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The Organization of Work: Changes and Their Consequences

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The Organization of Work: Changes and Their Consequences

The paper documents the changes in human resource practices from the early 1980s to the middle of the 1990s, using a unique and comprehensive data set concerning a sample of about 800 firms from a wide range of industries in the state of Minnesota. A major aspect in these changes concerns the widespread adoption of practices that emphasize employee involvement in decision-making and in firm financial returns. Focusing on cross-sectional data the paper examines the determinants of human resource practices and finds that differences in the complexity of tasks and the interdependence among the tasks of core employees explain well the prevalence of employee participation in decision-making both individually and in groups. The association between human resource practices and outcomes of interest to employees and shareholders is complicated; the empirical findings do not support strong statements concerning the effect of employee participation in decision-making and in financial returns on outcomes. JEL codes M12, L23, J53

Since the early 1980s, the organization of work and the structure of firms have been undergoing a process of change that is not yet completed. New technologies, the intensification of domestic and international competition, and various political changes that have affected many countries, have forced firms to change their business strategy in order to survive, and have allowed them to adopt policies that make them more profitable (Osterman, 1994; Ichniowski et al., 1996; Baker, 1999; Cappelli and Neumark, 2001).

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The new organization of work emphasizes employee participation in both decision-making and in financial returns, with considerable training of various kinds. Today, numerous workers interface with computers or have their work directly affected by computerized equipment. Many workers are associated with some form of a team; in some cases workers have considerable decision-making power concerning their work, whereas in other cases they became human extensions to a sophisticated machine. A substantial minority of employees receives a (small) share of company profits as part of their current or deferred income, or own stock in the companies in which they work. Many employees also receive other financial incentives that are linked largely not to their individual performance but to that of the group with which they work. However, in many workplaces employees work in the more traditional way, carrying out their supervisors' decisions and receiving fixed wages. The first objective of this paper is to chart the changes in the organization of work from 1980 to the late 1990s.

What has driven these changes? In many cases, new technologies and business strategies resulted in new ways of producing goods and services, and generated new demands on workers and managers. Often workers are required to deal with more complexity than they had to in the past, and they must work more often together to deal with technology and changing consumer demand. In other cases, technology has not changed much, or the changes in technology and strategy made work simpler and more routine. The second objective of this paper is to analyze some factors that affect the contemporary organization of work, focusing on the tasks of core employees.

What are the consequences of the organization of work? Are workplaces that rely on more employee participation safer than other workplaces? Do shareholders or workers benefit more financially in more participatory firms or in workplaces organized in the more traditional way? The third objective of the paper is to offer a preliminary analysis of the consequences of the organization of work for workers and shareholders.

The paper summarizes the results of an ongoing project conducted at the Industrial Relations Center at the University of Minnesota.[1] It is written in a fashion aimed to inform readers of the main qualitative results of the project, and since it covers a very large territory, the relevant literature and theoretical background are quite large, the data sources and issues that are related to them are numerous, and the econometric techniques employed in the analyses summarized in the paper are diverse. In order to maintain coherence of the argument and to keep the paper at a reasonable length, the paper is brief on these matters (but points to papers that contain more detailed information).

Changes in the Organization of Work Since the Early 1980s

The organization of work consists of the practices that guide and direct the work of employees. These *human resource practices* can be grouped according to various criteria. We focus on the allocation of the key rights in an organization, the rights to decision-making and to financial returns,[2] and practices that

1. The data collection effort was supported by grants from the Alfred P. Sloan Foundation, and the University of Minnesota's Center for Urban and Regional Affairs and the Retail Food Industry Center.

2. See Hart and Moore (1990) and Ben-Ner and Jones (1995).

support these rights, and whether these rights are afforded to individual employees or groups of employees.[3]

Programs fostering *employee participation in decision-making* include, at the individual level, latitude for employees to make discretionary decisions; at the group level, various plans that involve employees in making some decisions (such as quality circles, self-managed work teams, and joint labor-management committees); and, at the firm level, employee representation on the board of directors.

Plans that provide for *employee participation in the financial performance* of the firm tie employees' compensation to some measure of performance. Individual financial performance plans include commissions and performance-based pay. Group bonuses and gain-sharing programs are examples of group-level financial performance plans, while stock purchases, cash profit sharing, deferred profit sharing, and employee stock ownership plans (ESOPs) are firm-level financial performance plans.

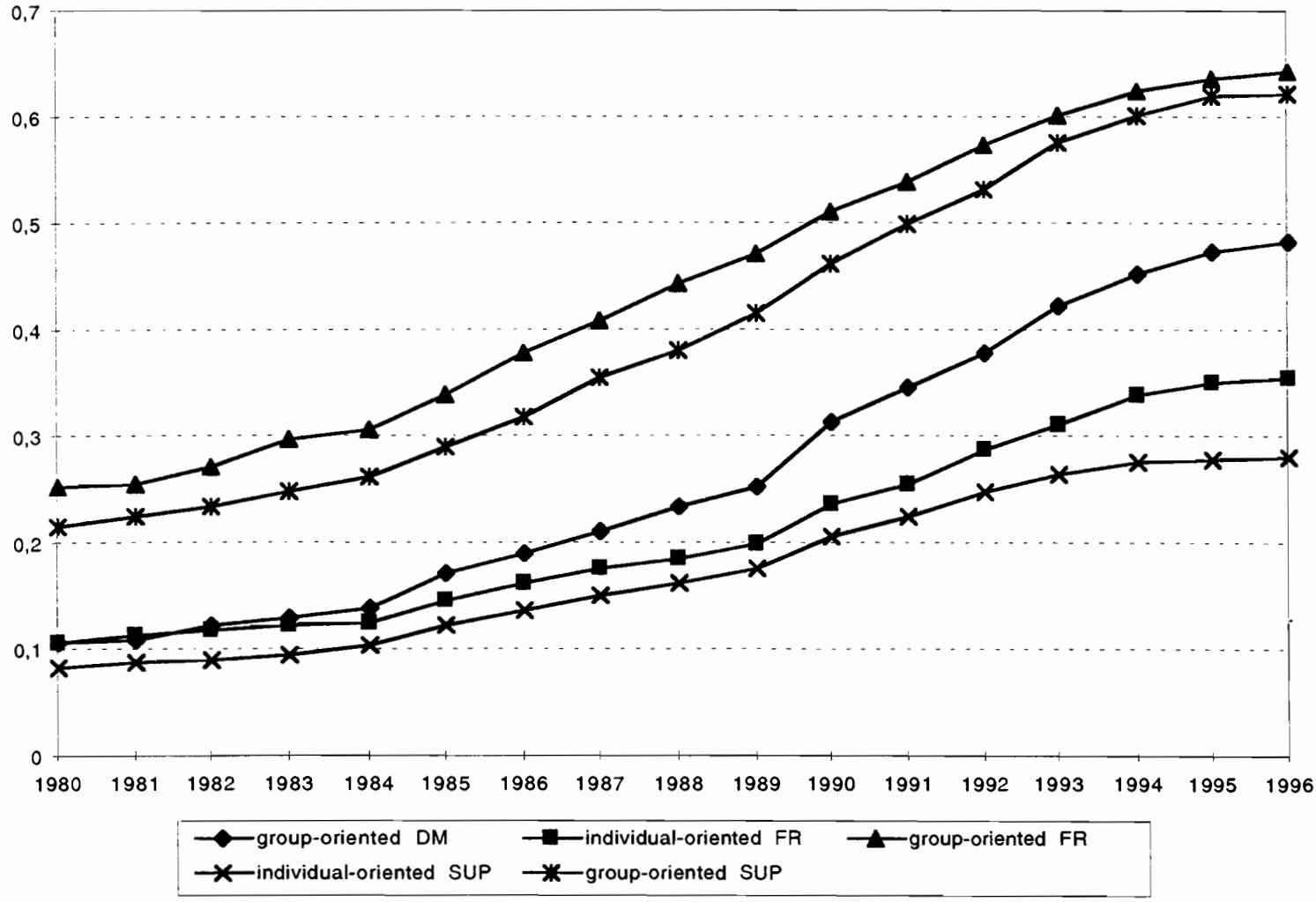
Finally, *supporting practices* are those that complement the first two categories. For example, self-managing work teams may not live up to their promise if workers do not receive training in team-building skills. Individual-oriented supporting practices include skill-based pay, employment security, and training in statistical analysis; group-based practices include job rotation, job redesign, and training in team-building skills.[4]

In order to obtain information about these human resource practices, since the middle of the 1990s researchers in the Industrial Relations Center at the University of Minnesota have been collecting information from companies and from various government (state and federal) agencies about diverse aspects of the organization of work. The present article presents results based on the 1994–96 survey, which includes retrospective information that permits evaluating changes over time.[5]

Figure 1 shows the proportion of firms with at least one program in each category,

3. Not all practices that we consider in this paper as human resource practices are recognized as such by practitioners, and not all the practices that practitioners term human resource practices are included in the discussion of this paper. For example, we consider employee ownership to guide the actions of employees, hence a human resource practice, but practitioners regard it as a financial plan. And practitioners refer to flex time, the practice whereby employees can arrive and leave work at individual times, as a human resource practice, whereas we ignore it for our purposes.
4. In the remainder of this paper we ignore the distinction between group and firm levels. The examples we gave in the text are the actual practices that are included in our empirical work in the three categories of practices.
5. The Minnesota Human Resources Practices Survey focused on 2,051 private, for-profit, Minnesota-based firms with at least 20 employees representing a broad spectrum of industries, ownership types, and sizes. The overall response rate was 42% (861 surveys); in many analyses, the number of usable observations is less than 600 because incomplete responses to some items or missing observations in other datasets that were merged with the survey data. The survey questionnaire asked respondents about plans and programs that involve employees in decision-making (for example, through self-managed work teams) or in the financial returns of the company for which they work (for example, through individual or group incentives such as profit sharing); supporting human resources practices (such as training, employment security, and job design); the degree of employee participation in decision making; the degree of information sharing with employees; the nature of the tasks carried out by different groups of employees; the company's reliance on computerized technology; and various aspects of firm organization. The survey also asked when various programs and practices were introduced or discontinued. The dataset used for the study included information supplied directly by firms through a survey instrument, data made available by Minnesota state agencies, federal agencies, and other publicly available information. For further information about the study, see Ben-Ner et al. (2001).

Figure 1.
The evolution of decision-making (DM), financial returns (FR), & supporting (SUP) practices. ***Proportion of firms having each type of plan***



with human resource practices classified into five categories based on the nature of the practice and the level at which the practice operates.[6] The figure illustrates the growth in usage of these human resource practices during the study period (1980 to 1996). Clearly, reliance on programs that promote employee participation in decision-making and financial performance increased dramatically since the early 1980s, accompanied by a similar growth in support practices. The growth has been particularly strong in the second half of the 1980s, and it has slowed down, perhaps even reached a plateau, by the middle of the 1990s. The most prevalent type of plan throughout the period was group-based participation in financial performance, with nearly two-thirds of respondents using this approach by 1996. The proportion of firms providing group-based participation in decision-making increased more than fourfold, from 11% to 48%. Although growth has occurred in all industries, it was most pronounced in the manufacturing sector and was least significant among firms engaged in commerce (the industry distribution is not shown in Figure 1).

6. The category of individual-oriented decision-making programs, which includes only employee discretion, is omitted because we have information about this category only for the year of the survey.

The Choice of Human Resource Practices

Theoretical considerations

Much has been written in recent years about the choice of the human resource practices. The theoretical perspectives employed by different authors vary, and so do their empirical frameworks. As a result, the findings are not directly and strictly comparable.[7] In this article we proceed with our theoretical perspective, which is derived primarily from organizational economics and from the sociology of organizations.[8] Management chooses practices that guide the work of employees to promote the firm's objectives. These practices address agency-managerial and technical-administrative problems.

Agency-managerial problems stem from the fact that workers prefer, when they can, to pursue their own interests rather than the objectives established by management. For example, workers may prefer to emphasize different projects than those that maximize profit for the firm, or to work less intensely than how management would like to work. The consequence of such potential behavior may be loss of productivity, and certainly loss of profits. To combat this, when workers' efforts or their results are easily observable, management requires and enforces work standards and guides directly employees' behavior, and pays fixed wages. (We shall refer to this as the 'old' or 'traditional' organization of work). When workers' efforts and direct results are not easily observable and when their behavior does not offer good clues about their productivity, management relinquishes direct control and grants workers some discretion in decision-making, and at the same time it offers incentive programs that link workers' performance with results, monitors some aspects of employees' effort, keeps records that provide indication of workers' attitudes, work results, and behavior over time, and seeks to change workers' view of where their loyalties reside. (We shall refer to this as the 'new' or 'innovative' organization of work). Thus if correctly chosen, the human resource practices that counter agency-managerial problems will possibly enhance productivity, and certainly will improve profitability. However, it will be uncommon for management to seek to eliminate *all* problems, because the marginal cost of combating agency-managerial problems is likely to be rising faster that the marginal profit generated by such actions.

Technical-administrative problems arise from the fact that workers' knowledge, skills and abilities are inadequate, or at least they are not perfectly suited to the needs of the firm in which they are employed. These problems result in lost productivity and profits, and management counters them by providing education and training to workers (and supplying incentives for workers to acquire skills), designing jobs in ways that ameliorate the consequences of insufficient knowledge or skills, providing opportunities for learning on-the-job from experience and from other workers, and so on. Again, management engages in such practices only up to a point; that point is generally short of the elimination of technical-administrative problems, in consideration of human resource practices' costs and benefits.

The human resource practices that deal

7. For a survey of the literature on the choice of human resource practices, see Appelbaum et al. (2000) and Ben-Ner, Kong and Liu (2001).
8. See Ben-Ner, Montias and Neuberger (1993) and Liu (1998).

with technical-administrative and agency-managerial problems are diverse. Some practices deal with more than one problem, and most problems need to be addressed by more than one practice. For example, team work may be the result of management's inability to observe and direct employees' efforts and therefore preference for delegating these rights to groups of employees (an agency-managerial issue), and from the inability of individual employees to deal with very complex issues that arise in their work and therefore the need for consultation among employees (a technical-administrative issue).

The relationship among different practices can be complex, and the choice of a package or system of human resource practices may be quite complicated as a result. Two principles underlie the optimal combination of human resource practices. The first is the principle of *horizontal consistency*, which refers to a complementary relationship among the different categories of human resource practices. This principle implies that decision-making rights should be supported by appropriate incentives through some form of financial returns participation, and that participation in financial returns should be accompanied by responsibility for making decisions that affect the financial returns in question. Furthermore, decision-making and financial-returns participation have to be backed by appropriate supporting practices. The second principle concerns *vertical consistency*, which refers to the relationship between practices at different levels of the organization. This principle implies that practices at different levels should not contravene each other. Thus if group decision-making and group participation in financial returns are considered desirable, then there should be relatively little reliance in the organization on individual-oriented practices, and vice versa. A firm that has only decision-making participation practices violates the principle of horizontal consistency, whereas a firm that combines individual decision-making discretion with group financial returns, but lacks individual financial returns and group decision-making is both horizontally and vertically inconsistent. A firm that has all four practices may be inconsistent, unless the practices are very carefully designed so as not to contravene each other.

The intensity of the technical-administrative and agency-managerial problems varies with several contingencies. These might include such things as a firm's business strategy; the technology of production; market forces; and the firm's size, age, and ownership structure. For example, technology may affect the complexity of tasks, and the ability of supervisors to observe workers' actions; firm size may affect the effectiveness of incentives that are subject to free-ridership problems, and so on. Consequently, the choice of human resource practices will vary among different firms because they generally face different contingencies.

Two major dimensions of *task environment* constitute the most important contingencies: the uncertainty of outcome of the employees' efforts, and the interdependence among employees' work. *Uncertainty of outcome* stems primarily from the complexity of an employee's tasks. Complexity prevents both the employee and his or her supervisor from being able to predict the exact outcome of a given task. To illustrate, let us compare a situation where the outcome is quite easy to predict – such as collecting tolls at a toll booth – with one where it is not – say, developing a new software application. The toll collector's tasks are fairly simple, and the work can be governed by simple rules and monitoring. In contrast, the software

Table 1.
Consistency in the Choice of Decision-Making and Financial Returns Participation Human Resource Practices

Individual-level plans	Decision-making but no financial returns participation		26%
	Financial returns but no decision-making participation		18%
	Decision-making and financial returns participation		16%
	Neither decision-making nor financial returns participation		41%
			100%
	Decision-making participation	*42%*	
	Financial returns participation	*34%*	
Group-level plans	Decision-making but no financial returns participation		11%
	Financial returns but no decision-making participation		31%
	Decision-making and financial returns participation		33%
	Neither decision-making nor financial returns participation		25%
			100%
	Decision-making participation	*44%*	
	Financial returns participation	*64%*	

developer's tasks are significantly more complex and less predictable. Almost by definition, this situation demands that the employee exercise judgment and individual discretion rather than follow a simple set of rules or procedures handed down by a supervisor. Furthermore, such complex tasks will likely require consultation and cooperation with other software developers, as well as joint decision-making with co-workers in the context of a work team. Generally speaking, the greater the complexity of tasks and the higher the uncertainty of the outcome, the more useful it becomes to involve employees in decision-making.

If uncertainty influences the amount of employee involvement, the level of *interdependence* between employees helps determine the scope – that is, whether these programs should operate at the individual or group level. In general, the more employees rely on each other to complete tasks, the more useful group-based programs are.

Empirical results

For the sake of simplicity of presentation we focus here on decision-making and financial returns practices, omitting supporting practices, in 1994 (the latest year for which information is available for all sample companies). Table 1 presents information on the incidence of these practices. About the same proportion of firms have individual and group-level decision-making participation, 42% and 44%, respectively. But only one-third of firms have individual incentives, whereas almost two-thirds of firms have group level incentives (financial returns participation).

A majority of firms combine their human resource practices according to the principle of horizontal consistency: 16% of firms have both decision-making and financial returns

participation at the individual level, whereas 41% of firms have neither, and 33% have both types of practices at the group level, and 25% have neither.[9] Horizontal inconsistency at the individual level is manifest in 44% of firms in our sample (26% have decision-making participation but no financial returns participation and another 18% have financial returns but no decision-making). At the group level, a similar percentage of firms exhibit horizontal inconsistency. A significant proportion of firms combine both individual and group-level practices; whether or not this is an indication of horizontal inconsistency or of careful crafting and targeting of different practices cannot be determined without more detailed information.

We now turn to examine briefly the determinants of the incidence of human resource practices, concentrating only on the most basic relationships discussed in the previous subsection. In Table 2, the dependent variables are practices providing for individual and group participation in decision-making and in financial returns. The independent variables are descriptors of a firm's task environment (uncertainty and interdependence) and the level and transferability of the skills required to execute these tasks. These variables are measured on Likert scales, where 1 indicates 'very little' and 5 'extreme' degrees of interdependence of tasks, extent of skills necessary to carry out the tasks, and transferability of skills. The uncertainty of tasks variable, which is the sum of complexity and variability of tasks, the range is from 2 to 10. We also use several control variables (number of employees, age of firm, unionization status, and industry). Given the dichotomous nature of the dependent variables (coded 0 if no practice of a given type is employed in a firm, 1 if at least one practice of that type is employed), our estimation method is logistic regression.

The results highlight the importance of task uncertainty in shaping human resource practices, as indicated by the results for the individual and group-level decision-making involvement practices. Interdependence among the tasks of employees is also important (but statistically somewhat less significant); it has the expected positive effect on the presence of group decision-making practices, and surprisingly, an even more significant effect on individual involvement in decision-making. However, neither uncertainty nor interdependence have apparently direct bearing on firms' adoption of financial returns plans. The level of skills is, as expected, positively associated with individual discretion in decision-making, but has no relationship with other dependent variables.

Outcomes for Owners and Workers

The operation of any firm is directed by the desire to attain certain objectives. Typically, for-profit firms are operated on behalf of their owners to maximize profits (or the value of their firms). This is done under a variety of constraints, including the need to hire managers and workers and the resulting agency-managerial and technical-administrative problems. The previous section has dealt with human resource practices that are instituted in order to ameliorate these problems, as well as with the underlying factors that affect the reliance on various practices. In this section we explore briefly

9. Companies that have neither decision-making nor financial returns plans are considered to have consistent horizontal combination of plans, just as those companies that have both types of plans.

Table 2.
The Choice of Human Resource Practices. ***Logistic Regressions***

	Decision making induvidual level	Decision making group level	Financial returns individual level	Financial returns group level
Task environment				
uncertainty	**0.43*** **	**0.31*** **	0.13	0.17
	(0.12)	(0.11)	(0.11)	(0.11)
interdependence	**0.18** **	**0.14***	0.06	0.03
	(0.09)	(0.09)	(0.09)	(0.09)
Skills				
transferability	0.05	0.04	0.11	0.04
	(0.08)	(0.08)	(0.08)	(0.08)
level	**0.26** **	0.07	0.03	0.11
	(0.11)	(0.10)	(0.11)	(0.11)
Control variables				
number of	-0.00	**0.16** **	0.00	0.00
employees (log)	(0.00)	(.07)	(0.00)	(0.00)
unionization	-0.08	0.26	0.12	**-0.43** **
(dummy)	(0.22)	(0.22)	(0.21)	(0.21)
firm age	0.00	0.00	-0.00	0.00
	(0.00)	(0.01)	(0.00)	(0.00)
firm age	0.00	0.00	-0.00	0.00
squared	(0.00)	(0.00)	(0.00)	(0.00)
Industry				
commerce	-0.20	-0.07	**0.30***	**-0.92*** **
(dummy)	(0.19)	(0.17)	(0.18)	(0.18)
services	-0.32	-0.32	0.24	**-0.91*** **
(dummy)	(0.23)	(0.22)	(0.22)	(0.23)
Number of obs.	749	749	749	749
Prob. > chi2	0.00	0.00	0.05	0.00
Log-likelihood	-448.4	-494.6	-475.0	-466.5

Notes:
1. Estimated standard errors are in parentheses.
2. Significance levels are indicated by * for the .1 level, ** for the .05 level, and *** for the .001 level.

and in a preliminary fashion the consequences of these practices for their putative intended beneficiaries, the owners, as well as for workers.[10]

Theoretical considerations

All stakeholders in a firm, primarily owners and their employees, draw their benefits from the same economic 'pie,' the economic results of the firm. Thus both parties have an interest in maximizing the size of the pie. But for any given size of the pie, one party's success in increasing its share comes at the expense of the other party. In their attempt to maximize their benefits owners and workers may take actions that reduce the size of the potential

10. This important question is the focus of our present research efforts under a grant from the Centers for Disease Control and Prevention and the National Institute for Occupational Safety and Health.

pie. Furthermore, since the well-being of workers is composed of multiple dimensions, including wages, level of effort, occupational safety and health, satisfaction from work, and employment security, they may seek to improve their overall well-being wherever they can; for instance, for given wages, workers may seek to increase their work satisfaction or safety.

The human resource practices that were discussed earlier affect the size of the pie as well as the shares of owners and employees. The channels through which these effects occur have been noted in our theoretical discussion of the choice of practices; here we make only a few general observations.[11] Recall that human resource practices are selected relative to the task environment and other contingencies, hence the optimal set of practices (from the point of view of owners) in one firm may not be optimal in another firm that has different contingencies. And the practices that promote one outcome may not promote, or may actually be adverse to, another outcome. For example, what might be beneficial for wages may be adverse to workplace safety, and which outcome will be emphasized by owners in their choice of practices depends on several factors; these include the expected cost of compensating injured workers, and the expected gain from improved productivity possibly associated with less meticulous observance of safety requirements versus the expected loss of productivity associated with worker absence and turnover, and so on. Workers, on the other hand, may have an input in the choice of their safety-related efforts only if they have decision-making discretion, and they are likely to emphasize safety over productivity efforts if they do not have a share in firm financial returns.

Empirical results

Table 3 summarizes the results of regressions of outcomes for firms, owners, and workers, using the same cross-sectional dataset that we used in the regressions underlying Table 2. In order to present the results succinctly as possible, a similar estimating framework is maintained across different outcome measures. The regressions include almost the same the set of independent variables: measures of human resource practices, controls for task environment and skills, and controls for firm size, industry, and union status; in the regressions represented by the first two columns we also included firm assets.[12] We present estimates only for decision-making and financial returns practices. The table includes two sets of regressions for each dependent variable. In one regression we include variables that identify the presence of decision-making and financial returns practices at the individual and group levels (the variable names, parameter estimates, F and R-squared statistics are italicized and appear on the right side of each column). In the other regression we included also interaction effects, written out in detail, with the omitted category being "no decision-making or financial returns participation plans." The parameter estimates on the variables not included in Table 3 are very similar across the two regressions. All regressions were estimated by OLS.

11. See Ben-Ner and Jones (1995), Han (1995), Park (1997), and Kong (2001) for more elaborate treatments of these issues.
12. The common framework is helpful for presentational purposes, but at the same time it acts as a straightjacket because different outcomes are determined in somewhat different processes which entail different estimating equations and different estimation methods.

Table 3.
Outcomes for Workers and Owners: OLS Regressions. *Dependent Variables*

	Productivity	Profitability	Wages	Injuries	Employment Variability
Individual-level plans					
Decision-making but no financial returns	-.439* (.262)	-4.74 (4.80)	.052 (.049)	-.077 (.087)	.012 (.729)
Financial returns but no decision-making	.023 (.264)	2.13 (4.78)	.094* (.053)	.002 (.092)	1.638** (.787)
Decision-making and financial returns	-.159 (.258)	-15.28*** (4.99)	.204*** (.060)	-.097 (.105)	.485 .902
Decision-making participation	*-.312** (.187)*	*-10.48*** (3.70)*	*.075** (.041)*	*-.086 (.071)*	*.351 (.602)*
Financial returns participation	*.147 (.193)*	*-2.53 (3.67)*	*.121*** (.041)*	*-.009 (.071)*	*1.10** (.609)*
Group -level plans					
Decision-making but no financial returns	-.026 (.497)	-9.57 (8.49)	-.189*** (.069)	.208* (.121)	-.483 (1.038)
Financial returns but no decision-making	.169 (.290)	-2.85 (5.48)	.071 (.052)	.095 (.091)	-.383 (.783)
Decision-making and financial returns	.194 (.300)	-2.29 (5.67)	.010 (.056)	.166* (.097)	-.937 (.838)
Decision-making participation	*.023 (.186)*	*-1.31 (3.44)*	*-.099** (.041)*	*.115 (.728)*	*-.581 (.616)*
Financial returns participation	*.237 (.238)*	*-1.38 (4.52)*	*.125*** (.041)*	*.042 (.071)*	*-.443 (.608)*
Number of observations	98	91	606	679	606
Mean of dependent variable	17.67	6.65	10.21	.807	7.38
Prob>F	0.000 *0.000*	0.000 *0.00000*	0.000 *0.000*	0.000 *0.000*	0.002 *0.001*
R squared	.908 *.908*	.516 *.483*	.369 *.372*	.131 *.129*	.060 *.059*

Notes:

1. The dependent variable in the productivity regression is log sales; in profitability it is after-tax shareholder economic returns (income before extraordinary items divided by common equity); in wages it is log of average wage; in injuries it is the log of the injury rate per 100 workers; in employment variability it is the coefficient of monthly employment variation during the year.
2. All regressions include the following control variables: employment (log), union (dummy), three broad industries (dummies), support practices - individual level (dummy), support practices - group level (dummy), skill complexity, and interdependence (1-5 Likert scales), and skills level and transferability (1-5 Likert scales). The productivity and shareholder economic returns equations also include assets (log).
3. The number of observations varies because of missing observations. The small number of observations in the first two columns is due to the fact that dependent-variable and asset information is available only for public firms.
4. Two regressions were run for each dependent variable. In one, variables that identify the presence of decision-making and financial returns practices at the individual and group levels were included; the independent variables, parameter estimates, F and R- squared statistics for these regressions are italicized and right-adjusted in each column. In the other regression interaction effects were also included; the omitted category is "no decision-making or financial returns participation plans."
5. Significance levels are indicated by * for the .1 level, ** for the .05 level, and *** for the .001 level.

The size of the pie is proxied by the common measure of productivity, sales. The first column represents a Cobb-Douglas production function augmented by the human resource practices and control variables.[13] The estimates on the decision-making and financial returns plans are statistically insignificant, with the exception of individual discretion in decision-making, which is mildly significant, negative and large in economic terms. The main conclusion here is that individual discretion unaccompanied by individual financial incentives is associated with lower productivity, suggesting perhaps that decision-making discretion is used for other ends. Generally, there appears to be little gain from participatory practices.

Profitability, which is the main outcome of interest to owners, is proxied by after-tax economic returns to shareholders divided by common equity. The same general conclusions apply here too, except that individual discretion, even when accompanied by individual financial returns, is associated with lower returns (some 15 points). It is important to note that the results for productivity and profitability are rather preliminary, and that the number of observations is small.

The outcomes for workers are captured here by average wage, injury rates, and employment variability. Individual decision-making discretion is associated with significantly higher wages, especially when accompanied by financial incentives.[14] Financial incentives, even without decision-making discretion, are associated with higher wages. Participation in group financial returns is also associated with higher wages, but not so with group decision-making. In fact, group decision-making without group incentives is associated with lower wages than no decision-making and no financial returns plans at all.

Injury rates are slightly – but without statistical significance – lower in firms with individual discretion, and somewhat higher, with low statistical significance, in firms with group decision-making participation.[15] Finally, employment stability does not appear to be significantly associated with our measures of decision-making or financial returns participation, with the exception of individual incentives, which are associated with lesser stability (greater variability).[16]

Conclusions

The organization of work underwent a thorough transformation since the early 1980s. By and large, the typical new workplace relies more heavily on employee involvement in both decision-making and in firm performance, requires greater worker skills, and entails more complex tasks than the prevalent old workplace. A number of changes in the economy are responsible for these transformations, but the single most important proximate factor has been the increased complexity of tasks and the resulting uncertainty of outcomes. The driving forces behind this change are the increased reliance on computer-based technologies, and the change in business strategies towards greater

13. The estimate on labor is .76, and on capital .27, well within the common range.
14. Recall that controls for task complexity and skill were included, and the estimates on both are positive and highly significant.
15. However, these injury rate includes potential workers' exaggerated reporting of claims along with true safety level of a given workplace, and these may be associated with the type of human resource practices in a company.
16. For a different approach and different results concerning the effects of human resource practices on outcomes for firms and workers, see Appelbaum et al. (2000) and Baker (1999). For a summary of work of the literature see Ichniowski et al. (1996) and Ben-Ner et al. (1996).

flexibility in production. Although the changes have been sweeping, they have not affected all firms equally. Many occupations – such as those of line workers in manufacturing, services, and commerce – have become more complex and interdependent. In addition, the task of organizing workers has become much more complex than in the times of relative stability in the economic and technological environments. The flexibility that is being demanded of most employees is also required of those in positions of responsibility.

In view of the fact that managers choose human resource practices on behalf of shareholders to optimize their returns, it is surprising that the majority of the firms in our sample do not seem to benefit from their human resource practices neither in productivity nor in profitability. Individual discretion in decision-making appears to be particularly deleterious to both these important outcomes. Group-oriented practices have small negative – but statistically insignificant – effects on profitability and moderate to large effects, though again but statistically insignificant, on productivity (a 19.4% return on a combination of group decision-making and financial returns participation plans). These results must be qualified severely, given the low number of observations, the fact that the human resource practices have been summarized here rather coarsely, the great number of additional factors affecting such gross firm-level aggregates as productivity and profitability, and possible econometric specification problems.[17] But if these results do have a true ring to them, the question is: Why do firms select these human resource practices? Perhaps managers don't know the right answers regarding the organization of work, they do not actually maximize profits, or they make concessions to workers' explicit or implicit demands for certain human resource practices.

Workers' outcomes are only partly favored by the human resource practices that are adverse to shareholders' interests. Indeed, individual employee discretion is associated with higher wages, as are individual incentives, but with lower productivity and profitability, and less employment stability, another variable of interest to employees. Group decision-making without financial returns is not desirable to workers at all, and seems to do nothing good for shareholders, either, and at the same time they associated with greater incidence of injuries (and no real impact on employment stability).

This paper represented a comprehensive attempt to address in a unified framework several important issues concerning the organization of work and its consequences. Many more nuanced analyses, which present a richer and more complicated picture, could not be accommodated in the confines of this paper. The safest and most obvious conclusion is that more work is required, including on this data set, before we can conclude more firmly what are the effects of human resource practices on outcomes.

17. Using these and other metrics of company success we found in other work that some specific practices do have a favorable effect. It is worth noting here that dropping the task environment and skill control variables does not change the direction of the results.

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