



Working conditions in the European Union: Work organisation



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Foreword

The European landscape is characterised by considerable diversity in forms of work organisation. These differences have important implications for the quality of people's working lives, given the significant links that have emerged between types of work organisation and the various dimensions of quality of work and employment. Such a correlation, in turn, increases the need for a better understanding of the main forms of work organisation and their varying impact on working life in Europe.

Against this background, the European Foundation for the Improvement of Living and Working Conditions has, since 1990, been collecting data on developments pertaining to working conditions – a key dimension of quality of life in Europe. The latest of these surveys, the fourth European Working Conditions Survey, provides a comprehensive overview of working conditions across 31 countries in Europe. Among the themes of this survey is the diversity in different forms of work organisation – a subject which forms the basis of this current report, *Working conditions in the European Union: Work organisation*.

The report begins by identifying the four main types of work organisation that exist in Europe – defined as the 'discretionary learning', 'lean production', 'Taylorist', and 'traditional' or 'simple structure' forms of work organisation. It goes on to examine in greater detail the characteristics that differentiate these forms of work organisation, such as sectoral, occupational and demographic characteristics, their prevalence from a cross-country perspective, along with distinctions according to company size or market/non-market orientation. The study also explores the links between certain human resource management policies and how they complement the forms of work organisation under consideration.

A key aspect of this report is exploring the ways in which these forms of work organisation impact on certain dimensions of quality of work and employment, such as physical risk factors, working time, intensity of work and satisfaction with working conditions. It highlights the benefits of discretionary learning forms of work organisation from a quality of work and employment perspective, and concludes by proposing four indicators to monitor Member State progress in the development of these forms of work organisation, characterised by autonomy in work, learning new things and problem solving.

We hope that this report will provide a greater insight into the different forms of work organisation that exist across Europe, underlining particular elements that are more conducive to a better quality of work and employment and that can ultimately help to inform European policy debate and initiatives in this area.

Jorma Karppinen
Director

Abbreviations used in the report

EES	European Employment Strategy
EWCS	European Working Conditions Survey
HPWS	High performance work systems
ISCO	International Standard Classification of Occupations
NACE	Nomenclature générale des activités économiques dans les Communautés européennes (General industrial classification of economic activities within the European Communities)

Country codes

EU15	15 EU Member States prior to enlargement in 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK)
NMS	12 New Member States, 10 of which joined the EU in 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia) and the remaining two in 2007 (Bulgaria and Romania)
EU27	27 EU Member States

EU27

AT	Austria	LU	Luxembourg
BE	Belgium	MT	Malta
BG	Bulgaria	NL	Netherlands
CY	Cyprus	PL	Poland
CZ	Czech Republic	PT	Portugal
DK	Denmark	RO	Romania
EE	Estonia	SK	Slovakia
FI	Finland	SI	Slovenia
FR	France	ES	Spain
DE	Germany	SE	Sweden
EL	Greece	UK	United Kingdom
HU	Hungary		
IE	Ireland		
IT	Italy		
LV	Latvia		
LT	Lithuania		

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EWCS – Survey methodology

Quality assurance

The quality control framework of the European Working Conditions Survey (EWCS) made sure that the highest possible standards were applied to the questionnaire design, data collection and editing processes in order to strengthen the robustness of the research and ensure the accuracy, reliability and comparability of the survey data. A wide range of information on the survey's methodology and quality control processes was published on the website of the European Working Conditions Observatory (EWCO). As part of the quality control procedures, the Foundation also conducted a qualitative post-test for the modules on training and job development in five countries (Austria, Czech Republic, Finland, Portugal and the UK) to understand better the survey's capacity to measure complex phenomena and to make improvements in the questionnaire for future surveys.

Geographic coverage

The evolution of the EWCS follows the changes in the EU itself over the last 15 years. In 1990/91 the survey covered the 12 EU Member States that made up the EU at that time; 15 countries were covered in 1995/96 and 16 in 2000 (including Norway for the first time). The 2001 EWCS was an extension of the 2000 survey to cover the then candidate countries (Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia and Romania). The survey was subsequently extended to Turkey in 2002. The fourth major wave in 2005 had a larger geographic coverage encompassing 31 countries, including the 27 EU Member States, plus the candidate countries Croatia and Turkey, as well as the EFTA countries Switzerland and Norway.

Questionnaire

The survey questionnaire was developed with the support of a questionnaire development group involving members of Eurofound's Governing Board, representatives of the European social partners, other EU bodies (European Commission, Eurostat, the European Agency for Safety and Health at Work), international organisations (OECD, ILO) and national statistical institutes, as well as leading European experts in the field. The questionnaire was translated into 27 languages and 15 language variants.

The fourth EWCS questionnaire consists of more than 100 questions and sub-questions covering a wide range of work-related aspects, such as job characteristics and employment conditions, occupational health and safety, work organisation, learning and development opportunities, and work-life balance. Although the total number of questions has been steadily increasing since the first survey in 1990/91, the core variables of the questionnaire have been maintained, so that trends and changes in working conditions in the EU over the last 15 years can be examined.

Sample

The survey sample is representative of persons in employment (employees and self-employed), aged 15 years and over, resident in each of the surveyed countries. In the 2005 edition of the survey, around 1,000 workers were interviewed in each country, with the exception of Cyprus, Estonia, Luxembourg, Malta and Slovenia, where the number of persons interviewed totalled 600. The survey sample followed a multi-stage, stratified and clustered design with a 'random walk' procedure for the selection of the respondents.

Fieldwork

In total, 29,680 workers were interviewed face-to-face in their homes from 17 September to 30 November 2005, within different timespans in each country and an average of seven weeks. The fieldwork was coordinated by Gallup Europe and a network of national contractors carried out the data collection in each country.

Weighting

Data is weighted against the European Labour Force Survey figures. Variables used for the weighting are: sex, age, region (NUTS-2), occupation (ISCO) and sector (NACE).

Access to the survey datasets

The complete set of survey datasets is accessible via the UK Data Archive (UKDA) of the University of Essex at www.esds.ac.uk. To access data files, users are required to register with the UKDA. Information on the registration procedure is available at www.esds.ac.uk/aandp/access/login.asp. The archive also provides access to survey documentation and guidance for data users. Users are recommended to read supplementary supporting documentation on the methodology provided on this website before working with the data.

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Executive summary

Introduction

The fourth European Working Conditions Survey (EWCS) conducted in 2005 by the European Foundation for the Improvement of Living and Working Conditions (Eurofound) addresses topics that figure high on the European Union's employment policy agenda. The overall aim of the EWCS is to provide an overview of the state of working conditions throughout Europe, and an indication of the extent and type of changes affecting the workforce and the quality of work. Following the 2005 survey, Eurofound carried out further in-depth analyses of its findings on key themes relating to working conditions in the EU. The diversity in forms of work organisation across Europe was one of the themes explored and is the subject of this report.

To this end, the results of the EWCS have been analysed to map differences in the main forms of work organisation across EU countries, examining structural, demographic and cross-country characteristics which help define the different forms and exploring the relations between work organisation and the various dimensions of quality of work and employment. The study includes an analysis of the links between work organisation and human resource management (HRM) practices, along with an examination of work organisation in small establishments and in 'non-market' sectors – such as public administration and social security, education, health and social work institutions. The main part of the study, however, focuses on salaried employees in 'market sector' establishments employing 10 or more people. Based on its findings on work organisation in the EU, the study concludes by proposing some relevant policy indicators of forms of work organisation that could be useful in the context of the European Employment Strategy (EES).

Policy context

The considerable diversity in forms of work organisation in the EU has a huge influence on the quality of European policy debate and initiatives. The 2005 European Council decision on guidelines for the employment policies of EU Member States confirmed the leading role of the EES in implementing the employment and labour market objectives of the Lisbon Strategy, including improving quality and productivity at work and strengthening social cohesion and inclusion. In the European Employment Strategy, Indicator 17 specifically addresses the request for policy measures for a number of related elements – increasing employment, reducing unemployment rates, reducing inactivity, improving quality at work, increasing productivity, strengthening territorial and social cohesion and promoting a life-cycle approach to work. These objectives can be furthered by designing appropriate policies to foster forms of work organisation that promote improved performance with due regard for health and safety, while at the same time cultivating sustainable social equality in terms of access to jobs, careers and influence at the workplace.

These considerations call for a better understanding of what the main forms of work organisation are in Europe and how they impact on the quality of work and employment and productivity.

Key findings

Based on the analyses and set of variables used in the research, four main types of work organisation were identified: the 'discretionary learning', 'lean production', 'Taylorist', and 'traditional' or 'simple structure' forms of work organisation.

The discretionary learning form, which corresponds to 38% of the employees surveyed, is characterised by high levels of autonomy at work, learning and problem solving, task complexity, self-assessment of quality of work and, to a lesser extent, autonomous teamwork. Lean production (26% of the employees) is mainly defined by a higher level of teamwork and job rotation, self-assessment of quality of work and quality norms, and the various factors constraining work pace. Conversely, Taylorist forms of work organisation (20% of the employees) correspond to low autonomy at work, particularly in methods of work, few learning dynamics, little complexity and an overrepresentation of the variables measuring constraints on the pace of work, repetitiveness and monotony of tasks, and quality norms. In traditional or simple structure forms (16% of the employees), all of the variables of work organisation are underrepresented and methods are largely informal and non-codified.

The forms of work organisation adopted in the 27 EU Member States (EU27) depend on sector of economic activity or occupational category. For instance, discretionary learning forms of work organisation are highly developed in the services sectors, while lean production and Taylorist forms are most frequent in the manufacturing industries. In terms of occupational category, 'traditional' or 'simple structure' forms of work organisation are particularly characteristic among service and sales workers as well as unskilled workers, while discretionary learning forms are more prevalent among senior managers, professionals and technicians. The demographic characteristics of employees also play a role: for example, discretionary learning forms are more frequent among older employees, while Taylorist forms mainly concern younger employees. At the same time, lean production forms are characterised by an overrepresentation of men, while traditional or simple structure forms are characterised by a higher presence of women.

From a cross-country perspective, wide differences also emerge in terms of the importance of the four forms of work organisation across the EU27. Discretionary learning forms of work organisation are most developed in Denmark, Sweden and the Netherlands, while lean production forms are more apparent in the northwest European countries of Ireland and the United Kingdom (UK), along with many of the eastern countries and Finland, Luxembourg, Malta and Portugal. Taylorist forms of work organisation are most diffused in the southern European countries and in many eastern countries, while traditional or simple structure forms are most apparent in southern and certain eastern European countries.

HRM policies represent a further characteristic in distinguishing the different forms of work organisation adopted in EU countries. In particular, policies adopted in the areas of training, type of employment contract, payment system and work-related consultation and discussion play a critical role. For example, the discretionary learning and lean production forms tend to be characterised by higher levels of further training provided by the employer, greater use of variable or incentive pay forms, more secure tenures associated with greater use of indefinite contracts, and higher involvement of employees in work-related discussion and consultation. Thus, actively involving employees in problem-solving and learning activities, for instance, is likely to be more successful if it is complemented by investment in training, incentive pay systems and secure tenures to increase employees' commitment to the company's goals.

Turning to the impact of work organisation, important relations emerge between each form of work organisation and certain dimensions of quality of work and employment: namely, physical risk factors, working time, work-related health and safety risks, intensity of work, work-life balance,

intrinsic rewards, psychological working conditions related to HRM or social integration at work, and satisfaction with working conditions.

Exposure to physical risk factors, for example, is much less frequent in the discretionary learning and traditional or simple structure forms than in the lean production and Taylorist forms of work organisation. Long weekly or daily working hours are more apparent in the lean production and discretionary learning forms and lowest in the Taylorist and traditional or simple structure forms. Employees' perceptions of having to work at very high speed or to tight deadlines and of not having enough time to get the job done are much higher in the lean production and Taylorist organisation forms, while perceived work–life balance tends to be higher in the discretionary learning forms. Perceived job insecurity and being underpaid for work is highest among employees engaged in Taylorist forms of work organisation and lowest among those whose work adheres to discretionary learning forms. At the same time, the percentage of employees who are satisfied or very satisfied with the working conditions in their main paid job is highest in the discretionary learning cluster and lowest in the Taylorist cluster.

Finally, the research uncovers differences in work organisation according to the size of establishments and whether they are located in the market or non-market sector. For instance, the diffusion of new organisational methods, such as teamwork, job rotation and total quality management, is far less frequent in small establishments of the market sector than in larger establishments. Nevertheless, autonomy at work and cooperation at work are comparable between small and larger establishments.

Meanwhile, in the three sectors which are mainly non-market – public administration and social security, education, and health and social work – autonomy at work is much higher than in the market sectors, particularly in education. Learning new things at work, problem solving and complex tasks are also more highly developed in non-market than in market sectors. At the same time, work pace constraints and monotony and repetitiveness of tasks are less widespread in non-market than in market sectors, particularly in the education sector.

Policy recommendations

- The adoption of discretionary learning forms of work organisation, compared with lean production and Taylorist forms, can result in better working conditions in the sense of lower work intensity, less exposure to physical risks, fewer non-standard working hours, better work–life balance and lower levels of work-related health problems.
- Discretionary learning forms of work organisation are also associated with higher perceived intrinsic rewards from work, better psychological working conditions related to HRM policies and social integration at work, along with higher overall levels of employee satisfaction with working conditions.
- Despite the importance of work organisation for job quality, scant attention is paid to work organisation in the 2005–2008 Employment Guidelines. Eurofound proposes four indicators that could be used to monitor Member States' progress in developing innovative forms of work organisation:
 - the percentage of employees learning new things in the job;
 - the percentage of employees involved in problem solving in the job;

- a composite measure of autonomy at work based on the average of the percentages of employees exercising control over their work method, pace or order of tasks;
- the number of employees working in autonomous teams which can decide on the division of tasks as a percentage of the number of employees working in all teams.
- The EWCS should be further exploited to contribute to the development of useful indicators of quality in work and not just indicators of innovative forms of work organisation. More specifically, it would be worthwhile exploring the possibilities of developing a series of indicators for the various dimensions of quality in work – including physical risks, work-related health and safety risks, working time, work intensity, work–life balance, psychological working conditions and satisfaction with working conditions. These could be used to inform policy and complement the indicators of innovative forms of work organisation. Another dimension, which will be exploited in the future, is the link between quality of work and productivity.

Introduction

Research on the current restructuring of work organisation and management practices has increasingly focused on the characteristics and prevalence of high performance work systems (HPWS). Much of this literature assumes, at least implicitly, that HPWS constitute ‘best practice’ management, although a distinction can be drawn between those arguing for a contingency approach, in which the advantages and degree of adoption vary according to economic sector and business strategy (MacDuffie and Pil, 1997; Applebaum et al, 2000), and those arguing for the more universal advantages of HPWS (Huselid, 1995; Pfeffer, 1994). Contingency approaches typically link the progressive diffusion of the high performance model to processes of globalisation. In international human resources (HR) literature, the HPWS model often serves as a benchmark in determining the balance between the forces of globalisation and local context in shaping management practice.

This report does not assume a convergence towards a unique model of work organisation. Rather, it starts from the premise that institutional differences – notably the levels of labour markets, education and training systems, and the collective organisation of employers and employees – mediate the impact of globalisation processes and intensified international competition on workplace organisation. For all companies and sectors, competition and productivity are key drivers in adapting the way work is organised. The study draws theoretical inspiration from various literature sources developing the idea that ‘institutions matter’. These include the ‘varieties of capitalism’ literature, focusing on the contrast between liberal market and coordinated market economies (Hall and Soskice, 2001); the ‘regulation school’, which explores the relation between systems of macro-regulation and enterprise organisation (Amable, Barré and Boyer, 1997); the ‘national systems of innovation’ literature, focusing on the institutions which shape processes of learning and competence building (Lundvall, 1988 and 2002); and the ‘national business systems’ literature, exploring the relations between national state structures and enterprise organisation (Whitley, 1999). The theoretical perspectives developed in these literature strands provide reasons for anticipating greater international diversity in forms of work organisation than the thesis of a new ‘one best way’ would allow.

Work undertaken by Lorenz and Valeyre (2004 and 2005) on the basis of the 2000 wave of the European Working Condition Survey (EWCS), conducted by the European Foundation for the Improvement of Living and Working Conditions (Eurofound), identified sizeable diversity in work organisation across Europe. Their results showed not only that traditional Taylorist forms of work organisation have been holding their own in certain countries and sectors, but also that the forms of work organisation 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. The authors’ 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 pace of work – referred to as the ‘learning model’ – and a more bureaucratic 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.

Recognising that the European landscape is characterised by considerable diversity in its forms of work organisation has a bearing on the quality of European policy debate and initiatives. The 2005 European Council decision on guidelines for the employment policies of EU Member States confirmed the leading role of the European Employment Strategy (EES) in implementing the employment and labour market objectives of the Lisbon Strategy. These objectives include improving

quality and productivity at work and strengthening social cohesion and inclusion. Such aims can be furthered by designing appropriate policies to encourage forms of work organisation that promote improved performance while simultaneously fostering sustainable social equality in terms of access to jobs, careers and influence at the workplace. The idea of a uniform direction of change seriously impoverishes policy debate and initiatives by precluding a serious discussion of the consequences of the alternative organisational models that might be adopted.

These considerations call for a better understanding of what the main forms of work organisation are in Europe and how they impact on the quality of work and employment. In order to do this, the study draws on the results of the new wave of the EWCS carried out in 2005 in the current 27 Member States of the European Union (EU27). The report focuses mainly on salaried employees in 'market sector' establishments¹ employing 10 or more persons. Forms of work organisation are rather different in micro-enterprises employing fewer than 10 persons, where formal protocols such as job rotation or teamwork are generally not developed. Different patterns of diffusion of new organisational practices can also be expected in 'non-market sector' establishments², which do not face the same market and competitive constraints as market sector companies. Nonetheless, considerable evidence emerges that specific organisational methods developed in the market sector are spreading to the non-market sector.

For the main part of this report, the sample population comprises 9,240 salaried employees, excluding those in micro-enterprises and establishments in the economic sectors of agriculture, fishing, public administration and social security, education, health and social work, and activities of households. A separate chapter of the report is devoted to describing work organisation in micro-enterprises of the market and non-agricultural sectors, concerning a sample of 4,243 employees, and in the non-market sectors, encompassing a sample of 6,355 employees.

The report is organised as follows. The first chapter maps the main forms of work organisation in Europe, while the second chapter analyses how they vary according to sectoral, occupational and demographic variables. In the third chapter, differences between European countries in forms of work organisation are examined. The fourth chapter determines whether specific forms of work organisation are associated with different human resource management (HRM) practices, such as the provision of training, job security and pay systems. The fifth chapter examines the relation between forms of work organisation and specific dimensions of quality of work and employment: exposure to risks, work-related health or safety risks, working time, work intensity, work-life balance, intrinsic rewards, psychological working conditions related to HRM or social integration at work, and satisfaction with working conditions. In the sixth chapter, an exploratory and descriptive analysis of work organisation in micro-enterprises is presented, and the same analysis is then conducted for the non-market sectors of public administration and social security, education, and health and social work. Finally, the conclusions propose some policy-relevant indicators of forms of work organisation that could be useful in the context of the EES.

¹ 'Market sector' establishments mainly belong to market-driven sectors. They generally are private companies, but can be public, for example in the electricity, gas and water supply sector or in the post and telecommunications sector.

² 'Non-market sector' establishments mainly belong to non-market driven sectors: public administration and social security; education; and health and social work. They generally are public organisations, but can be private, for example in the education or health sectors.

Forms of work organisation in the European Union

Data from the EWCS provide a unique source of information for characterising work organisation in Europe and for developing harmonised measures of the frequency with which specific forms of work organisation are adopted in the different EU Member States. Measuring work organisation on the basis of employee-level data presents certain advantages and disadvantages compared with employer-level data. Employee-level data preclude developing measures of the importance of different types of companies or enterprise structures; however, they have the advantage of providing the necessary information for a detailed and rich characterisation of work content and job requirements. In particular, employee-level survey data can respond to the criticism that many of the key indicators derived from employer-level surveys to measure the diffusion of new or 'transformed' management practices are largely indeterminate as regards actual work content and job requirements (Edwards et al, 2002; Marchington and Grugulis, 2000). For example, it has been observed that teamwork can be developed and applied in varying ways with different implications for employee discretion and involvement in decision making (Durand, Stewart and Castillo, 1998; Fröhlich and Pekruhl, 1996; Lorenz and Valeyre, 2005; Kyzlinková, Dokulilová and Kroupa, 2007).

This chapter focuses on the forms of work organisation adopted in non-agricultural market sector establishments of the EU27 employing 10 or more persons.³ As noted in the introduction, the sample studied consists of 9,240 salaried employees. The two basic statistical methods used here to characterise the forms of work organisation adopted across the EU27 are multiple correspondence factor analysis and hierarchical cluster analysis. These are exploratory statistical methods suitable for identifying structure in complex data. Multiple correspondence analysis is a method suitable for identifying relations among a set of categorical variables, while cluster analysis is a method for identifying natural groupings of observations (persons) according to a set of variables or criteria.

The choice of variables for these analyses is based on a reading of three complementary literature strands which address the relation between the forms of work organisation used by companies and their capacity for adaptation and change. The first strand comprises the HPWS and lean production literature sources, dealing with the diffusion of Japanese-style organisational practices (Aoki, 1990) in the United States (US) and Europe (Gittleman, Horrigan and Joyce, 1998; Osterman, 1994 and 2000; Ramsay, Scholarios and Harley, 2000; Truss, 2001; Wood, 1999). The second field consists of literature on the sociology of work, addressing the issue of new forms of work organisation (Durand, 2004; Durand, Stewart and Castillo, 1998; Linhart, 1994; Veltz and Zarifian, 1993; Zarifian, 1993; Zarifian, 2003). Meanwhile, the third strand includes literature dealing with the relation between organisational design and innovation (Lam, 2005; Lam and Lundvall, 2006; Mintzberg, 1979 and 1983).

The 'high performance' literature focuses on the diffusion of specific organisational practices and arrangements that are seen as enhancing the company's capacity for making incremental improvements to the efficiency of its work processes and the quality of its products and services. These include practices designed to increase employee involvement in problem solving and operational decision making such as teams, problem-solving groups and employee responsibility for

³ For an analysis of work organisation concerning all salaried employees in Europe, see the Eurofound report *Fourth European Working Conditions Survey* (Parent-Thirion, Fernández Macías, Hurley and Vermeulen, 2007).

quality control. Many of the practices identified in this literature were innovations developed by large Japanese automobile and electronics companies in the 1970s and 1980s – such as the Toyota Motor Corporation – and some authors refer specifically to the diffusion of the lean production model associated with Toyotism⁴ (Womack, Jones and Roos, 1990; MacDuffie and Pil, 1997). The diffusion of these Japanese-style organisational practices is seen as having contributed to the progressive transformation of more hierarchically structured companies that relied on Taylor's principles of task specialisation and a clear distinction between the work of conception and execution.

While it is often considered that the lean production model is the new organisational 'one best way', the thesis of the diversity of new models of work organisation has also been developed (Appelbaum and Batt, 1994; Boyer and Freyssenet, 2000; Coutrot, 1998; Lorenz and Valeyre, 2005). The second field of literature – covering organisational economics and the sociology of work – has addressed the emergence of new models of work organisation. One of the main issues is to examine the impact on a traditional Taylorist organisation of the changes introduced by the adoption of the lean production model. This debate remains open: on the one hand, there are those who consider that the lean production model marks a real break with the Taylorist model, through the greater levels of autonomy and responsibility that it confers on operating personnel; on the other hand, there are those who affirm that it is simply a renewal of the Taylorist model, combining stricter instructions and supervision of work with increases in the procedural autonomy of employees in a model of 'limited and controlled autonomy' (Coutrot, 1998; Edwards, Geary and Sisson, 2002).

The emergence of other new models of work organisation is apparent in studies on 'socio-technical systems' (Emery and Trist, 1960) and 'learning organisations' (Zarifian, 2003). The Scandinavian socio-technical systems involve self-managed teamwork and work enrichment by multi-skilling. Learning organisations are characterised by strong individual and collective learning dynamics in the workplace, notably with regard to problem-solving activities related to unforeseen events such as dysfunctions in production and with regard to innovation processes. These organisations need high levels of autonomy, initiative and communication at work on the part of employees and attach great importance to autonomous teams and project teams. Based on collective reflexive returns to tasks and events and assigning a larger intelligibility to work (Freyssenet, 1995), they clearly break with Taylorist principles.

While the high performance literature makes a dichotomous distinction between hierarchical and flexible or 'transformed' organisations, the third literature strand – concerning organisational design – has tended to develop more complex taxonomies. For example, within the context of the broad distinction between 'bureaucratic' and 'organic' organisations defined by Burns and Stalker (1961), Mintzberg (1979) identifies two types of organic organisation with a high capacity for adaptation: the 'operating adhocracy' and the 'simple structure organisation'. Different forms of work organisation and types of work practices characterise these two organic forms. The simple form relies on direct supervision by one individual, typically a manager; a classic example of this type of organisation is the small entrepreneurial company. Adhocracies rely on mutual adjustment, whereby employees coordinate their own work by communicating informally with each other. Various liaison devices, such as project teams and task forces, are used to facilitate the process of mutual adjustment.⁵

⁴ The lean production model corresponds to the Toyotist or Japanese-style organisational model adopted with modifications in Western developed countries.

⁵ Thus, 'learning organisations' are generally related to Mintzberg's 'operating adhocracy'.

In contrast to these 'organic' forms, Mintzberg identifies two basic bureaucratic forms with a limited capacity for adaptation and innovation: 'mechanistic bureaucracy' and 'professional bureaucracy'.⁶ The key characteristic of work organisation in the former is the standardisation of jobs and tasks through the use of formal job descriptions and rules imposed by management. Therefore, it incorporates a high degree of centralisation and limited employee discretion over how work is carried out or over the pace of work.⁷ In professional bureaucracy, on the other hand, centralisation is low and behaviour is regulated and standardised through the acquisition of standardised skills and the internalisation of professional norms and standards of conduct. As a result, operating procedures are rather stable and routine, despite considerable autonomy in work.

Work organisation variables

In order to characterise the adoption across the EU27 of the main forms of work organisation identified in the above literature sources, the multiple correspondence and cluster analyses use the following active variables:

- a three-level variable measuring the use of teamwork, distinguishing between autonomous teamwork (with team members deciding the division of tasks), non-autonomous teamwork (with team members not having the power to decide the division of tasks) and no teamwork;
- a binary variable measuring task rotation;
- two binary variables measuring autonomy in work – autonomy in the methods used and autonomy in the pace or rate at which work is carried out;
- four binary variables measuring the factors or constraints which determine the pace or rate of work – 'automatic' constraints linked to the rate at which equipment is operated or a product is displaced in the production flow; 'norm-based' constraints relating to numerical production targets or performance targets; 'hierarchical' constraints linked to the direct control exercised by one's immediate superiors; and 'horizontal' constraints relating to the way a person's work rate is dependent on the work of his or her colleagues;
- a binary variable measuring the repetitiveness of tasks of less than one minute;
- a binary variable measuring the perceived monotony of tasks;
- two binary variables measuring the way quality is controlled, which correspond to the use of precise quality standards and to self-assessment of the quality of work;
- a binary variable measuring the complexity of tasks;
- two binary variables measuring learning dynamics in work, which correspond to whether individuals learn new things in their work and to whether the work requires problem-solving activity.

⁶ Mintzberg also refers to a third bureaucratic form, the 'divisionalised' form. Unlike the other four configurations, he describes it as a partial structure superimposed on other divisions, each of which is driven towards the mechanistic bureaucracy.

⁷ Taylorist forms of work organisation are related to 'mechanistic bureaucracy'.

Overall, four of these active variables measure the use of the core work practices identified in the lean production model and in HPWS: teamwork, task rotation, employee responsibility for quality control and precise quality standards. The use of autonomous teamwork defined by the three-level variable of teamwork is characteristic of the Scandinavian socio-technical systems and of the learning organisation model. A further two of the variables capture whether employees engage in learning and problem solving, which are mainly characteristics of learning organisations and operating adhocracies and, to a lesser extent, HPWS. One variable captures whether work tasks are complex and is relevant to both adhocracies and learning organisations. The forms of discretion in work that are characteristic of learning organisations, socio-technical systems, adhocracies and, to a certain extent, HPWS, are measured by two active variables that capture whether employees are able to choose or change their work methods and pace of work.

The four variables measuring different constraints on employee discretion in setting their pace of work – the automatic, norm-based, hierarchical and horizontal constraints – are interesting because they provide indicators of differences in how work is coordinated inside the companies across different forms or systems of work organisation. Automatic constraints are classic characteristics of Taylorist or mechanistic bureaucratic work settings, while norm-based constraints characterise both the Taylorist or mechanistic bureaucratic and the lean production forms of work organisation. At the same time, hierarchical constraints characterise both Taylorist or mechanistic bureaucratic and simple structure forms. The horizontal constraints variable – which provides a measure of whether work is carried out collectively rather than individually – distinguishes adhocracies and the lean production model. Finally, the two variables measuring task repetitiveness and task monotony capture typical features of Taylorist or mechanistic bureaucratic work settings.

In addition, this study makes use of four non-active or supplementary variables, which help characterise the generated factors and clusters while not contributing to their construction:⁸

- a binary variable measuring autonomy in the order of tasks;
- two binary variables measuring assistance in work from colleagues or from a superior or boss if requested;
- a binary variable measuring indirectly the extent of ‘just-in-time’ production practices on the basis of demand-driven work rate constraints for employees who never or seldom deal directly with customers.

The fourth EWCS adds a number of new questions pertaining to the use of teamwork and job rotation. For teamwork, it is possible to determine whether the team chooses the team leaders and whether it decides on the division of labour among team members. In the case of job rotation, it is possible to identify whether it involves multi-skilling or multi-tasking, and whether the division of labour is determined by the employees involved. Both job rotation and teamwork are key components of lean production and HPWS; in particular, the use of teams has been the subject of extensive literature assessing the impact of new managerial practices on enterprise performance and on the quality of work, including worker satisfaction.⁹ The three-level variable of teamwork, which captures

⁸ These four variables have not been included in the list of active variables used to construct the factors and clusters for technical reasons. Either they are highly correlated with active variables, thus creating an overly determinant effect on the clustering, or they provide highly indirect measures of work organisation, thus introducing bias in the analyses.

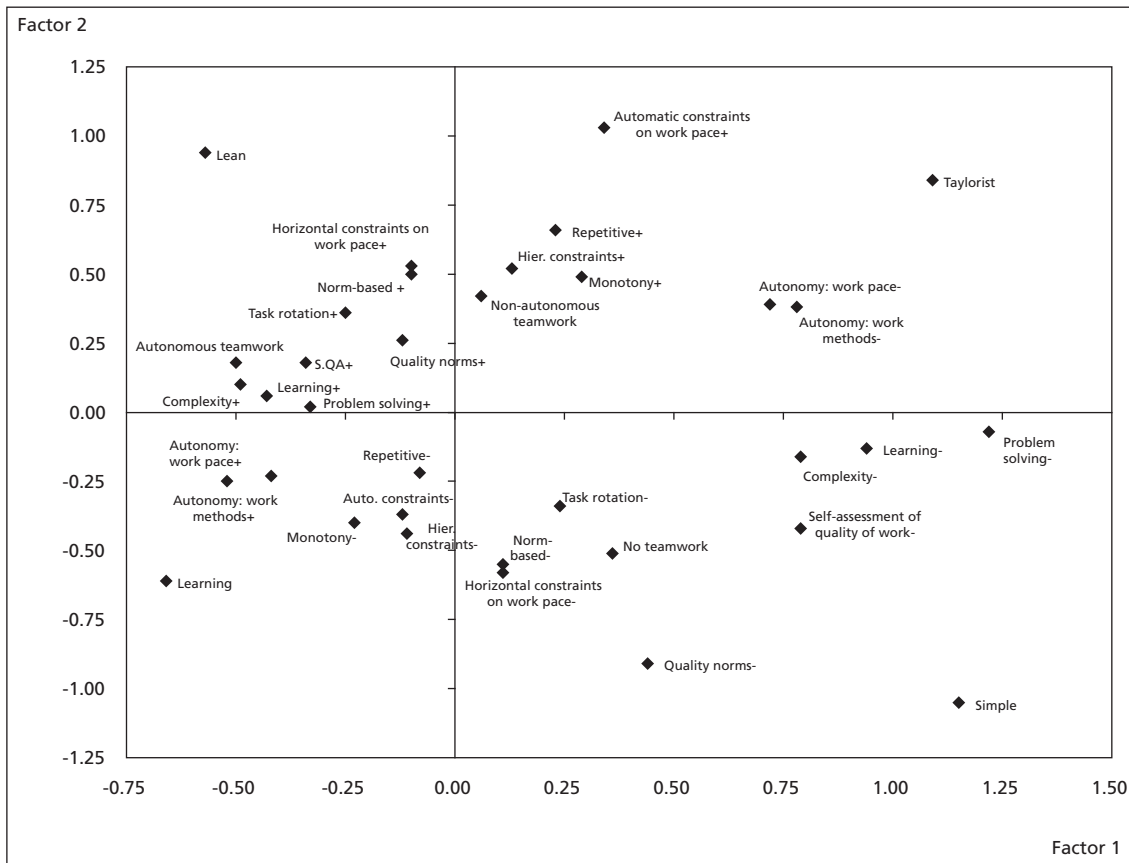
⁹ For a discussion of the theoretical literature and a detailed characterisation of the use of teamwork in EU Member States, see Kyzlinková, Dokulilová and Kroupa (2007).

whether the team members decide on the division of tasks, is integrated directly as an active variable of the factor and cluster analyses. The other multi-level variables of teamwork and task rotation are not included among the active variables for technical reasons.¹⁰ Nevertheless, they provide relevant information about the organisation of work across the different clusters.

Main dimensions of work organisation

In order to describe the main dimensions of work organisation across the 27 EU Member States, a multiple correspondence analysis has been carried out on the basis of the 15 organisational variables listed earlier. Figure 1 presents the results concerning the first two factors of the analysis (these factors will be explained underneath the figure).

Figure 1 Main dimensions of work organisation (first two factors of the multiple correspondence analysis)



Notes: x+: presence; x-: absence. Auto. constraints: Automatic constraints on work pace; Hier. constraints: Hierarchical constraints on work pace; Norm-based: Norm-based constraints on work pace; S.QA: Self-assessment of quality of work. Forms of work organisation – Lean: Lean production; Learning: Discretionary learning; Simple: Traditional or simple structure; and Taylorist.

Source: EWCS, 2005 and authors' calculations

¹⁰ A more detailed variable of teamwork combining team member decisions on the division of tasks and on the team leader, and the three-level variable of task rotation distinguishing multi-skilling and multi-tasking, could not be integrated into the analysis because of the low frequencies of some of the levels. It also proved impossible to integrate the other three-level variable of task rotation capturing whether employees decide the division of tasks, because it is highly correlated with the three-level teamwork variable and creates an overly determinant effect on the cluster analysis.

The first factor of the analysis, accounting for 16% of the inertia or chi-squared statistic, distinguishes between new forms of work organisation and Taylorist or traditional ones. It is structured by variables measuring autonomy in work regarding the methods and pace of work, and by variables measuring learning, problem solving and task complexity, quality management – that is, self-assessment of the quality of work – and autonomous teamwork, meaning teamwork with member control on the division of tasks. The second factor, accounting for 15% of the chi-squared statistic, is structured by variables concerning the formalisation of work and which are characteristic of the Taylorist and lean production forms of work organisation: the variables of work pace constraints, repetitiveness and monotony of tasks, quality norms, task rotation and non-autonomous teamwork. It may be noted that task rotation and quality norms, associated with horizontal and norm-based constraints on pace of work, are more characteristic of lean production. The third factor, which accounts for 8% of the chi-squared statistic, is mainly structured by the variables measuring autonomous teamwork and task rotation, which are associated to a certain extent with horizontal work pace constraints, and are opposed to the quality management variables of quality norms and self-assessment of quality of work and to the norm-based work pace constraint variable.

Typology of forms of work organisation

A typology of forms of work organisation has been produced using Ward's method of hierarchical cluster analysis, on the basis of the factor scores resulting from the multiple correspondence analysis.¹¹ This typology groups employees into four main classes of work organisation forms which correspond to typical models described in the literature: the discretionary learning, lean production, Taylorist and traditional or simple structure forms. Tables 1 and 2 show how the four classes are differentiated by the various variables of work organisation.¹² Figure 1 clearly illustrates these contrasting situations, by the projection of the four classes onto the graph of the first two factors of the multiple correspondence analysis.

Discretionary learning forms

The first class, representing 38% of employees, is characterised by the overrepresentation of the variables measuring autonomy in work, learning and problem solving, task complexity, self-assessment of quality of work and, to a lesser extent, autonomous teamwork. Conversely, the variables reflecting monotony, repetitiveness and work pace constraints are underrepresented. This class, which is referred to as the discretionary learning form of work organisation, appears to correspond to the learning organisation or the operating adhocracy models. It shares many of the features of the Scandinavian socio-technical model, notably a relative emphasis on autonomous team organisation for those employees involved in teamwork.

Lean production forms

The second class, representing 26% of employees, is mainly defined by an overrepresentation of teamwork, autonomous or otherwise, and job rotation, particularly multi-skilling. This class also has

¹¹ The multiple correspondence analyses (MCA) and cluster analyses were carried out using Statistical Package for Augmented Designs (SPAD 3.5) software. Weighted data were used for the MCA and unweighted data for the cluster analysis, which was carried out on the scores of the first four factors of the MCA, each of which accounted for a greater percentage of the inertia than the average and contributed together to 46% of the inertia. The clustering was performed using Ward's method of ascending hierarchical clustering.

¹² In all of the tables presented in the report, data are weighted by the cross-national weighting or the respondents.

a high degree of quality management variables, including self-assessment of quality of work and quality norms, as well as the indirect variable of just-in-time production, measured by demand-driven constraints on work pace without or almost without direct customer contact. It also features the various factors constraining pace of work. This class, like the first, displays strong learning dynamics and relies on employees' contribution to problem solving. In this instance, the observer easily recognises the classic attributes of the lean production model. However, autonomy in work is only a little higher than the average and is encompassed 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. Thus, this class has much in common with what is described as a 'controlled autonomy' in work, reflecting employers' concern to balance the needs of exercising control over employees and encouraging their creativity (Coutrot, 1998; Edwards, Geary and Sisson, 2002).

Table 1 Work organisation variables across the classes (% of employees)

		Work organisation classes				Total
		Discretionary learning	Lean production	Taylorist	Traditional or simple	
Autonomy in work	Methods of work	88.9	65.5	10.5	43.0	60.1
	Speed or rate of work	88.1	65.1	21.6	51.5	63.2
	Order of tasks	79.8	60.7	14.6	43.0	56.2
Cognitive dimensions of work	Learning new things	86.7	90.2	38.1	27.7	68.5
	Problem-solving activities	95.8	94.0	53.6	45.7	78.9
	Complexity of tasks	78.5	85.5	34.9	16.8	61.7
Quality	Self-assessment	80.1	92.1	58.0	24.1	69.7
	Quality norms	75.7	96.6	91.6	36.8	77.8
Task rotation		40.9	79.1	42.4	26.3	48.6
Teamwork	With control over task division	33.8	47.3	14.4	16.4	30.6
	Without control over task division	23.8	42.2	45.5	18.5	31.9
Monotony of tasks		23.8	59.2	75.4	36.9	45.1
Repetitiveness of tasks		11.6	39.1	41.2	16.7	25.3
Work pace constraints	Automatic	4.1	46.6	60.6	5.7	26.3
	Norm-based	41.1	76.3	73.9	15.7	52.4
	Hierarchical	25.7	67.0	69.4	30.9	45.7
	Horizontal	36.0	85.0	64.9	25.0	52.4
	Demand-driven without direct customer contact (or almost never)	15.2	24.2	25.9	11.4	19.0
Assistance	From colleagues	74.2	81.6	62.4	62.4	71.9
	From hierarchy	66.4	63.9	48.4	49.7	59.5
Sample		38.4	25.7	19.5	16.4	100.0

Note: Weighted proportions of employees in each work organisation class and in the total population, in percent. For example, 88.9% of the employees grouped in the discretionary learning class of work organisation experienced autonomy in work methods, compared with only 60.1% of the employed population as a whole.

Source: EWCS, 2005 and authors' calculations

Table 2 Teamwork and task rotation variables (% of employees)

	Work organisation classes				Total
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Teamwork	57.5	89.6	59.9	34.9	62.5
- with control over task division	33.8	47.3	14.4	16.4	30.6
- without control over task division	23.8	42.2	45.5	18.5	31.9
- with control over task division and leader choice	14.0	20.9	5.4	3.5	12.4
- with control over task division or leader choice	22.8	34.3	12.9	15.0	22.5
- without control over task division and leader choice	20.8	34.4	41.7	16.4	27.6
Task rotation	40.9	79.1	42.4	26.3	48.6
- multi-skilling	31.8	68.4	26.1	13.9	37.2
- multi-tasking	9.1	10.7	16.3	12.4	11.5
- with control over task division	22.6	41.9	11.1	11.8	23.5
- without control over task division	18.3	37.3	31.3	14.6	25.1

Note: Weighted proportions of employees in each work organisation class and in the total population, in percent. For example, 57.5% of the employees grouped in the discretionary learning class of work organisation experienced teamwork, compared with 62.5% of the employed population as a whole.

Source: EWCS, 2005 and authors' calculations

Taylorist forms

The third class, representing 20% of employees, mainly corresponds to a classic characterisation of Taylorist or mechanistic bureaucratic forms of work organisation. The work situation is largely the opposite of that found in the discretionary learning class, with low autonomy in work, particularly in the methods of work, along with few learning dynamics, low task complexity and little assistance from colleagues or hierarchy. Conversely, this class demonstrates an overrepresentation of the variables measuring constraints on the pace of work, repetitiveness and monotony of tasks, and quality norms. Interestingly, teamwork and job rotation are nearly at an average level in this class, confirming the importance of what some authors refer to as 'flexible Taylorism' (Boyer and Durand, 1993). However, team working is developed with a low level of self-organisation concerning the division of tasks and choice of team leader. Likewise, workers rotating tasks do not often choose the division of tasks, and they practise more multi-tasking and less multi-skilling than in the discretionary learning and lean production forms.

Traditional or simple structure forms

The fourth class, comprising 16% of employees, is poorly described by the variables of work organisation, which are all underrepresented. It presumably groups traditional forms of work organisation where methods are largely informal and non-codified. This class also appears to correspond, to a certain extent, to the notion of a 'simple organisational structure' identified by Mintzberg (1979).

Summary

The typology of work organisation forms, carried out for the EU27 in 2005 on the basis of the fourth EWCS, identifies the same four contrasting forms of work organisation as the typology for the 'older' 15 EU Member States (EU15) in 2000 based on the third wave of the survey (Lorenz and Valeyre, 2005): discretionary learning, lean production, Taylorist and traditional or simple structure. Thus, the enlargement of the European Union and organisational evolutions over the last five years have not fundamentally transformed the relevance of the typology for mapping the work organisation forms.

One of the key points emerging from this analysis is that the new forms of work organisation characterised by strong learning dynamics and high problem-solving activity on the part of employees are not characteristic of one model, but rather of two different models: firstly, the discretionary learning model, relatively decentralised and with substantial employee autonomy in work; and secondly, the lean production model, more hierarchical and with limited and controlled autonomy in work. These results contradict the thesis of organisational convergence towards a 'one best way' in management practice and support the idea of diversity in the new forms of work organisation. Another important point resulting from the study is that Taylorist and traditional or simple structure forms of work organisation are far from extinct within the EU.

Structural characteristics of work organisation forms

The forms of work organisation outlined in the previous chapter depend on structural economic, occupational and demographic characteristics such as sector of economic activity, company size, occupational category, and the age and sex of employees. This chapter describes the organisational forms according to these structural characteristics.

Economic sector

The different forms of work organisation vary widely according to sector of economic activity, as Table 3 shows.

Table 3 Distribution of work organisation classes, by sector (%)

	Work organisation classes				Total
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Food, beverages and tobacco	24.8	25.4	31.1	18.8	100.0
Textiles, clothing and leather	19.6	27.1	47.1	6.2	100.0
Wood, paper, publishing and printing	30.0	32.5	30.2	7.4	100.0
Chemicals, plastics and minerals	31.0	32.7	27.7	8.5	100.0
Metallurgy and metal products	26.0	35.0	30.0	9.0	100.0
Machinery and equipment	44.4	32.2	17.0	6.5	100.0
Electrical, electronic and optical equipment	35.7	31.1	18.7	14.6	100.0
Transport equipment	35.4	31.4	27.8	5.5	100.0
Mining and quarrying, and other manufacturing	29.0	29.2	26.4	15.4	100.0
Electricity, gas and water supply	56.3	23.4	8.7	11.6	100.0
Construction	29.1	35.7	23.0	12.2	100.0
Wholesale and retail trade, repairs	39.6	20.4	14.6	25.5	100.0
Hotels and restaurants	32.5	20.8	26.0	20.8	100.0
Transport	33.2	22.0	18.2	26.6	100.0
Post and telecommunications	42.0	22.2	21.7	14.1	100.0
Financial intermediation	63.2	18.9	5.6	12.4	100.0
Real estate, renting and business activities	50.5	20.5	10.8	18.3	100.0
Community, social and personal service activities	48.9	21.3	7.7	22.2	100.0
Average	38.4	25.7	19.5	16.4	100.0

Notes: The list of sectors is set out according to the General industrial classification of economic activities within the European Communities (Nomenclature générale des activités économiques dans les Communautés européennes, NACE Rev. 1); these codes are listed in Annex 1. Some of the data in the tables may add up to slightly more or less than 100% where indicated, due to the rounding of data.

Source: EWCS, 2005 and authors' calculations

The discretionary learning forms of work organisation are highly developed in the services sectors, mainly in financial intermediation (63% of employees), real estate, renting and business services (50%) and community, social and personal service activities (49%); they are also prevalent in the gas, electricity and water supply sector (56%). However, although these forms of work organisation are less frequently adopted in manufacturing industries, they concern a relatively high proportion of employees (31%). Indeed the proportion in the machinery and equipment sector (44%) is greater than the average level (38%); this sector is characterised by complex production processes and important research and development (R&D) activities.

The lean production forms of work organisation are most common in the manufacturing industries (31%), with small disparities emerging between their various sectors, and in the construction sector. However, these forms of work organisation also group together significant proportions of employees – one in five – in the various services sectors. Taylorist forms of work organisation are also most frequent in manufacturing industries (28%), notably in the textiles, clothing and leather sector (47%), but to a much lesser extent in machinery and equipment (17%) and electrical, electronic and optical equipment (19%). These forms of work organisation are generally less present in the services sectors, except in hotels and restaurants (26%), and post and telecommunications (22%), where they reach a higher than average level (19%). Finally, the traditional or simple structure forms of work organisation grouped in the fourth class are to be found principally in the services sectors, mainly transport (27%), wholesale and retail trade (25%), community, social and personal services (22%), and hotels and restaurants (21%). Nonetheless, they are also diffused in manufacturing industries (10%), notably in food, beverages and tobacco (19%).

The diversity of work organisation forms between economic sectors does not mean that a structural determination sets out which organisational forms belong to specific sectors. Each form is present in every sector. Thus, the forms of work organisation are of a transversal nature and some latitude appears to arise in adopting any particular model.

Company size

The size of the enterprise constitutes a relatively unimportant factor in the use of different forms of work organisation. As Table 4 shows, few variations emerge in the frequencies of discretionary learning forms and Taylorist forms according to company size: discretionary learning forms are slightly more present in large establishments, while Taylorist forms are slightly less apparent in small enterprises. Disparities are more significant for the other two forms of work organisation. The lean production forms increase somewhat with company size, whereas the reverse tendency can be observed for the use of traditional or simple structure forms of work organisation.

Table 4 Distribution of work organisation classes, by company size (%)

	Work organisation classes				Total
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
10–49 employees	37.9	23.9	17.7	20.4	100.0
50–99 employees	37.3	25.9	21.1	15.7	100.0
100–249 employees	39.4	25.9	21.6	13.1	100.0
250–499 employees	36.0	30.8	18.7	14.5	100.0
500 or more employees	41.7	27.1	21.4	9.8	100.0
Average	38.4	25.7	19.5	16.4	100.0

Source: EWCS, 2005 and authors' calculations

Occupational category

Regarding occupational category, strong differences in work organisation forms can be observed (Table 5). Discretionary learning forms are particularly characteristic of the work of senior managers, professionals and technicians. Nevertheless, although they are less common among blue-collar workers, significant proportions of these workers experience such forms of work organisation: almost

29% of skilled workers, 24% of unskilled workers and 15% of machine operators do so. Lean production forms characterise the work of blue-collar workers, mainly skilled workers, but also the work of managerial or professional white-collar workers, chiefly senior managers; this is probably due to the fact that they have considerable work pace constraints, like their subordinates, in just-in-time production systems. Clerks and service and sales workers are less affected by these forms of work. As might be anticipated, the Taylorist forms are generally found among blue-collar workers, mainly machine operators, and are seldom found among senior managers and professionals. Finally, the traditional or simple structure forms of work organisation are particularly characteristic of the work of service and sales workers and unskilled workers.

Table 5 Distribution of work organisation classes, by occupational category (%)

	Work organisation classes				Total
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Senior managers	52.0	37.0	5.6	5.4	100.0
Professionals	59.7	26.8	5.2	8.4	100.0
Technicians	56.7	23.7	9.6	10.0	100.0
Clerical workers	43.8	20.0	14.2	22.1	100.0
Service and sales workers	38.9	17.0	12.2	31.9	100.0
Skilled workers	28.9	34.6	28.6	8.0	100.0
Machine operators	15.3	24.8	40.5	19.4	100.0
Unskilled workers	24.4	21.5	27.0	27.0	100.0
Average	38.4	25.7	19.5	16.4	100.0

Note: Occupational categories are based on the International Standard Classification of Occupations (ISCO).

Source: EWCS, 2005 and authors' calculations

Demographic characteristics

Forms of work organisation also vary according to the demographic profile of salaried employees. As Table 6 shows, the proportion belonging to the discretionary learning forms of work organisation increases with age. The opposite can be observed in Taylorist forms, which mainly concern younger employees. Working in lean production forms is more frequent in the medium age categories, while working in traditional or simple structure forms is more frequent among junior and senior employees.

Table 6 Distribution of work organisation classes, by age and sex (%)

		Work organisation classes				Total
		Discretionary learning	Lean production	Taylorist	Traditional or simple	
Age	<25 years	26.6	22.7	30.4	20.3	100.0
	25–39 years	38.4	28.7	18.3	14.6	100.0
	40–54 years	41.3	25.0	18.3	15.4	100.0
	55 years or more	42.1	20.4	15.0	22.5	100.0
Sex	Men	37.9	29.2	19.1	13.9	100.0
	Women	39.4	19.5	20.3	20.8	100.0
Average		38.4	25.7	19.5	16.4	100.0

Source: EWCS, 2005 and authors' calculations

Gender differences are significant in the lean production forms of work organisation, characterised by an overrepresentation of men. Conversely, the traditional or simple structure forms of work organisation are characterised by an overrepresentation of women. Minor gender differences are found in the discretionary learning and Taylorist forms of work organisation.

Differences between EU Member States in forms of work organisation

A substantial body of organisational literature exists analysing differences in the forms of work organisation adopted across countries. Classic studies include: Maurice, Sellier and Silvestre (1982) comparing France and Germany, and Dore (1973) focusing on Japan and the United Kingdom (UK). Recent studies in the HPWS tradition identifying significant national differences include Appelbaum and Batt (1994) and MacDuffie and Pil (1997). Furthermore, a large volume of literature exists on the diffusion of Japanese-style work practices, examining differences across Western countries and the emergence of distinct national hybrid arrangements (for an overview, see Doeringer, Lorenz and Terkla, 2003).

Such differences in work organisation across countries have been variably attributed to differences in history and culture, at institutional level – notably, in terms of the labour market and industrial relations – and with regard to the international division of labour. While the EWCS does not provide information which would enable an exploration of the various hypotheses, it does uniquely provide a basis for comparing countries and identifying national specificities. This chapter draws on the results of a cluster analysis for the EU27 to compare differences in the prevalence of different forms of work organisation in individual European countries. The comparison will be complemented by logistic regression analyses to estimate the impact of the country in which an employee works on the likelihood of belonging to a particular work organisation class, controlling for the structural variables discussed in Chapter 2.

National differences in forms of work organisation

Wide differences arise in the importance of the four forms of work organisation across EU Member States. Table 7 gives the proportion of employees in each country grouped according to the four classes of work organisation forms.¹³

Discretionary learning forms of work organisation are most developed in the Scandinavian countries of Denmark and Sweden, and in the Netherlands. They are also relatively well represented in the continental countries (Austria, Belgium, France, Germany and Luxembourg), as well as Finland and Malta. However, these forms of work organisation are less diffused in many southern countries (Cyprus, Greece, Portugal and Spain) and some eastern countries (Bulgaria, the Czech Republic, Lithuania, Romania and Slovakia).

¹³ Obvious problems arise in interpreting survey data emanating from different countries. Varying responses to the same question may reflect national cultural differences rather than real existing differences. Finding new ways to standardise results of national surveys with the aim of making them more reliable – for instance, by combining detailed case studies with testing questionnaire responses in different countries – is a major challenge. In light of this, it is important to refer to the quality control procedures used by Eurofound in translating the EWCS questionnaire. The translation process implemented for the survey was based on current good practice in the multilingual translation of international survey questionnaires. The English master version was subject to parallel translation into the main target languages by independent translators familiar with survey research in the area of working conditions. These parallel translations were merged into a final draft, which was then translated back into English to identify and resolve remaining problems or ambiguities. For further details, see Parent-Thirion, Fernández Macías, Hurley and Vermeylen (2007), pp. 93–4.

Table 7 Distribution of work organisation classes, by country (%)

		Work organisation classes				Total
		Discretionary learning	Lean production	Taylorist	Traditional or simple	
Continental countries	AT	47.3	22.4	18.3	12.0	100.0
	BE	43.3	24.6	16.3	15.8	100.0
	DE	44.3	19.9	18.4	17.4	100.0
	FR	47.7	23.8	17.5	11.0	100.0
	LU	42.7	29.6	13.9	13.8	100.0
Eastern countries	BG	20.6	27.2	32.7	19.5	100.0
	CZ	28.0	26.7	22.5	22.9	100.0
	EE	40.7	33.4	11.2	14.7	100.0
	HU	38.3	18.2	23.4	20.1	100.0
	LT	23.5	31.1	22.0	23.4	100.0
	LV	33.4	34.5	17.1	15.0	100.0
	PL	33.3	32.6	18.9	15.2	100.0
	RO	24.0	33.4	27.6	14.9	100.0
	SI	34.9	32.1	16.7	16.3	100.0
	SK	27.2	21.0	33.8	18.1	100.0
Nordic countries and the Netherlands	DK	55.2	27.1	8.5	9.2	100.0
	FI	44.9	29.9	12.6	12.7	100.0
	NL	51.6	24.3	11.4	12.7	100.0
	SE	67.5	16.0	6.9	9.6	100.0
Northwest countries	IE	39.0	29.2	11.3	20.5	100.0
	UK	31.7	32.4	17.7	18.2	100.0
Southern countries	CY	26.4	27.0	21.2	25.4	100.0
	EL	24.0	29.1	22.6	24.3	100.0
	ES	20.6	24.6	27.5	27.3	100.0
	IT	36.8	24.1	24.6	14.6	100.0
	MT	45.6	34.2	12.1	8.2	100.0
	PT	24.9	30.3	32.5	12.3	100.0
EU27		38.4	25.7	19.5	16.4	100.0

Note: See country codes at start of report.

Source: EWCS, 2005 and authors' calculations

The lean production forms of work organisation are most evident in the northwest countries (Ireland and the UK), many eastern countries (Estonia, Latvia, Lithuania, Poland, Romania and Slovenia), as well as Finland, Luxembourg, Malta and Portugal. They are less apparent in Germany, Hungary and Sweden.

Taylorist forms of work organisation are most diffused in the southern countries (mainly Portugal and Spain, and to a lesser extent Greece and Italy) and many eastern countries (mainly Bulgaria, Romania and Slovakia, and to a lesser extent the Czech Republic, Hungary and Lithuania) – showing almost the reverse trend compared with the discretionary learning forms. The Scandinavian countries and the Netherlands, as well as Estonia, Ireland and Malta, report a low incidence of Taylorist forms of work organisation.

Finally, the traditional or simple structure forms of work organisation are primarily found in some southern countries (Cyprus, Greece and Spain) and certain eastern countries (the Czech Republic and Lithuania), while they are less numerous in the Scandinavian countries and Malta.

Combining the differences in each form of work organisation across the EU Member States, important national specialisations can be identified. Overall, six contrasting groups of countries may be distinguished according to their main forms of work organisation:

- the Scandinavian countries of Denmark and Sweden, as well as the Netherlands, where the discretionary learning forms of work organisation predominate;
- the northwest countries (Ireland and the UK), some eastern countries (Estonia, Latvia, Poland and Slovenia) and Finland, Luxembourg and Malta, which are characterised by a relatively high development of the lean production forms of work organisation. The discretionary learning forms are also slightly overrepresented in Finland, Luxembourg and Malta;
- Portugal and Romania, with an overrepresentation of the lean production and Taylorist work organisation forms;
- Bulgaria and Slovakia, where the Taylorist forms of work organisation are rather widely diffused;
- certain Mediterranean countries (Cyprus, Greece and Spain) and some eastern countries (the Czech Republic and Lithuania), with an overrepresentation of the Taylorist and traditional or simple structure forms of work organisation;
- most of the continental countries (Austria, Belgium, France and Germany), with a less contrasting distribution of the different forms of work organisation and a slight overrepresentation of the discretionary learning forms. An average situation is also observed in Hungary and Italy.

As the discussion in Chapter 2 showed, each form of work organisation tends to be associated with particular economic sectors, company sizes, occupations and demographic categories. This raises the question of what part of the variation in the importance of these forms across EU Member States can be accounted for by the country's specific structural characteristics. In order to address this question, logistic regression analyses have been used to estimate the impact of national effects on the relative likelihood of adopting the different work organisation models independently of the effects of sector, company size, occupation and demographic characteristics.¹⁴ Overall, these analyses confirm that the results of the descriptive statistics are robust to structural controls. Nationally-specific structural characteristics contribute to a rather small part of the observed national differences in work organisation forms.

While taking into account the structural characteristics of workplaces and employees does not deeply modify the conclusions regarding country specificities in work organisation, some changes nevertheless deserve to be mentioned. In the case of the Netherlands, for example, a lower overrepresentation of the discretionary learning forms emerges. In the Czech Republic, Lithuania, Portugal and Romania, the Taylorist forms are no longer overrepresented.

¹⁴ A detailed presentation of these logistic regression analyses is developed in the technical report on *Work organisation in Europe* (Valeyre et al, 2008).

National diversity across the EU15 and NMS

Thus, significant national differences seem to be evident in work organisation forms across the EU27. In particular, a large national diversity can be observed across the countries of the EU15 and across the new Member States (NMS). This section briefly alludes to some of the national institutional factors that may have a bearing on this diversity and the specific situation of the NMS in comparison to the EU15.

Concerning the EU15, as shown in the previous section, four groups of countries can be distinguished according to forms of work organisation: Scandinavian and the Netherlands, continental, northwest and southern countries. This typology has many features in common with the results of a previous study based on the third EWCS (Lorenz and Valeyre, 2005). Moreover, it presents similarities with more general typologies based on types of market regulation and welfare institutions (Amable, 2005; Esping-Andersen, 1999; Hall and Soskice, 2001). This is not surprising, considering that the various forms of work organisation are structured by different types of coordination and division of tasks in companies, which are embedded in more general types of economic and social regulations.

Differences between the NMS are also important. Many eastern countries, as well as Malta, belong to the group characterised by an overrepresentation of the lean production forms, alongside the northwest countries of the EU15. Bulgaria and Slovakia are characterised by an overrepresentation of the Taylorist forms, while Romania joins Portugal in the EU15 to form the group characterised by an overrepresentation of both the lean production and Taylorist forms. Cyprus, the Czech Republic and Lithuania belong to the group characterised by an overrepresentation of both the Taylorist and traditional forms, alongside the Mediterranean countries of the EU15. Despite a less contrasting organisational situation, Hungary is nonetheless characterised by a slight overrepresentation of the Taylorist forms (Makó, 2005).

Like the northwest and southern countries of the EU15, the discretionary learning forms of work organisation are less prevalent in most of the NMS. The only exceptions concern Malta, which has a relatively high level of diffusion of discretionary learning forms, and Estonia and Hungary, which report average levels. In accounting for this situation, it is important to draw attention to the comparative underdevelopment of knowledge-intensive activities in these countries. However, putting this pattern of relative underdevelopment in a dynamic perspective, it should be emphasised that economic sectors which are knowledge intensive – such as financial intermediation and business activities – are characterised by a high growth rate in several NMS compared with the EU15. For example, European comparisons of the national employment growth levels in the subsectors of computer and related activities and other business activities between 2000 and 2003 (Huws, Dahlmann and Flecker, 2004) show clearly that the strongest employment growth has taken place in those countries where the employment level in 2003 was the lowest. ‘In other words, while the new Member States may be behind the rest of Europe in the proportion of their economies devoted to information and computer technology (ICT) services, they are catching up fast. The lowest growth rates are, by and large, in the most developed countries’ (Huws, Dahlmann and Flecker, 2004, p. 14). More specifically, the highest growth rates in employment in computer and related activities in Europe during 2000–2003 were registered in Hungary and Slovakia; meanwhile, in the case of employment growth in other business activities during the same time period, the highest growth rates were found in Bulgaria, the Czech Republic, Hungary, Lithuania and Slovakia.

Most of the post-socialist economies within the NMS are characterised by an overrepresentation of the lean production or Taylorist forms of work organisation. Relevant factors which help explain such organisational characteristics may be that these countries have led the so-called 'second-generation economic reform' in post-socialist Europe. These nations became highly efficient in attracting foreign direct investment (FDI) in the period between 2000 and 2005, using radical tax cuts, flat taxes, extensive investment incentives, reduced state welfare commitments and reduced trade union influence, for example (see O'Dwyer and Kovalcik, 2007 for more details). The economic activities delocalised to these countries through FDI followed the former path of economic development. For instance, Slovakia's tradition of heavy industry and the related industrial culture served as a good basis or precondition for large-scale manufacturing activities; thus, it became the new centre of the car industry – the so-called 'Slavic Detroit' – reflecting the dominance of Taylorist work organisation. Another example of successful second-generation economic reform is Romania, where lean production forms of work organisation dominate. The structure of economic activities in this country was more diversified than in Slovakia. This economic heritage facilitated the attraction of FDI to sectors requiring more learning capabilities, in other words, lean production forms.

Human resource management and work organisation

An established body of literature focuses on the nature and performance effects of HRM in supporting certain forms of work organisation. This literature propounds the basic idea 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 concerning pay, training and HR planning. For example, work in discretionary learning forms of work organisation is characterised by high levels of learning, and employees are expected to exercise discretion in the methods they use for solving complex problems. In lean production forms, work similarly requires the use of problem-solving skills and involves continuous learning. However, in lean production, these dynamics are embedded in a more formal structure based on codified protocols, such as teamwork and job rotation practices, often associated with tight quantitative production norms. Compared with the discretionary learning forms of work organisation, discretion is relatively low and, in particular, employees' pace of work in the lean production forms is sharply constrained by the hierarchy.

Since learning and problem-solving capabilities are central to both of these models, it can be expected that companies 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, it may be argued that such investment in training is more likely to be effective if it is complemented by a relatively secure employment tenure in order to lengthen time horizons and increase employees' commitment to the goals of the company (Marchington et al, 1994).

For similar incentive reasons, it can be argued that companies pursuing the discretionary learning or lean production forms of work organisation will have an interest in adopting pay systems linking employees' compensation to their effort and to company performance. The plausible hypothesis is that employees will be more likely to commit themselves to the objective of improving the company's capacity for problem solving and product development if they are promised a share of the 'quasi-rents' which derive from their enhanced commitment and effort (Ichniowski, Shaw and Prenzushi, 1997; Freeman and Lazear, 1995; Levine and Tyson, 1990; Osterman, 1994). Quasi-rents are returns in excess of the cost of the resources devoted to the activity.

Pay practices that support employee involvement in this manner include collective incentive schemes such as profit sharing and gain sharing, and individual incentive schemes such as performance-dependent incentive schemes, including skill-based pay and compensation for suggestions. It has also been argued that these complementary compensation policies are more likely to be effective if they are embedded in some system of employee representation or consultation that helps to assure the workers that their interests will be represented in the design and operation of the pay system (Eaton and Voos, 1992; Freeman and Lazear, 1995; Levine and Tyson, 1990; Lorenz, Michie and Wilkinson, 2004).

This chapter examines the complementarities between forms of work organisation and the HRM practices concerning further training, employment contracts, payment systems, formal work assessment, and work-related discussion and consultation.¹⁵

¹⁵ HRM policies typically differ according to economic sector, company size and occupational category. Educational level, sex, age and work seniority may have a bearing on the forms of training received and the type of employment contract. National differences may also be anticipated in the form and importance of these policies. Since the forms of work organisation vary according to these demographic and structural characteristics, this study has undertaken logistical regressions on a range of HRM policies which neutralise their effects by introducing controls for the country of location, sector, company size, occupational category, sex and age. HRM policies are also likely to vary according to educational level and work seniority; therefore, the analysis included additional controls for these variables. The results of the logistical regression analyses broadly confirm the descriptive results on complementarities between work organisation forms and HRM practices presented in this chapter. These econometric results are developed in the technical report on *Work organisation in Europe* (Valeyre et al, 2008).

Further training

The data in Table 8 support the idea that significant complementarities exist between forms of work organisation and investment in training.¹⁶ The table shows the proportion of employees grouped in each organisational class or cluster who have received training paid for by the employer, on-the-job training or training paid for by themselves. Thus, 37.1% of the employees grouped in the discretionary learning forms have received training paid for by the employer. Training provided on-the-job can be distinguished by its relatively high levels of company and task specificity, as it is acquired in the process of performing one's job. Training provided by the employer includes external and on-site courses provided outside of working hours and hence is designed to develop more general and transferable skills. Training paid for by the employee is likely to be even more general in nature.

Table 8 Type of further training, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Training paid for by employer	37.1	35.7	16.6	15.7	29.2
On-the-job training	35.0	38.7	24.2	17.3	30.9
Training paid for by oneself	4.2	4.4	2.7	2.6	3.7

Source: EWCS, 2005 and authors' calculations

Overall, the data support the theoretical point concerning complementarities, since they show a clear tendency for employees grouped in the discretionary learning and lean production clusters to receive more on-the-job and employer-provided training than those grouped in the Taylorist and traditional clusters. Comparing the types of training received by employees grouped in the discretionary learning and lean production clusters, a further difference may be observed in that the emphasis is on training paid for by the employer in the case of discretionary learning while on-the-job training is more prevalent in the lean production cluster. A possible explanation for this relates to the differences in types of knowledge on which the two forms of work organisation rely. As Lam and Lundvall (2006) have observed, the lean production or Japanese-style model of production relies on knowledge which is company-specific and collectively embedded within team structures. On-the-job training is an integral mechanism for imparting this type of knowledge to employees. Meanwhile, the discretionary learning forms of work organisation, which are more characteristic of operating adhocracies or learning organisations, tend to rely on individually embodied knowledge which combines formal elements with those based on a rich experience of practical problem solving. Continuing vocational education in the form of external and internal courses paid for by the employer is an important mechanism for renewing and upgrading the formal elements of this individual knowledge.

Employment contracts

The relation between the use of the different work organisational forms and types of employment contracts, as shown in Table 9, also supports the idea of complementarities between work

¹⁶ It is important to emphasise that the cross-sectional data used for this analysis cannot address issues of causality between HRM variables and work organisation variables. They are only suitable for identifying the relations – positive or negative – that may exist between variables. Thus, for the logistical regression analysis, it is best to think of the independent HRM variables not as determinants of work organisation, but rather as being more or less significant 'predictors' of them.

organisation and HRM practices. The data reveal that a relatively large proportion of the employees grouped in the discretionary learning forms of work organisation – which rely on substantial investment in further training – are hired on indefinite employment contracts; these correspond to a relatively secure job tenure. This is also the case, albeit to a slightly lesser extent, for the employees grouped in the lean production forms. Employees working in Taylorist work settings are more likely to experience relatively precarious forms of employment associated with the use of fixed-term contracts and temporary agency work. The same situation applies, although to a lesser degree, among employees grouped in the traditional or simple structure forms of work organisation.

Table 9 Type of employment contract, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Indefinite contract	85.1	82.0	73.9	75.4	80.5
Fixed-term contract	7.7	10.6	13.9	11.3	10.3
Temporary agency contract	1.2	1.3	3.9	2.2	1.9

Source: EWCS, 2005 and authors' calculations

Payment systems and formal work assessment

The thesis of HRM complementarities receives further support from the data on the use of different payment systems, as outlined in Table 10. Collective forms of performance-based pay, such as gain sharing or profit sharing, are more common among employees grouped in the two forms of work organisation that require continuous learning and problem solving.

Table 10 Payment system and formal work assessment, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Payment system:					
- Fixed base salary	95.7	94.3	94.3	92.8	94.6
- Piece rate or productivity payments	10.7	19.7	20.7	8.2	14.5
- Pay based on overall performance of company	17.5	16.3	6.3	5.6	13.1
- Pay based on performance of a group	8.0	9.9	3.4	2.4	6.7
- Income from owning shares in company	4.0	5.1	1.2	1.5	3.3
Formal assessment of work performance	43.3	55.7	32.8	29.9	46.6

Source: EWCS, 2005 and authors' calculations

However, a clear distinction emerges between the discretionary learning and lean production forms regarding the use of individual forms of variable pay, such as piece rate or productivity payments. The importance of these forms of pay in the case of the lean production model can arguably be accounted for by their role as incentive devices associated with the use of quantitative production norms to regulate work pace. Such norm-based constraints on pace of work play a relatively minor role in the discretionary learning model of work organisation. Moreover, it can be argued that this difference in the use of individual forms of variable pay is linked to the lower use of formal systems of performance assessment for employees grouped in the discretionary learning class. The use of

formal performance assessment tends to accompany a reliance on quantitative production norms, as such assessment provides a basis for determining the allocation or level of productivity payments.

Work-related discussion and consultation

The EWCS provides limited information on processes of representation and employee participation at the workplace. The only question that unambiguously captures the presence of a formal system of representation is that pertaining to whether discussions have been held with an employee representative. Consultation about changes in work organisation or working conditions could include formal or informal processes of consultation. The two questions asking whether discussions have been held with one's boss most likely capture informal interactions between an employee and his or her boss.

Table 11 shows the average percentages of employees who have been involved in the different types of work-related discussion or consultation and also outlines the proportional groups for each of the four forms of work organisation. One result that stands out is that employees are considerably less likely to be involved in discussions structured through some system of formal employee representation than they are to be involved in informal discussions or processes of consultation. The survey, however, does not provide the basis for investigating the reasons for this, and doing so would require information about the legislative frameworks that exist both at EU and national level to foster and sustain formal systems of representation.¹⁷

Table 11 Work-related discussion and consultation, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Frank discussion with boss about work performance	54.2	56.0	38.3	34.3	48.3
Discussion with boss about work-related problems	66.3	68.6	45.6	37.6	58.1
Discussion with employee representative about work-related problems	21.3	32.2	19.6	13.5	22.5
Consultation about changes in work organisation or working conditions	54.6	55.7	32.8	29.9	46.6

Source: EWCS, 2005 and authors' calculations

Turning to the issue of HRM complementarities, and given the limitations of the measures available, the results presented in Table 11 are largely consistent with the view that involving employees in a process of consultation or representation is complementary to forms of work organisation that rely significantly on performance-based pay. In the case of the discretionary learning forms – with the exception of discussions with an employee representative – the frequencies of the different types of work-related discussion or consultation are substantially higher than they are in the Taylorist or traditional forms of work organisation. In the case of the lean production forms, the frequencies of all four types of discussion or consultation are considerably higher than they are in the Taylorist or traditional forms.

¹⁷ For a brief overview of the regulation and practice of information, consultation and other forms of employee involvement in the EU15 plus Norway, see the European Industrial Relations Observatory (EIRO) report by Carley, Baradel and Welz (2005). For the internal workings of European Works Councils in five EU Member States – France, Germany, Italy, Sweden and the UK – see the Eurofound report by Weiler (2004).

Employee participation and representation is clearly an area of vital interest to EU policy, and these results point to considerable differences in their importance across the different forms of work organisation. Thus, it would be desirable to include additional questions in future surveys that would allow a deeper analysis and understanding of the nature and functioning of both formal and informal systems of employee participation and representation.

Work organisation forms and quality of work and employment

In much of the HPWS literature, it is assumed that the quality of work and employment is positively related to the new forms of work organisation. The literature on high commitment (Walton, 1985) or high involvement management (Lawler, Mohrman and Ledford, 1992), for example, argues that the intrinsic rewards associated with practices such as job flexibility, teamwork, problem-solving groups and minimal hierarchical status lead directly to greater job satisfaction and employee commitment. These arguments were subsequently adopted by authors such as MacDuffie and Pil (1997), who treated high performance management as synonymous with high involvement or high commitment management.

However, this view of the link between HPWS and worker outcomes has not been without its detractors. Some contend that the performance gains associated with HPWS derive primarily from work intensification and that the dominant effect on employees is a worsening of working conditions and increased stress (Askenazy, 2004; Parker and Slaughter, 1988; Ramsay, Scholarios and Harley, 2000).

Recent work by Valeyre (2007) and by Lorenz, Lundvall and Valeyre (2005) offers a partial reconciliation of the conflicting views expressed above. In terms of relationships between work organisation forms and the quality of work and employment, their research identifies significant differences between the two forms of work organisation characterised by high levels of learning and problem solving, that is, the discretionary learning and lean production forms. More specifically, the discretionary learning forms are associated with better working conditions, lower intensity of work and better job satisfaction than the lean production forms.

This chapter analyses the relations between each form of work organisation and measures of the quality of work and employment, including: physical risk factors, work-related health and safety risks, working time, intensity of work, work–life balance, intrinsic rewards, psychological working conditions related to HRM or social integration at work, and satisfaction with working conditions.¹⁸

Physical risk factors

On the basis of the fourth EWCS, many variables of physical risk factors can be analysed according to three main dimensions: ergonomic risks, ambient risks, and chemical, biological and radiation risks. A total of five variables of ergonomic risks are defined by exposure to: tiring or painful positions, carrying or moving heavy loads, standing or walking at work, repetitive hand or arm movements, and vibrations from hand tools or machinery. Exposure to lifting or moving people is not studied because of the low proportion of employees involved. In addition, three variables of ambient risks are studied – exposure to loud noise, to high temperatures and to low temperatures. At the same time, five variables of chemical, biological and radiation risks focus on exposure to: breathing in smoke, fumes, powder or dust; breathing in vapours such as solvents or thinners; handling or being

¹⁸ To assess the possibly different and generally important relationships with work organisation features, the descriptive statistics are complemented by using separate logistical regression analyses estimating the ‘effect’ of each work organisation form on various measures of quality of work and employment, controlling for countries and the structural variables outlined in Chapter 2. The main results of the comparison of the logistical regression analyses with the descriptive statistics are provided in footnotes. A more detailed presentation with the tables of logistical estimates is offered in the technical report on *Work organisation in Europe* (Valeyre et al, 2008).

in skin contact with chemical products or substances; radiation such as X-rays, radioactive radiation, welding light or laser beams; and handling or being in direct contact with potentially infectious materials, such as waste, bodily fluids or laboratory materials. The duration of exposure chosen to define these variables is half or more of the working time for the ergonomic and ambient risk variables, a quarter or more of the working time for the chemical risk variables, and almost never or more for the radiation and infectious risk variables.

The incidence of ergonomic risk exposure is rather high. As Table 12 shows, almost 30% of the employees declare that they are exposed at least half of their working time to tiring or painful positions, while 21% report this level of exposure to carrying or moving heavy loads. Meanwhile, 55% of the employees cite this level of exposure to work involving standing or walking, while nearly 54% record such exposure to repetitive hand or arm movements and 23% cite exposure at this level to vibrations from hand tools or machinery. These rates of exposure vary widely according to the particular forms of work organisation. Ergonomic risk factors are much higher for employees working in the Taylorist forms and, to a lesser extent, in the lean production forms than in the discretionary learning and traditional or simple structure forms. For example, the proportion of employees who declared that their job involves tiring or painful positions half or more of the time was 47% in the class of Taylorist work organisation forms, 36% in the lean production class, 23% in the traditional or simple structure class and almost 19% in the discretionary learning class.

Table 12 Physical risk exposure, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Ergonomic risks					
- Tiring or painful positions (half of the time or more)	18.8	36.3	47.3	23.4	29.6
- Carrying or moving heavy loads (half of the time or more)	12.0	29.8	30.4	17.8	21.1
- Standing or walking (half of the time or more)	42.4	63.5	70.3	53.2	55.0
- Repetitive hand or arm movements (half of the time or more)	39.6	62.4	75.3	47.6	53.7
- Vibrations from hand tools, machinery, etc (half of the time or more)	11.1	33.6	43.0	10.6	23.0
Ambient risks					
- Noise so loud that you would have to raise your voice to talk to people (half of the time or more)	13.6	37.4	47.3	15.9	26.7
- High temperatures which make you perspire even when not working (half of the time or more)	9.0	26.0	31.9	11.6	18.3
- Low temperatures whether indoors or outdoors (half of the time or more)	7.4	19.0	16.2	11.2	12.7
Chemical, biological and radiation risks					
- Breathing in smoke, fumes, powder or dust (quarter of the time or more)	13.6	35.4	34.9	15.4	23.6
- Breathing in vapours such as solvents and thinners (quarter of the time or more)	7.0	20.6	19.3	8.7	13.2
- Handling or being in skin contact with chemical products or substances (quarter of the time or more)	8.4	22.4	19.8	9.1	14.3
- Radiation such as X-rays, radioactive radiation, welding light, laser beams (any exposure)	12.4	24.6	14.7	8.8	15.4
- Handling or being in direct contact with materials which can be infectious (any exposure)	12.7	24.7	19.5	13.2	17.2

Source: EWCS, 2005 and authors' calculations

Ambient risk factors are relatively frequent. Exposure to loud noise at least half of the working time involves almost 27% of the employees. The proportion for exposure to high temperatures is 18% and almost 13% in relation to low temperatures. As was the case for ergonomic risks, strong differences arise in levels of exposure between the various forms of work organisation, with a much higher level evident in the Taylorist and lean production forms. Moreover, it may be noticed that exposure to low temperatures is more frequent in the lean production forms than in the Taylorist ones, in contrast with exposure to loud noise or high temperatures.

Chemical, biological and radiation risk factors are rather significant. Almost 24% of the employees are exposed at least a quarter of their working time to breathing in smoke, fumes, powder or dust, while 13% are exposed to breathing in vapours such as solvents or thinners and 14% to handling or being in skin contact with chemical products or substances. At the same time, 15% of the employees are exposed to radiation at least a quarter of their working time and 17% to handling or being in direct contact with materials which can be infectious. Toxic exposure varies according to the forms of work organisation. These variables are much more common in the lean production and Taylorist forms than in the discretionary learning and traditional or simple structure forms. In this case, as was found for low temperature risks, these forms of exposure are most developed in the lean production forms.¹⁹

Finally, in comparing the physical working conditions in the two new or innovative forms of work organisation – the discretionary learning and lean production forms – all risk factors are lower in the former than in the latter. Moreover, whereas risk factors are lower in the discretionary learning forms than in the Taylorist forms, this is not always the case for the lean production forms. In the latter, exposure is often higher than in the Taylorist forms, particularly in the case of chemical, biological and radiation risks.

Work-related health or safety risks

More than a quarter of the employees believe that their work poses a risk to their health or safety. This perception varies considerably according to the forms of work organisation, as Table 13 shows. Health or safety is thought to be at risk because of work by more than one employee in three in the Taylorist forms (37%) and in the lean production forms (36%), while far fewer employees – about one in five – share this view in the discretionary learning forms (18%) and in the traditional or simple structure forms (21%).²⁰

Table 13 Health or safety risks, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Health or safety thought to be at risk because of the work	18.0	35.8	37.2	21.2	26.8

Source: EWCS, 2005 and authors' calculations

¹⁹ The logistical regression analyses confirm these descriptive results overall. They show no statistically significant differences between the lean production and Taylorist forms in the case of exposure to standing or walking at work, to vibrations from hand tools or machinery, to loud noises and to high temperatures. Exposure to carrying or moving heavy loads is significantly lower in the Taylorist forms than in the lean production forms.

²⁰ These results are confirmed by the logistical regression analysis. It indicates that the differences between the lean production forms and the Taylorist forms are not statistically significant.

Working time

Working time is analysed according to three main dimensions: long working hours, non-standard working hours and flexible working time. More specifically, two variables of long working hours are defined: long weekly hours of more than 48 hours a week and long daily hours of over 10 hours a day more than five days a month. In addition, the study considers five variables of non-standard working hours: night work more than five times a month; evening work more than five times a month; Saturday work once or more a month; Sunday work once or more a month; and shift work. Finally, three variables of flexible working time are examined: daily flexibility of working time, meaning a different number of working hours every day; weekly flexibility of working time, meaning a different number of working days every week; and flexibility of working schedules, corresponding to no fixed start or finish times.

In spite of the trend towards a decrease in working hours observed in the EU during the 1990s (Boisard, Cartron, Gollac and Valeyre, 2003b), numerous employees still report long working hours. On average, almost 10% of them declare that they work more than 48 hours a week, while about 12% work over 10 hours a day more than five times a month (Table 14). The prevalence of long working hours clearly varies according to work organisation forms. Long working hours are most common in the lean production forms of work organisation, at an average level in the discretionary learning forms and occur least frequently in the Taylorist and traditional or simple structure forms.

Non-standard working hours are rather prevalent. On average, 45% of the employees work on Saturday and 22% work on Sunday. Furthermore, 11% of the employees work during the night and about 26% work in the evening more than five times a month. Finally, almost 22% of them work in shifts. Night work, evening work and shift work are more developed in the Taylorist forms of work organisation and, to a lesser extent, in the lean production forms. They are far less diffused in the discretionary learning forms. Concerning Saturday or Sunday work, the situation is different: inequalities between work organisation forms are less significant, although working at the weekend is a little more common in the lean production forms.

The practice of flexible working time is also widely used. Some 32% of the employees have flexible working schedules, about 35% report that the number of daily working hours is flexible and almost 22% state that the weekly number of working days varies. Flexible working schedules and flexibility concerning the number of daily working hours are more widespread in the new forms of work organisation, particularly the discretionary learning forms. Unsurprisingly, they are clearly least common in the Taylorist forms. Regarding flexibility in the weekly number of working days, work organisational differences are small and comparable to those observed for Saturday or Sunday work.²¹

²¹ These descriptive results are confirmed overall by the logistical regression analyses. Controlling for the structural variables, small changes can be observed. Long weekly hours become more frequent in the discretionary learning forms and shift work becomes insignificantly lower in the lean production forms than in the Taylorist forms.

Table 14 Working time, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Long working hours					
- Long weekly hours (> 48 hours a week)	10.9	12.6	5.6	6.8	9.6
- Long daily hours (> 5 days a month)	13.5	16.4	8.1	9.3	12.5
Non-standard working hours					
- Night work (> 5 nights a month)	5.7	12.6	18.5	11.3	10.9
- Evening work (> 5 evenings a month)	22.0	27.7	33.2	21.7	25.6
- Saturday work (>= 1 Saturday a month)	37.6	53.0	48.1	48.3	45.3
- Sunday work (>= 1 Sunday a month)	20.2	25.0	22.7	23.4	22.4
- Shift work	12.4	27.5	35.2	18.7	21.8
Flexible working hours					
- Different number of hours every day	40.7	35.6	26.3	30.0	34.8
- Different number of days every week	20.6	23.2	20.3	23.2	21.6
- Flexible working schedules	38.3	33.3	20.8	29.4	32.2

Source: EWCS, 2005 and authors' calculations

Intensity of work

The study defines three variables of work intensity as perceived by the employees: working at very high speed all or almost all of the time, working to tight deadlines all or almost all of the time, and almost never or rarely having enough time to get the job done. Because the variables of work pace constraints are used to construct the typology of the work organisation forms and are linked to these subjective variables of work intensity (Boisard, Cartron, Gollac and Valeyre, 2003a; Green, 2001; Green and McIntosh, 2001), it is not surprising to observe relationships between the work organisation forms and the level of subjective work intensity variables. Table 15 reveals a high incidence of working at very high speed or to tight deadlines and having insufficient time to get the job done; this experience is much more common in the lean production and Taylorist forms – where work pace constraints are also higher – than in the discretionary learning and traditional or simple structure forms. Although working at very high speed is more prevalent in the Taylorist forms than in the lean production forms, the opposite finding may be observed concerning working to tight deadlines or having insufficient time to get the job done.²²

Table 15 Intensity of work, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Working at very high speed (all or almost all of the time)	18.5	39.5	46.0	16.4	28.9
Working to tight deadlines (all or almost all of the time)	26.3	47.7	45.5	17.1	34.0
Almost never or rarely enough time to get the job done	10.8	18.5	15.7	7.8	13.2

Source: EWCS, 2005 and authors' calculations

²² The logistical regression analyses lead to the same results. They specify that the differences between the lean production and Taylorist forms are not statistically significant for each of the three variables of work intensity.

Work–life balance

Employees’ perception of work–life balance differs according to work organisation forms. The proportion of those who declare that, in general, their working hours fit very well or well with their family and social commitments outside of work is particularly high in the discretionary learning and traditional or simple structure forms. This share is lower than the average in the lean production forms and is lowest in the Taylorist forms (Table 16).²³

Table 16 Work–life balance, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Very well perceived	36.0	30.2	21.7	31.8	31.0
Well perceived	48.5	45.6	51.3	51.5	48.8
Well or very well perceived	84.5	75.8	73.0	83.3	79.8

Source: EWCS, 2005 and authors’ calculations

Intrinsic motivation

This section explores the relation between forms of work organisation and certain qualities of work that are often considered to be intrinsically motivating. Deci (1975) developed the basic distinction between intrinsic and extrinsic motivation in work. Extrinsic motivation is driven by the aim of obtaining some reward that is separable from the activity itself, such as income or power. Intrinsic motivation, on the other hand, can be defined as doing an activity for its inherent satisfaction. In the approach developed by Deci (1975) and Deci and Ryan (1985), it was assumed that, for intrinsic motivation to be maintained, an activity must enhance both competence and autonomy. Consequently, a considerable amount of empirical work in psychology has focused explicitly on the issues of autonomy and control in relation to motivation. A subsequent distinction proposed by Lindenberg (2001) – and developed in the context of organisation theory by Gottschalg and Zollo (2006) – distinguishes between a task-related component, referred to as ‘hedonistic intrinsic motivation’, and a social component, referred to as ‘normative intrinsic motivation’. The latter alludes to activities that are intrinsically motivating because they conform to established norms or conventions of behaviour.

Within organisational research focusing on the diffusion of new forms of work organisation, the link between intrinsic motivation and work organisation has been addressed in the context of an analysis of job satisfaction. For example, the literature on high commitment management (Walton, 1985) or high involvement management (Lawler, 1986) argues that greater job satisfaction and employee commitment is obtained by the intrinsic rewards associated with practices such as job flexibility, teamwork, problem-solving groups and minimal hierarchical status. Appelbaum et al (2000), in a study of HPWS in the steel, imaging and clothing industries, contend that the link from increased opportunities for participation to both commitment and job satisfaction is mediated by the higher levels of trust and the intrinsic rewards that HPWS generate.

²³ The logistical regression analysis for work–life balance confirms these results. It shows that no statistically significant differences arise between the lean production and Taylorist forms.

The 2005 EWCS includes a number of new questions that can be used to capture intrinsically motivating qualities of work. These are listed in Table 17, which shows the proportion of employees in each organisational class responding ‘almost always’ or ‘often’ with respect to the particular quality; in the case of the question referring to ‘opportunities to grow’, the table shows the percentage who either ‘strongly agree’ or ‘agree’ with this statement. However, some doubt may arise over whether the indicator of ‘intellectually demanding work’ captures an intrinsically motivating quality. If work is too intellectually demanding, perhaps because of inadequate education or training, then it might generate stress and a sense of low self-esteem.

Table 17 Intrinsic rewards, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
At work, you have the opportunity to do what you do best (almost always or often)	73.1	64.7	40.2	52.8	61.2
Your job gives you the feeling of work well done (almost always or often)	85.8	83.0	61.5	66.4	77.2
You are able to apply your own ideas in your work (almost always or often)	66.1	57.4	21.8	33.9	50.0
You have the feeling of doing useful work (almost always or often)	85.6	82.5	60.3	63.2	76.2
You find your job intellectually demanding (almost always or often)	59.7	57.8	22.6	26.2	46.5
At work, you have opportunities to learn and grow (strongly agree or agree)	63.3	59.2	28.4	33.0	50.5

Source: EWCS, 2005 and authors’ calculations

The results show that, in all cases, the proportion of employees reporting high levels of intrinsically motivating work is higher in the discretionary learning class than in the lean production class (Table 17). Moreover, the share is systematically lower in the Taylorist class than in the other forms of work organisation. To some extent, however, these results may be tautological, since the discretionary learning class is defined by its high levels of reported learning and autonomy in work, whereas the Taylorist class is defined by its low levels of such qualities. Nonetheless, from a normative standpoint, the results provide support for pursuing policies designed to promote the diffusion of the discretionary learning forms of work organisation.²⁴ Thus, the psychological working conditions measured by these indicators of intrinsic rewards are better in the discretionary learning forms of work organisation than in the lean production forms, and more favourable in these new forms of work organisation than in the Taylorist forms.

²⁴ The results of the logistical regression analyses support the conclusions based on simple descriptive statistics, with the exception of the indicator for intellectually demanding work; in this case, the positive coefficient in the lean production cluster is higher than it is in the discretionary learning cluster.

Psychological working conditions related to HRM or social integration at work

The fourth EWCS introduced a set of new questions which can be used to capture other psychological working conditions. Some of them, such as opinions on job security, work being well paid or prospects for career advancement, are linked with HRM policies. Other questions, such as the statement of feeling ‘at home’ in the organisation or having very good friends at work, are associated with a sense of social integration in the company.

As Table 18 shows, poor psychological working conditions related to HRM or social integration at work are relatively common. Some 29% of the employees disagree or strongly disagree with the statement that they are well paid for the work they do, while almost 44% disagree that their job offers good prospects for career advancement. Furthermore, 21% of the employees disagree that they feel ‘at home’ in their organisation and about 9% disagree that they have very good friends at work. At the same time, 15% agree or strongly agree that they might lose their job in the next six months.

These psychological working conditions vary across forms of work organisation. The feeling of job insecurity is much more apparent in the Taylorist and lean production forms than in the discretionary learning forms. This result is strongly related to the diffusion of fixed-term or temporary agency contracts in these work organisation forms, as shown in Chapter 4. In the same way, the perception of work being underpaid is highest in the Taylorist forms, slightly above the average in the lean production forms and the traditional or simple structure forms, and lowest in the discretionary learning forms. Poor prospects for career advancement are also highest in the Taylorist forms and lowest in the discretionary learning forms, but are lower than the average in the lean production forms. The quality of social integration in the company, measured by the feeling of being ‘at home’ in the organisation, is lowest in the Taylorist forms, at the average level in the lean production forms and the traditional or simple structure forms, and highest in the discretionary learning forms. Nevertheless, with respect to friendship at work as a measure of the quality of social integration, no significant differences arise between the four forms of work organisation.²⁵

Table 18 Psychological working conditions related to HRM or social integration at work, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
I might lose my job in the next six months (strongly agree or agree)	12.2	17.3	19.2	15.4	15.4
I am well paid for the work I do (strongly disagree or disagree)	23.6	30.6	36.4	31.7	29.2
My job offers good prospects for career advancement (strongly disagree or disagree)	33.9	38.5	60.8	54.6	43.7
I feel myself ‘at home’ in this organisation (strongly disagree or disagree)	14.7	21.9	33.4	22.2	21.4
I have very good friends at work (strongly disagree or disagree)	8.2	8.1	10.4	9.8	8.9

Source: EWCS, 2005 and authors’ calculations

²⁵ The logistical regression analyses give the same basic results. The main difference is rather slight: controlling for the structural variables, the perception of work being underpaid is not significantly lower in the lean production forms than in the Taylorist forms.

Satisfaction with working conditions

The impact of work organisation on job satisfaction is highly contested in business and economic literature. As was observed in the section on intrinsic rewards, numerous researchers in the HPWS tradition have argued that the intrinsic rewards associated with the use of high performance business practices result in higher job satisfaction. However, this view has not been without its detractors. Parker and Slaughter (1988), for example, have argued that the performance gains associated with HPWS derive primarily from work intensification and that the dominant effect on employees is increased job insecurity and stress.

Moreover, job satisfaction is multi-dimensional, depending not only on intrinsic rewards and work intensification, but also on the full range of working condition variables discussed in this report – including physical risk factors, health and safety factors, working time, work–life balance and psychological working conditions other than those related to intrinsic motivations. Job satisfaction is also influenced by the HRM policies discussed in Chapter 4, as well as by absolute and relative levels of pay.

While addressing the impact and possible interaction effects of these various determinants of job satisfaction goes beyond the scope of this report, it may be seen that significant differences arise across the different forms of work organisation in a measure of job satisfaction included in the fourth EWCS. Table 19 shows that the proportion of employees who are satisfied or very satisfied with the working conditions in their main paid job varies across the organisational classes, being highest in the discretionary learning forms and higher in the lean production forms than in the Taylorist forms. The traditional or simple structure class has a ranking in between the discretionary learning and lean production classes.²⁶

Table 19 Satisfaction with working conditions, by work organisation class (%)

	Work organisation classes				Average
	Discretionary learning	Lean production	Taylorist	Traditional or simple	
Satisfied or very satisfied with working conditions in main paid job	88.7	79.2	70.1	83.4	81.8

Source: EWCS, 2005 and authors' calculations

²⁶ These results are clearly confirmed by the logistical regression analysis.

Summary

The discretionary learning forms of work organisation are clearly characterised by better quality of work and employment than the other forms of work organisation. This finding emerges with respect to most of the indicators analysed in the field of physical risks, work-related health and safety risks, working time, work intensity, work–life balance, intrinsic rewards and other psychological working conditions related to HRM or social integration at work, as well as satisfaction with working conditions.

Almost all indicators of quality of work and employment are far more favourable under the discretionary learning forms of work organisation than the Taylorist forms. The reverse situation can only be observed in relation to some indicators of working time – long working hours and flexible daily working hours.

On the other hand, the indicators of quality of work and employment vary in a comparison between the lean production and Taylorist forms. The situation is clearly better under the lean production forms in the case of the ergonomic risks of painful positions and repetitive movements, the non-standard working hours of night and evening work, the psychological working conditions pertaining to intrinsic rewards, career prospects and feeling ‘at home’ in the organisation, as well as satisfaction with working conditions. However, the situation under the lean production form of work organisation is clearly worse in the case of chemical, biological and radiation risks, the ambient risk of cold temperatures, long working hours, flexible daily working hours and work at the weekend.

The comparison between the two new forms of work organisation shows that the quality of work and employment is clearly better under the discretionary learning forms than under the lean production forms. This is particularly the case in the field of physical risks, work-related health and safety risks, work intensity, work–life balance and satisfaction with working conditions. Only the indicators concerning long working hours and flexible daily working hours, and the psychological working conditions of intrinsic rewards and friendship at work, do not significantly differentiate the discretionary learning and lean production forms. Thus, in the diffusion of the new forms of work organisation, it is important to give greater prominence to the discretionary learning forms with a view to improving the quality of work and employment.

Work organisation in micro-enterprises and the non-market sector

As explained in the introduction, the previous chapters of this report focused on the work organisation of salaried employees working in medium or large-sized establishments belonging to market sectors. This chapter aims to provide some exploratory analyses concerning micro-enterprises, employing fewer than 10 persons, of the market sector, in addition to the mainly non-market sectors of public administration and social security, education, and health and social work.

In the EU27, the survey sample of employees working in micro-enterprises of the market sectors, excluding agriculture and activities of households, comprises 4,243 persons: 340 employees working alone; 1,744 workers in companies with two to four people; and 2,159 personnel in establishments with five to nine people. The sample of employees working in non-market sectors consists of 6,355 persons: 1,699 staff in public administration and social security; 2,376 employees in education; and 2,280 personnel in health and social work.

Micro-enterprises in the market sector

The diffusion of new organisational methods such as teamwork, task rotation, total quality management and just-in-time production is far less developed in micro-enterprises of the market sector than in medium or large-sized companies (Tables 20 and 21). Total quality management is measured by the variables of self-assessment of quality of work and of quality norms, while just-in-time production is indirectly measured by the variable of demand-driven work pace constraints without or almost without direct customer contact. Moreover, it may be observed that these innovative practices clearly increase with the size of the micro-enterprise.

Autonomy in work in micro-enterprises is not very different to the situation in larger companies. The autonomy of employees with regard to both the methods and pace of work is a little lower in micro-enterprises, while autonomy in the order of tasks is at the same level. Not surprisingly, autonomy in work is highest for employees working alone, and autonomy in the methods of work is lowest in very small establishments with two to four people. Cognitive dimensions of work are less developed in micro-enterprises compared with larger ones, particularly as regards the complexity of tasks and the opportunity to learn new things at work. Differences according to the exact size of micro-enterprise are not very marked, except for the high level of problem-solving activities and low level of task complexity in the one-person establishments. Work pace constraints are considerably lower in micro-enterprises and increase with their size. The differences are most significant in relation to the norm-based and automatic work pace constraints. Finally – excluding one-person establishments where assistance in work is for obvious reasons lower – cooperation at work, measured by the assistance from colleagues or from superiors or the boss, is comparable between small and larger establishments.

Table 20 Work organisation variables, by micro-enterprise size (% of employees)

		Fewer than 10 employees				10 or more employees
		One	Two to four	Five to nine	Total	
Autonomy in work	Methods of work	65.2	55.5	59.8	58.5	60.1
	Speed or rate of work	74.3	61.0	59.3	61.2	63.2
	Order of tasks	66.2	55.9	55.2	56.4	56.2
Cognitive dimensions of work	Learning new things	60.7	61.3	61.3	61.2	68.5
	Problem-solving activities	82.0	74.1	76.7	76.1	78.9
	Complexity of tasks	38.2	49.0	51.3	49.3	61.7
Quality	Self-assessment	68.6	64.4	67.1	66.1	69.7
	Quality norms	62.7	66.6	71.1	68.6	77.8
Task rotation		3.2	40.2	45.4	39.9	48.6
Teamwork	With control over task division	2.8	22.6	28.3	23.9	30.6
	Without control over task division	6.9	21.7	30.0	24.8	31.9
Monotony of tasks		35.8	42.3	43.4	42.4	45.1
Repetitiveness of tasks		20.5	26.4	25.9	25.6	25.3
Work pace constraints	Automatic	9.1	14.9	18.3	16.2	26.3
	Norm-based	19.7	32.3	39.8	35.2	52.4
	Hierarchical	31.6	36.2	43.1	39.4	45.7
	Horizontal	16.8	34.2	46.7	39.2	52.4
	Demand-driven without direct customer contact (or almost never)	17.2	14.0	16.8	15.7	19.0
Assistance	From colleagues	36.1	66.8	70.8	66.4	71.9
	From hierarchy	46.1	64.6	58.1	59.7	59.5
Sample		8.2	40.1	51.7	100.0	

Source: EWCS, 2005 and authors' calculations

Table 21 outlines in more detail the results for micro-enterprises in terms of the different types of teamwork and task rotation, comparing the totals with those for larger companies.

Table 21 Teamwork and task rotation, by micro-enterprise size (% of employees)

		Fewer than 10 employees				10 or more employees
		One	Two to four	Five to nine	Total	
Teamwork		9.7	44.2	58.4	48.7	62.5
- with control over task division		2.8	22.6	28.3	23.9	30.6
- without control over task division		6.9	21.7	30.0	24.8	31.9
- with control over task division and leader choice		1.3	7.5	10.6	8.6	12.4
- with control over task division or leader choice		1.5	18.5	21.0	18.4	22.5
- without control over task division and leader choice		6.9	18.3	26.8	21.7	27.6
Task rotation		3.2	40.2	45.4	39.9	48.6
- multi-skilling		3.1	29.7	33.8	29.6	37.2
- multi-tasking		0.0	10.6	11.6	10.3	11.5
- with control over task division		1.2	19.6	20.7	18.6	23.5
- without control over task division		2.0	20.6	24.7	21.2	25.1

Source: EWCS, 2005 and authors' calculations

Many work organisation variables are less frequently represented in micro-enterprises than in medium or large-sized companies. Only a few variables have comparable levels: autonomy in work and repetitiveness of tasks. As a result, work organisation characteristics in micro-enterprises are much closer to the traditional or simple structure forms of work organisation distinguished in Chapter 1 for larger establishments, than to the other forms, particularly the lean production forms (compare Tables 20 and 1, and Tables 21 and 2). This result is unsurprising, considering that the prevalence of the traditional or simple structure forms of work organisation in enterprises with 10 or more employees clearly decreases with company size (Table 4). Further studies should be carried out to examine the extent of the traditional or simple structure forms in micro-enterprises of the market sector and, more generally, to analyse their various forms of work organisation.

Non-market sector

Non-market sector companies do not face the same market and competitive constraints as market sector companies; for this reason, one can expect rather different patterns of diffusion of new organisational practices. Nonetheless, considerable evidence exists that specific organisational methods developed in the market sector are spreading to the non-market sector.

In the three economic sectors which are mainly non-market – public administration and social security, education, and health and social work – the autonomy of employees in the methods and pace of work, and in the order of tasks, is high, particularly in the education sector (Table 22). Overall, autonomy in work is much more prevalent in non-market sectors than in market sectors. The cognitive dimensions of work, which involve learning new things, solving unforeseen problems or complex tasks, are also more highly developed in non-market than in market sectors. The differences are very significant with regard to learning new things at work, particularly in the education sector. Teamwork and task rotation are slightly more developed in non-market sectors than market sectors; they are more diffused in the health and social work sector and less in the education sector. Self-assessment of work quality is also slightly more widespread in non-market sectors, particularly in education. The opposite can be observed concerning the use of quality norms, measured by meeting precise quality standards, and the practice of just-in-time production, which are less developed than in market sectors – with the unsurprising exception of quality norms in the health and social work sector. Monotony and repetitiveness of tasks are less common in non-market than in market sectors, particularly in the education sector. Overall, the same results can be observed in relation to work pace constraints; almost all of these constraints are much lower in non-market than in market sectors. Automatic, hierarchical and horizontal constraints are lowest in the education sector. The only exception in this context concerns horizontal constraints, which are rather high in the health and social work sector.

Table 22 Work organisation variables, by non-market sector (% of employees)

		Non-market sectors			
		Public administration	Education	Health and social work	Total
Autonomy in work	Methods of work	67.0	84.4	65.5	72.6
	Speed or rate of work	67.7	78.8	63.4	70.2
	Order of tasks	62.1	69.3	62.1	64.6
Cognitive dimensions of work	Learning new things	77.9	83.8	81.6	81.1
	Problem-solving activities	83.2	85.6	84.9	84.6
	Complexity of tasks	68.4	60.6	68.8	65.8
Quality	Self-assessment	64.9	76.9	72.1	71.4
	Quality norms	66.2	66.7	76.5	69.6
Task rotation		54.1	43.2	60.8	52.4
Teamwork	With control over task division	31.3	36.2	46.0	37.6
	Without control over task division	35.9	19.0	26.6	27.1
Monotony of tasks		43.3	31.3	37.9	37.4
Repetitiveness of tasks		20.1	14.9	24.0	19.5
Work pace constraints	Automatic	11.1	3.8	8.2	7.6
	Norm-based	30.1	31.9	29.0	30.4
	Hierarchical	40.5	27.8	31.1	33.1
	Horizontal	44.7	30.4	49.4	41.2
	Demand-driven without direct customer contact (or almost never)	12.8	10.3	13.0	12.0
Assistance	From colleagues	77.2	70.5	77.6	75.0
	From hierarchy	62.5	57.5	63.0	60.9
Sample		33.6	34.8	31.6	100.0

Source: EWCS, 2005 and authors' calculations

More precisely, in relation to teamwork and task rotation, autonomous teamwork, multi-skilling and job rotation with employee control over the division of tasks are highly prevalent in the health and social work sector (Table 23).

Overall, autonomy in work and cognitive dimensions of work are clearly much higher in non-market than in market sectors. Organisational innovative practices, such as teamwork, task rotation or self-assessment of quality of work, are also more widespread. Conversely, work pace constraints, repetitiveness and monotony of tasks, and quality norms are far less common in the non-market than market sectors. Thus, the characteristics of work organisation in the non-market sector are closer to the discretionary learning forms of work organisation distinguished in Chapter 1 in companies of the market sector with 10 or more employees, than to the other forms – as can be observed by comparing Tables 22 and 23 with Tables 1 and 2. With a higher level of autonomy in work and greater development of cognitive dimensions, alongside a lower level of work pace constraints and of monotony or repetitiveness of tasks, the education sector emerges as the non-market sector most similar to discretionary learning forms of work organisation. Further studies should be conducted to clarify the extent of discretionary learning forms in the non-market sectors and, more generally, to analyse the distinctive traits of their forms of work organisation.

Table 23 Teamwork and task rotation, by non-market sector (% of employees)

	sectors			
	Public administration	Education	Health and social work	Total
Teamwork	67.2	55.2	72.6	64.7
- with control over task division	31.3	36.2	46.0	37.6
- without control over task division	35.9	19.0	26.6	27.1
- with control over task division and leader choice	13.9	17.6	18.2	16.6
- with control over task division or leader choice	24.6	20.9	31.8	25.6
- without control over task division and leader choice	28.7	16.7	22.5	22.6
Task rotation	54.1	43.2	60.8	52.4
- multi-skilling	39.6	35.9	52.0	42.3
- multi-tasking	14.5	7.3	8.8	10.2
- with control over task division	26.9	24.6	35.9	28.9
- without control over task division	27.3	18.6	24.9	23.5

Source: EWCS, 2005 and authors' calculations

Using indicators from the European Working Conditions Survey, this report has developed a typology of work organisation. While work organisation may have other dimensions, these are beyond the scope of this study. Follow-up case studies could shed further light on work organisation in European companies and hence would complement this study. The principal policy implication of this report is that greater attention should be given to the economic and social impacts of work organisation. In particular, the results presented show that, for the EU27, systemic links arise between the forms of work organisation adopted and the quality of jobs, including working conditions and health and safety. More specifically, the results reveal that the adoption of discretionary learning forms of work organisation, when compared with the lean production and Taylorist forms, leads to better working conditions in the sense of lower intensity of work, less exposure to physical risks, fewer non-standard working hours, a better work–life balance and lower levels of work-related health problems. The results also indicate that discretionary learning forms of work organisation are associated with higher perceived intrinsic rewards from work, better psychological working conditions related to HRM policies and social integration at work, and higher levels of employee satisfaction with working conditions.

These results are directly relevant to the ability of EU Member States to pursue knowledge-based policies that further progress towards achieving the objectives of the 2000 Lisbon Agenda. Within the EU, knowledge policies have been cast in a broad social framework that gives recognition to the importance of skills development at all levels of the enterprise and to the impact of company-level knowledge development and use on social cohesion and differences between workers. This broader social perspective was the starting point for the Lisbon Agenda, which set the goal for Europe ‘to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion’ (Lisbon European Council Conclusions, March 2000).

The aim of combining economic and social objectives was further reinforced in the 2005 revised Lisbon Strategy, incorporating the *Integrated Guidelines for Growth and Jobs (2005–2008)*. These guidelines place an emphasis on tapping synergies between the economic, social and environmental objectives of the Lisbon Strategy.²⁷ Policy guidelines and targets in the areas of R&D, innovation and ICT are formulated in an explicitly transversal manner with respect to objectives in the areas of labour markets, work organisation, the quality of jobs, and education and training. Guideline No. 21 of the EES in particular points to the importance of work organisation and calls for the promotion of flexibility combined with employment security partly through ‘the promotion and dissemination of innovative and adaptable forms of work organisation, with a view to improving quality and productivity at work, including health and safety’.

Achieving the goals of the Lisbon Strategy depends critically on having the information to construct relevant indicators as a basis for analysis and for monitoring national progress in achieving specific objectives. Within the EU, where many key areas of policy fall under the competence of individual Member States, jointly established measuring instruments play a crucial role in coordinating national policies around common European objectives in a manner that respects the principle of subsidiarity. The European ‘open method of coordination’ depends on having harmonised data and indicators as a basis for comparing Member State progress in translating European guidelines into national and

²⁷ See http://ec.europa.eu/growthandjobs/pdf/integrated_guidelines_en.pdf for the full text of the *Integrated Guidelines for Growth and Jobs (2005–2008)*.

regional policies that take into account differences at national and regional level. This underlies the considerable EU investment in infrastructure for the development of harmonised data and measures over a wide range of policy fields including labour markets, living conditions and welfare, information society statistics, and science and technology.

Despite the recognition given to the role of work organisation in achieving the aims of the Lisbon Strategy, no efforts have been made to develop explicit indicators of work organisation or of enterprise organisation and change more generally. The Laeken indicators for the organisational dimension of quality in work, established at the Laeken European Council in December 2001, surprisingly only include an indicator of work–life balance. In the context of the EES and the revised Integrated Guidelines, the indicators proposed for monitoring progress in achieving the aims of Guideline 21 focus mainly on issues of labour market flexibility and health and safety – to the neglect of work organisation.

In keeping with the recognised importance of developing harmonised indicators as a basis for EU policymaking, this study offers preliminary ideas on how the analysis results can be used to partly overcome these limitations of the existing indicators. The proposals for developing indicators of the adoption of innovative forms of work organisation are presented in the spirit of generating useful discussion and debate with Eurofound on how the results of the fourth EWCS might be used to contribute to the ongoing process of revising the 2005–2008 Integrated Guidelines and associated indicators.

The aggregate results presented in this report demonstrate that a positive relation exists between the frequency of adopting discretionary learning forms of work organisation and various indicators of the quality of jobs. The results also reveal that the frequency of adopting discretionary learning forms varies considerably across EU Member States.²⁸ Cluster analysis-based measures of the adoption of different forms of work organisation are not appropriate as the basis for the construction of indicators in the context of the open method of coordination, since they lack the essential qualities of transparency and ease of interpretation. Based on the results of the multiple correspondence and cluster analyses presented in Chapter 1 of this report, four indicators may be identified that capture the characteristics of learning, problem solving and autonomy in work – which typify discretionary learning forms of work organisation.

It should be emphasised that these indicators could be used to monitor Member State progress in the development and dissemination of such forms of work organisation. The construction of indicators for purposes of analysis, on the other hand, would require harmonised company-level data that could be used to analyse the relation between the adoption of different forms of work organisation and relevant characteristics of the establishment's structure and strategy, including its strategic policies in the areas of new product development and technological innovation. Generating this sort of data would require the development of a new complementary EU-wide organisational survey instrument carried out at employer level, or would necessitate extending the scope of the existing EWCS in order to develop matched employer–employee data. Indicators for performance/productivity and business innovation could be added to this exercise.

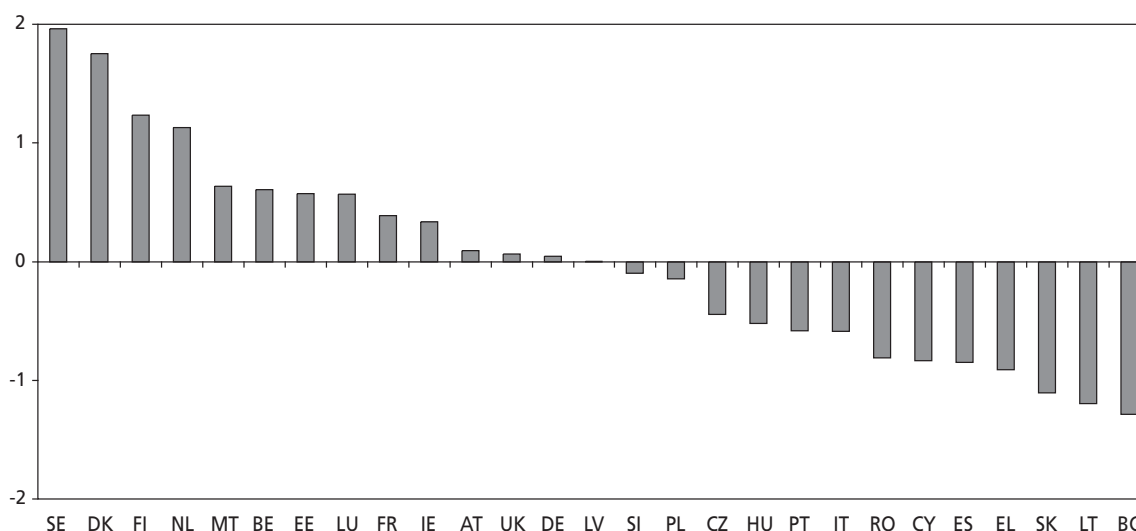
²⁸ It is important to bear in mind that the responses to the same survey questions on which these results are based may reflect national cultural differences rather than real existing differences. See footnote 13 (p. 21) for information on the quality control procedures applied by Eurofound in translating the questionnaire.

Based on the analysis of the EWCS, the four proposed indicators for the purposes of monitoring are:

- the percentage of employees learning new things on the job;
- the percentage of employees involved in problem solving on the job;
- a composite measure of autonomy in work, based on the average of the percentages of employees exercising control over their methods of work, work pace or order of tasks;
- the number of employees working in an autonomous team organisation, in which the team members decide the division of tasks, as a percentage of the number of employees working in all teams.

On the basis of these four indicators, the study has also constructed a composite Innovative Work Organisation Index.²⁹ The index, shown in Figure 2 for the EU27, is highly correlated with the frequency of discretionary learning forms of work organisation, indicating that it is a good proxy for the use of the discretionary learning forms.³⁰ As the results show, the Scandinavian countries are in a leading position on the Innovative Work Organisation Index, followed by the Netherlands in fourth place. Looking at some of the other EU15 countries, Austria, Germany and the UK are ranked slightly above the EU average – depicted as zero on the scale – whereas Greece and Spain can be found near the bottom. The results point to considerable variation among the NMS in the extent of adopting innovative forms of work organisation, with Malta and Estonia ranked fifth and seventh respectively, while Bulgaria and Lithuania are placed at the bottom of the scale.

Figure 2 Innovative Work Organisation Index, EU27, 2005



Note: The average for the EU27 is depicted as zero on the scale.

Source: EWCS, 2005 and authors' calculations, based on four proposed indicators of learning, problem solving and autonomy in work

²⁹ The composite Innovative Work Organisation Index is the mean of the four standardised indicators defined on the basis of the four proposed indicators. A standardised indicator is obtained by subtracting its mean from itself and dividing the resulting difference by its standard deviation. The values for this composite index, and for the four indicators which are used to construct it, are presented in Valeyre et al (2008).

³⁰ In statistical terms, the Pearson's correlation coefficient between the composite index and the percentage of employees grouped in the discretionary learning cluster is .92 and significant at the .00001 level or better. The Spearman's rank correlation coefficient is .91 and significant at the .00001 level or better.

In conclusion, it is worth emphasising that the potential of the EWCS to contribute positively to the development of useful indicators of quality in work, in the context of the open method of coordination and the Integrated Guidelines, goes substantially beyond the question of developing indicators of innovative forms of work organisation.³¹ Chapter 5 of this report explored some of the richness of the survey results in the areas of physical risks, work-related health and safety risks, working time, work intensity, work–life balance, psychological working conditions and satisfaction with working conditions. These are central issues in EU employment policy. Thus, a useful future exercise would be to explore the possibilities of developing a series of indicators for these various dimensions of quality of work that could be used to inform policy in a complementary manner to indicators of innovative forms of work organisation.

³¹ The quality of work not only depends on the innovation of work organisation but also on how demanding work is in terms of pace and time. Thus, it is worth comparing the EU Member States according to these two dimensions, as proposed in Annex 2, on the basis of the Innovative Work Organisation Index and the ‘Onerous Work Organisation’ Index defined by Burchell et al (2008).

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Annex 1

List of non-agricultural 'market-driven' sectors according to NACE codes

Table A1 lists the economic sectors according to NACE Rev. 1 after excluding: agriculture, fishing, public administration and social security, education, health and social work, and activities of households.

Table A1 NACE codes Rev. 1

List of sectors	NACE codes (2-digit level)
Mining and quarrying	10, 11, 12, 13, 14
Manufacture of food, beverages and tobacco	15, 16
Manufacture of textiles, clothing and leather	17, 18, 19
Manufacture of wood, paper, publishing and printing	20, 21, 22
Manufacture of chemicals, plastics and minerals	23, 24, 25, 26
Metallurgy and metal products	27, 28
Manufacture of machinery and equipment	29
Manufacture of electrical, electronic and optical equipment	30, 31, 32, 33
Manufacture of transport equipment	34, 35
Other manufacturing	36, 37
Electricity, gas and water supply	40, 41
Construction	45
Wholesale and retail trade, repairs	50, 51, 52
Hotels and restaurants	55
Transport	60, 61, 62, 63
Post and telecommunications	64
Financial intermediation	65, 66, 67
Real estate, renting and business activities	70, 71, 72, 73, 74
Community, social and personal service activities	90, 91, 92, 93

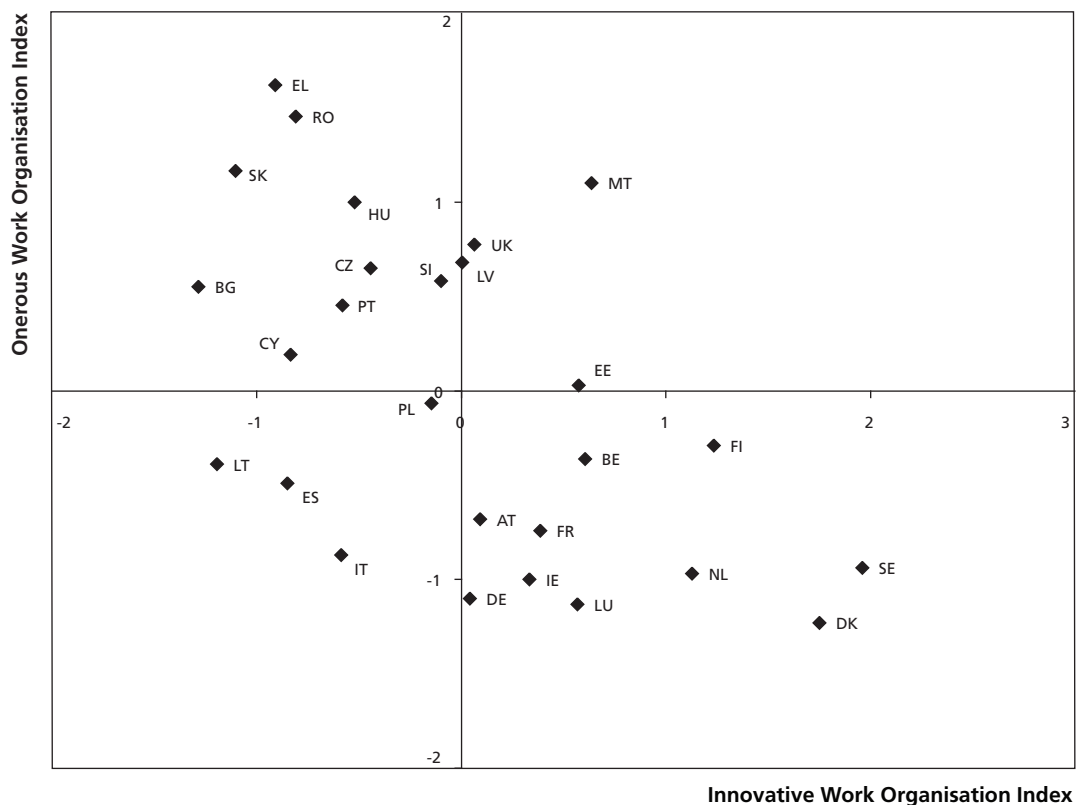
Source: European Commission, 2002

Annex 2

Comparison of EU Member States according to Innovative and Onerous Work Organisation Indexes

The quality of work and employment is not only affected by the innovativeness of work organisation but also by how demanding work is in terms of pace and time. Thus, it is worth examining the relation between the Innovative Work Organisation Index and the ‘Onerous Work Organisation’ Index proposed by Burchell et al (2008) in the Eurofound report *Working time: Work intensity*. This Onerous Work Organisation Index is constructed on the basis of measures of work intensity, long working hours and non-standard working hours. In Figure A1, the vertical axis ranks EU Member States on the Onerous Work Organisation Index while the horizontal axis ranks them on the Innovative Work Organisation Index.

Figure A1 Innovative and Onerous Work Organisation Indexes



Source: EWCS, 2005, Burchell, 2008 and authors' calculations

As the results show, a variety of configurations emerge across the EU Member States. Overall, five groups can be distinguished.

- The Scandinavian countries stand out for combining high levels of innovation in work organisation with low levels of onerous work.

- Two groups of countries with moderate levels of innovation in work organisation can be identified according to the level of onerous work:
 - the continental countries and Ireland with low levels of onerous work;
 - the UK, Malta and some of the NMS with high levels of onerous work.
- In the same way, countries with low levels of innovation in work organisation can be divided into two groups:
 - some Mediterranean countries, such as Italy and Spain, characterised by low levels of onerous work;
 - the majority of the NMS, as well as Greece and Portugal, characterised by high levels of onerous work.

The variety of configurations observed across EU Member States makes it clear that no necessary relation exists between the innovativeness of work organisation and how onerous it is. An adequate explanation for this diversity would arguably require an investigation of national institutional arrangements, including the way in which the labour market regulatory framework impacts on working time.

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