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# Working time flexibility components and working time regimes in Europe: using company level data across 21 countries<sup>1</sup>

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## Abstract

Working time flexibility comprises a wide variety of arrangements, from part-time, overtime, to long-term leaves. Theoretical approaches to grouping these arrangements have been developed, but empirical underpinnings are rare. This paper investigates the bundles that can be found for various flexible working time arrangements, using data of the Establishment Survey on Working Time (ESWT), 2004/2005, covering 21 EU member states and 13 industries. Using factor analyses, the results confirmed that working time arrangements can be grouped into two bundles, one for the employee-centred arrangements, a second for the employer-centred arrangements, and that these two bundles are separate dimensions. We have also tested the stability of the factor analysis outcome, showing that although we find some deviations from the pan-Europe and pan-industry outcome, the naming of the components as flexibility for employees and flexibility for employers can be interpreted as holding rather stable. Lastly, we also find that there are three country clusters that can be found for the 21 European countries using the bundle approach. The first group consisting of the Northern European countries with Poland and Czech Republic, the second group the continental European countries with UK and Ireland, and lastly, the southern European countries with Hungary and Slovenia.

Key words: flexible working time arrangements, company survey, cross-national study, latent components, working time regimes

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## **1. Introduction**

Many studies in the area of Human Resource Management (HRM) talk about various categories of flexibility strategies used within companies (for example, Atkinson and Meager, 1986; Cappelli and Neumark, 2001). In addition, an increasing number of studies talks about flexicurity components found in Europe (for example, CEC, 2007; Philips and Eamets, 2007; also see Chung, 2011). Comparatively, few studies investigate the dimensions of working time flexibility. Most studies have been restricted to the examination of one arrangement, usually the use of part-time work (O'Reilly and Fagan, 1998; Branine, 1999; Anxo et al., 2007; Tomlinson, 2007) or shift work (Shen & Dicker, 2008) the actual hours worked (example O'Reilly et al., 2000; Messenger, 2004), or employees' working time preferences (Stier and Lewin-Epstein, 2003; Bielenski et al., 2005). Only few examine several arrangements at once, but even then they are usually examined in terms of the employer oriented arrangements (e.g., Richbell et al., 2011), or the family friendly arrangements (e.g., Kelliher & Andersen, 2008).

In other words, although there have been many studies on working time, not many studies examine empirically whether and how working time arrangements are being used simultaneously within companies. However, such a holistic approach is important for several reasons. Firstly, examining the separate use of flexible arrangements neglects how organisations may use various combinations of arrangements in combination (Kalleberg et al, 2003: 539) due to the substitution and complementary relationships between the arrangements. Secondly, the use of bundles captures the basic distinction between types of flexible arrangement, since sometimes managers may not strictly distinguish between the different types (Kalleberg et al 2003: 539~540). Lastly, the use of the concept of bundles or components allows a much simplified analyses of complex ideas, since we are able to grasp the use of various arrangements in manageable small number of concepts.

Regardless, although many studies have developed assumptions about the bundling of a wide variety of working time arrangements, empirical underpinnings using large numbers of cases across countries are absent. This is most likely due to the lack of appropriate data sources, thus data covering the wide range of issues on working

time flexibility, collected at establishment-level<sup>2</sup>, comparable across different countries, and due to the lack of a method in which the arrangements can be examined simultaneously. This paper overcomes these problems, using large-scale, multi-country establishment data and factor analyses. Another issue addressed in this paper is what type of working time regimes can be found based on the components approach, using company level data. Previous working time regimes have been based on either national level policies, or individual behaviours. Working time regimes based on company practices is yet to be found. Given that company level provisions draw out the ‘real’ provision of arrangements for workers, it is worthwhile investigating how countries can be placed in terms of company behaviours.

In sum, the following questions are asked in this paper; Can working-time flexibility arrangements indeed be grouped as bundles based on the practices of companies across Europe and if so, what types of bundles can be identified? Which main latent factors (bundles) are underlying the groupings of working time flexibility arrangements used in companies in Europe? Secondly, what is the relationship between the bundles? Thirdly, what kind of working time regimes can we find using the working time components approach? The empirical underpinning of this paper stems from the European Working Time Survey (ESWT) 2004/2005, conducted by the European Foundation.

The paper is structured as follows. In the next section, we examine the some theories of working time flexibility categories and working time regime typologies to derive our hypotheses. In the third section, we examine the ESWT data, the method used, namely factor analysis and cluster analysis, and the grounds for the choice of variables included in the analysis. In section four, we provide the outcomes of the factor analysis and test its robustness across countries and sectors. In addition, also in this section we examine the country clusters found using the components found in the previous analysis, and compare the results to the existing working time regime studies. In section five, we draw conclusions.

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<sup>2</sup> Although there are differences between companies and establishment, in this paper we use the term interchangeably.

## **2. Working time typologies and regimes**

### **Flexible working time typologies**

Until now, studies that provide empirical analysis to derive working time components that can be applicable to companies across Europe were largely lacking. However, there are studies that theoretically distinguish dimensions or typologies of working time arrangements. Most of these studies distinguish between employer- and employee-preferred flexibility arrangements, though the terminology varies greatly. Worker-centred flexibility versus company-centred flexibility (Gareis and Korte, 2002), active versus passive flexibility (Wilthagen, 1998; Visser, 2003), employer-oriented versus employee-oriented arrangements (Reilly, 2001; Rubery and Grimshaw, 2003), and unstructured, structured and autonomous flexibility (Fagan, 2004) are working time flexibility categories developed over the years. Despite the differences in their wording, most typologies refer to flexibility serving employees' needs and those which are for employers' needs. Gareis and Korte (2002: 1104) define worker-centred flexibility as involving "more freedom to choose working times attuned to personal preferences and family requirements", whereas company-centred flexibility "brings supply of human capital in line with the temporal requirements following from business, e.g. times of customer demand, machine running times, optimal utilisation of capital invested".

Fagan (2004) expands this distinction even further by taking the predictability dimension into account. Using the notion of structured and unstructured flexibility as developed by Purcell et al. (1999), she distinguishes three types of working time flexibility strategies. Unstructured flexibility is when employees have little control over the schedule and the volume of hours that they work, similar to employer-oriented flexibility. Autonomous flexibility is geared towards employees' needs rather than organizational requirements and gives employees some ability to vary or alter their working time in order to accommodate other activities, similar to employee-oriented flexibility. The third category is structured flexibility. Here, the working time arrangements are non-standard, but predictable, offering employees more control over their working hours than unstructured flexibility, and potentially providing an alternative for people who cannot work standard hours (Fagan, 2004: 111). This distinction could be considered a type of flexibility that facilitates the needs of both employers and employees.

The only competing theory against the predominant employer versus employee-oriented dimensions is the part-time versus full-time oriented working time arrangements typology. Rubery and Grimshaw (2003) consider this as an additional dimension, thus putting forward a two-dimensional approach of working time, namely the employer- versus employee-orientation dimension and the part-time versus full-time dimension.

Regarding the typologies of working-time flexibility, two schools of thoughts can be distinguished. Visser (2003) and Rubery and Grimshaw (2003) understand the employee- versus employer-orientation of the arrangements as one linear continuum with employer-orientation at one end and employee-orientation at the other. In other words, the more employee-centred an arrangement is, the less employer-centred it is, and vice versa. In contrast, Fagan (2004) and Gareis and Korte (2002) present the dimensions rather as dichotomous entities. Here, the degree to which the flexibility arrangements facilitate the needs of either the employee or the employer is not necessarily at odds with each other, and there can be arrangements where both needs are met.

Most of the above mentioned studies have based their arguments on a theoretical basis or on a small number of empirical case studies from one or a few countries. Thus, our understanding of working time flexibility and its dimensions could benefit largely from a broader empirical underpinning.

### **The dimensions of working time flexibility**

Summing up from the literature examined in the previous section, we can come to a typology of working time as is shown in figure 1. In the first, two continuums can be assumed to position all flexible working time arrangements, notably the full-time/part-time divide and the emphasis on employer or employee-centred interests,

[figure 1 here]

In the graph, part-time work, phased retirement, and the right to reduce working hours are considered as part-time related arrangements, whereas early retirement and flexible working hours are more likely to be arrangements used in tandem with full-time contracts. However, all of these arrangements can be seen as having the potential to serve the interests of both employees and employers, meeting the needs of both sides. Additionally, working time accounts can be seen as being more employee-centred,

whereas annualization of working hours is likely to be more geared towards the employer. Despite having similar characteristics, working time accounts have been developed to facilitate workers to balance work and life, whereas annualization of working hours is used to allow employers to change employees' daily/weekly working hours to adapt to workload cycles without having to pay overtime premiums. Leave schemes are employee-centred flexibility arrangements which are also mostly full-time oriented. Although leave schemes can be used by part-time workers, they are used more often as alternatives to reduction of working hours for adapting work to various life needs such as child-minding duties. Overtime, temporary contracts and unusual hours are more employer-centred options. Of these, overtime is used more in the full-time centred model, whereas unusual hours and temporary contracts can be used by both full-time and part-time models. Shift work is more employer-centred and oriented more towards the part-time centred flexibility model. Both dimensions form a linear continuum.

We see in this figure that employer and employee-centred characteristics are placed on linear continuums, whereby providing utility to one party may mean disutility to the other. However, based on previous studies, we believe that the strategies to promote flexibility for employees and employers are not necessarily at odds with each other. Employee-centred arrangements may not necessarily provide disutility for employers, and vice versa. In addition, the arrangements that are categorized as providing utility for both sides need not provide less utility than the pure employee-centred or employer-centred arrangements,

### **Working time regimes**

One of the interests of this study is how countries cluster, using the working time dimensions found in our analysis. Can meaningful country groupings be found, using the components resulting from the working time flexibility practices of companies? How do these groupings compare to previous working time regime typologies? Examining the literature, we find two distinct theories of working time regimes, one based on the degree of flexibility and gender equity characteristics of the regimes, and another based on the negotiation structures and diversity of working hours.

Anxo et al. (2007) distinguish seven European countries based on patterns of working hours of men and women, and the gap between the sexes in different stages of

life, using the European Community Household Panel. They come to four distinct working time models. First, the Nordic '*universal breadwinner*' model has high labour market participation for both men and women. This involves long part-time or full-time hours and high employment continuity, and Sweden is a prime example of this model. The '*modified breadwinner*' model can be distinguished by the fact that some women withdrawal from the labour market due to motherhood or family formation. However, others who remain employed work predominantly full-time. France is an example of this model. The '*exit or full-time*' model is similar to the previous model, however, in this model more women drop out during family formation periods. The Southern European countries, namely Italy and Spain are considered to be included in this model. Lastly, the '*Maternal part-time work*' model includes the Netherlands, Germany and the UK. Here, reduce their working hours during family formation periods, rather than dropping out completely. However, it should be also noted that in these countries the employment rate is not as high as the ones found in the '*universal breadwinner*' model. These different typologies reflect the time and income policies provided in the different countries.

This regime is similar to what is found in the study of Figart and Mutari (2000). They construct working time regimes according to the degree of flexibility in work hours and relative gender equity in work schedules and economic roles. They derive four regime typologies, namely, the '*Male Breadwinner*' regime, where both gender equity and flexibility is low (Greece, Italy, Spain and Portugal); the '*Liberal Flexibilization*' regime where gender equity is low but flexibility is high (UK and Ireland); the '*Solidaristic Gender Equity*' regime with high gender equity but not as much flexibility (Denmark, France, Belgium, and Finland); the '*High Road Flexibilization*' regime, where both flexibility and gender equity is combined (only theoretically defined no countries included); lastly, the '*Traditional*' regime with little gender equity but a general move towards flexibilization through the use of part-time work for women (Germany, the Netherlands, Luxembourg, Austria, and Sweden). For our analyses, we expect that countries that were considered '*universal breadwinner*' or '*Maternal part-time work*' in the Anxo et al. study, will have high scores on employee-oriented working time components, while '*modified breadwinner*', '*exit or full-time*' models will be those with low employee-oriented working time scores. Those with high flexibilization in the Figart and Mutari study can be expected to have high working time



scores on both employer and employee components, whereas the countries categorised as the gender equal countries will be those with more employee-oriented working time arrangements.

Another notable working time regime is the one based on the negotiation structures of the countries (Anxo and O'Reilly, 2000). They distinguish four types of working time regime typologies. In the '*Static*' working time regime, statutory regulations are the key element governing the use of flexibility and working time patterns, while collective bargaining plays a limited role. Here, a normalized type of working hours is expected (Spain and France). The '*Negotiated*' working time regime typologies emerge in countries with a strong tradition of negotiation between social partners, while the state regulatory system only provides a basic framework (Sweden, Finland, Denmark, Germany, Austria, and the Netherlands). Lastly, the '*Externally Constrained*' working time regime is associated with collective bargaining, and working time is distributed over a wider spectrum (Ireland and the UK). This theory concerns the cross-national variance in the distribution of working hours, not necessarily the use of various working time flexibility arrangements. However, similar effects of negotiation structures on the use of working time arrangements can be expected. For instance, companies in externally constrained working time regimes will probably have more leeway to make use of flexible working time arrangements, especially those that facilitates employers' needs. In static working time regimes, statutory regulations may restrict the use of flexible arrangements, especially for the employers' needs, but will provide legal obligations for companies to provide workers' work-life balance arrangements. For negotiated working time regimes, many possibilities to develop both types of working time flexibility exist, and in countries where unions are strong and mobilized, we expect a development of employee-oriented arrangements.

One thing to note is that all three regime typologies do not take company practices into account. However, there are disparities between institutions and practices, and that company shop level practices draw out the "real" provision of working time arrangements for workers (see Den Dulk, 2001; Reidmann et al., 2006; 1<sup>st</sup> AUTHOR, 2009). Thus, it is worthwhile to derive a new regime cluster based on company level practices and compare that with the previous regime clusters based on national or individual level data.

## **Hypotheses**

Following the review of literature in the previous sections, our hypotheses are:

H1: Working time flexibility can be grouped into bundles

H2: The grouping of arrangements is predominantly based on whose needs they facilitate, thus those for employers versus those for employees.

H3: The bundles of flexibility are of two dichotomous dimensions rather than one linear continuum.

## **3. Data and Method**

### **The ESWT data**

To investigate the three hypotheses derived from the previous section, establishment-level data is needed. The European Establishment Survey on Working Time and Work-life Balance (ESWT) offers a great opportunity, addressing a wide range of working time arrangements not available in other data sources. The ESWT provides establishment level information on the various arrangements that are created within a firm to enhance internal flexibility and to adapt to workers' preferences for combining work and non-work activities. The survey covered establishments with 10 or more employees across the EU-15 and six new accession countries (Cyprus, Czech Republic, Hungary, Latvia, Poland and Slovenia). Conducted between 2004 and 2005, in 21,031 establishments personnel managers and, if available, employee representatives were interviewed. By using the establishment weight we reproduce the structure of the universe in terms of size, class, sectors, and country. For response rates and other technical issues concerning the survey, see Reidmann et al. (2006).

The key point of our analysis is to find a pan-European result that can be used to compare companies across Europe, thus we include all companies into our analysis. A limitation to this approach is that the arrangements may have a different meaning in different countries, especially due to the different institutional context the arrangements are used in (see Branine, 1999). However, the distinction of arrangements used in the survey is derived through previous studies on the company levels (Anxo, et al., 2006), and are general categories of working time practices that can be applied for all countries

covered in the survey. In addition, if we take into account that a working time arrangement can differ in character not only depending on the country, but also sector, company and even the individual who is taking it up ([Anderson, Coffey, & Byerly, 2002](#); [Blair-Loy & Wharton, 2002](#)), it is sometimes useful to take a broader view of the issue using broad strokes to come to a general theory. In section four, however, we will come back to the issue of cross-national variation in institutional settings when we interpret the results.

## **Method**

To investigate the empirical underpinning of the grouping of employee- versus employer-centred working time flexibility, factor analysis is the most suitable method. Factor analysis reduces the numbers of variables by combining them into a single factor. It allows the identification of interrelated variables and thus for finding or classifying bundles (Statsoft, 2008). Factor analysis also assumes that internal attributes account for the observed variation and covariation across a range of observed surface attributes (Tucker and Mc Callum, 1997). The grouping of the arrangements is based on their covariation, thus how they are being used together, which in turn is indicating that they share a similar latent characteristic. The groupings can be understood as representing the working time arrangements bundles, but they can also be understood as representing the company's working time flexibility strategies, here measured as the latent factors. Following the literature and the stylized presentation in Figure 1 this study hypothesizes that the arrangements will group based on two latent factors, the employer-centred and the employee-centred dimensions.

The second analysis method used in this paper is cluster analysis. Cluster analysis seeks to identify homogeneous subgroups of cases in a population. It establishes group membership by identifying a set of groups with both minimum within-group variation, and maximum between-group variation (Garson, 2009). Of the various types of cluster analysis the hierarchical cluster method, where the researcher can select the definition of distance, as well as the linking method for forming clusters is most appropriate (Garson, 2009). The Squared Euclidian distance is used for the definition of distance which places greater emphasis on objects further apart, thus increasing the effect of outliers (Garson, 2009). In addition, for the linking

method, we use Ward's method which uses the sum of distances from each case in a cluster to find the grouping with the least sum of squares.

### **Arrangements included in the analysis**

The results of the factor analysis and the groupings of the arrangements as well as countries will heavily depend on the indicators (variables) chosen, as the outcomes rely on the number of indicators included representing a certain idea or type. The exclusion of relevant variables and the inclusion of irrelevant variables in factor analysis may substantially affect the factors which are uncovered (Kim and Mueller, 1978; Garson, 2008). Hence, the initial choice of the indicators used for the analysis is crucial. Following the assumption on the employer- versus employee-centred divide, hereafter the variables included in the analysis are presented briefly.

All variables unrelated to flexible working time arrangements are excluded, such as external numerical flexibility arrangements (e.g., fixed term contracts and temp agency work) and work-life balance facilities (e.g., child care facilities, house hold management services). Parental leave, one of the working time related arrangements, is excluded due to the problematic manner in which the question was asked in the survey<sup>3</sup>. The ten working time arrangements relevant to the analysis are depicted in Table 1. If the survey question asked whether the company used the arrangement, we consider this a *use* question. If the question asked whether the company made the arrangement available to their workers, we consider this an *available* question. The difference between these two types of questions is due to the characteristics of the arrangements. The take-up of the employer-centred arrangements is in most cases decided by the company, based on their need for such arrangements. Thus at company level it is relevant to measure whether or not the company has used the arrangements. The take-up of the employee-centred arrangements is in most cases decided by the workers themselves. Companies can make certain arrangements available for workers, but the workers choose to use them. Thus, in these cases the survey questions ask whether the companies make the arrangements available or not. The third and fourth columns represent whether or not the arrangements are hypothesized to facilitate the needs of employer and/or employees based on previous studies, as discussed in section

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<sup>3</sup> For a more details see FIRST AUTHOR (2009).

two. The last column provides the weighted average percentage of companies making use of the arrangement. Note that the use and the availability of all arrangements are measured dichotomously. The data do not indicate to what extent the arrangements are being used and which specific groups of workers are affected. Thus, the use or the availability of an arrangement may apply to only a minority of workers. Although the issue of who gets what is important when examining company policies regarding working time flexibility, this is not covered in this paper due to data limitations.

[table 1 here]

This study hypothesizes that the arrangements are expected to group into two latent factors, the employer-centred and the employee-centred arrangements. The choice of the variables to be included in the analysis is made accordingly. Regarding the employer-centred arrangements, the use of unusual hours, that is working evenings, nights and weekends, is included, Shift work is included, and so is overtime. Here, overtime refers to both paid and unpaid overtime. Regarding the employee-centred arrangements, three long-term leaves, namely leaves for care or illness in the family, leaves for training or education, and leave for other purposes, are included as three distinct arrangements. Long leaves are expected to be important in countries where full-time jobs are the norm where long leaves play a major role in facilitating work-life balance. This is in contrast to those countries where part-time jobs and other reduced working hour arrangements facilitate the work-life balance. The types of long-term leave arrangements seem to have distinct characteristics of their own thus we include all three separately.

Some arrangements can facilitate both employers' and employees' needs. These include the use of part-time work, the (right to) reduce working hours, the use of flexible working hours, and the use of phased retirement. In the survey, the right to reduce working hours refers to the possibility for full-time workers to change to part-time hours in a relatively easy manner. Although companies using part-time work may also have such arrangements, both the use of part-time work and the right to reduce working hours are included separately, predominantly because in companies where part-time and full-time jobs are highly segmented, the use of part-time jobs may not go along with the

right to reduce working hours. In addition, the right to reduce working hours is an increasingly important work-life balance option<sup>4</sup> which should be examined separately.

Phased retirement might be considered similar to part-time work and the right to reduce working hours. By definition, since phased retirement is the reduction of working hours before going into full retirement, this would be the same as the reduction of full-time working hours. However, since reduction of working hours is primarily taken up by women for child-rearing (Tijdens, 2002), and phased retirement is aiming at older workers, these two arrangements are considered to be different sets of policies. In the ESWT data, approximately half of the establishments that provide the right to part-time work do not offer phased retirement, and approximately one third of the establishments that provide phased retirement do not offer the right to part-time work. Thus it seems feasible to include phased-retirement as a distinct arrangement in our analysis.

The last arrangement included in the analysis is flexible working hours, defined as the possibility for workers to adapt the starting and ending time of work according to their preferences.

#### **4. Analysis outcomes**

In this section, we examine the outcomes of the factor analysis and cluster analysis.

##### **Factor analysis**

For the factor analysis, we tested to see whether the factors derived were correlated, through the use of the promax solution and found no strong correlations. For this reason we chose a varimax solution, the most commonly used orthogonal method, presuming a non-correlation between the two factors derived. Selecting the number of factors based on the Kaiser-criterion<sup>5</sup>, the first outcome shows just three factors derived from

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<sup>4</sup> In 2000, the Netherlands introduced in their working time legislation a right to decrease working hours (Wet Aanpassing Arbeidsduur: WAA), and in 2005, in the UK this right was also introduced for parents with children under the age of 6 in the Work and Families Bill and is planned to be extended to those with children under the age of 16 by April 2009 (EIRO, 2005; Telegraph 26<sup>th</sup> August, 2008).

<sup>5</sup> This method chooses the number of factors that has the eigen value over 1. If a factor has the eigen value of less than 1, this means that the factor does not explain as much as the equivalent of one original variable added.

the ten arrangements. However, these three factors explain almost half (49.8%) of the variances in the variables.

The first factor shows high factor loadings for all of the long-leave arrangements (Table 2). This could also be interpreted as the *working time flexibility for employees* factor, since leave schemes accommodate the needs of the worker more than other arrangements. The second factor can be named *working time flexibility for employers* factor, with overtime, unusual hours, and shift work all showing high factor loadings. The third factor includes the four arrangements that have been noted in the hypothesis as being *working time flexibility for both employers and employees*, that is, phased retirement, part-time work, flexible working time arrangements, and the right to reduce working hours. The naming of the factors not only stems from how the arrangements are grouped into three separate factors depending on their highest loading scores, but from their loadings on other factors as well. The arrangements have almost no loading or very slight negative loading on the factors other than their main factor. The exception to this is part-time work with a slight positive loading on factor 1 and overtime with a slight positive loading on factor 2.

The last column of Table 2 shows the communality scores for each variable. Communalities represent the extent to which the factors explain each variable. The higher the communality score, the better the variable is explained by the factors derived (R-square). As the table shows, the use of overtime and flexible working schemes are only weakly related to the two factors derived in this analysis.

[table 2 here]

To test our hypothesis of two dimensions of working time flexibility bundles we restrict the number of factors to two, as Table 3 shows. A two-factor analysis allows for both a clearer conceptual distinction and more simplicity in our analysis. In addition, it reflects what is hypothesized by previous studies as well as this paper. The two-factor analysis groups the arrangements that benefit the employees as a first factor, and those that benefit employers as a second factor, as hypothesized in the paper. The grouping found cannot be seen as confirming the competing hypothesis of the division of full-time oriented versus part-time oriented working time options, as shown in the vertical axis in Figure 1. The arrangements that were once in the second factor, working time flexibility for both employees and employers, load on both factors relatively similarly.

The exception to this is the use of part-time work, where the loading score on the second factor is higher. This can be due to the fact that, although varying across countries and individuals within countries, part-time work is more often than not used to facilitate company's needs to adapt to workloads. The right to reduce working hours' higher loading on factor two may have to do with its high correlation to part-time work. Although there is a drop in the variance explained by the two factors, still about 38% of the variance is explained only with the two factors. Similarly, compared to the results in Table 2, the communalities observed in table 3 are lower for all variables with the exception of phased-retirement. This decrease is especially notable for flexible working hours, which may be related to the loss of the third dimension, *flexibility for both*.

[table 3 here]

From the results shown in Table 2 and Table 3, we can conclude that working time arrangements can be grouped into bundles, and the most prominent latent characteristics that groups the bundles are to whose needs the arrangements facilitate. It is important to note that the factors are two (three) separate dimensions rather than one linear continuum. This is confirmed not only by the number of factors found, but also the correlation between the factors. The two dimensions can be depicted as shown in Figure 2. We have also tested whether it was possible to reduce the dimensions into a single dominant factor, by reducing the number of factors to one. However, this seriously reduces the explanatory power and the communality scores for the arrangements.

[figure 2]

### **Robustness of factors**

The results in the previous section have been derived from the inclusion of all company cases in the ESWT. This pan-European pan-sector analysis, taking all companies of all sectors and countries together, may raise problems because it gives natural weights to large countries and large sectors. Therefore, we have tested the robustness of the factors by examining the two factor varimax analysis outcomes separately for each country and for each of the 13 industries<sup>6</sup>.

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<sup>6</sup> Results can be provided upon request.



The outcomes show that the four arrangements that facilitate flexibility needs for both, namely phased retirement, flexible working hours, part-time work, and right to reduce working hours, do show some deviations from the analysis that included all countries and all industries. Their loadings are not necessarily equal for both factors, and sometimes have a higher loading on one, with some even showing no or slightly negative loadings on the other. A plausible interpretation for this is that the arrangements facilitating the flexibility needs of both employers and employees depends much more on the country and sectoral contexts than the ‘pure’ employee and employer driven arrangements, that are rather used in a uniform manner across different contexts. Country deviances, for example, can be noticed in Denmark, Finland and Sweden. In these countries, the arrangements facilitating the flexibility needs for both parties, namely part-time work, right to reduce working hours, phased retirement and flexible working time arrangements, have higher loadings on the ‘*working time flexibility for employees*’ factor than the European average, and lower or even negative loadings on the employers factor. The opposite effect is seen in countries such as the UK. Given that the Nordic European countries are those frequently linked with better welfare provision and working conditions (Esping-Andersen, 1990; Gallie, 2003; Branine, 1999), it is unsurprising that in these countries the provision of arrangements are more worker friendly than in other countries.

[figure 3 here]

In addition, when examining the results for each country and sector separately, overtime and very infrequently other long-term leave also show deviations from the results of the pan-European pan-sector factor analysis outcomes. Overtime having high loadings on the employee-oriented arrangements may be due to the fact that it is sometimes taken up by workers voluntarily for additional income. It may also be due to workers taking up long-term leave. Without additional staff to do the person’s job, co-workers must work overtime to supplement the increased workload.

Regardless of such deviations, our examinations of European companies lead to the conclusion that working time flexibility arrangements can be grouped in bundles. In addition, the most prominent characteristics that can group the arrangements are the extent to which they facilitate employees’ needs for flexibility and the extent to which they facilitate employers’ needs for flexibility.

### **Clusters of countries**

Figure 3 is a graphical depiction of the aggregate component scores for each country for each factor. We can see that there seems to be a positive relationship between employee-oriented WTFC and employer-oriented WTFC, at least at the aggregate macro-level. In other words, countries with a high average score of employee-oriented WTFC are also likely to have a high average score of employer-oriented WTFC. This implies that at least at the national level, the two types of working time flexibility seem to be compatible. This result is in line with our hypothesis that the employee- and employer-oriented working time components are not necessarily at odds with one another.

[figure 4 here]

When examining the country average scores closely, a pattern across countries arises. Three clusters are found using the hierarchical cluster analysis. The first distinct country grouping found is the southern European country grouping, including Greece, Portugal, Spain, Italy, Cyprus, and two new accession countries which are also located in the south eastern part of Europe, Slovenia and Hungary. These countries show low average scores for both the employee-oriented component and the employer-oriented component. The second country grouping includes all northern European countries, namely Denmark, Finland, Sweden, the Netherlands, and also Poland and the Czech Republic. These countries can be characterised as having a high average score of both of the employee- and the employer-oriented component. Thirdly, the last grouping consists of Austria, Belgium, France, Germany, Ireland, Latvia, Luxembourg, and the UK. These countries can be characterised as having as high average score for the employer-oriented component as the northern European country grouping. However, they do not show as high scores for the employee-oriented component, although they are higher than that found for the southern European country grouping.

The country grouping somewhat reflects the working time regime typologies found in the previous studies of Anxo et al. (2006), Figart and Mutari (2000) and Anxo and O'Reilly (2000), but does not replicate it completely. This is not too surprising given that the focus of this regime typology was not on gender equality, but examines the flexibility needs of workers of both sexes. Second, it incorporates employer's flexibility aspects, which is not done in the first two studies. Third, the way the regimes

were constructed was not based on national policies and or individual behaviours, but company policies. In this sense, this is one of the first studies to show how countries can be grouped in terms of company practices of working time. Our study is also different in that it includes the new accession countries, which are not included in others. It is worthwhile noting that these countries do not form a distinct cluster of their own

## **5. Conclusions**

This paper is a first attempt to empirically investigate the possibility of using working time component approach in the analysis of working time flexibility. This is done through the use of the Establishment Survey on Working Time (ESWT) 2004/2005, which covers establishments in 21 EU member states. Based on the previous studies, we arrived at three hypotheses.

Our first hypothesis was that working time arrangements are not single entities but can be grouped into bundles of working time arrangements. Secondly, the extent to which the arrangements facilitate the needs of employees and/or employers would be the main characteristic that groups the arrangements. The first two hypotheses have been tested by running an exploratory factor analysis of ten working time arrangements included in the ESWT survey. The results from the analysis confirmed that there are two or three main factors group the working time arrangements that can explain approximately 40% (for the two factor outcome) and half (for the three factor outcome) of the variances of the arrangements. In addition, having taken a closer look at the grouping of the factors, we found that it most likely represents whose needs the arrangement facilitates. For the two factor outcome we find that the outcome shows a clear division of arrangements of those that facilitate employer's needs or employee's needs, and for the three factor outcome, a third factor – those that facilitate the need of both sides emerges.

Our third hypothesis was that the employee- and employer-centred bundles are not placed in a linear relationship where they are at odds with one another, but that they constitute two different dimensions of flexibility. We tested this hypothesis by checking whether or not the factors can be reduced to one single dominant factor which may represent a linear relationship between the two characteristics. In addition, the

correlations of the factors were examined to see their relationships. Based on our analysis, we find it likely that there are two or three dimensions in which the employers' and employees' flexibility needs constitute as separate dimensions rather than one dimension with conflicting needs.

We tested the stability of the factor analysis outcome by examining the separate outcomes per country and per industry. The result shows that although there are some deviations from the pan-Europe and pan-industry outcome. We believe that this is mostly due to the context in which the arrangements are being used. However, the naming of the factors as flexibility for employees and flexibility for employers can be interpreted as being rather stable across countries and across industries although some variations may exist.

Lastly, using the components derived, we map out the 21 countries in our analysis to see if any meaningful groupings of countries could be found. Through cluster analysis, three groups of countries emerged. The first is the southern European country cluster with Hungary and Slovenia, where the average company does not use much working time arrangements, neither for the employees nor for the employers. The second is the northern European country cluster with Czech Republic and Poland, where both employee- and employer-oriented working time arrangements are used extensively. The last is a cluster for the remaining countries, the continental European countries and the Anglo-Saxon countries. Here the employer-oriented working time component score is high, and is comparable to that of the Nordic countries, yet their employee-oriented working time component score is in between the northern and southern European country clusters. This grouping reflects to some extent the results found in previous studies, but provides yet a new way of examining countries in terms of working time flexibility.

Through this paper we have found meaningful bundles or latent strategies of working time flexibility and meaningful country groupings based on them. The component found not only mirror many of the previous smaller n case studies, but also provide an interesting insight on how countries can be examined not only in terms of their policies but the way their companies behave. The use of the components approach method allows for simplifying the way researchers examine working time arrangements, at the same time allowing a more holistic view of companies' working time strategies,

in comparison to examining arrangements separately as single entities, which was the predominant method until now.

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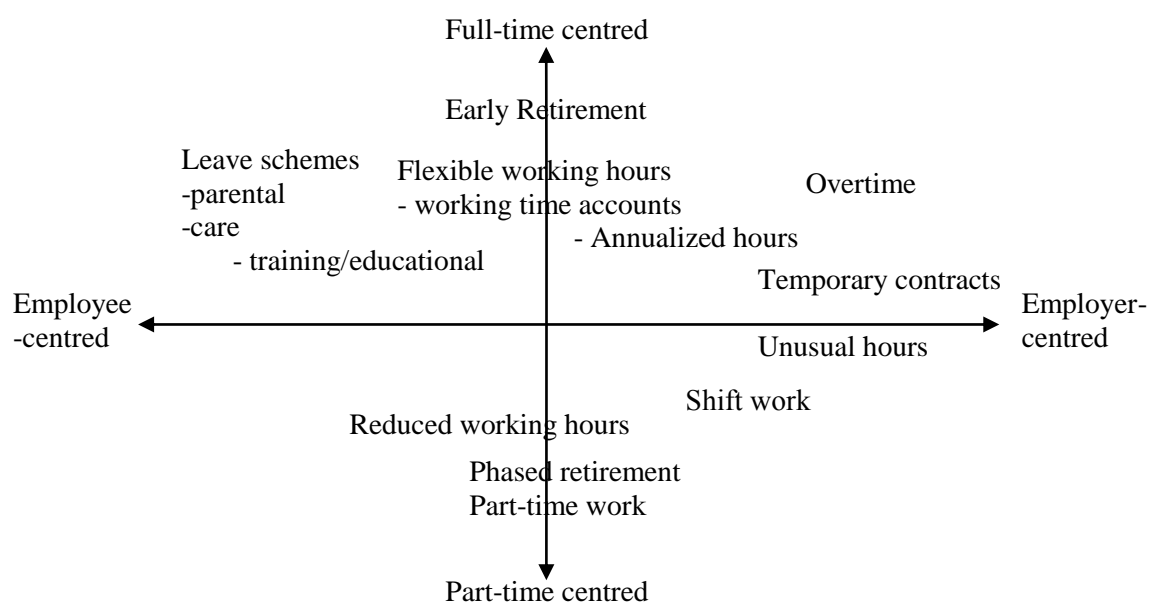
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## [Annex] Tables and Figures



**Figure 1. Taxonomy of flexibility arrangements**

Source: Based on Rubery and Grimshaw (2003), Visser (2003) adapted by authors

**Table 1. Variables included in the analysis**

Variables	Note	Employer centred	Employee centred	Averages
The use of unusual hours		√		42.5%
The use of shift work	Regularly changing working hours due to the nature of the job	√		23.4%
The use of overtime	Paid or unpaid	√		74.7%
The availability of long-term leave for care or illness in family	Paid or unpaid		√	41.3%
The availability of long-term leave for training or education	Paid or unpaid		√	40.7%
The availability of long-term leave for other purposes	Paid or unpaid		√	28.9%
The use of part-time work		√	√	65.3%
The right to work part-time	The possibility of full-time employees to go to a part-time contract <sup>b</sup>	√	√	41.6%

The availability of phased retirement	Only asked to companies with 50+ workers / possibility to reduce their weekly working hours before retirement <sup>c</sup>	√	√	35.1%
The use of flexible working hours	Worker has possibility to adapt starting or ending time of work	√	√	48.5%

a: "Use" questions were asked on whether the company had used or was using the arrangement for more than 1 worker, "available" questions were asked on whether the company had or made such arrangements available to its workers.

b: When full-time workers "can get appropriate job quickly" or "has to wait for some time" to get a part-time contract, it is considered as there being a possibility to reduce working hours. When it was "possible only exceptionally" or there were "no chance" to change to part-time it is considered as there not being a possibility. This question was asked for skilled workers and unskilled workers separately, and here the average score for both was used.

c: Companies without workers who are 50 or older were considered not to have this arrangement

**Table 2. Factor analysis, varimax rotation three factor outcome**

Variable	Factor1	Factor2	Factor3	Communalities
Care leave	<b>0.82</b>	0.11	0.01	0.68
Education leave	<b>0.83</b>	0.07	0.05	0.69
Other leave	<b>0.70</b>	0.05	0.01	0.49
Overtime	- 0.01	0.22	<b>0.36</b>	0.18
Unusual hours	- 0.01	0.05	<b>0.80</b>	0.65
Shift work	0.07	0.02	<b>0.79</b>	0.63
Phased retirement	0.07	<b>0.41</b>	- 0.02	0.17
Flexible working hours	0.01	<b>0.72</b>	0.07	0.53
Part-time work	0.23	<b>0.60</b>	0.02	0.41
Reduce working hours	0.14	<b>0.72</b>	0.05	0.54

Explained variance: 49.8%

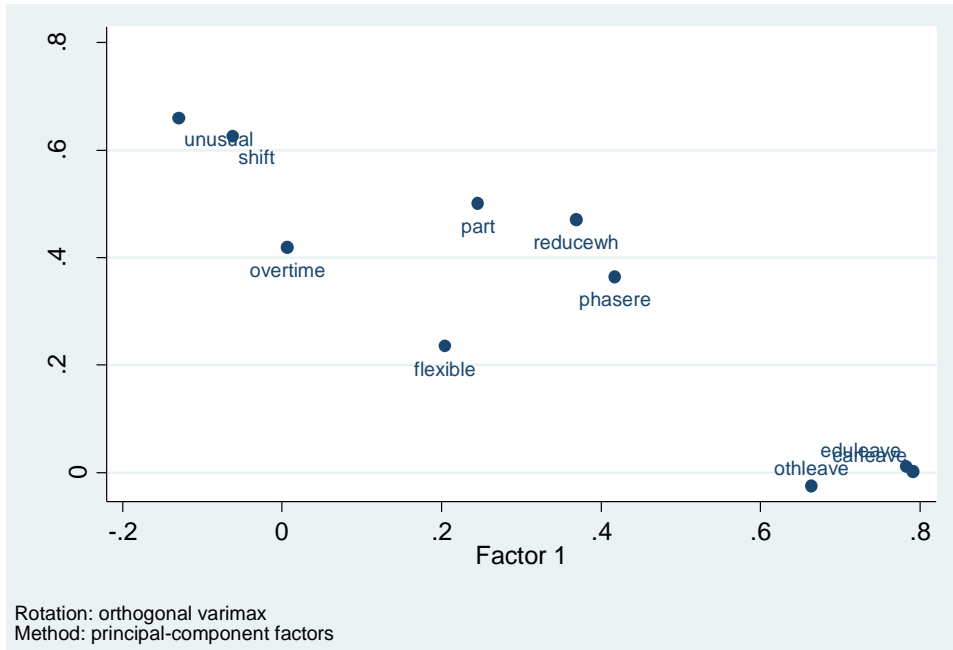
Establishment weighted. Highest loadings in bold.

**Table 3. Factor analysis, varimax rotation two factors outcome**

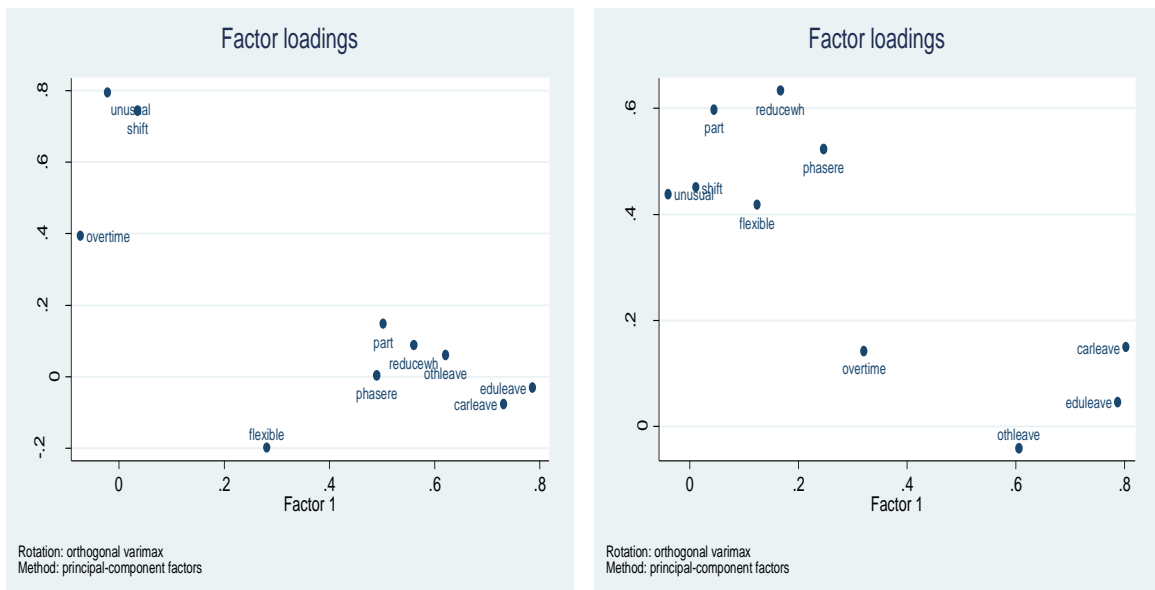
Variable	Factor1	Factor2	Communalities
Care leave	<b>0.79</b>	0.00	0.63
Education leave	<b>0.78</b>	0.01	0.61
Other leave	<b>0.66</b>	- 0.02	0.44
Overtime	0.01	<b>0.42</b>	0.18
Unusual hours	- 0.13	<b>0.66</b>	0.45
Shift work	- 0.06	<b>0.63</b>	0.39
Phased retirement	<b>0.42</b>	<b>0.36</b>	0.31
Flexible working hours	<b>0.20</b>	<b>0.24</b>	0.10
Part-time work	<b>0.25</b>	<b>0.50</b>	0.31
Reduce working hours	<b>0.37</b>	<b>0.47</b>	0.36

Explained variance: 37.7%

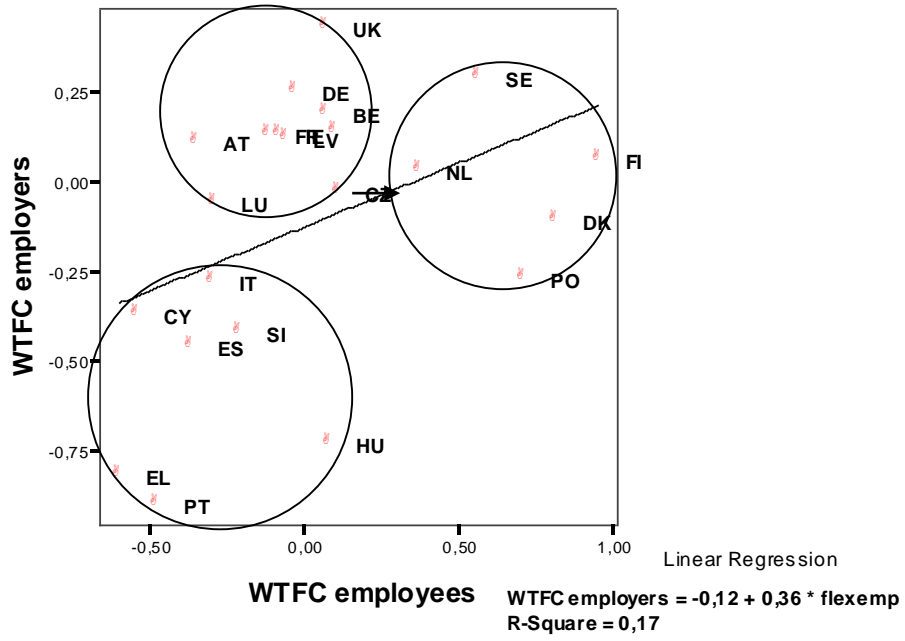
Establishment weighted. Highest loadings in bold.



**Figure 2. Dimensions of working time flexibility components**



**Figure 3. Factor analysis results for Denmark and UK**



**Figure 4. Average working time flexibility component score per country and their respective groupings**