# National Employment Systems and Job Autonomy: Why Job Autonomy is High in the Nordic Countries and Low in the United States, Canada, and Australia*

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## Abstract

We present evidence that, across countries, similar jobs carry very different levels of autonomy. Workers in Nordic countries have greater discretion than workers in the United States, Canada, and Australia, all else being equal. This suggests that students of job autonomy, who emphasize task complexity and human capital, should heed the role of the wider institutional environment. We examine three explanations of the link between national location and autonomy. The Taylorism/de-skilling thesis suggests that work control is a zero-sum game between workers and managers, such that in countries where managers exercise great control, workers will exercise little. The collective bargaining thesis suggests that union bargaining strategy is the key: unionists will have high autonomy in 'co-determination' countries and low autonomy in 'job control' countries. We argue more broadly that national management, training, bargaining, and unemployment systems operate according to different logics. Where they are oriented to rule-governed work, autonomy will be low. Where they are oriented to skill-governed work, autonomy will be high. Detailed data on job autonomy from over seven thousand jobs in seven countries support our contention that national employment systems shape job autonomy.

**Descriptors:** work, comparative sociology, occupations, job autonomy

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Organization Studies
1999, 20/2
257–291

0170–8406/99
0020–0010 $3.00

## Introduction

Evidence has mounted since the early 1980s that worker discretion varies widely across nations (Einhorn and Logue 1982; IDE 1981a; ILO 1981; Kirmeyer and Shirom 1986; Lincoln and Kalleberg 1985; Maurice et al. 1984; Wright et al. 1995). All else being equal, workers in Denmark exercise more discretion than their counterparts in the United States. This evidence raises theoretical questions, because prevailing rationalist theories suggest that such individual-level factors as task complexity and human capital should explain variation in job autonomy. It also raises questions for policy makers, because autonomy and high skill levels are thought to be important components of national economic competitiveness. It raises questions about the future, because globalization and regional

economic integration are thought to be McDonaldizing work everywhere, reducing job autonomy in high-skill nations in the process.

Due in part to a lack of good comparative data, previous studies have offered little hard evidence about how job autonomy varies across countries. In this paper, we examine data on about a thousand jobs in each of seven countries, testing three explanations of national differences by comparing levels of conceptual autonomy — the autonomy to decide how work will be performed — across countries and groups of employees. First, the Taylorism/de-skilling thesis suggests that there is a zero sum of work control between workers and managers. In countries where Taylorism, Fordism and like management movements have expanded managerial control of work and undermined craft traditions, the autonomy of workers will be relatively low. In countries where craft traditions have survived and routinization movements have failed, managers will have low autonomy and workers will have high autonomy. Among nations, in other words, autonomy will vary *between* managers and workers.

Second, the collective bargaining thesis suggests that labour history holds the key. In countries where unions pursued job control bargaining, codifying work tasks and fixing job boundaries, unionists will have less autonomy than their non union peers. In countries where unions pursued co-determination bargaining, building worker participation into production decisions, unionists will have more autonomy than their non union peers.

Third, we build on comparative studies to argue that national employment systems carry different logics, institutionalized in management, training, bargaining, and unemployment practices (Fligstein and Byrkejflot 1996; Soskice 1993; Scott 1994; Scott and Meyer 1994). The United States, Canada, and Australia represent one such logic, with rule-oriented practices that limit autonomy. The Nordic countries represent another, with skill-oriented practices that expand autonomy. We do not argue that Taylorism, Fordism, the craft heritage, co-determination, job control, and other workplace traditions have not been important; rather, we argue that they have contributed to wider institutional logics that today affect all kinds of jobs.

Previous studies of national employment systems have compared macro institutions, but have only posited their effects on jobs. We used detailed individual-level data. After controlling for characteristics of jobs, occupants, and employing organizations, we find that workers in Denmark, Finland, Norway, and Sweden have greater autonomy than workers in the United States, Canada, and Australia, as all three theories suggest. We then undertake systematic analysis of differences among groups of employees to evaluate the three theories of national differences. We find that in the Nordic countries, skill-oriented employment systems increase job autonomy among all sorts of jobs. In North America and Australia, rule-oriented employment systems lower autonomy for all sorts of jobs. Contrary to the Taylorism/de-skilling thesis, we do not find that worker autonomy is negatively related to manager autonomy among nations. Contrary to the collective bargaining thesis, we do not find that autonomy among union

members is relatively low in job control countries and high in co-determination countries. In short, among nations, job autonomy varies *across* workers and managers, unionists and non unionists, rather than *between* these groups. This finding reinforces our argument that national employment systems influence autonomy across all sorts of jobs.

## Explaining Cross-national Variation in Job Autonomy

Functionalist organizational theorists suggest that job autonomy should co-vary with task complexity and human capital, and that cross-national differences in autonomy are the result of different compositions of industries, jobs, and incumbents. However, large scale surveys (IDE 1981a; ILO 1981) and comparative case studies (e.g. Maurice et al. 1984) find large cross-national differences in worker autonomy after such factors are controlled. Scholars have put forward several explanations.

### The Taylorism/De-skilling Thesis

Frederick Taylor (1911) saw control over work as a zero-sum game between managers and workers and saw the expansion of managerial control as the key to efficiency. Both Taylor's followers and later critics from the left came to see work control as zero-sum. Henri Fayol (1949) argued that specialization can eliminate traditional craft control of work by allowing managers to master the distribution and sequencing of work routines across jobs. Later rationalist theorists (e.g. Galbraith 1983) argued that within a given technology, work can be organized to maximize worker or manager control. To understand national differences in work organization and autonomy, analysts have often pointed to historical differences in the institutionalization of scientific management (Devinat 1927; Merkle 1980; Guillén 1994). In countries where Taylorism and other management practices that routinize work were popularized, one would expect worker autonomy to be the lowest and manager autonomy to be the highest.

Critics from the left, who argue that Taylorism increased capitalist social control rather than efficiency, accept the axiom that work control is a zero-sum game and that scientific management shifts the balance towards managers (Burawoy 1978). Harry Braverman (1974) and Richard Edwards (1979) argue that by shifting work control to managers, Taylorism and Fordism reduced employer dependence on worker skill, rendering particular employees expendable and thereby undermining union power. Both find that in the United States, these movements in fact reduced worker skill and discretion. Because Taylorist techniques diffused to white collar jobs in countries where they reigned over blue collar jobs (Kocka 1980), all workers in Taylorist countries can be expected to have relatively low autonomy. Wright and Singleman (1982: 184) show that de-skilling continued in the postwar period, which suggests that we should find cross-national differences in the data discussed below.

The Taylorism/de-skilling thesis refers not to the history of Taylor's ideas *per se*, but to the broader argument that, through routinization, managers in some countries have shifted control of work away from workers, to themselves. It suggests two hypotheses. First, in countries where work was not systematically routinized, such as in Denmark, Finland, Norway, and Sweden (Merkle 1980; Cole 1989), workers should have greater autonomy than in countries where it was, such as the United States, Canada, and Australia. Second, because work control is a zero-sum game, in countries where managers have substantial autonomy, workers will have relatively low autonomy. Among countries, that is, autonomy will vary *between* managers and workers.

### Collective Bargaining Theories

Comparative studies of labour and bargaining suggest that national bargaining strategies affect job autonomy. Where unions adopted the job control strategy of bargaining over the duties and pay rates of particular jobs, autonomy was restricted by contractual rules that specified work routines and job boundaries (Piore and Sabel 1984: 113; Bernstein 1970; Kochan 1980). By contrast, where unions adopted the co-determination strategy of negotiating for ongoing worker participation in decisions about the organization of work through works councils and other means, autonomy was expanded by the introduction of practices that ceded decision control to individual workers and employee–management teams (Ingham 1974; Fry 1979; Swedish Trade Union Confederation 1981).

Unions in the growing industrial, non-craft, sectors in the United States, Canada, and Australia adopted the legalistic job control form of bargaining in the 1940s and 1950s (Thelen 1993). Even earlier in the century, American craft unions had focused their struggle on gaining control of the shopfloor (Montgomery 1987). The goals of job control unionism were to expand union control over work, to prevent low-wage workers from replacing high-wage workers, and to stabilize union membership. The result is what David Brody (1989) terms 'workplace contractualism', or contractual work rules that have narrowed the autonomy of unionists (Slichter et al. 1960; Dimick 1978).

Unions in the Nordic countries have long collaborated with management in designing the work process, and since the 1970s they have embraced co-determination and industrial democracy to increase labour participation in, respectively, decisions about shopfloor organization and corporate planning.

Job control and co-determination bargaining have shown effects on worker autonomy in a number of single-country studies. In job control countries, union members show lower levels of job autonomy, when all else is equal, than non-members (Kirmeyer and Shirom 1986; Kochan and Helfman 1981). Co-determination in northern Europe has been found to expand autonomy by precluding work simplification and by encouraging job flexibility and skill enhancement (Einhorn and Logue 1982; IDE 1981b; Martin

1987). These studies suggest that we should expect a negative effect of union membership in the United States, Canada, and Australia, and a positive effect in Denmark, Finland, Norway, and Sweden. Alternatively, because the co-determination statutes won by Nordic unions affect union and non-union jobs alike, autonomy may be higher for *all* workers in those countries (Martin 1979). National differences in autonomy result, according to this argument, from the relatively low autonomy of union members in the English-speaking countries and the relatively high autonomy of unionists, or of all employees, in the Nordic countries.

### The Logic of Employment Systems

We argue that within each nation, management, training, bargaining, and unemployment institutions may be oriented either to 'direct control' of work through the elaboration of rules or to 'responsible autonomy' through dependence on skill (Friedman 1977). As Neil Fligstein and Haldor Byrkejflot imply in *The Logic of Employment Systems* (1996), national institutions in these four realms are highly interdependent and thus tend to carry consistent logics. Where work is controlled to a greater extent by rules, management practices tend to be oriented towards routinization of work; secondary schools tend not to teach job-related skills; post-secondary vocational education is usually rare; bargaining is often based on rule-oriented job control; and unemployment systems tend to include weak turnover controls and thus (a) encourage employers to replace rather than retrain displaced workers and (b) provide no incentive to employers to create broad skill-development programmes.

Conversely, where work is controlled by skill, management practices tend to be oriented towards employee control of the work process; secondary schools tend to teach job-related skills for which there is demand in the local labour market; post-secondary vocational education is usually common; bargaining is often based on co-determination of workplace practices; and unemployment systems tend to discourage turnover and thus encourage employers to retrain displaced workers and to create skill-development programmes.

These logics affect the whole spectrum of jobs because they are comprised not of specific practices such as Fordist assembly techniques, utilized in only a few sectors, but of a broad range of practices that follow a pervasive principle of work control. They define quite generally whether work should be governed by codes and procedures or by individual discretion. As a consequence of the ubiquity of these logics at the national level, in rule-oriented nations it is not only operatives in assembly plants whose work is relatively rule-governed, but bank tellers, physicians, security guards, teachers, and managers. All of these jobs will be relatively proceduralized, but the particular procedures and rules may take very different forms.

Our argument builds on neo-institutional arguments about organizations, which address the meanings or logics embedded in rationalized institutions

(Berger and Luckmann 1966; Meyer and Rowan 1977; Dobbin 1994). We argue that national employment systems carry logics of work control that influence how work is governed in a wide range of settings. We contend, for instance, that the legacy of Taylorism and job control unionism in the United States is not merely rule-governed work in settings subjected to Taylorism and job control, but a rule-oriented approach to organizing work that has become widely institutionalized. To say that this approach is institutionalized is to say that it is thought by Americans to be natural — to be self-evidently the optimal way of organizing work. Its advantages are taken for granted such that it shapes how Americans design new management, training, bargaining, and unemployment practices. In each of these countries, we argue, a particular logic of work organization has become institutionalized across very different kinds of work settings.

The unique contribution of neo-institutional theory is the insight that organizational structures carry not only routines and rules, but deeper rationalized principles of organizing. These logics have broad effects. While the origins of these principles are to be found in part in national experience with Taylorism and collective bargaining, today they pervade national economies.

There is substantial disagreement about how national employment systems emerged. Which came first, management, training, bargaining, or unemployment practices? Those who advocate education, such as Robert Reich (1991), argue that low-skill and high-skill economies follow characteristics of the labor supply, and thus that training is the key. Students of management history emphasize the role of management paradigms such as Taylorism (Guillén 1994). Students of labour history tend to argue that where unions failed to emphasize skills and lost political power, national skill levels waned (Selznick 1969; Brody 1989; Montgomery 1987). Students of comparative politics tend to emphasize the role of unemployment policies, particularly as they encourage employers to seek broadly skilled employees and foster skill development (Janoski 1990; Soskice 1990). Whilst these analysts may disagree about what produces high-skill employment systems, many agree that the corporatist tradition in the Nordic countries has helped to sustain high-skill employment, because unions have lobbied not only in firms but also in parliaments to enhance skill levels (Kristensen 1996; Kjellberg 1992; Scheuer 1992; Lilja 1992; Dølvik and Stokland 1992).

Differences over the origins of these systems notwithstanding, there is substantial agreement among scholars about how employment systems differ. David Soskice (1993), Wolfgang Streeck (1992), and Kathleen Thelen (1993) describe different national systems in quite congruous terms. Figure 1 summarizes differences among national employment systems. The United States, Canada, and Australia are located closest to the rule-oriented end of the continuum. Their rule-oriented *management* systems, based on explicit job descriptions and clear work rules, diminish the scope of jobs. Their weak and non-specific *training* systems (in secondary and vocational schools and in colleges) ensure that many entry-level job-seekers are

unskilled. Their job control *bargaining* systems formalize job boundaries and prescribe tasks, thereby circumscribing worker discretion. Their *unemployment* systems make it cheap for employers to terminate workers, and thus discourage employers from retraining redundant workers and from training them broadly in the first place.

Denmark, Finland, Norway, and Sweden are located towards the skill-oriented end of the continuum. Their skill-oriented *management* systems, based on collaborative job design and worker participation in decision making, allot great discretion to workers. Their elaborate, job-specific *training* systems ensure that even entry-level job-seekers are skilled. Their co-determination *bargaining* systems prescribe employee participation in shopfloor design and expansion of job discretion. Their *unemployment* systems make it expensive for employers to fire workers, and thus encourage the retraining of redundant workers and broad skill development.

Here we emphasize the shared characteristics of countries within each group. There are, of course, substantial differences within each group. For instance, among the Nordic countries, Denmark has depended more on craft control of work through a small-firm system of production, the survival of which depends on strong interfirm networks, and on a craft-controlled educational system (Kristensen 1992, 1996). By contrast, Sweden has depended more on co-determination-based skill enhancement in a large employer system of production, the survival of which depends on the success of a few large employers, and on state-controlled educational institutions (Kjellberg 1992). While each national employment system, then, has unique characteristics that produce a unique equilibrium, the seven countries fall into two broadly different groups, those that depend on skills and those that depend on rules for the governance of work.

We argue that these national employment systems should have pervasive effects across managers and workers, unionists and non-unionists. We predict very different patterns from those posited by the Taylorism/de-skilling and collective-bargaining approaches.

#### Managers versus Workers

Employment systems affect managerial jobs as well as non-managerial jobs. Where work is highly proceduralized and codified for workers, supervisory decision making is typically proceduralized and codified as well. March and Simon (1958) anticipate this in their discussion of programmed decisions: managers' and workers' decisions can be programmed, or rule-bound, in a wide range of settings. In any setting, there is substantial leeway in the extent to which decisions are programmed, and managers and workers are typically subjected to similar principles of work control. In settings where worker discretion is bound by rules, supervisory discretion also tends to be bound by rules. For instance, where assembly line workers are prevented by management rules or collective bargaining agreements from repairing the machines they operate, supervisors tend to be prevented from repairing those machines by the very same rules, and supervisors' decisions about broader production issues tend to be programmed. Alvin

Figure 1 National Training, Employment, Bargaining, and Management Systems

| | Management | Training | Bargaining | Unemployment |
|---|---|---|---|---|
| Australia | Rule-oriented control of work (Foenander 1962; Sutcliffe 1967; Ford and Plowman 1983) | Apprenticeships rare, weak vocational education. (Sutcliffe 1967) | Job control unionism (Rawson 1978; Plowman and Cole 1982) | Layoffs inexpensive, barrier-free (Gaston 1992) |
| Canada | Rule-oriented control of work (Laxer 1976; Jamieson 1973) | Apprenticeships, technical training rare (Logan 1948; Williams 1975) | Job control unionism (Williams 1975; Woods and Goldenberg 1981) | Layoffs inexpensive, barrier-free (Bouchard 1988) |
| Denmark | Skill-oriented control of work (Tarp 1985; Lovaas 1987) | Apprenticeships and technical schools (Tarp 1985; Begtrup et al. 1929) | Craft-based codetermination; cooperation committees (IDE 1981b; Westenholz 1993) | Layoffs costly; discharge barriers (Wohlers and Weiner 1988; Stewart 1974) |
| Finland | Skill-oriented control of work (IDE 1981a; ILO 1984) | Technical education, job-related training (IDE 1981a; Aintila 1989) | Co-determination under shop stewards (IDE 1981b; Aintila 1989) | Layoffs costly; contractual discharge barriers (Wohlers and Weiner 1988; IDE 1981a) |
| Norway | Skill-oriented control of work (Thorsund 1985) | Apprenticeships and public vocational education (Rust 1989; Sirianni 1983; Galenson 1949; Kristensen 1992) | Co-determination; board representation (IDE 1981b; Thorsund 1985; Galenson 1949) | Layoffs costly; discharge barriers (Wohlers and Weiner 1988) |
| Sweden | Skill-oriented control of work (Swenson 1989; Cole 1989; Martin 1979) | Technical education tied to future jobs (Boli 1989; Soskice forth.; Lind 1979) | Co-determination; Works' Councils (Nycander 1979; IDE 1981b; Ingham 1974) | Layoffs costly; union right to bargain over layoffs (Soskice forth.; Olsson 1990) |
| United States | Rule-oriented control of work (Edwards 1979; Kocka 1980; Clawson 1980) | Apprenticeships, technical training rare (Braverman 1974; Bowles and Gintis 1976) | Job control unionism (Selznick 1969; Jacoby 1985; Marks 1989) | Layoffs inexpensive, barrier-free (Soskice forth.; Janoski 1990) |

Gouldner's (1954) study of two workplaces, a mine and an administrative office, illustrates this difference. In the mine, where miners' work was hardly constrained at all by rules, supervisors were similarly unconstrained by rules. Yet in the administrative office, where clerical work was very much constrained by rules, supervisors were similarly constrained.

#### Unionists versus Non Unionists

We expect to find that among countries, autonomy varies *across* union and non-union workers, because work in non-union settings is organized much like work in union settings. This we have long known from historical and comparative research. In his study of American management practice, Philip Selznick (1969) documented that union-related practices diffused to the non-union sector in the 1950s. In his classic comparative study, Reinhard Bendix (1956) found great homogeneity in management practice within nations and little variation between union and non-union sectors. In his recent comparison of the United States and Sweden, Peter Swenson (1992) has shown that the principles of management associated with unionism are also found in non-union settings.

In sum, the employment systems thesis suggests several hypotheses about variation in job autonomy. First, once industrial, organizational, and incumbent features are controlled, jobs in the Nordic countries will show greater autonomy than jobs in the English-speaking countries. Second, among nations, autonomy will vary positively *across* managers and non-managers, unionists and non-unionists, because the logics of employment systems will affect all sorts of jobs. Contrary to the Taylorism/de-skilling thesis, we do not expect to find that autonomy varies *between* managers and workers — – that where it is high for managers it is low for workers — because national management systems govern both groups. In countries where workers have great discretion, so will managers. In countries where workers have little autonomy, so will managers. Contrary to the collective bargaining thesis, we do not expect to find that unionists in job control countries have less autonomy than their non-union peers, because union and non-union jobs will be governed by the same broad management systems. For the same reason, we do not expect that in co-determination countries, unionists will have high autonomy relative to their peers.

## Data and Methods

Previous studies of national employment systems have not examined individual-level data to control for occupational, industrial, and individual factors. We analyze data from a large-scale, cross-national study of individuals' work experiences. Our analytical strategy is two-fold. First, we examine whether significant cross-national differences in job autonomy hold up in the presence of controls for occupation, industry, education, age, gender, supervisory level, and establishment size. We find that, even in the presence of these controls, jobs in the Nordic countries carry significantly

more autonomy than jobs in North America and Australia. Second, to test the three theories of cross-national differences, we introduce country-by-supervisory status and country-by-union status interactions. The Taylorism/de-skilling thesis suggests that supervisory interactions will be significant, because autonomy will vary *between* managers and workers. The collective bargaining thesis suggests that union interactions will be significant, because autonomy will vary *between* unionists and non unionists. The employment systems thesis suggests that there will be no interaction effects, because national employment systems shape all sorts of jobs.

## The Data

We analyze the most detailed data on job autonomy ever collected in a cross-national survey (Wright et al. 1990). The dataset, collected during the 1980s in Australia, Canada, Denmark, Finland, Norway, Sweden, and the United States, is ideal for our purposes because, in addition to covering a wide range of potential causal factors, it includes a superb measure of job autonomy based on concrete examples given by respondents. Because they were collected during the 1980s, the data have the added advantage of offering a snapshot of cross-national differences in jobs *before*, some argue, regional integration and globalization began to drive out national variation in work organization (Mueller 1994). For instance, they were collected before the European Union developed a European Works Council that may foster homogenization of employer practices (Schulten 1996). Whether the EU will cause co-determination practices to be introduced everywhere, or whether it will erase the participatory role won by unionists in Scandinavia, remains to be seen (Windolf 1993). Being cross-sectional, the data do not allow us to explore whether national employment systems resist homogenizing forces (Kristensen 1996).

The sample is comprised of adults from randomly sampled households (see Table 1 for sampling details). Questionnaires were completed for 12,287 people in these seven countries, with national samples ranging from 998 for Finland to 2,577 for Canada. Adjusted response rates were in the order of 75 percent for most countries (Wright et al. 1990). After excluding respondents who did not hold full-time jobs and deleting cases for which relevant variables were missing, we were left with 7,496 cases. The vast majority of deleted respondents were not full-time workers. For each nation, means for deleted cases were close to means for those included, which gives us confidence that item response bias is not driving the results.

## Job Autonomy

We examine conceptual job autonomy, the capacity to design one's own work process and make key, non-routine, decisions (as distinct from the capacity to decide the pace or hours of work). The six-point scale of conceptual job autonomy is based on a two-part question. Respondents were first asked a filter question: 'Is yours a job in which you are required to

Table 1
The National Samples

| Country | Year of Survey | Type of Survey | Response Rate | Population Sampled (N) |
|---|---|---|---|---|
| Australia | 1986 | Personal | N.A.[a] | Men over age 18 working at least 30 hours weekly; women over 18 working at least 15 hours (1,195) |
| Canada | 1982 | Personal | 76% | Persons over age 18 who were employed, seeking work, or housewives (2,577) |
| Denmark | 1985 | Interview | 69% | Persons over age 15 (2,080) |
| Finland | 1981 | Personal | 74% | Persons aged 18-65 (998) |
| Norway | 1982 | Personal | 90+%[b] | Persons aged 16-66 (2,532) |
| Sweden | 1980 | Telephone and Mail | 76% | Employed persons aged 18-65 (1,145) |
| United States | 1980 | Telephone | 78% | Same as Canada (1,760) |

[a] In Australia interviewers randomly selected households within census districts. Overall response rates were not reported.
[b] For Norway Wright et al. (1990) do not report the response rate, but Rosenfeld and Kalleberg (1990: 77) report that it is 'nearly 100 percent'.

design important aspects of your own work and to put your ideas into practice? Or is yours a job in which you are not required to design important aspects of your work or to put your ideas into practice, except perhaps in minor details?' Those who answered that they *were not* required to design important aspects of their work were given a score of 'no autonomy'. Those who answered that they *were* required to design important aspects of their work were asked a follow-up: 'Could you give me an example of how you design your work and put your ideas into practice?'. Trained coders scored each response on a six-point scale. For respondents who had given a 'false positive' response to the filter question, a score of no-autonomy was assigned by the coders [the definition: 'Very marginal involvement with designing procedures. Most work activities highly routinized with rare problem-solving' (Wright et al. 1990, v. III: 3)]. Specific definitions were given for scores of high, medium, and low autonomy, with intermediate levels of autonomy defined as 'probably high' and 'probably medium'. High autonomy was defined as designing or planning significant aspects of the final product or service, *or* problem solving with non-routine solutions as a significant aspect of the work. Medium autonomy was defined as designing or planning most of the procedures *used in one's own work*, but having little influence on the final product or service, *or* problem solving as a regular aspect of work, but generally of a routinized nature. Low autonomy was defined as designing or planning at most a limited aspect of one's own work procedures, *or* problem solving as at most an occasional/marginal aspect of work.

The definition of low autonomy was: 'design/plan at most a limited aspect of procedures, with virtually no influence over aspects of the final product

or service. OR problem solving is at most an occasional/marginal aspect of work.' The definition of medium autonomy was: 'design/plan most of the procedures used in one's work, but only have influence on very limited aspects of the final product or service. OR problem solving is a regular aspect of work, but generally of a routinized character or not a central activity in one's work.' The definition of high autonomy was: 'design/plan significant aspects of the final products or service, not just procedures used in one's own work. OR problem solving with non-routine solutions is a central aspect of the work, not just an occasional event' (Wright et al. 1990, v. III: 3).

Coding instructions contained detailed explanations of how to code responses for particular occupations. For instance, for repair people, the instructions defined high autonomy as 'must design/modify tools and machines in order to accomplish tasks, as opposed to simply repairing machines within a well-defined set of alternatives' and low autonomy as 'repair work is completely routinized requiring no significant problem solving'. For accountants, the instructions defined high autonomy as 'involved in the planning and design of auditing systems, systems of financial records, etc.' and low autonomy as 'involved in purely routine accounting/calculations with no significant problem solving' (Wright et al. 1990, v. III: 6). Coders also developed specific definitions for sales, secretarial, clerical, and nursing.

To ensure consistency and evaluate reliability, three coders assigned scores to each response. There was complete agreement among coders in 80 percent of the cases. Instances of disagreement were resolved through discussion: 'where disagreements occurred, the final codes adopted were the result of a consensus among the coders after a case-by-case discussion of the disagreements' (Wright et al. 1990, v. III: 2). In sum, autonomy scores were determined by coders on the basis of concrete examples provided by respondents. Objective definitions of autonomy minimized the effect of coder and respondent attitudes. Triple-coding ensured the reliability of the coding process.

For three occupational categories, coders found it difficult to assign meaningful autonomy scores on the basis of examples given by respondents. To remedy this, Wright and his colleagues assigned 'high' autonomy scores to all teachers and police and 'medium' scores to all hairdressers/barbers. Because the scores for these groups were assigned on the basis of occupation, we exclude them from the analysis.

### Organization, Occupation and Incumbent Characteristics

Different national compositions of organizations, occupations, and incumbents account for some of the cross-national variation in average job autonomy. Slight differences in national sampling frames may also account for some of the variation (Black and Myles 1986). To assess whether similar jobs actually carry different levels of autonomy in different countries, we controlled for factors that have been linked to autonomy in previous studies.

### Managerial Status

Managers have been found to have greater discretion than subordinates in virtually all settings. We operationalized managerial status with a set of binary variables representing upper manager, middle manager, and supervisory manager. The reference category is non manager. The Taylorism/de-skilling thesis suggests that, among countries, autonomy should vary *between* managers and workers. To examine this thesis, we introduce interactions between supervisory level and country.

### Union Membership

Single-country studies typically suggest that union membership will have either positive or negative effects. The comparative literature on collective bargaining, however, suggests that union membership should have differential effects by country (IDE 1981b; Kochan and Helfman 1981; Kirmeyer and Shirom 1986). To test this hypothesis, we include union membership in the baseline model and introduce country-by-union-membership interactions.

### Human Capital: Education and Experience

Human capital theorists suggest that individuals with the greatest human capital — in terms of innate ability, education, and experience — will be most productive, and that the economy sorts individuals into the jobs where they will be most productive (Becker 1964; Coleman 1988). Productive workers with great human capital will be the best paid, because salaries are based on productivity, and they will carry the highest levels of autonomy, because the value of human capital assets lies in scarce skills and the ability to make independent judgements.

We measure human capital using education and experience. Education is coded as the number of years of schooling completed. In Australia, Denmark, Finland, and Sweden respondents were asked not about how many years they had spent in school, but about the progress they had made towards the completion of various degrees. We assigned respondents who had terminated schooling upon the completion of a particular degree the number of years required to attain that degree in their country. We assigned those who had completed one degree and worked towards another the number of years required to complete the first plus half of the number of years required to complete the second. We also examined a set of binary variables representing degrees completed (high school, technical school, junior college, 4-year college, masters-level degree, doctorate-level degree).

Lacking a direct measure of work experience, we follow the common practice of using respondent age. Age is modelled as a quadratic because it has been shown to have a non-monotonic relationship to autonomy: job autonomy increases to a certain age and then begins a gradual decline.

### Gender Discrimination

Net of human capital attributes and job characteristics, gender has been shown to affect remuneration, status, power, and autonomy (e.g. Brown

1975). Differences in job outcomes between men and women have been linked to discrimination in two ways. First, discrimination in hiring and promotion places women in less attractive jobs than similarly qualified men (Rosenfeld and Kalleberg 1990; Baron and Bielby 1985). Second, discrimination leads to low wages, status, power, and autonomy for jobs traditionally held by women (Jacobs 1990; England and Farkas 1986; Hartmann 1985). We include the binary variable Male.

#### Organizational Scale

Blau and Schoenherr (1971) and Pugh et al. (1969) find that large organizations are most likely to adopt the kinds of formal work rules and written job descriptions that diminish job autonomy. Subsequent studies have confirmed this. We measure organizational size by the number of workers in the employing organization. For certain economic sectors in certain countries, respondents were asked to place their employer in a size category rather than to report the actual size. For these cases, we recoded responses to the midpoint of the category. We use firm size rather than establishment size, because practices affecting job autonomy are typically determined at the firm level. In addition to simple employment size, we introduce logged employment to examine Blau and Schoenherr's (1971) contention that there is a diminishing effect of size on organizational structure and practice. Because the variable 'organizational size' was missing for a large number of respondents, including all Australians and most public-sector employees elsewhere, we set missing cases equal to zero for the two size variables and introduced a binary variable 'size missing'.

#### Industry, Occupation, and Predictability

James March and Herbert Simon (1958) suggest that job autonomy should vary as a result of the predictability of the work process. In industries and occupations where the work process is predictable, programmatic decision-making will reduce job autonomy. In industries and occupations where the work process is unpredictable, the impossibility of programming decision making will increase job autonomy. Studies of autonomy have shown uniform evidence of industry and occupation effects. To control for these effects we introduced binary variables representing each industry and occupational group. The binary variables tap the effects of industry and occupation without requiring us to prejudge the relative effects of different industries or occupations. Table 2 reports mean autonomy for each of the 12 broad industrial categories. Table 3 presents mean autonomy for each of the 25 occupational groups. Means in both tables are based on the cases used in the analysis. We exclude, for instance, teachers, police, and barbers, for whom autonomy scores were not based on individual responses. In an appendix we show full industry and occupation effects for the final model reported in Table 4. In the analyses we omit the occupation and industry with the lowest mean scores.

Table 2
Job Autonomy
Means by Industry

| Industry | Mean |
|---|---|
| Agriculture, fishing, and forestry | 0.87 |
| Nondurable manufacturing | 0.97 |
| Durable manufacturing | 1.22 |
| Communications and utilities | 1.23 |
| Retail trade | 1.23 |
| Mining | 1.25 |
| Personal services | 1.44 |
| Wholesale trade | 1.47 |
| Construction | 1.61 |
| Business services | 1.76 |
| State dominated services and non profits | 1.77 |
| Professional services | 1.99 |
| Grand mean | 1.45 |
| N=7496 | |

Table 3
Job Autonomy
Means by
Occupation

| Occupation | Mean |
|---|---|
| Transportation workers | 0.41 |
| Operatives except transport | 0.42 |
| Laborers except farm | 0.46 |
| Other clerical | 0.78 |
| Secretaries | 0.81 |
| Farm labourers and foremen | 0.84 |
| Unskilled services | 0.85 |
| White collar services | 0.93 |
| Skilled manual services (e.g. barbers) | 1.01 |
| Crafts | 1.13 |
| Sales | 1.47 |
| Govt. protective workers | 1.68 |
| Other medical | 1.84 |
| Foremen | 2.16 |
| Technicians (e.g. draftsmen, embalmers) | 2.34 |
| Accountants, Auditors | 2.53 |
| Managers, Other | 2.95 |
| Managers in public or quasi-public settings | 3.41 |
| Public advisors (e.g. clergy, personal relations) | 3.54 |
| Managers, corporate | 3.57 |
| Creative/entertainment | 3.64 |
| Judges and lawyers | 3.69 |
| Mathematicians, engineers, scientists, architects | 3.80 |
| Physicians and dentists | 3.93 |
| University teachers, social scientists, librarians | 3.94 |
| Grand mean | 1.45 |
| N=7496 | |

## Findings

We began by examining the effect of national location on job autonomy, in the presence of controls for organization, occupational, and incumbent characteristics. National location shows significant and robust effects. Next, to understand these national differences, we compared the Taylorism/de-skilling and employment systems theses by introducing country-by-supervisory status interactions. In support of the employment systems thesis, we found that among countries, autonomy varies *across* supervisory levels. Finally, we compared the collective bargaining and employment systems theses by introducing country-by-union status interactions. In support of the employment systems thesis, we found that among countries, autonomy varies *across* union and non-union workers.

First, we review the baseline model presented in Table 4. Because the sample sizes varied across countries, we ran all models unweighted as well as weighted for national sample size. Sample sizes by country are reported in the Appendix, Table A2. The results for the two sets of models were substantially the same, hence we report the unweighted models here.

Table 4 presents a series of 6, nested, models of job autonomy. All models contain managerial status, union membership, education, gender, and age. We added sets of binary variables representing occupation, industry, and national location in turn to evaluate these factors. For parsimony, we omitted the full list of industries and occupations in Table 4. We present the full results for the final model, however, in the Appendix, Table A1.

Managerial status shows strong, consistent, effects on autonomy in these models, with upper managerial status producing the largest positive coefficients, followed by middle managerial and supervisory status. The collective bargaining literature suggests that we should find negative effects of unionism in some nations and positive effects, or no effects, in others. In equations (1), (2), (3), and (5) union membership shows positive effects. However, the addition of variables representing national location causes the union coefficient to change signs in equations (4) and (6), which suggests that union membership acts as a proxy for national location in the other four equations, because union membership is much higher in the Nordic countries than elsewhere. Once national location is controlled, union membership shows a negative effect. In country-specific equations, union membership similarly shows slight negative effects in most cases (see Appendix Table A2).

Note that in the Appendix, Table A2, we report equations using indexes for occupation and industry, instead of the 35 binary variables used in other models. The indexes range from 1 to 25 for occupation and 1 to 12 for industry. They are based on the means for occupation and industry reported in Tables 2 and 3. The occupation with the lowest score is given a value of 1 and that with the highest score a value of 25. While we run the risk of introducing a simultaneity bias here, thereby overestimating the effects of industry and occupation, the results reported here were substantively

Table 4 Nested Regressions Predicting Job Autonomy

| Equation | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| Upper Mgr. | 2.458**(.085) | 1.638**(.087) | 2.407**(.085) | 2.361**(.083) | 1.626**(.087) | 1.619**(.085) |
| Middle Mgr. | 1.946**(.076) | 1.317**(.074) | 1.923**(.075) | 1.915**(.074) | 1.316**(.074) | 1.336**(.073) |
| Supervisor | 1.155**(.051) | .864**(.049) | 1.131**(.050) | 1.197**(.050) | .862**(.049) | .921**(.049) |
| Union Mbr. | .128**(.037) | .079* (.035) | .103**(.038) | −.166**(.040) | .068 (.036) | −.131**(.039) |
| Education | .142**(.006) | .045**(.006) | .126**(.007) | .187**(.007) | .041**(.007) | .074**(.007) |
| Male | .342**(.036) | .388**(.040) | .476**(.039) | .364**(.036) | .396**(.041) | .394**(.040) |
| Age | .074**(.009) | .054**(.008) | .074**(.009) | .067**(.008) | .052**(.008) | .048**(.008) |
| $Age^2$ | −.001**(1e$^{-04}$) | −.001**(1e$^{-04}$) | −.001**(1e$^{-04}$) | −.001**(1e$^{-04}$) | −.001**(1e$^{-04}$) | −.001**(1e$^{-04}$) |
| Occupation | | 24 vars. | | | 24 vars. | 24 vars.[a] |
| Industry | | | 11 vars. | | 11 vars. | 11 vars.[a] |
| Denmark | | | | 1.214**(.077) | | .759**(.073) |
| Finland | | | | .808**(.075) | | .668**(.071) |
| Norway | | | | .670**(.064) | | .411**(.063) |
| Sweden | | | | .601**(.074) | | .301**(.070) |
| Canada | | | | .100 (.056) | | .007 (.005) |
| United States | | | | ... ... | | ... ... |
| Australia | | | | −.048 (.067) | | −.210**(.064) |
| Constant | −2.351**(.184) | −1.501**(.202) | −2.473**(.235) | −3.009**(.187) | −1.265**(.263) | −1.745**(.264) |
| R-square | .310 | .423 | .323 | .346 | .427 | .447 |
| N | 7496 | 7496 | 7496 | 7496 | 7496 | 7496 |

*$p$<.05
**$p$<.001
[a] Full results reported in Appendix, Table A1.
Standard errors shown in parentheses.
In equations 4 and 6 the binary variable for the United States is omitted.

identical to the results for parallel models using the full set of binary variables.

Returning to Table 4, education, measured as years of schooling, shows a consistent, positive, effect on autonomy. When this continuous variable was included in the equations, binary variables representing degrees completed showed no net effects, hence we do not include them in the models reported here. Age shows a curvilinear relationship with job autonomy. The age coefficients for the final model in Table 4, which are 0.047756 for age and –0.000595 for age-squared, show that autonomy peaks at age 40 before beginning a gradual decline. Gender also shows the expected effect: being male has a positive effect net on other factors.

When we added either of the two measures of the size of the employing organization, simple employment or logged employment, to the models reported in Table 4, we found negative effects, as predicted. Because size was missing for many cases, we introduced a binary variable, 'size missing', in order to avoid eliminating those cases from the analysis. Logged size, which was available for 4,617 cases, produced significant, negative, coefficients when added to each of these models, although it did not improve the fit of the final model. Logged size produced better fitting models than did simple size, in support of Blau and Schoenherr's thesis that there is a declining effect of size on formalization, or rule creation, in organizations. The addition of the size variables did not alter the effects of other variables, here or in subsequent models, hence we exclude size from the reported models because it was missing for many cases.

### Occupation, Industry and National Location

Equations (2), (3), (5), and (6) show the effects of adding occupation, industry, and national location to the model reported in equation (1). In equation (2), the addition of 24 variables representing occupations has a dramatic effect on the fit of the model. The *r*-square rises from 0.310 to 0.423. An *F*-test shows that equation (2) offers a significantly better fit than equation (1). Likewise, in equation (3), the addition of 11 industry variables produces a significant improvement in the fit (at $p<.05$) over the model reported in equation (1). In equation (5), adding the industry variables to the model with occupation present, reported in equation (2), produces a small increase in the *r*-square, but an *F*-test shows that even this modest improvement in fit is significant.

In equation (4), we add binary variables representing 6 of the countries — with the United States as the reference — to assess the effects of national location. The two groups of countries cluster as expected: coefficients for Denmark, Finland, Norway, and Sweden range from 1.214 to 0.601, while coefficients for Canada and Australia are 0.100 and –0.048, respectively. As the reference, the United States falls between Canada and Australia, with an implicit coefficient of 0. In equation (3), the country variables show a much greater effect on the fit of the model than the industry variables and produce a significant improvement over the nested model. In equation

(6), in which we control for occupation and industry, the spread of the country coefficients has narrowed slightly, ranging from 0.759 for Denmark to –0.210 for Australia. In other words, location in Denmark affords the average job about 1 point more on our autonomy scale, which ranges from 0 to 5 with a mean of 1.45, than does location in Australia. All national locations but Canada are significantly different from the United States, and an $F$-test shows that the national location variables significantly improve the fit of the models reported in equations (4) and (6) over nested models reported in equations (1) and (5), respectively, at the 0.001 level.

When we systematically omitted each variable (or set of variables in the cases of occupation, industry, supervisory status, and national location) from the final model, only occupation and supervisory status explained more of the variance than did national location, which showed significant and robust effects. These findings are compatible with the three macro hypotheses about job autonomy; each predicts that autonomy will be greater in the Nordic countries than in the English-speaking countries. Next, we make comparisons across groups within countries to test hypotheses offered by the Taylorism/de-skilling, collective bargaining, and employment systems theses.

#### Comparing the Taylorism/De-skilling and Employment Systems Theses

These two approaches suggest contradictory hypotheses about the relationship between managerial and non-managerial job autonomy. The Taylorism/de-skilling thesis predicts that managerial and non-managerial autonomy will co-vary negatively across nations. In countries where Taylorism has succeeded to move work control from workers to managers, workers will have little autonomy and managers a great deal. The employment systems thesis suggests that non-managerial autonomy should be positively associated with managerial autonomy. In countries with rule-based employment systems, the jobs of non-managers and of managers alike will be governed to a greater extent by rules, and hence both groups will have less autonomy than their peers in countries with skill-based systems.

To test these hypotheses, we interacted managerial status with national location. The Taylorism thesis suggests that in Denmark, where workers have *great* autonomy compared to their American counterparts, managers should have *little* autonomy compared to *their* American counterparts. This effect should show up in significant, negative coefficients for the interactions upper manager, middle manager, and supervisor by Denmark. The same should hold for Finland, Norway, and Sweden.

In Australia and Canada, where Taylorism and similar management movements have had greater success, the gap between non-managerial and managerial autonomy should resemble the gap in the United States — the omitted country. As in the United States, the autonomy of non-managers should be relatively low and that of managers should be relatively high. Thus for Australia and Canada, the interactions should show no effects.

By contrast, our employment systems thesis suggests that national location should have a consistent effect across levels. Rule- and skill-oriented

Table 5 Estimate of Job Autonomy with Country–Managerial Interactions

| Independent Variable | | Country–Upper Mgr. Interactions | | Country–Mid-Manager Interactions | | Supervisor Interactions | |
|---|---|---|---|---|---|---|---|
| Upper manager | 1.631**(.162) | | | | | | |
| Middle manager | 1.368**(.146) | | | | | | |
| Supervisor | .842**(.109) | | | | | | |
| Union member | −.142**(.039) | | | | | | |
| Education | .074**(.007) | | | | | | |
| Male | .383**(.040) | | | | | | |
| Age | .047**(.008) | | | | | | |
| Age2 | −.001**(1e$^{-04}$) | | | | | | |
| Occupation | 24 vars. | | | | | | |
| Industry | 11 vars. | | | | | | |
| Denmark | .746**(.081) | **−.685** | **(.373)** | **.115** | **(.287)** | **.246** | **(.188)** |
| Finland | .606**(.080) | **.124** | **(.294)** | **.154** | **(.246)** | **.596*** | **(.220)** |
| Norway | .351**(.072) | **.265** | **(.222)** | **.151** | **(.253)** | **.290** | **(.151)** |
| Sweden | .310**(.079) | **−.427** | **(.372)** | **−.063** | **(.236)** | **.009** | **(.176)** |
| Canada | .016 (.062) | *.064* | *(.217)* | *−.185* | *(.201)* | *−.005* | *(.142)* |
| United States | ... ... | ... | ... | ... | ... | ... | ... |
| Australia | −.090 (.080) | *−.489* | *(.248)* | *−.320* | *(.219)* | *−.185* | *(.155)* |
| Constant | −1.696** (.266) | | | | | | |
| R-square | .450 | | | | | | |
| N | 7496 | | | | | | |

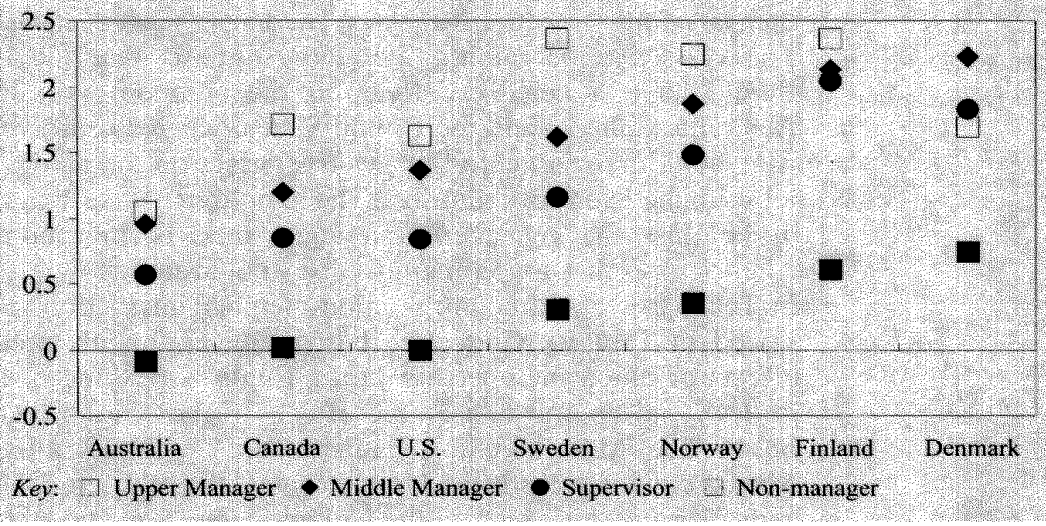
*$p$<.05
**$p$<.001
Standard errors shown in parentheses. The omitted country is the United States.

employment systems should affect managerial and non-managerial jobs alike, increasing or lowering autonomy for all kinds of jobs. In Denmark, where workers have great autonomy, so should managers. This should be captured by the non-interacted effects of national location and managerial status. We should find no effects of the country-by-managerial status interactions net of country effects.

According to the Taylorism/de-skilling thesis, in Table 5, the twelve interactions for the Scandinavian countries (shown in **bold**) should have *negative* effects, and the six interactions for the English-speaking countries (shown in *italics*) should have no effects. None of the 12 interactions for the Scandinavian countries shows a significant effect in the predicted direction. Putting significance tests aside, the coefficients do not show the pattern predicted by the Taylorism thesis. The failure of the interactions suggests that managerial autonomy co-varies positively with non-managerial autonomy, as the employment systems thesis suggests it should. In countries where worker autonomy is high, manager autonomy is also high.

In Figure 2, we graph these findings by plotting the effects of managerial

Figure 2
Effects of Managerial Level on Autonomy, by Country




status by country. Each value represents the sum of managerial and country coefficients from Table 5 in which education, gender, age, occupation, and industry are controlled. Hence Figure 2 graphs the net effects of country and managerial status after these factors have been controlled. For Australian upper managers, for instance, we have summed the coefficients for upper manager, Australia, and the interaction upper manager by Australia. The value for the omitted category, American non-managers, is constrained to be zero. The pattern of effects shown in Figure 2 supports our thesis that national management systems influence job autonomy at all levels of the organizational hierarchy. Contrary to the Taylorism/de-skilling hypothesis, the distance between non-managers and managers does not decline as non-managerial autonomy increases (the principal outlier for supervisory autonomy, Finland, had the smallest number of respondents in the 'supervisor' category). Instead, managerial autonomy increases *with* worker autonomy. This pattern is the most consistent for supervisors and middle managers. It is less consistent for upper managers, because this category is the most diverse — containing managers of tiny one-boss grocery shops and CEOs of huge conglomerates — and only contains a few cases. Australia and Denmark show anomalous values for upper managers. These two countries had the smallest numbers of upper managers, with only 17 each. Moreover, over a quarter of the 'upper managers' in each of these two countries reported that they were the only managers in their establishments, which suggests that they worked in very small establishments.

As we predicted, where non-managers have relatively low autonomy due to rule-based management systems that constrain discretion, so do supervisors, middle managers, and, for the most part, upper managers. In aggregate, then, autonomy does not appear to be a zero-sum game between managers and workers. The findings presented in Table 5, and represented graphically in Figure 2, support the employment systems' argument that autonomy varies nationally *across* rather than *between* managerial levels.

**Comparing the Collective Bargaining and Employment Systems Theses**

The collective bargaining literature suggests that job control unionism should have a negative effect on the autonomy of unionized jobs in Australia, Canada, and the United States; whereas co-determination unionism should have a neutral or positive effect on the autonomy of unionized jobs in the Nordic countries. The employment systems thesis suggests, by contrast, that managerial strategies have become homogenized within countries, so that union membership should not show effects.

In Table 6, we add country–union-member interactions to the model presented in Table 5. Collective bargaining arguments predict negative net effects of union membership in the English-speaking countries (shown in *italics*), and neutral or positive effects in the Nordic countries (shown in **bold**). The effect of union status should be significantly different in the Nordic countries from the United States, the omitted country, and Canada and Australia. Unionists in the United States, Canada, and Australia should have particularly low autonomy, all else being equal. The employment systems hypothesis suggests that union membership will not have variable effects by country. The results corroborate the latter thesis. The effect of union membership in the United States, which is represented by the non-

Table 6
Estimate of Job Autonomy with Country–Union-Member Interactions

| Independent Variable | | Country–Union | |
|---|---|---|---|
| Upper manager | 1.621**(.085) | | |
| Middle manager | 1.338**(.073) | | |
| Supervisor | .925**(.049) | | |
| Union member | −.032 (.105) | | |
| Education | .074**(.007) | | |
| Male | .393**(.040) | | |
| Age | .047**(.008) | | |
| Age2 | −.001**($1e^{-04}$) | | |
| Occupation | 24 vars. | | |
| Industry | 11 vars. | | |
| Denmark | .499**(.135) | **.230** | **(.171)** |
| Finland | .764**(.119) | **−.200** | **(.161)** |
| Norway | .433**(.080) | **−.105** | **(.132)** |
| Sweden | .475**(.119) | **−.293** | **(.159)** |
| Canada | .027 (.059) | *−.107* | *(.126)* |
| United States | ... ... | ... | ... |
| Australia | −.179* (.079) | *−.131* | *(.140)* |
| Constant | −1.764**(.265) | | |
| R-square | .448 | | |
| N | 7496 | | |

*$p<.05$
**$p<.001$
Standard errors shown in parentheses.
The omitted country is the United States.

interacted 'Union Member', is nil. Among the other countries, the interaction produced no significant effects. In general, union membership has a slight negative effect on job autonomy once other factors are controlled (see Appendix, Table A2), but that effect does not appear to vary systematically across countries. Note that the effects of most variables are stable across countries (Appendix, Table A2). We argue that union membership has little effect because the legacies of job control and co-determination unionism now pervade national management systems.

In sum, the Taylorism/de-skilling, collective bargaining, and employment systems theses all suggest that when industrial, organizational, and incumbent features are controlled, jobs in Denmark, Finland, Norway, and Sweden will show greater autonomy than those in the United States, Canada, and Australia. This is what we found. To discriminate between these theories, we operationalized their predictions about differences between workers and managers, unionists and non unionists. Inter-group comparisons contradict the Taylorism/de-skilling thesis: managers do not have high autonomy in the countries where workers have low autonomy and low autonomy where workers have high autonomy. In addition, inter-group comparisons contradict the collective bargaining thesis: unionists do not have particularly low autonomy in the job control countries — the United States, Canada, and Australia — and high autonomy in the co-determination countries, Denmark, Finland, Norway, and Sweden.

Instead, across nations, worker and manager autonomy, unionist and non-unionist autonomy, vary together. Where workers have high autonomy, so do managers. Where unionists have high autonomy, so do non unionists. When all else is equal, national employment systems, which consist of interlocking management, training, bargaining, and unemployment institutions, appear to have effects across all sorts of jobs. Where these institutions are oriented to ruled-governed work, all kinds of jobs will carry lower autonomy. Where they are oriented to skill-governed work, all kinds of jobs will carry higher autonomy.

## Conclusion

Does national location affect job autonomy? Our analyses show that when controls are applied for industry, occupation, and incumbent characteristics, national location has dramatic effects. On a job autonomy scale ranging from 0 to 5 with a mean of 1.45, workers in Denmark score one point higher than workers in Australia. Why do Nordic workers have greater autonomy than American, Canadian, or Australian workers? Most analysts have pointed to Taylorist management practices or job-control unionism in the English-speaking countries compared with craft traditions or co-determination unionism in the Nordic countries. We argue that these factors do not operate narrowly on particular jobs, but that they have contributed to the rise of employment systems with broadly different logics.

We have built upon the employment systems thesis of neo-institutionalists (Fligstein and Byrkejflot 1996; see also Scott 1994), who suggest that interlocking national management, training, bargaining, and unemployment institutions carry consistent logics that should affect autonomy in all kinds of jobs. The employment systems in these seven countries follow two broadly different logics. In the English-speaking countries, management, training, bargaining, and unemployment practices are oriented to rule-governed work. Management systems depend on clear work rules, educational systems provide meager skills training, bargaining systems narrow discretion by codifying work routines and job boundaries, and unemployment systems encourage firms to treat workers as disposable rather than investing in skill development. In the Nordic countries, practices are oriented to skill-governed work. Management systems depend on worker discretion and input on decisions about the work process, educational systems provide broad job-related skills, bargaining systems are designed to maximize worker participation, and unemployment systems make dismissal costly and thereby encourage employers to retrain workers and invest in skill development. While there are important differences within groups in our two sets of countries, the differences between groups are substantial.

Previous studies of employment systems depended on macro comparisons (Fligstein and Byrkejflot 1996; Streeck 1992) and mathematical models (Soskice 1990) to illustrate their effects. Our job-level data provide new support for the influence of these systems. Evidence that they affect a wide range of jobs supports our contention that they are highly institutionalized and truly national. We argue that employment systems influence how work is organized across industries and levels of management because the principles of organizing work, education, bargaining, and unemployment have spread across realms. Philip Selznick (1969) reinforces this interpretation by showing how the practices of unionized employers spread to non-union employers during the 1950s. Peter Swenson (1992) extends the finding to Sweden by showing that management practices have become homogenized across union and non-union settings there, as they have in America. These studies suggest that in each nation, a distinct logic of organizing work prevails.

We cannot adjudicate debates about where the logics of national employment systems originated, but we can say two things. First, the fact that they influence autonomy across a wide range of jobs suggests that national employment systems are highly institutionalized. Thus, in American manufacturing and medicine alike, we find the routinization of work, clear delineation of job boundaries, entry-level jobs requiring scant or no preparation, union bargaining over specific job duties, and high rates of turnover. Second, the fact that some components of these systems are decades old suggests that the systems reproduce themselves. In Denmark, participative management, extensive vocational education, co-determination bargaining, and costly governmental turnover controls function together. The educational system, for instance, allows managers to avoid routinization of work because they can depend on entry-level workers having basic skills. Costly

turnover controls encourage long-term employment, and thereby reinforce participative management practices that foster firm-specific skills. It appears that each system represents a different equilibrium.

What effects are economic regionalization and globalization likely to have on national employment systems? The two important unknowns are whether those trends encourage re-skilling or de-skilling, and whether national employment systems are so highly institutionalized that they will resist change. First, on the issue of re-skilling versus de-skilling, Michael Piore and Charles Sabel (1984) have described a future in which flexible specialization will replace mass production, permitting firms to tailor their products to the demands of different markets. This demands skilled workers who can re-tool production lines and tailor services. Flexible specialization should replace mass production as globalization generates new niche markets, increasing skill levels in the process. The jury is still out on whether this is occurring, but studies of British industry have found little evidence of new flexible production processes and ample evidence of new flexible staffing practices that depend on short-term employment and routinized work (Amin 1994).

In contrast to Piore and Sabel, Charles Tilly (1995) and others describe a bleaker future in which the globalization of production reduces labour rights and work conditions everywhere to the lowest common denominator. Because globalization permits employers to move work to countries with low labour costs, it will force employers everywhere to cut labour costs to the bare minimum and encourage neo-Fordist production (Milkman 1991; Hodson and Hagan 1988). Tilly emphasizes the role of states in creating and enforcing labour rights and thereby producing favourable work conditions, such as those found in the countries with skill-governed work. Global competition for plants undermines this role of states, sabotaging the expansion of labour rights in developing countries and threatening existing labour rights in developed countries. To take one example, can Volvo's worker-friendly, participative, '*Uddevalla*' production system compete against the more severe production systems of East Asia (Rehder 1992)?. Our cross-national findings seem to support Tilly's main argument, because states have done much to produce the institutional conditions we describe in the Nordic countries, by creating vocational educational programmes, legislating co-determination, and extending rights to generous unemployment benefits.

It remains to be seen whether globalization will encourage re-skilling or de-skilling. We have seen evidence that particular technological advances can be used to routinize work in one country and to enhance skills in another, which suggests that technology alone does not hold the key (Finegold and Soskice 1988), but will national employment systems prove resistant to change in any event? If our argument about the interdependence of management, training, bargaining, and unemployment systems is correct, national systems may be more intractable than either Piore and Sabel or globalization theorists suggest. Several analysts talk about the structural inertia of national systems. Peer Hull Kristensen (1996) argues that

globalization will have limited effects in Europe due to the resistance of national business systems to change. Klaus Armingeon (1998) argues that, in Europe, national industrial-relations systems with different logics may resist integration under a ubiquitous European Works Council. David Soskice (forthcoming) suggests that because the various parts of national employment systems are interdependent, changing one part will not necessarily alter the others. By routinizing work, for instance, Danish employers would lose the advantage of the vocational training system but be saddled with high wages and unemployment taxes.

We argue that because national employment systems carry meaningful logics of work organization, they may be even more resistant to change than these structural arguments suggest. Institutionalized logics of action affect how actors conceive of problems and solutions in the realms of management, training, bargaining, and unemployment (Meyer and Rowan 1977; DiMaggio and Powell 1991; Fligstein 1990). Neo-institutionalists contend that it is the power of such logics, more than the structural inertia of particular practices associated with them, that carries social arrangements forward (Dobbin 1994). If this is the case, these systems may be quite resistant to change.

Many argue that, in the near term, advanced economies that specialize in highly skilled production will sustain high-wage, attractive, jobs (Piore and Sabel 1984; Streeck 1992; Soskice 1993; Reich 1991). How might public policy be used to enhance skills and autonomy?. It seems likely that, in order to change their employment systems, nations would have to address each of the institutional realms that we have discussed. This calls into question the utility of changing a single realm, yet most policy proposals, such as Robert Reich's (1991) call for expanding education, and most management movements, such as the in-company training movement (Knoke and Kalleberg 1994; Monahan et al. 1994), involve changing only one element of the national employment system.

Answers to key questions about change will have to await future studies. A great strength of the data we examined is that they were collected in the 1980s before regionalization, in the form of NAFTA and the EU's European Works Council, and globalization exerted pressure on employers to adopt foreign models of management (Schulten 1996; Windolf 1993). A weakness of the data, on the other hand, is that they do not permit us to address questions about how regionalization, globalization, and public policy are shaping work and autonomy today.

## Appendix

Table A1
Occupation and Industry Coefficients for Equation 6 of Table 4

| | |
|---|---|
| **Occupation** | |
| Transportation workers | Omitted |
| Operatives except transport | .164 (.113) |
| Laborers except farm | .183 (.123) |
| Other clerical | .361* (.112) |
| Secretaries | .464**(.128) |
| Farm labourers and foremen | .513* (.226) |
| Unskilled services | .570**(.120) |
| White collar services | .535* (.164) |
| Skilled manual services (e.g. barbers) | .615**(.153) |
| Crafts | .597**(.110) |
| Sales | −1.012**(.123) |
| Govt. protective workers | .516* (.177) |
| Other medical | 1.193**(.135) |
| Foremen | .998**(.145) |
| Technicians (e.g. draftsmen, embalmers) | 1.405**(.130) |
| Accountants, auditors | 1.424**(.187) |
| Managers, other | 1.476**(.204) |
| Managers in public or quasi-public settings | 1.740**(.167) |
| Public advisors (e.g. clergy, personnel) | 2.417**(.153) |
| Managers, corporate | 1.930**(.132) |
| Creative/entertainment | 2.617**(.245) |
| Judges and lawyers | 2.017**(.310) |
| Mathematicians, engineers, scientists, architects | 2.398**(.143) |
| Physicians and dentists | 2.049**(.234) |
| University teachers, social scientists, librarians | 2.804**(.161) |
| **Industry** | |
| Agriculture, fishing, and forestry | Omitted |
| Nondurable manufacturing | −.129 (.171) |
| Durable manufacturing | −.092 (.171) |
| Communications and utilities | −.130 (.173) |
| Retail trade | −.200 (.177) |
| Mining | −.182 (.206) |
| Personal services | −.101 (.174) |
| Wholesale trade | −.118 (.184) |
| Construction | .102 (.180) |
| Business services | .069 (.177) |
| State dominated services and non profits | .112 (.171) |
| Professional services | .220 (.180) |

*$p<.05$
**$p<.001$
Standard errors shown in parentheses.

Table A2 Regressions Predicting Job Autonomy for Individual Countries

| Ind. Vars. | Denmark | Finland | Norway | Sweden | U.S. | Canada | Australia |
|---|---|---|---|---|---|---|---|
| Occupationa | .130** | .120** | .084** | .079** | .117** | .103** | .084** |
| | (.011) | (.011) | (.008) | (.010) | (.007) | (.007) | (.008) |
| Industry | .012 | .033** | .045* | .034* | .005 | .038** | .031* |
| | (.016) | (.012) | (.019) | (.014) | (.012) | (.010) | (.013) |
| Upper manager | .709 | 1.641** | 1.900** | 1.292** | 1.467** | 1.729** | 1.522** |
| | (.392) | (.272) | (.198) | (.328) | (.166) | (.162) | (.207) |
| Middle manager | 1.333** | 1.461** | 1.410** | 1.476** | 1.164** | 1.210** | 1.290** |
| | (.287) | (.205) | (.241) | (.186) | (.149) | (.149) | (.172) |
| Supervisor | .937** | 1.239** | 1.061** | .914** | .738** | .808** | .703** |
| | (.179) | (.177) | (.127) | (.134) | (.110) | (.095) | (.111) |
| Union member | .153 | −.246* | −.191* | −.268* | .041 | −.159* | −.245* |
| | (.153) | (.114) | (.090) | (.114) | (.108) | (.073) | (.095) |
| Education | .080** | .068 | .111** | .133** | .156** | .084** | .039* |
| | (.027) | (.058) | (.020) | (.022) | (.020) | (.012) | (.016) |
| Male | .331** | .179 | .474** | .261** | .175* | .364** | .280** |
| | (.117) | (.102) | (.096) | (.096) | (.083) | (.070) | (.096) |
| Age | .075** | .057* | .092** | .019 | .030 | .043** | .056* |
| | (.025) | (.028) | (.022) | (.024) | (.018) | (.016) | (.023) |
| $Age^2$ | −.001** | −.001* | −.001** | $-2e^{-04}$ | $-3e^{-04}$ | $-6e^{-04}$** | $-7e^{-04}$* |
| | ($3e^{-04}$) | ($3e^{-04}$) | ($2e^{-04}$) | ($2e^{-04}$) | ($2e^{-04}$) | ($2e^{-04}$) | ($2e^{-04}$) |
| Constant | −2.368** | −1.542* | −3.073** | −1.435** | −2.760** | −2.142** | −1.577** |
| | (.666) | (.768) | (.468) | (.497) | (.400) | (.336) | (.464) |
| R-square | .362 | .527 | .418 | .421 | .518 | .436 | .408 |
| N | 768 | 735 | 1292 | 838 | 1220 | 1775 | 868 |

*$p$<.05
**$p$<.01
Standard errors shown in parentheses.
[a] The definition of the variables occupation and industry can be found in the text.

## Note

* The research reported here was supported by Princeton's Committee on Research in the Humanities and Social Sciences. We would like to thank Paul DiMaggio, Randy Hodson, Arne Kalleberg, Matthijs Kalmijn, P. Devereaux Jennings, Jytte Klausen, John Meyer, Kathleen Thelen, Pamela Tolbert, Bruce Western, Yan Yan, three anonymous reviewers, and co-editor Behlül Üsdiken for useful comments and suggestions. We are also grateful to the participants in the Comparative Project on Class Structure and Class Consciousness, who made their data available through ICPSR.

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