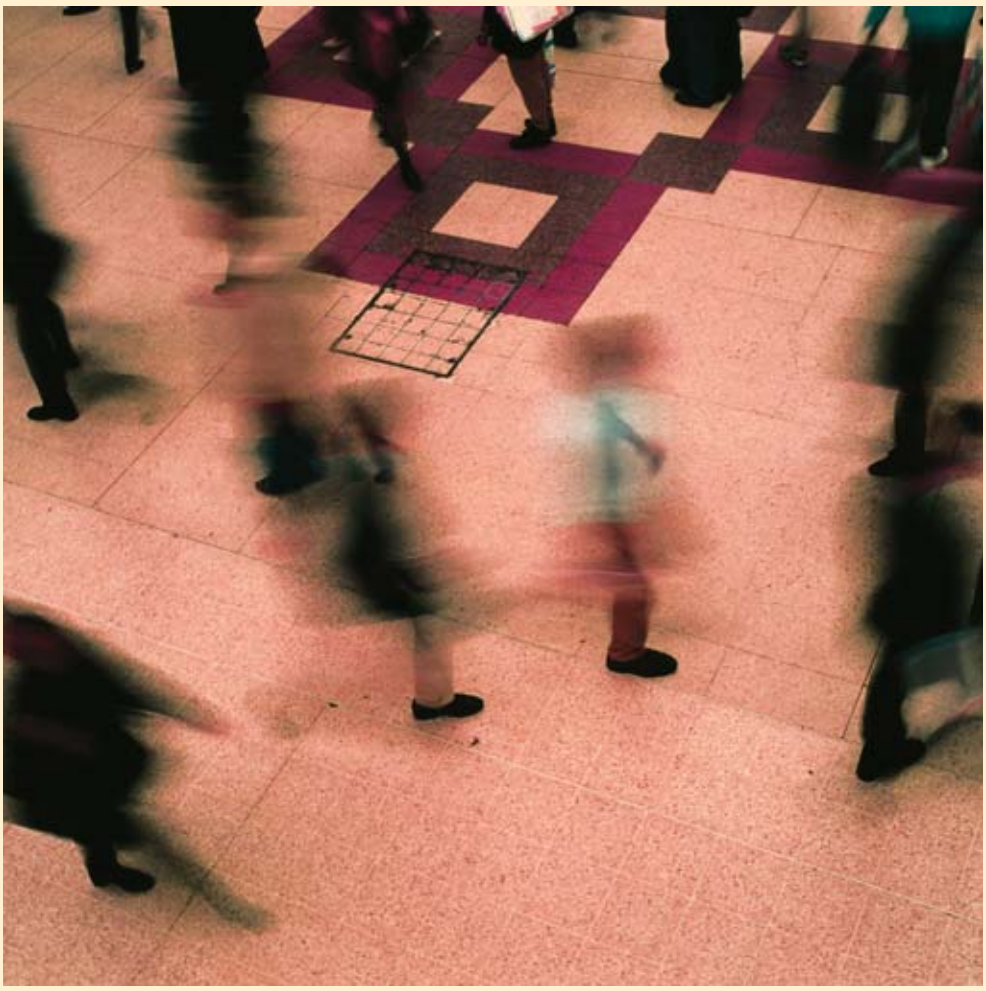
European Foundation for the Improvement of Living and Working Conditions

Extended and unusual working hours in European companies



Establishment Survey on Working Time 2004–2005

Extended and unusual working hours in European companies

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Research project: Company survey on time

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Foreword

Working time arrangements and work–life balance are important issues on the EU political agenda. In a diverse and fast-changing economic climate, both companies and workers need flexibility. Working time arrangements can have a significant bearing on the efficiency, productivity and competitiveness of companies, not to mention the health, well-being and motivation of their employees. In order to reach the Lisbon employment objectives of more and better jobs for everyone, governments are being encouraged to implement policies aimed at achieving more harmony between work and family life. In general, it is intended that employment rates for women and older workers should increase, and policy debate has focused on the steps needed in order for this to happen.

Against this background, the European Foundation for the Improvement of Living and Working Conditions has been committed to obtaining more in-depth information on the use of working time arrangements in European companies, the reasons for using such arrangements and the outcomes for both companies and workers. In 2004, the Foundation launched its first Establishment Survey on Working Time (ESWT) in 21 European countries: the 15 'old' Member States of the European Union and six of the New Member States – the Czech Republic, Cyprus, Hungary, Latvia, Poland and Slovenia. The survey was a questionnaire-based, representative sample survey in more than 21,000 establishments, which aimed to analyse working time arrangements and work–life balance issues at the workplace by interviewing personnel managers and, where available, formal employee representatives.

This report analyses the data from the survey to address the issue of extended and unusual working hours, by exploring all aspects of what may be called 'non-standard working hours': the extension of working hours through overtime, working at 'unusual' times beyond traditional societal standards (such as the '9 to 5' norm), and varying time schedules over the week, month or year involving 'changing' working hours. It examines in greater detail the incidence of such working hours across countries, sectors and companies. Moreover, the analysis provides information on the factors determining the need for deploying workers at unusual hours and highlights how management perceives the various effects of these working time patterns. It also focuses on various personnel problems faced by management in establishments with unusual working hours.

This report provides an insight into the extent to which unusual and changing working hours are used in European companies. We trust it will be a useful contribution towards shaping the policies which seek new approaches to working time benefits for unusual working hours, while supporting work–life balance.

Jorma Karppinen
Director

Willy Buschak
Deputy Director

Country codes used in the report

EU21	EU15 + NMS6
EU15	former 'old' Member States pre-enlargement 2004
AT	Austria
BE	Belgium
DK	Denmark
FI	Finland
FR	France
DE	Germany
EL	Greece
IE	Ireland
IT	Italy
LU	Luxembourg
NL	Netherlands
PT	Portugal
ES	Spain
SE	Sweden
UK	United Kingdom
NMS6	6 of the 10 New Member States that joined the EU in 2004
CZ	Czech Republic
CY	Cyprus
HU	Hungary
LV	Latvia
PL	Poland
SI	Slovenia

Acronyms used in the report

ELFS	European Labour Force Survey
ESWT	European Establishment Survey on Working Time and Work-Life Balance
EUCOWE	European Union Company Survey of Operating hours, Working times and Employment
LSE	large-scale enterprise
SME	small and medium-sized enterprise

Contents

Introduction

During the 20th century, extended and unusual or atypical working hours became more and more confined to particular categories of workers in most European countries. This applied, in one way or the other, to all aspects of what may be called 'non-standard hours': the extension of work hours through overtime, working at 'unusual' times beyond traditional societal standards such as the '9 to 5' norm, and varying time schedules over the week, the month or the year, that means 'changing' working hours. For example, night and shift work has become, if for different reasons, the 'natural' way of organising working times for nurses or steelworkers. Over recent years, however, the distinction between those workers exposed to non-standard hours and those who are not appears to have become blurred.

This is true, although in different ways, for all three types of working hours that are regarded as 'unusual' – work on Saturdays or Sundays, and work at night from 22.00 to 06.00, and as well to the partly related phenomenon of changing work hours such as shift work (see Bosch and Lehndorff, 2001). The increased importance of service work relative to manufacturing results in the need for more people to work during other people's leisure time, especially when it comes to personal services. Moreover, the competitive market environment of many services and manufacturing activities triggers a constant search by organisations for both greater temporal flexibility and reductions of personnel costs. Consequently, the need for organisational flexibility may require, to a greater or lesser extent, individual flexibility of the workforce, which in turn will be reflected in working time arrangements. Last, but not least, the same environment drives many organisations, particularly those manufacturing companies confronting international competition, to economise on capital costs by extending their capital operating hours (Anxo *et al*, 1995). As Groß *et al* (2004) found in the recent EUCOWE[1] survey on operating hours, working time and employment in six EU countries, there is an ongoing trend of increasing capital operating hours in both manufacturing and service industries, entailing a great deal of work both at unusual and at changing hours. Thus, while the increase in work occurring at unusual and changing times may not be dramatic in some European countries over recent years, it affects to a greater or lesser degree roughly one out of four employees in the EU15 countries (Van Bastelaer and Vaguer, 2004).

Health issues are particularly pertinent to various forms of night and shift working, as has been well established in the literature (Baillod *et al*, 1993; Colquhoun *et al*, 1996; Hornberger *et al*, 2000; Wedderburn, 2000). It has to be emphasised that shift work is to a large extent connected to night work. Drawing on the Third European Working Conditions Survey (EWCS), Muñoz de Bustillo and Fernández (2007) found that, for the six EU countries involved in the EUCOWE survey, working hours of roughly 45% of all shift workers include work at night.[2]

While health-related problems arising from night and shift work continue to be reflected in employee surveys, they do not necessarily imply low levels of satisfaction of workers with their working conditions, given the extra pay traditionally (if not always) provided as a compensation for unusual working hours (Muñoz de Bustillo and Fernández, 2007). Nevertheless, in addition to the individuals' current perception of potential negative outcomes of their working hours, both long-

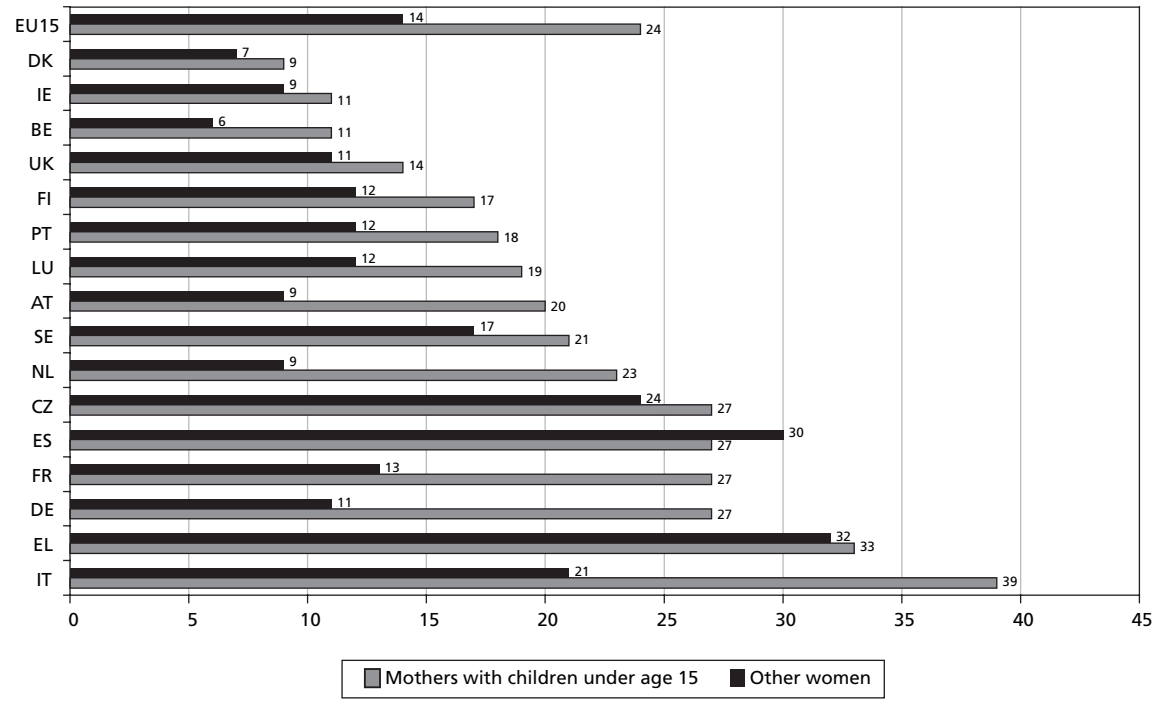
[1] European Union Company Survey of Operating hours, Working times and Employment (EUCOWE). The EUCOWE project collected and analysed comparative and representative data on the relationship between operating hours and working time management, and their consequences for employment in six EU countries: France, Germany, the Netherlands, Portugal, Spain and the United Kingdom.

[2] Note that 'changing work hours' in the context of the present ESWT survey includes, next to shift work, staggered working hours which do not necessarily serve in all cases as a tool of extension of opening or operating hours, as they may also provide for a variation in manning levels over the day or week (see for the retail trade Baret *et al*, 2000).

term and societal aspects have to be taken into account. In particular, and most importantly given the demographic changes in EU societies, the negative impact on workers' health of night and shift work cannot be outweighed, in the long run, by extra pay for the individuals affected. 'Sustainability' of work organisation and working times arguably ranks high on the list when it comes to coping with the challenges of an ageing workforce and health-related issues at the workplace (Lehndorff, 2006).

Next to the problem of health issues involved with night and shift work, deviations from the standard working day may put pressure on many individuals' social life, including family, friends, but also household duties. Obviously, this also applies to night and shift work, thus arguably exerting a dual strain on many of these workers. With regard to family and other social life-related constraints, particular attention has to be paid to weekend work as health issues are not equally important here according to the findings of various employee surveys (Bielenski *et al*, 2002a; Martin and Le Bihan, 2004; see also, with reference to Germany, Klenner and Pfahl, 2005). It has to be kept in mind that 'unsociable working hours' used to be a minor issue as long as the traditional male single-earner model was predominant in Europe. In the course of the continuous rise in female labour market participation, however, the issue of 'unsociable hours', particularly work on Saturday and Sunday, has become more prominent in public debates. In fact, the term 'work–life balance' is often primarily connected to the issue of working – particularly, if not solely, of women – at times of the day or the week that interfere with family obligations. The pertinence of these concerns has recently been highlighted by a study published by the European Foundation for the Improvement of Living and Working Conditions (hereafter called the Foundation), which is based on data of the EWCS and national employee surveys (*see Figure 1*).

Figure 1 Poor work–life-balance, by female full-time employees (%)



Note: Mothers compared with all women
Source: European Working Conditions Survey (EWCS), 2000, cited in Pärnänen *et al*, 2005

This report examines in greater detail the incidence of non-standard working hours across countries, industries, and establishments. The analysis draws on the findings of the European *Establishment Survey on Working Time and Work-Life Balance (ESWT) 2004–2005*, commissioned by the Foundation and conducted in 21 European countries.

Establishment Survey on Working Time and Work-Life Balance (ESWT)

The ESWT was launched by the Foundation in 2004 in 21 European countries, namely: the 15 'old' Member States of the European Union (EU15) and six of the New Member States (the Czech Republic, Cyprus, Hungary, Latvia, Poland and Slovenia). In more than 21,000 establishments, covering both the private and public sectors, personnel managers and – where available – formal employee representatives (for example, shop stewards and members of works councils) were interviewed about working time arrangements and work–life balance in their companies.

Data obtained from the ESWT are representative for all establishments with 10 or more employees in the abovementioned countries. The survey covers private and public establishments from virtually all sectors of activity, with the exception of 'agriculture', 'forestry', 'private households' and 'extraterritorial organisations'. In these sectors, the number of companies employing 10 or more employees is negligible in the countries surveyed. The sample design provided for a control of the representative distribution of interviews among the two main sectors: 'Industry' (NACE C – F) and 'Services' (NACE G – O). In a finer breakdown, weaknesses with regard to the representation of the subsectors 'education' (NACE M) and 'health and social work' (NACE N) show up in some countries, due to deficiencies in the available sampling sources (for details, see Riedmann *et al*, 2006, p. 57).

Interviews for the survey were carried out via telephone in the autumn of 2004 in the EU15 countries and in the spring of 2005 in the six NMS countries. TNS Infratest Sozialforschung Munich coordinated the fieldwork for the survey. In total, 21,031 personnel managers were interviewed, along with 5,232 employee representatives from the same establishments.

Unless otherwise stated, all figures in this report reflect the distribution of establishments, not of employees (more details on the survey methodology can be found in Riedmann *et al*, 2006, pp. 55–66.).

Based on the findings of the EWST, the Foundation aims to produce a series of seven analytical reports. A consortium of research institutes and experts from different European countries, coordinated by TNS Infratest Sozialforschung, will draft these reports. The analysis consists of three main steps:

- A first analysis of the survey data is presented in the overview report (Riedmann *et al*, 2006).
- In a second step, a series of four additional reports will be produced, which focus on specific working time arrangements. This current report focuses on extended and unusual working hours. The three other reports explore the issues of part-time work (Anxo *et al*, 2007a), early and phased retirement (Leber and Wagner, 2007), and parental leave (Anxo *et al*, 2007b).
- In the third step, two reports will be produced which analyse the data in a more comprehensive way. One report will focus on flexibility at company level and will analyse the interrelations between the different working time arrangements. The second report will examine social dialogue at company level in relation to working time and work–life balance issues.

As Riedmann *et al* have highlighted in the overview report (2006), among the strengths of the ESWT survey are that it is both representative and covers a broad range of European countries, i.e. the EU15 and six of the New Member States. Given that the ESWT is an establishment survey, however, the fundamental difference compared to data provided by employee surveys has to be kept in mind. There is no way to draw direct conclusions from establishment survey findings about individuals' working conditions, well-being or work–life balance. This general caveat should be borne in mind when it comes to an interpretation of the data.

However, the survey does provide, importantly enough, insights into how establishments organise their working hours, into some characteristics of establishments with an above-average incidence of non-standard hours and into the way various effects of these working time patterns are perceived by the management.

Chapter 1 provides an overview of the incidence of non-standard working hours, drawing primarily on a descriptive analysis of ESWT data. Some major determinants of non-standard working hours are analysed in Chapter 2. Chapter 3 then gives an insight into some outcomes of these working time patterns for the establishments, as perceived by management. Chapter 4 explores whether or not time-related compensations (i.e. other than extra pay) for non-standard working hours are of higher-than-average importance in establishments displaying above-average use of non-standard working hours. This leads to concluding remarks about potential policy areas.

1 Mapping the incidence of non-standard working hours in companies

This chapter outlines the incidence of non-standard working hours in European companies.[3] Following the ESWT questionnaire, the focus will be on the answers given by managers to the question 'Are there any employees in your establishment who are regularly required to work

- at night between 22.00 and 06.00;
- on Saturdays;
- on Sundays'.

These deviations from the common '9 to 5' working day and the usual pattern of five days a week will be referred to as 'atypical' or 'unusual working hours' here.

Moreover, this survey takes into account the unequal distribution of working hours over time. These are labelled as 'changing hours' and comprise regular shift work as well as so-called staggered working hours; the latter may serve both to extend operating hours and to vary staffing levels within given operating hours. In line with the ESWT overview report (Riedmann *et al*, 2006), these four types of working times are collectively referred to as 'non-standard working hours' in this report.

For both theoretical and practical reasons, the analysis will focus on establishments in which 20% or more of the employees are regularly required to work at non-standard hours. Most importantly, the intensity of non-standard hours and their importance for the organisation has to be considered. Obviously, there are many establishments in which non-standard hours are only required from a small portion of the workforce such as porters and firemen. In most cases, these forms of working time are irrelevant for the working time organisation of the establishment as a whole. Failure to make a distinction between these establishments and others could contaminate the findings, since unlike in employee surveys, the ESWT is an establishment survey geared towards providing insight into establishments' working time policies. Obviously, a much narrower limit (for example, a 40% threshold) might have been useful for this purpose. This, however, would have limited the scope and validity of the findings. As it is a minority of establishments that feature non-standard hours, a higher threshold would have resulted in a very small cell allocation in many cases. Figure 2 gives a general overview of unusual hours by establishment size, illustrating the point to our approach.

As Riedmann *et al* highlight in the overview report (2006, p. 31), there is no obvious overall pattern of unusual working hours discernable across the countries surveyed. The following sections therefore describe, step by step, the incidence of each of the four types of non-standard hours across countries, industries and company size.

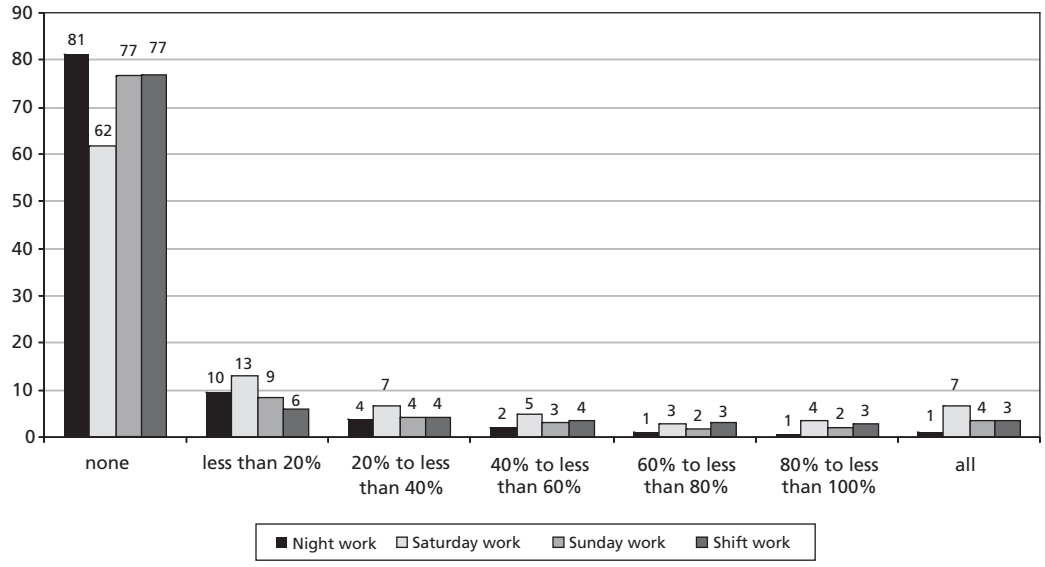
Saturday work

Saturday work is widely practised in European establishments. Figure 3 shows its incidence across countries. Most prominently, almost 40% of the establishments in the UK require their employees to regularly work Saturdays, while Cyprus, France and Ireland see roughly a third of their

[3] The data base comprises establishments with at least 10 employees in 21 EU countries; for details, see Riedmann *et al*, 2006.

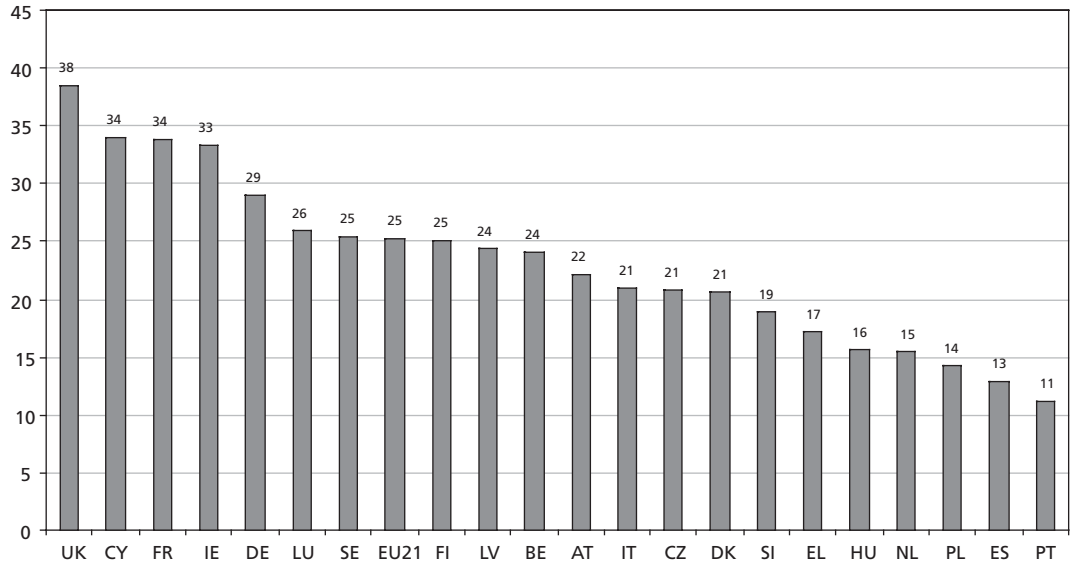
establishments requiring employees to regularly work Saturdays. At the lower end of the scale, in Spain and particularly in Portugal, about one in 10 establishments require employees to regularly work Saturdays.

Figure 2 Unusual working hours in European companies, % of workforce



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

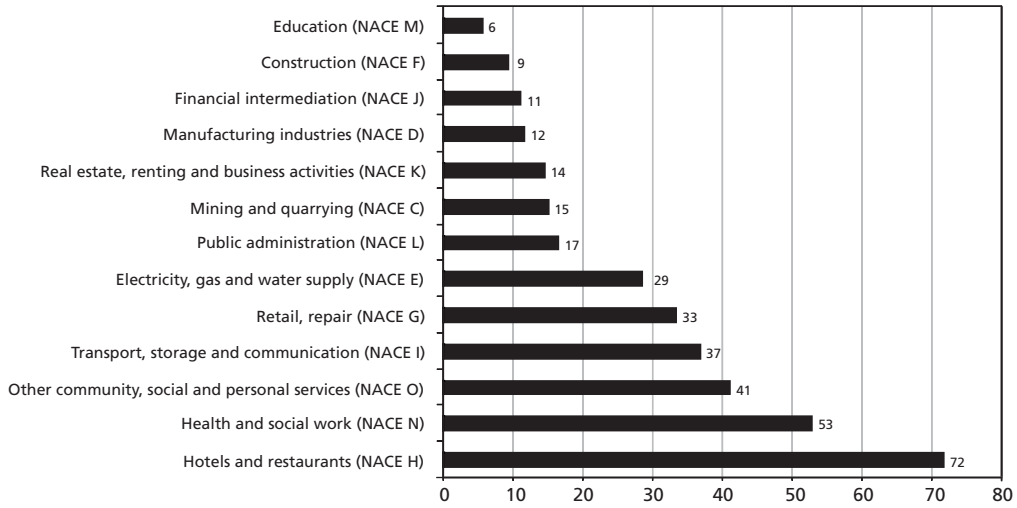
Figure 3 Regular Saturday work (required from at least 20% of employees) in European companies, by country (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

In relation to the distribution across sectors, Saturday work more frequently occurs in service sector companies than in industrial companies. The sector 'hotels and restaurants' (NACE H) ranks highest, with more than 70% of establishments requiring their employees to regularly work Saturdays, followed by the sectors 'health and social services' (NACE N) and 'other community, social and personal services' (NACE O) (*see Figure 4*). As the latter include institutions such as hospitals, these also rank high for weekend work. As expected, the sectors 'education' (NACE M) and 'financial intermediation' (NACE J) are at the opposite end of the scale. The modest ranking of the 'manufacturing industries' sector (NACE D), however, is noteworthy, as the increase in operating hours over recent years suggests that indeed more Saturday work would have been required once these establishments moved beyond their traditional work patterns. This is examined at a later stage of the survey.

Figure 4 Regular Saturday work (required from 20% or more of employees) in European companies, by sector (based on NACE classification) (%)



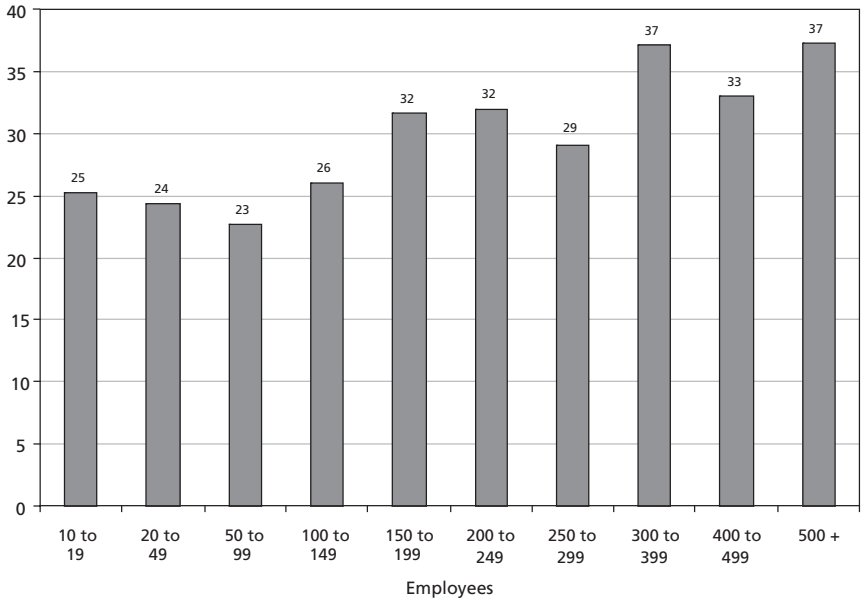
Base: All establishments (management interviews)
Source: ESWT, 2004–2005

When taking establishment size into account, the incidence of Saturday work increases with the size of the company: the larger the business, the higher the incidence of Saturday work (*see Figure 5*). However, variations exist when analysing the data in greater detail, even if the results ranging from roughly one in four up to just over one in three of the larger companies requiring their employees to work Saturdays does not represent a significant variation.

As shown by earlier establishment surveys, particularly the recent EUCOWE survey on operating hours in six EU Member States (Groß *et al*, 2004, p. 104), operating hours depend on the size of the establishment. The largest companies have the longest operating hours. The evidence from this ESWT survey suggests that such differences in operating hours do not primarily exist as a result of Saturday work.[4]

[4] Operating hours as such cannot be checked at this point since the ESWT survey did not extend to measuring them.

Figure 5 Regular Saturday work (required from at least 20% of employees) in European companies, by company size (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

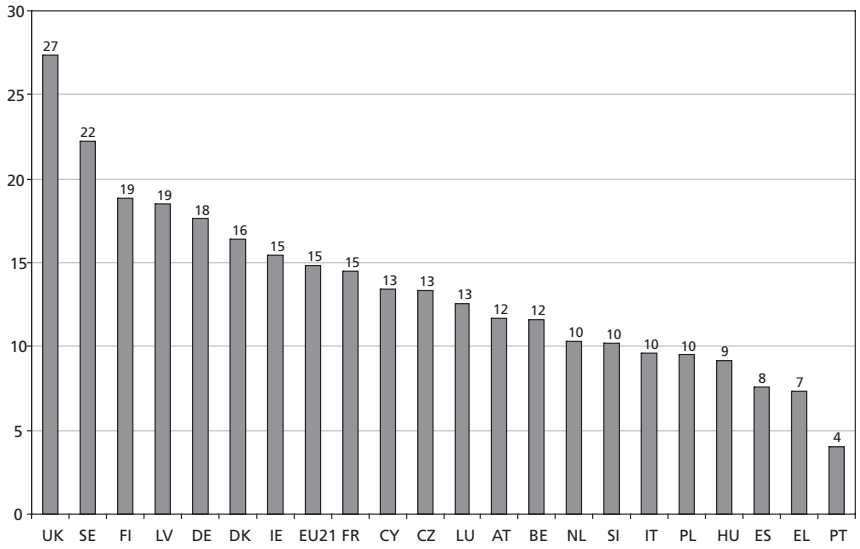
Overall, the incidence of employees regularly engaged in Saturday work is most prevalent in the following countries, sectors and companies:

- the UK, with 38.4% of all companies surveyed indicating such a requirement, followed closely by Cyprus (34%), France (33.9%) and Ireland (33.4%);
- hotels and restaurants, with 71.6% of all establishments surveyed requiring their employees to work that day, followed by various social and personal services organisations;
- companies with more than 300 employees.

Sunday work

Across Europe, Sunday work is less frequent than Saturday work, with the EU21 average being at 15% for Sunday work compared with 25% for Saturday work (*see Figure 6*). Yet, the variation across countries is comparable to that of Saturday work. Again, the UK figures at the top of the scale, but now followed by Sweden, Finland and Latvia. Quite similarly to Saturday work, the incidence of Sunday work is lowest in Portugal, Spain and Greece. Moreover, the pattern for companies featuring Saturday work differs across countries from those featuring Sunday work. While in the UK, and also in Sweden, both forms of unusual working hours appear to be important (note that in Sweden establishments requiring Sunday work are only slightly fewer than those requiring Saturday work), this association cannot be found, for instance, in Cyprus and France. At the other end of the scale, data indicate that in some Southern European countries, particularly in Spain and Portugal and, with some reservations, in Greece, the extent of weekend work is minimal when compared with the rest of Europe.

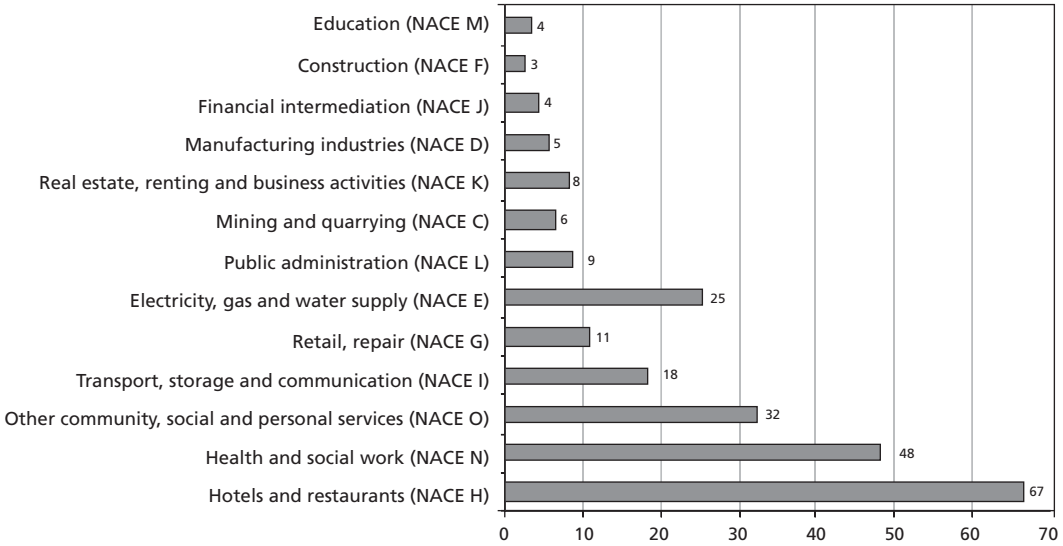
Figure 6 Regular Sunday work (required from at least 20% of employees) in European companies, by country (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Looking at the incidence of Sunday work by sector, the distribution (*see Figure 7*) is similar to the one relating to Saturday work (*compare to Figure 4*). Obviously, the level of Sunday work is lower in most sectors. In the 'transport, storage and communication' sector (NACE I) and, even more so, in the 'retail repair' sector (NACE G), the difference between Saturday and Sunday work is substantial. Conversely, among the sectors showing the highest incidence of Sunday work, particularly the hotels and restaurants sector, Sunday work is almost as important as Saturday work.

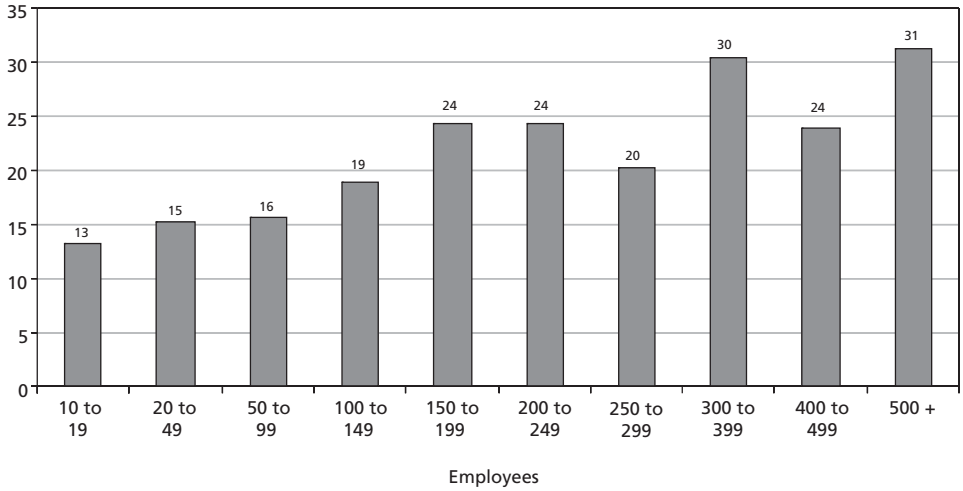
Figure 7 Regular Sunday work (required from at least 20% of employees) in European companies, by sector (based on NACE classification) (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

The breakdown by establishment size (*see Figure 8*) mirrors, by and large, the picture for Saturday work. The incidence of Sunday work is thus more prevalent in larger companies than in smaller ones.

Figure 8 Regular Sunday work (required from at least 20% of employees) in European companies, by company size (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

In all, the incidence of regular Sunday work is highest in the following countries, sectors and companies:

- the UK, with 27.4% of all companies surveyed indicating such a requirement, followed by Sweden (22.2%), Finland (18.8%) and Latvia (18.5%);
- hotels and restaurants, with 66.6% of all establishments surveyed requiring their employees to work that day, followed by the same social and personal services establishments as seen with Saturday work;
- companies with more than 300 employees.

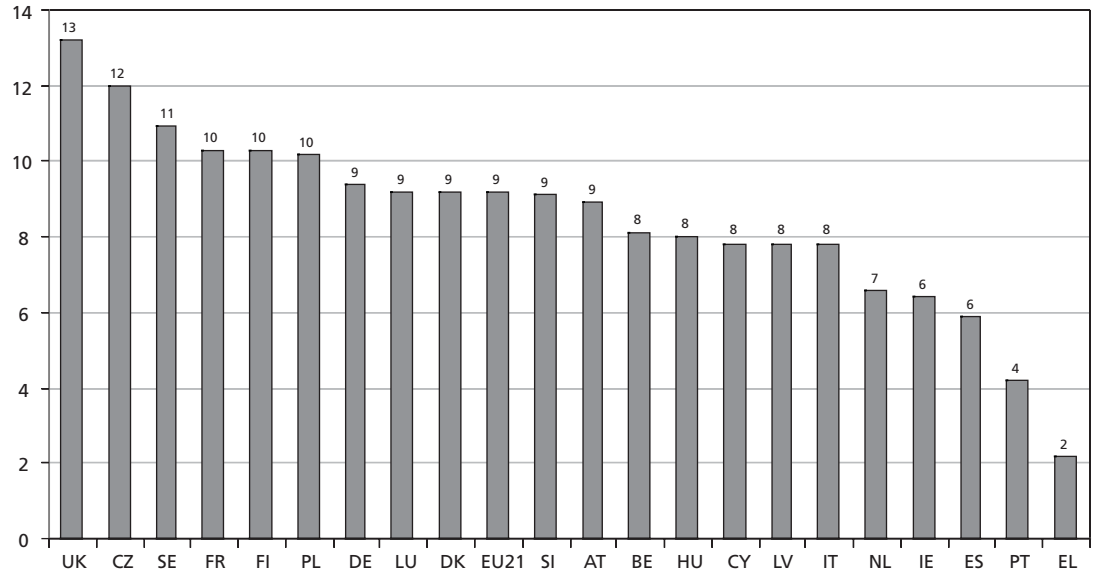
When both forms of weekend work are taken together and examined by country, the overall picture is as follows: individual countries and groups of countries can be distinguished in relation to their share of establishments requiring weekend work. The UK stands out in this regard, having a high proportion of companies engaging their employees in weekend work. However, the picture is not as clear among the other countries. By and large, above-average importance of both Saturday work and Sunday work is exhibited by countries such as Sweden and Germany. At the other end of the scale, Portugal registers particularly low scores for weekend work. Other countries with markedly lower scores than the EU21 average are Spain, Hungary and Poland.

As for sectors, the most distinctive feature is the difference between the incidence of Saturday work and Sunday work in the transport sector and, even more so, in the retail trade sector. This contrasts with the situation in other services sectors, in health and social services and, most markedly, in hotels and restaurants, where there is hardly any difference between the incidence of Saturday work and Sunday work. As for the incidence of weekend work across companies of different sizes, the company profiles are basically the same for Saturday work and Sunday work.

Night work

When compared to weekend work, the occurrence of night work is less pronounced across the European countries surveyed, showing an EU21 average of roughly 10% (*see Figure 9*). Again, considerable variation exists across the countries, ranging from 2% in Greece to 13% in the UK, with an aggregate of most countries between 6% and 10%. After the UK, the proportion of companies requiring at least 20% of their workforce to regularly work at night is largest in the Czech Republic and Sweden. As with regular Saturday work or Sunday work, southern European countries such as Spain, Portugal and Greece show the lowest incidence of night work in establishments.

Figure 9 Regular night work (required from at least 20% of employees) in European companies, by country (%)

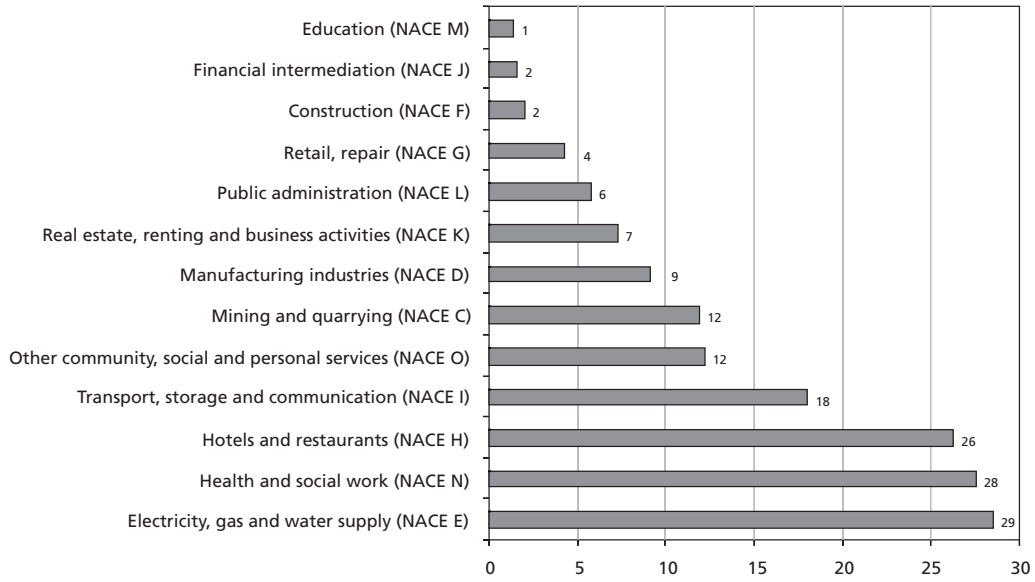


Base: All establishments (management interviews)
Source: ESWT, 2004–2005

In contrast to the country distribution, the incidence of night work is strongly related to the sector in which the establishments operate (*see Figure 10*). At both ends of the scale, the picture is somewhat similar to weekend work. For example, the so-called 24/7 (24-hour seven-days-a-week) service provided in hospitals or power plants leads to a high incidence of both weekend and night work.

Other sectors, however, display interesting differences. Not surprisingly, in retail trade, night work is much less important than weekend work in general, and Saturday work in particular. As with past employee surveys, this establishment survey provides little evidence to support the widespread discourse on the '24-hour society'. Of interest is the higher ranking of mining and, even more so, of manufacturing, when it comes to night work, given their moderate ranking in weekend work. By and large, night work is almost as important as Saturday work in manufacturing industries, which is a contrasting picture to most other sectors. This finding supports earlier evidence (Lehndorff, 1995) that, wherever two-shift systems are already practised[5], the increase in operating hours in manufacturing over recent years draws on night work, with shift work extending to five nights a week. Five nights a week provide greater leeway for companies to extend the capital operating time than one Saturday does. Roughly speaking, the night is most important for extending the operating hours in large-scale operations, whereas Saturday primarily provides flexibility.

Figure 10 Regular night work (required from at least 20% of employees) in European companies, by sector (based on NACE classification) (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

In relation to the breakdown by company size, the same characteristics as for Saturday and Sunday work are, in principle, mirrored again. The proportion of establishments with at least 20% of their employees working at night and on weekends increases with company size (*see Figure 11*). The variance in night work between companies of different sizes, however, is much more pronounced than that between establishments with weekend work. While only 7% of small companies with10–19 employees have more than 20% of their employees working at night, this proportion increases to about 31% of companies with more than 500 employees.

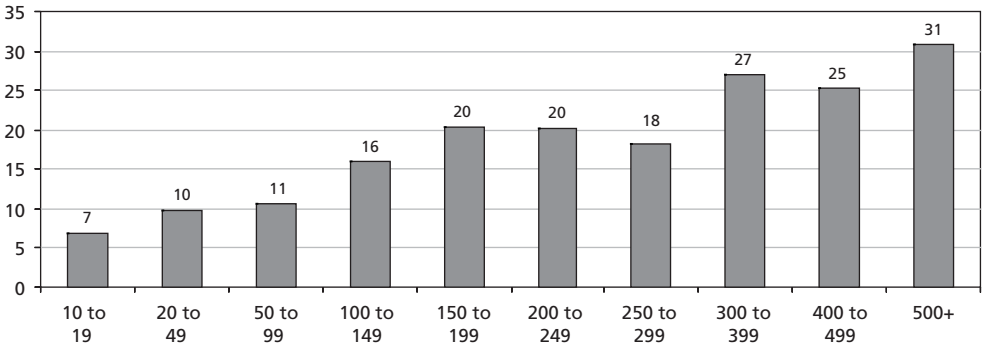
The findings of the EUCOWE project (Groß *et al*, 2004) are helpful in making sense of this distinctive feature. In all six countries covered by EUCOWE, the variance of operating hours between establishments of different sizes was impressive. Once more, the findings of this survey support evidence from earlier surveys, as well as from qualitative research, on the importance of night work as an instrument of extending operating hours.

It has to be noted that differences in company size are not equally distributed across the sectors surveyed. Dividing the pool of establishments into larger companies employing at least 250 people and smaller ones with 10 to less than 250 employees shows that large companies are more frequently to be found within the electricity as well as health and social services sectors, and in public administration. Conversely, smaller companies are particularly present in sectors such as hotels and restaurants, construction and education. This observation highlights the potential insight that might be provided by drawing together the strands of descriptive analysis presented here. Before doing so, however, the incidence of changing working hours in European companies has to be analysed. Since

[5] In general, except large-scale operations, the most important instrument to extend operating hours in manufacturing is the move from a one-shift system to a two-shift system (Groß *et al*, 2004).

shift work represents one of the major forms of changing working hours, it is reasonable to assume that the evidence on changing working hours is closely connected to that of night work.

Figure 11 Regular night work (required from at least 20% of employees) in European companies, by company size (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

In all, the occurrence of regular night work is most widespread in the following countries, sectors and companies:

- the UK, with 13.2% of all companies surveyed indicating night work, followed by the Czech Republic (12%) and Sweden (10.9%);
- the utilities sector – electricity, gas and water supply (NACE E) – with 28.5% of all establishments surveyed requiring their employees to work at night, followed closely by sectors such as health and social work (27.5%), and hotels and restaurants (26.2%);
- in establishments with more than 300 employees.

Changing working hours

As already mentioned, the issues of shift work and staggered working times were addressed in the ESWT questionnaire by a combined question asking for the incidence of changing working hours in an establishment. Hence, it cannot be taken for granted that any form of changing work hours is connected to the extension of operating hours, which would entail working at unusual hours. Staggered working time can be regarded as an instrument primarily aimed at coping with daily variations in workload, rather than extending working hours. For the importance of staggered working hours as a way to vary staffing levels within given opening hours, see the example of the retail trade described in greater detail by Baret *et al* (2000) and Jany-Catrice and Lehndorff (2005).

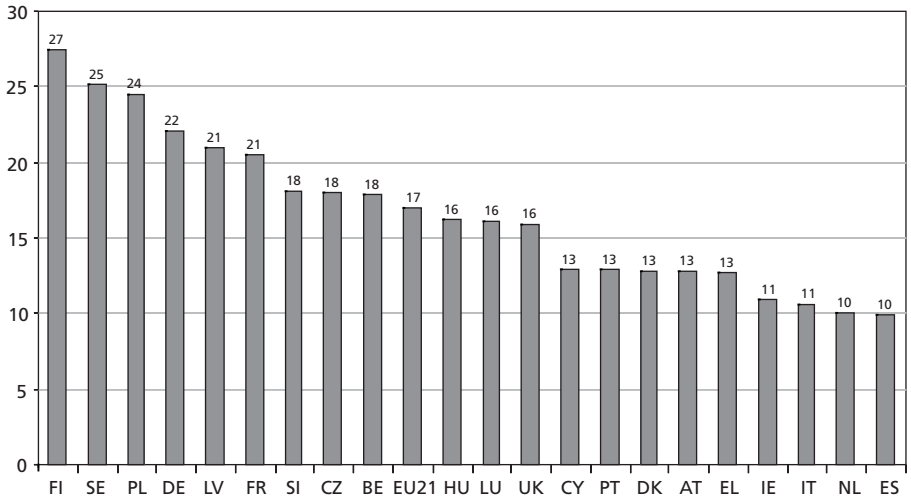
In contrast, shift work aims at decoupling operating hours from individual working times (Groß *et al*, 2004). Shifts are, in most cases, organised within two-shift patterns (either with alternating morning and afternoon shifts, the so-called 'continental' pattern, or day and night shifts, the so-called 'Anglo-Saxon' pattern), or three-shift patterns, the latter being organised either in semi-continuous (five

days a week) or continuous patterns (seven days a week).[6] Thus, as soon as shift patterns include the night or the weekend, or parts of these, the decoupling of operating hours from individual working times entails, to a greater or lesser degree, work at unusual hours.

Consequently, as will be described later in this chapter, the link between work at changing and at unusual hours is quite strong in the establishments covered by this survey. First however, the incidence of changing working hours will be examined in relation to country, sector and company size.

Overall, some 17% of EU21 establishments have at least 20% of their workers regularly exposed to changing working hours (*see Figure 12*). Significant variation exists across the 21 countries surveyed. Managers from Finland and Sweden report the highest incidence of changing working hours in establishments, followed by establishments in Poland, Germany, Latvia and France. Spain, the Netherlands, Italy and Ireland in turn are at the far end of the scale, with a frequency of changing working hours far below the EU21 average. It should be noted that the UK, the country showing the highest incidence of unusual working hours, ranks below average when it comes to changing working hours (as reported by managers).

Figure 12 Regular work at changing hours (required from at least 20% of employees) in European companies, by country (%)



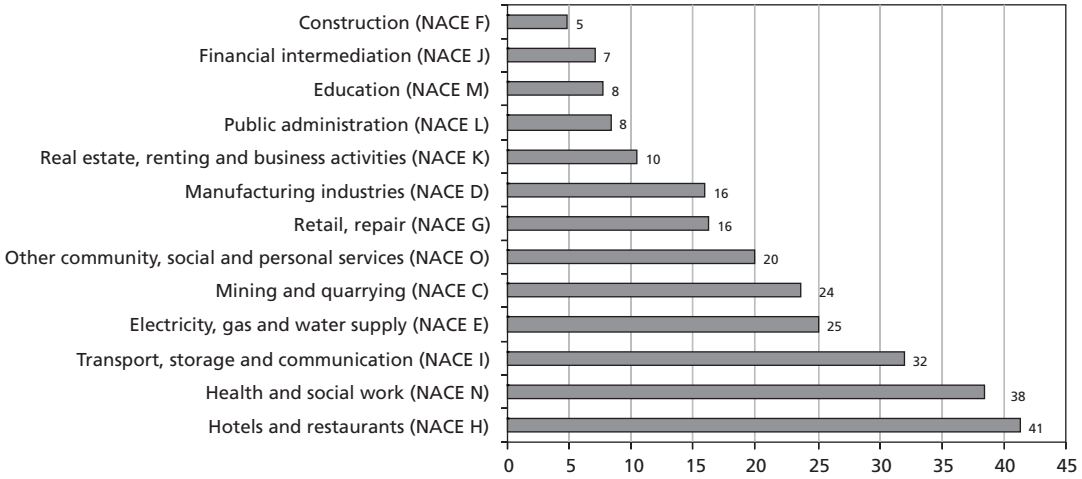
Base: All establishments (management interviews)
Source: ESWT, 2004–2005

With regard to the incidence of changing working hours across sectors (*see Figure 13*) and by company size (*see Figure 14*), the distribution of establishments resembles that of unusual hours. First of all, it is no surprise that sectors such as hotels and restaurants, health and social work, transport, storage and communication, and utilities (electricity, gas and water supply) show the highest incidence of changing working hours. For the other sectors, however, the frequency of

[6] For a detailed description of shift patterns in manufacturing, see the example of the European automotive industry outlined by Lehndorff (1995).

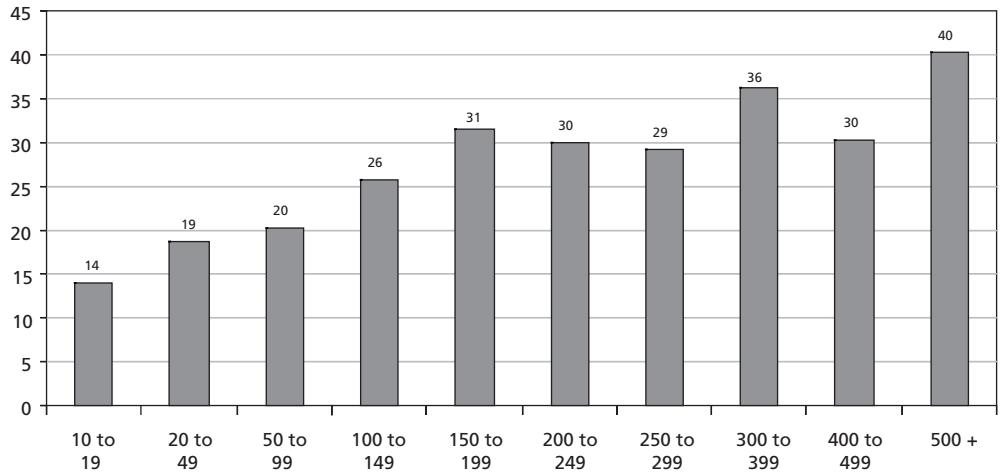
changing working hours depends on whether the company staff is primarily exposed to Saturday work (*see Figure 4*) or to night work (*see Figure 10*). For example, the occurrence of both changing working hours and night work is less prominent in the 'other community, social and personal services' sector, which is in contrast to the high incidence of weekend work in this sector.

Figure 13 Regular work at changing hours (required from at least 20% of employees) in European companies, by sector (based on NACE classification) (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Figure 14 Regular work at changing hours (required from at least 20% of employees) in European companies, by company size (%)



Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Overall, the incidence of regular work at changing hours is highest in the following countries, sectors and establishments:

- Finland, with 27.4% of all establishments surveyed requiring their employees to regularly work changing hours, followed by Sweden (25%) and Poland (24.4%);
- hotels and restaurants, with a proportion of 41.3% of establishments indicating regular work at changing hours, followed by health and social work (38.3%) as well as transport (32%);
- companies with more than 300 employees.

This chapter is based on the assumption that changing hours are closely connected with night work. The following section looks at this connection and at other links between the various forms of non-standard working hours.

Links between forms of unusual working hours

The incidence of work at unusual as well as at changing hours differs widely across countries and sectors. Moreover, each of the three forms of unusual working hours – night work between 22.00 to 06.00 and work on Saturdays or Sundays – is unevenly distributed across countries and sectors. It is therefore not possible to depict a clear overall pattern. Looking into links between the various forms of non-standard working hours, however, reveals a better idea of underlying patterns. The following section analyses the findings of this chapter by (1) looking at the correlation between changing hours and unusual working hours, (2) the importance of unusual working hours across countries and sectors, and (3) the effect of establishment size on unusual working hours. Finally, the question arises as to what all this means for the working conditions of the individual.

Correlation between changing and unusual working hours

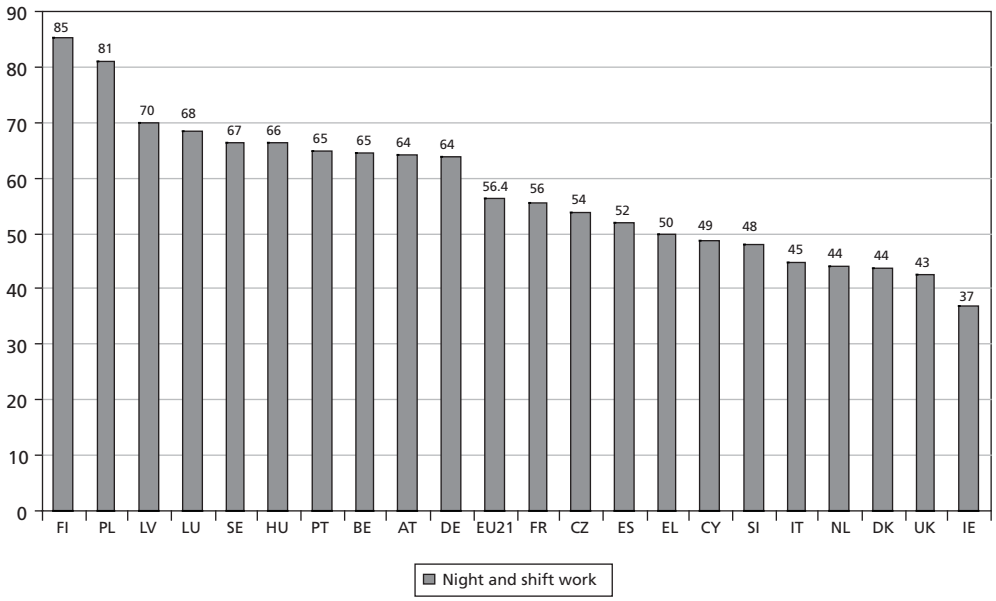
For all establishments covered by the ESWT survey, the assumption of strong links between different types of non-standard working hours is supported.

Among these, the correlation between changing and unusual working hours is weakest for Sunday work, though still of significance.[7] The strength of correlations differs substantially across countries; for example, the correlation with changing hours is particularly strong (at levels of more than .40) for night work in Belgium, for Saturday work in Germany, and for Sunday work in Denmark, Sweden and Finland (see Annex, part 3 for an overview of correlations by countries and forms of non-standard working hours).

When focusing solely on establishments with at least 20% of staff working at changing hours (e.g. shift work), the incidence of unusual working hours being at the same time associated with changing hours is particularly pronounced (*see Figures 15 and 16*).

[7] The correlations are .354 for changing hours and night work, .360 for Saturday and .379 for Sunday work, with the results being significant at the 0.01 level.

Figure 15 Share of establishments deploying staff regularly at night with staff working changing hours at the same time, by country (%)

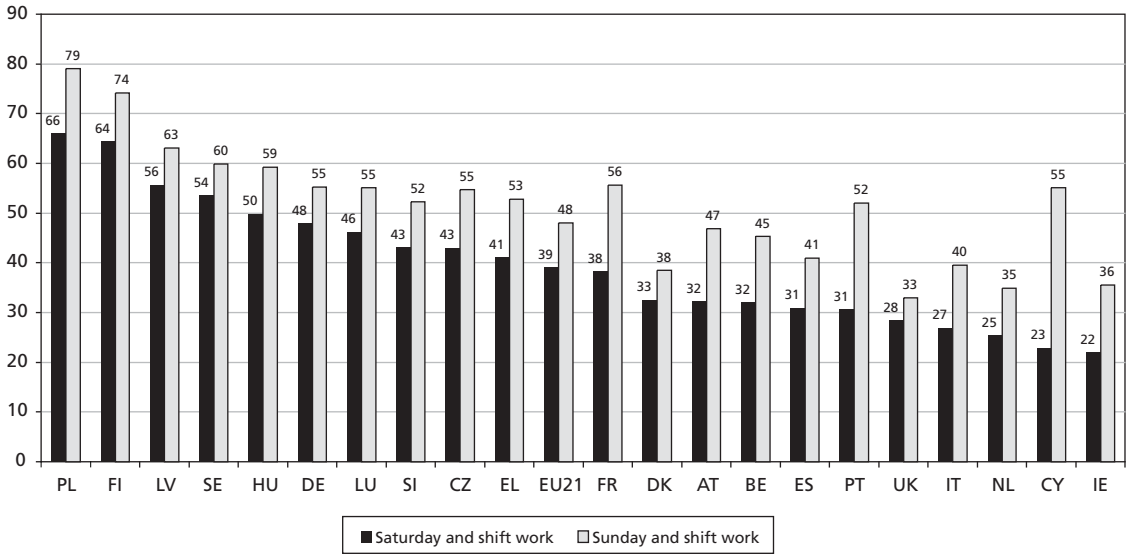


Note: Data shown for establishments with at least 20% of employees working these hours.
Base: All establishments (management interviews)
Source: ESWT, 2004–2005

The variation across countries is remarkable. The link is particularly strong in the cases of Finland and Poland, as well as those of Latvia and Luxembourg and some other countries, including Sweden, Hungary and Germany. It should be kept in mind, however, that sample sizes for some countries, in particular the smaller ones, are limited, thus generalisations for these countries have to be treated with caution. In comparison, the link is less important for some countries with minor exposure of staff to unusual hours, such as Denmark and the Netherlands, or indeed Ireland which shows a strong exposure to Saturday work, but minor exposure to night work. However, the link is also less important for the UK even with its high scores in all forms of unusual working hours. Thus, it may be assumed that in the UK, to a greater extent than in other EU countries, unusual working hours are based on individual employees' overtime. As this survey provides establishment data rather than data on individual employees, it is not possible to test this assumption within the framework of this report. It should be noted, however, that EUCOWE data suggest that the extension of operating hours in the UK draws to a much greater extent on overtime than it does in the cases of France and Germany (Muñoz de Bustillo and Fernández, 2007, p. 14).

The concomitant incidence of changing and unusual hours is one way to look at the correlations presented here. At the same time, taking into account their limited strength in most countries, a second conclusion might be drawn. Changing hours in today's European companies go far beyond traditional shift work aimed primarily at the extension of operating hours. Staggered working times and overlapping shifts have become prominent instruments to provide both for extended or more flexible operating hours, and for a more flexible use of staff within fixed opening and operating hours.

Figure 16 Share of establishments deploying staff regularly at weekends with staff working changing hours at the same time, by country (%)



Note: Data shown for establishments with at least 20% of employees working these hours.
Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Importance of unusual working hours across countries and sectors

Compared to the correlation between changing working hours and unusual working hours, the links between different types of unusual hours are even stronger. For all establishments surveyed, high correlations exist for the concomitant use of night work and Sunday work and, in particular, for the concomitant use of Saturday work and Sunday work. The correlation between night work and Saturday work is still strong, but less significant.[8] Again, the correlations differ substantially across countries, with peaks for concomitant use of night work and Sunday work in Hungary, and for Saturday work and Sunday work in Denmark (*see Annex, part 1*).

Given the multifaceted patterns of unusual working hours across countries and sectors, it is useful to try and draw a picture of the overall significance of unusual hours. The easiest way to do this is to create an index based on the accumulated rankings of each country, or sector, for each of the three forms of unusual work hours. Obviously, such an index only provides a rough idea of the relative significance of unusual working hours across countries and sectors. Given today's widespread, and acknowledged, practice of indexation when it comes to much more complex subjects such as the competitiveness of national economies, it is appropriate to use this approach here.

As far as the EU21 countries are concerned, several groups of countries can be identified (*see Table 1*). The UK stands out for its particularly high proportion of establishments reporting the regular deployment of at least 20% of staff at unusual hours. At the other end of the scale, three southern

[8] The correlations are .39 for night and Saturday work, .52 for night and Sunday work, and .71 for work on Saturdays and Sundays , with the results being significant at the 0.01 level.

European countries – Portugal, Spain and Greece – show particularly low proportions of companies regularly requiring at least 20% of employees to work at unusual hours. In between, there is a group of countries with above-average shares in each of the three forms of unusual working hours, including Sweden, France, Finland and Germany. At the far end of the scale, in turn, the Netherlands, Hungary and Italy indicate below-average scores in each of the three forms of unusual working hours.

For six out of the 21 countries surveyed, it is possible to compare this ranking with findings from the EUCOWE survey on operating hours (*see Table 2*). As the comparison of the data from both surveys reveals, the three countries with long operating hours (at an average of 58 to 59 hours a week) – the UK, France and Germany, with its particularly long operating hours in manufacturing – are part of the group of five countries with the highest proportion of unusual working hours among the EU21 sample in the ESWT survey. Conversely, the other three countries – the Netherlands, Portugal and Spain – showing comparatively shorter operating hours per week are part of the group of six countries in the ESWT survey with the lowest scores of unusual working hours. Thus, the correlation between the extension of operating hours and the proportion of establishments deploying substantial numbers of their staff at unusual hours may be regarded as established.[9]

Table 1 Ranking of unusual working hours (required from at least 20% of employees) within EU21

	Night work	Saturday work	Sunday work	Index
UK	1	1	1	3
SE	3	7	2	12
FR	4	3	8	15
FI	5	8	3	16
DE	7	5	5	17
CZ	2	13	10	25
LU	10	6	11	27
CY	16	2	9	27
DK	8	14	6	28
LV	15	9	4	28
IE	18	4	7	29
AT	11	11	12	34
BE	13	10	13	36
SI	9	15	14	38
PL	6	19	17	42
IT	14	12	16	42
HU	12	17	18	47
NL	17	18	15	50
EL	21	16	20	57
ES	19	20	19	58
PT	20	21	21	62

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

[9] For a detailed joint exploration of the EUCOWE and EWCS data sets, see Muñoz de Bustillo and Fernández (2007).

Table 2 Operating hours per week

	All establishments	Manufacturing industries	Service sectors
UK	**58.77**	59.40	**58.57**
FR	58.47	61.50	57.23
DE	58.10	**63.44**	55.16
PT	54.77	51.47	57.47
ES	51.58	51.57	51.58
NL	51.18	50.06	51.52

Note: Indirect measurement; for details on methodology, see Groß *et al* (2004) and Anxo *et al* (1995)
Source: EUCOWE Survey, 2003

Table 2 also indicates that the duration of operating hours, with the implication of high shares of unusual working hours, depends strongly on the relative importance of industries in the respective countries. Significantly, the operating hours in Germany are primarily pushed by manufacturing. Given the comparatively high proportion of manufacturing industries in the national economy and in overall employment in this country, the operating hours in the service sectors are outweighed by the long operating hours in manufacturing, thus leading Germany to rank among the top three countries.

Against this background, it is particularly relevant to look at the ranking of sectors as far as unusual working hours are concerned (*see Table 3*). At first glance, the picture is quite obvious. Two service sectors out of the 13 sectors highlighted in this survey show a noticeable record for unusual working hours, namely hotels and restaurants, and health and social work. Sectors such as utilities (electricity, water and gas supply), other social and personal services, and transport, storage and communication are also very prominent in that regard. The retail trade and repair sector stands out for its discrepancy between the significance of night work, on the one hand, and of weekend work, on the other. The manufacturing sector, in turn, shows the opposite pattern, with an above-average score in night work, and weekend work being less important, when compared to other sectors. It should be noted that this classification refers to the ranking rather than the absolute percentage of establishments deploying their staff in the various forms of unusual working hours. The latter may be quite important, as is the case with weekend working in manufacturing, whereas the ranking is less pronounced as weekend working is even more widely used in other sectors, particularly in some service sectors. In all, managers of establishments in financial intermediation, construction and education report the least overall incidence in regularly deploying staff at unusual hours. As regards the construction sector, the emphasis on 'regularly' is of particular importance, as this industry has a record of frequent, but possibly not regular, use of overtime working on Saturdays in many countries (Bosch and Philips, 2003).

As for manufacturing, a more differentiated definition of individual industries would most likely have shown that the modest ranking of manufacturing in general results from a statistical balancing of contrasting features within this large sector. Thus, the present ranking gives only a limited account of the two major reasons behind long opening and operating hours which entail work at unusual hours. The first one is related to a production cost-driven rationale, where unusual working hours are a consequence of striving for a longer use of machinery and lower capital costs, or avoiding high costs caused by interruptions of the production process, as in the steel industry. The second one is

a demand-driven rationale, where unusual hours are determined by customer demands. In contrast to the former rationale, the latter is very well reflected in the ranking in Table 3.

A computation of the correlations between different types of unusual working hours, broken down by sector, underlines the broad trend indicated by this ranking (see Annex, Part 1 for correlations table). Across all sectors, correlations are strongest for the link between Saturday work and Sunday work. In addition, among the three highest ranking sectors, it is the utilities and health sectors where correlations are also particularly strong for weekend and night work.[10]

In relation to the large disparities of unusual working hours across sectors, the question arises as to what extent the differences between countries may be explained by the relative size of various industries and sectors in individual countries. This question will be examined in Chapter 3.

Table 3 Ranking of unusual working hours (required from at least 20% of employees), by sector

	Night work	Saturday work	Sunday work	Index
Hotels and restaurants (NACE H)	3	1	1	5
Health and social work (NACE N)	2	2	2	6
Electricity, gas and water supply (NACE E)	1	6	4	11
Other community, social and personal services (NACE O)	5	3	3	11
Transport, storage and communication (NACE I)	4	4	5	13
Retail, repair (NACE G)	10	5	6	21
Mining and quarrying (NACE C)	6	8	9	23
Public administration (NACE L)	9	7	7	23
Real estate, renting and business activities (NACE K)	8	9	8	25
Manufacturing industries (NACE D)	7	10	10	27
Financial intermediation (NACE J)	12	11	11	34
Construction (NACE F)	11	12	13	36
Education (NACE M)	13	13	12	38

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Effect of establishment size

The one certain observation that can be made in relation to each of the descriptive chapter sections so far has been the relationship of non-standard hours and the size of establishments. Roughly speaking, the smaller the establishment, the less important unusual working hours are. This is true for each type of non-standard working hours (*see Table 4*). This finding supports, for a much larger range of countries, the results from the EUCOWE survey, indicating a direct link between company size and operating hours.

[10] The correlations in the utilities sector are .75 for Saturday work and Sunday work, .59 for Saturday work and night work, and .75 for Sunday work and night work. The correlations in the health and social work sector are .90 for Saturday work and Sunday work, .54 for Saturday work and night work, and .57 for Sunday work and night work.

Table 4 Small and medium-sized enterprises (SMEs) and large companies with unusual working hours (required from at least 20% of employees) (%)

	Night work	Saturday work	Sunday work	Changing working hours
Establishment size <250 employees	9	25	15	17
Establishment size >249 employees	26	35	28	35

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

As with the EUCOWE data set, it is interesting in this ESWT survey to distinguish between 'true' (i.e. independent) SMEs and those SMEs that belong to a larger company. The ESWT finding is the same for the EU21, for a substantially greater number of countries than in EUCOWE, when it comes to the importance of working non-standard working hours (*see Table 5*). Each type of non-standard working hours is less frequently used in independent companies, both smaller and larger ones. Corporations are likely to expose their staff to unusual working hours more so than independent companies (with the single exception of changing hours in larger establishments) and particularly more so than independent small and medium-sized companies. It can be assumed that, quite in line with the EUCOWE findings, one of the reasons for this pattern is the greater exposure of larger companies, on average, to international competition, which proved, according to the EUCOWE data, to be a major driver for the extension of operating hours (Groß *et al*, 2004).

Table 5 Companies featuring unusual working hours (required from at least 20% of employees), by company status and size (%)

	Night work	Saturday work	Sunday work	Changing working hours
Establishment size <250 employees independent company	8	22	13	15
Establishment size <250 employees part of other company	10	30	18	20
Establishment size >249 employees independent company	23	30	25	37
Establishment size >249 employees part of other company	29	39	30	34

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

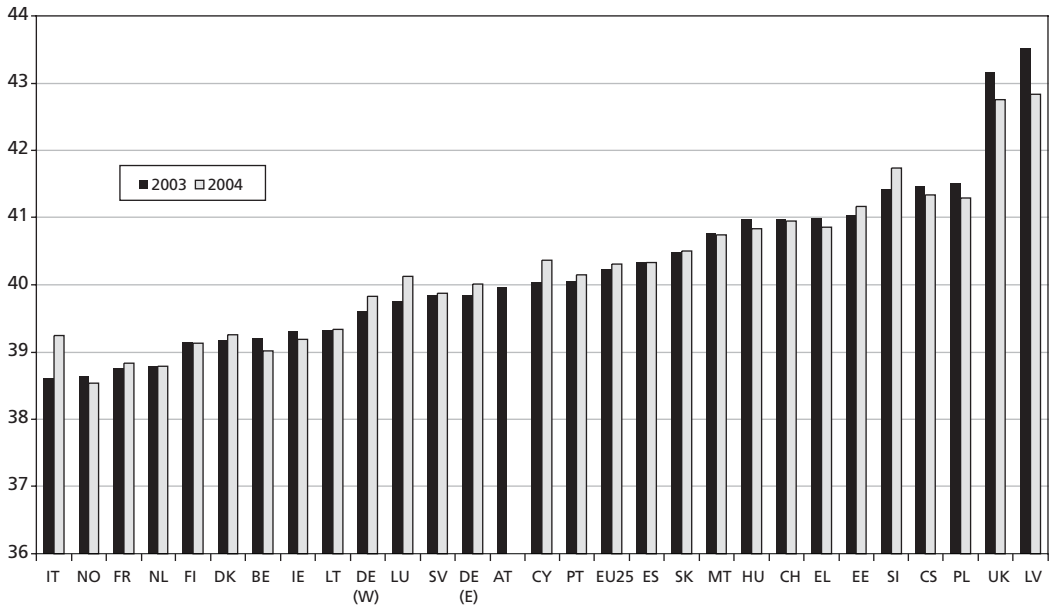
Research perspectives

It might be assumed that a country or sector that shows high levels of non-standard working hours does not score highly when it comes to the quality of working conditions. While this may be true in many cases, it is not necessarily so. It should be kept in mind what was already mentioned in the introduction to this report – that this ESWT survey is an establishment survey, providing information on the percentages of establishments using one form, or another, of non-standard working hours for a given proportion of employees. For instance, a high proportion of night workers in an establishment may indicate a high degree of night work in the overall operating time of the establishment, but equally it could reflect a moderate degree of night work in the overall operating time which is put into practice by many workers. In the latter case, however, the average working hours of individual employees would be shorter than in the former, all other things being equal. Thus, the idea that a high

proportion of employees working a smaller portion of unusual hours cannot be dismissed. What applies to individual companies might apply to an economy at large; in that case, short working hours could be regarded as compensation for, or 'counterweights' to, unusual working hours.

When using the European Labour Force Survey (ELFS) as a rough guide to the average hours worked by full-time employees, it is immediately apparent that this idea of compensation is not relevant for the UK (*see Figure 17*). In the UK with its established tradition of extended individual working hours, it is unlikely that a high proportion of workers benefit from short working hours as a counterweight for working at unusual hours. However, at least in principle, the consideration may be relevant for some of the other countries with high incidence rates of non-standard working hours, such as France, Finland, Sweden or Germany. There is an obvious need for further analyses with a more detailed use of employee survey data to explore the relationship touched on here.

Figure 17 Usual weekly working time of full-time employees in EU25*, 2003 and 2004



* EU25 plus Norway and Switzerland; no comparable data for Austria from 2004 onwards.
Source: ELFS and Institut Arbeit und Technik, 2006

2 Country or sector: What determines unusual working hours?

The previous chapter has outlined the extent to which unusual working hours vary across countries and sectors. Nevertheless, such a descriptive analysis does not reveal how far each of these factors determines a particular pattern of unusual hours. For instance, in a previous analysis on flexibility measures in establishments based in five countries, Schief (2006) found location to be a mitigating factor. Yet, it is a fact that sector-specific demands can require a full range of operating hours, such as in the healthcare sector. So, when considering the issue of unusual working hours, it is reasonable to also expect profound sectoral effects.

Determining country and sector characteristics

This chapter examines the influence country and sector exert on the incidence of unusual working hours in companies. More specifically, it aims to shed light on the following three questions:

- What role do country characteristics play?
- To what extent are unusual hours an effect of characteristics specific to the sector?
- Do establishments cope with the need for unusual working hours according to sector-specific demands or are unusual working hours a combination of both sector-specific demands and a country's approach to work, such as work regulation, work culture, customs and practices?

From a methodological point of view, it should be kept in mind that 'country' itself does not really fulfil the requirements of an explanatory variable as long as what 'country' stands for is not defined. In the ESWT context, it is very likely that it is not the country itself that causes differences in working time arrangements, but the various national differences in terms of labour market and product market regulations, customs and practices, and other aspects that affect working time policy at company level. Since the ESWT does not provide any information about these factors, 'country' serves as a reliable placeholder instead.

Previous analyses show that company size, as well as country and sector, is important when considering the incidence of unusual working hours. Moreover, in line with the ESWT findings, EUCOWE and other research have shown that work organisation and the degree to which working and operating hours are decoupled differ greatly across companies of different sizes. A high variance in company size, therefore, leads to highly heterogeneous data. In addition, as Muñoz de Bustillo and Fernandez (2007) point out, it seems that national and also informal regulations affect SMEs much more than large-scale enterprises (LSEs). Thus it is reasonable to expect differences in the influence of country and sector on unusual working hours, depending on the size of an enterprise. Since it is also true that both country and sector are associated with company size, the latter can therefore be regarded as a highly confounding variable that it is not easy to control for.

In order to take the findings of Muñoz de Bustillo and Fernandez (2007) into account and to deal with the confounding variable problem, it was decided to estimate country and sector effects for small establishments (which for the purposes of the present exercise are defined as establishments with 10 to 49 employees) and large establishments (defined as establishments with at least 250 employees) separately. This approach is best suited to add to the knowledge on the specific way country, sector and company size are intertwined when it comes to work organisation forms.

Analysing country and sector influence

A series of stepwise multiple logistic regression analyses were performed (see Annex, Part 2 for a more detailed description of the method). The first ones aimed at estimating the effects of country and sector only, while the later analyses also took into account possible interactions between the two selected predictor variables (*see Table 6*).

Table 6 Country and sector effects on forms of unusual working hours, results from a stepwise multiple logistic regression analysis

	Saturday work		Sunday work		Night work		Changing working hours	
R^2 Company size (employees)	small (10–49)	large (>249)	small (10–49)	large (>249)	small (10-49)	large (>249)	small (10–49)	large (>249)
Model I*								
1. Step: sector	.25	.33	.32	.36	.17	.36	.11	.23
2. Step: country	.29	.38	.35	.41	.18	.40	.15	.34
Model II*								
1. Step: sector x country	.33	.48	.39	.49	.24	.46	.20	.43
2. Step: sector	.34	.49	.40	.50	.24		.21 (3.step)	.44
3. Step: country	.34	.49	.40	.51	.25		.21 (2.step)	.45

Note: For the estimation of Saturday work and shift work in LSEs, in Model II, Luxembourg, Cyprus, Latvia and Slovenia have been omitted due to small case numbers; and for the estimation of Sunday work and night work in LSEs, Cyprus, Latvia, Luxembourg, Portugal and Slovenia have been omitted due to small case numbers.
* all displayed r^2-values, $p < .001$
Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Model I was computed in order to estimate the main effects of country and sector separately. The results show clearly that for all four forms of unusual working hours, including changing working hours, the sector factor accounts for most of the variation between companies. This is true for both small and large enterprises. In fact, the amount of additional explained variation by country is, although significant, rather small (with the exception of changing working hours), so country characteristics seem to play only a minor role with regard to the incidence of unusual working hours at company level. The data reveal that it is sector, rather than country, that determines whether or not establishments rely on unusual working hours.

Model II is a refined Model I, by not only taking into account sector and country effects, but also allowing for possible interactions between the two variables.[11] Incorporating these interactions increases the explained variance on all accounts and changes significantly the results of Model I. Here, the interactions turned out to be the most important predictors for the likelihood of unusual

[11] Due to the incorporated interactions between the variables, cell allocation is in some cases a bit small; this is not to deny the overall trend of ESWT data, but to suggest that particular significant or non-significant interactions between country and sector should be interpreted with caution.

working hours in companies, followed by sector. Country, finally, has to be regarded again as having less influence when it comes to the incidence of unusual working hours – except for the incidence of changing hours in small enterprises where country seems to be a somewhat better indicator than sector.

The regression analysis shows that neither country nor sector effects as such are accountable for any pattern of unusual working hours. However, data indicate that the interplay between sector and country should not be underestimated. This is to say that although sector-specific demands clearly play a major role, which is highlighted in the results of Model I, the particular location of a company also adds significantly to the explained variance. Neither country nor sector are stand alone determinants. The way the sector determines the incidence of unusual working hours in companies is always influenced by the respective country, its regulations, customs and practices.

Finally, when comparing the results for small and large enterprises, the findings show that the proportion of explained variance for large companies exceeds that for small enterprises significantly, and in the cases of night work and changing hours, quite dramatically so. Obviously, in the case of small enterprises the information of sector affiliation and location of an establishment is not comparably as sufficient in predicting the incidence of work at unusual hours. The low proportion of explained variance between small companies leads to the assumption that, in the case of these companies, the decision whether or not unusual working hours are necessary follows different rules compared to large establishments. However, when focusing on the factors – country and sector – that are capable of explaining the existence of particular unusual working hours, the same explanation pattern as for LSEs emerges.

Overall, Model I shows that sector requirements are the main contributors when it comes to the incidence of unusual working hours. The additional proportion of explained variance stemming from country is comparably small, but still significant and influential. The importance of country in this regard is re-evaluated when taking a closer look at Model II. Here, free interactions were allowed for between the two factors, resulting in a noteworthy increase of explained variance. Thus, the results suggest that countries find their own particular way to deal with sector-specific requirements – and vice versa.

3 Difficulties encountered by companies with unusual working hours

Having described the incidence of unusual working hours and analysed their major determinants, it is now important to examine the problems establishments may encounter when deploying their employees at unusual or changing work hours.

Literature extensively covers the subject of adverse outcomes of unusual working hours for employees. For instance, evidence suggests that working permanently at night or working shifts, as well as working more than 40 hours a week, affects health and sleep habits in a negative way (Bauer *et al*, 2004). In addition to these negative impacts on one's health, deviances from the standard working day may exert extra pressure on the organisation of one's social life, including family, friends but also household duties. Simon *et al* (2004) investigated the occurrence of work–home conflicts among nurses in eight European countries. They found that the arrangement of working hours, notably shift work and irregular hours, was the main cause to interfere with the nurses' work–life balance. To be required to work at times that do not adhere to the social 'norm' can thus severely impact on the work–life balance of people. This in turn can be expected to significantly impact on the motivation of workers.

For obvious reasons, the ESWT survey cannot provide data on employee motivation levels. It is therefore impossible to deduce the effects of unusual working hours on individual employees. The following analysis, however, reflects the perception of company managers on that matter. Among other issues, managers gave an assessment of their particular establishment's problems with general absenteeism and absenteeism due to ill-health, poor motivation of workers and difficulties in retaining staff. The analysis thus aims to identify the influence of unusual working hours – night work, working on Sundays and Saturdays, work at changing hours – on companies in this regard.

For this purpose, a series of logistic regression analyses were computed separately for each of the described phenomena. Since the different forms of unusual working hours are to a certain degree intercorrelated (*see Chapter 2*), it was decided to compute regression analyses for each incidence separately to avoid multicollinearity.[12] In order to get a clear picture of the influence of unusual and changing working hours on possible problems encountered by companies with their staff, each of the working time variables – work at night, Saturday work, Sunday work and changing working hours – were entered as a trichotomous variable in line with the following three conditions: no incidence of respective unusual hours; up to 19% of workers engaged in working unusual hours; and at least 20% of workers engaged in working unusual hours.

Each analysis controlled for the effects of the following variables: country; sector affiliation; establishment size; degree of flexible work arrangements; overtime; and the proportion of younger and older workers in the establishment (for a detailed description of variables entered to the equation as well as reference categories used and results, see Annex, Part 3). The importance of the first three variables – country, sector and establishment size – and their potential to mediate or moderate possible effects on unusual working hours has already been shown and does not require any further

[12] Multicollinearity may be defined as the existence of a correlation between the independent variables and can impact severely on the estimation itself in such a way that results can be over- or underestimated. Consequently, incorrect conclusions about relationships between independent and dependent variables can be drawn.

comment. Moreover, flexibility measures and overtime were included in the analysis as control variables because it was expected that the presence (or absence) of those policy instruments would be able to mitigate (or add to) any adverse effect possibly stemming from unusual hours. Additionally, the proportion of younger and older workers in the company was incorporated. This was done due to the fact that younger and older workers are known to have higher absenteeism rates. Furthermore, younger workers are inclined to change jobs more frequently than older or middle-aged workers. Thus, by adding both factors to the equation, their possible influence on health problems, poor motivation or staff fluctuation levels can be controlled within the regression analysis.

Sickness and absenteeism

The logistic regression analysis clearly shows that establishments with unusual working hours in the 21 countries surveyed report problems with sickness and absenteeism more frequently than companies with no such working hours, or only a small incidence of unusual working hours. Moreover, it appears that any use of unusual working hours – even where the number of employees concerned is small – increases the probability that managers report more sickness problems. According to manager assessment, the situation appears to be worse in establishments that have night work and changing working hours – for both incidences, data indicate that the likelihood of encountering difficulties with sickness and absenteeism is 1.6 times greater than in establishments that do not observe such hours. As for the incidence of weekend work, data show similar results for both the cases of Saturday and Sunday work. Here, the likelihood of sickness and absenteeism problems is still 1.3 times greater compared to establishments that do not require staff to work on the weekend.

Staff motivation

It can be concluded from the results of the logistic regression analysis that managers experience motivational problems with employees who are exposed to unusual working hours. As with problems of absenteeism and sickness, the highest increase of probability is to be found in establishments where at least 20% of employees are exposed to regular night work. The likelihood for establishments to experience motivational problems is roughly 1.5 times greater for companies working both at night and on Saturdays compared to those who do not observe these working hours. In establishments that work on Sundays or at changing hours, the probability of encountering difficulties with staff motivation is still 1.4 times greater than in establishments where those hours are not worked.

Retaining staff

Compared to establishments featuring no unusual working hours, data show clearly that the likelihood for establishments to experience difficulty in retaining staff increases with the proportion of workers exposed to unusual working hours. Problems with retaining staff are more likely to be reported by managers of establishments where at least 20% of staff have to work Saturdays or Sundays. In this case, the likelihood of encountering difficulties in keeping staff is 1.7 times greater than in companies that do not rely on weekend work. Likewise, establishments with changing working hours are 1.5 times more likely to suffer from problems of high staff turnover. In contrast to the results for motivational and sickness problems, establishments with night work do not stand out when it comes to difficulties with retaining staff. Still, the likelihood for those establishments to encounter problems is 1.3 times greater than in companies not operating night work.

In all, the ESWT data provide profound evidence that managers of establishments with unusual and changing working hours report more difficulties with respect to sickness and absenteeism, motivational problems and high staff turnover than do managers of establishments without unusual working hours.

4 Compensation for unusual working hours

For decades, there has been a widely accepted practice of compensating workers exposed to unusual hours through extra pay. Bonus payments for shift, night and Sunday work are still well-established features in many sectors of the European economies. Workers who are deployed at unusual hours by their companies appear to be relatively satisfied with this practice, as Muñoz de Bustillo and Fernández (2007) found in their combined analysis of the EUCOWE data set and the Third European Working Conditions Survey. The authors highlighted that 'these compensations explain that although the negative effects [of unusual working hours] are undeniable, the levels of satisfaction with these working arrangements are not as low as otherwise could be expected'.

Two reservations should be expressed at this stage. First, given the continuous structural change in employment, it cannot be taken for granted that in the future most workers exposed to unusual hours will continue to benefit from financial compensation. For example, in many service activities such as retail trade or hotels and restaurants, it has become quite evident that companies in these sectors regard weekend work as part of the 'normal' working time. True, these service sectors have, by and large, a higher rate of female workers as well as more part-time and fixed-term employment, and are less unionised than the steel or chemicals industries, or other traditional manufacturing industries that have unusual working hours. However, it cannot be ruled out that the traditional way of compensating for unusual working hours in the latter industrial sectors will diminish gradually, along with the loss in importance in terms of overall employment (Dølvik and Waddington, 2005).

The second reservation is equally important, but closer to the subject of the ESWT survey. As mentioned in the introduction, there may be forms of compensation, relevant for workers putting in unusual hours, other than extra pay. In fact, discussions on working time-related compensations for unusual working hours and activities in collective bargaining have evolved over recent years (Pärnänen *et al*, 2005; Demetriades *et al*, 2006). It follows a presentation of findings on the incidence of potential working time-related compensation for unusual working hours in those establishments that deploy 20% and more of their staff regularly at unusual and changing hours.

As the ESWT is an establishment survey, the data collected do not specify whether or not it is precisely those workers who put in unusual hours who benefit from compensation; in turn, the data provided indicate whether or not establishments using non-standard working hours have potential working time-related benefits for these hours in place. This information has value since it may give a rough indication of the usual working time practices of companies with non-standard hours, compared to those without them.

A second caveat has to be added. As seen in previous chapters, the definition of sectors chosen for the ESWT survey had to be, for practical reasons, reduced to little more than a dozen. This, in turn, limits the scope for analysis with regard to unusual and changing working hours. In this respect, one particularly relevant example is the manufacturing sector, which encompasses a wide range of different industries with contrasting working time practices. Many interesting differentiations which could be made in the analysis are hidden within manufacturing – a statistical grouping of industries. Despite this methodological constraint, it is worthwhile to exploit the remaining potential for analysis.

Given the information provided by the ESWT data set, the following three practices, reported by management, were chosen as potential compensations for unusual working hours:

- notice of changing hours;
- early retirement;
- contractual working time.

Obviously, this choice is arbitrary as many other aspects of working time organisation exist relevant to this analysis; for example, employees may have entitlements to turn down, within certain limits, employers' requests for weekend work, as is laid down in some collective agreements for the retail trade sector (Jany-Catrice and Lehndorff, 2005). The following analysis will focus on those aspects which are relevant and present in the ESWT survey, and which the size of data set allows to be interpreted in an appropriate manner. In most cases, findings will be broken down by country, as it is assumed that actors at national level will find them of interest.

Notification period for changing working hours

For employees who are obliged to work changing hours, it is particularly important whether or not they are given notice well in advance of changes in working hours. As this aspect has been highlighted in the ESWT overview report (Riedmann *et al*, 2006), reference can be made to the findings presented there.

Figure 18 shows the situation for establishments with at least 20% of staff working at changing hours. Only a minority of managers from these establishments report particularly short notification periods. As previously observed, the profile varies across the 21 countries surveyed. When it comes to notification periods allowing for reliable work patterns (two weeks and more) while also focusing on those countries with an above-average use of changing working hours, it is in Sweden, Finland, Latvia, Poland, Germany and France that more than half of the establishments with changing working hours report to notify their staff within this timeframe.

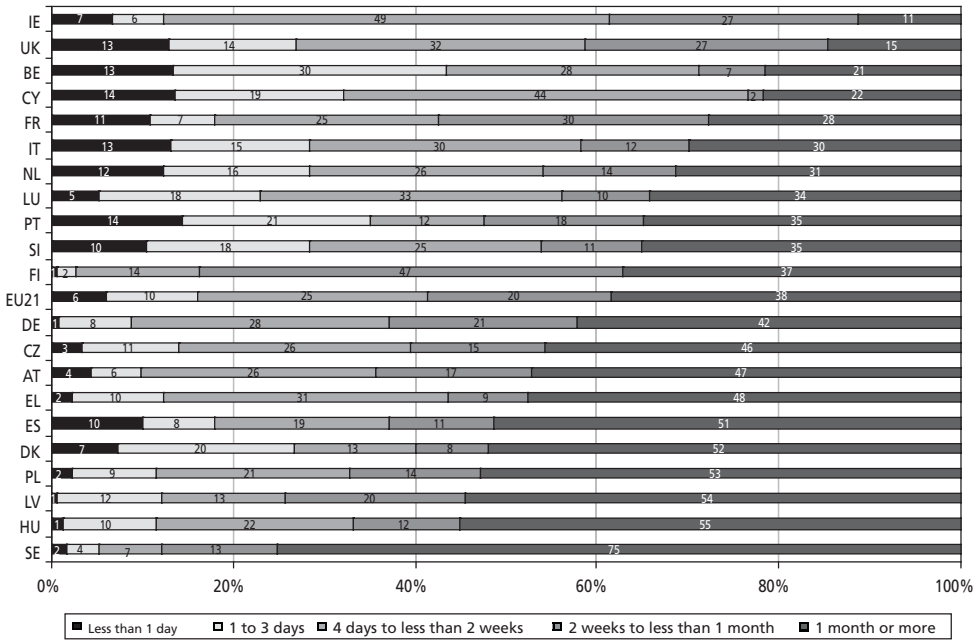
Further analysis would need to go into much more detail, examining both quantitative and qualitative evidence. An obvious distinction would have to be made between regular shift work, including annual rosters in large-scale manufacturing operations, and service activities with staffing variations in line with fluctuating demand. In comparison, the latter applies to workforces generally characterised by a higher proportion of women than the former. Therefore, a focused policy agenda aimed at a better work–life-balance would require further research.

Early retirement

Early retirement in return for shift work and unusual working hours has been one of the standard practices in many European countries in recent decades. However, this approach has come under pressure recently (Bosch and Schief, 2006). It is therefore worth looking at the practice as reported by managers in the ESWT survey.[13]

[13] For in-depth analysis of the extent to which phased and early retirement schemes are used in European companies as well as the underlying reasons, see the ESWT report on *Early and phased retirement in European companies* (Leber and Wagner, 2007).

Figure 18 Notification period in companies with at least 20% of workers deployed at changing hours, by country



Base: Establishments with changing hours (applying to at least 20% of staff)
Source: ESWT, 2004–2005

The findings demonstrate the persistence of the traditional approach in most of the countries surveyed (for data tables, see Annex, Part 4). In some countries, the difference in the proportion of establishments offering early retirement is striking, when comparing companies without changing hours or night work with those with changing hours or night work.. In Belgium, for instance, early retirement provisions in night work establishments are 25% more frequent than in establishments without night work. In countries with a high incidence of changing working hours, such as Sweden, the provision of early retirement in companies with changing working hours is above the EU21 average when compared to the reference group (i.e. establishments without changing hours). In France, however, it is below the EU21 average. When it comes to night work, Germany is noteworthy for a substantially smaller use of early retirement in night work establishments compared to establishments without night work.

As early retirement schemes are increasingly coming under pressure in many European countries, the features reflected in this survey may not be maintained for another decade. This prompts the question as to whether or not new forms of working time-related compensation for changing working hours or night work will be developed. Given the well-known health risks connected with these forms of working time, companies in which a high number of staff are deployed in these working time systems will face the question of how to cope with an ageing workforce.

Contractual working time

The ESWT survey included a question about contractual working time for full-time workers in the establishment. While it is true that what counts, in the end, are the actual working hours of those employees who work regularly at unusual hours, it is the contractual hours that may be subject to collective bargaining. Thus, when it comes to address potential policy areas, it is useful to take contractual hours into account.

As already mentioned in the concluding section of Chapter 2, reduced working time might be regarded as one basic form of compensation for non-standard working hours. For this reason, the average weekly contractual working hours were compared between the following establishments, namely:

- establishments with at least 20% of staff regularly working on Sundays ('Sunday work establishments') with those in establishments without any Sunday work ('reference group');
- establishments with at least 20% of staff regularly working at night ('night work establishments') with those in establishments without any night work;
- establishments with more than 20% of staff regularly working at changing hours ('changing hours establishments') with those in establishments without any work at changing hours.

With regard to Sunday work, compared to the reference group, a reduced average weekly working time in Sunday work establishments exists in six countries. Two of these countries, the Netherlands and Sweden, show a relevant difference in the average weekly working time, amounting to respectively 0.9 and 1.6 hours less in working hours per week, in comparison to the establishments of the reference group (for details, see Annex, Part 4). In most other countries, the difference in contractual working hours is not relevant between the two groups of establishments. However, in four countries – Cyprus, Latvia, Austria and Luxembourg[14] – Sunday work establishments report longer average weekly working times than those of the reference group by more than one hour per week.

Comparing this finding with the incidence of Sunday work by country (*see Figure 6*), Sweden appears to be the only country, out of those with above-average use of Sunday work, where Sunday work establishments report a substantially reduced average weekly working time of contractual hours than those without Sunday work.

For night work, the finding is quite similar. Reduced average weekly contractual hours in night work establishments compared to establishments of the reference group are reported from not more than four countries. In two of these countries – the Netherlands and Sweden – the difference in working time may be regarded as relevant, as in night work establishments the contractual hours are more than one hour shorter than in the reference group. In most other countries, no relevant difference in contractual working hours exists between the two groups of establishments. Moreover, in Germany, Greece and Austria, night work establishments report even longer hours, exceeding the reference group by more than one hour per week.

Looking at Figure 9, which depicts the incidence of night work by country, Sweden is again the only country, out of those with an above-average use of night work, where night work establishments report a substantially reduced average weekly working time (i.e. less contractual hours per week) than those without night work.

The findings for establishments with changing working hours do not differ substantially. Here, there is no country in which changing hours establishments report reduced working times by more than one hour per week. Sweden again stands out, with an average weekly working time difference of –0.7 hours per week. At the far end of the scale, changing hours establishments in Luxembourg report contractual hours exceeding the ones in the reference group by 1.3 hours a week. A comparison with

[14] Note again that findings from smaller countries should be read with caution due to small cell allocation.

Figure 12 confirms that in no country showing a high incidence of changing working hours, other than Sweden, is the difference in contractual hours between the two groups of establishments noticeable.

The bottom line of this exercise is that among the countries with high scores in unusual working hours (*see Table 1*) there is no country, other than Sweden, where establishments with unusual working hours report substantially shorter average weekly working times (i.e. less contractual hours) than those without unusual working hours. Most notably, establishments with unusual working hours and those without in the UK, which scored highest in terms of unusual hours, do not report any difference in working hours that is worth mentioning.

Beyond the comparison of establishments with unusual working hours with the reference group by country, it is interesting to break down the differences by sector of activity, with particular attention given to industries with extensive use of unusual working hours. However, as limited cell allocations in the data set would not allow for such an exercise, the relevance of the breakdown by country shall be highlighted, by using employee survey data on usual weekly working hours of full-time employees. Data from the European Labour Force Survey (ELFS) for the steel industry and the hotels and restaurants sector was evaluated since these two sectors are known for having particularly high proportions of workers deployed at unusual working hours (*see Table 7*). It should be noted that the ELFS data set also includes Estonia and Slovakia, and thus provides average weekly hours worked in these two sectors for 23 European countries (EU23).

As far as hotel and restaurants are concerned, the picture drawn by the ELFS evaluation underlines the findings from this ESWT survey. Usual working times in this sector, which has the highest scores in unusual working hours of all sectors defined in the ESWT survey (*see Table 3*), exceed the national averages in almost all countries by at least half an hour per week. It is only in Finland that the average weekly working time is shorter than average by more than half an hour. In the UK and Sweden, two of the high-profile countries when it comes to unusual working hours, the average weekly working times in hotels and restaurants are close to the respective national averages.

For the steel industry, which was not defined separately in the ESWT survey, the picture is more contradictory. Longer working times in five countries, including the UK, contrast with shorter working times in six countries, including countries with a high incidence of unusual working hours, such as Sweden, Finland, Germany and France. It should be noted, however, that in most of these countries this working time difference cannot be called substantial, with the only possible exceptions being the Czech Republic and Slovakia where the average working times in the whole economy are higher than the EU23 average.

Two conclusions can be drawn from this quick glance at employee survey data. First, it is reasonable to assume that one major reason for the difference in terms of average working times between the steel industry and the hotels and restaurants sector is the strong unionisation of the former, which used to be one of the strongholds of European trade unions. Moreover, the steel industry has a higher proportion of men among its workforce, while the hotels and restaurants sector counts a higher number of female workers. In this respect, the service sector highlighted here may point more to future challenges of working time and work–life balance-related policies than does the traditional, though high-tech, steel industry.

Table 7 Average weekly hours worked in the steel, and hotels and restaurants sectors compared to those in the whole economy (full-time employees), 2004

Country	Hotels and restaurants (NACE H 55)	Steel industry (NACE D 27)	Whole economy	Hotels and restaurants as share of whole economy (%)	Steel industry as share of whole economy (%)
EU23	42.54	39.78	40.25	105.7	98.8
BE	39.98	40.31	39.02	102.5	103.3
CY	43.71	n.a.	40.37	108.3	n.a.
CZ	42.73	39.51	41.33	103.4	95.6
DE	42.17	38.27	39.84	105.8	96.1
DK	39.97	n.a.	39.26	101.8	n.a.
EE	41.02	n.a.	41.16	99.7	n.a.
EL	45.65	41.12	40.86	111.7	101.1
ES	43.4	40.48	40.33	107.6	100.4
FR	41.13	38.2	38.83	105.9	98.4
HU	41.85	40.84	40.83	102.5	100.0
IE	39.62	39.46	39.19	101.1	100.7
IT	42.71	41.11	39.25	108.8	104.7
LT	40.28	n.a.	39.35	102.4	n.a.
LU	42.64	40.27	40.12	106.3	100.4
LV	42.72	n.a.	42.84	99.7	n.a.
MT	41.34	n.a.	40.74	101.5	n.a.
PL	43.3	41.56	41.29	104.9	100.7
PT	43.46	n.a.	40.14	108.3	n.a.
FI	38.15	38.78	39.13	97.5	99.1
SI	42.43	41	41.73	101.7	98.3
SK	41.98	39.19	40.5	103.7	96.8
SE	40.28	38.31	39.87	101.0	96.1
UK	42.82	43.77	42.76	100.1	102.4

Note: ELFS data also include Estonia (EE) and Slovakia (SK), covering 23 European countries (EU23);
n.a. = data not available, too small cell allocation.
Source: ELFS, 2004; IAT, 2006

The second conclusion is that even the workers in the 'privileged' steel industry, in spite of their high profile when it comes to all major forms of unusual and changing hours, do not benefit from substantially shorter working hours compared to the economy as a whole.

The ELFS evaluation supports the evidence based on the ESWT survey that, possibly apart from Sweden, there is thus far no comprehensive policy aimed at systematically reducing working hours for employees regularly exposed to unusual hours. Given that traditional forms of compensation, such as early retirement, may no longer rank at the top of the list of policy options in the years to come, there may be a renewed interest among actors at national or industry levels, not to mention at company level, in new approaches to working time benefits for unusual working hours.

Conclusions 5

It is widely accepted that night work, weekend work and work at changing hours, in particular shift work, have a serious impact on work–life balance. Health risks entailed by regular night work and shift work are well established in the literature. More recently, research has begun to highlight the problems related to combining work with social or family life for employees who are frequently exposed to weekend work. In addition, these issues have gained increased attention with the public and among social actors. For these obvious reasons, the ESWT survey addressed the subject of changing and unusual working hours.

Drawing on answers from managers who participated in the ESWT survey, this report explores the use of these different working time arrangements in European companies. It provides a detailed description of the incidence of changing and unusual working hours, which are also called 'non-standard working hours', across countries, sectors and establishments of different sizes. In light of this, a number of significant findings emerge in relation to the different forms of unusual working hours in the 21 countries surveyed.

Regular Saturday work is most prevalent in the UK, Cyprus, France and Ireland, whereas regular Sunday work is most common in the UK, Sweden, Finland and Latvia. Regular night work is strongest in the UK, the Czech Republic and Sweden, and regular work at changing hours is most prevalent in Finland, Sweden and Poland. As for the sectors involved, hotels and restaurants, followed by health and other social and personal services, stand out when it comes to Saturday work and Sunday work. The occurrence of regular night work is highest in sectors such as utilities (electricity, gas and water supply), health and social work, and hotels and restaurants. The incidence of regular work at changing hours is strongest in hotels and restaurants, followed by the health and transport sectors. The size of the establishment is also relevant: by and large, the smaller the establishment, the less important are non-standard working hours.

When pulling together these findings, it is possible to distinguish several groups of countries and sectors in which companies are most likely to operate at non-standard hours. In relation to the countries, the UK stands out for having a particularly high share of establishments that report the regular deployment of at least 20% of staff at unusual working hours. At the far end of the scale, three southern European countries – Portugal, Spain and Greece – show particularly low shares of companies requiring their employees to work regularly at unusual hours. In between, there is a group of countries with above-average shares of enterprises indicating working time arrangements in each of the three forms of unusual working hours. These include Sweden, France, Finland and Germany. At the lower end of the scale, the Netherlands, Hungary and Italy show below-average scores in each of the three forms of unusual working hours.

With regard to sectors, two services sectors record a remarkably high incidence of unusual working hours, namely the hotels and restaurants sector, and the health and social work sector. Sectors such as utilities, other social and personal services, and transport are also very prominent in that regard. In contrast, company managers of establishments in sectors such as financial intermediation, construction and education report the least overall shares in regularly deploying staff at unusual hours.

Beyond the ranking of countries and sectors, the report also looks at whether unusual working hours are determined by distinct sector characteristics or by national regulations, customs and practices.

Based on a series of multiple logistic regression analyses, it is the characteristics of the sector rather than the country that prove to be of prime importance. This finding comes as no surprise since particular industries and services require specific working time organisations, either for competitive or for social reasons. Also, because individual industries and services are unequally distributed across countries, it should be obvious that sector characteristics impact first on working time practices, including work at non-standard hours, across countries.

However, as soon as possible interactions between country and sector are taken into account, it becomes apparent that country-specific characteristics such as work regulations and work culture can affect working time organisation in individual sectors. Thus, the interaction between country and sector proves to be the single most important explanation for differences in the incidence of unusual working hours. ESWT data supplied profound evidence that neither country nor sectors are stand-alone determinants of the occurrence of non-standard working hours in European companies. Yet, it is true that sector-specific demands come first with regard to the presence of unusual working hours in companies, but to what extent this occurs depends on country characteristics.

Looking at the problems faced by establishments with regular use of non-standard working hours, ESWT data provide sound evidence of personnel problems. As reported by company managers, establishments that require at least 20% of their staff to work at unusual and changing hours are confronted with more difficulties than companies without unusual working hours. These difficulties relate to sickness, absenteeism and motivational problems, as well as to staff turnover. Since the ESWT is an establishment survey, it is impossible to conclude from the present data that it is employees exposed to unusual working hours, rather than employees working standard hours (for example, from nine to five), who are more likely to suffer from lower motivation or are more often inclined to change jobs. Nonetheless, this survey does show that managers in non-standard hours establishments see themselves confronted at a clearly higher than average level with absenteeism, motivation and staff turnover problems.

For this reason, the question of what compensation workers receive for working at non-standard hours might become equally important for establishments operating these hours and for the employees in these companies. Traditionally, extra pay for unusual or changing working hours has been the widely practised way of compensating for the hardships of night and shift work, and Sunday work. Given the challenge of an ageing workforce, this approach may become unsustainable in the future. Moreover, the same may apply to early retirement, the only widespread non-pay benefit for night and shift work.

According to ESWT data, early retirement is a feature of many establishments operating at unusual and changing hours. Low scores in France and Germany, however, could be interpreted as early signals of the tide turning. The question of other potential working time-related benefits may gain importance, with the future of early retirement becoming a key issue of public debate.

With this in mind, it is useful to shed light on the contractual work hours in establishments with a high incidence of unusual and changing working hours. In terms of contractual working hours, only Sweden among the countries with a high occurrence of unusual working hours in establishments reports substantially shorter contractual working hours in companies with non-standard working hours than in those without unusual working hours. Most notably, for establishments in the UK,

which ranks at the top in terms of unusual working hours, no significant difference in working hours exists between these two groups of companies.

So far, the question of alternative working time-related compensations for unusual and changing working hours still seems absent from the policy agenda of most establishments deploying at least 20% of their staff to work regularly at these hours. This conclusion is supported by the European Labour Force Survey which looked at the usual weekly working times of workers in high-profile sectors with non-standard working hours. Since there is thus far no evidence of a comprehensive policy aimed at systematically introducing shorter working hours for employees exposed regularly to unusual working hours, and given that traditional forms of compensation such as early retirement may no longer be at the top of the list of policy options in years to come, there may be a renewed interest among actors at national, industry and company levels in fresh approaches to working time benefits for unusual working hours.

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Annex
Data related to Chapters 1 to 4

Part 1: Data related to Chapter 1

Table A1 Correlations of non-standard working hours, by country

Country		Night work	Saturday work	Sunday work	Changing working hours
BE	Night work		.23	.39	.48
	Saturday work	.23		.67	.22
	Sunday work	.39	.67		.30
	Changing working hours	.48	.22	.30	
DK	Night work		.58	.66	.32
	Saturday work	.58		.86	.36
	Sunday work	.66	.86		.42
	Changing working hours	.32	.36	.42	
DE	Night work		.39	.47	.31
	Saturday work	.39		.74	.47
	Sunday work	.47	.74		.39
	Changing working hours	.31	.47	.39	
EL	Night work		.25	.48	.29
	Saturday work	.25		.57	.42
	Sunday work	.48	.57		.37
	Changing working hours	.29	.42	.37	
ES	Night work		.50	.57	.45
	Saturday work	.50		.81	.35
	Sunday work	.57	.81		.37
	Changing working hours	.45	.35	.37	
FR	Night work		.31	.53	.39
	Saturday work	.31		.56	.32
	Sunday work	.53	.56		.42
	Changing working hours	.39	.32	.42	
IE	Night work		.26	.40	.27
	Saturday work	.26		.69	.38
	Sunday work	.40	.69		.34
	Changing working hours	.27	.38	.34	
IT	Night work		.33	.52	.33
	Saturday work	.33		.61	.27
	Sunday work	.52	.61		.32
	Changing working hours	.33	.27	.32	
LU	Night work		.49	.57	.46
	Saturday work	.49		.70	.48
	Sunday work	.57	.70		.40
	Changing working hours	.46	.48	.40	
NL	Night work		.53	.62	.36
	Saturday work	.53		.81	.33
	Sunday work	.62	.81		.43
	Changing working hours	.36	.33	.43	

Table A1 (*continued*)

Country		Night work	Saturday work	Sunday work	Changing working hours
AT	Night work		.50	.54	.50
	Saturday work	.50		.74	.40
	Sunday work	.54	.74		.42
	Changing working hours	.50	.40	.42	
PT	Night work		.20	.22	.35
	Saturday work	.20		.59	.28
	Sunday work	.22	.59		.33
	Changing working hours	.35	.28	.33	
FI	Night work		.46	.52	.45
	Saturday work	.46		.80	.54
	Sunday work	.52	.80		.56
	Changing working hours	.45	.54	.56	
SE	Night work		.47	.53	.40
	Saturday work	.47		.86	.41
	Sunday work	.53	.86		.48
	Changing working hours	.40	.41	.48	
UK	Night work		.43	.51	.31
	Saturday work	.43		.76	.28
	Sunday work	.51	.76		.33
	Changing working hours	.31	.28	.33	
CZ	Night work		.38	.50	.34
	Saturday work	.38		.74	.40
	Sunday work	.50	.74		.38
	Changing working hours	.34	.40	.38	
CY	Night work		.31	.55	.29
	Saturday work	.31		.54	.20
	Sunday work	.55	.54		.44
	Changing working hours	.29	.20	.44	
LV	Night work		.40	.49	.32
	Saturday work	.40		.86	.45
	Sunday work	.49	.86		.47
	Changing working hours	.32	.45	.47	
HU	Night work		.43	.70	.44
	Saturday work	.43		.63	.37
	Sunday work	.70	.63		.44
	Changing working hours	.44	.37	.44	
PL	Night work		.51	.63	.40
	Saturday work	.51		.78	.43
	Sunday work	.63	.78		.41
	Changing working hours	.40	.43	.41	
SI	Night work		.47	.61	.29
	Saturday work	.47		.72	.46
	Sunday work	.61	.72		.43
	Changing working hours	.29	.46	.43	
	all p < .001 (2-sided)				

Base: All establishments (management interviews)

Source: ESWT, 2004–2005

Table A2 Correlations of non-standard hours, by sector (based on NACE classification)

Sector		Night work	Saturday work	Sunday work	Changing working hours
Mining and quarrying (NACE C)	Night work		.64	.79	.42
	Saturday work	.64		.73	.29
	Sunday work	.79	.73		.45
	Changing working hours	.42	.29	.45	
Manufacturing industries (NACE D)	Night work		.37	.48	.44
	Saturday work	.37		.61	.23
	Sunday work	.48	.61		.24
	Changing working hours	.44	.23	.24	
Electricity, gas and water supply (NACE E)	Night work		.59	.75	.57
	Saturday work	.59		.80	.28
	Sunday work	.75	.80		.35
	Changing working hours	.57	.28	.35	
Construction (NACE F)	Night work		.42	.62	.20
	Saturday work	.42		.63	.18
	Sunday work	.62	.63		.19
	Changing working hours	.20	.18	.19	
Retail, repair (NACE G)	Night work		.12	.31	.19
	Saturday work	.12		.45	.31
	Sunday work	.31	.45		.21
	Changing working hours	.19	.31	.21	
Hotels and restaurants (NACE H)	Night work		.38	.32	.25
	Saturday work	.38		.85	.35
	Sunday work	.32	.85		.40
	Changing working hours	.25	.35	.40	
Transport, storage and communication (NACE I)	Night work		.15	.36	.25
	Saturday work	.15		.49	.13
	Sunday work	.36	.49		.20
	Changing working hours	.25	.13	.20	
Financial intermediation (NACE J)	Night work		.33	.63	.15
	Saturday work	.33		.48	.14
	Sunday work	.63	.48		.27
	Changing working hours	.15	.14	.27	
Real estate, renting and business activities (NACE K)	Night work		.62	.77	.41
	Saturday work	.62		.75	.42
	Sunday work	.77	.75		.43
	Changing working hours	.41	.42	.43	
Public administration (NACE L)	Night work		.51	.76	.50
	Saturday work	.51		.70	.39
	Sunday work	.76	.70		.54
	Changing working hours	.50	.39	.54	
Education (NACE M)	Night work		.31	.46	.09
	Saturday work	.31		.69	.17
	Sunday work	.46	.69		.13
	Changing working hours	.09	.17	.13	

Table A2 (*continued*)

Sector		Night work	Saturday work	Sunday work	Changing working hours
Health and social work (NACE N)	Night work		.54	.57	.33
	Saturday work	.54		.90	.40
	Sunday work	.57	.90		.42
	Changing working hours	.33	.40	.42	
Other community, social and personal services (NACE O)	Night work		.33	.41	.19
	Saturday work	.33		.81	.21
	Sunday work	.41	.81		.20
	Changing working hours	.19	.21	.20	
	all p < .001 (2-sided)				

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Part 2: Data related to Chapter 2

This section outlines the method of analysis employed in Chapter 2: a stepwise forward logistic regression (LR) analysis. This method estimates the likelihood with which a certain incidence occurs or not. Dependent variables are generally required to be dichotomous (here: 0=event does not take place vs. 1=event takes place); independent or predictor variables can usually take any form.

The method used here selects first the predictor variable that is able to explain the largest proportion of variance and then adds (step by step) those predictors whose coefficients are further adding significantly to the explained variance. Stepwise regression is a tool that is in general designed for exploratory phases of research.

Model I

Dependent variable (entered in different equations):

1. Equation: **Saturday work**: 0 = no employees working on Saturdays vs. 1 = at least 20% of workers work on Saturdays
2. Equation: **Sunday work** 0 = no employees working on Sundays vs. 1 = at least 20% of workers work on Sundays
3. Equation: **Night work** 0 = no employees working at night vs. 1 = at least 20% of workers work at night
4. Equation: **Changing hours** 0 = no employees working changing hours vs. 1 = at least 20% of workers work changing hours

Independent variables (entered in each equation):

1. Country — entered as a categorical variable (reference category: Slovenia)
2. Sector — entered as a categorical variable (reference category: Other services – NACE O)

Model II

Dependent variable (entered in different equations):

1. Equation: **Saturday work**:	0 = no employees working on Saturdays vs. 1 = at least 20% of workers work on Saturdays
2. Equation: **Sunday work**	0 = no employees working on Sundays vs. 1 = at least 20% of workers work on Sundays
3. Equation: **Night work**	0 = no employees working at night vs. 1 = at least 20% of workers work at night
4. Equation: **Changing hours**	0 = no employees working changing hours vs. 1 = at least 20% of workers work changing hours

Independent variables (entered in each equation):

1. Country	entered as a categorical variable (reference category: Slovenia)
2. Sector	entered as a categorical variable (reference category: Other services – NACE O)
3. Country x sector	

Due to space constraints, the results of the regression analysis are not displayed here, but all results are available on request from the authors.

Part 3: Data related to Chapter 3

The data here result from a multiple logistic analysis. This method estimates the likelihood with which a certain incidence occurs or not (see column Exp(B)). Dependent variables are generally required to be dichotomous (here: 0=event does not take place vs. 1=event takes place).

Variables entered into the equation:
Dependent variable: Establishment reports difficulties with sickness or absenteeism of employees (1) vs. establishment encounters no such problems (0).

Independent variables (each entered in a different equation):

1. Night work:	no exposure to night work vs. up to 19% of workers working at night vs. at least 20% of employees working at night
2. Saturday work:	no exposure to Saturday work vs. up to 19% of workers working on Saturdays vs. at least 20% of employees working on Saturdays
3. Sunday work:	no exposure to Sunday work vs. up to 19% of workers working on Sundays vs. at least 20% of employees working on Sundays
4. Changing hours:	no exposure to changing hours vs. up to 19% of workers working changing hours vs. at least 20% of employees working changing hours

Variables controlled for

— country (entered as categorical variable; reference category: Slovenia)
— sector (entered as categorical variable; reference category: Other services – NACE O)
— company size (entered as a trichotomous variable):
small establishments (10 to 99 employees) vs. medium establishments (100 to 299 employees) vs. large establishments (>300 employees); reference category: small company size
— proportion of younger workers (entered as a trichotomous variable):
low proportion of younger workers (up to 19% of employees) vs. medium proportion (up to 79%) vs. high proportion (up to 100%); reference category: low proportion of younger workers
— proportion of older workers (entered as a trichotomous variable):
low proportion of older workers (up to 19% of employees) vs. medium proportion (up to 79%) vs. high proportion (up to 100%); reference category: low proportion of older workers
— flexible working time arrangements (entered as a categorial variable):
no flexible working time arrangements vs. flexitime vs. compensation of hours vs. compensation with full days off vs. compensation with longer periods off; reference category: longer periods off
— overtime worked (entered as a dummy variable):
0-19% of employees working overtime vs. at least 20% of workers exposed to overtime; reference category: low proportion of overtime workers

Same method and variables were used for the estimation of

a) Establishment reports difficulties with motivational problems of employees (1) vs. establishment encounters no such problems (0).

b) Establishment reports difficulties with retaining staff vs. establishment reports no such problems (0).

Table A3 Unusual working hours and sickness problems in establishments

Sickness problems	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
Country (reference category: Slovenia)								
BE	-.378***	.686	-.357***	.700	-.376***	.686	-.369***	.691
DK	-.358***	.699	-.340***	.712	-.371***	.690	-.347***	.707
DE	-.679***	.507	-.703***	.495	-.715***	.489	-.722***	.486
EL	-1.919***	.147	-1.914***	.148	-1.938***	.144	-1.932***	.145
ES	-.811***	.444	-.774***	.461	-.807***	.446	-.767***	.464
FR	-.143***	.867	-.156***	.856	-.151***	.860	-.147***	.864
IE	-.624***	.536	-.663***	.515	-.658***	.518	-.608***	.544
IT	-.802***	.449	-.813***	.444	-.834***	.434	-.821***	.440
LU	.204***	1.227	.209***	1.232	.190***	1.209	.196***	1.217
NL	-.878***	.416	-.877***	.416	-.897***	.408	-.869***	.419
AT	-.702***	.496	-.678***	.508	-.705***	.494	-.701***	.496
PT	-2.065***	.127	-2.029***	.131	-2.062***	.127	-2.097***	.123
FI	-.566***	.568	-.557***	.573	-.595***	.552	-.624***	.536
SE	-.748***	.473	-.747***	.474	-.782***	.458	-.780***	.459
UK	-.594***	.552	-.595***	.551	-.623***	.536	-.562***	.570
CZ	.029	1.029	.054*	1.055	.025	1.026	.044	1.045
CY	-1.309***	.270	-1.307***	.271	-1.300***	.272	-1.248***	.287

Table A3 (*continued*)

Sickness problems	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
LV	-.579***	.561	-.527***	.590	-.545***	.580	-.572***	.564
HU	-.948***	.388	-.915***	.400	-.951***	.386	-.961***	.383
PL	-1.484***	.227	-1.425***	.240	-1.450***	.235	-1.500***	.223
Sector (reference category: Other services, NACE O)								
Mining and quarrying	-.428***	.652	-.304***	.738	-.342***	.710	-.433***	.649
Manufacturing industries	.173***	1.189	.277***	1.319	.232***	1.261	.182***	1.199
Electricity, gas and water supply	-.892***	.410	-.747***	.474	-.788***	.455	-.846***	.429
Construction	-.226***	.798	-.177***	.838	-.219***	.804	-.221***	.802
Retail, repair	.022*	1.022	.015	1.015	.017	1.017	-.014	.986
Hotels and restaurants	-.187***	.830	-.086***	.918	-.145***	.865	-.143***	.867
Transport, storage and communication	-.217***	.805	-.129***	.879	-.136***	.873	-.228***	.796
Financial intermediation	-.706***	.494	-.672***	.510	-.713***	.490	-.708***	.493
Real estate, renting and business activities	-.853***	.426	-.779***	.459	-.820***	.440	-.834***	.434
Public administration	-.176***	.839	-.140***	.869	-.172***	.842	-.178***	.837
Education	-.040***	.961	.020	1.020	-.074***	.928	-.036**	.965
Health and social work	.256***	1.291	.393***	1.482	.336***	1.399	.301***	1.351
Company size (reference category: small size)								
Medium-sized company	.671***	1.956	.768***	2.155	.768***	2.157	.731***	2.077
Large company	.973***	2.646	1.121***	3.067	1.116***	3.052	1.069***	2.913
Flexibility Working time arrangements (reference category: longer periods off)								
No flexibility	.069***	1.071	.081***	1.084	.092***	1.096	.106***	1.112
Flexitime	-.024**	.976	-.019**	.981	-.009	.991	-.005	.995
Comp. hours	.066***	1.068	.090***	1.094	.088***	1.092	.089***	1.093
Full days off	-.124***	.884	-.113***	.894	-.117***	.889	-.131***	.878
High amount overtime	-.063***	.939	-.066***	.936	-.071***	.932	-.063***	.939
Proportion of workers < 30 years (reference category: low proportion)								
Younger workers medium proportion	.142***	1.152	.148***	1.160	.143***	1.154	.149***	1.161
Younger workers high proportion	.193***	1.213	.192***	1.212	.198***	1.218	.191***	1.211
Proportion of workers >49 years (reference category: low proportion)								
Older workers medium proportion	.234***	1.264	.237***	1.267	.235***	1.265	.233***	1.262
Older workers high proportion	.126***	1.134	.121***	1.129	.126***	1.134	.130***	1.139
Night work trichotomised (reference category: no night work)								
Low proportion of night workers	.433***	1.542	—	—	—	—	—	—
Night work: At least 20% of workers	.473***	1.605	—	—	—	—	—	—

Table A3 (*continued*)

Sickness problems	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
Saturday work trichotomised (reference category: no Saturday work)								
Low proportion of Saturday workers	—	—	.124***	1.132	—	—	—	—
Saturday work: At least 20% workers	—	—	.270***	1.310	—	—	—	—
Sunday work trichotomised (reference category: no Sunday work)	—	—	—	—	—	—		
Low proportion of Sunday workers	—	—	—	—	.054***	.1,056	—	—
Sunday work: At least 20% workers	—	—	—	—	.282***	.1,326	—	—
Changing hours trichotomised (reference category: no changing hours)								
Low proportion of changing hours workers	—	—	—	—	—	—	.183***	1.200
Changing hours: At least 20% of workers	—	—	—	—	—	—	.457***	1.580

*** p < .001, **p < .01, *p < .05

Base: All establishments (management interviews)

Source: ESWT, 2004–2005

Table A4 Unusual working hours and motivational problems in companies

Motivational problems	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
Country (reference category: Slovenia)								
BE	.616***	1.851	.619***	1.858	.613***	1.845	.648***	1.912
DK	.084*	1.088	.103**	1.109	.060	1.062	.123**	1.131
DE	.383***	1.467	.357***	1.429	.359***	1.432	.370***	1.447
EL	-.623***	.537	-.622***	.537	-.642***	.526	-.625***	.535
ES	-.196***	.822	-.172***	.842	-.199***	.820	-.170***	.844
FR	1.254***	3.504	1.227***	3.412	1.257***	3.516	1.269***	3.556
IE	1.092***	2.980	1.032***	2.807	1.067***	2.906	1.112***	3.041
IT	.594***	1.811	.589***	1.801	.582***	1.789	.612***	1.845
LU	.764***	2.146	.759***	2.135	.761***	2.141	.797***	2.219
NL	.008	1.008	.008	1.008	-.006	.994	.034	1.035
AT	-.065	.937	-.045	.956	-.061	.941	-.005	.995
PT	-.192***	.825	-.151***	.860	-.182***	.834	-.234***	.791
FI	.343***	1.409	.349***	1.418	.321***	1.379	.326***	1.386
SE	-.016	.984	-.021	.979	-.045	.956	-.016	.984
UK	.110***	1.116	.075*	1.078	.067	1.069	.147***	1.158
CZ	.526***	1.691	.545***	1.724	.524***	1.689	.553***	1.739

Table A4 (*continued*)

Motivational problems	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
CY	.220**	1.246	.181**	1.199	.215**	1.240	.248***	1.281
LV	.455***	1.576	.456***	1.577	.472***	1.603	.512***	1.669
HU	.049	1.050	.082*	1.086	.050	1.051	.055	1.056
PL	.369***	1.446	.404***	1.498	.392***	1.480	.363***	1.438
Sector (reference category: Other services, NACE O)								
Mining and quarrying	-.673***	.510	-.560***	.571	-.585***	.557	-.696***	.498
Manufacturing industries	-.288***	.749	-.190***	.827	-.217***	.805	-.291***	.748
Electricity, gas and water supply	-.570***	.566	-.487***	.614	-.491***	.612	-.499***	.607
Construction	-.252***	.777	-.177***	.838	-.227***	.797	-.263***	.768
Retail, repair	-.235***	.791	-.259***	.772	-.219***	.803	-.271***	.762
Hotels and restaurants	-.302***	.739	-.278***	.757	-.285***	.752	-.241***	.786
Transport, storage and communication	-.489***	.613	-.456***	.634	-.416***	.660	-.511***	.600
Financial intermediation	-.815***	.443	-.749***	.473	-.786***	.456	-.830***	.436
Real estate, renting and business activities	-.556***	.573	-.478***	.620	-.504***	.604	-.565***	.568
Public administration	-.362***	.696	-.344***	.709	-.343***	.710	-.382***	.682
Education	-.960***	.383	-.868***	.420	-.983***	.374	-.982***	.375
Health and social care	-.551***	.576	-.502***	.605	-.517***	.596	-.529***	.589
Company size (reference category: small size)								
Medium-sized company	.285***	1.330	.327***	1.387	.333***	1.395	.311***	1.365
Large company	.016	1.016	.069***	1.071	.080***	1.084	.069***	1.072
Flexibility Working time arrangements (reference category: longer periods off)								
No flexibility	-.033***	.967	-.047***	.954	-.019**	.981	.007	1.007
Flexitime	-.073***	.930	-.075***	.928	-.051***	.951	-.044***	.957
Compensated hours	.050***	1.051	.072***	1.075	.077***	1.080	.084***	1.087
Full days off	-.055***	.946	-.056***	.946	-.049***	.952	-.036***	.965
High amount overtime	-.162***	.850	-.144***	.866	-.160***	.852	-.158***	.854
Proportion of workers < 30 years (reference category: low proportion)								
Younger workers medium proportion	-.005	.995	-.020***	.980	-.012**	.988	-.013**	.987
Younger workers high proportion	-.032**	.969	-.054***	.947	-.046***	.955	-.083***	.921
Proportion of workers >49 years (reference category: low proportion)								
Older workers medium proportion	.224***	1.252	.220***	1.246	.224***	1.251	.227***	1.254
Older workers high proportion	.096***	1.101	.093***	1.098	.107***	1.113	.094***	1.098

Table A4 (*continued*)

Motivational problems	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
Night work trichotomised (reference category: no night work)								
Low proportion of night workers	.202***	1.223	—	—	—	—	—	—
Night work: At least 20% workers	.425***	1.529	—	—	—	—	—	—
Saturday work trichotomised (reference category: no Saturday work)								
Low proportion of Saturday workers	—	—	.251***	1.285	—	—	—	—
Saturday work: at least 20% of staff	—	—	.395***	1.485	—	—	—	—
Sunday work trichotomised (reference category: no Sunday work)								
Low proportion of Sunday workers	—	—	—	—	.089***	1.093	—	—
Sunday work: at least 20% of staff	—	—	—	—	.321***	1.379	—	—
Changing hours trichotomised (reference category: no changing working hours)								
Low proportion of changing hours workers	—	—	—	—	—	—	.179***	1.196
Changing hours: At least 20% of staff	—	—	—	—	—	—	.334***	1.397

*** p < .001, **p < .01, *p < .05

Base: All establishments (management interviews)

Source: ESWT, 2004–2005

Table A5 Unusual working hours and companies' difficulties in retaining staff

Problems retaining staff	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
Country (reference category: Slovenia)								
BE	.869***	2.384	.878***	2.406	.878***	2.405	.888***	2.429
DK	.179***	1.196	.200***	1.222	.156**	1.168	.178***	1.195
DE	-.189***	.828	-.223***	.800	-.200***	.819	-.198***	.820
EL	.967***	2.629	.998***	2.714	.989***	2.688	.985***	2.678
ES	.514***	1.672	.564***	1.758	.540***	1.716	.560***	1.751
FR	1.069***	2.912	1.024***	2.785	1.083***	2.952	1.071***	2.917
IE	.695***	2.004	.639***	1.895	.687***	1.987	.727***	2.068
IT	.811***	2.250	.810***	2.247	.822***	2.275	.844***	2.325
LU	.265**	1.303	.246**	1.279	.252**	1.286	.255**	1.290
NL	-.222***	.801	-.214***	.807	-.218***	.804	-.169**	.844
AT	-.166**	.847	-.148**	.863	-.143**	.866	-.105*	.901

Table A5 (*continued*)

Problems retaining staff	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
PT	-.327***	.721	-.265***	.767	-.281***	.755	-.348***	.706
FI	.100	1.105	.081	1.084	.062	1.064	.054	1.056
SE	-.043	.958	-.058	.943	-.082	.921	-.077	.926
UK	.844***	2.325	.813***	2.254	.800***	2.225	.886***	2.426
CZ	.688***	1.989	.707***	2.029	.691***	1.995	.712***	2.038
CY	1.460***	4.304	1.420***	4.136	1.461***	4.311	1.497***	4.469
LV	1.386***	3.999	1.396***	4.039	1.363***	3.907	1.409***	4.093
HU	.280***	1.323	.323***	1.381	.298***	1.347	.286***	1.332
PL	.584***	1.794	.620***	1.860	.613***	1.846	.577***	1.781
Sector (reference category: Other services, NACE O)								
Mining and quarrying	-.412***	.662	-.244***	.784	-.256***	.774	-.441***	.644
Manufacturing industries	-.296***	.744	-.128***	.880	-.136***	.873	-.286***	.752
Electricity, gas and water supply	-.666***	.514	-.562***	.570	-.608***	.544	-.609***	.544
Construction	-.353***	.702	-.207***	.813	-.212***	.809	-.311***	.732
Retail, repair	-.217***	.805	-.202***	.817	-.131***	.878	-.237***	.789
Hotels and restaurants	.006	1.006	-.016	.984	-.052***	.949	.012	1.012
Transport, storage and communication	-.247***	.781	-.184***	.832	-.140***	.869	-.263***	.769
Financial intermediation	-.910***	.403	-.778***	.460	-.778***	.459	-.901***	.406
Real estate, renting and business activities	-.053***	.948	.091***	1.095	.072***	1.075	-.032*	.968
Public administration	-.698***	.498	-.621***	.537	-.628***	.534	-.695***	.499
Education	-.768***	.464	-.603***	.547	-.728***	.483	-.755***	.470
Health and social work	-.353***	.703	-.299***	.742	-.333***	.717	-.390***	.677
Company size (reference category: small size)								
Medium company	.128***	1.137	.158***	1.171	.134***	1.143	.160***	1.174
Large company	.260***	1.297	.265***	1.303	.232***	1.261	.283***	1.327
Flexibility Working time arrangements (reference category: longer periods off)								
No flexibility	.010	1.011	-.018**	.982	.025**	1.025	.033***	1.034
Flexitime	-.076***	.927	-.103***	.902	-.062***	.940	-.097***	.908
Compensate hours	.050***	1.051	.055***	1.057	.076***	1.079	.056***	1.057
Full days off	.073***	1.075	.061***	1.063	.080***	1.083	.054***	1.056
High amount overtime	-.104***	.901	-.077***	.926	-.087***	.917	-.098***	.906
Proportion of workers < 30 years (reference category: low proportion)								
Younger workers medium proportion	.301***	1.351	.282***	1.326	.284***	1.329	.294***	1.342
Younger workers high proportion	.744***	2.104	.700***	2.013	.712***	2.038	.739***	2.094

Table A5 (*continued*)

Problems retaining staff	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
	Night work		Saturday work		Sunday work		Changing hours	
Proportion of workers >49 years (reference category: low proportion)								
Older workers medium proportion	-.107***	.898	-.105***	.900	-.102***	.903	-.095***	.909
Older workers high proportion	.129***	1.138	.100***	1.105	.120***	1.127	.138***	1.147
Night work trichotomised (reference category: no night work)								
Low proportion of night workers	.264***	1.303	—	—	—	—	—	—
Night work: At least 20% workers	.280***	1.324	—	—	—	—	—	—
Saturday work trichotomised (reference category: no Saturday work)	—	—	—	—	—	—	—	—
Low proportion of Saturday workers	—	—	.204***	1.227	—	—	—	—
Saturday work: At least 20% workers	—	—	.503***	1.654	—	—	—	—
Sunday work trichotomised (reference category: no Sunday work)								
Low proportion of Sunday workers	—	—	—	—	.297***	1.346	—	—
Sunday work: At least 20% workers	—	—	—	—	.516***	1.676	—	—
Changing hours trichotomised (reference category: no changing working hours)								
Low proportion of changing hours workers	—	—	—	—	—	—	.172***	1.188
Changing hours: At least 20% workers	—	—	—	—	—	—	.409***	1.506

*** p < .001, **p < .01, *p < .05

Base: All establishments (management interviews)

Source: ESWT, 2004–2005

Part 4: Data related to Chapter 4

Table A6 Possibility of early retirement in companies with and without night work, by country (%)

Possibility of early retirement given	No night work	At least 20% of staff work at night	Difference
EL	39	68	28
BE	62	87	25
PT	40	61	21
IE	60	78	18
ES	47	60	13
HU	46	59	12
DK	63	71	9
LU	64	70	7
CZ	94	100	6
CY	52	58	6
EU21	*55*	*58*	*3*
LV	71	73	2
FR	56	58	2
PL	80	82	2
FI	86	86	0
UK	71	71	0
AT	37	36	-1
SE	40	39	-1
SI	50	48	-2
IT	15	13	-2
NL	77	71	-7
DE	56	45	-11

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Table A7 Possibility of early retirement in companies with and without changing working hours, by country (%)

Possibility of early retirement given	No shift work	At least 20% of staff work shift hours	Difference
HU	46	65	19
CY	49	67	18
ES	49	60	11
DK	62	73	11
BE	63	71	8
SE	39	45	6
EU21	*55*	*60*	*5*
NL	76	80	4
DE	53	57	4
AT	37	41	4
IE	62	64	3
FI	85	88	3
CZ	94	97	2
LV	76	78	2
LU	63	64	1
UK	71	72	1
EL	41	41	0
PT	43	43	0
IT	16	14	-1
SI	49	48	-2
FR	57	54	-3
PL	82	79	-3

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Table A8 Average weekly contractual working time in companies with and without regular Sunday work, by country (hours)

Country	No Sunday work	At least 20% of staff work Sundays	Difference
CY	38.8	40.7	1.9
LV	39.2	40.9	1.7
AT	38.9	40	1.1
LU	40.2	41.3	1.1
DE	38.8	39.5	0.7
PL	39.7	40.4	0.7
EL	39.9	40.4	0.5
FR	36.2	36.6	0.4
IE	38.6	39	0.4
HU	39.9	40.2	0.3
ES	39.1	39.4	0.3
CZ	40	40.3	0.3
SI	40	40.2	0.2
PT	39.6	39.7	0.1
BE	38.2	38.3	0.1
DK	37	36.9	-0.1
FI	38.1	37.9	-0.2
UK	38.6	38.4	-0.2
IT	38.9	38.6	-0.3
NL	38.3	37.4	-0.9
SE	39.7	38.1	-1.6

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Table A9 Average weekly contractual working time in companies with and without night work, by country (hours)

Country	No night work	At least 20% of staff work at night	Difference
DE	38.8	40.4	1.6
EL	39.9	41.2	1.3
AT	38.9	40	1.1
PL	39.7	40.5	0.8
ES	39.1	39.7	0.6
FI	37.9	38.5	0.6
CY	38.9	39.5	0.6
LU	40.3	40.8	0.5
FR	36.1	36.5	0.4
UK	38.5	38.9	0.4
BE	38.1	38.4	0.3
IE	38.6	38.9	0.3
PT	39.5	39.8	0.3
LV	39.5	39.8	0.3
DK	37	37.2	0.2
IT	38.9	39.1	0.2
SI	40.1	40.1	0
HU	40	39.8	-0.2
CZ	40.1	39.7	-0.4
NL	38.3	37.1	-1.2
SE	39.6	38.3	-1.3

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

Table A10 Average weekly contractual working time in companies with and without changing hours, by country (hours)

Country	No changing working hours	At least 20% of staff work changing hours	Difference
LU	40	41.3	1.3
CY	39	39.9	0.9
ES	39.1	39.8	0.7
DE	38.9	39.2	0.3
DK	37	37.3	0.3
FI	37.9	38.1	0.2
SI	40	40.2	0.2
IE	38.6	38.8	0.2
HU	40	40.1	0.1
FR	36.3	36.3	0
BE	38.2	38.1	-0.1
UK	38.6	38.5	-0.1
PL	39.7	39.6	-0.1
PT	39.6	39.4	-0.2
EL	39.9	39.6	-0.3
AT	39.2	38.9	-0.3
IT	39	38.6	-0.4
NL	38.4	38	-0.4
CZ	40.1	39.6	-0.5
LV	39.8	39.2	-0.6
SE	39.5	38.8	-0.7

Base: All establishments (management interviews)
Source: ESWT, 2004–2005

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It is widely recognised that night work, weekend work and work at changing hours – shift work, in particular – all have serious health implications for workers. In recent years, the problems related to combining work with social or family life for those who regularly work atypical working hours have come to the attention of social commentators and policymakers. This report explores the experience of working extended and unusual working hours in companies across the European Union. Based on a large-scale, representative survey carried out in establishments with 10 or more employees in 21 European countries, the report examines in detail the incidence of such working hours across countries, sectors and companies. It outlines the factors behind the need to deploy workers at unusual hours and shows how management perceives the various effects of these working time patterns. It also focuses on various personnel problems – such as sickness and absenteeism, motivation levels and high staff turnover – faced by management in establishments with unusual working hours.

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