Agnieszka Piasna*

Standards of Good Work in the Organisation of Working Time: Fragmentation and the Intensification of Work Across Sectors and Occupations**

Abstract

This article addresses the issue of good work in terms of working time organisation by exploring the link between diverse working time practices and work intensity. Existing studies have demonstrated that non-standard working hours expose workers to the pressures of work intensification, which can be defined as the compression of work activities into a unit of time. This article expands existing knowledge by investigating how the outcomes of non-standard working hours differ by sector and occupation, as well as by incorporating detailed and comprehensive measures of working time organisation in the empirical analysis. Based on EWCS data from 2010 and 2015 for 28 EU countries, the empirical analysis uses multilevel regression models with workers nested within countries. The results show that non-standard working hours and employer-driven scheduling are, on average, linked to more intense work than regular daytime hours scheduled from Monday to Friday or under worker-led flexibility arrangements. Consistent with expectations, the study points to significant differences in this relationship between sectors and occupations. Among others, in low-skilled and routine occupations, and service sectors such as transport, commerce, hospitality and health, short hours of work and employer-led flexibility are associated with relatively more intense work. Even where workers have some control over their schedules, jobs in these areas are not linked to lower levels of work intensity. The findings also support the expectation of overwork in high-skilled jobs, where long hours of work and high levels of worker-led flexibility are linked to relatively more intense work.

Keywords: job quality, flexible working time arrangements, work effort, work intensity, control and autonomy
(JEL: J21, J22, J24, J28, J81)

Introduction

Working time is one of the elements of work organisation that has undergone profound changes in the most recent decades. Structural changes in the economy, the

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loosening of the regulation of labour standards, the decline in trade union strength and the spread of business strategies emphasising cost containment, as well as workers' changing life courses and preferences, have created an environment characterised by the expansion of flexible, fragmented and variable work schedules (Berg, Bosch, & Charest, 2014; Messenger, 2011). In this process of change, norms related to working time organisation have been gradually challenged, forcing us to rethink what type of working time practices can constitute an element of good work.

Thus far, the dominant approach has been to consider shorter working hours as better for workers and long working hours as less favourable. Indeed, in Taylorist forms of work organisation, efficiency is improved through task re-organisation and the compression of more activities into an hour of work. In such conditions, working fewer hours might have positive health and well-being outcomes for workers. In contrast, when employers regard payment for labour that exceeds narrow definitions of demand (e.g. the number of customers) as an unnecessary expense (see Lambert, Haley-Lock, & Henly, 2012), efficiency is improved by removing 'unproductive' time from paid working hours. This results in increased pressure and workloads during the remaining shorter, but increasingly fragmented and flexible, hours (see e.g. Ciccia & Ó Riain, 2013; Green, 2006; Piasna, 2018; Rubery, Ward, & Grimshaw, 2006).

Building on this literature, this article investigates outcomes for workers associated with a diversity of working time arrangements. The outcomes are assessed in terms of work intensity, defined as the compression of work tasks into a given unit of time, which is an important element of good work in a broader sense. Work intensification has been shown to have significant negative implications for a vast array of well-being and health outcomes, such as job satisfaction, stress levels, perceived time pressure or work-life conflict (see e.g. Burchell, Ladipo, & Wilkinson, 2002; Gallie & Zhou, 2013; Green, 2006).

Moreover, this article considerably extends prior research by analysing whether the relationship between diverse working time practices and work intensity is occupation- and sector-specific, thus documenting the importance of job context in understanding the outcomes of non-standard working hours. While there has been abundant research on the influence of national regulation and institutions, as well as worker and work characteristics, on diverse working time practices (see e.g. Doellgast & Berg, 2018; Gerstel & Clawson, 2015; Marginson & Galetto, 2016; Richbell, Brookes, Brewster, & Wood, 2011), cross-national empirical evidence on sectoral and occupational differences is limited and, for the most part, based on single-country case studies with limited comparability (Lambert et al., 2012; Lloyd & Payne, 2018; Park, Yaduma, Lockwood, & Williams, 2016).

Against this background, this article contributes to this body of literature by developing a quantitative cross-national analysis of fragmented and flexible working time arrangements and their association with work intensity. The analysis aims to explore

and explain job-specific differences in the outcomes for workers associated with certain non-standard working hours. The empirical analysis uses a large-scale and representative survey of European workers from 28 countries: the European Working Conditions Survey carried out by Eurofound. Cross-national differences are addressed by adopting a multilevel analytical approach, with workers nested within countries. The study also overcomes some of the limitations of prior research that have conflated many aspects of working time organisation under one heading of flexibility, by including detailed and comprehensive measures of working time arrangements, such as the number of hours, and taking into account the heterogeneity of part-time work, unsocial hours, shift work, flexibility and unpredictable work schedules.

Theoretical Framework

Levels of work intensity are usually not formalised in an employment contract (Cartier, 1994; Simon, 1991) and can be viewed as a component of the bargain between employers and workers. Employers deploy, among others, a range of managerial tools to obtain desired outcomes from workers, with the result reflecting the state of power relations between the sides (Baldamus, 1961; Behrend, 1957). With respect to work intensity, employer-employee relations can be based on internal systems of control (e.g. methods of production, staffing policy or wage systems) and incentives, as well as on worker involvement fostered by the HRM practices that organisations implement to improve performance (Kelliher & Anderson, 2010; McGovern, Hill, Mills, & White, 2007). The organisation of working time plays an important role in all these mechanisms and therefore represents an essential element in the analysis of work intensity.

Efficiency and the maximisation of productivity can be achieved by manipulating either the extent of working time or the intensity of its use. Traditionally, efficiency in time use has been associated with increases in the amount of productive activity that can be performed during a given unit of time (Hill, 1986; Weber, 2001). This is epitomised by the development of scientific methods of management. In the wake of the studies conducted by Taylor, the way in which workers are used at work has been increasingly subject to scrutiny and rationalisation (Blyton, Hassard, Hill, & Starkey, 1989), which translates into an increasing pace of work and the accumulation of more activities within an hour of work. This form of efficiency has been achieved by means of a re-organisation of the sequence and order of activities rather than adjustments to working hours.

A complementary strategy of improving efficiency and productivity is based on removing 'unproductive' time from paid working hours (Adam, 2003; Harvey, 1989). From this perspective, units of time are no longer all the same and their utility to the employer differs. A manifestation of this approach is the increasing fragmentation and flexibilisation of working time (Rubery, Ward, Grimshaw, & Beynon,

2005) based on the identification of a close link between reductions of working hours and adjustments to them (Tergeist, 1995). This became particularly visible in the post-2008 economic crisis, which has affected the negotiation of flexibility at the company level (Goudswaard et al., 2012; Lang, Clauwaert, & Schömann, 2013). Faced with pressures to cut costs and develop new cost-efficient ways to increase productivity, employers have implemented working time adjustments primarily to maximise staffing efficiency and achieve a better alignment between the number of working hours, staffing levels and workloads (Piasna, 2015).

In principle, as Messenger (2011) observes in a review of trends and patterns in working hours in Europe, the growth in fragmented and short working hours usually involves full control by employers over the scheduling of these hours. Short working hours and employer-controlled schedules are thus a means of passing to the workforce the risks and costs associated with a decline in economic activity and periods of lower demand. From a workers' perspective, the matching of staffing levels to workloads is associated with increased unpredictability (McCrate, 2012; Osuna, 2013) and work intensification (Ciccia & Ó Riain, 2013; Piasna, 2018).

Based on the above review of the literature, the following hypothesis may be formulated about the relationships between working time arrangements and work intensity at a generalised level:

H1: Non-standard working hours are associated with increased work intensity compared to standard working hours.

Standard hours are defined as 8-hour working days scheduled regularly during the daytime from Monday to Friday. Overall, we expect that employer-controlled schedules that allow the fine-tuning of work hours to demand, including variable, long and unsocial hours (i.e. work at night and on weekends) at employers' discretion, represent poor-quality working time and will be associated with particularly high work intensity and work pressure for workers.

However, the impact of working time practices, for both organisations and workers, have been linked to the context in which they operate (Askenazy, 2013; McGovern et al., 2007; Russell, O'Connell, & McGinnity, 2009). Therefore, it can be expected that the relationship between working time arrangements and work intensity will vary by type of job, as defined by occupation and sector of economic activity. While there is a rich literature about the occupation and sector-specific use of non-standard scheduling (Berg et al., 2014; Bosch, 1999), job-specific differences in the relationship between working time arrangements and work intensity are not yet well established empirically.

Jobs differ in a number of important features, including task complexity, the nature of their demands, work organisation, capital structure and the portability of work outside the workplace, as well as sector-specific regulations, methods of production

and collective interest representation (Felstead, Ashton, & Green, 2001; Gallie, Felstead, & Green, 2004). These characteristics influence employers' strategies with respect to the use of non-standard working time arrangements (Lehndorff, Wagner, & Franz, 2010; Marginson & Sisson, 2004), and they can also result in different work intensity outcomes.

For instance, production in the service sector is labour-intensive, rather than capital-intensive as in the case of manufacturing, with the costs of labour accounting for a much higher share of total production costs (Bosch, 1995). Thus, in many service sector organisations, it is both feasible and cost-effective to match working hours more closely to peaks in demand. The extension of working hours in sectors employing elementary and routine workers, such as hotels, restaurants, entertainment or retail, tends to be achieved by means of part-time work scheduled at peak times and thus can be associated with the intensification of work. Moreover, in routine and low-skilled occupations, Taylorist systems of work organisation reduce complexity, interdependence and skill, and enable the easy substitution of individuals. Thus, working hours and workloads can be easily adjusted, with part-time jobs being effectively used better to match workers to workload, and can consequently be associated with relatively high work intensity.

This finds support in the available empirical evidence. Part-time work has been found to represent a productivity-enhancing solution among low-skilled and routine jobs such as cleaning and catering services in the UK (Edwards & Robinson, 1999); in elementary occupations (Beechey & Perkins, 1987; Junor, 1998); in hospitality and banking sectors in Germany; and in Dutch pharmacies (review in Garnero, Kampelmann, & Rycx, 2014).

This points to another important feature of work in the service sector, namely the difficulty in smoothing the workload over the day or week (Beechey & Perkins, 1987; Bosch, 1999). This can increase work intensity at peak times, especially for a higher grade and skilled occupations in the service sector where it is difficult to substitute workers and quantify the tasks to be distributed among more workers. Therefore, the increased work intensity achieved by matching the coverage of lower-skilled and elementary workers to peaks in demand, mainly by means of part-time work extending into unsocial hours, might not be observed among high-skilled service workers.

Furthermore, the choice of competitive strategy depends on the balance of power between employers and workers, which results in a stark divide in the quality of part-time work between managerial and routine jobs. Tilly (1992) linked these differences to the demands of the job in terms of task complexity and training, as well as motivation to work. On these grounds, we can differentiate between 'good' part-time jobs in high-skill and high-level occupations and 'bad' part-time jobs characterised by employer-led flexibility in routine low-level jobs (Tijdens, 1997; Warhurst, Carré, Findlay, & Tilly, 2012). The imposition of contracts based on re-

duced work hours among low-skilled and manual workers is used mainly as an employer-led solution to fine-tune work hours to demand by facilitating the hiring of workers for the minimum number of hours deemed necessary to complete their tasks and when demand for labour is at its height (Fagan, 2004; Purcell, Hogarth, & Simm, 1999). Support for this is found in a study of private sector firms in Belgium (Garnero et al., 2014). The authors show that, in service occupations and sectors, reductions in hours are linked to relatively higher productivity. In contrast, in manufacturing, part-time jobs are likely to be the result of collectively negotiated reductions in working hours and are often accompanied by corresponding changes in workplace design, thus possibly without having negative outcomes for work effort.

Long weekly hours, exceeding the 40-hour standard, is a common solution to increased workloads among managerial and professional occupations. The literature on over- and under-work points to 'overworked' professionals (Jacobs & Gerson, 2004) and a trend towards overwork in career jobs with workers enticed by higher incomes and the social status acquired through consumption (Schor, 1992). In such jobs, overtime is usually unpaid, often driven by company norms, individual ambition and high commitment (Richbell et al., 2011). Job demands imposed on professionals that translate into long hours might, therefore, imply more intense work during those hours. In contrast, long hours in manual occupations where physical effort is exceptionally high might be linked to increased fatigue with a reverse effect on work intensity. Overtime might also be less often used to cope with increased workloads in sectors where it is paid at a multiple of the standard rate. In such jobs, the use of additional part-time contracts represents a cheaper solution for employers (see Rubery et al., 2005).

The available evidence on the job-specific outcomes for work intensity of the duration of working hours allows us to formulate the following hypotheses:

H2: Part-time work is associated with relatively high levels of work intensity in lower-level service sector jobs in sectors such as commerce, hospitality and health (i.e. jobs where tasks can be easily quantified and part-time contracts used to cover peaks in demand).

H3: Long working hours are associated with relatively high work intensity in professional and managerial positions and in higher-skilled services (i.e. jobs where they represent the main solution to increased workloads).

As noted earlier, employers can strive to limit labour costs by closely matching employees' work hours to variations in consumer demand (Henly & Lambert, 2014). This strategy can be described as employer-led flexibility insofar as it effectively shifts risk from employers to workers and it can have negative outcomes for workers in terms of increased stress, work pressure and work intensity (Appelbaum, Bailey, Berg, & Kalleberg, 2000). However, the prevalence and effectiveness of such a strat-

egy are likely to depend on the type of job. Matching staffing levels closely to business requirements is primarily used in labour-intensive industries, when employers are faced with consumer demand that varies over the day, week and year, where unsold supply cannot be stockpiled and where staffing levels can be easily adjusted among workers who do not have enough bargaining power to resist employers' pressures for variable working hours (Lloyd & Payne, 2018; Park et al., 2016). Berg and colleagues (2014) describe such strategies as a 'low-road' path of flexibility; a cost-cutting tool that is particularly prevalent in customer service organisations where working time practices are highly variable and unpredictable for employees.

The existing empirical research shows a prevalence of such practices primarily in hospitality (Lloyd & Payne, 2018; Park et al., 2016; Yaduma, Williams, Lockwood, & Park, 2015) and in retail trades (Henly & Lambert, 2014; Wood, 2016), but particularly among relatively low-skilled workers across the service sector in general. In these types of job, the findings illustrate substantially increased intensity of work linked to employer-led flexibility, as measured by stress levels, strain, increased productivity and damaging perceptions of job quality. In view of this, we expect that:

H4: Employer-led flexibility in working hours is associated with relatively high work intensity in customer service jobs, i.e. in retail and hospitality, and lower-skilled service sector occupations.

In contrast to employer-led flexibility, which is consistently linked to higher work pressure for workers, the outcomes of worker-led flexibility, giving workers more control and discretion over the number and scheduling of their hours, are less clear.

On the one hand, worker-led flexibility is associated with less intense work. For instance, greater autonomy and control by employees over their working time has been found to reduce the overall pressure of work (Boxall & Macky, 2014; Moen, Kelly, & Hill, 2011; Russell et al., 2009; White, Hill, McGovern, Mills, & Smeaton, 2003). The flexibility sought by employees to allow, for instance, planning for childcare might represent inflexibility for the employer (Golden, 2012; Piasna & Plagnol, 2018), thus leading to flexible workers being assigned to less urgent and less demanding work with lower work intensity.

However, while technically plausible, evidence shows that family concerns are rarely a reason for employers' decisions to facilitate worker-led flexibility (see Ortega, 2009). Instead, it is performance concerns that prevail, with flexibility used to improve performance and leading to higher work intensity. One example would be the use of worker-led flexibility as part of high-performance or high-commitment work practices which commonly serve to obtain greater discretionary effort from employees (Appelbaum et al., 2000; Atkinson & Hall, 2011; Golden, 2012; White et al., 2003). Worker-led flexibility can be expected to have a work-intensifying effect, given also the theory of social exchange and reciprocity (Kelliher & Anderson,

2010). In exchange for control over their working hours, employees may increase work effort either by working longer or more intensively.

Empirical studies show that high-skilled workers have more access to worker-led flexibility and that, in higher-level occupations, the scope for flexibility is also broader (McDonald, Guthrie, Bradley, & Shakespeare-Finch, 2005). Riva et al. (2018) link this to the nature of work, where task completion may be conducted outside the usual 9 to 5 schedule and where it does not depend on the physical presence on company premises at a specific time. Among professionals, causation can also be reversed, with very intense work being one of the reasons behind the introduction of employee-oriented flexibility options (Lambert et al., 2012). Nevertheless, Lyness et al. (2012) found that the positive relationship between worker-led flexibility and organisational commitment, which might translate into the higher discretionary effort, differed neither according to workers' social class nor across the 21 countries in their sample.

Finally, some studies suggest that worker-led flexibility is linked to more intense work among lower-skilled service sector jobs. Lambert et al. (2012) have shown that workers in low-level jobs in hospitality, retail and financial services might have notional control but they face repercussions when taking advantage of policies allowing them to influence their hours. Their scope for control may also be marginal, functioning only within a framework established by employers (Henly & Lambert, 2014). Furthermore, employees in hospitality who have control over their hours might choose to work more busy shifts to maximise their earnings (e.g. from tips). Therefore, with regard to worker-led flexibility, we explore two partly competing hypotheses:

H5a: Worker-led flexibility is associated with relatively high work intensity in high-skilled and high-level jobs.

H5b: Worker-led flexibility is associated with relatively high work intensity in low-skilled service sector jobs.

Methodology

Data

The empirical analysis uses data from the European Working Conditions Survey (EWCS), a cross-sectional survey of workers repeated every five years with an average sample size of 1,000 per country. The sample for the analysis includes both the 2010 and 2015 waves from EU28 countries. Only employees and those self-employed who receive a wage or salary are included in the analysis, and armed forces occupations are excluded. The final sample includes 52,236 respondents with complete data on all analysed variables.

Measures

Good work is assessed in terms of the pressure it exerts on workers and thus the intensity of work. There is no widely-accepted definition that would allow for the unequivocal operationalisation and measurement of work intensity. For the analysis, it is defined as the speed and tempo of work, as opposed to the complexity of work, the required skill level or the number of hours (see e.g. Green, 2006). Work intensity thus refers to the amount or compression of work activities within a specified unit of time.

Based on this definition, the work intensity index—the dependent variable—was computed from self-reported frequencies of work at very high speed and to tight deadlines, both measured on 7-point scales (Cronbach's α=0.784). The responses were recorded to range from 0=never to 6=all of the time and then summed to form a 13-point scale (range from 0 to 12) with higher values indicating more intense work.

The work intensity index is not group-specific and it applies to all types of jobs. Across all analysed occupations and sectors, it approximates a normal distribution, where all values of the index are present in the data, with a somewhat positive skew among service and sales workers; skilled agricultural, forestry and fishery workers; and in the education sector.

Working time arrangements are the main predictors and include detailed measures of the duration, distribution and flexibility of working hours.

The duration of usual weekly hours of work is measured in five categories (1–19, 20–34, 35–40, 41–48 and 49 or more).

The distribution includes four measures of work during unsocial hours and indicates the number of times the respondent worked during the past month at night; on Saturdays; on Sundays; or for more than ten hours per day. Long days (of over ten hours) do not necessarily overlap with long weekly working hours; for instance, they were reported by as many as 12.5 % of part-time workers in the sample. Shift work is also included, differentiating between 1=no shift work; 2=daily split shifts; 3=permanent; and 4=rotating shifts.

Flexibility measures the scope for control and variability in work hours. It combines information from two EWCS items (Q42 and Q43) into three categories: 1=regular hours that are fixed by the employer and do not change; 2=employer-led flexibility with changes in working hours that are dictated by employers and beyond workers' control; and 3=worker-led flexibility that allows workers at least some control over the scheduling of their work. A further aspect of flexibility is the frequency of the requirement to come into work at short notice over the past 12 months (3=several times a month or more; 2=rarely; and 1=never). This measure is only available in the 2015 EWCS.

The analysis controls for a number of work and worker characteristics including gender; age (in years); sector of economic activity (13 groups derived from 1-digit NACE Rev. 2); occupation (nine groups based on 1-digit ISCO); educational attainment (three groups based on ISCED classification); and type of employment contract (1=indefinite; 2=fixed-term; 3=temporary employment agency; 4=apprenticeship, training and other). All questions about work organisation pertain to the respondent's main paid job.

Statistical Analysis

Multilevel regression models with random intercept and fixed slopes are employed in the empirical analysis, with workers nested within the 28 EU countries. The advantage of multilevel modelling lies in the possibility of handling data where observations are not independent and correctly modelling such correlated error terms. Thus, respondents from the same country are allowed to be more similar to each other than to respondents from other countries.

In the first step, the effect of working time organisation on work intensity is assessed on average for all workers. Model 1 includes only information about working time, while model 2 adds control variables to account for compositional factors and allows an assessment of the impact of working time organisation once the effects of worker and work characteristics are held constant. In model 3, a measure of work at short notice is included. This model, exceptionally, uses only the 2015 EWCS. The final step of the analysis tests whether the relationship found between working time and work intensity is similar among different jobs. The differences between occupational groups and sectors of economic activity are explored by including two-way interaction terms in the main model (model 2) with all control variables. Interactions are modelled between occupations or sectors and two working time measures in turn (duration and flexibility). This gives a total of four models with interaction terms.

Results

The first step in the analysis is to investigate the relationship between various working time arrangements and work intensity, on average for all workers. The results in Table 1 show that, in general, work intensity is higher when working hours deviate from the standard schedule of regular, daytime and weekday work.

Table 1. Multilevel Regression Models With the Effects of Working Time Arrangements on Work Intensity

	Model 1 2010–2015	**Model 2** 2010–2015	**Model 3** 2015
Duration of weekly hours (ref. 35–40)			
1–19 hours/week	-0.961***	-0.579***	-0.623***
20–34 hours/week	-0.704***	-0.369***	-0.347***
41–48 hours/week	0.569***	0.567***	0.509***
49+ hours/week	0.891***	0.786***	0.692***
Work at night	0.015**	0.001	-0.003
Work on Saturdays	0.056***	0.081***	0.034
Work on Sundays	-0.008	0.047**	0.021
Long working days (over 10 hours)	0.032***	0.040***	0.038***
Shift work (ref. no shift work)			
Daily split shifts	0.713***	0.724***	0.733***
Permanent shifts	0.668***	0.596***	0.577***
Rotating shifts	0.347***	0.345***	0.306***
Flexibility of hours (ref. regular)			
Employer-led flexibility	0.792***	0.806***	0.598***
Worker-led flexibility	-0.134***	-0.094*	-0.240***
Work at short notice (ref. never)			
Rarely			0.515***
Several times a month or more			1.451***
Control variables [a]	No	Yes	Yes
Intercept	4.747***	5.494***	5.622***
Random part			
Variance within countries	3.533	3.433	3.399
Variance between countries	0.909	0.904	0.934
N of observations	52,236	52,236	26,847
Log likelihood	-140111.0	-138615.4	-71003.921

***p < 0.001, **p < 0.01, *p < 0.05

Note: Number of groups: 28. Null model (without predictors): variance within countries 3.614; variance between countries 0.871; log likelihood -141298.3. [a] Control variables: gender; age; sector (NACE); occupation (ISCO); educational attainment; type of employment contract; and year of survey (only in model 2). Complete results provided in the Appendix.

In particular, we observe that workers who reported work during unsocial hours, such as nights, Saturdays or long days of over ten hours, experienced higher levels of work intensity compared to workers with only standard hours of work. The effect of night work loses statistical significance when control variables are included (model 2). It should be noted, however, that unsocial hours are usually correlated. For

instance, among workers who reported that they worked at night (17.6 %), the vast majority (88.2 %) also worked during weekends. There is a similar, but much stronger, effect of shift work where daily split shifts are associated with the most intense work. The flexibility of working hours is also significantly related to work intensity, but it matters who has control over the schedule and the extent to which working hours are unpredictable for workers. Thus, employer-led flexibility is linked to increased work intensity, while worker-led flexibility is associated with less intense work compared to regular hours. Independently, work at short notice is also linked to work intensification: the more often workers are required to come into work at short notice, the more intense their work. Finally, work intensity rises as the number of weekly hours of work increases. Thus, part-time work is linked to lower levels of work intensity compared to full-time hours (35–40 per week), while long working weeks (41 hours/week or more) are linked to more intense work.

The results remain largely unchanged when worker and work characteristics are included as control variables (model 2 in Table 1). The effect of part-time work and worker-led flexibility is somewhat reduced, which is related to an unequal distribution of these arrangements across different jobs and groups of workers, but it remains statistically significant. Overall, the results support *Hypothesis 1*, as non-standard working hours are associated with increased work intensity compared to standard working hours.

In the next step of the analysis, we test whether the link between non-standard working time and work intensification varies by type of job, as defined by sector and occupation. The structure of jobs in the sample is illustrated in Figure 1.

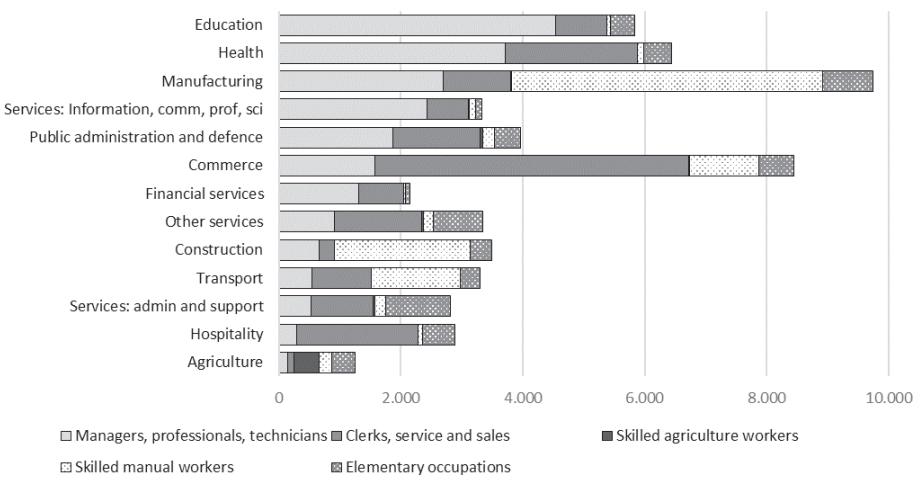
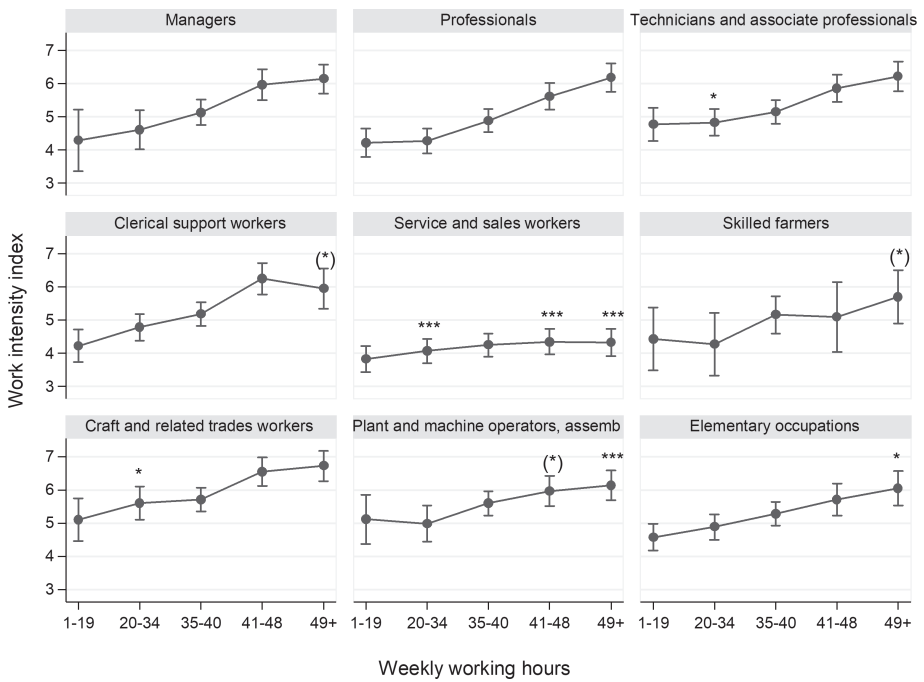


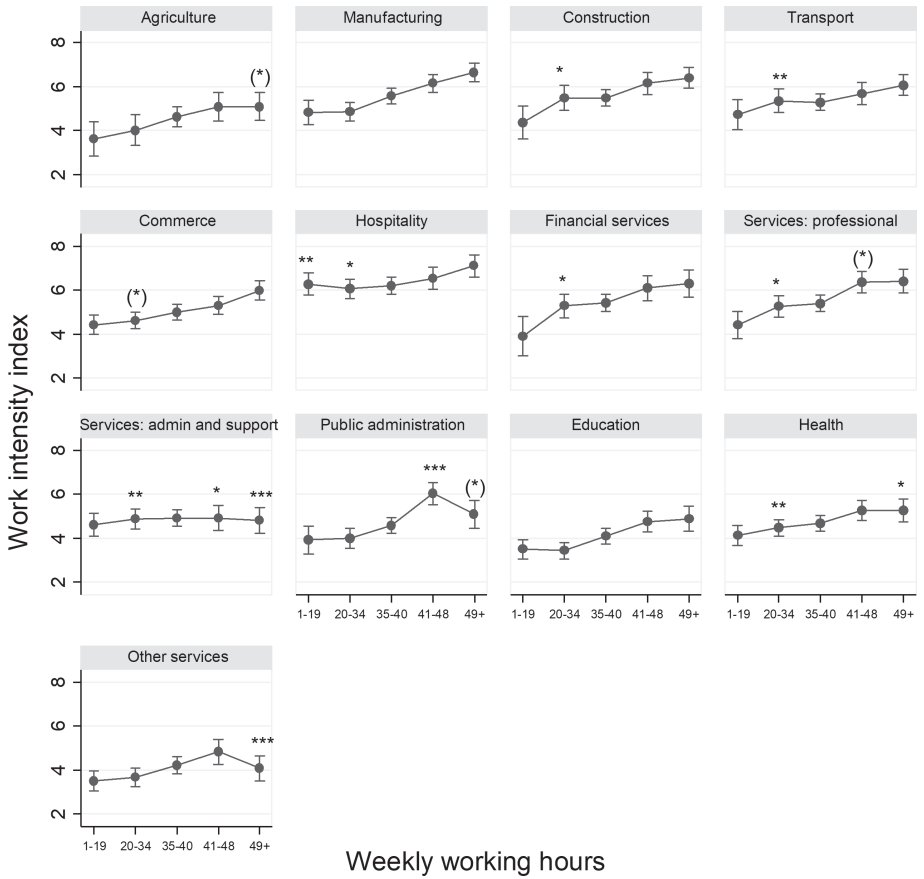
Figure 1. Structure of jobs in the sample, by sector and broad occupation, EU28, 2010–2015.

The use of various working time practices is highly job-specific in the analysed sample of workers (see Tables A1 and A2 in the Appendix). Service and sales workers stand out as having very diverse work schedules, characterised by a high prevalence of short and unpredictable hours and with a high incidence of employer-led flexibility. A somewhat similar pattern is found among manual workers, with a much greater scope for employer control among low-skilled manual compared to high-skilled manual jobs. Manual workers, however, who are mostly male, work predominantly full-time. Workers in elementary occupations report the highest incidence of part-time hours, but their schedules are somewhat less variable and offer little scope for setting one's working hours. On the other hand, high-skilled white-collar jobs (managers, professionals and associate professionals) offer the highest levels of worker autonomy in arranging working hours.



Notes: Predictive margins: predicted values from the regression analysis, all control variables included, with interaction terms between occupations and weekly working hours. Professionals and 35–40 hours/week are reference categories; significant interaction effects are marked: ***p < 0.001, **p < 0.01, *p < 0.05, (*)p < 0.1. Vertical lines represent 95 % confidence intervals.

Figure 2. Occupation-specific relationship between weekly working hours and work intensity; predictive margins from the multilevel regression analysis.



Notes: Predictive margins: predicted values from the regression analysis, all control variables included, with interaction terms between sectors and weekly working hours. Manufacturing and 35–40 hours/week are reference categories; significant interaction effects are marked: ***p < 0.001, **p < 0.01, *p < 0.05, (*)p < 0.1. Vertical lines represent 95 % confidence intervals.

Figure 3. Sector-specific relationship between weekly working hours and work intensity; predictive margins from the multilevel regression analysis.

Aside from occupation, the sector of economic activity also has an impact on the use of non-standard and flexible working time arrangements. The most fragmented working hours are found in transport, hospitality and health care, with a high share of part-time hours (except transport), employer-led flexibility and work at short notice. In male-dominated sectors, such as manufacturing, construction or transport, part-time work is very rare and long working weeks are common. The opposite is found in female-dominated education, health and other services. Knowledge-intensive services, including finance, information and communications, and professional, scientific and technical activities, stand out in terms of the presence of high levels of

worker-led flexibility and a balanced distribution of weekly working hours. We have tested whether these differences in the use of non-standard schedules across jobs coincide with different work intensity outcomes.

We first consider the relationship between the number of weekly working hours and work intensity. Figure 2 illustrates how this relationship differs across occupations, by showing the predictive margins from the regression model with an interaction term between occupations and weekly hours of work and all control variables, as in model 2 in Table 1. Figure 3 provides a corresponding illustration for the differences across sectors.

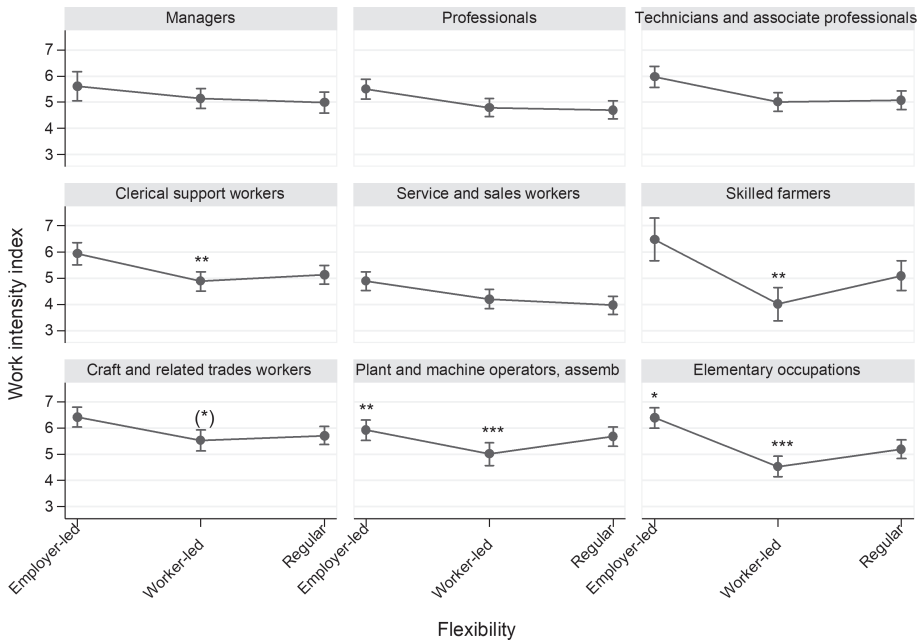
On average, part-time work is associated with significantly lower levels of work intensity than full-time work (i.e. 35–40 hours/week) (Table 1). The results show that, among professionals (a reference category), work intensity is indeed relatively lower in part-time jobs without there being a marked difference between short (1–19) and substantial (20–34) part-time hours. This relationship is significantly weaker among technicians and associate professionals, service and sales workers, and craft workers. Thus, in these jobs, there is less difference in work intensity between part-time (20–34 hours/week) and full-time working hours.

Considering sectoral differences, a similar pattern with relatively high work intensity in part-time work emerges in hospitality, administrative services, professional and financial services, construction, transport, health and commerce. In all these sectors, the relationship between part-time work and work intensity is significantly weaker than in manufacturing (a reference category). However, significant differences apply mostly in the case of substantial part-time hours (20–34), which might be due to a relatively low presence of marginal part-time hours in many sectors.

Overall, the results are in line with the expectation from *Hypothesis 2* that, in lower-level service sector jobs, part-time working would be associated with relatively high levels of work intensity. Nevertheless, this pattern is also found in lower-level manual jobs and, contrary to expectations, also in professional services. The latter might be due to these sectors also employing considerable shares of lower-skilled clerical workers (see Figure 1).

Considering the link between work intensification and long weekly hours of work, based on the literature, *Hypothesis 3* was formulated about the presence of stronger effects among professional and managerial positions and in higher-skilled service sectors. Indeed, the results show a relatively higher increase in work intensity in long-hour jobs among professionals compared to service and sales workers, operators and assemblers, and elementary occupations. Across the sectors, however, the results are less consistent with *Hypothesis 3*. We observe that the relative difference in work intensity between full-time and long hours is indeed significantly less pronounced in administrative and support services, and in health and other services, and that, in public administration, overtime (41–48 hours/week) is linked to partic-

ularly high relative work intensity. Even so, there is no significant difference in this respect between manufacturing and professional services, commerce or hospitality, which suggests that long working hours represents an important tool for addressing increased workloads across various sectors and one which is by no means limited to high-skilled professional positions.

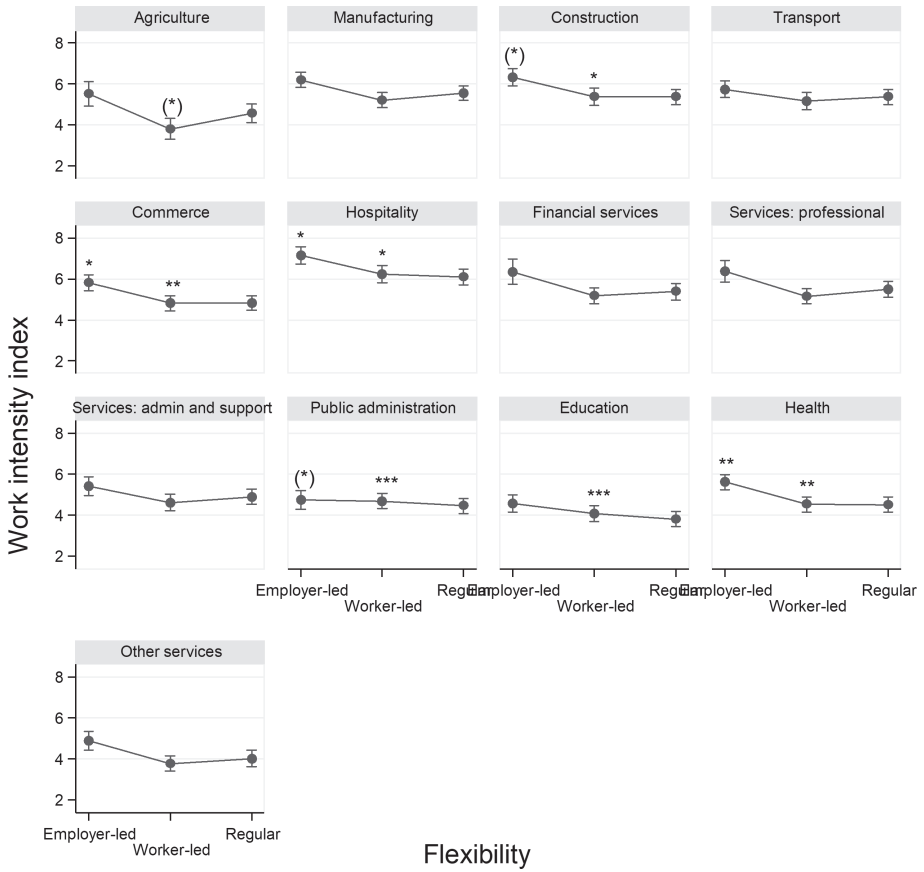


Notes: Predictive margins: predicted values from the regression analysis, all control variables included, with interaction terms between occupations and flexibility. Professionals and regular hours are reference categories; significant interaction effects are marked: ***p < 0.001, **p < 0.01, *p < 0.05, (*)p < 0.1. Vertical lines represent 95 % confidence intervals.

Figure 4. Occupation-specific relationship between flexibility of working hours and work intensity; predictive margins from the multilevel regression analysis.

Employer-led flexibility in working hours is associated with relatively higher work intensity, compared to regular hours, in all jobs but to differing degrees (Figures 4 and 5). In line with expectations, this relationship is significantly stronger in commerce, hospitality and health. Elementary occupations also stand out as reporting particularly high levels of work intensity associated with flexibility imposed by employers. In contrast, among operators and assemblers, employer-led flexibility has a significantly weaker effect on work intensity than among professionals (a reference category). However, the effect is not significantly stronger in the category of service and sales workers, as proposed in *Hypothesis 4*. Nevertheless, lower-skilled service

sector occupations constitute a substantial part of jobs in commerce, hospitality and health. In view of this, we consider that the results support the hypothesis.



Notes: Predictive margins: predicted values from the regression analysis, all control variables included, with interaction terms between sectors and flexibility. Manufacturing and regular hours are reference categories; significant interaction effects are marked: ***p < 0.001, **p < 0.01, *p < 0.05, (*)p < 0.1. Vertical lines represent 95 % confidence intervals.

Figure 5. Sector-specific relationship between flexibility of working hours and work intensity; predictive margins from the multilevel regression analysis.

Finally, in manufacturing, worker-led flexibility in working hours is associated with lower work intensity compared to regular hours. This stands in contrast to the construction, commerce, hospitality, public administration, education and health sectors. In all these sectors, having some control over one's working hours is not linked to less intense work. Looking at occupation, worker-led flexibility is associated with particularly low work intensity compared to regular hours among clerks, skilled

agricultural workers, operators and assemblers, and elementary occupations, but not among high-skilled workers. Thus, the results do not allow us to discriminate unequivocally between the competing *Hypotheses 5a* and *5b*, as there is evidence of relatively more intense work being associated with worker flexibility in both some higher-skilled occupations and in lower-level service sectors.

Subsequently, an additional regression analysis was carried out (not shown) including only the 16 biggest jobs defined as an occupation in a sector (e.g. professionals in health care, service and sales workers in hospitality). This revealed that, for service and sales workers in commerce, worker-led flexibility was associated with the most intense work when compared to regular hours. In all other jobs, this relationship was weaker or even reversed with worker-led flexibility linked to lower work intensity than regular hours.

Discussion and Conclusions

The goal of this study is to advance knowledge on the implications for workers of working time fragmentation and flexibilisation by addressing the question of whether non-standard working hours are associated with increased work intensity, independent of other work and worker characteristics. Non-standard working hours are analysed in detail and on many dimensions to disentangle the role of particular aspects of scheduling, including the number of hours, unsocial hours, shift work, flexibility and unpredictability. Moreover, this article considerably extends prior research by analysing whether the relationship between diverse working time practices and work intensity is occupation- and sector-specific, thus documenting the importance of job context in understanding the outcomes of non-standard working hours. Previous studies have typically addressed working time from a cross-country perspective (see e.g. Doellgast & Berg, 2018; Gerstel & Clawson, 2015; Marginson & Galetto, 2016; Richbell et al., 2011) or focused on a particular sector or organisation (Lambert et al., 2012; Lloyd & Payne, 2018; Park et al., 2016). This study utilises comparative data from the EWCS collected in 2010 and 2015 among waged workers from EU28 countries; this allows us to overcome the limited comparability of previous research and also enables the generalisation of the results across a wider set of jobs.

The results confirm the importance of how working time is organised to the definition of good work standards. The way working hours are organised is correlated with work intensity which, in turn, is related to a vast array of well-being and health outcomes. More specifically, consistent with Rubery et al. (2005) and Osuna (2013), this study finds that fragmented and employer-led schedules allow the fine-tuning of work hours to demand and are associated with increased work intensity. There is a positive correlation between more intense work and examples of non-standard working hours such as overtime; unsocial hours; shift work, in particular, daily split shifts; and work at short notice. Moreover, the analysis illustrates that

workers' control over their work schedule is an important component of good work and is, on average, linked to lower levels of work intensity.

The study also documents the role of job context, measured by occupational group and sector of economic activity, in understanding the relationship between working time organisation and work intensity. Consistent with expectations (see e.g. Garnero et al., 2014; Lloyd & Payne, 2018; Park et al., 2016), the results show the high commodification of labour in low-skilled and routine jobs and service sectors such as transport, commerce, hospitality and health. In such jobs, tasks and workloads appear to be more easily allocated across time and workers. This allows employers closely to match staffing levels to peaks in workloads using short hours of work and employer-led flexibility initiatives which are associated with relatively more intense work. These service sectors are usually not strongly unionised, and, in many countries, they are dominated by casual employment. This renders the position of workers *vis-à-vis* employers particularly vulnerable since it gives them few power resources to resist employer pressures towards greater fragmentation, flexibility and the intensification of work (Baldamus, 1961; Behrend, 1957).

The empirical evidence also supports the notion of overwork in high-skilled jobs (Appelbaum et al., 2000; Jacobs & Gerson, 2004), where long hours of work and high levels of worker autonomy go hand-in-hand with pronounced work intensification linked to flexible working hours. This can be due to a broader scope for the self-management of workloads in such jobs and an expectation of a higher work commitment associated with flexibility in career jobs and manifested in increased levels of overall work effort.

The results should, of course, be considered in relation to the study's limitations. Above all, the use of cross-sectional EWCS data restricts inferences about causality between diverse working time practices and work intensification. Nevertheless, the theoretical framework and existing case study evidence may be used as a basis for the formulation of the causal interpretation that working time organisation does have an impact on work intensity. Moreover, due to sample size limitations, the analysis could not be disaggregated by country. Thus there remains scope for further research to determine the role of the institutional context, including working time regulation, working time culture and collective bargaining systems, in the differences between countries. Finally, as this study focused on the role of job context, other important differences between workers were not addressed, notably the role of gender differences. The empirical analysis accounts for gender differences in the use of working time practices and average work intensity, but a gender-sensitive analysis of the work intensity outcomes of non-standard scheduling is beyond the scope of this article.

Overall, the findings show that, in determining standards of good work in contemporary employment systems, working time developments and regulation should be considered jointly in terms of their impact both on the overall effort required of

workers and on their well-being. The social partners should be aware of the potential risks to, and costs for, workers linked to exchanges of working time reductions for increased scope for employer flexibility. Policy-makers, on the other hand, should be made aware of the possible negative outcomes of reductions in individual working hours as a means of redistributing work among more workers at country level, an idea that has surfaced during economic downturns and periods of high unemployment.

Additionally, this study provides further evidence about the importance of workers' control over their work schedule as an important component of good work. It is desirable for future legislation to move in this direction and ensure some basic standards in terms of employees' influence over their working hours. The results show that de-standardisation in working time carries risks not only in unregulated new forms of work in the 'gig' economy but that it can also have a wider negative impact on workers in traditional forms of work. Further research in this area should be encouraged to inform the current debate on the need to revisit many of the standards of good work.

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Appendix

Table A1. Weekly Working Hours and Flexibility Across Occupations (%), EU28, EWCS 2010–2015

	1–19h	*20–34h*	*35–40h*	*41–48h*	*49h+*	*Employer-led flexibility*	*Worker-led flexibility*
Managers	2	7	51	17	23	8	58
Professionals	7	22	54	10	7	14	40
Technicians and associate professionals	4	14	64	10	7	14	41
Clerical support workers	6	17	67	7	3	11	31
Service and sales workers	11	21	47	13	8	26	26
Skilled agricultural, forestry and fishery workers	12	12	49	9	18	17	35
Craft and related trades workers	3	6	71	11	9	21	16
Plant and machine operators and assemblers	3	6	65	12	14	28	15
Elementary occupations	16	24	48	7	5	19	22

Table A2. Weekly Working Hours and Flexibility Across Sectors (%), EU28, EWCS 2010–2015

	1–19h	*20–34h*	*35–40h*	*41–48h*	*49h+*	*Employer-led flexibility*	*Worker-led flexibility*
Agriculture	9	11	50	14	16	18	33
Manufacturing	3	7	70	12	9	17	24
Construction	3	7	65	11	14	22	23
Transport	4	9	59	12	15	28	24
Commerce	7	17	55	13	8	21	28
Hospitality	13	20	41	13	13	28	26
Financial services	3	13	65	11	9	8	45
Services: information, communications, professional, scientific, technical activities	5	12	63	11	8	9	50
Services: administrative and support	11	22	51	9	7	19	30
Public administration and defence	4	13	70	9	5	13	36
Education	11	31	47	7	4	16	26
Health	9	25	53	8	5	23	34
Other services	19	26	41	7	7	17	43

Table A3. Multilevel Regression Models With the Effects of Working Time Arrangements on Work Intensity (Complete Results)

	Model 1 2010–2015	Model 2 2010–2015	Model 3 2015
Duration of weekly hours (ref. 35–40)			
1–19 hours/week	-0.961***	-0.579***	-0.623***
20–34 hours/week	-0.704***	-0.369***	-0.347***
41–48 hours/week	0.569***	0.567***	0.509***
49+ hours/week	0.891***	0.786***	0.692***
Work at night	0.015**	0.001	-0.003
Work on Saturdays	0.056***	0.081***	0.034
Work on Sundays	-0.008	0.047**	0.021
Long working days (over 10 hours)	0.032***	0.040***	0.038***
Shift work (ref. no shift work)			
Daily split shifts	0.713***	0.724***	0.733***
Permanent shifts	0.668***	0.596***	0.577***
Rotating shifts	0.347***	0.345***	0.306***
Flexibility of hours (ref. regular)			
Employer-led flexibility	0.792***	0.806***	0.598***
Worker-led flexibility	-0.134***	-0.094*	-0.240***
Work at short notice (ref. never)			
Rarely			0.515***
Several times a month or more			1.451***
Female (ref. male)		0.476***	0.561***
Age		-0.021***	-0.021***
Sector (ref. manufacturing)			
Agriculture		-1.073***	-0.861***
Construction		-0.048	-0.167
Transport		-0.256***	-0.399***
Commerce		-0.579***	-0.467***
Hospitality		0.759***	0.803***
Financial services		-0.121	-0.162
Services: Information, communications, professional, scientific		-0.09	-0.093
Services: Administrative and support		-0.679***	-0.757***
Public administration and defence		-0.965***	-0.955***
Education		-1.568***	-1.635***
Health		-0.858***	-0.740***
Other services		-1.500***	-1.655***
Occupation (ref. professionals)			
Managers		0.327***	0.09
Technicians and associate professionals		0.314***	0.184*
Clerical support workers		0.306***	0.261**
Service and sales workers		-0.686***	-0.763***
Skilled agricultural, forestry and fishery workers		0.103	0.022

	Model 1 2010–2015	**Model 2** 2010–2015	**Model 3** 2015
Craft and related trades workers		0.888***	0.890***
Plant and machine operators and assemblers		0.651***	0.507***
Elementary occupations		0.374***	0.285**
Education level (ref. primary, lower secondary)			
(Upper) secondary, non-tertiary		0.035	0.005
Tertiary		0.166**	0.143
Type of employment contract (ref. indefinite)			
Fixed-term contract		0.031	0.047
Temporary work agency		0.377**	0.131
Apprentice, other		-0.306***	-0.505***
2015 EWCS (ref. 2010)		0.168***	
Intercept	4.747***	5.494***	5.622***
Random part			
Variance within countries	3.533	3.433	3.399
Variance between countries	0.909	0.904	0.934
N of observations	52,236	52,236	26,847
Log likelihood	-140111.0	-138615.4	-71003.921

***p < 0.001, **p < 0.01, *p < 0.05