model (3), none of the coefficients is significant.

We do not emphasize the model (3) results for totally unionized firms because of the small number of observations in these three cells. In any event, the estimates provide no evidence that EI programs enhance ROA in totally unionized firms.

CONCLUSION

Our analyses suggest three major conclusions. First, while unionized and nonunion workers seem equally likely to be covered by an EI program, union status appears to influence the nature of implemented EI programs. Workers in unionized firms appear to have less authority in their participation programs than do workers in nonunion firms or double-breasted firms. Ironically, totally nonunion EI initiatives cover more employees than do EI programs in other firms. Second, we find no evidence that EI programs enhance ROA in totally unionized, double-breasted, or totally nonunion manufacturing firms. This finding is consistent with the results of other studies of the impact of various EI initiatives (for a review, see Kochan, Katz, and McKersie, 1986).

Third, our theoretical discussion indicates that performance measures should be carefully selected in this type of study. In particular, in unionized environments ROA is influenced by efficiency effects and labor cost differentials. EI programs may not have an impact on ROA because these two effects are not adequately disentangled in the empirical model. Consequently, other measures of firm performance, such as labor productivity, may provide a more direct test of the economic impact of EI programs.

Furthermore, although we have examined a broader sample of firms than existing studies, our analysis is based on cross-sectional data. The complexities of the relationship between EI programs and firm performance may only be evident in longitudinal

analyses. In particular, if EI initiatives occur in response to low levels of performance, then the absence of significant effects in a cross-sectional model may indicate that EI successfully raises the performance of firms above the relatively low levels of prior periods. We also recommend closer analysis of the nature of EI programs because our distinction between high and low decision making may not capture inherent differences in worker commitment and motivation across various kinds of initiatives. For example, the extent to which information sharing, profit sharing, and links to strategic business decision making are built into EI programs may critically influence the impact of those programs on firm performance (see Kochan, Katz, and McKersie, 1986, p. 149).

NOTES

1. The EI variable is based on answers to the following question: "Employee participation initiatives are variously referred to as quality of worklife, quality circles, employee involvement, and labor-management participation teams, among others. Do you have these or other formal employee participation programs with any of these employee groups?"
2. Respondents answered the following question using a five point scale that ranged from (1) "no authority" to (5) "complete authority:" "For employee groups with a formal involvement or participation program, how much authority to make decisions and implement recommendations on the issues listed does the involvement program have?" We classified programs scoring above the median response of 2 as being high authority programs. Programs receiving a score of 2 or less were classified as low authority programs.
3. Missing values on the EI measures cause the reduction in sample size from 227 to 182 cases.
4. Other control variables are: the four firm concentration ratio in the three-digit SIC category as a measure of market power; the average grade completed, average experience, and average experience squared for among workers in the three-digit SIC industry as measures of differences in labor quality across industries; the percent male and percent white among workers in the three-digit SIC category; and a dummy variable to differentiate durable from nondurable manufacturing firms as a further control for other unobserved industry differences. These data were obtained from the May 1985 Current Population Survey and the 1982 Census of Manufacturers.
5. It would also be consistent with a value of σ less than one in the theoretical model if there is a labor productivity differential due to unionism d^L that is greater than $(\alpha * m)[1 - \sigma]$.

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Table 1**Unionization and Employee Participation****Business Unit Union Status**

<u>Participation Measure</u>	<u>Totally Unionized</u>	<u>Double-Breasted Unionized</u>	<u>Nonunion</u>	<u>Totally Nonunion</u>
Proportion of Business Units Having a Formal Employee Participation Program	.500 (10)	.574 (54)	.593 (54)	.432 (118)
Proportion of Formal Participation Programs Having High Decision Authority	.200 (.5)	.613 (31)	.563 (32)	.412 (51)

Note: The data cover manufacturing and production workers in manufacturing industries. Sample size is in parentheses.

Table 2

**Results of Regression of Business Unit Return on Assets
on Employee Participation and Unionization Measures**

Independent Variables	Model (1)	Model (2)	Model (3)
EI Program	1.49 (3.06)	----- -----	----- -----
High Decision Authority	----- -----	2.61 (3.84)	----- -----
Low Decision Authority	----- -----	.41 (3.71)	----- -----
Totally Unionized	-16.94** (6.86)	-16.79** (6.89)	----- -----
Double-Breasted	3.41 (3.71)	3.19 (3.75)	----- -----
Totally Nonunion Low Authority	----- -----	----- -----	1.38 (4.46)
Totally Nonunion High Authority	----- -----	----- -----	2.90 (5.04)
Double-Breasted No EI Program	----- -----	----- -----	3.23 (5.20)
Double-Breasted Low Authority	----- -----	----- -----	2.30 (6.97)
Double-Breasted High Authority	----- -----	----- -----	7.57 (5.51)
Totally Union No EI Program	----- -----	----- -----	-11.14 (9.58)
Totally Union Low Authority	----- -----	----- -----	-15.76 (10.86)
Totally Union High Authority	----- -----	----- -----	-36.64* (20.19)

Standard errors are in parentheses. Regression equations also include measures of the average levels of education, experience, experience squared, percentage male, and percentage white of each industry's manufacturing workers, a durable goods dummy variable, and the concentration ratio for each three digit industry. Sample size equals 178. ** $p < .05$; * $p < .10$.