Why Do Employers Retrain At-Risk Workers? The Role of Social Capital

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Why are some employers willing to retrain workers who are at risk of layoff for new jobs in their organization, whereas others "churn" their workforce through layoffs and outside hiring? The question seems central to understanding why some employers and some jobs are "good," whereas others are not and, more generally, for understanding employment security. The arguments herein use national probability data to examine this question and find that the retraining option is associated with preserving the social capital among current employees. Employers who make greater use of work systems that rely on social capital are more likely to retrain their workers. Alternative explanations—that retraining is an employee benefit associated with employee-friendly policies or is part of overall strategy to invest in training—receive no support. These results extend our understanding of the role that social capital can play in organizations. They also suggest that being a "good" employer may have a great deal to do with other choices about systems of work organization.

Interest in understanding why some jobs are insecure is a central topic in the social sciences and dates back at least to the reform movements of the early days of industrialization (see, e.g., Webb and Webb 1897; Commons 1913). In the contemporary context, corporate restructuring has become the main driver of job insecurity. An American Management Association survey, for example, found 66 percent of the employers responding that downsizing in their companies during the 1990s was driven by internal restructuring and reengineering, in contrast to more traditional explanations that relate job loss primarily to business cycles (American Management Association 1997). And roughly one-third of all companies reported that they were hiring new workers during layoffs in order to get

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the new skills they need to accommodate their restructuring plans (American Management Association 2000). This process of restructuring by laying off and hiring—"churning" the workforce—externalizes the costs of restructuring to the laid-off employees and increases the demands on other providers of skills in society. Retraining is in many ways the opposite approach to restructuring in that it internalizes restructuring costs, stabilizing employment and expanding overall skill levels in the process. Because of these very different consequences, the decision to churn or retrain is increasingly central to discussions about the responsibilities that employers have to workers and society.

Roberts' Dictionary of Industrial Relations (1986), which draws its definitions from usage in previous research studies, defines *retraining* as fundamentally *different* skills made necessary because of some exogenous change in skill requirements. A major drawback to this definition is that it can be very hard to distinguish retraining from the more general skill upgrading that happens routinely in the modern workplace when jobs change. How different the new skills have to be before regular skill upgrading becomes retraining is arbitrary, making the distinction less than completely helpful.

A more useful conceptualization of retraining turns on the fact that retraining embodies a fundamental "make or buy" decision: One either retrains the otherwise at-risk employees for new or substantially altered jobs, or the alternative is to lay them off and hire new workers who already have the skills needed for the new jobs. *Retraining,* therefore, can be defined as the decision to invest in the skills of workers who would otherwise be at risk of losing their jobs unless they acquire new skills. Jobs may be at risk even where the skill gap is small if it is easier to hire the new skills on the outside market. This definition has the advantage of drawing a conceptual distinction, rather than a point along an empirical continuum, between retraining and more common skill upgrading and does not require an arbitrary assessment of the size of the skill gap. It also focuses attention on a central policy outcome of retraining, avoiding layoffs and preserving jobs.

There is ample evidence that employers understand that they face a make-or-buy choice between hiring new skills on the market and retraining existing employees. Practitioner publications, for example, routinely examine the pluses and minuses of the two options (e.g., Bartholomew 1997; Asbrand 1993.) Public-policy attention also has turned to the make-or-buy aspect of the employer's retraining decision. California's Employment Training Panel, for example, provides resources from the unemployment insurance fund for employers to retrain workers who otherwise would be displaced because of shortfalls caused by changing skill requirements (Osterman and Batt 1993).

Explaining the Decision to Retrain

A logical place to begin understanding why employers retrain would be with prior findings about retraining, but there is very little there. Aside from proscriptive arguments, actual reports of employer practices are limited and suggest considerable diversity in the choice between hiring employees with new skills and retraining the ones they have (Bartholomew 1997). Case studies in Europe, where the retraining option would seem to be advantaged because of greater restrictions on layoffs, find that recruiting new employees seemed to work better for employers than attempts at retraining existing workers in part because it delivered the new skills so much faster (JEIT 1995). On the other hand, where labor shortages are severe and outside hiring more difficult, employers seem more inclined to retrain current employees, as was the case with the introduction of client-server technology in information technology, where 96 percent of firms surveyed engaged in some retraining (Melymuka 1995). In other contexts, however, information systems groups seemed particularly inclined to hire rather than retrain (see, e.g., Moad 1990). Other reports show that firms consider outsourcing as an alternative to retraining (Hoffman 1995), which is another form of buying skills on the outside market. Reports such as these highlight the importance that labor markets play in shaping the decision to retrain because they shape the relative merits of the alternative to retraining, which is outside hiring.

Prior research related to the more general concept of employer training may offer more insight. Becker's (1964) now-famous work on the financing of employer-provided training asserted that employers would find it difficult to provide any training, let alone retraining, where the skills required for the new or alternative jobs are general skills also useful to competitors, at least without mechanisms to have the employees share the costs. One therefore would not expect employers to retrain for general skills when they could hire those skills on the outside market. Where the new skills required are specific to the employer, the employer has to provide them because the option of buying such skills on the market does not exist. However, whether the firm-specific skills should be provided to new hires or to otherwise redundant employees—i.e., whether the employer should hire and train or simply retrain—is unclear.

Some part of the explanation about retraining no doubt turns on simple cost issues beginning with the fact that retraining spares the employer the costs associated with hiring. Understanding the retraining decision therefore should consider the relative costs of hiring as compared with training, an issue I return to below. Another cost factor that would seem to be relevant in deciding which approach is cheaper is the relative wage of the

retrained workers as compared with that for new hires from the outside market. However, this factor ends up being endogenous to the employer's decisions and therefore difficult to evaluate. While the *market price* of workers who can perform a given job is exogenous to the employer, the employer may decide to pay its retrained workers something other than the market wage—possibly less, at least during the training, to recoup the training investment but quite possibly more if pay policies in the firm incorporate seniority provisions or other arrangements that cause the wages of individuals to differ within the same job. The wage of retrained workers relative to new hires, therefore, is very much a function of the employer's internal wage policies. Unless driven by some outside factor such as union contracts (see below), these wage decisions appear to be part of the employer's choice set along with retraining decisions.

Organization-level studies of employer-provided training take a different approach, emphasizing the possible synergies between the decision to train and other practices. Knoke and Kalleberg (1994), for example, showed how characteristics of internal labor markets are related to employer-provided training. In these situations, the decision to train may reinforce the operation of internal labor markets by facilitating internal promotions and helping to retain existing talent. A number of studies relate organizational characteristics such as size (Osterman 1994), capital intensity (Bartel 1989; Lynch and Black 1998), and unionization (Frazis, Herz, and Horrigan 1995) to training. The factors behind these findings—greater scale economies, opportunities for productivity improvements, and restraints on mobility—enhance the ability to provide training investments of all kinds. Knoke and Janowiec (1998) examined a different make-or-buy training decision—whether training is outsourced or done internally—in part based on complementarities with other practices and characteristics such as internal labor markets. It is not obvious whether retraining is driven by the same factors as regular training, but the notion of synergies with other practices may be part of the explanation. Overall, however, it seems fair to say that the literature on training does not offer anything like a definitive explanation as to why some employers retrain their workers.

The Role of Social Capital

A more novel and useful explanation that also relies on the notion of synergies concerns the role of social capital in the workplace. The notion of social capital as articulated by Coleman (1988, 1990) emphasizes the potential value of relationships between individuals as a resource for facilitating

a range of outcomes. Because it is an asset that exists *between* individuals rather than within each individual, social capital may suggest why it could make sense to reinvest in and retain individuals even if their job-specific skills are obsolete: The relationships they maintain with others may create value that extends beyond their ability to perform their current job.

There is now considerable literature on social capital that suggests several mechanisms through which it is created and a range of benefits from it. Space constraints prevent a detailed review of this literature, but a brief summary suggests the following. First, there are different but not necessarily conflicting arguments about the source of social capital, all of which focus on the underlying idea of networks of relationships. A somewhat older set of studies emphasizes the value of "weak ties" in the sense of a network of acquaintances and other contacts (Grannovetter 1974). The information and obligations created by these networks can be useful to individuals in the labor market, as well as in other activities (Bourdieu 1986). Another argument suggests the importance of the structure of network relationships, in particular, whether they provide opportunities for the individuals in them to act as a broker between other individuals or networks that have little contact with each other but that might benefit from such contact (Burt 1992).

Most of the research on social capital emphasizes the benefit of these social relationships to the individuals in them, especially how social capital affects employees within organizations. For example, Granovetter (1974) looked at how networks affect hiring prospects, and Podolny and Baron (1997) found that social ties affect promotion prospects. Some of the original research on social capital went on to suggest how the benefits to individuals aggregate up to social benefits, e.g., that communities whose networks facilitate the employment of their members are healthier in related dimensions such as reduced unemployment, crime, etc. (e.g., Coleman 1988).

What has been underrepresented in discussions of social capital are the potential benefits to organizations that result from these social relationships. Krackhardt and Stern (1988) provided an important exception by demonstrating that group performance was higher in situations where there were more cross-group friendships, and Pennings, Lee, and vanWitteloostuijn (1998) showed that employee tenure is positively related to organizational survival. Two recent conceptual articles developed new arguments about social capital and organizational outcomes. Leana and Van Buren (1999) argued that social relationships within an organization (defined broadly) facilitate trust, which, in turn, makes it easier for the individuals in the organization to define and then enact collective goals. Positive social relations therefore might make it easier to pursue any organizational goal

(although negative social relations, such as conflict, presumably would have the opposite effect).

Nahapiet and Ghoshal (1998) took a different approach and suggested how social relationships within organizations can facilitate the development of intellectual capital by making the internal transfer of knowledge easier. It is an argument presaged by Blau (1955), who showed how advice about tasks in the workplace is passed along social networks. The Nahapiet and Ghoshal argument makes use of the equally large literature on organizational learning, which space constraints make difficult to review in detail. In brief, the argument turns on the importance of tacit knowledge for organizational success (Polyani 1967), how such knowledge is in many ways a characteristic of organizations rather than individuals (Nelson and Winter 1982), and on the considerable research showing how social relations between individuals either facilitate or block that transfer of knowledge (e.g., Weick and Roberts 1993).

These arguments suggest a direct connection between social capital and retraining that turns on the make-or-buy choice that underlies the retraining decision. If a firm chooses not to retrain, it replaces existing employees with new ones. In the process, social networks in the workplace are disrupted, and social capital is destroyed. If the firm does retrain, it preserves social networks and retains social capital. To the extent that retraining reduces turnover that otherwise might occur, it enhances social capital by retaining social networks. Krackhardt and Porter (1985) illustrated explicitly some of the potential costs to current employees and the organization that stem from layoffs that disrupt social networks. There is also an extensive body of research on the composition of teams and team performance that suggests the value of stability in team roles (Hackman 1990) in part because of the difficulty in getting a good fit between individuals and teams (Klimoski and Jones 1995; more generally, West, Borrill, and Unsworth 1998). The issue of the composition of teams and its relationship to performance is a topic of growing importance (e.g., Stewart and Barrick 2000). In an economic sense, social capital can be thought of as a particular type of fixed investment that can be preserved through retraining. One way to think of this relationship is that it may take less of an investment to retrain redundant employees to make a contribution than to hire new ones because the former already have important firm-specific investments in social capital. However, the investment is in relationships, not skills. The type of social capital that is relevant from this perspective is the Coleman variety: strong networks among participants rather than either the weak-tie (Granovetter 1974) or structural-hole (Burt 1992) versions, where diffuse networks provide information useful for individual career advancement.

One problem with the preceding arguments is that because they appear to suggest that preventing layoffs through retraining is valuable everywhere, they do not per se offer an explanation as to why some employers find it useful to retrain employees and others do not. A simple alternative is just that some situations make social capital more valuable than others. Some organizations, for example, rely on bureaucratic management and work organization practices based on rigid rules and procedures for decision making that are designed in part to be relatively impervious to social relations and resilient to employee turnover. The classic example of assembly-line operations based on the principles of scientific management seem to fit this model in that they reduce opportunities for social relationships to affect the work process (e.g., Braverman 1974). In such circumstances, social capital should be much less important as a means of getting work done. Work systems based on teamwork and empowered groups, in contrast, rely much more heavily on the social relationships between employees and therefore on social capital to operate effectively. [The considerable proscriptive literature on the requirements of teams asserts that communications and constructive interpersonal relationships are a necessary condition for their success. See, for example, Wellins, Byham, and Dixon (1994) and Hackman (1990) for a scholarly interpretation.] Much of the benefit of these work systems also may come from the social capital that they generate—the sharing of information and ideas in particular that facilitates organizational learning (see, e.g., Nahapiet and Ghoshal 1998). And this leads to the main hypothesis of the study:

> *Hypothesis 1: Employers who use work systems that rely on social capital are more likely to retrain their employees.*

It is also plausible that the causation in the preceding arguments might be reversed. Firms that are actively engaged in retraining might find it easier to introduce work systems that make greater use of social relationships. The reasons relate to the findings in social capital research concerning "closed networks"—that norms and values conducive to getting work done are developed more easily in workplaces and social relations where there is limited entry and exit, in this case reduced layoffs and subsequent hiring (Coleman 1990). I return to this issue below.

There are other factors that may influence the decision to retrain as well. It is important to consider them if for no other reason than to be certain that we do not attribute any of their influence to the social capital hypothesis above. One potential explanation relates to labor markets and shapes the costs and benefits of the "make or buy" or hire versus retrain decision, and that is the magnitude of the fixed costs noted earlier that are associated

with hiring and firing employees. Other things equal, employers should find it more efficient to retain and then retrain the existing workforce where those fixed costs are greater, i.e., where the alternative of laying off and hiring new workers is more costly. Greater hiring costs or dismissal costs, such as severance pay, should encourage employers to pursue the retraining route, other things equal.

Hypothesis 2: Employers with greater fixed employment costs are more likely to retrain.

Another alternative to the social capital explanation is simply that there is something about an employer's operation that creates a comparative advantage in training of all kinds, including retraining. That is, employers who find it cost-effective to provide more traditional training may be more likely to provide retraining as well. Labor market circumstances, such as an isolated location, encourage all forms of training investments by making it difficult for employees to leave and take training investments with them. Employers that provide greater levels of regular training therefore also may find it easier to provide retraining—either because all forms of training are easier for them to deliver or because greater training proxies firm-specific skills. Similarly, employers whose jobs require relatively more general skills may be less inclined to train or to retrain and more inclined to hire the skills on the outside market.

Hypothesis 3: Employers that invest more in training are more likely to retrain their employees.

As noted earlier, arguments about the benefits of stable employment in terms of individual employee morale and commitment to organizational goals are also a central part of the "best practice" literature in employee relations (e.g., Kochan and Osterman 1994; Pfeffer 1995). The arguments motivating the best-practice literature are very much like traditional welfare capitalism arguments in their focus on improving morale as the mechanism for improving performance. They suggest, for example, that norms of obligation or reciprocity are created by employer practices that protect or benefit employees, particularly practices that are not mandated by law or union contracts but that are in some ways voluntary. Employees may respond to them with enhanced commitment, greater initiative, and reduced resistance to organizational change efforts (e.g., Osterman 1994, among others).

The argument that employers retrain because it improves employee morale and contributes to individual performance is complicated, however, because the basic evidence that employee morale per se contributes to organizational performance is less than compelling [see, for example, Cotton

(1993) for a survey], and new research indicates that employee commitment, the central attribute in this model, may be much less related to the sense of obligation and reciprocity associated with the value of employer contributions than to other factors [see Rodgers (2000) for a survey].[1] More generally, some employers may pursue practices thought to be good for employees because they have paternalistic ideals. They may be trying to create a sense of obligation to drive improved employee performance, they may be interested in union avoidance through practices that substitute for union provisions, or they simply may follow the best-practice literature and its advice. These motivations may be condensed at an aggregate level to the following hypothesis:

> *Hypothesis 4: Employers that pursue employee-friendly policies are more likely to retrain their employees.*

Data, Variables, and Specific Hypotheses

In order to examine these hypotheses, we need data on a range of employment practices, technology, and wages, a combination that has been difficult to find in the same data set. A recent establishment-level survey of employment practices conducted by the Bureau of the Census for the National Center on the Educational Quality of the Workforce (EQW) contains such data and allows us to address some of the preceding questions [see Cappelli (2001) for a detailed description of the data].

The EQW National Employers Survey (NES) was administered by the U.S. Bureau of the Census as a telephone survey in August and September 1994 to a nationally representative sample of private establishments with more than 20 employees. The survey represents a unique source of information on employment practices. It is structured to provide information on all categories of incumbent workers, not just new hires or those in core occupations.

The survey oversampled establishments in the manufacturing sector and establishments with over 100 employees. Public-sector employees, not-for-profit institutions, and corporate headquarters were excluded from the sample. Although the survey excluded establishments with fewer than 20

[1] Further, the best-practice arguments such as those mentioned earlier do not by themselves explain why some employers would pursue retraining while others do not. Some authors suggest that these practices should be, more or less, universally useful (e.g., Pfeffer 1995). One could construct an argument, similar to the one presented earlier, suggesting that some situations offer greater opportunities for employee attitudes to affect organizational performance than others, although it may not be so obvious how to identify such situations.

employees (which represent approximately 85 percent of all establishments in the United States), the sampling frame represents establishments that employ approximately 75 percent of all workers. The target respondent in the manufacturing sector was the plant manager and in the nonmanufacturing sector was the local business site manager. Because the goal is to learn about actual practice in the facility, not about policies, it is more important to have local operating managers respond than corporate officers in human resources. The survey was designed to allow for multiple respondents so that information could be obtained from establishments that kept financial information, for example, in a separate office—typically at corporate headquarters for multiestablishment enterprises. Computer-assisted telephone interviewing (CATI) was used to administer each survey, which took approximately 28 minutes to complete.

The sampling frame for the survey was the Bureau of the Census Standard Statistical Establishment file, one of the most comprehensive and up-to-date listings of establishments in the United States. Of the 4633 eligible establishments that were contacted by Census, 1275 refused to participate in the survey. This represents a 72 percent response rate, which is substantially higher than similar establishment surveys. The usual reason given by employers for why they would not participate in the survey was that they did not participate in voluntary surveys or were too busy to participate. Probit analysis conducted by Lynch and Black (1998) of the characteristics of nonrespondents indicated that there was no significant pattern at the two-digit industry level in the likelihood of participating in the survey. The only differentiating characteristic of establishments less likely to participate was that manufacturing establishments with more than 1000 employees, 0.1 percent of the sample, were less likely to do so. For the following analyses, we restricted the sample to establishments reporting usable data for all questions used in any of the regressions to ensure that differences across specifications or across different dependent variables did not reflect changes in the sample.

The Dependent Variable. Finding appropriate measures of retraining activity is certainly one of the significant challenges in studying the retraining decision. As noted earlier, attempting to identify retraining by examining the content of training programs is problematic. A straightforward alternative relying on the definition of retraining outlined earlier is simply to ask employers directly whether they retrain employees who are otherwise at risk of layoff.

A question in the NES survey asks: "Does your establishment currently provide retraining opportunities to employees at risk of losing their jobs

due to economic conditions?" The phrase *economic conditions* was designed to rule out situations where the potential job loss was within an employee's control, such as that attributable to poor job performance. It is possible, despite the wording of the question, that some of the employers that answered "yes" were in fact retraining employees who were *already laid off* to find jobs at other employers. That is, the retraining was a form of outplacement assistance rather than an investment with direct benefit to the employer. The motivation for retraining employees to help them leave the organization certainly might be different from that suggested earlier. A search of the literature on these outplacement-based retraining programs suggests that, by 1994, they were rare and limited to a few collective-bargaining agreements, most prominently in automobiles. Controlling for the presence of unions in the analyses that follow should control for any such instances.

The survey question has another complication that may affect its interpretation, however. Employers that answered "yes" to it clearly fit the definition of offering retraining. However, the interpretation for those that respond "no" is potentially more complicated. A "no" response indicates that the employer does not retrain workers at risk. However, it might mean that the employer does not because it currently has no workers at risk and that it might offer retraining if it ever did have at-risk employees. The distinction between those that responded "yes" and those that responded "no" does correspond to employers that do and do not have a practice of offering retraining. However, it might not perfectly map onto the distinction between establishments that *would* offer retraining if it was needed, what we might think of as "good" employers, and those that *would not*. If the goal is to draw inferences about the characteristics of establishments that currently offer retraining, then this issue presents no problem. However, if the goal is the more general one of drawing inferences about the characteristics of good employers who would protect the job security of their workers, then this problem could generate measurement error in the dependent variable because some of the "no" responses would be incorrectly classified.

It is difficult to know the characteristics of such measurement error, but assuming that it is classical measurement error, then the results are unbiased, although the estimates will have larger standard errors and be less precise. One solution to the problem would be to have had answers to two separate questions—the first asking whether employees were at risk of layoff and the second asking whether retraining was provided. (Asking the more direct hypothetical question as to whether employers would retrain if they had workers at risk creates the potential for various biases. Employers may want to look good or at least avoid sounding heartless. More generally, stated intentions do not necessarily predict actual behavior, especially where

the behavior, as in this case, involves uncertainty and serious costs.) Retraining could then be estimated conditional on having employees at risk by estimating a system of equations where the first equation was an attempt to model the risk of layoff and the second models the retraining decision conditional on the results of the first equation. The problem with such an analysis, however, is that there is no clear model on which to estimate the risk of layoff. And the risk of layoff in any case is likely to be a continuum where it is not obvious how far along it one needs to be in order to be at risk versus not at risk of layoff.

A simpler and more straightforward alternative is to rely on two relevant variables in the data set that help eliminate the preceding complication by restricting the sample. The first variable measures whether skill requirements for production workers have risen during the past 3 years (see Table 1). This variable should capture those situations where skill-biased technological change or other developments have raised skill requirements and made existing skills sets obsolete. The second variable addresses a different aspect of the preceding concern by measuring the extent to which the establishment was operating with excess operating capacity, a proxy for whether layoffs associated with economic conditions were likely.

By restricting the sample to establishments that have seen rising skill requirements and that are operating below capacity, we are likely to focus only on employers where there were risks to existing job security. We therefore hope to eliminate from the sample establishments that responded "no" to the retraining question because they have never had to confront the need to retrain at risk workers. The retraining question then can be interpreted more easily as distinguishing among employers that have seriously confronted the issue of layoffs and have decided whether or not to retrain their at-risk employees. (Note, however, that these restrictions still do not allow us to make inferences about what employers without at-risk workers would do.) Restricting the sample is preferred to simply controlling for these variables because it allows for the restrictions to operate through all the coefficients and not just through the intercept. In the analyses that follow, we test whether these restrictions matter in practice. Both variables are also included as controls in the full sample, where they help address another potentially confounding explanation for retraining: Some firms that do not retrain may want to do so but have made the decision not to either because they have no demand for their output and, therefore, no jobs to fill or because no new skills are needed.

Independent Variables. The first and most important hypothesis concerns investments in social capital generated by an establishment's work systems.

TABLE 1

VARIABLE DEFINITIONS, MEANS, AND STANDARD DEVIATIONS

Variable	Definition	Full Sample		Restricted Sample Rising Skill & Below Capacity	
		Mean	SD	Mean	SD
Retraining	= 1 if "establishment currently provide[s] retraining opportunities to employees at risk of losing their jobs due to economic conditions?" = 0 if not.	0.356		0.384	
Self-managed teams	= "Percentage of nonmanagerial and nonsupervisory employees [who] are currently involved in self-managed teams."	12.0	24.7	18.0	30.7
TQM	= 1 if establishment has "adopted a formal total quality management program," else = 0.	0.344		0.429	
Flextime	= 1 if establishment has flextime, else = 0.	0.383		0.456	
Severance pay	= 1 if establishment's "employees are covered by . . . severance plan," else = 0.	0.253		0.324	
Recruiting costs	= "Percentage of total labor costs spent annually on the recruitment and selection of employees for [the] establishment."	3.8	6.0	4.3	6.0
Training costs	= "Percentage of total annual labor costs spent on formal training programs."	5.1	7.4	5.4	7.4
Overcapacity	= 1 if "establishment is currently operating above capacity;" else = 0.	0.060		0	
Below capacity	= 1 if "establishment is currently operating below capacity;" else = 0. [Left-out category is "at or near capacity."]	0.337		1	
Skills rising	= 1 if "in the last 3 years, . . . the skills required to perform production or support jobs [for nonmanufacturing," primary or front-line services or support jobs"] at an acceptable level have . . . increased in [the] establishment;" else = 0.	0.548		1	
Skills declining	= 1 if "skills required . . .", as above, have "decreased;" else = 0. ["Remained the same" is the omitted category.]	0.056		0	
Health insurance	= 1 if establishment's "employees are covered by medical or health insurance," else = 0.	0.894		0.927	
Gain sharing	= 1 if "company [has] a profit sharing, bonus or gain-sharing plan for any of the following categories of workers:" "Technicians; Office/clerical/sales/customer service [for non-manufacturing establishments, "Office/clerical"]; or Production [Sales/customer services or other front-line employees];" else = 0.	0.530		0.631	
Gain Sharing/ Mangers	= 1 if profit sharing, bonus, or gain-sharing, as above, for either or both of "Managers," and "Supervisors" categories.	0.721		0.803	
Stockoption	= 1 if establishment's "employees are covered by . . . Stock options," else = 0.	0.168		0.146	

TABLE 1 (cont.)

VARIABLE DEFINITIONS, MEANS, AND STANDARD DEVIATIONS

Variable	Definition	Full Sample		Restricted Sample Rising Skill & Below Capacity	
		Mean	SD	Mean	SD
Family leave	= 1 if establishment's "employees are covered by . . . Family leave," else = 0.	0.620		0.639	
Multiple location	= 1 if establishment is part of a multi-establishment firm, else = 0.	0.510		0.491	
Employment	Total employment at the end of 1996-defined as the maximum of (a) response to question asking the "total number of workers on your payroll," and (b) the sum of the responses to three questions asking for the respective numbers of "full-time workers," "part-time workers," and "temporary or contract workers."	119	415	159	599
(ln)Employment	Logarithm of employment.	4.0	1.0	4.0	1.1
(ln)Employment^2	Variable (ln)Employment squared (i.e., squared after taking the logarithm).	16.8	9.2	17.6	10.5
Employment change	The "percentage [by which] employment changed," if, "in the past three years, the number of employees at [the] establishment increased or decreased;" else = 0.	5.7	31.8	4.6	22.5
Employment change^2	The signed square of employment change.	75.9	1224.9	23.0	217.2
Education	The average number of years of education of the workforce—share-weighted average of average education for 5 occupational categories.	12.7	1.1	12.8	1.0
Part time	Number of part-time employees as a percentage of TOTEMP	21.2	29.1	18.1	28.8
Temps	Number of temporary help workers	177.8	7.9	2.4	10.2
Women	"Percentage of full-time employees [who] are . . . women."	42.6	30.3	43.7	27.1
Union	= 0 if establishment is not "represented by a union or unions," else equal to the "percentage of [establishment's] employees covered by a collective bargaining agreement."	8.3	24.2	10.3	26.7
% New	"Percentage of [establishment's] currently employed workers [who] have been with the firm for less than one year."	21.7	21.6	17.4	20.6
Hires %	Percentage of establishment's workers regarded "as being fully proficient at their job."	80.0	19.8	75.9	21.3
Proficient					
(ln)establishment age	Logarithm of 1995 minus "In what year did you begin operations in this location (if before 1900, enter 1900)."	2.6	0.8	2.5	0.8
Establishment age < 5	Dummy variable equal to 1 if began operations at this location in or after 1990.	0.137		0.153	

NOTE: Means and standard deviations are weighted by the sampling weights used in the regressions in Table 2.

We use three variables to measure social capital in the workplace. The first is the percentage of employees operating in self-managed teams. There is considerable evidence that it takes a fair amount of time for such teams to come together and be effective. Communication and social relationships among the team members are central components of success in such teams. It is also clear that changes in the composition of teams—e.g., if some team members were laid off—disrupts those social relationships and can damage the functioning of the teams in important ways (Dougherty and Bowman 1995; Hackman 1990; Klimoski and Jones 1995; West, Borrill, and Unsworth 1998). Establishments that make greater use of self-managed teams therefore have more social capital in the form of relationships that are necessary to allow those teams to operate successfully, capital that would be at risk if employees were laid off.

Similar arguments can be made about total quality management (TQM) programs, which involve employees through team settings in important operating decisions associated with quality and performance issues. Hackman and Wageman's (1995) study of TQM found that the concept does demonstrate convergent validity in the sense that there is considerable agreement about the practices that constitute TQM and that the implementation of TQM does in fact involve those practices. However, there is more than one practice associated with TQM, raising the question of construct validity. The most frequently used of the five practices of TQM described by Hackman and Wageman is problem-solving teams, whereas the second is training, most typically for interpersonal skills (Conference Board 1991; Olian and Rynes 1991). Both seem to tap the notion of social capital as drawing on relationships among employees. Two of the other practices, building relationships with suppliers and with customers, also may rely on social capital, albeit relationships with stakeholders outside the firm. It is not possible to sort out the outside and inside aspects of social capital with the data here, although it would be a very interesting topic for future research.

While it seems that social capital issues are squarely at the heart of TQM, it is also possible that the interest in pursuing TQM may reflect other characteristics of the establishments, such as having more skilled workers able to use some of the numerical techniques or having a more sophisticated management team (the remaining practice from the Hackman and Wageman list making top-down communication of quality a priority). The question is whether those other characteristics have an independent effect on retraining that could confound interpretation of the TQM variable, an issue I attempt to address below.

One of the complications of using self-managed teams and TQM programs in the same model is the potential for collinearity given that both

capture aspects of teamwork, albeit in different forms. The correlation between the two variables is only 0.10, however, which also indicates that it is unlikely that respondents are routinely "double counting" by including the teams used in TQM as self-managed teams.

To examine whether the social capital affecting retraining extends beyond teamwork, I include another management practice that makes use of social capital in ways that are unrelated to teams. This practice is flextime, a work-scheduling arrangement whereby employees are allowed some latitude in the scheduling of their working hours as long as the overall needs of the workplace are met. Approximately 30 percent of U.S. workers report that they have flexible work schedules (BLS 2001). A slightly greater percentage of establishments in the data below (38 percent) report that they have such practices, a figure that comports well with other establishment-level estimates (Golden 2001). The typical flextime system is one that defines core working hours (e.g., 10 A.M. to 4 P.M.) when all employees must be at work. Around this there is a band of flexible hours (e.g., 7 to 10 A.M. and 4 to 7 P.M.) within which employees can adjust their schedule on an ad hoc basis (Conference Board 1989). Social capital comes into play with flextime in two ways. Some organizations negotiate the initial work schedules within work groups to balance out the workflow—if one person wants to leave early, for example, then someone else must agree to stay late in order to cover the work. Most require some adaptations on the part of other workers when enough individual employees want to change their own schedules. The work schedule that results is in many ways a balance among the employees, one that in practice has to be renegotiated to be maintained and can be disrupted if an individual leaves [Avery and Zabel (2000); see Fletcher (2000) for examples]. The second and more common social capital requirement of flextime is that employees must manage the handoff of tasks across schedules that overlap, typically using informal relationships to do so (Avery and Zabel 2000). Clearly, the level of social capital involved in flextime is much more modest than in self-managed teams, and the interpretation of the flextime variable is potentially confounded because it is also an example of an employee-friendly practice of the kind associated with Hypothesis 4. When controlling for other measures of employee-friendly practices (see below), its interpretation as a measure of social capital may be clearer. It represents a more modest form of social capital but also one that is different from teamwork per se, which helps establish whether the relationship with retraining is truly driven by social capital.

The hypothesis that employers retrain as part of a general employee-friendly approach to management (Hypothesis 4) can be tested with the following variables: employer-provided medical and health insurance, having a family

leave policy, gain-sharing/profit-sharing/bonus plans, and stock options. Medical and health insurance would seem to be a minimum requirement for employers that are interested in taking care of the needs of their workers. The compensation variables are consistent with the best-practice recommendations for managing employees (e.g., Pfeffer 1995; Kochan and Osterman 1994). They would seem to provide a means of sharing the wealth with employees, but they also put pay at risk for employees, suggesting that they may not be entirely employee-friendly policies.[2]

We should expect to find a positive relationship between these benefits and retraining if retraining is in fact part of a policy of pursuing employee-friendly practices. As noted earlier, controlling for these measures of employee-friendly practices also allows one to interpret any relationship between flextime and retraining as driven by the social capital aspects of flextime.

The stock-option variable also may have another, albeit more tenuous, relationship with retraining. Employers that offer employees an implicit bargain of extra effort now in return for payments later through back-loaded compensation, as in the form of stock options, may be interested in retraining workers to avoid layoffs that otherwise would break that relationship. It is worth noting that the employer's short-term incentives may be to break these deals and save the payments, so it is only employers with back-loaded compensation who are also concerned about their reputation that would be interested in retraining.

I address the second hypothesis concerning the fixed costs of employment with two variables. The first is whether the employer offers severance payments to laid-off employees. Establishments with these payments have a greater incentive to retrain at-risk employees because they otherwise must make payments to those laid off. The second variable measures the employer's expenditures associated with selecting and recruiting employees. These costs reflect something about what the establishment must spend to hire new employees if it does not retrain and then keep its current workers.[3] No doubt there are other important aspects of fixed employment costs that are not captured by these measures.

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[2] Bonus plans in particular may be tied to individual-level performance, providing an incentive to work harder.

[3] While we know and include in the equation the number of employees in the establishment, we do not know the number of hires per year. The recruiting and hiring cost variable therefore measures total costs given employee levels, but this may not correspond to costs per hire. Because some of these hiring costs are variable, such as interviewing, it is possible that establishments could have high overall hiring costs and still have low costs per hire if they do a great deal of hiring and the variable hiring costs were proportionately greater.

The third hypothesis, that retraining is an integral part of a firm's general approach to training and is driven by the same factors that drive training more generally, is examined using a variable measuring total expenditures on training. The variable measures only formal training costs because it is extremely difficult to estimate the amount of informal training and associated costs. We want to examine to what extent retraining may be driven by an establishment's overall training policy and whether differences in the incidence of retraining across establishments simply are due to differences in capabilities or the in the nature of jobs. Some establishments, for example, may have jobs whose skills are predominately general and therefore would train less and be less likely to retrain as well, other things equal.[4]

Expenditures on employee training also may capture something about the fixed costs of employment. Training investments are obviously lost if employees are laid off. Some proportion of past training investments may represent sunk costs in that they were for skills that are now obsolete, but some proportion of training investments no doubt represents skills that new hires must have as well, such as orientation and safety training. These expenditures would have to be made again if the employer laid off current workers and replaced them with new ones. The training variable therefore may have several interpretations, but the common theme is to control for explanations that may confound interpretation of the social capital variables.

Control Variables. In order to test the preceding hypotheses, it is important to control for other characteristics of the establishments and their employees that might be associated both with the preceding independent variables and with the retraining decision. The control variables concerning the establishment's characteristics include industry (two-digit SIC code and not reported in the results), establishment size (number of employees), employment growth and its square, whether the establishment is part of a larger firm, capital-labor ratios, age of the establishment, a management assessment of the proportion of the workforce that is fully proficient at their jobs, value added per employee, and unionization. These variables capture factors such as the ability to fund training of all kinds, as well as factors influencing the risk of layoffs. Unionization should capture any collective-bargaining

[4] Other studies have found relationships between formal training and teamwork and suggested that teamwork requires new skills, which, in turn, require training (e.g., Osterman 1994; Gittleman, Horrigan, and Joyce 1998; Lynch and Black 1998). If retraining is in fact driven by formal training, then one might expect to find a positive—but spurious—relationship between the self-managed team variable and retraining; self-managed teams drive overall training, which then drives retraining. Something similar might be expected for the TQM variable. Including overall training investments in the model may control for this spurious relationship.

agreements that mandate retraining. It also may capture the extent to which seniority or related wage practices make retrained workers more expensive than new hires.

An extensive literature in labor economics examines how the characteristics of the workforce affect training investments. Altonji and Spletzer (1991), for example, showed how employee characteristics such as education levels affect the incidence of employer-provided training. Research such as this suggests that employer decisions about training may be influenced by the attributes of the current employees. Control variables concerning workforce characteristics therefore are included: average education of the workforce and the percentage of the workforce that is part time, temporary, female, represented by a union, and with less than 1 year of tenure. While it is not obvious that these variables would be correlated with the independent variables, it is important to control for this possibility. All the variables used in the analyses are described in Table 1, which presents their definitions, means, and standard deviations.

Analyses and Results

Table 2 presents the results of a logit regression model estimating the incidence of employer-provided retraining across establishments. Table 3 repeats the analysis with the sample restricted to establishments with rising skill requirements and excess operating capacity, effectively excluding those where employees might not be at risk of job loss. Listwise deletion of observations for missing data reduced the working sample considerably. Observations were removed if they were missing information for any of the variables used in the analysis in order to keep the sample consistent across coefficients (no apparent difference was discernible in the characteristics of the observations that were removed).

The results of the equations strongly support the main hypothesis (Hypothesis 1) that employers are more likely to retrain employees when they make use of work systems that rely on social capital. All three of the relevant variables are significant at conventional levels, and the TQM and flextime variables have among the largest coefficients in the equation. Both self-managed teams and TQM are significant, suggesting that they are not collinear in this context.

The results provide little support for the alternative hypotheses. Hypothesis 2 asserted that retraining is higher where establishments have greater fixed employment costs. The presence of severance pay policies was positively and significantly related to retraining in the main sample, although it

TABLE 2

Incidence of Retraining: Full Sample

Variable	Coef.	Std. Err.	z	$P > z$
Self-managed teams	0.010	0.004	2.38	0.02
TQM	0.978	0.265	3.70	0.00
Flextime	0.787	0.250	3.15	0.00
Severance pay	0.755	0.273	2.77	0.01
Recruiting costs	0.016	0.025	0.64	0.52
Training costs	−0.022	0.019	−1.14	0.25
Overcapacity	−0.506	0.500	−1.01	0.31
Below capacity	−0.423	0.265	−1.60	0.11
Skills rising	0.602	0.275	2.19	0.03
Skills falling	0.183	0.700	0.26	0.79
Health insurance	−0.203	0.469	−0.43	0.67
Gain sharing	−0.445	0.323	−1.38	0.17
Gain sharing/managers	0.052	0.348	0.15	0.88
Stock option	0.129	0.346	0.37	0.71
Family leave	0.424	0.311	1.37	0.17
Multiple locations	0.031	0.258	0.12	0.90
(ln)Employment	1.276	0.601	2.12	0.03
(ln)Employment^2	−0.121	0.059	−2.03	0.04
Employment change	−0.018	0.007	−2.44	0.02
Employment change^2	0.037	0.013	2.98	0.00
Education	−0.085	0.117	−0.73	0.47
% Part time	−0.005	0.006	−0.83	0.41
% Temp	−0.009	0.010	−0.97	0.33
% Women	0.013	0.006	2.27	0.02
% Union	0.001	0.005	0.19	0.85
% New hires	0.008	0.007	−1.07	0.28
% Proficient	−0.012	0.007	−1.77	0.08
(ln)establishment age	0.145	0.183	0.79	0.43
Establishment age < 5	0.286	0.487	0.59	0.56

Note: Number of obs = 1458; chi^2(49)° = 121.1; prob > chi^2 = 0.000; pseudo R^2 = 0.237; log likelihood = –724.60.

was negatively and significantly related in the restricted sample: Perhaps where establishments are cutting jobs, severance pay and related practices associated with outplacement are used explicitly as a substitute for retraining. Recruiting and selection costs do not show significant relationships with retraining.

Hypothesis 3 asserted that retraining should be positively associated with overall training investments and is rejected. The relationship is insignificant in the full sample, and in the restricted sample, establishments making greater expenditures on formal training are significantly *less likely* to engage in retraining of at-risk employees. This is especially notable given that expenditures on retraining are included in the overall measure of total training expenditures, which otherwise should cause the two to be positively correlated. A sensible interpretation of the results in the restricted sample

TABLE 3

RESTRICTED WORKER SAMPLE: BELOW SKILL CAPACITY AND REQUIREMENTS RISING

Variable	Coef.	Std. Err.	z	$P > z$
Self-managed teams	0.027	0.009	3.02	0.00
TQM	0.949	0.441	2.15	0.03
Flextime	1.030	0.554	1.86	0.06
Severance	−1.279	0.574	−2.23	0.03
Recruiting costs	0.090	0.058	1.55	0.12
Training costs	−0.110	0.049	−2.26	0.02
Health insurance	0.412	1.284	0.32	0.75
Gain sharing	−0.073	0.599	−0.12	0.90
Gain sharing/manager	−0.512	0.662	−0.77	0.44
Stock option	1.334	0.585	2.28	0.02
Family leave	0.015	0.489	0.03	0.98
Multiple location	0.978	0.544	1.80	0.07
(ln)Employment	0.602	0.951	0.63	0.53
(ln)Employment^2	−0.048	0.090	−0.53	0.60
Employment change	−0.059	0.018	−3.32	0.00
Employment change^2	0.228	0.123	1.86	0.06
Education	0.553	0.241	2.30	0.02
% Part time	−0.009	0.014	−0.64	0.52
% Temps	−0.004	0.021	−0.19	0.85
% Women	0.028	0.011	2.52	0.01
% Union	−0.011	0.011	−1.01	0.31
% Tenure	0.007	0.017	0.42	0.68
% Proficiency	−0.002	0.012	−0.20	0.85
(ln)Establishment age	0.145	0.403	0.36	0.72
Establishment age < 5	−0.185	0.993	−0.19	0.85

NOTE: Number of obs = 322; chi^2(45)° = 79.8; prob > chi^2 = 0.001; pseudo R^2 = 0.400; log likelihood = −128.59.

where jobs are more at risk is that retraining represents an alternative to the apparently greater training expenditures associated with having to hire new workers. To the extent that overall training expenditures reflect the skill requirements in jobs, other things equal, we might believe that the establishments that have invested more in training, controlling for other factors, also would be those with more firm-specific as opposed to general skill requirements. The fact that there is no positive relationship between overall training expenditure and retraining therefore may suggest that the retraining is not driven by the distribution of general versus firm-specific skill across establishments.

Finally, Hypothesis 4, suggesting that retraining is a practice associated with employee-friendly policies, is not supported by the results. None of the employee benefits examined is significantly and positively related to retraining, with the exception of stock options for employees in the restricted sample, and the coefficients for several of the other benefits have the wrong sign. The fact that stock options was the only variable of the employee-friendly

measures to be positively and significantly related to retraining is consistent with the argument noted earlier that retraining protects back-loaded compensation arrangements by making it possible for employees to stay in the firm and receive the option payout.

The fact that the relationship between retraining and flextime is positive while other employee friendly practices are largely unrelated to retraining suggests that the relationship with flextime is not driven by an overall "good employer" strategy. Flextime was very weakly correlated with these other practices ($p < 0.06$). Instead, its relationship with retraining is more likely be driven by social capital, a different form of social capital than that in the team or TQM measures.

Overall, the sample restriction designed to eliminate observations where employers had no need for retraining produced only slightly different results. The establishments in the restricted sample where jobs are more likely to have been at risk show a modest 3 percentage point higher incidence of retraining than in the full sample, suggesting that if any respondents were reporting that they did not retrain because they had no need to do so, they formed a small group. The social capital variables were significant in both samples.

An issue that is difficult to address adequately given the cross-sectional nature of the data is the direction of causation. Given space constraints, this issue is most relevant to examine for the main hypothesis, for which there is support—the social capital hypothesis. It may seem reasonable to assume that employers introduce work-reform practices such as TQM and self-managed teams first because they are practices that fundamentally change the way the workplace operates and then introduce retraining to support them. However, it is also possible that employers decide first to retrain their at-risk employees (perhaps as a matter of principle or a policy of employment security) and then introduce the practices associated with the social capital variables. It is not obvious why retraining would make an employer more likely to introduce something such as flextime, but retraining may make it easier to introduce self-managed teams and TQM by supporting the need for stability in teams.

If the preceding argument is true, then employers may think about these relationships as essentially being simultaneous: Retraining and TQM or self-managed teams, for example, should be thought of as a package. If the relationships are simultaneous, however, then the independent variables used in the preceding models are endogenous and are correlated with the error term. The estimates, as a result, would be biased. One way to examine whether such bias is an issue is with a test for endogeneity of the variables. The test used below is a regression-form version of the Hausman test suggested

by Kennedy (1993). The basis of these Hausman tests is to compare the estimator in question with one generated from instrumental variables, where the assumption is that the instruments will be independent of any correlation between the regressors in question (in this case the social capital variables) and the error term. The test begins by generating predicted values for each of the potentially endogenous social capital variables from instruments for those variables. The predicted values are then added to the equation along with the original estimators for social capital. If the regressors for the predicted values are (jointly) significant, then it suggests that the independent variables are likely to be endogenous, and if so, the relationships would be simultaneous.

The test relies on finding good instrumental variables, which are defined as being correlated with the independent variables thought to be endogenous—TQM, self-managed teams, and flextime—but not with the dependent variable, retraining (see the Appendix for a correlation matrix). The instrumental variables used were whether the establishment had (1) job rotation, (2) pay for skill, (3) job sharing, (4) the number of management levels in the establishment, and (5) the ratio of subordinates to first-line supervisors. The relationship between the predicted values from the instruments and the logit model of retraining is jointly insignificant ($\chi^2 = 1.2$; $p = 0.00$), suggesting that the relationship between the original social capital variables and retraining is not endogenous. Different instrumental variables and different sample restrictions can yield different results, of course, so it is important to note that tests such as these are not necessarily definitive. (Details of these test results are available on request.)

Conclusions

Retraining employees at risk of layoff to handle new jobs represents an approach to organizational restructuring that is fundamentally different from one where employers churn their workforce, laying off existing workers with redundant skills and hiring new ones. The preceding results suggest that employers who retrain workers do so at least in part to preserve the social capital that exists in worker relationships. Specifically, the use of work practices such as self-managed teams and TQM relies on that social capital to operate effectively, and employers with those practices have an interest in retraining to preserve that workplace social capital. The TQM result also may reflect social capital beyond coworkers, including relationships with customers and suppliers. These results point to the importance of "strong tie" social capital of the kind that develops in close working relationships.

It would be useful for further research to examine explicitly the extent to which "weak tie" social capital and more informal relationships in the workplace matter for issues such as retraining and, more generally, the relative importance of strong- and weak-tie social capital in shaping work organization and other employment practices.

A reasonable concern about the preceding conclusions is whether the social capital embedded in relationships is still useful if the employees end up in working with different people after retraining. The establishments in the preceding sample are small enough—119 employees on average (see Table 1)—that there is a very good chance they will still interact with the same people even if they change jobs. This is especially so under the reasonable assumption that workers do not change their basic occupations after retraining so that, for example, retrained production workers remain in the production workforce, which is only a fraction of the entire workforce.

How best to address the issue of whether employers that have no current employees at risk would have a retraining policy raises a more general issue about how to measure employer practices and policies. An analogy here may be to the behavioral intentions arguments in psychology, where the practice of asking individuals what they intend to do is used to predict what they ultimately do. Many of the important questions about employer practices involve responses to events that have yet to happen—how will the employer respond to a downturn in business or a merger, what will happen to work-life programs when business declines, as well as will they retrain at-risk employees? An interesting topic for future research would be to see how well employer statements about such practices predict what they actually do.

Finally and perhaps most important, the preceding results help us to understand why some employers appear to be "good" or responsible employers who protect their workers from the risk of job loss, whereas others do not. Explanations for these differences often turn on the ethical standards or principles of the leaders in charge of the organizations. However, these results suggest that an important part of the explanation turns on the characteristics of the establishments themselves and the relative value of the social capital that is preserved through retraining.

References

Altonji, Joseph G., and James R. Spletzer. 1991. "Worker Characteristics, Job Characteristics, and the Receipt of On-the-Job Training." *Industrial and Labor Relations Review* 45(1):58–79.

American Management Association. 1997. *1997 American Management Association Downsizing Survey*. New York: AMA Research.

———. 2000. *2000 American Management Association Survey Staffing and Structure*. New York: AMA Research.

Asbrand, Deborah. 1993. "Downsizing Poses a Delicate Staffing Question: Should Corporations Retrain or Replace Their Mainframe Support Employees?" *Infoworld* 15(9):47.

Avery, Christine, and Diane Zabel. 2000. *The Flexible Workplace: A Sourcebook of Information and Research*. Westport, CT: Quorum.

Bartel, Ann. 1989. "Formal Employee Training Programs and Their Impact on Labor Productivity: Evidence from a Human Resource Survey." Working paper no.3026, National Bureau of Economic Research, Cambridge, MA.

Bartholomew, Doug. 1997. "To Retrain or Not to Retrain?" *Industry Week* 246(16):48.

Becker, Gary S. 1964. *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. Chicago: University of Chicago Press.

Blau, Peter M. 1955. *The Dynamics of Bureaucracy: A Study of Interpersonal Relationships in Two Government Agencies*. Chicago: University of Chicago Press.

Bourdieu, P. 1986. "The Forms of Capital." In *Handbook of Theory and Research for the Sociology of Education*, edited by John G. Richardson, pp. 241–58. New York: Greenwood Press.

Braverman, Harry. 1974. *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*. New York: Monthly Review Press.

Bureau of Labor Statistics (BLS). 2002. "Workers in Flexible and Shift Schedules in 2001: Summary." U.S. Department of Labor, Bureau of Labor Statistics News, April 18, 2002.

Burt, Ronald S. 1992. *Structural Holes*. Cambridge, MA: Harvard University Press.

Cappelli, Peter. 2001. "The National Employer Survey: Employer Data on Employment Practices." *Industrial Relations* 40(2):635–47.

Coleman, James S. 1988. "Social Capital in the Creation of Human Capital." *American Journal of Sociology* 94:S95–120.

———. 1990. *Equality and Achievement in Education*. Boulder, CO: Westview.

Commons, John R. 1913. *Labor and Administration*. New York: Macmillan.

Conference Board. 1989. *Flexible Staffing and Scheduling in U.S. Corporations*. New York: Conference Board, Research Bulletin 240.

———. 1991. *Employee Buy-in to Total Quality*. New York: Conference Board.

Cotton, John L. 1993. *Employee Involvement: Methods for Improving Performance and Work Attitudes*. Newbury Park, CA: Sage.

Dougherty, Deborah, and Edward H. Bowman. 1995. "The Effects of Organizational Downsizing on Product Innovation." *California Management Review* 37(4):28–44.

Fletcher, Lee. 2000. "Workers Help Define Flexible Schedules." *Business Insurance*, March 27.

Frazis, Harley J., Diane E. Herz, and Michael W. Horrigan. 1995. "Employer-Provided Training: Results from a New Survey." *Monthly Labor Review* 118(5):3–17.

Gittleman, Maury, Michael Horrigan, and Mary Joyce. 1998. "'Flexible' Workplace Practices: Evidence From a Nationally Representative Survey," *Industrial and Labor Relations Review* 52(1):99–115.

Golden, Lonnie. 2001. "Flexible Work Time: Correlates and Consequences of Work Scheduling." *American Behavioral Scientist* 44(7):1157–78.

Granovetter, Mark S. 1974. *Getting a Job*. Cambridge, MA: Harvard University Press.

Hackman, Richard (ed.). 1990. *Groups That Work (and Those That Don't): Creating Conditions for Effective Teamwork*. San Francisco: Jossey-Bass.

——— and Ruth Wageman. 1995. "Total Quality Management: Empirical, Conceptual, and Practical Issues." *Administrative Science Quarterly* 40:309–42.

Hoffman, Thomas. 1995. "Retraining, Outsourcing Rule the Roost at Chase." *Computerworld* 29(40):93.

Journal of European Industrial Training (JEIT). 1995. "Recruitment Preferred to Retraining." *Journal of European Industrial Training*. 19(11):iii.

Kennedy, Peter. 1993. *A Guide to Econometrics*. Cambridge, MA: MIT Press.

Klimoski, Richard J., and Robert G. Jones. 1995. "Staffing for Effective Group Decision Making." In *Team Effectiveness and Decision Making in Organizations*, edited by Richard A. Guzzo and Eduardo Salas, pp. 291–332. San Francisco: Jossey-Bass.

Knoke, David, and Arne L. Kalleberg. 1994. "Job Training in U.S. Organizations." *American Sociological Review* 59:537–46.

——— and Lisa Janowiec. 1998. "Make or Buy? The Externalization of Company Job Training." *Research in the Sociology of Organizations* 16:84–106.

Kochan, Thomas A., and Paul Osterman. 1994. *The Mutual Gains Enterprise: Forging a Winning Partnership Among Labor, Management, and Government*. Boston: Harvard Business School Press.

Krackhardt, David, and Robert N. Stern. 1988. "Informal Networks and Organizational Crisis: An Experimental Simulation." *Social Psychological Quarterly* 51:123–40.

——— and Lyman W. Porter. 1985. "When Friends Leave: A Structural Analysis of the Relationship Between Turnover and Stayer's Attitudes." *Administrative Science Quarterly* 30:242–61.

Leana, Carrie R., and Harry J. Van Buren, III. 1999. "Organizational Social Capital and Employment Relations." *Academy of Management Review* 24(3):538–55.

Lynch, Lisa, and Sandra E. Black. 1998. "Beyond the Incidence of Employer-Provided Training." *Industrial and Labor Relations Review* 52(1):64–81.

Melymuka, Kathleen. 1995. "The School of Hard Knocks." *Computerworld* 29(28):97–9.

Moad, Jeff. 1990. "It's Time to Retrain!" *Datamation* 36(15):20–4.

Nahapiet, Janine, and Sumantra Ghoshal. 1998. "Social Capital, Intellectual Capital, and the Organizational Advantage." *Academy of Management Review* 23(2):242–66.

Nelson, Richard R., and Sidney G. Winter. 1982. *An Evolutionary Theory of Economic Change*. Boston: Belknap Press.

Olain, Judy D., and Sarah L. Rynes. 1991. "Making Total Quality Work: Aligning Organizational Processes, Performance, and Stakeholders." *Human Resource Management* 30:303–33.

Osterman, Paul. 1994. "Internal Labor Markets: Theory and Change." In *Labor Economics and Industrial Relations: Markets and Institutions*, edited by Clark Kerr and Paul Staudohar, pp. 303–39. Cambridge, MA: Harvard University Press.

——— and Rosemary Batt. 1993. "Employer-Centered Training for International Competitiveness: Lessons from State Programs." *Journal of Policy Analysis and Management* 12(3):456–77.

Pennings, Johannes M., Kyungmook Lee, and Arjen van Witteloostuijn. 1998. "Human Capital, Social Capital, and Firm Dissolution." *Academy of Management Journal* 41(4):425–40.

Pfeffer, Jeffrey. 1995. *Competitive Advantage Through People*. Boston, MA: Harvard Business School Press.

Podolny, Joel M., and James N. Baron. 1997. "Resources and Relationships: Social Networks and Mobility in the Workplace." *American Sociological Review* 62(October):673–93.

Polyani, Michael. 1967. *The Tacit Dimension*. London: Routledge.

Roberts, Harold S. 1986. *Roberts' Dictionary of Industrial Relations*. Washington: BNA Books.

Rodgers, Ronald. 2000. "Commitment-Based Employment Relationships and High Performance Work Systems: A Theory-driven Research Strategy to Bring the Traditional Concepts in Line with the Empirical Evidence." Working paper, National University of Singapore, Faculty of Business Administration.

Stewart, Greg L., and Murray R. Barrick. 2000. "Team Structure and Performance: Assessing the Mediating Role of Intrateam Process and the Moderating Role of Task Type." *Academy of Management Journal* 43(2):135–48.

Webb, Sidney, and Beatrice Webb. 1897. *Industrial Democracy*. London: Longmans, Green.

Weick, Karl E., and Karlene H. Roberts. 1993. "Collective Mind in Organizations: Heedful Interrelating on Flight Decks." *Administrative Science Quarterly* 38:357–81.

Wellins, Richard S., William C. Byham, and George R. Dixon. 1994. *Inside Teams: How 20 World-Class Organizations Are Winning Through Teamwork*. San Francisco: Jossey-Bass.

West, Michael A., Carol S. Borrill, and Kerry L. Unsworth. 1998. "Team Effectiveness in Organizations." In *International Review of Industrial/Organizational Psychology*, edited by Cary L. Cooper and Ivan T. Robertson, Vol. 13, pp. 1–48. Chichester: Wiley.

Appendix

TABLE A.1

Variable Correlation Matrix

	Retraining	Self-Manage	TQM	Flextime	Severance	Recruiting Costs	Training Costs	Health Insurance	Gain Sharing
Self-managed	0.136	1							
TQM	0.279	0.103	1						
Flextime	0.251	0.180	0.139	1					
Severance	0.269	0.089	0.145	0.099	1				
Recruiting costs	0.158	0.102	0.241	0.118	0.067	1			
Training costs	0.109	0.080	0.149	0.120	0.115	0.352	1		
Health insurance	−0.013	0.014	0.070	−0.041	0.200	−0.103	−0.097	1	
Gains sharing	−0.087	0.025	0.080	−0.056	0.029	−0.061	−0.009	0.298	1
Gains sharing for Mangers	0.009	0.039	0.166	0.012	0.039	0.058	−0.096	0.173	0.594
Stock options	0.158	0.039	0.334	0.038	0.220	0.164	0.149	0.155	0.080
Family leave	0.218	0.091	0.199	0.065	0.309	0.112	0.191	0.076	0.108
Overcapacity	−0.037	0.015	0.030	−0.038	0.025	0.000	0.045	0.045	0.087
Below capacity	−0.047	0.114	−0.027	0.060	0.002	−0.054	−0.029	0.013	0.094
Skills rising	0.159	0.086	0.139	0.169	0.104	0.119	0.064	0.113	0.091
Skills declining	0.043	0.085	−0.037	0.117	0.092	−0.008	0.187	0.079	−0.040

	Gain Sharing for managers	Stock Options	Family Leave	Overcapacity	Below Capacity	Skills Rising
Stock options	0.196	1				
Family leave	−0.006	0.182	1			
Overcapacity	0.030	0.057	−0.005	1		
Below capacity	−0.043	−0.114	−0.055	−0.180	1	
Skills rising	0.152	0.074	0.048	0.080	−0.058	1
Skills declining	−0.115	0.057	0.016	−0.044	0.226	−0.2674

$N = 1458$