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THE MANAGEMENT OF WORKING TIME AND OPERATING HOURS IN SMES IN EUROPE

Abstract

This paper explores the management of working time flexibility and operating hours in small and medium-sized enterprises (SMEs) in six European countries using a survey of more than 17,000 establishments (EUCOWE). We analyze the use of different working arrangements by establishments of different sizes across countries and sectors and the links with operating times of SMEs and investigate the impact of firm size, sector and the use of various working patterns on operating hours. We show how the use of various working time patterns is positively related to establishment size and in turn the establishment's operating hours but also that smaller establishments can benefit from the adoption of certain working time practices.

Keywords: Working Conditions, Labor Force and Employment, Labor Management, JEL Classification J81, J21, M54,

Introduction

Small and Medium-sized Enterprises (SMEs) are often identified as a source of job growth and increased competition in a European context (CEC 2002) but while the flexibility associated with size is often promoted relatively little is know about working patterns within SMEs (Sieglen et al. 2001). Smaller firms may have inherent flexibilities, an ability to respond quickly and the potential to innovate but their size may also act as a constraint when it comes to the development and implementation of more complex working arrangements. Similarly the reliance on informal managerial approaches (Woods and Joyce 2003) may free an organization for bureaucratic rules but may also lead to a reliance on informal working practices that could limit organizational performance. Here we use the operating times of establishments - daily, weekly and yearly - as a measure of performance. As a measure of capital utilization, operating hours can be considered a useful measure of performance at the micro, meso and macro level, capturing the use of effective organizational resources (Delson et al 2007). This paper explores the management of working time flexibility and operating times in small and medium-sized enterprises (SMEs) in six European countries using a survey of more than 17,000 establishments based in Germany, France, the UK, the Netherlands, Portugal and Spain. Firstly, we analyze the use of different working arrangements by establishments of different sizes across countries and sectors and the links with operating times of SMEs. In particular we consider the particular constraints or flexibilities that SMEs may face in relation to larger firms and the working time arrangements at their disposal. Second, we investigate the impact of firm size, sector and the use of various working patterns on operating hours. We show how the use of various working time patterns is positively related to establishment size and in turn the establishment's operating hours but that size per se may not be the sole constraint in implementing complex working time practices as smaller establish-

ments can also benefit from the adoption of such working time practices.

The paper is divided into six sections. After this introduction we go on to review the links between work patterns, working time and organizational size. We consider interaction of national regulation and informal management styles and the working practices likely to be found in SMEs. The methodology of the EUCOWE survey used in this paper is reviewed in the third section. The fourth and fifth sections examine the work patterns employed to meet operating time requirements and impact of firms of different sizes. The final section discusses the findings.

SMEs, Employment and Working Patterns

Small and Medium-sized Enterprises (SMEs) have become an increasingly important component of policy at both the national and European level in recent years (Unger 2003; Devins and Johnson 2003). The importance of SMEs in terms of their share of employment is undeniable. Gray (2004) suggests that around 99 percent of EU firms are SMEs and they account for 122 million private sector jobs; similarly high figures have been quoted for other parts of the world (for example, USA and Australia, (Jones 2004)). Although SMEs are often promoted for their employment creation or innovation potential less is known about the working time patterns in SMEs (Sieglen et al. 2001). In fact much of the concern around SMEs has been about the extent to which they are really a source of job growth, for example the claims about the job creation potential of small firms by authors such as Birch (1987) and the subsequent emphasis given to small firms in the policies of Thatcher, Reagan and more recently the European Employment Strategy (see for example CEC 2002). Although the claims have been challenged (Parker 2001) in the EU interest in SMEs has been maintained by relatively poor job creation performance and the potential of SMEs to compensate or even contribute to employment growth. Dearden (1998:334) points out the European job losses in larger firms between 1988 and 1995 were largely offset by increased employment in SMEs, particularly in firms with fewer than 100 employees. However, against the employment potential of SMEs must also be placed the risks of sustainability of employment and low productivity (Serferiades 2004); the instability in the sectors where SMEs are prevalent (Gray 2004), the lower job quality (CEC 2002:84), poor workplace health and safety standards (Vickers and James 2004) and poor pay and conditions in SMEs (Parker 2001). Among these measures of job quality are the working hours and conditions for SME employees.

All European Union countries are subject to a national interpretation of the Working Time Directive but while this provides relatively weak regulation of total hours, rest breaks and holidays, specific national legislation and collective regulation can impose further constraints on working-time practices at the workplace level. Limits on daily or weekly hours, annual leave and overtime will all shape the use of particular working practices to meet fluctuations or extend operating hours (Freyssinet and Michon 2003). Like other organizations SMEs will be subject to these national and pan-national regulation of working time; however, there are a number of factors and characteristics of SMEs that may act against strict compliance with national regulation. SMEs have been described as being governed by more "personal and arbitrary" forms of control even though this may be ineffective (Woods and Joyce 2003:181). Indeed the exclusion of smaller firms from aspects of collective regulation in some European countries confirms the different status of regulation within an SME setting, for example firm size thresholds exist for Work Council regulations in many countries (Slomp 1995). Such exemptions may mean that SMEs and larger organizations face different constraints on the regulation of their working times. SMEs are also less likely to have working times collectively regulated as union membership and union activity tends to fall as firm sizes decline. The close involvement of owners in the management of SMEs may also be a factor

that inhibits formal collective regulation. Bluhm (2001:163) found that most SMEs adopt a "non-cooperative approach" to collective labor institutions. She found that owners felt the nature of the entrepreneurial risks and the need for co determination is more limited in SMEs and favored direct communication. Although there are limited examples of firm size thresholds for working time regulation (Freysinet and Michon 2003), exemption from regulation around collective representation may further encourage informality around, for example, the organization of working hours.

The centrality of SMEs to employment policy in Europe means that it is perhaps surprising that not more is known about the working time patterns and operating times in SMEs. In all workplaces there is a strong link between operating hours and working time and nowhere is this link stronger than in SMEs where size limitations can limit opportunities for extended operating times or place increased reliance on existing employees. Although SMEs have been described as being at the forefront of employment creation and more agile or adaptable than large bureaucratic organizations (see Parker 2001) they may also face additional constraints in the organization of working time when it comes to extending operating hours. Longer operating hours require the deeper or wider use of employees. For SMEs the use of a wider range of employees may be difficult given their size. Resource constraints may create an "aversion" to growth (Gray 2004:453) including increasing the numbers employed. Indeed the size of the labor force can be regarded as resource constraint in itself. On the other hand, more intensive use of a smaller range of employees can provide an immediate and potentially cheaper solution although it may place greater demands on just a few members of staff. Furthermore, the development and implementation of complex working-time arrangements may make considerable demands on management time and skills, resources which are often limited in SMEs (Atherton 2003; Jones 2004). These constraints may explain the greater use of less formal methods of extending working time among SMEs such as overtime and more limited use of more complex working-time arrangements such as working time accounts (Arthur 2002), annualized hours (Hart and Bell 2003) and shifts (IDS 2001). For example a double shift system required to decouple operating hours from employee working hours with an increase from 40 to 80 hours per week, will at least double the number of employees (see IRS 2003:27), meanwhile additional overtime could extend operating hours while maintaining the firm size.

Other barriers to the extension of operating times may include the limited strategic orientation of management in SMEs (Gray 2004). Extended operating hours may require a strategic approach to the use of labor and working time yet SMEs are not known for this type of thinking and more regularly described as reactive and unplanned (Devins and Johnson 2003). Atherton (2003) suggests resource scarcity in SMEs can lead to greater levels of uncertainty and the establishment of a shift system to extend operating times can involve considerable up front investment (see Hart and Bell 2003) while increasing the overtime of existing workers might be regarded as relatively risk free.

SMEs are often controlled directly by an owner or close associate and this proximity of the owner/manger may also encourage informal arrangements that benefit both employee and employer. Informal working practices in SMEs may mean that employers feel less bound by regulation and employees are less aware of their rights. For example, Bluhm (2001:159) found just one example of an SME introducing complex working time arrangements and this involved an entirely informal arrangements with employees happy to circumvent local regulations for higher pay and some control over their working time. The personal and informal management style that can lead to the circumvention of collective regulations may also extend to the use of unpaid overtime or overtime at non-premia rates. Overtime can be regarded as a relatively cheap form of working-time flexibility even when premia are paid but regulation around premia or time off in lieu may be difficult to implement in resource-constrained

SMEs. Kodz et al. (2003) highlight the informal practices that can exist in SMEs where long-hours cultures exist. In particular organizational cultures associated with an owner/manager may encourage a sense of 'helping out' that can result in unpaid overtime. For small firms with limited resources a reliance on unpaid overtime may be particularly important. Kodz et al. (2003:45) also identify a sense of rallying round "to get the work finished" and that this can result in a voluntary increase in hours for employees reflecting loyalty to the employer. On the other hand, for the employee in an SME, where wages are often lower than in larger firms (CEC 2002), low pay can create an additional incentive to work long hours at a premia (Kodz et al. 2003: 26). Furthermore a long-hours culture can create resistance to the implementation of shorter shift work systems (op cit:29) that may actually increase operating times.

It is however important to note the SME sector is heterogeneous both within and across countries (Bagnasco 1995). Significant differences may exist in the use of technology, the markets and support from local institutions (Bagnasco and Sabel 1995). Important differences also exist between micro, small and medium sized enterprises (Devins and Johnson 2003). For these reasons the results in the rest of this paper are disaggregated for SMEs of different sizes and across different sectors.

Methodology

This paper uses the data from the European Capital Operating Time and Work and Employment (EUCOWE) Project[1] to explore working time patterns and operating times of small and medium sized establishments in six European countries. In many of the countries studied the survey represented one of the first dedicated studies on the operating time, for example the UK (Smith et al. 2007). Previous research has often taken an indirect approach to measuring operating times of establishments, for example through the analysis of secondary survey data (Bosworth and Cette, 1995). However with a central focus on working patterns and operating times the EUCOWE data provide a unique resource (Delson et al 2007). Gross national samples of between 10 and 20 thousand establishments produced the following usable responses and response rates; the UK 1657 (12 percent), The Netherlands 1918 (16 percent) France 2316 (12 percent) Germany 3001 (25 percent) Portugal 2818 (44 percent) and Spain 5957 (69 percent). The stratified sampling design was used to ensure representative results for different sectors and establishment sizes (Bauer et al 2007). In the following, this paper will use the weighted EUCOWE data.

We use operating times here as a measure of organizational performance. Operating times provide a useful indicator of the extent to which an organization is using its capital resources and as such assess the extent to which available resources are being used to produce goods and services (Bustillo and Fernandez 2007). The EUCOWE study contained several measures of daily, weekly and annual operating times as well as detailed questions on the number of employees with different working-time patterns. Operating times are calculated as mean daily and weekly hours or annual days. It is worth noting that a 9 to 5 five day week would produce a weekly operating time of 40 hours. However, few organizations operate in such a manner and the decoupling of working times and operating times allow extensions of operating hours beyond that of the standard full-time week. As well as considering the oper-

[1] The EUCOWE project was coordinated by Frank Bauer and Hermann Gross with Georg Sieglen and Lisgret Militzer at ISO, Cologne. The project also drew on a research team from across the participating countries, including; Steffen Lehndorff and Sebestian Schief (IAT, Germany); Gilbert Cette and Arnaud Sylvain (Banque De France), Yusuf Kocoglu (Université Aix-Marseille); Rafael Munoz de Bustillo and Enrique Fernandez (Universidad Salamanca, Spain): Lei Delson and Jeroen Smits (KUN, Nijmegen), Albert Castro and Jose Varejao (UCP, Porto); and Derek Bosworth (University of Warwick), Mark Smith and Marilyn Carroll (Manchester Business School).

ating hours of establishments over the period of a day or week it is also important to consider variations across the year. For example for the impact of holidays and non-operating days will reduce the operating times of establishments over the year, this may include weekends and Christmas/Summer shut downs. Not all organizations operate every day of the week and those that do not open at weekends will have at least 104 non-operating days.

Operating times can be calculated by both the direct and indirect measures (see Bauer et al. 2007). The direct measure uses responses from the survey to the question "How many hours does your establishment operate on a typical day" with a similar question for weekly operating hours. By contrast the indirect measure uses a wider range of information on employee involvement in different working-time arrangements and the typical duration of these working patterns and weights by the number of employees involved. The direct measure implicitly assumes that all employees in the establishment work the same hours. Here we use the direct measure of operating times as we are concerned with the establishment as the unit of analysis and this is also both simpler and more appropriate to use when weighting the data with national establishment weights.

Working Time Patterns and Operating Times

For an individual company, a prerequisite for extending operating time from is the possibility to decouple operating hours from the working times of its employees. The EU-COWE survey includes information about the presence and extent of overtime, staggered working hours, shift work, Saturday work and Sunday work. A company's daily and weekly operating hours as well as a company's working hours per year will be determined by the extent to which it can decouple working hours and operating hours, i.e. whether it can use different working-time practices in the workplace to meet its demands for certain operating hours and operate outside the hours of the standard day, week or year. As we discussed above, for smaller establishments the potential for decoupling may be constrained.

As one of the simplest forms of working time flexibility overtime is widely used across many organizations and here we measure the importance of overtime by standardizing the weekly amount of overtime for the number of employees in each establishment. Table 1 presents the incidence of overtime and the mean overtime hours per employee by country and firm size. Just over a quarter, 27 percent, of the establishments in the sample were using overtime work, ranging from one in twenty or fewer establishments in Spain and Portugal to around two fifths in Germany and the UK. This reflects the opposite positions of Portugal and Spain on the one hand and the UK on the other in terms of regulation of overtime and total working time. In the UK the institutionalized use of overtime to boost pay and meet normal workloads is also a factor (Smith et al. 2007). Perhaps surprisingly the incidence of overtime increases with firm size but we see the concentration of overtime per employee remains relatively fixed across firm sizes. Furthermore we find smaller establishments are more likely to use overtime than other forms of working-time flexibility. This partly supports our expectation of a greater use of overtime among small establishments compared to more complex staffing measures.

Staggered working time is another means of decoupling operating hours from working hours and a fifth of all establishments in the sample have staggered working time schemes, ranging from almost zero in Spain to 33 percent in Germany. The share of employees covered is lower but is subject to the same country effect (table 1a). We also find that, as far as establishment size categories are concerned, the incidence of staggered working time increases steadily from 17 percent among micro organizations to 32 percent among large organizations. On the other hand, the average proportion of employees affected by staggered working hours reaches a peak for those with 10-49 employees and then deceases with firm size (table 1b).

Shift work is a more complicated form of working time arrangement and we find that the overall extent of shift work is lower with just 9 percent of all establishments in the sample using shift work schemes, ranging from 6 percent in France and the Netherlands to 12 percent in the UK (table 2). The mean coverage rates for employees vary from around 5 percent in the Netherlands and France to 10 percent in the UK and Spain. The incidence of shift work increases steadily with establishment size categories from 5 percent among micro organizations to 59 percent among large organizations. Mean employee coverage is also positively associated with firm size (table 1b).

Table 1: Working Time Arrangements by Country and Establishment Size**.**

(a) country	Germany	Spain	France	UK	Netherlands	Portugal	Total
Coverage of establishments (%)							
Overtime hrs	40.5	2.3	24.0	37.8	33.2	5.5	27.1
Staggered working hours	32.8	0.4	22.6	23.9	17.8	16.9	21.2
Shift work	9.9	7.2	6.4	12.3	5.9	8.2	8.9
Saturday work	49.5	15.7	55.8	48.3	49.3	34.8	44.4
Sunday work	23.2	7.9	22.5	25.7	20.9	17.7	20.7
Overtime hours *	1.2hrs	-	0.7 hrs	1.2 hrs	1.1 hrs	0.1 hrs	0.8 hrs
Coverage of employees (%)							
Staggered working hrs	21.4	0.2	14.8	13.5	11.8	13.1	13.6
Shift work	7.3	10.2	5.5	10.5	5.0	8.6	8.1
Saturday work	16.9	12.3	31.1	18.6	24.5	21.5	20.5
Sunday work	8.3	5.5	10.8	8.0	9.3	10.3	8.5

(b) **Establishment Size**	1-9	10-49	50-249	>=250	Total
Coverage of establishments (%)					
Overtime hours	21.9	34.9	53.7	64.3	27.1
Staggered working hrs	17.4	28.6	31.5	32.4	21.2
Shift work	4.9	13.2	38.5	59.4	8.9
Saturday work	43.1	46.1	52.3	66.5	44.4
Sunday work	18.9	22.9	32.0	47.0	20.7
Overtime hours *	0.8 hrs	0.8 hrs	0.9 hrs	0.8 hrs	0.8 hrs
Coverage of employees (%)					
Staggered working hrs	12.4	16.1	13.9	11.5	13.6
Shift work	6.5	9.6	19.9	29.1	8.1
Saturday work	22.5	17.1	12.3	15.3	20.5
Sunday work	8.9	7.6	7.8	9.8	8.5

Note: * mean number of overtime hours per employee
Source: EUCOWE (weighted data).

Table 2: Operating time, country, and establishment size

	(1) Mean operating hours per day	(2) Mean operating hours per week	*(3) Mean operating days per year*
Country			
Germany	10.5	59.5	*3408*
Spain	8.6	47.3	*2314*
France	9.8	57.1	*2981*
UK	10.0	58.8	*3442*
Netherlands	9.4	501.7	*3042*
Portugal	9.7	55.1	*3449*
establishment size			

1-9	9.2	51.4	*2837*
10-49	10.7	62.5	*3458*
50-249	13.7	82.6	*4484*
>=250	16.2	102.7	*5441*
Total	*9.8*	*56.1*	*3097*

Source: EUCOWE (weighted data).

Weekend work is another way to extend operating times and the survey found just less than half (45 percent) of all organizations indicate that the company is operating on Saturdays, with a mean 21 percent of employees involved (table 1a). Across countries, company coverage of Saturday work varies between 16 percent in Spain to close to half in France, Germany and the UK. On the other hand employee coverage is lowest in Spain (12 percent) and highest in France (31 percent). The incidence of Saturday work tends to rise with firm size with a particular step change between median and large establishments. On the other hand we note a less intensive use of employees for Saturday work as firm size grows with more than a fifth of employees in small establishments working Saturdays compared to 15% in those with more than 250 employees. Sunday work is less common with around a fifth (21 percent) of the establishments operating on a Sunday and 9 percent of all employees involved (table 2). Across countries, company coverage of Sunday work varies between 8 percent in Spain to around a quarter in Germany, France and the UK, while employee coverage is lowest in the Spain (5 percent) and highest in Portugal and France (10 and 11 percent respectively). For Sunday work there does not appear to be any clear linear relationship between organization size and the intensity of using employees but once again we do find the larger establishments are more likely to have employees working on Sundays.

Different operating times of organizations will be achieved through the use of these various forms of flexible working and the relative reliance on some measures. The pressures in SMEs may be more acute as the capacity to extend or vary operating times may be limited by the personnel capacity of the organization itself. The mean average operating hours per day of all organizations in the sample, irrespective of size, sector of economic activity, and country, is 9.8 hours (table 2). Differentiating between countries in the survey, the mean operating hours per day are highest in Germany with 10.5 hours, followed by the United Kingdom with 10.0 hours while Portuguese, French, and Dutch organizations operate for between 9.4 and 9.8 hours per day. Spanish organizations find themselves at the bottom of the league table with 8.6 hours. There is a considerable difference in the mean operating hours per day across countries and while these differences may have several causes company size can be important. The findings indicate that there is a direct relationship between mean operating hours per day and establishment size. Daily operating hours increase from 9.2 hours in micro establishments (up to nine employees) to 10.7 for small establishments with 10-49 employees, and to 13.7 for medium-sized establishments with 50-249 employees (table 2). Large establishments with 250 or more employees operate on average 16.2 hours per day.

The second measure of operating times is the mean operating hours per week (table 2). Here we find the pattern observed for daily operating times repeated with micro establishments operating on average 51.4 hours per week, small establishments 62.5 hours, and medium-sized establishments 82.6 hours. The largest establishments had operating hours some 80% longer than those for micro firms at 102.7 hours. Again the longest mean operating hours in Germany (59.5 hours) and the UK (58.8 hours) compared to an overall mean of 56.1 hours. France, Portugal and the Netherlands had weekly operating hours, with the lowest average again in Spain (47.3 hours). The mean operating hours per year, our third measure, were 3097 hours for all organizations in the survey, with micro and small organizations operating at 2837 hours and 3458 hours respectively (table 1). However, the respective figures for

medium-sized and large organizations rise to 4484 hours and 5441 hours. The short daily and weekly operating hours in Spain are matched by short yearly operating times of 2314 hours: This is much shorter than the 2981 hours in France. German, Portuguese, Dutch and UK establishments operate between 3042 and 3442 hours a year.

Thus we find overall that firm size plays an important role in the use of different types of working pattern associated with extending operating hours. Overall we find that larger establishments are more likely to use these different working arrangements. Furthermore, and perhaps unsurprisingly, we find that larger establishments are more likely to make use of more complex forms of working arrangement such as shifts. However, we also find that the proportion of employees involved in these working arrangements is actually higher in smaller establishments suggesting a greater intensity of use where smaller organizations do undertake these different working patterns.

Table 3. Mean Number of working time measures used to meet fluctuations at the organizational level by size and sector

	Sector							
	Primary	Secon-dary	Con-struction	Distribu-tive Services	Producer Services	Social Services	Personal Services	Total
Germany								
1-9 employees	1.8	2.0	2.3	2.0	2.1	1.5	1.6	1.9
10-49 employees	3.7	2.4	2.5	2.6	2.8	1.9	2.3	2.5
50-249 employees	(3.0)	3.2	(3.2)	3.0	2.9	2.1	3.3	3.0
250+ employees	-	3.8	(3.7)	3.5	3.2	2.7	2.5	3.5
Total	2.0	2.3	2.4	2.2	2.4	1.6	1.8	2.1
France								
1-9 employees	2.5	1.7	(1.7)	1.6	2.1	1.8	1.5	1.7
10-49 employees	3.0	2.2	2.1	2.0	2.1	2.8	2.1	2.1
50-249 employees	3.4	2.7	3.0	3.0	2.8	2.2	(3.0)	2.8
250+ employees	(2.0)	3.3	(2.0)	2.7	3.0	2.6	(2.0)	2.9
Total	2.6	1.9	1.8	1.7	2.1	2.2	1.7	1.9
UK								
1-9 employees	(2.0)	1.8	2.3	2.3	2.2	2.3	(1.8)	2.2
10-49 employees	2.5	2.9	4.1	2.8	2.6	2.5	3.3	2.9
50-249 employees	-	3.2	(2.6)	3.1	3.0	3.0	(2.5)	3.0
250+ employees	(3.5)	5.1	(5.7)	3.2	4.5	3.6	-	4.2
Total	2.3	2.3	2.8	2.5	2.4	2.4	2.2	2.4
Netherlands								
1-9 employees	3.3	2.9	2.3	2.0	2.2	1.9	3.2	2.4
10-49 employees	3.6	2.9	3.0	3.4	3.0	0.7	3.5	3.2
50-249 employees	(3.0)	2.9	2.7	3.4	2.1	5.0	(3.6)	3.0
250+ employees	-	2.8	-	2.3	5.0	2.9	(4.0)	3.0
Total	3.4	2.9	2.5	2.3	2.3	1.8	3.3	2.6
Portugal								
1-9 employees	(1.5)	1.2	1.5	1.2	1.2	1.7	1.5	1.3
10-49 employees	1.9	1.2	1.2	1.2	1.4	2.7	1.9	1.5
50-249 employees	(2.3)	1.9	2.0	1.7	1.0	2.0	1.3	1.8
250+ employees	-	2.6	(4.0)	1.0	4.0	(1.0)	(2.0)	2.7
Total	1.8	1.3	1.4	1.2	1.3	2.0	1.7	1.4
EU5	2.3	2.2	2.3	2.1	2.3	2.0	1.9	2.2

Note: figures in parentheses based on sample of less than 25.
Source: establishment weighted EUCOWE data

An important factor in the use of different working time patterns is the extent to which they are used to meet fluctuations in demand. The questionnaire asked respondents to indicate whether they use one of more of a range of measures to meet fluctuations faced by the business. The options included overtime, Saturday work, Sunday work, shift work, part-time work, short time work, staggered shifts, working time accounts/flexitime/annualised hours, subcontractors/agency/on-call-freelancers, hire and fire or other. Table 3 shows the number of flexible measures taken to meet fluctuations by firm size. Given the limited resources available to SMEs and their greater reliance on informal measures we may also expect the number of measures to rise with establishment size.[2]

Overall we find that the information included in table 3 supports the other findings that the use of different forms of working patterns rises with firm size. However we also find persistent country differences identified above. For example, establishments in the Netherlands and the UK seem to make use of a greater number of working time arrangements (means of 2.4 and 2.6 measures) than those in other countries. This country effect from the UK and Netherlands also holds when controlling for the size of establishment with a higher number of measures used to deal with fluctuations in each of the firm size categories. In Germany and the UK the difference in the number of measures used is greater between the small and largest establishments with the large establishments (>250 employees) using a little less than twice as many measures to deal with fluctuations as micro establishments.

Many studies have pointed to the service sector as a source of growth for new forms of work and working time (Smith 2005), but interestingly here we find establishments in industrial sectors just as likely to use multiple forms of working arrangement to meet fluctuations. This is particularly the case for larger establishments in the secondary sector which have some of the highest means for the number of working time measures deployed.

In some sectors the linear relationships between firm size and the number of working time measures deployed to meet changes in workload (fluctuations) is weaker. In some cases this is the results of the limited sample size, for example the primary sector, but in other sectors the largest establishments may be using fewer measures than smaller ones, particularly the medium sized establishments, for example distributive services in France, Netherlands and Portugal. However, overall these cases are the exceptions that prove the rule and the number of measures deployed by the largest establishments is generally higher within each sector and country. Thus we find larger establishments not only making greater use of each form of working time arrangement but also more likely to adopt a strategy of multiple forms of work arrangement to meet the need to extend operating hours. Nevertheless where smaller establishments are using particular work patterns or operating at weekend the onus falls on a greater proportion of employees.

Multivariate Analysis of Working Time Patterns and Operating Times

The earlier descriptive statistics indicate that the use of different forms of working time flexibility and strategies involving multiple working time forms are influenced by the size of the establishment, the sector of economic activity and by the country the organization is based in. We find a similar result for all three indicators of operating time – daily, weekly and annually. However, these analyses give no indication of the importance of different explanatory factors or to that of the interaction between them. Thus to control for multiple influences and differentiate between them, the following section reports the results of multiple regression analysis of operating times.

Our regressions include a range of measures to capture the characteristics of the or-

[2] Unfortunately these data are not available for Spain.

ganizations: the profit/non-profit status, the extent of foreign control, and the scope of the product markets. We used labor costs as a percentage of total costs to measure the labor intensity of production and four dummy variables relating to different size categories - micro-organization (1-9 employees), small organization (10-49 employees), medium-sized establishments (50-249 employees), and large organization (+250 employees). A set of six country dummy variables (Germany as the reference category) and seven industry dummies (secondary sector as the reference category), capture geographical and sectoral differences. Importantly we include a series of measures to explore the presence of various working-time arrangements and working patterns. Firstly there are continuous variables to control for the proportion of part-time employees, the proportion of agency workers, the proportion of workers with fixed-term contracts, and the average working time of employees. Secondly a series of dummy variables are used to identify the use of shift work, staggered working time, Sunday work, Saturday work and overtime. Finally, the estimations for the operating hours per year include a continuous variable controlling for the number of holidays per year while another dummy variable identifies the presence of a collective agreement on working time in both models.

Table 4. Multivariate Analysis of Operating Hours

	Weekly Operating Hours		Annual Operating Hours	
Profit-orientation (yes=1)	**	4.63	*	236.47
Foreign control (yes=1)		-0.47	*	160.25
Collective agreement (yes=1)		0.04		42.58
Scope of competition				
local		-		-
national		-0.45		6.68
international	*	2.5		128.12
% Labor costs	**	0.05	*	2.74
Company Size				
micro		-		-
small	**	4.4	**	188.88
medium	**	12.86	**	702.04
large	**	19.65	**	1072.32
Country				
Germany		-		-
Spain		-0.38	**	-472.81
France	*	-3	**	-416
UK	*	-2.67	**	-258.45
Netherlands	**	-4.36	*	-188.07
Portugal		-0.95	**	314.2
Sector				
secondary		-		-
construction		0.77		-8.57
distributive services	*	-1.99		-93.26
producer services	*	-1.83		-123.17
social services		3.07		95.41
personal services		1.12		126.07
% part-time employees		-0.52		193.92
% agency fixed term		-2.22		-144.28
Working time average	*	0.16		6.48
Saturday work (yes=1)	**	12.38	**	497.3
Sunday work (yes=1)	**	21.85	**	934.81
Staggered working hours (yes=1)	**	5.59	**	211.35

Shift work (yes=1)	**	34.96	**	1684.68
Overtime (yes=1)		1.53		60.46
No. of holidays per year				-2.28
Constant	**	30.65	**	1991.39
No obs		9077		1483
F		161.36		18.88

The regression on operating hours per week show the impact of various working patterns is mixed once we control for the impact of other variables. On the one hand Sunday work, Saturday work, staggered work and shift work all have a positive effect on operating hours. Similarly the length of average working hours has a positive impact on operating times. On the other hand, we find that the proportion of part-time workers and the use of overtime have no significant effect. The model yields significant positive results for being a profit-orientated enterprise, experiencing international competition, and a labor intensity of operations is also positively associated with operating hours per week. All company size categories yield positive associations compared to the micro-establishments. Compared to Germany being located in France, the Netherlands or UK has a significantly negative impact on operating hours per week. Similarly organizations based in distributive and producer services have significantly lower hours than those in the secondary sector but no other sectors had a significant effect.

The analysis of mean operating hours per year show particular working patterns having a significant and positive effect on annual operating times, namely Sunday work, Saturday work, staggered work and shift work. On the other hand, the mean number of holidays for employees has no effect on yearly operating hours. The model produces similar significant results for establishment characteristics with profit-orientation, foreign ownership and establishment size all having a positive impact on annual operating hours. Again being located outside Germany tends to reduce operating times except in the case of Portugal where there is a significant positive results when compared to Germany.

Conclusions

This empirical analysis explores the relationship between working patterns and operating hours in SMEs in six European countries. Our findings confirm some of our earlier discussion on the limited potential of SMEs to adopt more advanced forms of working-time organization that would allow them to extend operating hours. Our results highlight the relationship between company size on and operating times. Associated with this is the positive relationship between establishment size and the use of working time patterns likely to raise operating hours, for example shift work and weekend work. However, we also find that smaller establishments adopting working time practices likely to extend operating hours also benefit; demonstrating the size per se may not be the sole constraint in implementing complex working time practices. Thus although the opportunity for developing complex working-time arrangements may increase with company size the benefits seem to be available to all sizes of establishments. Interestingly SMEs seems to use working time measures more intensely so that a greater proportion of employees are affected.

The impact of the national regulatory frameworks can not be discounted in the country-specific differences we identify; here we would expect both the regulation of working patterns and working time norms to impact on the methods used to extend operating hours. These frameworks may to a large extent be provided by both collective agreements and statutory regulation. However, our results suggest that the influence of the regulatory environment on the use of certain working patterns or the duration of operating hours is not

straightforward. The comparison of Germany and the UK provide an example two countries with relatively long operating times, high use of overtime in many establishments but quite different regulatory frameworks. In relation to the deployment and management of working time measures we demonstrate how the availability of non-standard working time arrangements such as shift work, staggered working hours, and weekend work all show positive associations with operating times. On the other hand we find no such relationship for the use of overtime hours. A reliance on overtime is a relatively straightforward managerial strategy in the absence of strict working time regulation but also has a relatively small impact on operating hours when compared to shift work where individual employees work shorter hours but establishments may be operating for longer. The availability of these options may be shaped by the regulatory framework the organization is exposed to. Interestingly, a collective agreement covering working time and/or operating hours did not have a negative impact on operating times; instead it is possible that collective regulation at the establishment level encourages the use of more complex working time systems likely to have a positive effect on operating times while not relying on the overworking of employees (more detailed analysis by company size does indicate a positive relationship between a collective agreement and operating hours, Smith et al. (forthcoming)). On the other hand, reliance on overtime in less regulated environment provides a cheap source of working time flexibility but may actually have a limited impact on overall operating hours.

One factor that may limit an organization's capabilities to invest in complex working time systems and indeed current operating times is uncertainty over the future economic prospects. We might expect the SMEs to experience such uncertainty to a greater degree than larger organizations. Unfortunately the particular economic situation of the organization was not an explicit component of the EUCOWE survey. It is inevitable that during any period of data collection some organizations may have been operating at capacity while others struggle and have reduced operating hours. In the future such information would be useful to analyze further the impact of working patterns on operating hours.

One of the key decisions affecting management and employees is to determine the proportion of employees affected by non-standard working time practices used to extend operating times. For example it is possible that for some establishments there is a reliance on atypical workers to extend operating times at unsocial hours thus placing a disproportionate burden on a small number of workers, for example part-timers. In SMEs the impact on employees of particular working time regimes may be more acute; here we found that the means of extending operating hours through weekend, staggered and shift work provide positive benefits as they do in larger establishments. It is interesting to note that where smaller establishments do use these forms of working time a greater proportion of employees are often affected. While this suggests that the burden of extending operating hours falls more evenly in smaller establishments it may also be the result of more informal work practices and processes in SMEs bringing a larger number of employees into non-standard working arrangements.

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