

# ORGANISATIONAL INNOVATION, HUMAN RESOURCE MANAGEMENT AND LABOUR MARKET STRUCTURE: A COMPARISON OF THE EU-15

EDWARD LORENZ\* AND ANTOINE VALEYRE\*\*

## INTRODUCTION

There is an ongoing international debate over the way globalisation and intensified international competition are leading to a restructuring of management practices in Europe in order to achieve greater flexibility and cooperation at the workplace. A key focus in this debate has been on the diffusion of the 'lean' or 'high-performance' model, which is often presented as a new 'one best way' destined to replace fordism which emerged as the dominant organisational paradigm in the decades after the World War II (see Womack *et al.* 1990; Osterman 1994; MacDuffie & Pil 1997).<sup>1</sup> For example, MacDuffie and Pil (1997: 24–5), in their international comparison of the auto industry, argue that intensified international competition associated with the globalisation of product markets has resulted in greater awareness on the part of manufacturers of the performance-related advantages of lean production relative to fordist techniques. Foreign direct investments and international joint ventures work in the same direction, by providing producers with greater insight into the operating principles of the lean model.

The diffusion of the lean model is often seen as one aspect of a more general convergence in industrial relations systems among advanced industrialised nations (Eaton 2000). As Thelen (2001: 75–7) has observed, the globalisation literature, implicitly or explicitly, sees the observed trend towards greater decentralisation of bargaining as a general weakening of labour, because it undermines unions' ability to enforce uniform standards. Decentralisation is understood as being driven by employers' uniform interest in withdrawing from the collective regulation of labour markets in order to secure the conditions necessary for achieving greater flexibility at the plant level. Thus, flexibility at the plant level and higher-level coordination are seen in zero-sum terms.

In this paper we provide evidence contrary to the convergence thesis. Not only do our results show that traditional taylorist forms of work organisation are

---

\*IDEFI-CNRS, Université de Nice-Sophia Antipolis, France. Email: lorenz@idefi.cnrs.fr \*\*Centre d'Etudes de l'Emploi, CNRS, France. We express our gratitude to the European Foundation for the Improvement of Living and Working Conditions for allowing us to use the results of the Third European Working Conditions Survey. We also thank the DARES, Ministry of Employment, France, for providing financial support for the research upon which this paper is based. We especially thank Alice Lam, Michel Gollac, Bengt-Aake Lundvall, Paul Nightingale and the editors of the *JIR* for their useful comments on previous versions.

holding their own in certain nations and sectors, but they also show that the dichotomous distinction between Taylorism and the lean or high-performance model is inadequate for capturing the organisational variety that exists across European nations. The organisational forms associated with strong learning dynamics and high problem-solving activity on the part of employees display widely different degrees of employee autonomy in decision-making. Much in keeping with the remarks of Applebaum and Batt (1994), our evidence points to the existence of two models with strong learning dynamics: a relatively decentralised model associated with substantial employee autonomy in setting work methods and work pace (referred to as the 'learning model'), and a more hierarchical model, which places emphasis on regulating individual or group work pace by setting tight quantitative production norms and precise quality standards (referred to as the 'lean' model).

Moreover, these two forms of advanced work organisation tend to prevail in different institutional settings. Although the lean forms of organisation are most developed in nations with relatively deregulated labour markets, the learning forms tend to predominate in regulated labour market settings. We shall argue that relatively well-developed systems of employer coordination around matters of pay and vocational training constitute a favourable institutional setting for establishing learning forms of work organisation characterised by high levels of employee competence and autonomy at all levels of the organisational structure.

The discussion that follows is divided into five basic sections. In the first section we describe the variables used to characterise work organisation in the 15 countries of the European Union (EU) and we present the results of the factor and hierarchical clustering analyses used to construct a typology of organisational forms. The second section examines how the relative importance of the different organisational forms varies according to sector, firm size and occupational category. The third section takes up the issue of Human Resource Management (HRM) complementarities by examining the relation between organisation forms and policies around pay, training and employment tenures. The fourth section makes use of logit analysis to assess the importance of national effects in the adoption of the different organisational forms. The fifth section considers to what extent the differing importance of these organisational forms across European nations may be associated with differences in the way labour markets are regulated. In the conclusion we consider some of the principal methodological and policy-related implications of our results.

### **MEASURING FORMS OF WORK ORGANISATION IN THE EUROPEAN UNION**

The research is based on the results of the Third European Survey on Working Conditions undertaken by the European Foundation for the Improvement of Living and Working Conditions.<sup>2</sup> The survey was carried out in each of the 15 member states of the European Union (EU) in March 2000. The survey questionnaire was directed to approximately 1500 active persons in each country with the exception of Luxembourg with only 500 respondents. The total survey population is 21 703 persons, of which 17 910 are salaried employees. The survey methodology is based on a multistage random sampling method called 'random walk' involving

face-to-face interviews undertaken at the respondent's principal residence. The analysis of forms of work organisation developed here is based on the responses of the 8081 salaried employees working in establishments with at least 10 persons in all sectors except agriculture and fishing; public administration and social security; education, health and social work; and private domestic employees.

In order to describe the principal forms of work organisation across the 15 nations of the EU, a factor analysis and hierarchical clustering method<sup>3</sup> have been used on the basis of the following 15 organisational binary variables:

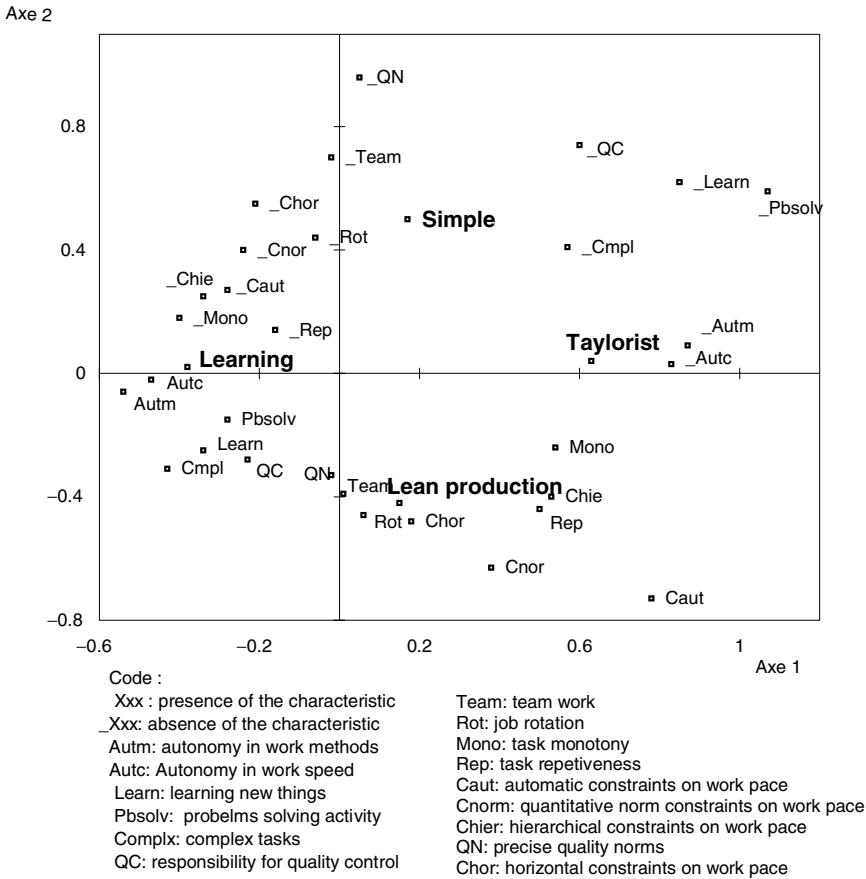
- a variable measuring the use of team work;
- a variable measuring job rotation;
- two variables measuring autonomy in work: autonomy in the methods used; and autonomy in the pace or rate at which work is carried out;
- four variables measuring the factors or constraints, which determine the pace or rate of work: 'automatic' constraints linked to the rate as which equipment is operated or a product is displaced in the production flow; norm-based constraints linked to the setting of quantitative production norms; 'hierarchical' constraints linked to the direct control, which is exercised by ones immediate superiors; and 'horizontal' constraints linked to way one person's work rate is dependent on the work of one's colleagues;
- a variable measuring task repetitiveness;
- a variable measuring perceived task monotony;
- two variables measuring the way quality is controlled: use of precise quality norms; and individual responsibility for quality control;
- a variable measuring the tasks complexity; and
- two variables measuring learning dynamics in work: learning new things in one's work; and problem-solving activity.

#### *Main dimensions of work organisation*

Figure 1 presents graphically the first two axes or factors of the multiple correspondence analysis (MCA). The first factor, accounting for 18% of the inertia or chi-squared statistic, distinguishes between taylorist and 'post-taylorist' organisational forms. Thus, on one side of the axis we find the variables measuring autonomy, learning, problem-solving and task complexity and to a lesser degree quality management, while on the other side we find the variables measuring monotony and the various factors constraining work pace, notably those linked to the automatic speed of equipment or flow of products, and to the use of quantitative production norms.

The second axis, accounting for 15% of the chi-squared statistic, is structured by two groups of variables characteristic of the lean production model: first, the use of teams and job rotation, which are associated with the importance of horizontal constraints on work pace; and second, those variables measuring the use of quality management techniques, which are associated with what we have called 'automatic' and 'norm-based' constraints. The third factor, which accounts for 8% of the chi-squared statistic, is also structured by these two groups of variables. However, it brings into relief the distinction between, on the one hand, those organisational settings characterised by team work, job rotation and

**Figure 1** Forms of work organisation.



horizontal interdependence in work, and, on the other hand, those organisational settings where the use of quality norms, automatic and quantitative norm-based constraints on work pace are important. The second and third axes of the analysis show that the simple dichotomy between taylorist and lean organisational methods is not sufficient for capturing the organisational variety that exists across European nations.

*Typology of organisational forms*

The various distinctions brought out by the MCA can, for the most part, be observed in the results of the hierarchical cluster analysis that has been carried out on the factor scores of all 15 factors resulting from the MCA. The cluster analysis results in a grouping of individuals into four main forms of work organisation:

- ‘learning’ forms;
- ‘lean’ forms;
- ‘taylorist’ forms; and
- ‘simple’ forms.

**Table 1** *Work organisation clusters (% of employees in each cluster)*

	<b>Learning organisation</b>	<b>Lean production</b>	<b>Taylorism</b>	<b>Traditional organisation</b>	<b>All</b>
Autonomy fixing work methods	89.1	51.8	17.7	46.5	61.7
Autonomy setting work rate	87.5	52.2	27.3	52.7	63.6
Learning new things in work	93.9	81.7	42.0	29.7	71.4
Problem-solving activities	95.4	98.0	5.7	68.7	79.3
Complexity of tasks	79.8	64.7	23.8	19.2	56.7
Responsibility for quality control	86.4	88.7	46.7	38.9	72.6
Quality norms	78.1	94.0	81.1	36.1	74.4
Team work	64.3	84.2	70.1	33.4	64.2
Job rotation	44.0	70.5	53.2	27.5	48.9
Monotony of tasks	19.5	65.8	65.6	43.9	42.4
Repetitiveness of tasks	12.8	41.9	37.1	19.2	24.9
Horizontal constraints on work rate	43.6	80.3	66.1	27.8	53.1
Hierarchical constraints on work rate	19.6	64.4	66.5	26.7	38.9
Norm-based constraints on work rate	21.2	75.5	56.3	14.7	38.7
Automatic constraints on work rate	5.4	59.8	56.9	7.2	26.7

*Source:* Third Working Condition survey. European Foundation for the Improvement of Living and Working Conditions.

As the projection of the centre of gravity of the clusters onto the graphic representation of the first two factors of the MCA suggests (see Fig. 1), and as Table 1 shows in more detail, the four clusters correspond to quite different working conditions.

The first cluster, which we refer to as the 'learning' model, groups 39% of the employees. It is characterised by the overrepresentation of the variables measuring autonomy and task complexity, learning and problem-solving and to a lesser degree by an overrepresentation of the variable measuring individual responsibility for quality management. The variables reflecting monotony, repetitiveness

and work rate constraints are underrepresented. This cluster would appear to correspond to the Swedish sociotechnical model of work organisation or to what Freyssenet (1995) has referred to as 'reflexive production'. It would also appear to have much in common with what Applebaum and Batt in their 1994 volume referred to as the 'American team production' model, which combines the Swedish sociotechnical principles with a contemporary emphasis on individual responsibility for quality control. A somewhat surprising result, though, is that neither team work nor job rotation are defining characteristics of this model of work organisation, suggesting that the emphasis on the importance of these practices as a condition for promoting learning and problem-solving on the part of employees is probably exaggerated in the literature.

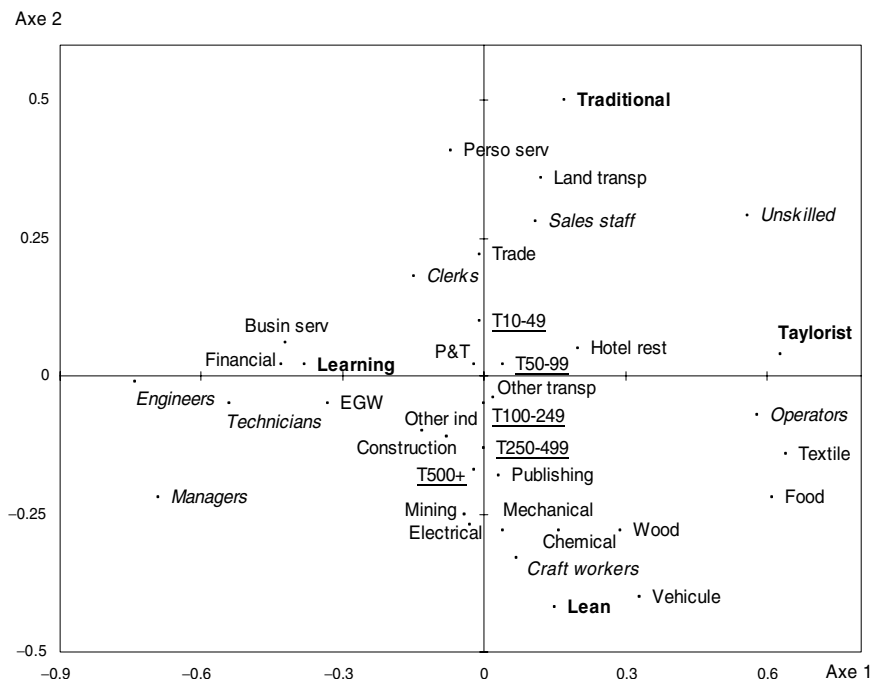
The second cluster, which accounts for 28% of the population, is characterised by an overrepresentation of team work and job rotation, the quality management variables and the various factors constraining work pace. This cluster, like the first, displays strong learning dynamics and relies on employees' contribution to problem-solving. Yet, compared to the first cluster, autonomy in work is relatively low and tight quantitative production norms are used to control employee effort. One easily recognises here the classic attributes of the 'lean' or 'high performance work' model (Womack *et al.* 1990; MacDuffie & Krafcik 1992). Compared to classic forms of taylorism, autonomy in work is relatively high. However, worker autonomy is bracketed by the importance of work pace constraints linked to the collective nature of the work and to the requirement of respecting strict quantitative production norms. This class has much in common with what Coutrot (1998) has described as a 'controlled' autonomy in work, reflecting employers' concern to balance the needs of exercising control over employees and encouraging their creativity (Edwards *et al.* 2002).

The third class, which groups 14% of the employees, corresponds in most respects to a classic characterisation of taylorism. The work situation is, for the most part, the opposite of that found in first cluster, with minimal learning dynamics, low complexity, low autonomy and an overrepresentation of the variables measuring constraints on the pace of work. Interestingly, teams and job rotation are somewhat overrepresented in this cluster, confirming the importance of what some authors refer to as 'flexible taylorism' (Boyer & Durand 1993; Linhart 1994).

The fourth cluster groups 19% of the employees. It is poorly described by the work organisation variables which, with the exception of monotony in work, are all underrepresented. This class presumably groups simple forms of work organisation where methods are for the most part informal and non-codified. This cluster would appear to correspond to Mintzberg's (1979) notion of 'simple organisational structure'.

### **DIFFERENCES IN FORMS OF WORK ORGANISATION ACCORDING TO STRUCTURAL AND OCCUPATIONAL CHARACTERISTICS**

The different forms of work organisation vary considerably in importance across sectors, establishment sizes and occupational category, as the projection of these variables onto the graph representing the first two axes of the MCA shows (see Fig. 2). The graph shows that learning forms of work organisation are especially

**Figure 2** Work organisation by sector, size and occupation.

developed in certain of the service sectors, notably banks and insurance, business services, and gas, electricity and water. The lean model of production is more present in the manufacturing sector, notably in the production of transport equipment, electronics and electrical production, wood and paper products, and printing and publishing. The taylorist forms of work organisation are notably present in textiles, clothing and leather products, food processing, wood and paper products and transport equipment. The simple forms of work organisation grouped in the fourth cluster are to be found principally in the services, notably land transport, personal services, hotels and restaurants, post and telecommunications, wholesale and retail trade.

Regarding occupational category, as one would anticipate, the learning forms of work organisation are especially characteristics of the work of managers, professionals and technicians, while the lean forms of work organisation primarily characterise the work of blue-collar employees. The taylorist forms are most present among machine operators and the unskilled trades. Finally, the simple forms of work organisation grouped in the fourth cluster are especially characteristics of the work of service workers and shop and market sales persons.

Establishment size constitutes a relatively unimportant factor in the use of different organisational models. The projection of this variable onto the graph of the first two axes of the MCA shows that the lean and taylorism forms increase somewhat with establishment size, while the reverse tendency can be observed for the use of simple forms of work organisation.

## HUMAN RESOURCE MANAGEMENT COMPLEMENTARITIES

There is a growing literature focusing on the nature and performance effects of HRM complementarities. A basic idea in this literature is that the forms of work organisation requiring considerable discretion and problem-solving activity on the part of employees are more likely to be effective if they are supported by particular policies around pay, training and manpower planning. For example, work in 'learning organisations' is characterised by a high degree of task complexity. Learning is continuous as employees are expected to take initiative and to exercise autonomy in resolving the production and service-related problems they confront. In the 'lean production' model, while work requires problem-solving skills and involves continuous learning, these dynamics are embedded in a more formal structure based on codified protocols (e.g. team work and job rotation practices) often associated with tight quantitative production norms. Autonomy is relatively low compared to the learning model.

Since learning and problem-solving capabilities are central to both of these models, it can be expected that firms adopting them will invest more in the training of their employees than those using more traditional taylorist methods, characterised by low-task complexity and high repetition. Moreover, one can argue that such investments in training are more likely to be effective if they are complemented by relatively secure employment tenures that serve to lengthen time horizons and to increase employees' commitment to the goals of the enterprise (Marchington *et al.* 1994).

For similar incentives reasons, it can be argued that firms adopting the learning or lean forms of work organisation will have an interest in adopting pay systems linking employees' compensation to their effort and to company performance. The quite plausible hypothesis is that employees will be more likely to commit themselves to the goal of improving the firm's capacity for problem-solving and product development if they are promised a share of the quasirents, which derive from their enhanced commitment and effort (Levine & Tyson 1990; Osterman 1994; Freeman & Lazeur 1995; Ichniowski *et al.* 1997).

Pay practices, which support employee involvement in this manner, include such collective incentive schemes as profit sharing and gaining sharing, and such individual incentive schemes as skill-based pay and compensation for suggestions. It has also been argued that such complementary compensation policies are more likely to be effective if they are embedded in some system of employee representation that assures employees that their interests will be represented in the design and operation of the pay system (Levine & Tyson 1990; Eaton & Voos 1992; Freeman & Lazeur 1995; Lorenz *et al.* 2004).

The idea that important complementarities exist between forms of work organisation and investments in training is supported by the figures in Table 2. They show a clear tendency for employers to offer more further training to those employees grouped in the learning and lean clusters, both of which are characterised by active problem-solving and continuous learning. Moreover, the differences are more striking when the further training is of a relative long duration.

The relation between the use of the different organisational forms and types of employment contracts also support the idea of complementarities between



**Table 2** *Forms of work organisation and further training (% of employees in each organisation class receiving training)*

<b>Training received over the last 12 months</b>	<b>Learning organisation</b>	<b>Lean organisation</b>	<b>Taylorist organisation</b>	<b>Simple organisation</b>	<b>All organisations</b>
None	52.6	62.5	83.5	83.4	65.5
1–9 days	29.8	23.1	11.2	12.7	22.1
At least 10 days	17.6	14.4	5.3	3.9	12.4

*Source:* Third European Survey of Working Conditions. European Foundation for the Improvement of Living and Working Conditions.

**Table 3** *Forms of work organisation and types of employment contracts (% of employees in each organisation class according to type of employment contract)*

<b>Types of labour contract</b>	<b>Learning organisation</b>	<b>Lean organisation</b>	<b>Taylorist organisation</b>	<b>Simple organisation</b>	<b>All organisations</b>
Unlimited	88.3	82.8	77.9	83.4	84.4
Fixed term	6.1	9.8	9.7	9.5	8.3
Temporary hire	1.1	1.9	6.1	2.3	2.2
Apprenticeship or other	4.5	5.4	6.3	4.8	5.1

*Source:* Third European Survey of Working Conditions. European Foundation for the Improvement of Living and Working Conditions.

work organisation and HRM practices. As Table 3 shows, those contractual forms which correspond to relatively secure job tenures are especially characteristic of the learning forms of work organisation, which rely on substantial investments in further training. Fixed-term contracts, however, are more common in the case of the lean forms of organisation, while relatively precarious forms of employment associated with the use of temporary hires are more frequent in the case of taylorist forms of work organisation.

The thesis of HRM complementarities also receives some support from the figures in Table 4 on the use of different payment systems. Collective forms of performance-based pay, such as gain sharing or profit sharing, are more present for the two forms of work organisation, which require continuous learning and problem-solving on the part of employees. A clear distinction between the learning and lean forms appears, however, as regards the use of piece rate and productivity

**Table 4** *Forms of work organisation and types of payment systems (% of employees in each organisation class according to pay system)*

Payment system	Learning organisation	Lean organisation	Taylorist organisation	Simple organisation	All organisations
Fixed base salary	93.9	91.9	92.0	92.4	92.8
Piece rate or productivity bonus	7.3	13.3	12.8	6.5	9.6
Pay linked to enterprise performances	10.5	9.1	2.3	4.8	7.9
Pay linked to team performance	4.7	5.4	0.5	1.3	3.7
Shareholding within the enterprise	4.5	3.0	0.8	0.4	2.8

*Source:* Third European Survey of Working Conditions. European Foundation for the Improvement of Living and Working Conditions.

bonuses. The importance of the latter forms of pay in the case of the lean model can arguably be explained by their role as incentive devices associated with the use of quantitative production norms to regulate work pace. Such norm-based constraints on work pace play a relatively minor role in the learning model of work organisation.

The HRM policies typically differ across sectors, establishment sizes and according to occupational category. One can also anticipate national differences in the form and importance of these policies. In order to neutralise these effects, we have undertaken logit regressions on a range of HRM policies controlling for the country of location, sector, size of establishments, occupational category, gender, age and seniority.

The coefficients presented in Table 5 broadly confirm the characterisation based on simple descriptive statistics. Thus, the forms of work organisation characterised by strong learning dynamics are positively associated with investments in further training. The relation is less systematic in the case of the lean model, since the positive relation is primarily apparent for training of a relatively long duration. The logit analysis brings out more sharply the relation between types of employment contracts and forms of work organisation. The learning forms, which rely on a capacity for autonomous problem-solving at all levels of the organisation, are associated with the relative importance of employment contracts of unlimited duration, while the lean model is associated with the relative importance of fixed-term contracts. The relatively important use of temporary hires is a good predictor of taylorist forms. Finally, as regards pay systems, while the coefficients for enterprise-based forms of performance pay are positive for both the learning and the lean forms, the coefficient is only significant in the case of the lean form.

**Table 5** *Human Resource Management (HRM) policies and forms of work organisation (logit regression estimates with structural controls)*

	Learning organisation	Lean organisation	Taylorist organisation	Simple organisation
<b>Further training</b>				
None (over the last year)				
1–3 days	0.57**	0.18*	–0.61**	–0.68**
4–9 days	0.95**	–0.10	–0.71**	–1.03**
10–19 days	1.09**	–0.11	–0.92**	–1.31**
At least 20 days	0.49**	0.48**	–0.78**	–1.31**
<b>Type of employment contract</b>				
Unlimited				
Fixed term	–0.33**	0.28**	0.10	–0.03
Temporary hire	–0.40*	–0.34*	0.99**	–0.26
Apprenticeship or other	0.16	0.07	0.05	–0.20
<b>Piece rate or productivity bonus</b>				
Yes	–0.40**	0.43**	0.20*	–0.38**
No				
<b>Pay based on enterprise performance</b>				
Yes	0.06	0.22*	–0.97**	0.06
No				
<b>Discussions with staff representatives</b>				
Yes	–0.02	0.52**	–0.31**	–0.48**
No				

\*Significant at 10% level; \*\*significant at 1% level.

Source: Third European Survey of Working Conditions. European Foundation for the Improvement of Living and Working Conditions.

## NATIONAL EFFECTS ON WORK ORGANISATION

The section ‘Human Resource Management complementarities’ has brought into relief certain universal characteristics of the different forms of work organisation. In this section we turn to a characterisation of national differences. Although each form of work organisation tends to be associated with particular HRM practices, as Table 6 suggests, there are wide differences in the importance of the four forms of work organisation across European nations. The learning forms of work organisation are most widely diffused in the Netherlands, the Nordic countries and to a lesser extent Germany and Austria, while they are little diffused in Ireland and the southern European nations. The lean model is most in evidence in the UK, Ireland and Spain and to a lesser extent in France, while it is little developed in the Nordic countries as well as in Germany, Austria and the Netherlands. The taylorist forms of work organisation show almost the reverse trend compared to the learning forms, being most developed in the southern European nations and

**Table 6** *National differences in organisational models (% of employees by organisational class)*

	<b>Learning organisation</b>	<b>Lean organisation</b>	<b>Taylorist organisation</b>	<b>Simple organisation</b>
Belgium	38.9	25.1	13.9	22.1
Denmark	60.0	21.9	6.8	11.3
Germany	44.3	19.6	14.3	21.9
Greece	18.7	25.6	28.0	27.7
Italy	30.0	23.6	20.9	25.4
Spain	20.1	38.8	18.5	22.5
France	38.0	33.3	11.1	17.7
Ireland	24.0	37.8	20.7	17.6
Luxembourg	42.8	25.4	11.9	20.0
The Netherlands	64.0	17.2	5.3	13.5
Portugal	26.1	28.1	23.0	22.8
UK	34.8	40.6	10.9	13.7
Finland	47.8	27.6	12.5	12.1
Sweden	52.6	18.5	7.1	21.7
Austria	47.5	21.5	13.1	18.0
EU-15	39.1	28.2	13.6	19.1

*Source:* Third Working Condition survey. European Foundation for the Improvement of Living and Working Conditions.

Ireland. Finally, the simple forms of work organisation are most in evidence in Greece and Italy and to a lesser extent in Germany, Sweden, Belgium, Spain and Portugal.

As the discussion in the section 'Differences in forms of work organisation according to structural and occupational characteristics' showed, each form of work organisation tends to be associated with particular sectors, establishments sizes and occupational categories. This raises the question of what part of the variation in the importance of these forms across EU nations can be accounted for by the nation's specific structural characteristics. In order to address this, we use logit regression analysis to estimate the impact of national effects on the relative likelihood of adopting the different work models (see Table 7). The dependent variable for these regressions is a binary variable measuring whether or not the individual is characterised by the particular form of work organisation. The independent variable for the columns 1–4 results is a categorical variable with 15 classes corresponding to country. Germany, the most populous nation within the EU, is the reference case for the estimates. Thus, the coefficients show the effects of a country on the likelihood of adopting the particular organisational form relative to the German case. For columns 5–8, three control variables have been added to the independent variables corresponding to sector, establishment size and occupational category. The reference cases for the estimates are the vehicle sector,

Table 7 *Logit estimates of national effects on the use of work organisation forms*

	Logit estimates without structural controls				Logit estimates with structural controls			
	Learning organisation	Lean organisation	Taylorism	Simple organisation	Learning organisation	Lean organisation	Taylorism	Simple organisation
Belgium	-0.22	0.32	-0.03	0.01	-0.23	0.42*	-0.11	-0.09
Denmark	0.63**	0.14	-0.82**	-0.79**	0.79**	0.29	-0.86**	-1.06**
Germany				<b>Reference category</b>				
Greece	-1.24**	0.35	0.85**	0.31	-1.33**	0.42	0.84**	0.12
Italy	-0.61**	0.24*	0.46**	0.20*	-0.51**	0.20	0.33**	0.16
Spain	-1.15**	0.96**	0.31*	0.04	-1.15**	1.08**	0.06	-0.17
France	-0.26**	0.72**	-0.29*	-0.27**	-0.32**	0.84**	-0.33**	-0.38**
Ireland	-0.92**	0.91**	0.45	-0.27	-1.11**	1.14**	0.47	-0.50
Luxembourg	-0.06	0.33	-0.21	-0.11	-0.17	0.42	0.00	-0.20
The Netherlands	0.81**	-0.16	-1.10**	-0.59**	0.79**	0.02	-0.94**	-0.74**
Portugal	-0.81**	0.47**	0.58**	0.05	-0.78**	0.51**	0.44*	-0.01
UK	-0.40**	1.03**	-0.31**	-0.56**	-0.68**	1.32**	-0.24*	-0.72**
Finland	0.14	0.45*	-0.15	-0.71*	-0.01	0.63**	-0.07	-0.78*
Sweden	0.33*	-0.07	-0.77**	-0.01	0.22	0.06	-0.68*	0.00
Austria	0.13	0.12	-0.10	-0.24	0.33	0.14	-0.26	-0.43*

\*Significant at 5% level; \*\*significant at 1% level. Reference country: Germany.

Source: Third European Survey of Working Conditions. European Foundation for the Improvement of Living and Working Conditions.

the 10–49 employee establishment size category and the occupational category of machine operator and assembler.

With a couple of exceptions, the results show that the national differences identified in columns 1–4 are robust to the various structural controls.<sup>4</sup> In the next section, we consider how features of national systems of labour market regulation may help account for these national differences.

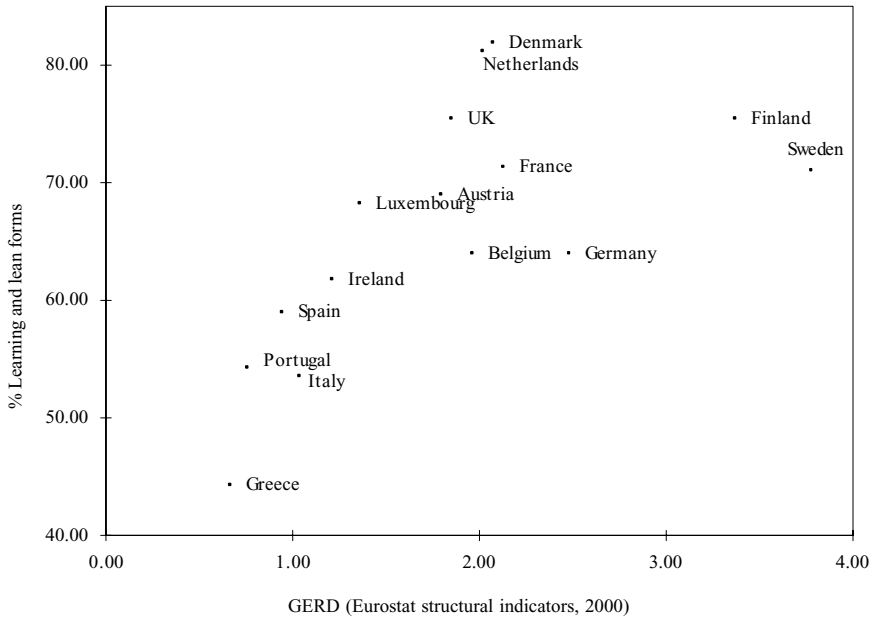
### LABOUR MARKET REGULATION AND NATIONAL EFFECTS ON WORK ORGANISATION

The evidence presented above calls for an analysis that goes beyond the idea that national variations in work organisation can be explained by the different degrees to which a new one best way has diffused across Europe. Our results not only point to the continued importance of taylorism in some national settings, but they also show the existence of multiple traditions and sources of inspiration for the development of more flexible work systems that depend on high levels of employee involvement in problem-solving and operational decision-making. This view is in keeping with the ‘varieties of capitalism’ literature (see notably Hall & Soskice 2001) and with work in the tradition of the regulationist school (Amable *et al.* 1997), which argue that the pressures associated with globalisation will tend to work themselves out differently in different national contexts, resulting in some respects in greater specialisation.

One possible explanation for international difference in the relative importance of the lean and learning forms of work organisation, both of which draw on employees’ capacity for continuous learning and problem-solving, is simply the different degrees to which national producers are positioned on the high-technology or high-quality end of product markets. Competition in these product market segments requires at a minimum capacity for continuous upgrading of quality for existing products and increasingly it requires a capacity for innovating new products and services. Correspondingly, work tends to be more demanding in terms of its problem-solving requirements and learning attributes.

Some support for this hypothesis can be derived from Figure 3. It shows a positive relation between the percentage of employees in a nation whose work is characterised either by the learning or by the lean models, and a standard measure of innovative effort, research and development expenditures as a percent of GDP (GERD).

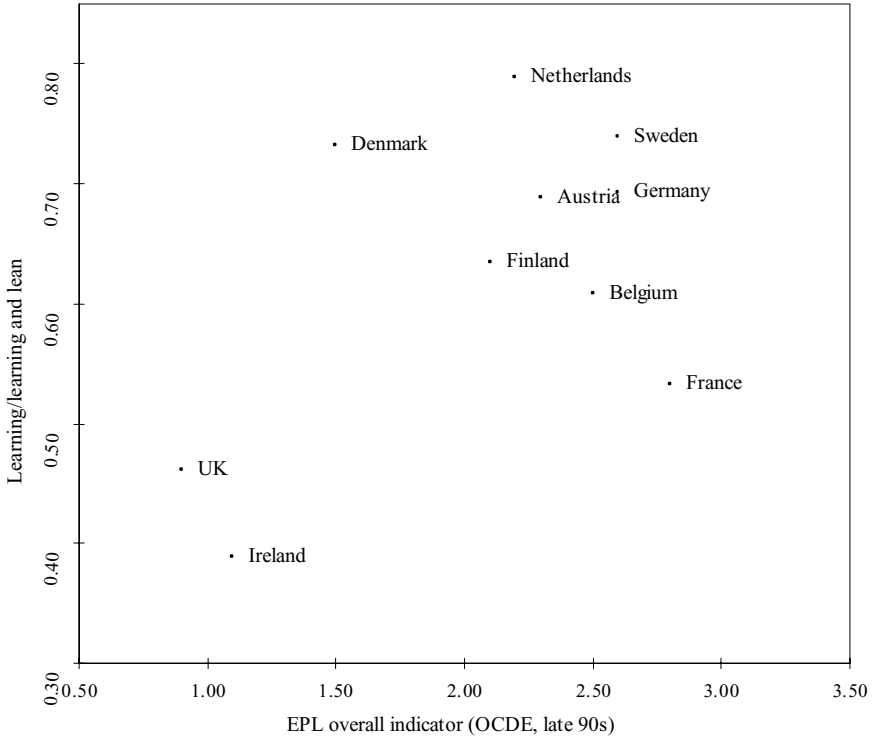
Close inspection of Figure 3, however, suggests that the positive correlation identified can be explained by the presence of the four southern European nations. If we restrict our attention to the Nordic and central and western European nations, which on average have much higher R&D expenditures, there is no obvious relation between the variables. This suggests that the figure is basically capturing an organisational distinction between two groups of nations with differing levels of R&D capability. This, however, leaves the basis for the different organisational choices among the more advanced group of nations. In what follows we focus on the factors that might account for differences in their use of the learning and lean forms and, in particular, the reasons for the relatively intensive use of the lean model in the UK and Ireland.

**Figure 3** Relation between R & O and the learning and lean forms.

One possible explanation for the limited use of the learning forms of work organisation in the UK and Ireland is that the deregulated labour market context in these nations fails to provide the necessary institutional support for establishing substantial forms of autonomy in work, both at the shop floor and higher levels. Figure 4 shows a clear distinction among nations in the relative importance of the lean model of work organisation according to the degree which the labour market is deregulated, as measured by the OECD's overall index of employment protection legislation (EPL).<sup>5</sup>

One argument that may help to account for the observed relation is that the current trend towards decentralised bargaining across European nations has different consequences in liberal market economies, such as the UK and Ireland, as compared with coordinated market economies, such as Germany, the Nordic countries and the Netherlands (see notably Thelen 2001). In the latter countries, despite the importance attached to plant and shop-level bargaining, employers have shown a continued interest in maintaining higher-level forms of coordination, notably around issues of wage determination and the provision of training.

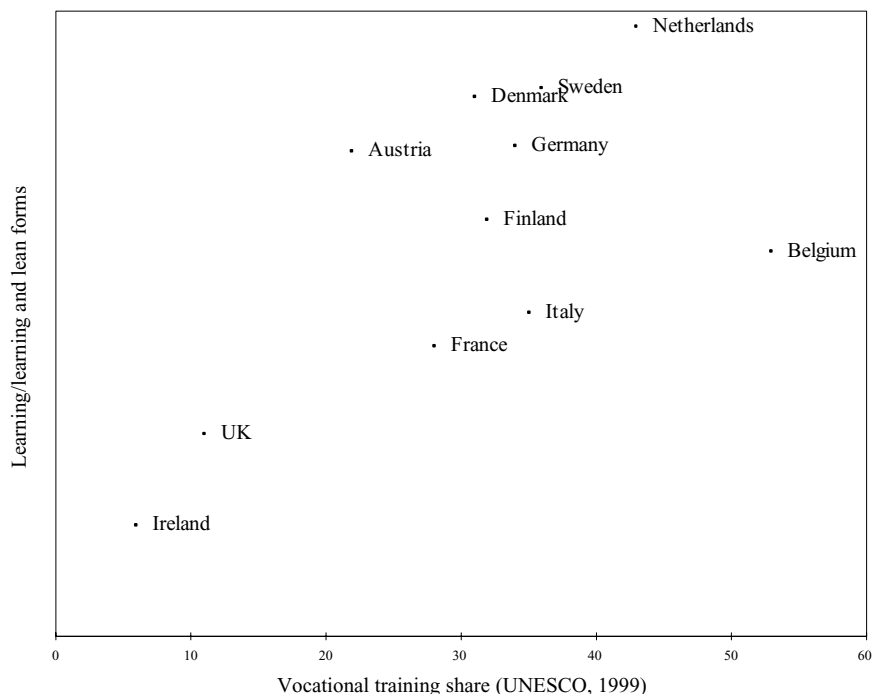
The collective coordination of the labour market in these countries has arguably played an important role in supporting local bargaining designed to secure more flexibility and greater cooperation of labour for two central reasons. First, as authors such as Streeck (1992) have observed, it serves to buffer the establishment from distributional conflict, which can easily spillover into areas of labour/management cooperation that are vital for competing through strategies of product and process innovation. Second, it provides a more solid foundation

**Figure 4** Relation between the learning model and employment protection.

upon which to make the substantial investments in industry and firms-specific training that lead to the development of an autonomous capacity for learning and problem-solving at all levels of the organisational structure.

In deregulated institutional settings, where employers' capacity for coordinated action around skill provision is weak, success in establishing the forms of employee involvement and cooperation vital to the goal of incremental innovation will depend on the firm's capacity to put in place adequate in-house training linked to firm-specific internal labour markets that serve to structure careers and provide incentives for skill acquisition. The risk is that in the absence of supporting external coordinating mechanisms, such firm-specific governance mechanisms will prove to be unstable. Distributional conflict may prove inimical to securing labour's commitment to progressive improvements in product quality, while the risk of loss of skilled labour to competitors will encourage firms to underinvest in the provision of training. Where these pressures do not simply dictate a reversion to low-skill strategies based on taylorism, they may lead to preference for relatively hierarchical modes of work organisation, characterised by lower degrees of worker autonomy and the use of tight quantitative production norms to fix the pace of work. From this perspective, the exceptional attractions of the lean model for employers in the UK and Ireland may be directly linked to the relatively deregulated labour market context in these countries, while the collective regulation of



**Figure 5** Relation between the learning model and vocation training.

the labour market in Germany, the Netherlands and the Scandinavian countries helps account for the relative importance of the learning model there.

Some support for this view is provided in Figure 5, which shows a positive correlation between the strength of a nation's vocational training system, as measured by the proportion of the nation's age cohort receiving vocational training, and the relative importance of the learning forms of organisation.

## CONCLUSION

The adoption of new organisational forms is now clearly on the European political agenda. In the Luxembourg Employment Summit, the 'adaptability' of companies.<sup>6</sup> In a closely related action, the European Commission issued a Green Paper examining new forms of work organisation and public policy options for increasing their utilisation.<sup>7</sup> Although there is increasing recognition at both the European and national levels of the importance of new forms of work organisation for competitive performance,<sup>8</sup> debate and policy initiatives are seriously hampered by the idea of a uniform direction of organisational change. This has impoverished the policy debate by precluding a serious discussion of the normative consequences of the alternative models that are available for achieving the combined goals of organisational learning and problem-solving.

Furthermore, the debate up to now has failed to address in a serious manner the relation between organisational change and wider labour market and institutional setting. It is difficult to assess the frequently made claim that unconstrained

competition and an absence of labour market restrictions constitute the most favourable context for introducing new forms of work organisation for the simple reason that we lack of a reliable mapping of the extent of diffusion of new practices across EU nations. In this paper we have taken an initial step towards providing this mapping and relating it to widely recognised differences in the way labour markets are regulated across European nations. Our results not only show that strong systems of employment protection are fully compatible with the development of advanced forms of work organisation, they suggest nations characterised by such systems display a comparative advantage in terms of adopting organisational practices that rely on a high degree of employee autonomy and involvement at all levels of the organisational structure.

These results of course need further development and our explanation for national differences should be taken as a set of tentative hypotheses consistent with the evidence rather than solid conclusions coming out of the econometric analysis. We offer them in the spirit of widening the debate and in the hope that they will stimulate further comparative research exploring the European link between organisational forms and institutional context.

## ENDNOTES

1. For a useful survey of the 'high performance work practice' literature, see Wood (1999). Key contributions include Becker and Huselid (1998), Guest (1997), Huselid (1995), Ichiniowski *et al.* (1997) and Osterman (2000).
2. The initial findings of the survey are presented in a European Foundation report by Merlié and Paoli (2001).
3. The factor analysis method used here is multiple correspondence analysis, which is designed for the analysis of categorical variables. See Benzecri (1973) and Greenacre (1993: 24–31).
4. The positive coefficient for the use of the 'learning' forms in Sweden is no longer significant at the 0.05 level and the positive coefficient for the use of taylorist forms in Spain is no longer significant at the 0.05 level. For a further discussion of these results, see Lorenz and Valeyre (2004).
5. Denmark is clearly somewhat of an outlier in terms of the relation we are proposing between employment protection and the relative importance of the lean model of work organisation. A distinctive feature of the Danish institutional set-up is that while employment protection is relatively low, unemployment protection is among the highest in Europe. See Lundvall (2002) and Hall and Soskice (2001: 167–9).
6. CEC 'The 1998 Employment Guidelines—Council Resolution of 15 December 1997' (1998).
7. CEC 'Partnership for a New organisation of Work—Green Paper' (Bulletin of the European Union, Supplement 1/97, 1997).
8. Often cited national programs include the New Work Organisation in Ireland Programme (Savage 1999) and the Finnish Workplace Development Programme (DGESA 2000).

## REFERENCES

- Amable B, Barré R, Boyer R (1997) *Les systèmes d'innovation à l'ère de la globalisation*. Paris: Economica.
- Appelbaum E, Batt R (1994) *The New American Workplace*. Ithaca, NY: ILR Press.
- Becker B, Huselid B (1998) High-performance work systems and firm performance: A synthesis of research and managerial implications. In: Ferris G, ed, *Research in Personnel and Human Resources*, Vol. 16, pp. 53–102. Greenwich, CN: JAI Press.
- Benzecri J-P (1973) *L'analyse des données*, 2 vols. Paris: Dunod.
- Boyer R, Durand J-P (1993) *L'après fordisme*. Paris: Syros.
- Coutrot Th (1998) *L'entreprise néolibérale, nouvelle utopie capitaliste?* Paris: La Découverte.
- DGESA (2000) *Government Support Programmes for New Forms of Work Organisation*. Report for the DG Employment and Social Affairs, Business Decision Limited, ISBN 92-828-9326-X.

- Eaton J (2000) *Comparative Industrial Relations*. London: Polity Press.
- Eaton A, Voos P (1992) Unions and contemporary innovation in work organisation, compensation and employee participation. In: Mishel L, Voos P, eds, *Unions and Economic Competitiveness*. Armonk, ME: Sharpe.
- Edwards P, Geary J, Giles A (2002) New forms of work organization in the workplace: Transformative, exploitative, or limited and controlled? In: Murray G, Bélanger J, Giles A, Lapointe P-A, eds, *Work and Employment. Relations in the High Performance Workplace*, pp. 72–119. London, New York: Continuum.
- Freeman R, Lazear E (1995) An economic analysis of works councils. In: Rogers J, Streeck W, eds, *Works Councils*. Oxford: Oxford University Press.
- Freyssenet M (1995) La 'production réflexive: Une alternative à la 'production de masse' et à la production au plus juste? *Sociologie du Travail* 3 (95): 365–89.
- Greenacre MJ (1993) *Correspondence Analysis in Practice*. New York: Academic Press.
- Guest D (1997) Human Resource Management and performance: A review and research agenda. *International Journal of Human Resource Management* 8 (3): 263–26.
- Hall P, Soskice D (2001) *Varieties of Capitalism*. Oxford: Oxford University Press, pp. 263–76.
- Huselid MA (1995) The impact of Human Resource Management practices on turnover, productivity, and corporate financial performance. *Academy of Management Journal* 38: 635–72.
- Ichiniowski C, Shaw K, Prensushki G (1997) The effects of Human Resource Management policies on productivity: A study of steel finishing lines. *American Economic Review* 87: 291.
- Levine D, Tyson L (1990) Participation, productivity and the firm's environment. In: Blinder A, ed, *Paying for Productivity*. Washington, DC: Brookings Institute.
- Linhart D (1994) *La modernisation des entreprises*. Paris: La Découverte.
- Lorenz E, Michie J, Wilkinson F (2004) HRM complementarities and innovative performance in French and British industry. In: Christensen JL, Lundvall B-A, eds, *Product Innovation, Interactive Learning and Economic Performance*. Amsterdam: Elsevier.
- Lorenz E, Valeyre A (2004) Les formes d'organisation du travail dans les pays de l'Union européenne. *Document de Travail du Centre d'études de l'emploi*. France: Noisy-le-Grand. (For an earlier English version of this text, see Lorenz E, Valeyre A (2003) *Organisational Change in Europe: National Models or the Diffusion of a New 'One Best Way'?* DRUID Working Paper. <http://ideas.repec.org/s/aal/abbswp.html>)
- Lundvall B-A (2002) *Innovation, Growth and Social Cohesion: The Danish Model*. Cheltenham, UK: Elgar Publishers.
- MacDuffie JP, Krafcik J (1992) Interacting technology and human resources for high performance manufacturing: Evidence from the international auto industry. In: Kochan T, Useem M, eds, *Transforming Organizations*. New York: Oxford University Press.
- MacDuffie JP, Pil F (1997) Changes in auto industry employment practices: An international overview. In: Thomas K, Lansbury R, MacDuffie JP, eds, *After Lean Production*, pp. 9–42. Ithica: Cornell University Press.
- Marchington M, Wilkinson A, Ackers P, Goodman J (1994) Understanding the meaning of participation. *Human Relations* 47 (4): 867–94.
- Merllié D, Paoli P (2001) *Third European Survey on Working Conditions (2000)*. Luxembourg: Office for Official Publications of the European Communities.
- Mintzberg H (1979) *The Structuring of Organizations*. Englewood Cliffs, NJ: Prentice Hall.
- Osterman P (1994) How common is workplace transformation and who adopts it? *Industrial and Labor Relations Review* 47: 173–89.
- Osterman P (2000) Work reorganization in an era of restructuring: Trends in diffusion and effects on employee welfare. *Industrial and Labor Relations Review* 53: 179–96.
- Savage P (1999) *New Work Organisation in Ireland*. Dublin: Irish Productivity Centre.
- Streeck W (1992) On the institutional conditions for diversified quality production. In: Matzuen E, Streeck W, eds, *Beyond Keynesianism: The Socio-Economics of Production and Employment*. London: Edward Elgar.
- Thelen K (2001) Varieties of labour politics in developed democracies. In: Hall P, Soskice D, eds, *Varieties of Capitalism*, pp. 71–103. Oxford: Oxford University Press.
- Womack JP, Jones DT, Roos D (1990) *The Machine that Changed the World*. New York: Rawson Associates.
- Wood S (1999) Getting the measure of the transformed high-performance organisation. *British Journal of Industrial Relations* 37 (3): 391–417.