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Family-related working schedule flexibility across Europe

Short statistical report No.6

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April 2014



Justice

Family-related working schedule flexibility across Europe

Short Statistical Report No. 6

Patrick Präg, Melinda Mills

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Preface

Working time flexibility is a potentially important lever to foster the reconciliation of work, family, and private life. Giving workers greater autonomy and more control over their working times could empower them to better balance their work and non-work demands. This could then in turn lead to less work-family conflict, greater female labour force participation, higher fertility and greater gender equality on the labour market. In this report, we draw on two indicators, namely whether workers report 1) the possibility of varying the start and/or end of working day for family reasons (by at least one hour), and 2) the possibility of organising working time in order to take whole days off for family reasons (without using holidays). Our findings show that there is considerable cross-national variation in the reported availability of family-related working schedule flexibility that may be explained by economic factors and the workers' age. The presence of young children in the household had hardly any effect on the availability of work schedule flexibility. These findings suggest a mismatch between the need for and the availability of flexible working times.

This short statistical report is part of a series of reports on gender equality in the work force and reconciliation of work, family and private life. These reports have been commissioned by the Justice Directorate General of the European Commission. The study was jointly undertaken by RAND Europe and the University of Groningen. These reports should be of interest to policy makers and academics with an interest in improving gender equality in the work force and improving the compatibility of having a career in combination with a family and private life.

RAND Europe is an independent not-for-profit policy research organisation that aims to improve policy and decision-making in the public interest, through research and analysis. The research group led by Professor Melinda Mills at the University of Groningen focuses on research in the area of cross-national comparative research, gender equality, work-family reconciliation and advanced statistical analysis.

This report has been peer-reviewed in accordance with RAND's quality assurance standards. The authors wish to thank the peer reviewers Marco Hafner and Sunil Patil for their comments on earlier versions of this document. For more information about RAND Europe or this study, please contact Stijn Hoorens (hoorens@rand.org). For more information about this specific document, please contact Professor Melinda Mills (m.c.mills@rug.nl):

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Summary

One of the major innovations in human resource practices in the last decades has been the proliferation of flexible work practices, such as working from home or work schedule flexibility. The latter especially are often seen as an important means to reconcile family, work, and private life. This view is based on the assumption that granting workers greater discretion more control over their working times should empower them to better balance their work and non-work demands. This could then in turn lead to less work-family conflict, greater female labour force participation, higher fertility, and greater gender equality on the labour market. Against the backdrop of aging populations in Europe, improving working time flexibility has also been recommended as a coping strategy, as it could allow to better distribute work over the life course and accommodate caring for older family members.

Previous research has been able to show that flexible working arrangements can indeed be helpful in improving work-life reconciliation, even though findings are sometimes mixed and effects are often small in magnitude. Studies have suggested that flexible work arrangements are associated with less work-family conflict, greater well-being of workers, less burnout, and better health behaviours (longer sleep on work nights, exercising more, going to the doctor when sick). Furthermore, some positive outcomes have also been reported for organisations, such as less sickness absence, greater commitment to the employer, less turnover, and reduced costs due to fewer missed deadlines. What has been largely lacking so far is a cross-national comparison of the prevalence of family-related working time flexibility and a detailed analysis of which social groups have access to family-related working schedule flexibility in Europe.

In this report, we analyse the 2010 ad hoc module of the European Labour Force Survey to compare family-related working schedule flexibility across 29 European countries (EU-27 plus Iceland and Norway). Family-related working schedule flexibility is measured by two indicators, namely whether workers report 1) the possibility of varying the start and/or end of working day for family reasons (by at least one hour), and 2) the possibility of organising working time in order to take whole days off for family reasons (without using holidays).

Our findings reveal remarkable variation in work schedule flexibility across countries. While less than ten per cent of workers in Romania report being able to make use of the two options in question, in countries like the Netherlands, Austria and the UK, this share exceeds sixty per cent of the workforce. Further country-level analyses confirmed that GDP per capita is a major predictor of the availability of work schedule flexibility, with greater availability in more affluent countries.

In a second step, we analyse which social groups across countries report the availability of work schedule flexibility. Firstly, women reported substantially less access to family-related work schedule flexibility. Secondly, younger workers (under the age of 30) reported less access to family-related work schedule

flexibility, while older workers (over the age of 60) reported substantially greater access. Thirdly, young children in the household had hardly any effect on the availability of family-related work schedule flexibility: those with children were just as likely to perceive work schedule flexibility to be available for them as those without children in their household.

In addition, our empirical analyses showed evidence for a social gradient in the perceived availability of work schedule flexibility. Compared to workers with permanent contracts, their counterparts with fixed-term contracts are substantially less likely to report perceiving access to flexible work schedules for family reasons. Workers with supervisory status are also more often state that they can access flexible work scheduling than non-supervisors. Also, there is some evidence that higher-educated workers find it easier to vary the start/end of the working day for family purposes. These findings suggest that already disadvantaged parts of the workforce have troubles enjoying any advantages conveyed by flexible work scheduling.

In terms of policy recommendations based on our literature review and our empirical analyses, we conclude that flexible working hours cannot be the sole strategy to foster work-family reconciliation in the European Union, as the effects for workers might be small and there is a mismatch between needs and demands. Provisions for formal full-time childcare seem to be a better mechanism to facilitate labour force participation of women and can help those workers who cannot get access to family-related work schedule flexibility.

Abbreviations

<i>EU 27 Member States</i>	Austria	AT
	Belgium	BE
	Bulgaria	BG
	Czech Republic	CZ
	Denmark	DK
	Germany	DE
	Estonia	EE
	Ireland	IE
	Greece	EL
	Spain	ES
	France	FR
	Italy	IT
	Cyprus	CY
	Latvia	LV
	Lithuania	LT
	Luxembourg	LU
	Hungary	HU
	Malta	MT
	Netherlands	NL
	Poland	PL
	Portugal	PT
	Romania	RO
	Slovenia	SI
	Slovakia	SK
	Finland	FI
	Sweden	SE
	United Kingdom	UK
<i>Candidate country</i>	Iceland	IS
<i>Third country</i>	Norway	NO

1. Introduction

Recent years have seen a rise in the prevalence of flexible work arrangements which give workers more discretion and autonomy over the scheduling and number of their hours of work. A more detailed definition of flexible work arrangements, such as working from home, flextime, or compressed work weeks, will be provided for the purpose of this report shortly. Several societal trends have been suggested to be at the core of the rise of flexible work arrangements, such as more dual-earner households (Blossfeld & Drobnič 2001), single parents (Heuveline et al. 2003), responsibilities for elderly care (Timonen 2008), men's greater involvement in family care (Hook 2006), and the growth in female labour force participation (Goldin 1990). Also, employers have responded to these factors, as labour markets have changed with greater demand for skilled labour due to more technology (Bekman et al. 1998), moves to deregulation (Esping-Andersen & Regini 2000), and greater flexibility in production (Davies & Freedland 2007), resulting in a trend towards a 24-hour economy (Presser 1999).

Working time flexibility has been praised as part of a **strategy for reconciling work and family demands**, suggesting that flexible hours and schedule control give workers a better chance to balance their work and family lives. This in turn could result in **less work-family conflict, greater female labour force participation, higher fertility** and **greater gender equality** on the labour market. Employee discretion about working time scheduling has been identified to be an important feature of **quality of work**, in line with the previous Lisbon Strategy goal of not only more, but also better jobs (Drobnič et al. 2013). More flexible working hours have also been recommended to cope with the labour market consequences of **ageing populations** (Carstensen 2011, Vaupel & Loichinger 2006). The border theory of the work-family interface (Clark 2000) argues that individuals regularly cross a border between the domains of work and family life and that these domains are equipped with different resources for attaining work-family balance. According to this theory, working time discretion is a key resource that could facilitate the reconciliation of work, family, and private life, as it is distinct from other aspects of job control by being situated between work and non-work life.

Previous research on flexible work is heavily focused on the consequences of those arrangements, while only rather few studies address the determinants of flexible work. For instance, a recent meta-analysis on the effects of flexible working arrangements on work-family conflict was able to identify 58 studies focusing on this outcome alone (Allen et al. 2013). Indeed, studies have suggested that greater flexibility of working time arrangements can be related to desirable outcomes. Halpern (2005) showed that in a large sample of US workers, more flexible working time arrangements were associated with less sickness absence, greater commitment to the employer, and reduced costs to the organisation because of fewer absences, fewer days late, and fewer missed deadlines. Kelly et al. (2011) conducted a prospective

intervention study in an US service sector organisation which showed that better work schedule control reduces work-family conflict. Moen et al. (2011b) point out that schedule control has a positive effect on health behaviours (almost an extra hour of sleep on work nights, exercising more, going to the doctor when sick, not going to the workplace when ill) and the well-being of workers. Furthermore, they showed that greater work-time control can reduce turnover in an organisation (Moen et al. 2011a). Grzywacz et al. (2008) provide evidence that greater perceived flexibility is associated with less burnout in employees. Beham et al. (2011) showed that in a sample of German service sector workers, use of flexible work arrangements was negatively correlated to work-to-family conflict and positively to work-to-family enrichment. In a cross-national study, Stier et al. (2012) found that the average level of working time flexibility in a country does not affect overall levels of work-family conflict, but it can reduce the gender gap in work-family conflict (women consistently reported greater work-family conflict than men). That means that in countries where working time flexibility is greater, the levels of work-family conflict of men and women were more similar than in countries with lower flexibility. In another cross-national study, Lyness et al. (2012) found that workers' working time autonomy positively affects job satisfaction and organisational commitment (but again, self-reported work-family conflict was not affected).

What is less known are the predictors of flexible working time, especially from a cross-national perspective. Few studies focus on who gets access to flexible work (Golden 2008; Masso 2013). Existing studies often draw on UK or US samples only; however, research has shown that similar working time arrangements can have different consequences depending on the national context (Mills & Täht 2011). To our knowledge, only four studies (Berg et al. 2004; Lyness et al. 2012; Ortega 2009; Plantenga & Remery 2010) analyse the determinants of working time flexibility using cross-national data. Berg and colleagues (2004) conducted a qualitative study, interviewing managers, public sector policymakers and administrators, and union leaders from seven Western high-income countries and suggest that in countries with high levels of collective bargaining coverage, high trade union density, and labour representatives who were sensitive towards working time issues, working time flexibility was greater. Ortega (2009) analysed data from 15 Western European countries (European Working Conditions Survey 2000), but did not pay any special attention to potential country differences in his study. Plantenga and Remery (2010) give a descriptive account of working time flexibility in the EU Member states, drawing on a large number of indicators from data that stem from the mid-2000s. Lyness and colleagues (2012) studied work schedule control in 21 mainly Western countries using the International Social Survey Program (ISSP) data from 1997. However, an analysis of a more recent, larger data set (larger both in terms of countries as well as individual respondents) could add substantially to the state of knowledge.

Existing research on flexible work arrangements often mixed a number of related concepts. Dimensions of flexibility that are often presented together are temporal versus spatial flexibility, availability versus take-up (Allen et al. 2013) and employer versus employee-centered arrangements (Chung & Tijdens 2013). Whereas temporal flexibility refers to arrangements such as variable working hours, spatial flexibility refers to practices such as working from home. Availability of flexible work arrangements gives workers the option to choose such arrangements, where take-up focuses on those who have chosen such arrangements and make use of them. Employer-centered arrangements allow organisations to react more flexibly towards external pressures, e.g. fluctuations in demand. Shift work, unusual hours, and overtime can be

seen as examples of employer-centered flexible work arrangements; conversely, leave schemes for family matters (e.g. a sick child) are examples for employee-centered working time flexibility. Previous research has already suggested keeping those dimensions separate in research to be better able to identify the effects of the different forms of flexibility, as they can substantially differ (Allen et al. 2013).

This report will focus on what we call perceived **family-related work schedule flexibility**, that is whether employees report that they are able to modify their working hours (start and ending time of work by at least one hour) and working days (take whole days off) for family reasons. So, in the terminology established in the preceding paragraph, we are looking at temporal, employee-focused availability of work flexibility. Note that we will be looking at the availability as perceived by employees, not as reported by e.g. HR departments. We believe that this is a more accurate approach as HR departments are more likely to inform about formal flextime policies only, whereas a substantial share of flexible work arrangements might be arranged informally between employees and their colleagues or their immediate supervisors. We acknowledge that there are other forms of working time flexibility which can help reconcile work, family, and private life, such as part-time work, compressed work week schedules, or atypical hours (Plantenga & Remery 2010); which are, however, beyond the scope of this Short Statistical Report.

While the potential benefits of flexible work schedules for reconciling work and family seem substantial, **mismatches between the availability of and employees' need for flexible working hours are likely**. Employers are more likely to grant discretion about working times to a small number of workers. In organisations, greater flexibility comes with more responsible and less specialised positions. Employees facing a variety of tasks that require much switching such as managers are often granted great discretion, also since monitoring of their work is more difficult. Furthermore, employers grant greater flexibility to employees as rewards for longer tenure, higher commitment, and greater skills and abilities. Lastly, flexibility can come as part of so-called high performance work systems (Ortega 2009). High performance work systems move away from a work organisation as inspired by Frederick Taylor towards a more holistic approach of work, often defined by job rotation, flat hierarchies, self-responsible teams, and greater discretion for workers. It is important to note that the groups who are in need for family-related work schedule flexibility, i.e. people at the age where they might start a family and especially women, might not be able to get them as they are not (yet) in a high-enough career position or are not able to commit themselves sufficiently to their job.

Exploiting the **EU-LFS 2010 Ad Hoc Module 'Reconciliation between Work and Family Life'**, we aim to give an up-to-date overview of family-related flexible working hours as captured by the possibility to vary start and/or end of the working day and to take whole days off for family reasons in **29 European countries**, focusing on differences between countries and between different social groups, especially men and women.

2. Data

The 2010 Ad Hoc Module ‘Reconciliation between work and family life’ of the European Labour Force Survey provides information from 29 European countries (27 EU Member States plus Iceland and Norway) for about 400,000 employees between the ages of 15 and 64. Those who are not active in employment, who are self-employed or who are not of working age are excluded from our analyses.

With respect to family-friendly flexible working hours, the Ad Hoc Module contains two indicators:

- Possibility of **varying the start and/or end of working day** for family reasons (by at least one hour).
- Possibility of organising working time in order to **take whole days off** for family reasons (without using holidays).¹

For both indicators, three response options were available, namely (1) ‘not possible’ (2) ‘rarely possible’ and (3) ‘generally possible’. It should be noted that these two indicators tap at the availability of these options as perceived by the employees (not as reported by HR departments) and do not measure actual take-up of these policies.

For the analyses of country differences, we will focus on the distinction between the general possibility (option 3) versus the other two response options combined as this captures the essential variation between the countries while considerably simplifying the analyses. For the individual level analyses in this report, we make use of the full variance of the response options that were available.²

We supplement the individual-level data from the EU-LFS with country-level information, namely **GDP per capita**, **social protection expenditure**, the **female labour force participation (LFP) rate**, the **size of the service sector**, **collective bargaining coverage**, and **gender occupational segregation**. More information about these indicators can be found in Table 1 in the section ‘Technical appendix’.

¹ Unfortunately, it is not possible to say how often this would be possible in a given span of time, as respondents were not asked about this.

² Three data restrictions are important to note. Given that Latvia has a very large share of missing responses (over 90 per cent) for the indicator about the possibility to vary start and/or end of working day for family reasons, we excluded Latvia from the analysis of this variable. For the Nordic countries (DK, FI, IS, NO and SE), there is unfortunately no household information available in the EU-LFS. For that reason, we had to exclude those countries from some analyses. Data from France suffer from a measurement problem (EU-LFS AHM 2010 Evaluation Report 2013), however are nonetheless included in this report and should be interpreted with caution. Further details about the EU-LFS microdata can be found in the section ‘Technical appendix’.

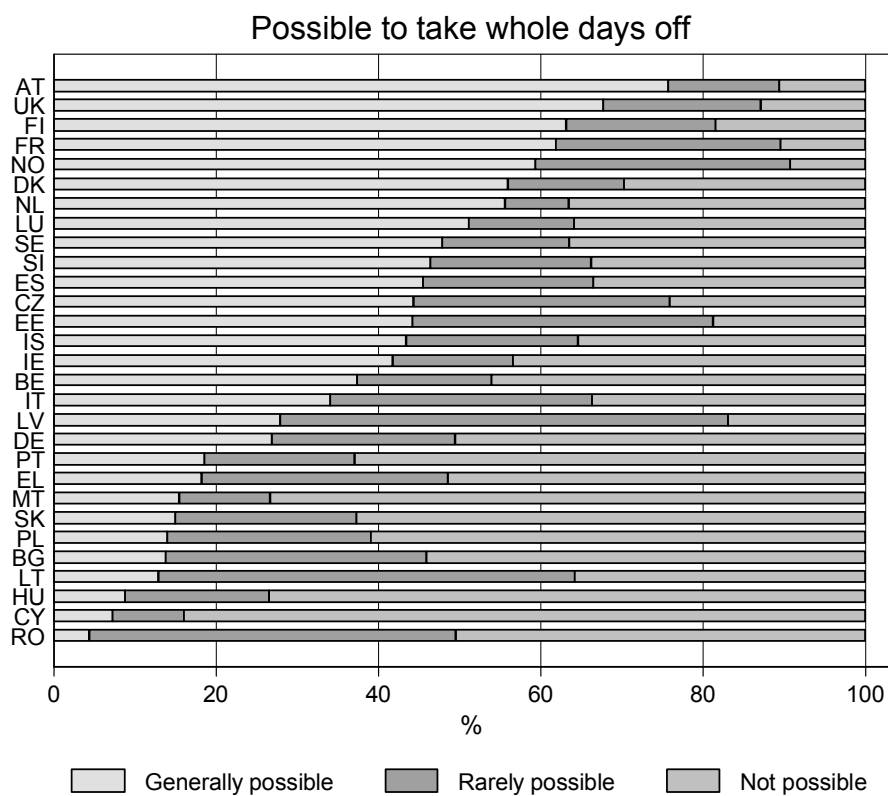
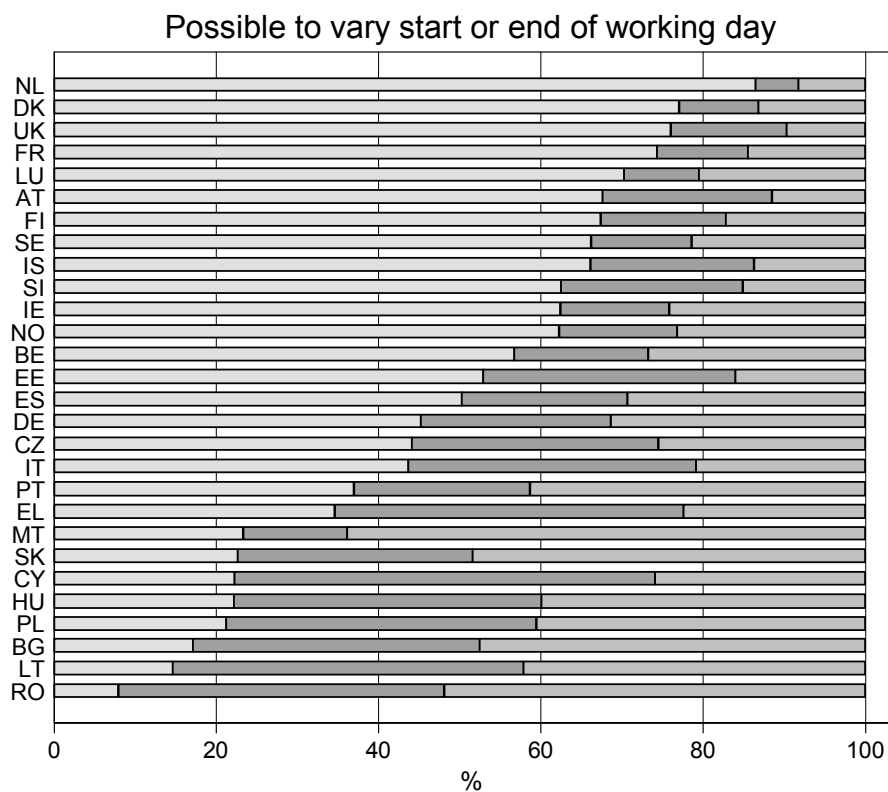
3. How prevalent is family-related work schedule flexibility across countries?

Figure 1 gives an overview of the distribution of family-related work schedule flexibility across countries in Europe. The upper panel of Figure 1 exhibits the possibility to vary the start/end time of the working day for family reasons by countries. The Netherlands, Denmark, and the UK are the countries where this is most common. More than 80 per cent of Dutch employees report that it is generally possible to vary the start/end times of their working day for family reasons; in Denmark, France and the UK, this share is more than 70 per cent. The top of the list is dominated by EU-15 Member States such as Austria, Luxembourg or Finland, only in rather few Eastern European Member States like Slovenia or Estonia the possibility of varying one's start/end times of work for family reasons is common. The countries where the possibility of varying the start/end times of their working day for family reasons is less prevalent are mostly Eastern European Member States. In Romania, Lithuania and Bulgaria, the share of workers who report so is less than 20 per cent. Some Southern European countries such as Cyprus or Malta are also located towards the bottom of this scale.

The lower panel of Figure 1 shows the possibility to organise one's working time in order to take whole days off for family reasons (without using holidays). At the top of the figure we find Austria, the UK, Finland and France, where more than 60 per cent report that they are generally able to do so. Again, the wealthier EU-15 Member States dominate the top of distribution. There are also countries where the possibility to take whole days off is less common. In Romania, Cyprus and Hungary the share of workers who report being able to generally do so is less than 10 per cent. In Eastern and Southern Member States workers are generally least able to take entire days off.

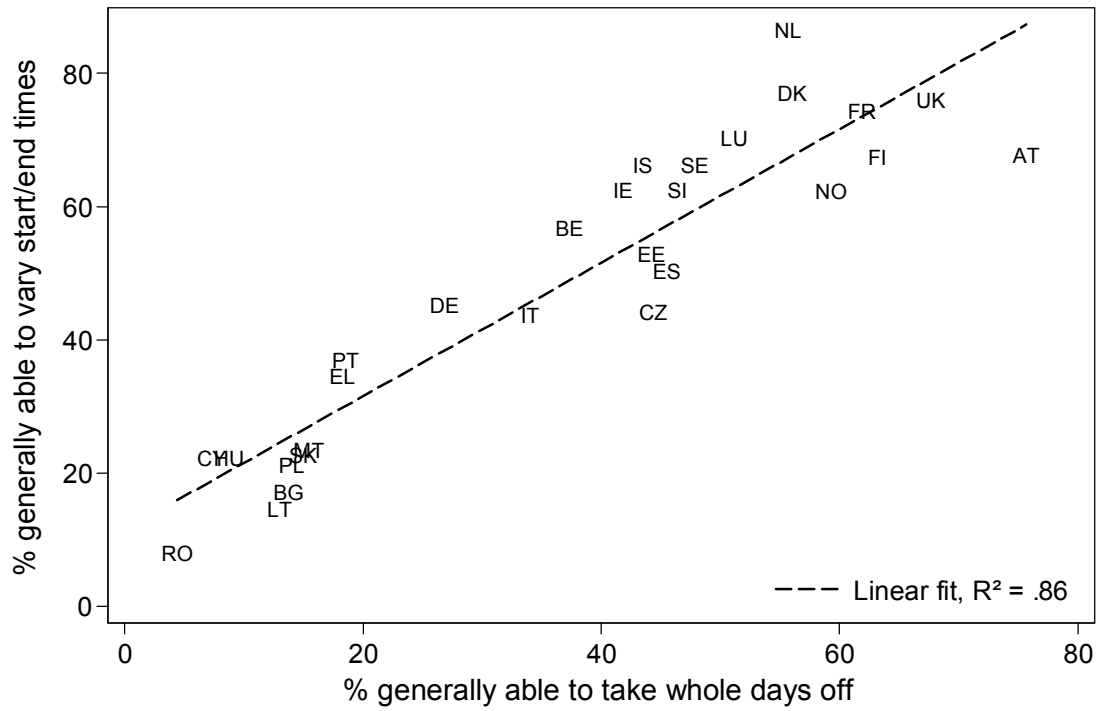
Figure 2 plots the two indicators of family-related work schedule flexibility against one another. What becomes clear is that both types of family-related work schedule flexibility go together in countries: when one type of family-related work schedule flexibility is (un)common, the other one is (un)common as well. In the lower left-hand corner the fit to the line is a bit closer than in the upper right-hand corner. This indicates that as the prevalence of family-related work schedule flexibility goes up, variation between countries increases. In the Netherlands, the possibility of varying the start and ending times of the working day is more common than taking an entire day off, whereas in Austria, the opposite is the case. The countries where family-related work schedule flexibility is uncommon are more consistent in their rigidity: where one type of flexibility has a low prevalence, the other type is uncommon as well.

Figure 1: Family-related work schedule flexibility across countries



SOURCE: EU-IFS 2010 AHM (weighted, authors' calculations).

Figure 2: Scatterplot of the two indicators of family-related work schedule flexibility



4. How can country differences in family-related work schedule flexibility be understood?

How can we make sense of these country differences in family-related work schedule flexibility? Previous literature on flexible work scheduling has largely been concerned with attributes of individuals that can predict whether they can work flexibly (Altman & Golden 2007; Golden 2001; Masso 2013; Ortega 2009) and have paid little attention for country differences (Berg et al. 2004; Chung & Tijdens 2013). Berg and colleagues (2004) suggested that it is the institutional environment within a country, labour market conditions, and management and labour union strategies which affect the prevalence of flexible working hours in a country. Lyness et al. (2012) have shown that there are considerable differences in the extent of working time flexibility across countries, and that these are associated with economic affluence, welfare state generosity, collective bargaining coverage, and national paid leave policies.

Figure 3 and Figure 4 contain scatterplots of the country differences in family-related work schedule flexibility against a range of country-level characteristics. For this purpose, we aggregated the weighted individual-level microdata to the country level and fitted linear models for the share of workers who report being generally able to vary one's start or end times of work or take a whole day off for family reasons. It should also be noted that we are reporting bivariate associations in this section to better grasp the cross-national variation in the availability of family-related work schedule flexibility. At this point we also do not yet account for differences in the composition of the workforces of the countries under study. Due to the bivariate, cross-sectional nature of these analyses, one should be cautious with causal interpretations of the associations shown. Figure 3 shows the scatterplots for the **possibility of generally varying one's start/end times of work** for family reasons. The plot in the upper left-hand corner shows the correlation with **GDP per capita**. The correlation is substantial, with an R-squared of .58, confirming the impression gained from the distribution plots in Figure 1 that family-related work schedule flexibility is more prevalent in more affluent countries. A substantive interpretation for this finding might be analogue to the common explanation of the relationship between affluence and labour supply in labour economics (e.g. Mincer 1962): as affluence passes a certain threshold, people substitute leisure for paid work time and thus greater affluence goes in hand with less labour time offered on the labour market. The same could be the case with flexible working hours: the greater the affluence in a country, the less people will feel inclined to offer their working time in inflexible time arrangements.

Social protection expenditure has been suggested by Lyness et al. (2012) to be affecting working time flexibility by way of increasing economic independence of workers. As can be seen from the upper right-hand panel of Figure 3, the recent EU-LFS data also support this effect.

The **female labour force participation** rate has been suggested by Ortega (2009) to be increasing the availability of working time flexibility by exerting pressure on organisations for granting more discretion to workers. Again, we find that the data are in line with this notion (Figure 3, left-hand panel in the middle), however, as already mentioned above, our cross-sectional research design makes it difficult to ascertain the causal direction: female labour force participation might also be higher due to a greater availability of working time flexibility.

The **size of the service sector** might be an important predictor of family-related flexible working times as service sector work better allows for organising work more flexibly and have traditionally been associated with more humane working conditions (Bell 1974; Fourastié 1949; Präg et al. 2010; Präg et al. 2011). This is also supported by our data (Figure 3, right-hand panel in the middle).

Figure 3: Country differences in the general possibility of varying start/end times of working day for family reasons plotted against several country-level indicators

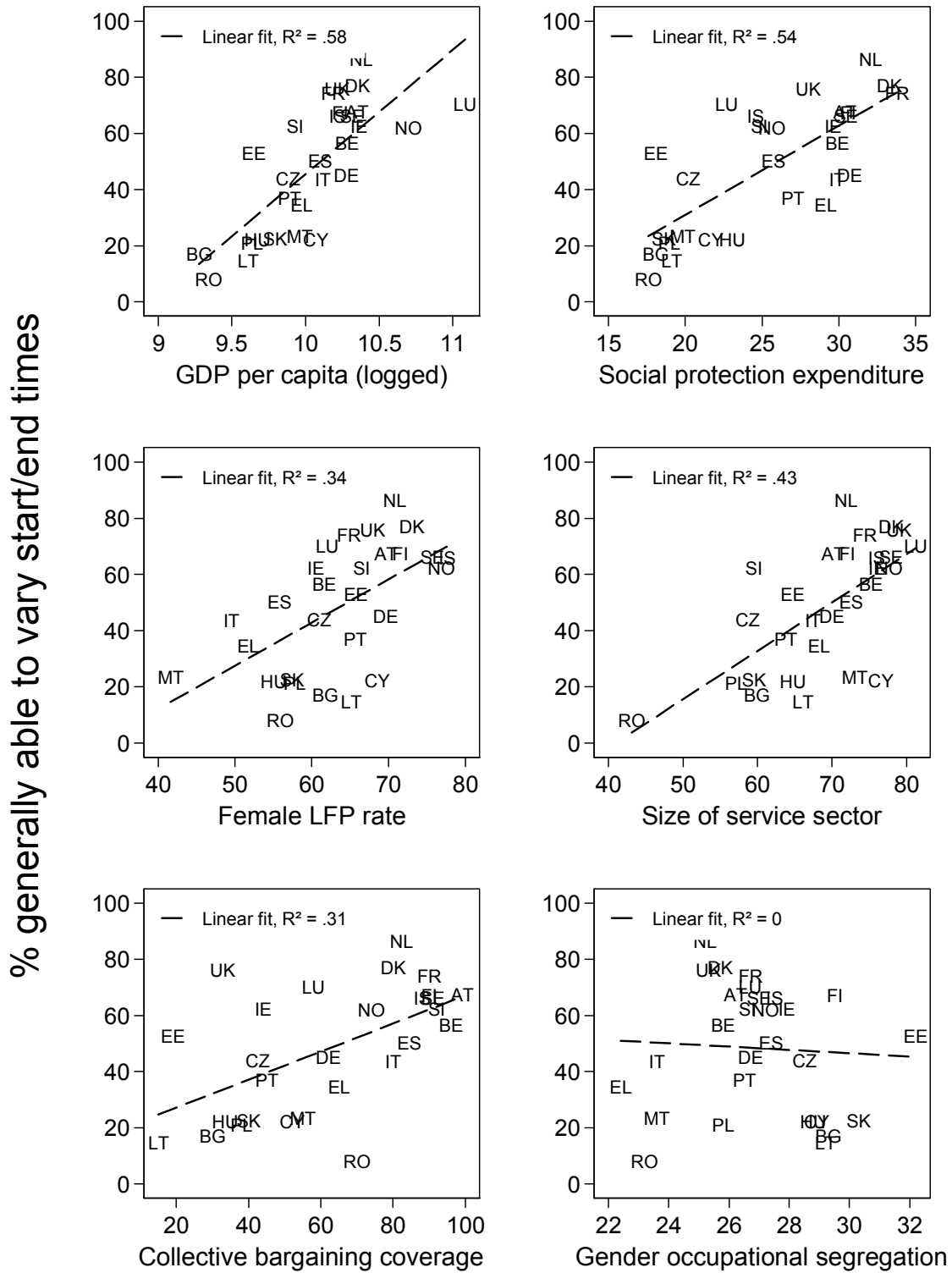
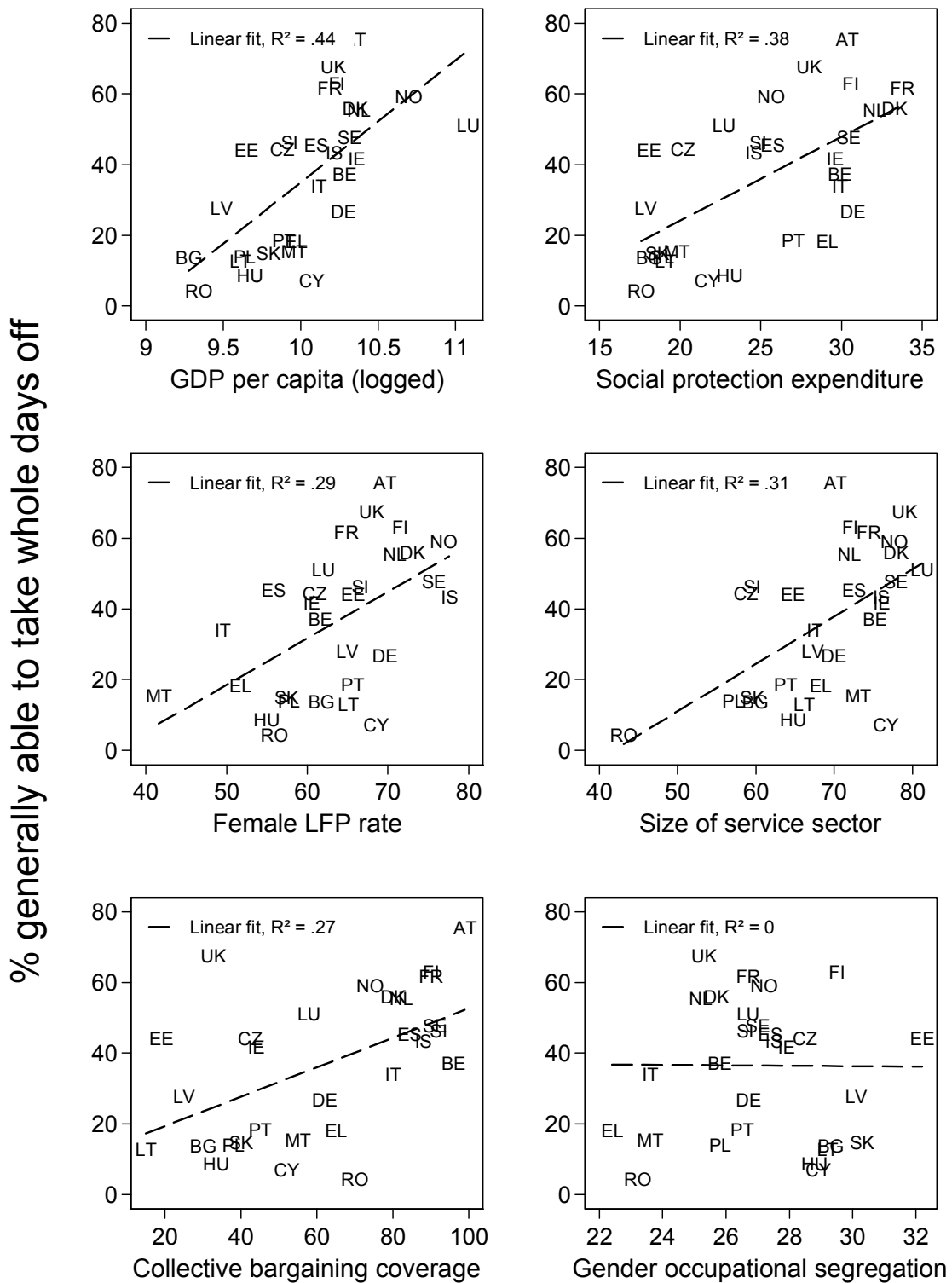


Figure 4: Country differences in the general possibility to take whole days off for family reasons plotted against several country-level indicators



Collective bargaining coverage is an important measure of the strength of trade unions on a labour market, which strengthen the bargaining position of workers for many issues, among them gaining control of their working time (Berg et al. 2004). The lower left-hand panel of Figure 3 shows that this is also the case in our data: the greater the collective bargaining coverage in a country, the greater the prevalence of the general possibility of varying the start/end time of their working day.

Gender occupational segregation is an important indicator of gender inequality on labour markets (Charles & Grusky 2004) and might be associated with less flexible working hours in a country (Cha 2013). The lower right-hand panel of Figure 3 illustrates that there is no relationship between the two indicators on the country level.

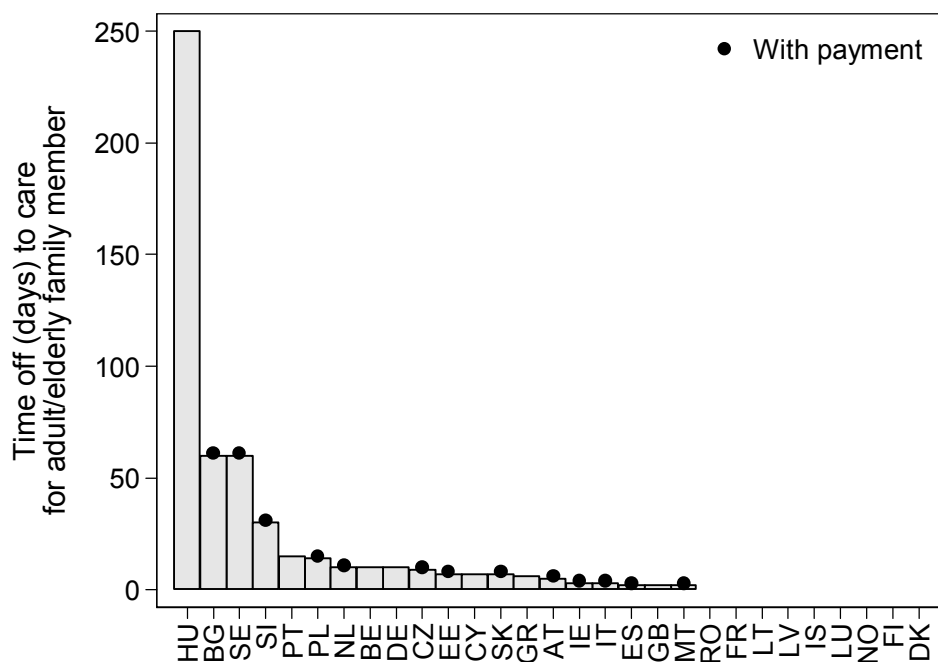
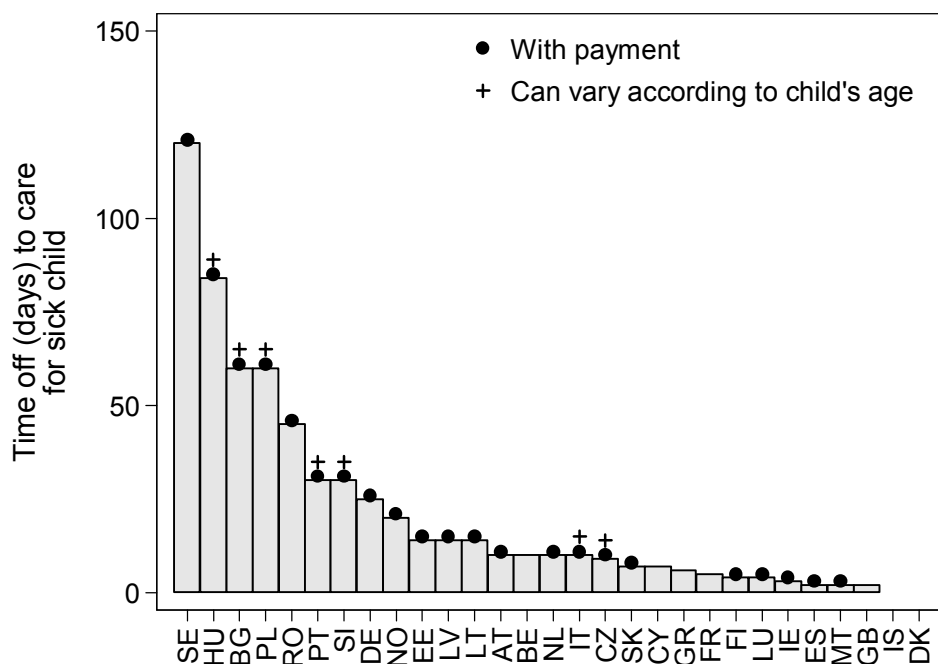
Figure 4 shows the same set of relations for the second indicator of family-related flexible working hours, namely the general **possibility of taking a full day off** for family reasons. Overall, the relations between the prevalence rates of this indicator and the country-level predictors are in the same direction as those with the other indicator, but the size of the associations is somewhat weaker. The relationship with **GDP per capita** is positive: the greater the economic affluence in a country, the greater the prevalence rate of the general possibility of taking an entire day off. An increase with **social protection expenditure** goes along with an increase in the prevalence rate of taking a day off for family reasons. In countries with a higher **female labour force protection rate** the general possibility of taking a whole day off for family reasons is more prevalent. The **size of the service sector** is positively correlated with the prevalence rate of being able to take a day off. The bigger the **collective bargaining coverage** in a country, the greater the likelihood that workers are able to take whole days off for family reasons. For **occupational gender segregation**, there is no relationship to the share of workers who are generally able to take entire days off.

Box 1: National leave legislation

Many countries in Europe provide employees with statutory rights for family reasons. Next to maternity, paternity, and parental leaves (which we will not cover here, as their relationship to flexible working times as analysed in this report will be limited), a number of countries also grant leave periods for workers who need to provide care for sick children and dependent adult/elderly family members. However, the terms and conditions of such leave policies are often complex and vary vastly across countries (Moss & Deven 2006). Among the countries which entitle workers to such leave, some do so either on a paid or unpaid basis, some let the maximum length of the leave depend on the age of children, some distinguish between public sector and private sector workers, some have requirements on the severity of an illness (e.g. only when person receiving care is terminally ill). These complexities create great difficulties for assessing the generosity of leave legislation across countries in a quantitative fashion. Thus, there is not yet an agreed-upon measure established for gauging national leave legislation for cross-national research purposes.

The Council of Europe Family Policy Database (Council of Europe 2009) however, offers a rough quantification of national legislation about leave arrangements as shown in Figure 5. As can be seen from Figure 5, there is substantial variation in the amount of leave that workers across European countries are legally entitled to, from no leave entitlement for parents of sick children in Iceland and Denmark to 120 days in Sweden (upper panel). Most countries entitle those taking up leave for sick children to some form of payment. Hungary has a very generous leave legislation, offering employees extremely long yet unpaid leave. The lower panel of Figure 5 shows that leave entitlements for caring for adult/elderly family members are less prevalent in the EU, with nine countries not offering any leave at all. Also, leave entitlements for those with adult/elderly family members more often are for unpaid rather than paid leave.

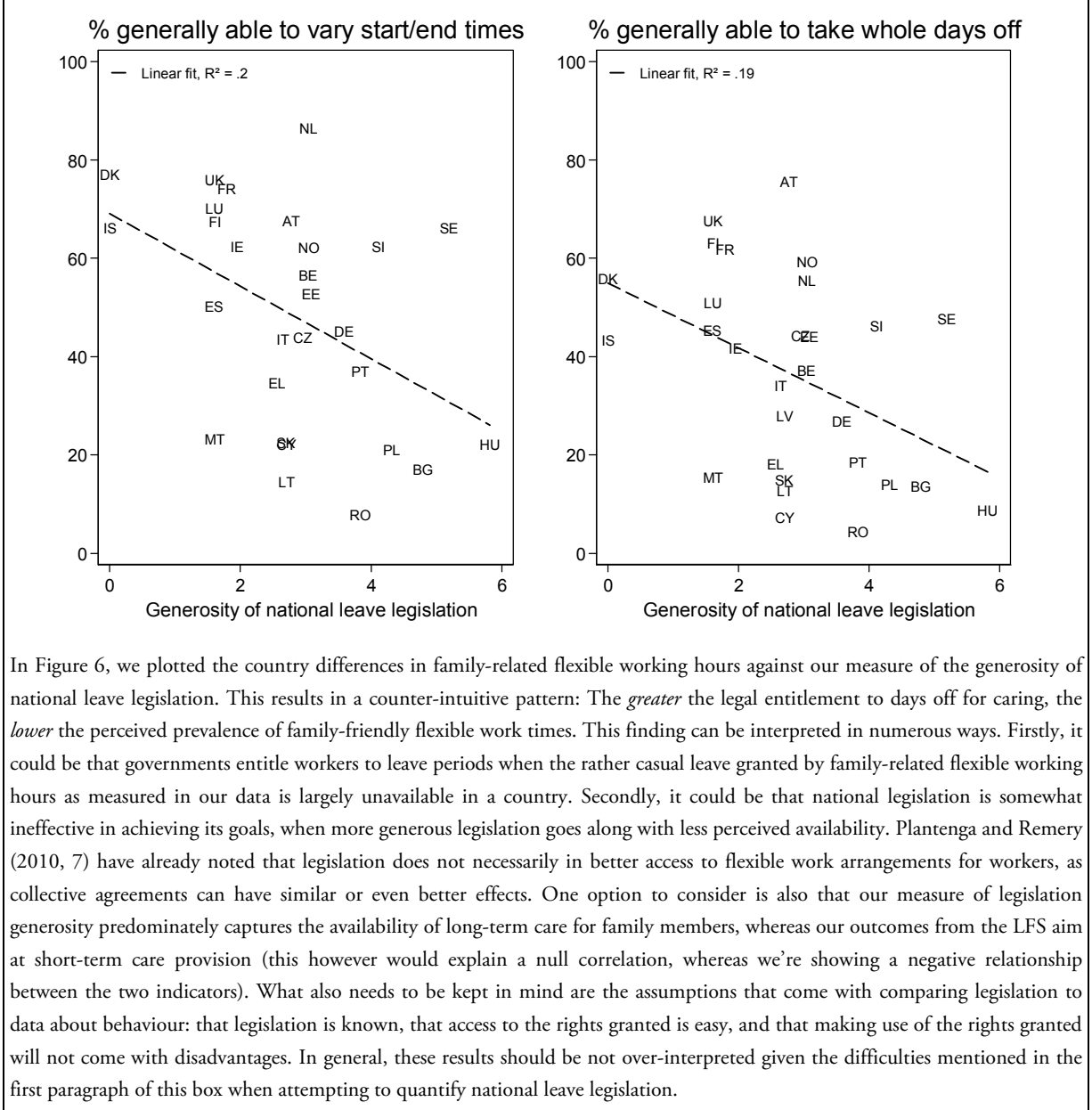
Figure 5: National leave legislation for care for sick children and dependent adult/elderly family members



SOURCE: Council of Europe Family Policy Database, version of 30 April 2009.

We have attempted to create an indicator of the generosity of national leave legislation by adding up both the indicators displayed in Figure 5. In order to pull in outliers (HU, SE) while preserving the overall country order, we took the natural logarithm of said sum.

Figure 6: Country differences in family-related flexible working hours plotted against generosity of national leave legislation



5. Which groups of workers have access to family-related work schedule flexibility?

Figure 7 and Figure 8 give us insights into the question regarding which workers have access to family-related working hours. Box 2 explains what these figures are based on and how they can be interpreted in detail.

The factors that predict the possibility to vary the start/end times of the working day is displayed in Figure 7. With respect to **gender** differences, it can be seen that **women report less access to the option of varying their start/end times of the work day**. This corroborates findings from earlier studies (Golden 2001, 2008; Lyness et al. 2012).

In terms of **age**, a distinct pattern arises: Compared to workers between 30 and 34 years of age, **younger workers report significantly less availability of the possibility of varying their start and/or end times of work for family reasons**. It should be noted at this point that women's mean age at first birth in Europe is between 25 and 29 years (Mills et al. 2011). For the age groups between 35 and 44 years, the availability is somewhat greater; for those between 45 and 59 years there is no difference to the 30 to 34 year-olds. **For workers between 60 and 64 years of age, the reported availability of variable start/end times is the greatest**.

With respect to **marital status**, no statistically significant difference between the groups can be found. **Workers in a household with children between zero and two report slightly greater access to variable start/end times for family reasons** when compared to workers in households without children. When the youngest child in a household is three years or older, there is no significant difference in the odds for accessing varying start or end times compared to workers in childless households.

Lower educated workers report less access to varying start/end times for family reasons. This finding corroborates earlier research (Golden 2001; Lyness et al. 2012; Masso 2013; Ortega 2009). Between medium and highly educated workers no difference can be found. The three different **working hour schemes** marginal part-time (less than 20 hours/week), substantial part-time (20–34 hours/week), and full-time (more than 35 hours/week) do not differ from one another in a statistically significant fashion, i.e. regardless of the working hours, all groups are similarly likely to report being able to vary start/end times for family reasons.

In **small firms** (fewer than ten employees), the reported access to the possibility of varying their start/end times of the work day **is substantially larger than in bigger firms**. This is in line with findings from other studies (Masso 2013; Ortega 2009) and likely due to less rigid structures and greater (informal) control in smaller organisations, which allow giving greater discretion to individual employees.

Workers with **fixed-term contracts** report **significantly less access** to varying start/end times of the working day than their counterparts with unlimited contracts. **Job tenure** is not significantly related to the option of varying the start/end times. **Supervisors** have significantly greater access to variable start and/or end times.

When comparing **occupational groups**, it shows that **skilled manual workers report the least availability of the option to vary start/end times** of the working day for family reasons. Not only workers in skilled, routine service jobs and those in high skilled service report a greater availability, but also those in unskilled jobs do so.

With respect to different **industries**, it shows that workers in agriculture report the greatest access to varying start and/or end times. For workers in industry and construction and different segments of the service sector, no statistically significant differences can be found.

Figure 8 shows the estimates obtained from modelling access to the option of taking a whole day off for family reasons. In important respects, they are identical to those of the model displayed in Figure 7, confirming the robustness of the findings.

Women report significantly less access to the option of taking an entire day off when compared to men. With respect to **age differences**, younger workers (less than 25 years of age) have less access and older workers (60 to 64 years) have greater access to the option of taking whole days off for family reasons. When comparing workers with different **marital statuses**, no significant differences arise.

For workers in **households with children**, we find no significant differences in access to the option to take entire days off. In other words, households with young children are in no way more likely to report access to be able to take a day off for family reasons than households without children.

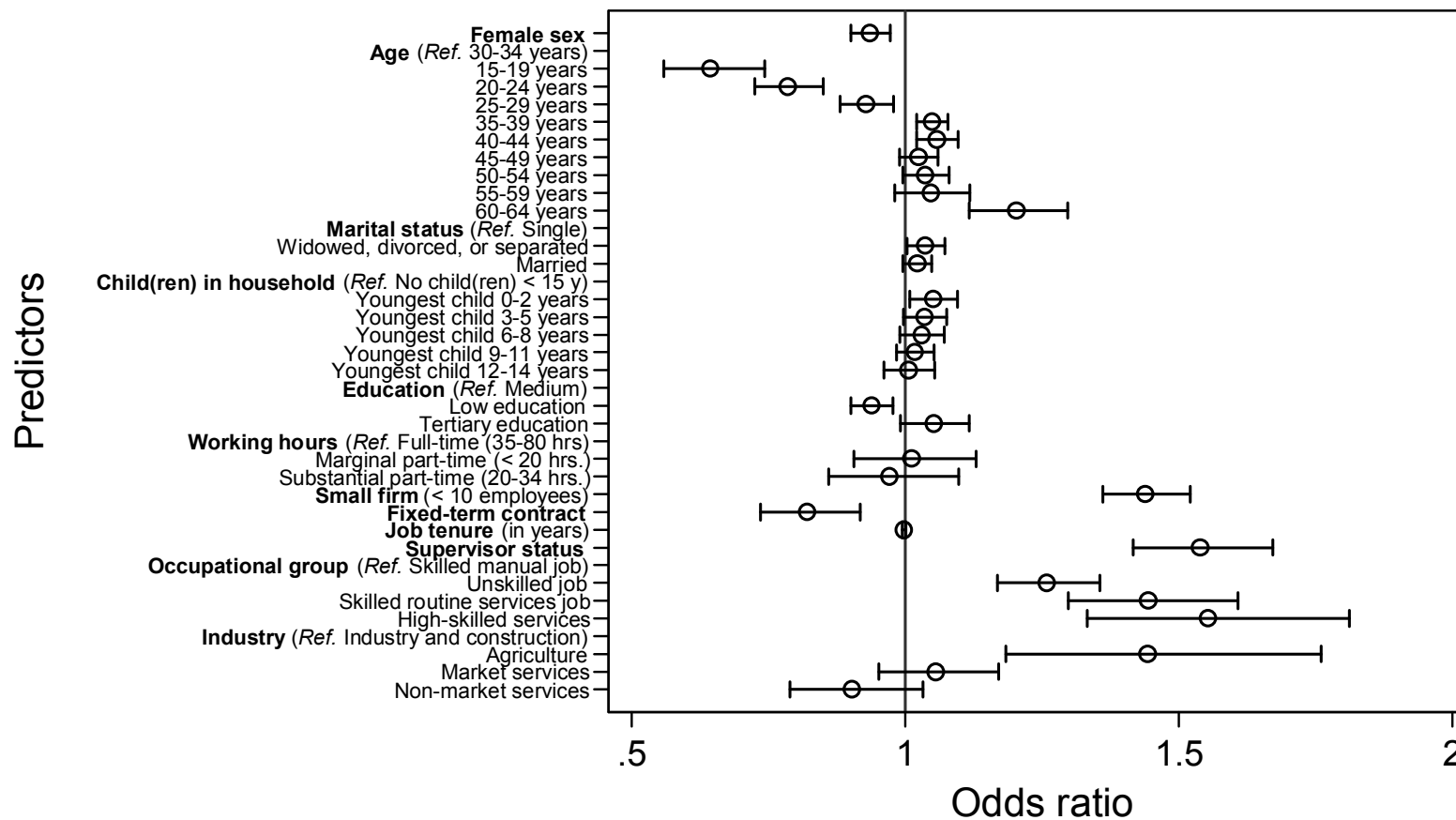
For the different **educational groups**, no differences arise for this form of family-related work schedule flexibility. When comparing **full-time to part-time workers**, it becomes visible that there is no difference between workers on a marginal (less than 20 hours/week) and a full-time (more than 35 hours/week) scheme, however workers with substantial part-time jobs (20 to 35 hours/week) enjoy substantially greater access to taking whole days off for the family. This shows the value of looking at different segments of the part-time workforce: A binary distinction between full-time and part-time workers can cover up important differences in the part-time workforce, as has been shown by earlier research (Beham et al. 2012). Apparently, the group of workers working less than twenty hours per week are as constrained in their work time scheduling when it comes to taking entire days off as full-time workers, whereas workers on part-time schemes putting in more than 20 hours enjoy some additional flexibility when it comes to taking entire days off for family reasons.

Workers in **small firms** (less than ten employees) enjoy greater access to the option of taking a day off for family reasons. Those with **fixed-term contracts** have less access to flexible working hours, and **job tenure** is unrelated to the outcome. **Supervisors**, however, have greater access to the option of taking a day off for family reasons compared to non-supervisors.

When comparing **occupational groups**, skilled manual workers have the least access to taking a day off compared to all other groups, and in terms of industries, workers in agriculture enjoy the greatest flexibility compared to those in industry and construction and the service sector.

Figure 7: Possibility of varying start/end of working day for family reasons regressed on individual-level predictors

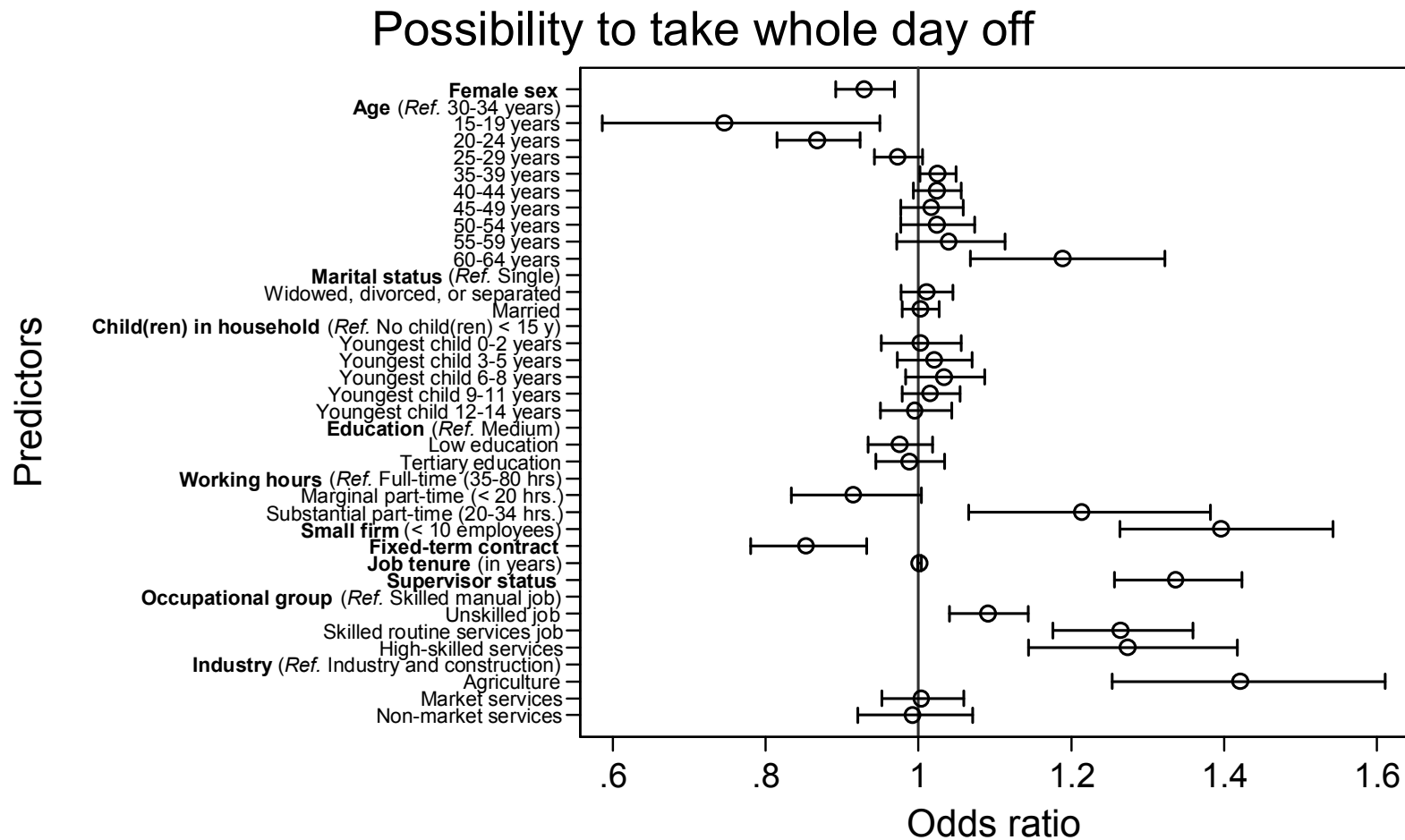
Possibility to vary start/end of working day



SOURCE: EU-LFS AHM 2010, authors' calculations. Nordic countries and LV excluded.

NOTES: Ordered logit regression. 95% CIs adjusted for clustering in countries. Coefficients for country dummies not displayed.

Figure 8: Possibility of taking whole days off for family reasons regressed on individual-level predictors



SOURCE: EU-LFS AHM 2010, authors' calculations. Nordic countries excluded.

NOTES: Ordered logit regression. 95% CIs adjusted for clustering in countries. Coefficients for country dummies not displayed.

Box 2: Empirical strategy and interpretation of results

The results displayed in Figure 7 and Figure 8 were obtained by estimating **ordered logit regression models** using the AHM 2010 data. Ordered logit models (Agresti 2010) are a **state-of-the-art approach** for modelling outcomes that come in discrete yet ordered categories.

Our dependent variables are the two indicators of family related work schedule flexibility, this time making use of the full range of answer categories (1) 'not possible,' (2) 'rarely possible,' and (3) 'generally possible.'

Parameter estimates as obtained from the models are presented as **odds ratios** with 95 per cent confidence intervals, as they offer an intuitive interpretation of the results. For instance, the odds ratio for the supervisor difference displayed in Figure 7 can roughly be interpreted as: The odds of a supervisor having the possibility to vary the start/end time of their work day are 1.54 times higher than the odds for a non-supervisor to have the same possibility. Theoretically, odds ratios range from 0 to infinity, with values below 1 indicating a negative effect and values above 1 indicating a positive effect.

The error bars around the odds ratio point estimates denote **95 per cent confidence intervals**. They account for the fact that we are analysing sample data which always come with a margin of error. Confidence intervals inform about the **range of possible effect sizes compatible with the data**.

If the confidence interval is relatively narrow, the parameter in the population of interest – for instance, the difference between men and women – is known fairly precisely. If it is wider, less is known about the parameter. This often reflects differing group sizes. For instance, the confidence interval around the estimate for supervisors is comparatively large (1.41 to 1.67) as the share of supervisors in our sample is relatively small.

If the confidence interval includes the value of 1 (i.e. it crosses the vertical line on the x-axis), it means that the estimate is statistically not significant from an odds ratio of 1; in other words, we do not know whether there is a real effect in the population or whether this result occurred by chance.

Our confidence intervals also reflect the fact that employees living in the same country are more alike than respondents obtained via a simple random sample; they are based on what is called cluster-robust standard errors.

Of further note is that the estimates presented in the figures are, firstly, **net effects** in the sense that they account for all the other parameters in the model. Thus, the positive effect of being a supervisor on the possibility of varying the start/end time of their working day cannot be due to the fact that supervisors are more likely to work full-time, are better educated, and have longer job tenure, as this is already accounted for in the model. Secondly, the parameters stem from a **country fixed-effects model**. This means that the parameters shown are average parameter estimates across all countries.

6. How can the gender gap in the perceived availability of family-related work schedule flexibility be understood?

In line with earlier research (Glass 1990; Golden 2001; Lyness et al. 2012; Ortega 2009), we were able to identify a gender gap in reported access to family-related working hour flexibility: Although women bear the greater burden of childcare across countries (Craig & Mullan 2011), they appear to have fewer possibilities to make use of family-related work schedule flexibility (Figure 7 and Figure 8). In this section of the report, we will test whether the size and direction of the gender gap are the same across countries and how any variation can be understood.

The upper panels of Figure 9 and Figure 10 show the gender gap in family-related work schedule flexibility across countries. A negative value (i.e. being located on the left-hand side of the axis) indicates that men have greater access to family-related flexible working times across countries; a positive value (being on the right-hand side of the x-axis) denotes that women have greater access. Contrary to what Lyness et al. (2012) found in their analyses, we find that the gender difference in access to flexible work scheduling does vary significantly across countries.³ The male advantage can be as high as 12 percentage points, the female advantage as high as five percentage points.⁴

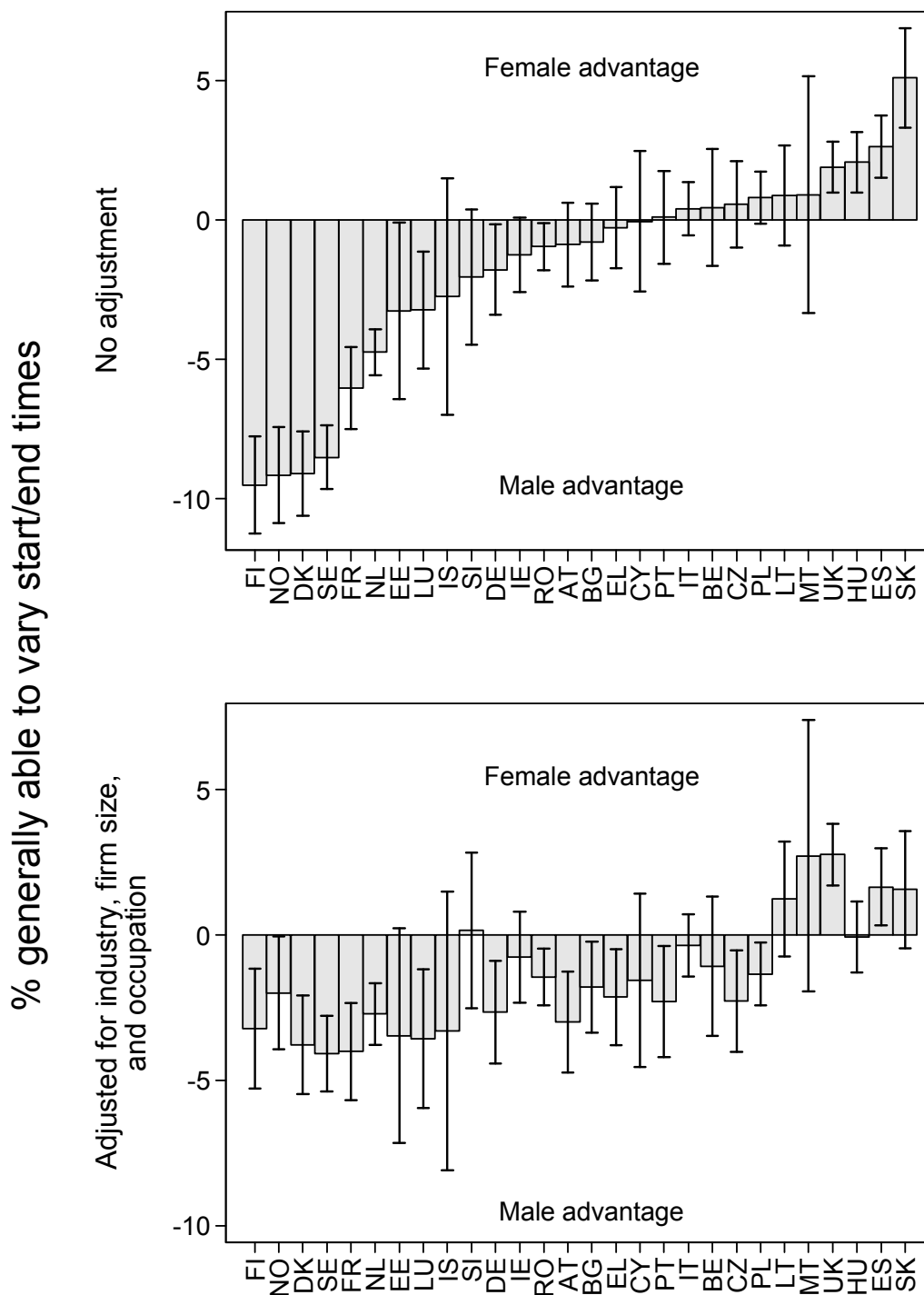
The upper panel of Figure 9 shows **variation in the reported availability of variable start and/or end times for family reasons**. In **Finland, Norway, Denmark, Sweden and France, men enjoy a substantial advantage over women** when it comes to the possibility of varying the start/end times of their working days. Apart from Estonia, the group of countries where men are significantly advantaged are all Western European countries. In the small group of countries where women are advantaged in terms of varying the start/end times of work, the size of the advantage is roughly only as half as large as the advantage that men enjoy in countries where their access is better. The group of countries where women are significantly advantaged is also more heterogeneous, comprising the UK, Hungary, Spain, and the Slovak Republic.

³ The contradicting finding of Lyness et al. (2012) could be due to the comparatively small sample size (about 10,000 workers from 21 countries), a different sample of countries (some Western, non-European countries as well as Russia and Japan were included), or there could have been changes in the gender gap over the last decade (the ISSP data analysed by Lyness stem from 1997).

⁴ Another first finding of note is that the gender gap in the Nordic countries (FI, NO, DK, SE and IS) is in line with the gender gaps shown in Figure 7 and Figure 8, where the Nordic countries had to be excluded due to the lack of household information. This ensures that the female disadvantage in family-related work schedule flexibility is not an artifact of excluding the Nordic countries from that particular analysis.

Differences in the size of the gender gap in the possibility to take whole days off are reported in the upper panel of Figure 10. The overall pattern is similar for this indicator. **Finland, France, Norway, Denmark and Sweden** are the countries with the biggest male advantage, in Italy, the Slovak Republic, Luxembourg, the UK and Belgium the female advantage is biggest, however substantially smaller than the advantage that men enjoy.

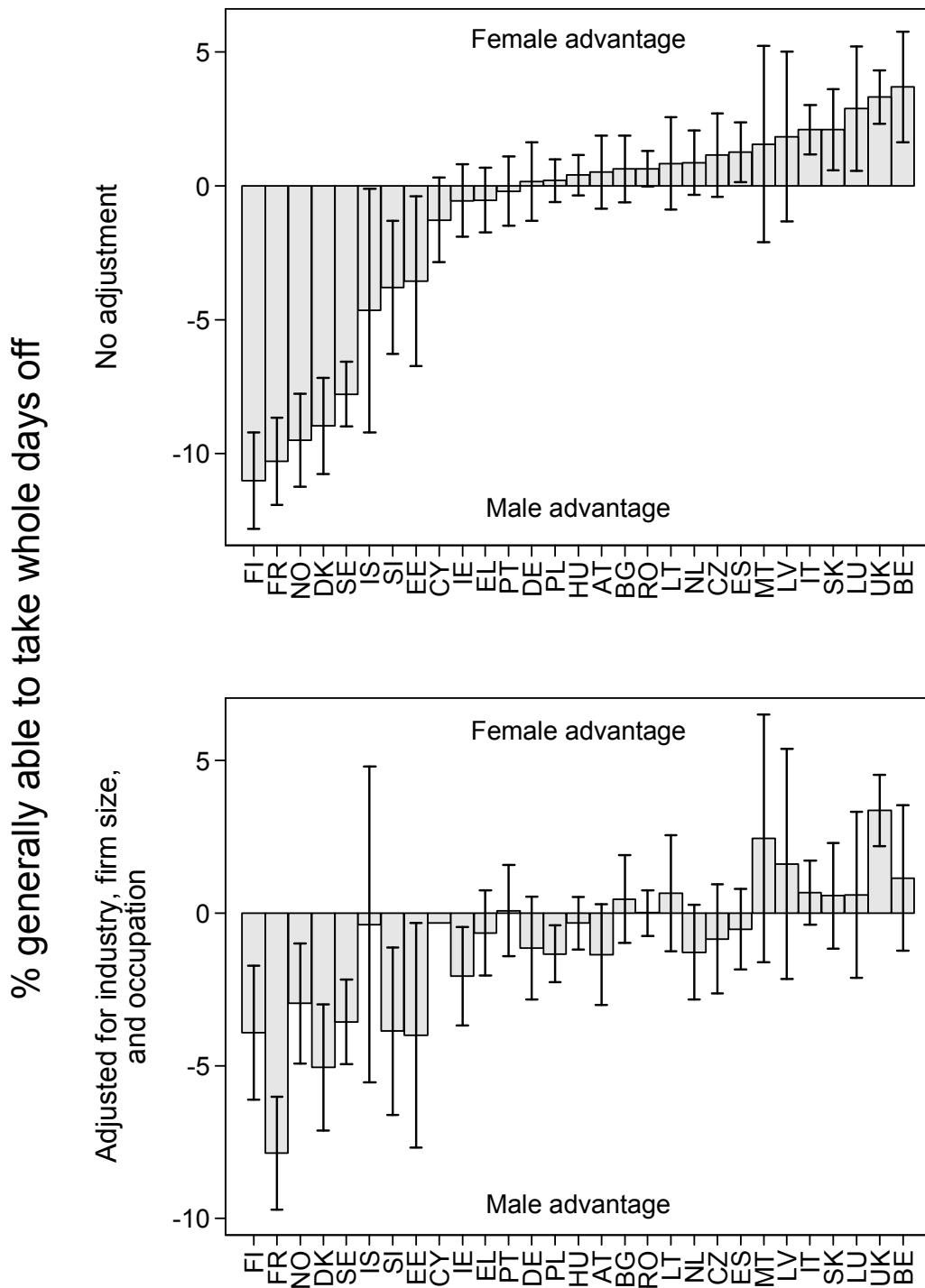
Figure 9: Gender gap in the possibility of varying start/end times of working day across countries



SOURCE: EU-LFS AHM 2010, authors' calculations.

NOTES: Differences in predicted probabilities with 95% CI's as obtained from a multinomial logit model, adjusted for firm size, industry, and occupational structure.

Figure 10: Gender gap in the possibility of taking whole days off across countries



SOURCE: EU-IFS AHM 2010, authors' calculations.

NOTES: Differences in predicted probabilities with 95% CI's obtained from a multinomial logit model, adjusted for firm size, industry, and occupational structure.

Differences in the size of the gender gap can be driven by two sources of variation. Firstly, compositional differences in the labour forces of the countries under study can affect the size of the gender gap. Labour markets vary in their sectoral and occupational structure (Bell 1974; Fourastié 1949; Mau & Verwiebe 2010) and this might be reflected in the levels of access to family-related work schedule flexibility. Another potentially important factor are firm characteristics, and as we have seen in Figure 7 and Figure

8, firm size plays a role in this context. For this reason, we also account for firm size. Secondly, factors operating at the country level might be affecting the size of the gender gap. The question we will be asking here is whether there are still meaningful country differences in the gender gap after taking into account the individual compositional characteristics of the labour market; and, if so, what the differences are associated with (Goldstein 2011; Subramanian et al. 2003).

In the lower panels of Figure 9 and Figure 10, we have adjusted the gender gaps by industries and occupation to account for cross-country differences in firm size as well as the sectoral and occupational structure in the national labour markets. In other words, we are interpolating how the gender gaps would look if all 29 countries had the same occupational and sectoral structure and the same firm size, namely one that is close to the average sectoral and occupational structure as well as firm size of all 29 countries under study. Practically, we have achieved this by fitting multinomial logit regression models for each country sample with gender, firm size, sectoral structure (NACE), and occupational structure (ISCO) in the equation. From these equations we obtained predicted probabilities for the two sexes, and the differences between these predictions along with their 95 per cent confidence intervals are shown in the lower panels of Figure 9 and Figure 10.

The lower panel of Figure 9 shows that **a large share of the gender gap in the possibility of being able to vary the start and end times of the working day can be explained by compositional differences.** The gender gap in countries where men are advantaged is roughly cut by half when accounting for firm size and the occupational and sectoral structure. This shows that a large share of the country differences in the gender gap is due to the fact that men and women work in largely different segments of the labour market, but that this difference in labour force composition varies across countries. By artificially removing this variation between countries, we can determine the extent of the impact of the compositional differences. It shows that the female advantage in some countries can partially be attributed to differences in composition across countries, as the gender gap in Hungary and the Slovak Republic are now insignificantly different from zero. In the UK and Spain the female advantage persists, and in the UK, the female advantage even grows when accounting for labour market differences.

For the **gender gap in access to taking an entire day off** (lower panel of Figure 10), the overall pattern is similar to the other indicator when accounting for the compositional factors. The male advantage is substantially reduced when adjusted for firm size and the sectoral and occupational structure. The generally smaller female advantage becomes statistically insignificant. There are some exceptions to these general statements. In France, the large male advantage is hardly affected by adjusting for compositional factors, and in the UK, the female advantage remains statistically significant from zero when accounting for differences in firm size and the sectoral and occupational structure.

But the size of the **gender gap in flexible working hours can also vary with country-level characteristics.** Figure 11 and Figure 12 plot the gender gaps by country – as shown in the lower panels of Figure 9 and Figure 10 – against the country-level indicators already shown in Figure 3 and Figure 4.

The upper left-hand panel of Figure 11 shows the gender gap in the possibility to vary one's start/end times of the working day scattered against GDP per capita. A modest negative trend arises, indicating that the more affluent a country is, the greater the male advantage in access to variable start/end times. A similar, yet stronger relationship can be found for social protection expenditure (upper right-hand panel), the female labour force participation rate (middle left-hand panel), and collective bargaining coverage

(lower left-hand panel). The greater the social protection expenditure, or the female labour force participation rate, or collective bargaining coverage, the larger the male advantage in terms of access to family-related flexible working hours. A possible explanation for the strong negative association with female labour force participation might be found in the different labour market positions of men and women: across all countries, men tend to hold better jobs with greater authority and longer job tenure; if the share of women on the labour market increases, they are likely in segments of the labour market where job quality and access to flexible work scheduling is lower. For the size of the service sector (middle right-hand panel), and gender occupational segregation (lower left-hand panel), there is no relationship.

Figure 12 shows the same set of relationships for the second indicator of family-related flexible working hours, the general possibility of taking entire days off for family reasons. Here, the general pattern of relations is similar: negative relations to GDP per capita (upper left-hand panel), social protection expenditure (upper right-hand panel), and collective bargaining coverage (lower left-hand panel). No relationships with the size of the service sector (middle right-hand panel) and gender occupational segregation (lower right-hand panel) can be found. The most pronounced negative relationship however exists with the female labour force participation rate (middle left-hand panel), indicating that in countries with a higher female labour force participation rate the male advantage in the reported possibility of taking an entire day off for family reasons is biggest. This confirms the finding for the other indicators. Again, an explanation might be found in the generally better labour market position of men compared to women.

In terms of substantive interpretations, the associations shown in Figure 11 and Figure 12 pose a challenge. Why should the gender gap be bigger in countries where more women are on the labour market? Ortega (2009) has suggested that female labour force participation should have a direct effect on the availability of flexible working times as it creates greater pressure on organisations to accommodate workers' family needs. The link as to why men should be the ones who get greater working time discretion to fulfil family responsibilities, however, remains elusive. This relationship could point to another mismatch in the context of family-related flexible working hours.

Figure 11: Gender gap in the possibility of varying start/end times of working day plotted against several country-level indicators

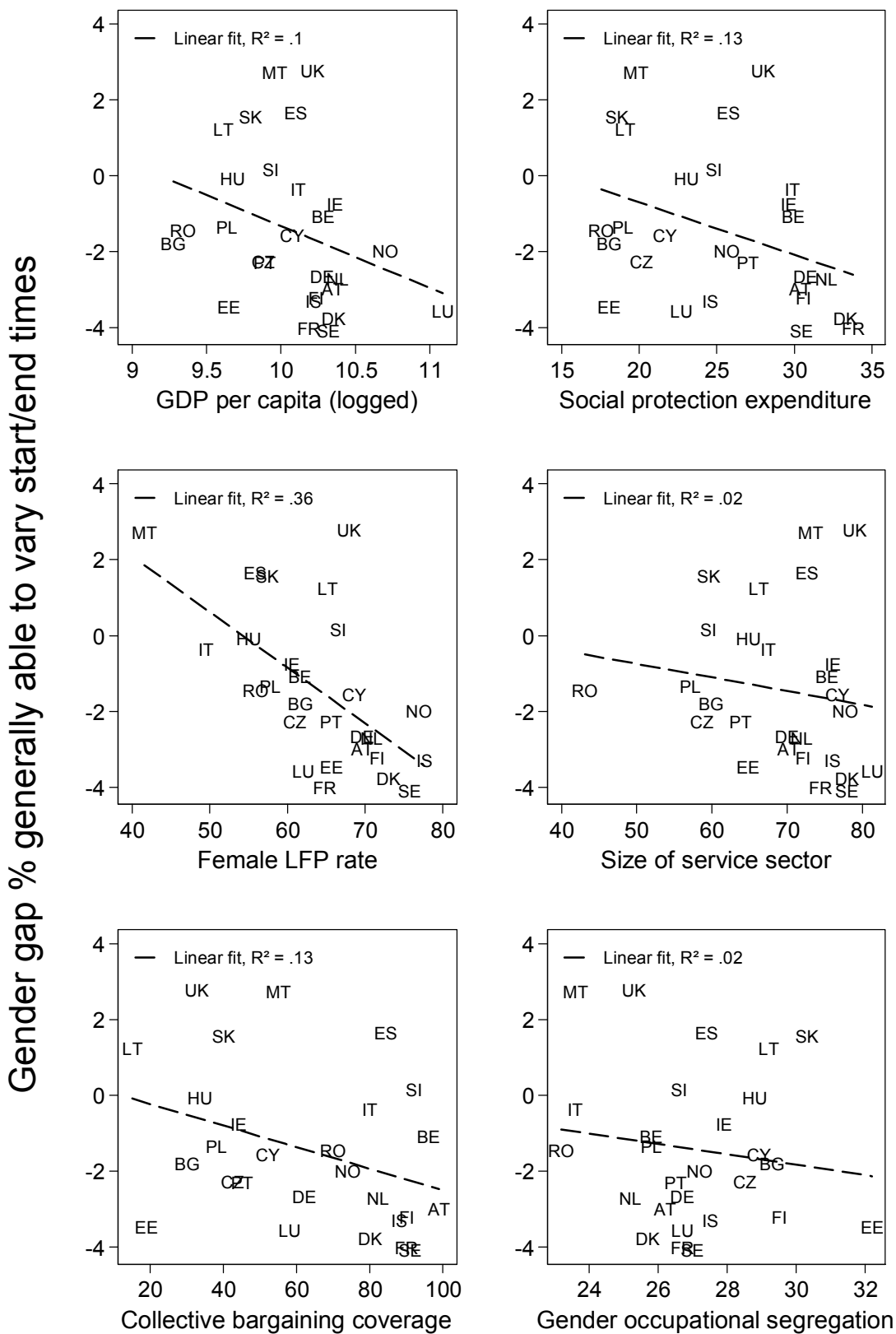
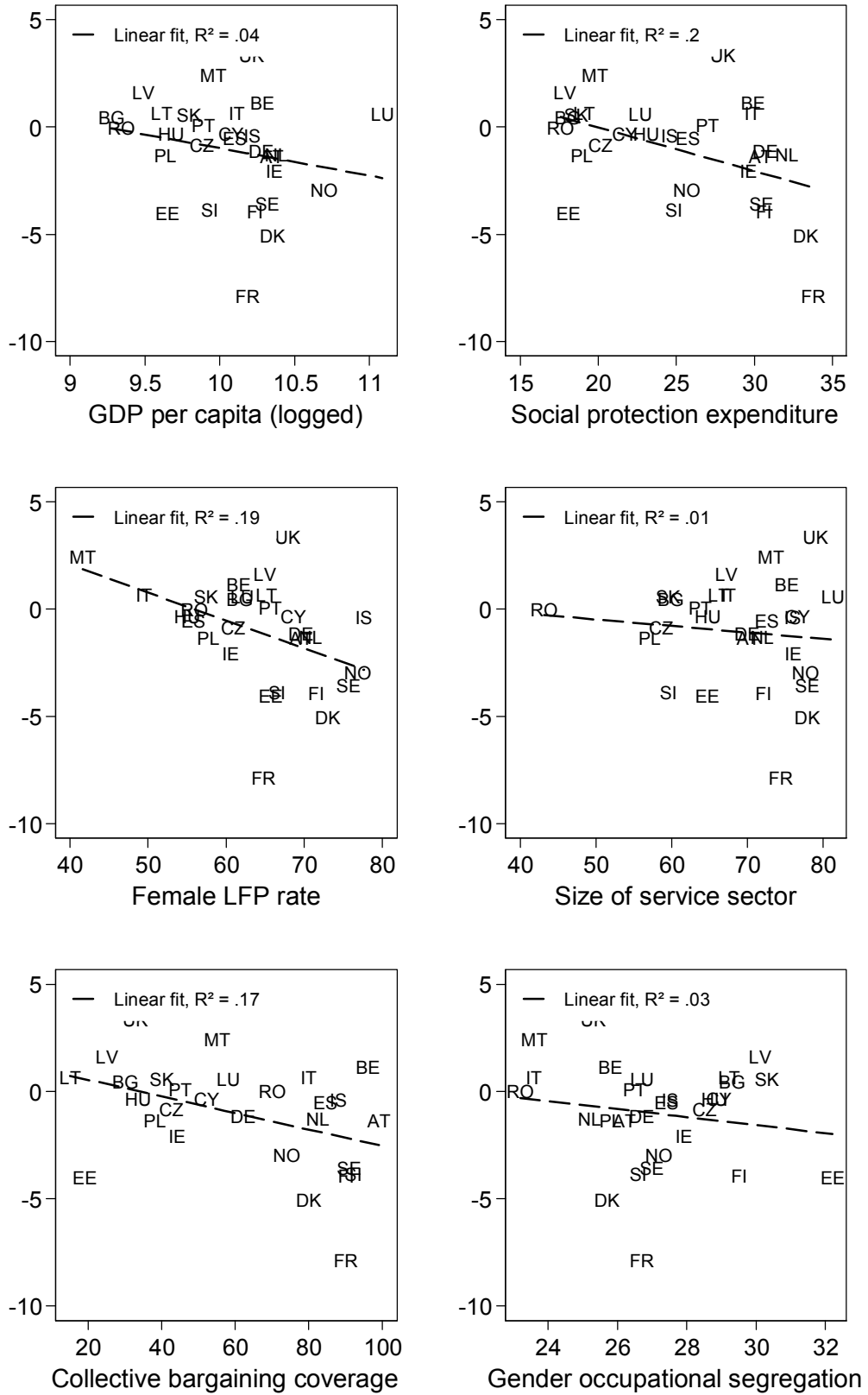


Figure 12: Gender gap in the general possibility of taking whole days off for family reasons plotted against several country-level indicators

Gender gap % generally able to take whole days off



7. Discussion and policy recommendations

This statistical report has illustrated the following key findings:

- There is substantial variation in the reported availability of family-related work schedule flexibility across European countries. For instance, the share of workers who can generally vary the start and/or end times of their work (by at least an hour) for family reasons ranges from less than ten per cent in Romania to more than 80 per cent in the Netherlands.
- The prevalence rate of reported availability of flexible work schedule flexibility across countries is patterned by country characteristics, most prominently GDP per capita. The more affluent a society, the higher the prevalence rate of reported access to family-related work schedule flexibility.
- The access to family-related work schedule flexibility is also patterned for different social groups, indicating several mismatches between the need for family-related hours and the reported availability.
 - Women report substantially less access to family-related work schedule flexibility.
 - Younger workers (under the age of 30) report less access to family-related work schedule flexibility; older workers (over the age of 60) report substantially greater access.
 - Having young children in the household has hardly any effect on the availability of family-related work schedule flexibility.
- There is also evidence for a social gradient in family-related work schedule flexibility, as those who do not have fixed-term contracts, who are better educated, and who have supervisor status report greater availability of flexible arrangements.
- The gender gap in access to flexible working hours varies across countries. Although in the majority of countries men reported greater access to family-related work schedule flexibility, the size of the difference varies, and in some countries (e.g. the UK), women have a slight advantage over men.
- Some of the variation in the gender gap can be attributed to differences in the sectoral and occupational composition of national labour markets, other appears to be negatively correlated with the female labour force participation rate.

Probably the greatest innovation in human resource practices in the last decades has been the proliferation of flexible work practices. This development appears to be highly variable across countries, as the reported availability of family-related work schedule flexibility vary greatly across the 29 countries under study in this report.

Despite the fact that working time flexibility has been suggested as a solution to the mismatches arising between work and family roles for workers (Christensen & Schneider 2011), they do not appear to solve the mismatch. Conversely, there is a mismatch in the sense that those groups who likely have the greatest need for family-related working time flexibility: women, younger workers, those with children, appear to not have more and often even less access to flexible working times.

With respect to the social gradient aspect of family-related flexible work schedules, it should be kept in mind that professional workers are often confronted with what has been termed the ‘stress of higher status’ (Schieman & Glavin 2011), meaning that workers of higher socioeconomic status, though privileged in terms of specific working conditions such as pay, career advancement, and autonomy, are at a disadvantage when it comes to reconciling work and non-work responsibilities and achieve a satisfying level of work-family balance (Beham et al. 2014). This underlines the notion that the link between flexibility in terms of working time and work-family reconciliation might not be a direct one, as for this group of workers greater working time flexibility does not appear to come with the desired outcome of better work-life balance.

Some points should be kept in mind when interpreting the results presented in this report. Our analyses are based on cross-sectional data, making it difficult to disentangle causal directions for the associations shown in the report. Furthermore, our analyses focus on the availability of family-related flexible working times as reported by employees themselves. This does not necessarily correspond to the actual take-up of these working time arrangements.⁵ The reported availability might not correspond to actual take-up. Women might have fewer possibilities, but make better use of them than men. For instance, one study has shown that mothers are more likely than fathers to stay at home when their child is sick even when both parents worked (Maume 2008), as women’s labour supply appears to be more sensitive to work-family obligations, even when both parents are full-time active on the labour market (Maume et al. 2009). Another option might be that men ask less often for an hour or day off for family reasons and are thus more likely to have it granted whereas women ask more frequently and are not being granted leave for family reasons at some point. While being able to assess the actual take-up would be an interesting topic of research, we believe that individuals’ perceptions of availability are also crucial as they are important for structuring individual behaviour, e.g. the decision to have a(nother) child, to put in more or less hours at work, etc.

Another point that should be kept in mind is that despite the plethora of research on flexible working arrangements, their outcomes are still highly disputed. Allen et al. (2013) suggest that any effects of flexible work arrangements might be small in size. Take-up of programs designed to help disadvantaged workers appear to hurt them in the end (Briscoe & Kellogg 2011; Glass 2004; Judiesch & Lyness 1999), as they might send the wrong signals to managers. For instance, Leslie et al. (2012) were able to show that take-up of flexible work practices can constrain career success depending on what motivations managers

⁵ The core module of the EU-LFS provides some indication of actual take-up of work schedule flexibility. While a detailed analysis is beyond the scope of this Short Statistical Report, a brief analysis by Eurostat showed that in Spain, Belgium, Cyprus, Romania and Italy, women are more likely to report that they worked less in the reference week due to special leave for personal and family reasons; in France, Portugal, Sweden, Austria and Iceland a small minority of men was on special leave during the reference week.

assume for take-up. Furthermore, researchers have suggested that there is a general trend in contemporary societies that the boundaries between work and non-work roles are blurring and that work pressures will find ways to penetrate family life, increasing work-family conflict this way. Against this backdrop, authors such as Blair-Loy (2009) have suggested that rigid shifts and inflexible working hours (even when they could in principle accommodate family needs) can become temporal havens in a 24-hour economy, protecting workers from stressful blurring between work and family roles (Schieman et al. 2009).

Based on the review of the literature and the findings of this report, the following policy recommendations appear warranted:

1. Flexible working hours cannot be the sole strategy to foster work-family reconciliation in the European Union.
 - While flexible working hours clearly have the potential to improve work-life balance for workers with families, the evidence that they actually do so is mixed and any reported positive effects are small.
 - The workers who report access to family-related work schedule flexibility are likely the ones who do not need it for reconciling work and family, as employers seem to be granting them to workers based on rank and commitment rather than need.
 - Provisions for formal, full-time childcare seems to be a better mechanism to facilitate labour force participation of women and can help those workers who cannot get access to family-related work schedule flexibility.
2. Facilitating greater collective bargaining coverage and greater social protection expenditures could constitute ways to improve the availability of family-related work schedule flexibility.
 - In countries with greater social protection expenditures and collective bargaining coverage, workers report greater availability of family-related work schedule flexibility.
 - This approach also could have the positive side-effect of mitigating the social gradient that arises in the access to family-related work schedule flexibility. The data show that workers of higher socio-economic status have greater access to flexible work.
 - Tentative evidence presented in Box 1 of this report suggests that a more generous national leave legislation for care of children and older family members does not go along with greater reported access to family-related work schedule flexibility.
3. Incentivising employers to offer flexible working hours to all (not just some) of their employees might be another strategy to improve access to family-related work schedule flexibility.
 - Given the fact that employers are most likely to offer family-related work schedule flexibility to those workers who are unlikely to need them, changes in the incentive structure could improve the access of all workers.

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Technical appendix

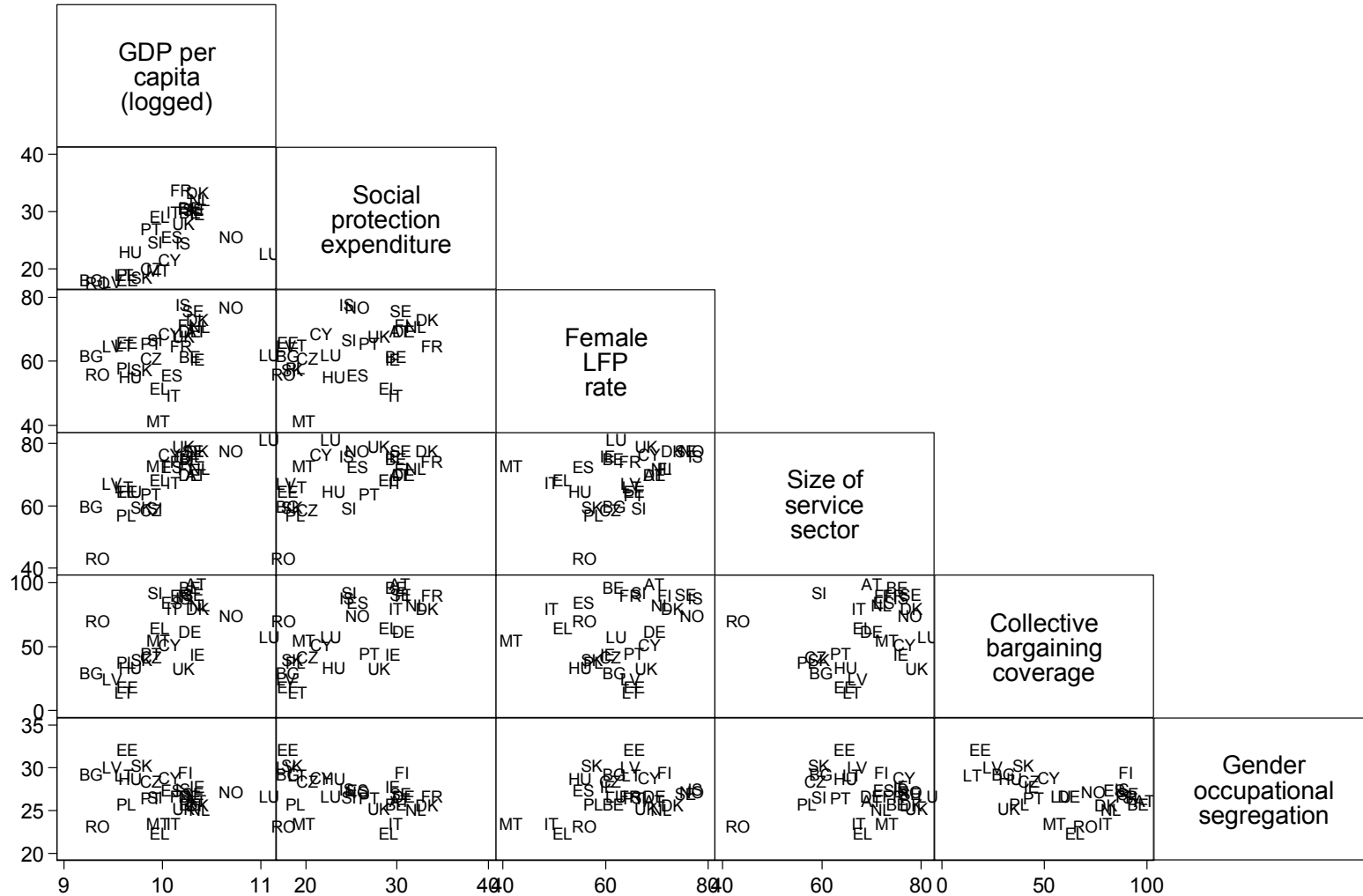
Country-level indicators

Our analyses of the EU-LFS are supplemented with country-level information drawn from other, high quality sources. Table 1 informs about the sources of the indicators, the metric they can be interpreted in, and the reference year. Figure 13 shows the correlations between the country-level indicators in a scatterplot matrix.

Table 1: Country-level indicators

Indicator	Source	Unit	Reference year
GDP per capita	Eurostat database (nama_gdp_c)	Natural logarithm of PPS per inhabitant	2010
Social protection expenditure	Eurostat database (spr_exp_sum)	Percentage of GDP	2010
Female labour force participation (LFP) rate	Eurostat database (lfsi_emp_a)	Percentage of women, 20 to 64 years	2010
Service sector size	Eurostat database (lfsa_egan2)	Percentage of workforce in service sector	2010
Collective bargaining coverage	Visser (2011)	Percentage of employees covered by wage bargaining agreements	2010 or closest year (2009 or 2008)
Occupational gender segregation	Bettio and Verashchagina (2009)	Karmel–MacLachlan (1988) (IP) index: percentage of workforce that would need to change occupation to bring about an even sex distribution among occupations	2007
National leave legislation	Council of Europe (2009)	Natural logarithm of days off to care for a sick child/dependent adult family member	2009

Figure 13: Scatterplot matrix of country-level indicators



Firm size

Information about firm size and whether respondents work in a small firm is assessed with one indicator variable denoting whether a worker is employed in a local unit with up to ten workers (i.e. a small firm) or in one with more than ten workers. The original variable in the EU-LFS data distinguishes between more fine-grained categories:

- 1 to 10 persons
- 11 to 19 persons
- 20 to 49 persons
- 50 persons or more
- do not know but fewer than 11 persons
- do not know but more than 10 persons.

In order to achieve a parsimonious measure of firm size and to effectively include the information from the two ‘do not know’ categories, we collapsed the categories to said dichotomous indicator variable.

Education

Education is based on the *International Standard Classification of Education* (ISCED) of 1997 (UNESCO 2006).

- *Lower education* refers to ISCED levels 0 to 2 plus ISCED 3c (shorter than two years).
- *Medium education* refers to ISCED levels 3 and 4, but excluding ISCED 3c (shorter than two years).
- *High education* refers to ISCED levels 5 and 6.

Occupational groups

Occupational groups were distinguished using a typology as presented by Mau and Verwiebe (2010), based on the *International Standard Classification of Occupations* (ISCO 88 COM).

- *High-skilled services* comprise the ISCO main groups 1 and 2
- *Skilled, routine services* comprise the ISCO main groups 3 to 5
- *Skilled manual job* comprise the ISCO main groups 6 to 8
- *Unskilled jobs* are the ISCO main group 9.

Industries

Industries were distinguished according to the Rev. 2 of the *Nomenclature statistique des activités économiques dans la Communauté européenne* (NACE), the European classification system of economic activities.

- *Agriculture* (section A) comprises agriculture, forestry, and fishing.

- *Industry and construction* (sections B to F) comprise mining and quarrying; manufacturing, electricity, gas, steam, and air conditioning supply; water supply, sewerage and waste management; and construction.
- *Market services* (sections G to N) comprise wholesale and retail trade; transportation; accommodation and food service activities; communication; financial and insurance activities; real estate activities; professional, scientific, and technical activities; administrative and support service activities.
- *Mainly non-market services* (section O-U) comprise public administration; education; health; arts, entertainment, and recreation; other services activities; activities of households as employers; activities of extraterritorial organisations.