# "Thou shalt work hard": Fragmented working hours and work intensification across the EU 

## Introduction

There is abundant evidence that the overall effort demanded of workers has been increasing across the developed world (e.g. Gallie 2005; Green 2006; Hochschild 1997; Schor 1992). On the one hand, work intensity, defined here as a compression of work activity within a given unit of time, has been found to be on the rise (Burchell et al. 2002; Green 2006; Green and McIntosh 2001); on the other, working time organisation practices place additional pressure on workers (Burke and Cooper 2008) as a result of, among others, business responses to fluctuating demand and leaner production processes, as well as a gradual weakening of working time regulations across the EU (Clauwaert and Schömann 2012). Little is known, however, about the interplay of these developments and hence about the overall impact of working time diversification on workers. New theoretical approaches and empirical evidence are needed, in particular, to allow a comprehensive overview of multiple and simultaneously developing aspects of work effort, to explain current trends and provide an internationally comparative perspective.

This gap is addressed in this article through proposing a conceptual framework of work effort in which working time and work intensity represent two dimensions of overall labour input. It thus becomes possible to explore whether flexible and non-standard scheduling of working hours is a means to achieve a closer fit between labour demand and supply and what may be the consequences in terms of work intensity. It is expected that de-standardisation of working time - including work outside core business hours, long hours, and part-time or variable work schedules - offers new possibilities to adapt to a 24 -hour economy and fluctuating market demands, potentially exposing workers to the pressures of work intensification. In this way, an important and thus far neglected element of work organisation - working time - is introduced into the work intensity research.

The article is structured as follows. The next section defines key concepts and examines theories and empirical evidence concerning the relationship between working time arrangements and work intensity. It is followed by a description of data and methodology. Results of an empirical analysis are presented in the subsequent section. The last section concludes with a summary of findings and a discussion.

## Theoretical framework: Two dimensions of work effort

In order to assess how hard people work, more than one dimension of human activity needs to be taken into account. Traditionally, a distinction has been made between the extensive magnitude of labour (i.e. the amount of time spent at work) and its density or condensation (i.e. intensity of work) (e.g. Green 2006, 2004; Marx 1976 [1867]; Smith 1982 [1776]). In the literature, the notion of work effort is thus commonly used to reflect both the intensity of work and for how long it is performed (Green and McIntosh 2001; Green 2006).

In view of the recent changes in working time organisation and its increasing de-standardisation, this article takes a broader view on working time. Accordingly, in addition to "duration" expressed in hours, two further dimensions of working time organisation are taken into account: (1) "distribution" within a day and a week, as well as (2) "variability", which includes information about a degree of flexibility and discretion over working hours. Such an analytical approach makes it possible to account for essential differences in day-to-day scheduling that might arise between seemingly similar types of working time organisation (e.g. part-time work). Thus, not only the type of working time arrangement, but also the structure of that arrangement is taken into account (Messenger 2011), as both are expected to affect the intensity of work. Figure 1 illustrates the conceptual framework proposed for the analysis, with time and intensity representing two dimensions of overall work effort.


Figure 1. Conceptual framework
Source: own elaboration.

## Work intensity

Work intensity is of central importance from the point of view of organisational performance, as well as of workers' health and well-being (Burchell et al. 2002; Gallie et al. 1998; Ryan 2008). In the literature, it has been defined as the rate of physical or mental input to work tasks during a unit of time (Green 2006, 48). The word "rate" is crucial, as it links the intensity to the speed or tempo of work and not to its complexity or the required skill level. To some extent, work intensity can be seen as inversely proportional to the "porosity" of the working day as described by Marx (1976 [1867]). The fewer the gaps that exist between tasks and that allow for physical and mental rest, the greater the effort expended. For the present study the crucial issue is to establish what determines work intensity and how its levels are established during the work process. On this basis, two hypotheses about the relationship between work intensity and working hours will be formulated.

## Effort bargain

Unlike the length of the working week, or the arrangement of working hours on a daily or weekly basis, work intensity is usually not formalised in an employment contract (Cartier 1994; Simon 1991). The various literatures on the means by which work intensity is determined are accurately summarised in a classification proposed by Kelliher and Anderson (2010). These authors distinguish between three types of work intensification: (1) imposed, when staffing levels or work hours decrease with workloads remaining unchanged; (2) enabled, which results from changes to work organisation; and (3) intensification that results from an act of reciprocation, based on social exchange between employees and employers (see also Golden 2012, 2009). Similarly, McGovern et al. (2007) divide the mechanisms used to extract more intense effort from workers into a market discipline, for instance job or market insecurity, and a bureaucratic discipline. The latter is based on internal systems of control and incentives as well as on worker involvement fostered by the HRM practices that organisations implement to ameliorate performance.

Work intensity can be thus described as worker-induced insofar as it results from expectations for compensation - in the form of wages, esteem, career opportunities, or job security - held by workers when they enter into the employment relationship (Siegrist 1996). Therefore, an improved understanding of the determinants of work intensity can be achieved through the lens of an administrative, managerial and market system of control that regulates employee actions and efforts to achieve employer goals (Weber 1964 [1947]). Levels of work intensity are accordingly viewed as one component of the bargain between employers and workers, with the former deploying, among others, managerial tools to obtain desired outcomes in such a way that the result is likely to reflect the power relations
between the parties (Baldamus 1961; Behrend 1957). Employer-employee relations with respect to work intensity can be based either on the administrative effort controls (e.g. methods of production or wage systems) or on a structure of incentives. However, the particular strategy developed by organisations will differ depending on the context, with possible sectoral, occupational or institutional moderating effects. The organisation of working time, as it is discussed in more detail in the following sections, plays an important role in all these mechanisms and therefore represents an essential element in the analysis of work intensity.

## Working time

The classic model of working time that emerged in the post-war Western societies was based on several principles. The first of these was a high degree of standardisation (Ciccia and Ó Riain 2013). Working days were of the same length of eight hours, with very consistent scheduling on a daily ( 9 a.m. to 5 p.m.) and a weekly (Monday to Friday) basis. An eight-hour working day had been a central and collective demand of labour, a subject of the first ILO Convention in 1919 and, although this model was never universal, it has constituted a powerful reference point, with full-time, daytime and weekday work commonly providing the yardstick for state intervention and collective bargaining (Bosch 1999).

The standardised working time model has many clear advantages for employees. Together with a broader concept of the standard employment relationship it was famously described as "one of the major achievements of the working class" (Hinrichs 1991, 36). For instance, a clear demarcation of standard working hours meant that all work performed outside them was considered atypical, calling for remuneration at appropriately higher rates (Rubery and Grimshaw 2003). Such a demarcation also translated into a clear division between paid working hours and free time, protecting workers' own time and increasing opportunities for social interaction (Hamermesh 1999; Hinrichs 1991).

In a break from the trend towards standardisation, the organisation of work hours has, since the 1990s, changed considerably and become more diverse in industrialised societies (Bosch 1999). Fagan (2004) links this development to changes in management practices, in work organisation, and to the spread of the "24/7 economy". The new and more diversified forms of work organisation, and in particular the use of part-time work to cover atypical hours, significantly contributed to redefining the boundary between standard and non-standard working hours (Plantenga and Remery 2010), as well as to renegotiating norms in relation to the remuneration expected for working at atypical times (Rubery 1998). Thus, pay levels ceased to reflect any distinction between a standard and an atypical distribution of working hours. An important consequence, from the perspective of work intensity, is a reduction of the barriers - both normative as well as financial

- that would prevent employers from scheduling work hours in the manner most appropriate to their business needs. For this reason it is important to explore the work intensity outcomes of such changes.


## The relationship between working time and work intensity

Efficiency and maximisation of productivity can be achieved by manipulating either the extent of working time, or the intensity of its use. Thus, both time and intensity can be seen as adjustment variables in the process of work organisation. In this section, I discuss various strategies to adjust working hours and work intensity in the interests of greater operational efficiency. I differentiate two approaches to working time - (1) a time-centred model and (2) a model of fragmented time - and I demonstrate how each results in a different logic of productivity maximisation. These two approaches are neither mutually exclusive nor chronological in their application in work organisation.

## Time-centred model of employment

Within the time-centred employment model, working time is divided into identical and abstract periods defined prior to any specific action planned for that time (Ciccia and Ó Riain 2013; Supiot 2001). The treatment of working time units as homogeneous has two important consequences for the analysis of work intensity and working time practices.

The first consequence, as Nyland (1986) accurately points out, is that the concern with working time developments focuses on the quantity of time units. Thus, a shortening of working days is seen as an undeniable improvement for workers, while the intensive aspect of labour time is disregarded. Such an approach has been prevalent since the development of factory production systems, as manifested by the emphasis in collective bargaining on working hour reductions (Hinrichs et al. 1985; Marx 1976 [1867]). Similarly, a reduction of working hours advocated as a political economy strategy to increase employment (described by Compston 2001) illustrates a lack of attention to the possibility that total labour output may be a function of both working hours and work intensity.

The second consequence is that efforts to raise production efficiency are focused on increasing work intensity while working time remains a constant. Working hours are thus assumed to be fixed and continuous, while both work intensity and wages are the adjustment variables subject to bargaining (Rubery et al. 2005). Consequently, an important focus in theories of economic progress in modern industrial societies is the efficient and disciplined use of time at work (Blyton et al. 1989; Weber 2001 [1930]). In systems of production calibrated towards efficiency, working time is a commodity and a factor of production (Adam 2003). The focus
on time resulted from the nature of employment relationships that were measured by the clock. The employer's interest was to make the most efficient use of the hours of labour, for otherwise time, and thus money, would be wasted. In this view, time becomes currency, "it is not passed but spent" (Thompson 1967, 61).

Traditionally, efficiency in time use has been associated with increases in the amount of productive activity that can be performed in a given unit of time (Hill 1986; Weber 2001 [1930]). This is epitomised by the development of scientific methods of management. In the wake of studies conducted by Taylor, the way in which workers use time at work has been increasingly subject to scrutiny and rationalisation (Blyton et al. 1989), which translates into an increasing pace of work and accumulation of more activities within a given unit of time. This form of efficiency was achieved by means of a re-organisation of the sequence and ordering of activities.

## Fragmented-time model

In opposition to the traditional time-centred model, in which time was an objective reference, a new and possibly complementary strategy emerges, based on improving efficiency by removing unproductive or inactive time from paid working hours (Adam 2003; Harvey 1989). The new approach is manifested by, among others, the increasing fragmentation of working time (Rubery et al. 2005). From this perspective, time too becomes an adjustment variable, as units of time are no longer all the same and their utility to the employer differs. This represents an important shift in the approach to working time and allows for a formulation of hypotheses about the effects of working time adjustments on work intensity.

According to the time-centred model of employment, based on continuous time, employers had to purchase their employees' time in standard chunks and any slowdown or inefficiency in its use was at the employers' expense (Ciccia and Ó Riain 2013). Within the fragmented-time model the risks and costs associated with any inefficiency in time use have been effectively shifted on to the workforce (McGovern et al. 2007). Such is the essence of the employer-led model of working time (Rubery et al. 2005) which involves increasing recourse to non-standard working time schedules as a market- and not an employee-driven solution. It follows from the logic of commodification of labour under capitalism, where the tendency is to treat labour as an impersonal factor of production (Marx 1976 [1867]). Employers are nowadays increasingly seeking to marketise employment relationships and market forces are used to resolve much of the efficiency issues, including working time arrangements and payment of labour (McGovern et al. 2007). Accordingly, working time is no longer automatically organised on a daily or weekly basis, but in a range of other more fragmented or flexible modes based on smaller units or special "currencies" (Bosch 1999). In principle, as Messenger (2011) observes in a review of trends and patterns in working hours in

Europe, developments in fragmented working time arrangements usually involve full control by employers over the scheduling of hours.

Fragmented and employer-controlled schedules are thus a means of passing on to the labour force the multiple pressures faced by organisations, ranging from competitive demands imposed by new technologies, through trade globalisation, to privatisation of the public sector (Lapido and Wilkinson 2002). Consequently, the work-effort bargain comes under pressure and its employer-led redefinition might be a likely outcome. This is expected to result in the acceleration of the pace and flow of work, giving rise to work intensification.

To sum up, under the analytical view presented above, the trend towards reduction and flexibilisation of weekly working hours follows two distinct patterns. Traditionally, under the model of continuous working days (i.e. time-centred model), the shortening of hours kept the time structures unchanged. For instance, the nineteenth-century English Factory Acts set maxima on weekly working hours leaving other aspects of working time scheduling unchanged (Marx 1976 [1867]), while the more recent changes from a 48 - to a 40 -hour working week (e.g. in Germany in the 1960s) eliminated work on Saturdays leaving the eight-hour structure of the remaining working days untouched. In the nine-teenth-century industrial system, long hours were a predominant solution as employers wanted to run their expensive machinery before it would become obsolete (Marx 1976 [1867]).

Conversely, in post-industrial economies with high fluctuations of demand and market volatility, the flexibility and adaptability of working hours seem to provide a better answer for efficiency gains. In line with the model of fragmented working time, since the 1990s the flexibilisation of scheduling has been based on a much closer link between reductions and adjustments of working hours (Tergeist 1995). This becomes even more apparent in the post-2008 economic crisis which has affected the negotiation of flexibility at a company level (Goudswaard et al. 2012). In response to the growing need to cut costs and develop new and cost-efficient ways to increase productivity, working time adjustments are implemented primarily to maximise staffing efficiency and achieve a better alignment between number of working hours, staffing levels, and workloads (e.g. zero-hours contracts, on-call work).

Two hypotheses may be formulated-based on the above review of the literature - in relation to how the relationships between working time arrangements and work intensity configure at a generalised level:

1. Non-standard working hours are associated with increased work intensity compared to standard working hours.
2. Working time practices form bundles of arrangements with different effects on work intensity compared to effects of separate practices (e.g. a combination of several features of the employer-led model is expected to have a particularly strong work intensifying effect).

## Data and measures

The European Working Conditions Survey (EWCS) — rounds 2005 and 2010 - is used in the analysis. The sample selection was based on the quality and consistency of questionnaire translations over time, rendering in total 39,780 employees from twenty-two EU countries ${ }^{1}$.

The work intensity index (dependent variable) assesses the frequency of work at high speed and to tight deadlines, measured on a $0-12$ scale with higher values indicating more intense work. Working time arrangements are the main predictors and are measured on three dimensions. Duration corresponds to the number of weekly working hours. Distribution refers to work in the evening, at night, on Saturdays and on Sundays. Variability measures a scope for autonomy and a degree of flexibility. It differentiates between rigid hours that are fixed by the employer and do not change, unpredictable hours with employer-led changes that are beyond workers' control, and flexible hours that allow employees at least some control over scheduling of their work.

A number of worker and work characteristics are included in the analysis as control variables, such as gender, age, occupation, sector, workplace size, and year of the survey. All predictor variables are measured at the individual level. The analysis uses multivariate multilevel regression models with employees grouped within countries.

## Results

A summary of the results obtained is presented in Table 1. Overall, all non-standard working hours taken separately (apart from part-time work) are associated with higher work intensity than a standard model of organising working time (defined as a full-time working week with regular daytime, Monday to Friday, working hours). In particular, employees with flexible or unpredictable hours of work report higher levels of work intensity than those with rigid hours. Employees who never work during unsocial hours report lower work intensity than those who work either in the evening, at night, on Saturday or on Sunday as part of their job. A combination of unsocial hours linked to the highest level of work intensity is found for jobs that involve a combination of night, evening and Saturday work (not shown). Finally, work intensity increases with the increasing number of weekly hours of work.

[^0]Table 1. Effects of working time arrangements on work intensity

| Dimensions of working time organisation | Effect on work intensity |  |  |
| :---: | :---: | :---: | :---: |
|  | Main effect | Controlling for other dimensions of working time | Controlling for other dimensions of working time, worker and work characteristics |
| Duration $35-40 \mathrm{~h} /$ week (ref) <br>  $1-19 \mathrm{~h} /$ week <br>  $20-34 \mathrm{~h} /$ week <br>  $41 \mathrm{~h}+/$ week | $\begin{aligned} & - \\ & - \\ & + \\ & \hline \end{aligned}$ | $\begin{aligned} & \text { - } \\ & \text { - } \\ & + \end{aligned}$ | $\begin{aligned} & \text { - } \\ & + \\ & \hline \end{aligned}$ |
| Distribution Work core hours only <br> (reff <br>  Evening work ${ }^{\text {a }}$ <br>  Night work ${ }^{\text {a }}$ <br>  Saturday work ${ }^{\text {a }}$ <br>  Sunday work ${ }^{\text {a }}$ | $\begin{aligned} & + \\ & + \\ & + \\ & + \end{aligned}$ | $\begin{aligned} & + \\ & + \\ & + \end{aligned}$ | $0^{+}$ |
| Variability Rigid hours (ref) <br>  <br>  <br>  <br> Flexible hours <br> Unpredictable hours | $+$ | $\begin{aligned} & - \\ & + \end{aligned}$ | $\begin{gathered} 0^{b} \\ + \end{gathered}$ |

Notes: Results from multilevel regression random intercept model. ${ }^{\text {a }}$ The results pertain to average work intensity for jobs that involved work during unsocial hours, and not to work intensity during these particular unsocial hours (e.g. work intensity on Sunday). ${ }^{\text {b }}$ For night work and flexible hours the effects not significant ( $\mathrm{p}>0.05$ ) after including control variables.

It is noteworthy that part-time work is, on average, associated with lower work intensity than normal (35-40h) weekly hours of work. This difference persists even when other characteristics of a job and a worker are accounted for, thus providing a strong indication that the allocation of workloads is essentially different in part-time work compared to full-time jobs.

Working time arrangements tend to deviate from the standard model on more than one dimension (i.e. duration, distribution or variability) simultaneously. For instance, employees who worked long weekly hours, or those whose hours were unpredictable, would also work unsocial hours. To account for this, a three-way interaction term was included to test how the effects of working time duration, distribution and variability combine when taken all together. Results are illustrated in Figure 2. For clarity, four types of unsocial hours are combined in one binary measure that distinguishes employees who work only during core hours from those who reported working during any type of unsocial hours ${ }^{2}$.

[^1]

Figure 2. Effects of bundles of working time arrangements on work intensity
Notes: Results from multilevel regression random intercept model with a three-way interaction term between duration, distribution and variability of working time. A full set of control variables is included. Dependent variable: work intensity index.

The combined effect of various working time practices on work intensity is in some cases different than their effect taken in isolation. First, a working time pattern that involves flexibility for employees and only core working hours is, on average, associated with the lowest work intensity for each category of weekly working hours. This pattern is most pronounced in the case of part-time work and seems likely to represent the closest reflection of employee-oriented working time adjustments.

Secondly, when working time arrangements combine several features of the employer-led model, their work-intensifying effects are the strongest. This claim is based on a clearly emerging model of unpredictable hours that involve either marginal part-time work (1-19 hours) or long weekly hours (41 or more) as the most work-intense combination. This is in line with the assumptions of an employ-er-led model of organising working time and can be interpreted as evidence of the model of fragmented working time. According to this model, efficiency gains are achieved by removing unproductive or inactive time from paid work, organising time in fragmented, small units, and closely matching workloads to staffing levels.

Thirdly, high levels of work intensity are also linked to jobs that offer flexibility for employees but involve long weekly hours of work, often coupled with unsocial hours ${ }^{3}$. This is in line with expectations formulated on the basis of social exchange theory. In such instances employees might be trading autonomy for higher overall work effort (high intensity and long hours of work), accepting that such practices come as a package in high-status career jobs and workplaces with HRM practices geared to enhanced performance resulting from increased commitment.

[^2]Conclusions
The article explores the relationship between working time arrangements and work intensity, its goal being to determine whether the working conditions of various categories of employees distinguished by their working time arrangements are sustainable, or whether they are leading to the "exhaustion of labour" (Askenazy 2013).

In the conceptual framework proposed for the analysis, time and intensity represent two interrelated components of overall work effort. Drawing on the literature, a distinction is made between two approaches to working time with different rationales for productivity maximisation: a traditional time-centred model, and a fragmented-time model. The latter represents the employer-led model, with growing recourse to non-standard working time schedules as a market- and not an employee-driven solution. Allowing for a closer match of labour demand and supply puts pressure on the work-effort bargain and intensification of work is expected to be an outcome.

Based on the analysis of the EWCS data for 22 EU countries, I conclude that the levels of work intensity are indeed dependent on the way working time is organised. Taking a "standard model" of working time as a point of reference (i.e. rigid 35-40 weekly hours during daytime and weekdays), I find that most adjustments to working hours that depart from this model on any dimension are associated with increased work intensity. An important advantage of the analysis is a simultaneous consideration of a range of dimensions of working time. The findings reveal that a combined effect of various working time practices is different from their effect in isolation. Accordingly, several models of working time organisation emerge. For instance, very short, unpredictable and mostly unsocial hours of work are characterised by particularly high levels of work intensity. This corresponds to the employer-led model of flexibility where fragmented working time is scheduled in small parcels across the whole spectrum of times of the day or week (as in the case of zero-hours contracts).

There are several limitations to the results obtained. Above all, the causation between working time scheduling and work intensity cannot be established with certainty. According to the theoretical framework, work intensity is an outcome of working time adjustments. However, the EWCS provides no information that would allow establishment of causality, while the cross-sectional nature of the data sets limitations on such conclusions.

Overall, the findings highlight the importance of analysing various dimensions of workers' effort simultaneously, and support the hypotheses about the impact of working time organisation on work intensity. New trends and developments in the area of working time, as well as changes to working time regulations, should thus be assessed in view of their impact on the overall effort required from workers and on their well-being. Further research in this area should be encouraged in order to inform public policy, employer, and trade union responses to the growing diversification in the organisation of working time.

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## Abstract

Increasingly diversified and flexible working time arrangements contribute to a redefinition of the boundary between standard and non-standard working hours, as well as entailing a renegotiation of the norms applicable to the remuneration expected in return for work at atypical times. This article investigates some of the other costs to employees of working time adjustments, with its focus on work intensification. The analysis uses the European Working Conditions Survey (2005 and 2010) results from twenty-two EU countries. Overall, findings point to a divergence in work intensity along the lines of diverse working time patterns.

## „Będziesz ciężko pracować": niestandardowy czas pracy oraz intensyfikacja pracy w Unii Europejskiej

Abstrakt

Postępujące zróżnicowanie i elastyczność w organizacji czasu pracy przyczyniają się do zacierania tradycyjnych granic między typowymi a nietypowymi godzinami pracy, jak również przyjętych norm określających wynagrodzenie za prace poza „normalnymi" godzinami. Artykuł bada, czy zmiany w organizacji czasu pracy niosą z sobą jeszcze inne skutki dla pracowników, a w szczególności koszty w postaci zwiększonej intensywność pracy. Przeprowadzona analiza empiryczna opiera się na danych z czwartej i piątej edycji Europejskiego Badania Warunków Pracy (2005 i 2010). Wyniki pokazują, że istnieje ścisła zależność między nietypowymi godzinami pracy, zarówno pod względem długości, jak i organizacji czasu pracy, a intensywnością pracy.


[^0]:    ${ }^{1}$ Austria, Bulgaria, Cyprus, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Poland, Romania, Slovakia, Slovenia, Spain, Sweden, the UK.

[^1]:    2 Taking into account a distinct character of work on Sunday, it could have been excluded from this part of the analysis. However, given that work on Sunday rarely exists in isolation (only $0.3 \%$ of

[^2]:    employees report Sunday work as the only form of unsocial hours), a decision was made to retain Sunday work in the distinction between core and unsocial hours.
    ${ }^{3}$ The vast majority ( 85 per cent) of workers reporting flexible and long hours also report unsocial hours of work.

