



## Employee representation and flexible working time☆

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# Employee Representation and Flexible Working Time\*

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## Abstract

This paper provides evidence on the effect of employee representation on working-time flexibility in private-sector European establishments. A 2002 European Union directive granted information, consultation and representation rights to employees on a range of key business, employment and work organization issues beyond a certain firm size. We exploit the quasi-experimental variation in employee representation introduced by the implementation of the Directive in four countries (Cyprus, Ireland, Poland and the UK) with no previous legislation on the subject. The empirical analysis is based on repeated cross-section establishment-level data from the last three rounds of the European Company Survey. Difference-in-difference estimates suggest that the Directive had a positive and significant effect on both employee representation and the utilisation of flexible working-time arrangements for eligible establishments. Interestingly, the relaxation of shareholders' property rights and the limits imposed on managerial discretion as a result of the operation of employee representation seem necessary to achieve certain valuable forms of organizational flexibility in market economies.

**Keywords:** employee representation, flexible working time, difference in difference

**JEL Codes:** D23, J22, J50

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## I. INTRODUCTION

The ability of organizations to adapt rapidly to a changing environment is a critical success factor in competitive markets (see for instance, Stigler, 1939; Hannan and Freeman, 1984; Volberda, 1996). The apparent lack of microeconomic flexibility has been a pressing concern for European countries, particularly in the recent recessionary context. European labour market institutions are often blamed for restricting the ability of firms, and of the economy, to respond to shocks smoothly. Recent survey evidence shows that the bulk of firms' adjustments to cope with shocks has primarily rested on employment rather than along other margins, such as wages and hours (Bertola, et al, 2012; Fabiani et al, 2015). While wage-setting institutions have captured most of the attention in this debate, this paper focuses on the role played by collective voice mechanisms at the workplace level. Yet employee representation may allow more efficient contractual arrangements by allowing firm adjustments to take into account employee preferences over hours, wage and employment trade-offs.

Employee representation, such as trade union representation or works councils, affects the distribution of decision rights and information between managers and workers, and therefore work organization, at the establishment level.<sup>2</sup> The presence of employee representation structures may oblige firms to disclose financial information and may impose specific procedures on how to implement certain decisions and major organizational changes.

It may be thought that employee representation erodes organizational flexibility by imposing time-consuming consultation and decision-making processes, thus limiting the ability of firms to respond to market signals quickly. In this paper, we study whether or not this

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<sup>2</sup> We use the term "employee representation" to mean a formal mechanism that allows workers to have a voice in managerial decisions at the workplace level. This may take different forms, including not only works councils and union representatives, but also joint consultative committees and other "institutionalized bodies for representative communication" between a single employer and employees of a single establishment or enterprise (Rogers and Streeck 1995).

presumption is empirically grounded by focusing on the effect of employee representation on an important operational dimension of organizational flexibility--working-time flexibility. By allowing firms to smooth working hours according to workload variations, flexible working-time arrangements, such as flexitime and working-time accounts, may provide an alternative adjustment mechanism to cope with shocks. Flexitime allows employees to vary workday start and finish times and working-time accounts compensate overtime with days off. Employers may benefit from implementing such arrangements in different ways. For example, working-time accounts can provide a cost-effective adaptation of employment to demand changes, by reducing overtime bonuses and the costs of recruiting and training temporary workers. From the employee's perspective, flexible working-time arrangements may provide greater job security and promote a better work-life balance, by allowing employees to vary their working times according to personal needs (Seifert, 2001; Herzog-Stein and Zapf, 2014).<sup>3</sup> We examine whether European legal provisions establishing employee representation rights and requiring firms to inform and consult employees have resulted in increased employee representation, and whether this is associated with a greater use of flexitime and working-time accounts. We also explore the extent to which the changes observed are associated with differences in firms' employment responses and employee motivation problems, and whether effects vary with the level at which pay bargaining takes place and with workforce composition.

Identifying the causal effect of employee representation, and more generally, of work organization, is methodologically troublesome (DiNardo and Lee, 2004; Bloom and van Reenen, 2011). Ideally, one would require exogenous variations in the presence of employee

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<sup>3</sup> Adapting working hours to workload variations and reconciling work obligations with workers' personal life appear to be the main reasons given by both managers and employee representatives for implementing such schemes (Riedmann, 2006). Interestingly, the fact that Germany did not experience a sharp increase in unemployment as other developed countries did during the Great Recession--the so-called German labour market miracle--has been partly attributed to the widespread use of flexible working-time schemes (Burda and Hunt, 2011).

representation at the workplace level. In this paper, we exploit the quasi-experimental variation introduced by the implementation of a 2002 European Union (EU) Directive granting employees information and consultation rights beyond a certain firm size. The Directive 2002/14/EC on the Information and Consultation of Employees provides employees with minimum statutory rights to be informed and consulted by their employers on a range of key business, employment and work organization and restructuring issues (Hall, 2005). We focus on four countries (Cyprus, Ireland, Poland and the UK) in which the implementation (“transposition”) of the Directive implied major changes in national legislation.<sup>4</sup> The size-contingent nature of the Directive, which applies to firms employing 50 employees or more, creates quasi-experimental conditions. This setting allows us to use a difference-in-difference (DID) approach to compare the responses of eligible and non-eligible establishments. To conduct our empirical analysis, we rely on repeated-cross sectional establishment-level data from the European Company Survey. One major advantage of this survey is that it provides harmonized information on employee representation and working-time arrangements before and after the transposition of the Directive.

Our results suggest that the Directive had a positive and significant effect on both the presence of employee representation and the utilisation of flexible working-time arrangements in eligible establishments. More precisely, the proportion of establishments with employee representation among those establishments affected by the Directive increases by 7 percentage points compared to the control group over the reform period. Furthermore, the utilisation of working-time accounts in the establishments affected by the Directive (the treatment establishments) increases by 5 percentage points compared to control establishments in the same period. In relation to the pre-reform situation, the magnitude of these effects is sizeable,

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<sup>4</sup> The implementation of a European Directive involves ensuring its provisions are transposed into national legislation.

representing increases of 32% and 34% respectively. Interestingly, the effect of employee representation on flexible working-time schemes is driven by establishments where no local wage bargaining takes place and those with a high proportion of female workers. Employee representation appears to play an important role in aggregating and communicating preferences for temporal flexibility, which are often thought to be stronger in the case of female employees (Goldin, 2014). The validity of our identification strategy is robust to a series of placebo tests in which we arbitrarily manipulate the size threshold and the pre-policy and post-policy periods. The results are not confounded with compositional changes of treatment and control groups over time. Moreover, our findings do not seem to reflect long-run differential trends in the utilisation of flexible working-time arrangements between affected and unaffected firms. Finally, we exploit additional variation provided by establishments located in countries in which the Directive implied either minor or no legislative changes and estimate a triple-difference (DDD) model, reaching similar conclusions.

Our results are consistent with the idea that employee voice may foster flexibility along other margins of adjustment (hours) than employment in second-best scenarios in which incomplete contracting problems are pervasive. Employee representation implements a change in property relations by transferring partial control rights to employees or at least precluding shareholders (and managers) from making decisions in relation to certain matters without informing employees. Interestingly, the relaxation of shareholders' property rights and the limits imposed on managerial discretion as a result of the operation of employee voice mechanisms seem necessary to achieve certain valuable forms of organizational flexibility.

The paper adds to the literature on shop-floor employee representation and works councils. Previous research has mainly focused on the German case, exploring the effects of representation on productivity (Addison et al, 2004), investment (Addison et al, 2007),

employment (Addison and Teixeira, 2006; Jirjahn, 2010), and wages (Addison et al, 2007).<sup>5</sup> More recently, the role played by shop-floor employee representation in major European economies, particularly during the financial crisis of 2008-2009, has received increased scholarly attention (Askenazy et al, 2016; Amossé et al, 2016). Our paper relates to the literature on the economic effects of unionization (DiNardo and Lee, 2004), including a relatively smaller literature on the effects of employee representation on nonwage aspects of work (Buchmueller, DiNardo, and Valletta, 2004). Evidence about the relationship between employee representation and working-time flexibility is scant and mostly based on case studies (Berg et al, 2014; Herzog-Stein and Zapf, 2014).<sup>6</sup> In a study more closely related to ours, Heywood and Jirjahn (2009) analyse the relationship (also restricted to the German context) between works councils and family-friendly workplace practices, finding that the presence of works councils positively affects the use of flexible work schedules. Due to the lack of exogenous variation in employee representation structures, the proper identification of causal effects has been a major concern about these studies.<sup>7</sup> By taking advantage of the quasi-experimental setting created by the implementation of the Directive, we provide for the first time causal evidence on the effect of employee representation on working-time flexibility.

The paper also contributes to the literature on working-time flexibility. While previous research has mainly focused on technology as a key driver of flexible working-time utilisation, we highlight the role played by an important labour market institution--employee representation--in mitigating the kind of commitment problems that may undermine the implementation of such practices. Recent studies have suggested that working-time flexibility

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<sup>5</sup> Other studies have analysed the effects of board-level employee representation on employment (Gregorič and Rapp, 2019), innovation (Kraft et al, 2011; Belloc, 2019), productivity (FitzRoy and Kraft, 2005) and corporate market value (Gorton & Schmid, 2004).

<sup>6</sup> The use and impacts of flexible working-time practices have received attention in sociological research (see for instance, Chung and Tijdens, 2013).

<sup>7</sup> Addison et al (2004) discuss major identification challenges in the empirical literature on works councils.

has a positive effect on firm productivity (Bloom et al, 2015; Beckmann, 2016) and promotes convergence in pay between genders (Goldin, 2014; Goldin and Katz, 2016). Our results suggest that employee representation may affect the gender pay gap through this interesting yet underexplored institutional channel.

The paper is structured as follows. Section II discusses the main hypotheses concerning the effect of employee representation on the utilization of flexible working-time arrangements. Section III gives background information on employee representation in Europe and describes the data. Section IV explains the identification strategy based on the size-contingent implementation of the EU Directive on Employee Information and Consultation. Section V presents the main results. Section VI provides evidence on heterogeneous effects depending on establishments' workforce composition (in terms of gender and skills) and on whether or not wages are negotiated locally. Section VII discusses our main identification assumptions and provides some robustness checks. Section VIII concludes.

## **II. EMPLOYEE VOICE AND FLEXIBLE WORKING TIME: RATIONALE AND HYPOTHESES**

Our focus on flexible working time is justified on theoretical and practical grounds. First, as discussed in the introduction, the potential link between working-time flexibility and employee representation is a relatively under-researched topic in the literature. Then, the Directive 2002/14/EC explicitly includes “information and consultation on decisions likely to lead to substantial changes in work organisation or in contractual relations”. A change in working-time arrangements is a typical example of organizational change. Finally, after “occupational health and safety”, “working-time arrangements” is the area in which employee representatives perceive to exert more influence at the workplace level (Eurofound, 2015: p.107).



The perception of employee representatives should not come as a surprise once the incomplete contracting problem surrounding the implementation of flexible working-time schemes is properly acknowledged. While working time on a fixed basis is easily contractible, working-time flexibility may not be. Two separate issues arise in this context. At the negotiation stage, it might be costly to write and agree on individual contracts specifying very detailed rules about how and when working time can be varied and rights over time credits/debits can be exercised by the parties.<sup>8</sup> After the contract has been agreed upon, the specialized knowledge required to enforce highly idiosyncratic workplace-level contractual provisions may not be available to third parties.<sup>9</sup> As a consequence, employers may behave in an opportunistic manner ex post and renege on their promise to compensate overtime with time-off. Employees may end up performing unpaid overtime hours, as the employer can always argue that employees' claims are not compatible with current company operational needs. In this context, employee representation may facilitate the introduction of flexible working-time arrangements by improving communication and information flows between the parties and protecting workers against the potential opportunistic manipulation of working-time schedules.<sup>10</sup>

Therefore, we expect the presence of an employee representation structure to exert a positive effect on the utilization of flexible working-time schemes at the workplace level. Our argument follows from the idea that employee voice may foster microeconomic flexibility along other margins of adjustment (hours) than employment in second-best scenarios in which incomplete contracting problems are pervasive and allow for more efficient contracting (see

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<sup>8</sup> Flexible working-time can be understood as a state-contingent contract (see, for instance, Malcomson, 1983).

<sup>9</sup> The application of third party arbitration procedures to managerial policy issues, such as the administration of flexible working-time schedules, might be prohibitively costly or unfeasible. This is exemplified by the so-called Business Judgment Rules in common law countries which have usually made courts reluctant to enforce contracts between parties within the same firm (Aoki, 1984; Bolton and Dewatripont, 2011; Aghion et al, 2014).

<sup>10</sup> Incomplete contracting may be especially problematic with provisions permitting employees to make up for overtime work by taking time off. While flexitime has been used for at least a century, working-time accounts are relatively recent, so that practices may still be evolving.

for instance, Freeman and Medoff, 1984; Hogan, 2001; Jacobsen and Skillman, 2004; Addison, 2015).<sup>11</sup>

We also expect the effect of employee representation on flexible working time to vary with firm characteristics. First, we consider the interplay between shop-floor representation and wage-setting institutions. It has been argued that by giving workers more power in enterprises employee voice would affect both the size and the distribution of the joint organizational surplus. In addition, employee representation structures may work better in situations where pay is determined outside the enterprise, as for example with industry-level collective bargaining. This separation decouples the factors that affect the division of the surplus from those that affect its size, which limits the scope for rent-seeking activities in negotiations over surplus distribution (Freeman and Lazaar, 1995). Based on a compensating differentials framework, one may argue that the wage rate determined at the establishment level implicitly takes into account workers' preferences for different workplace amenities, including flexible working time. By contrast, when wages are negotiated at the industry-level, one would expect a shift in the local bargaining agenda towards issues such as fringe benefits and working conditions. Local management may also be keen on negotiating some local arrangements if pay is determined at a different level. Therefore, we hypothesise that employee representation at the enterprise level promotes working-time flexibility arrangements, particularly in settings in which wages are negotiated at the sectoral rather than at the company level.

The effect of employee representation may also vary depending on the gender and skills composition of the workforce. As women still disproportionately face the double burden of market and household work, they may demand working-time flexibility more strongly, or may

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<sup>11</sup> Flexible working-time arrangements may thus improve the efficiency of workplace-level equilibria (McDonald and Solow, 1981). It is well-known that bargaining fails to achieve first-best outcomes when information is not symmetric and contracts are difficult to enforce (Farrell, 1987; Pencavel, 1984). While the efficient bargaining literature emphasizes the rent-seeking/bargaining role of employee representation (particularly through unions), our argument highlights its informational/agreement enforcement role.

be thought to do so by the local unions and management. It is then natural to think that employee representation structures may serve to aggregate and communicate such preferences to management more effectively if the proportion of women among employees is sufficiently high (Heywood and Jirjahn, 2009). In addition, it has also been argued that the role of employee representation would be particularly relevant in firms that need to rely heavily on human capital investments (Aoki, 1984; Gregoric and Rapp, 2019).<sup>12</sup> Such investments can be highly firm-specific, making employees vulnerable to ex-post expropriation. We conjecture that the presence of employee representation fosters the provision of working-time flexibility schemes particularly in firms with a high share of skilled workers.

### III. INSTITUTIONS AND DATA

#### *III.1 Employee representation structures in Europe*

Formal employee representation has a long tradition in European countries. While wage negotiations are carried out by trade unions at the national, sectoral or firm levels, employee representatives at the workplace level are involved in employment-related matters such as major organizational changes, training, working-time schedules, and working conditions. As shown in Figure I, there is a considerable and persistent degree of heterogeneity in the incidence of employee representation structures in EU21 countries.<sup>13</sup>

**[Place Figure I about here]**

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<sup>12</sup> Bloom et al (2010) find that the shares of both female and skilled workers are positively correlated with the adoption of family-friendly workplace practices.

<sup>13</sup> This includes the former 15 “old” member states (*Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom*) plus six of the 10 new Member States which joined the European Union in 2004 (*Czech Republic, Cyprus, Latvia, Hungary, Poland and Slovenia*). As we explain below, we restrict the analysis to this group of countries due to data availability.

Rules governing the adoption and operation of such shop-floor structures markedly vary across countries, for example regarding size thresholds and trigger procedures. In some countries, a single channel of representation predominates (either trade union representatives or works councils). Other countries are characterized by dual-channel representation in which both institutions are present.<sup>14</sup> Employee representatives of both types usually negotiate at the establishment level on issues delegated from the sectoral level, and have rights to information and consultation (e.g., on mass redundancies and major restructuring plans, financial information, etc.). European countries also differ in the extent of shop-floor employee representation rights. In some cases, the legislation just confers information and consultation rights to employees or their representatives. In other cases, employee representatives also have codetermination rights, in the sense that management cannot make decisions over certain matters without their agreement. An important issue is whether or not workplace-level employee representatives are allowed to bargain over wages. Workplace union representatives often negotiate over wages in countries like the UK and France. In Germany and in other countries, there are legal limits on the authority of works councils. For example, they cannot call strikes and cannot formally engage in wage negotiations unless expressly authorised to do so by the relevant industry-level collective bargaining agreement. This has been seen as a positive feature of the German institutional design as it allows to decouple the factors that affect the division of the organizational surplus from those that affect the surplus itself, avoiding potential perverse effects associated with two-tier bargaining systems (Freeman and Lazaar, 1995; Boeri, 2015).

In recent years, the European Directive 2002/14/EC on the Information and Consultation of Employees has been an important legislative innovation in relation to employee

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<sup>14</sup> Employee members of works councils may be elected from candidates nominated by trade unions, but are in principle distinct from trade union representatives.

representation. The Directive provides a minimum common statutory framework for informing and consulting employees' representatives in three specific areas: i) the current economic situation and probable development of the firm/establishment, ii) the current situation and future employment prospects (including any anticipatory measures envisaged when there is a threat to employment), iii) substantial changes in work organization or in contractual relations (Directive 2002/14/EU). The Directive sets up a broad framework and allows member states an important degree of flexibility regarding concrete arrangements. Implementation has varied across EU member states, depending on pre-existing national legislation on the subject. As we explain below, we exploit the differential impact of the Directive across establishments of different sizes as an exogenous source of variation in the presence of employee representation.

### *III.2 Data*

We test our hypothesis using repeated cross-section data from the last three waves of the European Company Survey (ECS 2004, 2009, 2013).<sup>15</sup> The ECS is a representative sample of non-agricultural European establishments employing at least 10 employees. A crucial advantage of this survey is that it provides harmonized cross-country information on employee representation and working-time arrangements at the workplace level.<sup>16</sup>

The survey is conducted in two steps. The first step involves a telephone interview with a manager, who is asked about establishment characteristics, organizational practices (e.g. compensation policies, working-time arrangements, etc), and industrial relations, including the existence of employee representation structures. The second stage comprises an interview with an employee representative in those establishments in which an employee representation

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<sup>15</sup> In 2004, the survey was called European Survey on Working Time and Work-Life Balance (ESWT).

<sup>16</sup> The lack of economic/financial information and cross-sectional nature of the survey are obvious limitations.

structure is present. As information obtained in the second stage is conditional on having an employee representation structure, our analysis is exclusively based on the information gathered in the management questionnaire.

In this paper, we focus on institutionalized forms of employee representation, either through trade unions or works councils. Employee representation is a dummy variable identifying establishments with a trade union, works council or any other country-specific official structure of employee representation (e.g. joint consultative committees). Following Bryson et al (2012), this definition excludes health and safety representatives and ad-hoc forms of representation.<sup>17</sup> We rely on two different measures of the utilisation of flexible working-time arrangements. The first measure (Flexitime) is a dummy variable equal to 1 if (according to managers) “*employees have the possibility to adapt the time when they begin or finish their daily work according to their personal needs or wishes*”. The second measure indicates whether it is “*possible for employees to use accumulated hours for days off*”. We use the latter as a proxy for the utilisation of working-time accounts at the workplace-level.

The purpose of the study is to analyse the effect of employee representation in conventional market-oriented establishments. As there are fundamental differences between public and private establishments both in terms of organizational objectives and the institutional rules governing industrial relations, we decide to restrict the analysis to private sector establishments. We focus on EU21 countries for which there is consistent information across the three waves.. Descriptive statistics of the pooled 2004-2009-2013 private sector sample are reported in Appendix Table A.I.<sup>18</sup> As we explain below, further sample restrictions are introduced in order to perform our main empirical exercise.

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<sup>17</sup> Measures of board-level employee representation are not available from the survey.

<sup>18</sup> Figures A.1 and A.2 in the Appendix show the incidence of employee representation is generally higher in large establishments and differs markedly across industries. Further details about the survey methodology and sampling procedure can be found in: <http://www.eurofound.europa.eu/surveys/european-company-surveys>.

#### IV. IDENTIFICATION

An obvious concern in terms of identification is that the presence of an employee representation structure at the workplace level may be influenced by many observed and unobserved factors which may also affect the outcome of interest. For example, management quality (usually unobserved) may be positively correlated with both flexible working schemes and employee representation.<sup>19</sup> Good managers may be prone to implementing working-time flexibility and opening up regular information and consultation channels with the workforce through employee representatives. By failing to control for management quality, an OLS estimate of the effect of employee representation on working-time flexibility will be biased upward.

To deal with the potential endogeneity of employee representation, we exploit the variation in the implementation of the Directive 2002/14/EU across establishments of different sizes in four European countries (Cyprus, Ireland, Poland and the UK). Two areas in which the Directive requires employee information and consultation clearly include working-time flexibility: employment-related issues and major changes in work organization.<sup>20</sup> It is worth emphasizing that the Directive obliges firms to implement formal information and consultation procedures via employee representatives and does not refer to individual (ad-hoc) voice mechanisms. Either the workforce or management has to take an initiative for negotiations to start on an information and consultation agreement. From the point of view of our identification strategy, a crucial feature of the Directive is that it is size-contingent, i.e., it applies to establishments or firms (“undertakings”) above certain employment threshold. The directive leaves it to national authorities to specify the appropriate level of application (firm or

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<sup>19</sup> Bloom et al (2010) document a positive correlation between family-friendly workplace practices, including flexitime, and their measures of management quality.

<sup>20</sup> Further details can be found in Van Gyes (2006) and Aumayr et al (2011).

establishment).<sup>21</sup> In some member states, the Directive was redundant or only required minor legal adaptations. We focus on four countries (the UK, Poland, Ireland and Cyprus) that experienced major legislative changes as a result of the transposition of the Directive according to industrial relations experts (see for example Carley and Hall, 2009). For this group of countries (hereafter CIPUK sample), the implementation of the Directive implied establishing for the first time a general, statutory employee information and consultation system and a statutory system for employee representation (Hall, 2005; Carley and Hall, 2009).<sup>22</sup> In all four of the countries we look at, the Directive was implemented between 2005 and 2008. Implementation thus took place between two rounds of the European Company Survey (2004 and 2009) so that the survey provides information on firms observed before and after the policy change.<sup>23</sup> In the case of these four countries, the Directive applies to firms employing 50 employees or more. The fact that we rely on establishment-level data may generate concerns about the proper identification of the treatment status and potential contamination of the control group. As shown in section VII, our results are qualitatively similar when we restrict the sample to single-site firms.

This quasi-experimental setting enables us to compare what happened to working-time flexibility (and related outcomes) before and after the implementation of the Directive in treatment firms, as compared to what happened over the same period in a comparison group of firms that were not affected as much (or at all) by the Directive. The latter group is assumed to

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<sup>21</sup> In Austria, Belgium, Bulgaria, Germany, Greece, Portugal and Slovenia, it is possible to trigger the directive at the establishment level. In all the other countries, the Directive is applied at the firm (“undertaking”) level (Carley and Hall, 2009).

<sup>22</sup> The UK legal framework already included the 1999 Employment Relations Act, which stipulates a statutory union recognition procedure.

<sup>23</sup> In the UK, the Directive came into force in April 2005 and was implemented gradually, reaching undertakings with 50 employees or more in April 2008. In Poland and Ireland, the Directive was transposed in April and July 2006 respectively. In Cyprus, the Directive came into force from April 2005 (for further details see Carley and Hall, 2009). Major legislative changes also occurred in Bulgaria, Estonia, Malta, and Romania during 2006 but unfortunately the 2004 ECS wave, i.e., before the implementation of the Directive, does not provide information on these countries. In Italy, the Directive just gave legal force to an existing information and consultation system based on collective agreements and did not create new employee representation structures (Carley and Hall, 2009).



capture the counterfactual trend that would have been observed in the absence of the policy change.

We estimate a difference-in-difference model by pooling the three ECS waves:

$$Y_{jsct} = \alpha + \beta_1 I(Size_{jsct} \geq 50) + \beta_2 Post_t + \beta_3 I(Size_{jsct} \geq 50) \times Post_t + X'_{jsct} \gamma + \varepsilon_{jsct} \quad (1)$$

where  $Y$  is the outcome of interest in establishment  $j$  (employee representation and flexible working-time arrangements), sector  $s$ , country  $c$ , and at time  $t$ .  $I(Size_{jsct} \geq 50_t)$  is an indicator function that takes the value one for establishments employing 50-99 employees (treatment group)<sup>24</sup> and zero for establishments with 10-49 employees,  $Post_t$  is a dummy variable equal to 1 for periods in which the directive was in place (2009 and 2013) and 0 for the pre-policy period (2004),  $X$  is a set of control variables (the economic situation of the establishment as perceived by the manager, and the shares of female, part-time and skilled workers).<sup>25</sup> Our coefficient of interest is  $\beta_3$ , which can be interpreted as the intention-to-treat effect, that is, the effect for an establishment of being offered treatment.<sup>26</sup>

#### *IV.1 Identification assumptions*

The validity of our DID approach rests on a series of identification assumptions. In this section, we discuss these assumptions and provide some evidence in support of the proposed research strategy.<sup>27</sup>

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<sup>24</sup> The definition of the treatment group is constrained by data restrictions. The narrowest group we can define above the threshold is 50-99 employees.

<sup>25</sup> The survey question is phrased as: “How would you rate the economic situation of this establishment? Is it very good, quite good, quite bad or very bad?” Unfortunately, the survey does not collect any objective measure of the establishment’s economic performance. For this reason, we rely on managers’ perception of the economic situation of the establishment.

<sup>26</sup> The inclusion of control variables may generate more precise estimates of the DID treatment effect. We estimate equation 1 including a set of year, sector and country fixed effects. It is worth noting that country fixed effects would capture differences in collective bargaining and codetermination institutions that remain constant over the period.

<sup>27</sup> Further details and robustness checks are presented in section VII.

***Pre-reform trends.*** In the absence of the Directive, the underlying trends in working-time flexibility outcomes (conditional on characteristics X) should have been similar for treatment and control establishments. Unfortunately, we cannot rely on the ECS to check for pre-reform parallel trends as the survey was conducted for the first time in 2004. As an alternative, we use individual-level data from the European Working Conditions Survey (EWCS) to compare the utilisation of flexible working schemes between individuals employed in treatment (50-99 employees) and control establishments (10-49 employees) in a period in which the Directive was not in place. As discussed in section VII.A, results from these falsification tests do not suggest the existence of long-run differential trends in the utilisation of flexible working-time schemes between affected and unaffected establishments.

***Group compositional changes.*** In a repeated cross-sectional study, one reason why common trends could be violated is because sample composition changes over time (see for example Blundell and Costa-Diaz, 2009). In Table A.II in the Appendix (last column), we report the results of a series of simple DID estimates for each establishment-level covariate. We observe few statistically significant changes in the average observable attributes of treatment and control establishments. For example, there is a significant differential change in the industry composition and perceived economic situation in the two groups of establishments. In section VII.B, we discuss results from additional estimates including interaction terms between the treatment indicator and the full set of covariates in order to allow control variables to enter the equation separately for treatment and control establishments. Our main findings do not seem confounded with group compositional changes.

***Anticipation effects.*** Our strategy would be compromised if there is any treatment effect in the pre-intervention period. Anticipatory responses are a potential concern whenever a policy includes a time gap between its announcement and its effective date of implementation. The European Parliament approved the Directive in March 2002 but its actual implementation

occurred few years later. Anecdotal evidence suggests that the country-level implementation of the Directive was preceded by discussions and negotiations involving national governments, employees and employers' representatives. As the new legislation was not completely unexpected, it might be possible that firms began to change their behaviour in response to the expectation that they would be affected by the new legislation in the near future. Unfortunately, the fact that we only have information for one pre-treatment year (2004) makes it difficult to investigate (and account for) the presence of anticipation effects in a systematic way. We can only speculate about the direction of the potential bias associated with ignoring anticipation effects. On the one hand, if the 2002 announcement led treatment firms to comply with the Directive and favour the introduction of ER structures before its actual transposition at the country level, our estimates of the contemporaneous response to the directive may be understating the treatment effect, as part of the effect occurs before the directive effectively came into force. On the other hand, firms may manage to block or delay the introduction of employee representation structures until the Directive was effectively implemented. If that is the case, our DID estimates may be upward biased. They may be partly capturing mean reversion, overstating the treatment effect.<sup>28</sup> In principle, firms could manipulate their eligibility status by reducing employment growth and remaining below the 50-employees threshold. As discussed in section VII.G, the analysis of pre-reform employment trends in treatment and control establishments does not provide any indication that firms manipulate their size in this way.

***Control variables: common support and exogeneity.*** The inclusion of control variables may help to increase the precision of our DID estimates. An important concern, however, is that control variables may be endogenous to the treatment. The exogeneity assumption may be

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<sup>28</sup> This case is similar to the pre-program dip problem extensively debated in the literature evaluating the impact of job training programs (Ashenfelter, 1978).

violated if covariates and outcomes are measured at the same time, which is the case in our repeated cross-sectional setting. For this reason, we specify a parsimonious model, including a limited set of covariates (industry and country dummies, measures of workforce composition and economic situation of the establishment as perceived by the manager). It is worth noting that the comparison of simple and controlled DID estimates does not reveal differences in terms of the magnitude and statistical significance of the coefficients (see columns 1 and 2 in Table II).<sup>29</sup> Finally, in Table A.III in Appendix, we provide a formal balancing test of establishment-level characteristics in the pre-reform period (2004), which suggests the observable pre-treatment attributes of two groups are very similar.<sup>30</sup>

## **V. MAIN RESULTS: THE DIRECTIVE, EMPLOYEE REPRESENTATION AND FLEXIBLE WORKING TIME**

### *V.1 Exploratory analysis: correlation between employee representation and flexible working-time arrangements*

Before moving to the main empirical exercise, we explore the correlation between employee representation and flexible working schemes based on both the entire EU21 countries sample and the restricted four-countries sample (CIPUK) on which we will later conduct the DID analysis.

**[Place Figure II about here]**

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<sup>29</sup> The fact that the coefficient of interest is stable across simple and controlled DID estimates is reassuring that omitted variable bias is not a severe problem in our context only under the assumption that our observed establishment-level attributes are a good proxy for the unobservable variables (Altonji et al, 2005; Oster, 2019). Therefore, our preference for a parsimonious specification may come at price in terms of omitted variable bias if our observable variables do not fully capture important unobservable factors. For example, we could have controlled for the utilisation of financial participation schemes (e.g. profit sharing) at the workplace level. Unfortunately, it is not possible to construct such indicator on a consistent basis for the three survey waves.

<sup>30</sup> The only differences that are significant are the difference in the proportion of establishments reporting a good economic situation (8 percentage points) and the proportion of establishments operating in Commerce and Hospitality (4.3 percentage points, significant at the 10% level).

Figure II suggests that there is a positive correlation between the incidence of employee representation and flexible working-time arrangements. Table I reports Pooled OLS estimates of the effect of employee representation on the utilisation of flexitime and working-time accounts (as defined in section III.2), from a series of Linear Probability Models. Establishment-level controls include a dummy variable equal to 1 for establishments with a very good or good economic situation as perceived by the manager, plant size dummies, industry dummies, country and year dummies, as well as controls for workforce composition (shares of female, skilled, and part-time employees).<sup>31</sup> The presence of a workplace-level employee representation structure is associated with greater utilisation of both types of flexible working schemes when estimates are performed on the EU21 sample. In the restricted CIPUK sample of four countries, the correlation between employee representation and flexible working-time arrangements is positive and significant in the case of working-time accounts but not in the case of flexitime.

**[Place Table I about here]**

## *V.2 Difference-in-difference estimates*

Our OLS estimates suggest a positive correlation between employee representation and the presence of flexible working-time arrangements at the workplace level. However, establishing a convincing causal link requires some exogenous variation in employee representation structures. In this section, we present the results from difference-in-difference estimates, considering the four countries (UK, Poland, Ireland and Cyprus) in which the

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<sup>31</sup> We rely on a quite parsimonious specification of the model in which few control variables are added in order to mitigate further endogeneity concerns.

Directive 2002/14/EU had a major impact on national legislation. Since the Directive applied only to firms with at least 50 employees, we take an interval around that size threshold to define treatment and control establishments. We define establishments employing 50 to 99 employees as our treatment group and establishments employing 10 to 49 employees as the control group. Unfortunately, the use of narrower size bands is precluded by data restrictions.

The validity of this strategy rests on establishing that the Directive had the expected differential impact on employee representation in eligible establishments<sup>32</sup>. Results from DID estimates of changes in employee representation reported in Columns (1) of Table II show that this is actually the case: there is a significant increase in employee representation after the reform in treatment establishments relative to control establishments. In column (2), we show that this is robust to the inclusion of establishment-level controls, industry, country and time fixed effects. It is worth noting that our simple and controlled DID estimates are very similar, which is a result of the similarity between treatment and control groups in terms of observables characteristics. In columns (3) and (4), we report results from additional estimates including both country and industry-specific time trends in order to account for the potential confounding effect of country and sectoral shocks over the period. Estimates from our preferred specification, reported in Column (4), indicate a statistically significant increase in the presence of employee representation structures in treatment establishments in relation to control firms of roughly 7.4 percentage points. Compared to the pre-reform incidence of employee representation, the magnitude of the effect is sizeable in the treatment group, representing an increase of 32%.<sup>33</sup> Furthermore, the magnitude of the effect is remarkably stable across

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<sup>32</sup> Previous attempts to quantify the effectiveness of the directive in promoting employee representation have been mainly descriptive. For example, Adam et al (2014) show an increase in the presence of Joint Consultative Committees in the UK between 2004 and 2011 for establishments in the size band affected by the Directive, suggesting a positive, though moderate, impact of the Directive.

<sup>33</sup> We also estimated the model using sampling weights, getting significant and similar point estimates of  $\beta$  (0.07 instead of 0.074). In our weighted estimates, however,  $\beta$  is less precisely estimated. Solon et al (2015) argue that when sampling probability is exogenous weighting may be unnecessary for consistency and harmful for efficiency. This is exactly our case as sampling probabilities in the ECS vary on the basis of explanatory variables

specifications. Overall, the results reported in Table II support our use of the Directive as a source of exogenous variation in the presence of employee representation at the workplace level. As expected, the Directive seems to have an effect around the legal threshold of 50 employees.<sup>34</sup> In Section VII, we provide further support for the use of the Directive by relying on a series of falsification tests in which we arbitrarily change the size threshold.<sup>35</sup>

**[Place Table II about here]**

Having documented that the Directive exerts an exogenous influence on the presence of employee representation, we now turn to our outcome of interest, working-time flexibility. We look at whether establishments affected by the reform use more working-time flexibility schemes than before and in comparison with other establishments. In column (1) of Table III, we report the main results for flexitime, i.e., the possibility for employees of adapting the time when they begin or finish their working day. Consistently with our OLS estimates on the CIPUK sample, we do not find the reform had any significant effect on the utilisation of flexitime. However, the effect is positive and significant for working-time accounts, i.e., the possibility of compensating accumulated overtime with days off as reported in column (2). Estimates indicate a statistically significant increase of 5.4 percentage points in the utilisation of working-time accounts in treatment establishments compared with the comparison group. In

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included in the model (establishment size, industry, and country). We report (unweighted) within-sample estimates, not population estimates, throughout the paper.

<sup>34</sup> In order to focus on short-run effects, we also estimated the model on 2004-2009 only and obtained qualitatively similar results.

<sup>35</sup> Using different data sources, previous studies have documented the evolution of employee representation in some of the countries analysed in this paper over a similar period. For instance, Bryson and Forth (2015) show a slight decline (significant at 10%) in the share of private UK workplaces (employing 10+ employees) in which there was some form of collective employee voice structure between 2004 and 2011. It is important to clarify that our strategy just exploits a (presumably exogenous) local relative changes in the incidence of employee representation in a relatively narrow establishment size interval around the 50 employees' threshold. Hence, our results are not necessarily incompatible with aggregate trends in employee representation found in the literature.

terms of the pre-reform incidence of this practice in the treatment group, the effect represents an increase of 34%. Results may be affected by slight changes in the wording and structure of flexible working-time questions across waves.<sup>36</sup> For this reason, we conduct additional estimates using a different proxy of working-time accounts available for the first two waves of the survey (2004 and 2009).<sup>37</sup> Estimates reported in column (3) also indicate a significant increase (at the 10% level) in the utilisation of working-time accounts in treatment establishments.

As we mentioned earlier, the implementation of flexible working-time arrangements could be associated with benefits for both workers and firms in terms of job stability and employee motivation. For example, working-time flexibility may allow firms to smooth hours worked (hence also labour costs) over the business cycle and facilitate a better work-life balance. For these reasons, we also investigate whether the presence of employee representation is also associated with differences in firms' employment adjustments and human resource management problems as perceived by managers, such as absenteeism and employee motivation.<sup>38</sup>

In Column (3) of Table III, we report no significant effect on the probability of reducing employment in the last three years. In column (4) and (5), we report estimates for absenteeism and low staff motivation as perceived by managers. No significant differences in absenteeism and managers' perception of low employee motivation are observed.<sup>39</sup>

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<sup>36</sup> In the ECS 2013, the question from which we construct our working-time account variable refers to the possibility of using "accumulated overtime for days off" instead of "accumulated hours for days off" as in the ECS 2004 and 2009. Moreover, in the ECS 2013 the question was answered by all establishments rather than just by establishments using flexitime.

<sup>37</sup> The exact wording of the question is the following: "*Does this system of flexible working hours allow employees to accumulate hours, i.e. is it possible to work longer on some days and to compensate this later by working less on other days?*" Only establishments that were using flexitime responded to this question.

<sup>38</sup> The survey asks managers whether or not they encounter problems of low staff motivation and high absenteeism at their establishments. Managers are also asked whether the establishment reduced, increased or kept employment stable in the last three years.

<sup>39</sup> Previous studies found a positive effect of flexible working-time on worker performance and firm productivity (Bloom et al, 2015; Beckmann, 2016).



[Place Table III about here]

## VI. HETEROGENEOUS EFFECTS: LOCAL WAGE-BARGAINING AND WORKFORCE COMPOSITION

The analysis presented above suggests that the Directive significantly boosted the presence of employee representation structures and utilization of working-time flexibility schemes in affected establishments. In this section, we focus on the arrangements clearly associated with the reform—working-time accounts, and allow for potential heterogeneous effects of the reform across establishments with different characteristics. In order to test the hypotheses discussed in section II, we perform additional DID estimates, but restricting the sample in convenient ways as explained below.

In columns 1-2 of Table IV, we present DID estimates of the effects of the reform separately for establishments with and without local pay bargaining. As expected, the greater utilisation of working-time accounts found for the establishments covered by the reform is driven by those in which no local wage negotiations take place.<sup>40</sup>

In order to examine how the effect of employee representation on flexible working time varies with the composition of the workforce, we split the sample between establishments with high and low proportions of women and with high and low shares of skilled employees.<sup>41</sup> Results from these additional exercises are reported in Columns 3-6 of Table IV.<sup>42</sup> In line with

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<sup>40</sup> The wording of questions used to identify the presence of local wage bargaining varies across ECS waves. In ECS 2004, there is a question on whether there is a trade union recognised for the purpose of collective bargaining at the workplace level. In ECS 2009 and 2013, managers report whether wages are negotiated at the establishment/company level or at a higher level (industry, region).

<sup>41</sup> Skilled workers are measured as those having a university degree. Establishments with a low incidence of women are defined as those in which female workers represent less than 40% of the workforce. Establishments with high female incidence are defined as those in which female workers represent more than 60% of the workforce. We classify establishments according to the share of skilled workers in a similar manner.

<sup>42</sup> As the workforce composition might be endogenous, one should interpret these results cautiously.

our initial expectation, the greater use of flexible working-time accounts found for eligible establishments seems to be driven by establishments with a high proportion of female workers. When the sample is split according to the incidence of skilled workers, we find a positive and significant effect of employee representation on the use of working-time accounts only for establishments with a low fraction of skilled workers, contradicting our initial hypothesis.

A possible interpretation is that the need to respond to fluctuations in demand is stronger in operations relying on less skilled workers. Incomplete contracting problems associated with the utilisation of flexible working-time arrangements might also be less severe in the case of skilled workers executing non-routine tasks. Lastly, it has been argued that flexible working time might be difficult to implement in the case of production workers and in teamwork environments (Beckmann, 2016). For instance, the potential intensification of the pace of work for other team members when an employee decides to take compensatory time might create collective action problems and exacerbate conflicts among workers (Walsh, 1999). We find that employee representation seems to facilitate the use of working-time accounts in such contexts.

**[Place Table IV about here]**

## **VII. IDENTIFICATION ASSUMPTIONS, ROBUSTNESS CHECKS, AND ADDITIONAL ESTIMATES**

As shown in Table II above, the Directive provides quasi-experimental variation in the presence of employee representation around the threshold of 50 employees. In this section, we further investigate the validity of our identification strategy and provide additional robustness checks.

*A. Pre-intervention trends in the utilisation of flexible working-time schemes.* Our DID estimates would be biased if treatment and control establishments experienced different underlying trends in the utilisation of flexible working-time arrangements. In such a case, our results might simply reflect long-run differential trends between both groups. Unfortunately, we cannot rely on the ECS to study pre-reform trends as the survey was conducted for the first time in 2004. Instead, we exploit individual-level data from the European Working Conditions Survey (EWCS). We compute three indicators of flexible working-time schemes in a consistent manner for the four countries affected using two waves of that survey before the transposition of the directive (EWCS 2000 and 2005). Our indicators include the incidence of flexible workday start and finish times (flexitime), working hours that vary on a daily basis, and variable working hours on a weekly basis.<sup>43</sup> We also consider the proportion of individuals not satisfied with their current job. These measures can be seen as crude proxies of the indicators available in the ECS. We run a series of falsification tests where we fictitiously assume that the transposition of the Directive took place in 2005 (post-reform period), taking 2000 as the pre-reform period. According to estimates reported in Table V, there are no significant differences in the utilisation of flexible working schemes or job satisfaction between individuals employed in treatment (50-99 employees) and control establishments (10-49 employees) in a period in which the Directive was not in place.<sup>44</sup> While this exercise is far from ideal, the results are consistent with the transposition of the Directive being the factor that

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<sup>43</sup> These indicators intend to mimic those computed using the ECS but they are slightly different as the wording of the relevant questions differs between the two surveys. Unfortunately, the EWCS did not ask individuals about the presence of an employee representation structure at their workplaces until 2010. Therefore, it is not possible to replicate the analysis based on the ECS.

<sup>44</sup> In Cyprus, the directive took effect from 8 July 2005, but excluding Cyprus from estimates reported in Table VIII does not alter the conclusion.

caused the utilisation of flexible working-time schemes to increase in treatment establishments.<sup>45</sup>

**[Place Table V about here]**

*B. Group compositional changes.* Our second set of robustness checks concern the assumption that treatment and control groups do not change their composition before and after the transposition of the Directive. In Table A.II in the Appendix (last column), we report the results of a series of unconditional DID estimates for each establishment-level covariate. We observe few statistically significant changes in the average observable attributes of treatment and control establishments. To provide evidence that the results are not confounded with such compositional changes, we re-estimate equation (1) including interaction terms between the treatment indicator and the full set of covariates in order to allow control variables to enter the equation separately for treatment and control establishments. The results presented in columns 1 and 2 of Table VI indicate that the main estimates are robust to this modification. We run another specification test in which we include interactions of all covariates with the post-reform indicator to investigate if different trends in observable characteristics could explain the differences in responses regarding working-time accounts between treatment and control establishments after the transposition of the Directive. The results appearing in columns 3 and 4 of Table VI indicate that our main findings are also robust to the inclusion of these additional controls.

*C. Exclusion of small establishments from the control group.* Unfortunately, data restrictions forced us to define treatment and control establishments using broad size intervals (50-99 vs. 10-49 employees). One could argue that such size bands are not narrow enough to

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<sup>45</sup> In our analysis of pre-reform trends based on EWCS, the treatment status is also defined at the workplace level due to lack of information on company size. Concerns about potential measurement error in our treatment indicator are discussed below in section of VII.D.

rule out the effect of differences in the size of establishments between the two groups independently of the reform. It is possible, however, to restrict the presence of small firms in the control group by excluding establishment employing 10-19 employees from the estimation. These additional estimates are reported in columns 5 and 6 of Table VI and confirm our main findings are robust to this modification.

**[Place Table VI about here]**

*D. Concerns about the specification of the treatment status.* The survey collects the information at the establishment-level and does not provide employment figures at the firm-level in the case of multi-plant firms. As the Directive was applied at the firm-level, this generates concerns about the potential contamination of the control group. We could have misclassified some small establishments as part of the control group when in fact they may be part of a larger firm in which employees could have triggered their collective voice rights as stipulated in the Directive. To shed light on this issue, we perform additional estimates restricting the sample to single-plant firms in which treatment status can be unambiguously specified. Estimates reported in Table VII shows that our baseline results are robust to the exclusion of establishments operated by multi-site firms. Conceptually, however, it is worth noting that any contamination effects of the control group that were present would make it harder to find an impact of the Directive. Indeed, the exclusion of multi-site firms leads to a higher point estimate of 10 percentage points (column 1 of Table VII) compared to our baseline estimate of 7.4 percentage points reported in column 4 of Table II.<sup>46</sup> This suggests that potential

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<sup>46</sup> It is worth noting, however, that the 95% confidence interval of the DID treatment effect when we restrict the analysis to single-plant firms contains our baseline estimate.

measurement error in the specification of treatment status may have biased our original estimates downwards.<sup>47</sup>

*E. Placebo tests.* In Table VIII we report the results from a series of placebo tests in which we change the definition of both treatment and control groups and pre-post intervention periods. For instance, in column (1) we report the results from a falsification test in which we arbitrarily place the employment threshold at 20 employees in order to compare two non-treated groups of establishments. In this case, treatment establishments are those employing 10-19 employees and control establishments those with 20-49 employees. In principle, one would not expect to see the Directive to have any effect on employee representation in this part of the establishment size distribution. As we can see, the estimate of  $\beta$ , the coefficient associated with *Treatment\*Post-reform* interaction, is not statistically significant in this case. Using alternative false employment thresholds (100, 150, and 250 employees respectively for results reported in columns 2-4 of Table VIII) leads to similar conclusions. Finally, in column (5) we assume 2009 and 2013 as the pre- and post-intervention periods respectively. The estimate for coefficient  $\beta$  is also not significant in this case.<sup>48</sup>

**[Place Table VII about here]**

**[Place Table VIII about here]**

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<sup>47</sup> According to the descriptive statistics reported in Table A.II, 20% of control establishments were part of a multi-site firm in the pre-reform year. One could also recode firm size in these unknown cases and consider them as part of the treatment group. In this case, the resulting point estimate of the DID treatment effect on the presence of employee representation is 9.7 percentage points (SE 1.9 pp), which is very close to the one obtained for single-plant firms.

<sup>48</sup> We replicate the same placebo tests using working-time accounts as the outcome variable, obtaining similar conclusions.

*F. Contemporary reforms.* During the period covered in this study, policy activity in most areas of labour market reform was intense in many European countries, particularly after the 2008 crisis. Reforms were more frequent in countries with a poor labour market performance (Turrini et al, 2014). This raises the concern that other reforms implemented contemporaneously with the Directive may have had a confounding effect. To address this problem, our preferred estimates control for country and industry-specific time trends, which should capture the effects of other changes in public policy, including changes in institutions and regulations. In addition, we use the European Commission's LABREF descriptive database that records labour market and welfare policy measures introduced in EU member states (EU-27) over the 2000-2013 period.<sup>49</sup> The database comprises information on enacted legislation (approved by Parliament), as well as executive or administrative acts, court rulings or agreements, including changes in the implementation of a previously adopted reform. Policy measures are organised into 49 policy fields and further grouped in 9 broad policy domains (Turrini et al, 2014). For the four countries affected by the directive, we track all the policy measures adopted in the domain "Working time/Working-time Management" over the 2004-2013 period. The list of policy developments in this area is presented in Appendix Table A.IV. We do not identify any relevant policy change fostering the utilization of working-time banking during this period.<sup>50</sup>

*G. Endogenous sorting into treatment status.* An important remaining concern is that establishments may endogenously sort themselves into treatment status. For instance, forward-looking managers may reduce establishment employment growth deliberately in order to avoid

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<sup>49</sup> LABREF database, DG EMPL, European Commission, accessible at: <https://webgate.ec.europa.eu/labref/public/>

<sup>50</sup> Poland introduced an amendment to the Labour Code in 2013, allowing for greater flexibility in working-time arrangements. However, this policy change hardly affects our results for two reasons. First, the amendment refers to flexitime, not to working-time banking. Second, the amendment came into force the 23 August 2013 and the fieldwork of the survey (ECS 2013) was conducted between February and June 2013. Finally, our main result on working-time banking is robust to the exclusion of Poland from the sample.

being covered by the Directive. Indeed, previous evidence on the effect of size-contingent regulations suggests there could be slower employment growth and a kink point in the cross-sectional firm size distribution just under the legal size threshold (Schivardi and Torrini, 2008, Garicano et al, 2016). Unfortunately, information on the entire establishment size distribution in the pre-policy period is not available.<sup>51</sup> However, we have information on whether the establishment's employment decreased, stayed stable or increased in the preceding years for each ECS wave. Figure A3 in Appendix reports the fraction of establishments that experienced positive employment growth in the last three years for both the CIPUK and EU21 sample. The fraction of growing establishments does not appear to be significantly lower for establishments in the size band (20-49 employees) just below the Directive's size threshold. Consistently, aggregate employment trends in establishments below and above the size threshold of 50 employees in the pre-policy period appear to be very similar in the four countries (see Figure A4 in Appendix). Using the 2004 wave, we look at differences in three-year employment changes between treatment and control establishments by estimating an ordered probit model. We find no significant differences between the two groups, suggesting that, at first glance, endogenous treatment status is not a concern in our setting.<sup>52</sup>

*H. Countries not affected by the Directive: triple-difference (DDD).* In all our previous estimates, we restrict the sample to four countries in which the Directive triggered major legislative changes (Carley and Hall, 2009). However, the Directive may have affected worker representation rates in other countries. For this reason, as a final robustness check, we estimate a DDD model for the whole EU21 sample. The impact of the Directive varies now along three

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<sup>51</sup> Ideally, one should test for a major discontinuity in the fraction of firms around the employment threshold stipulated by the Directive (e.g. McCrary test). This would allow to understand whether establishments manipulate their employment level strategically. Unfortunately, the ECS 2004 does not provide a continuous measure of establishment size. Instead, establishments are classified according to ten size categories. Moreover, ECS considers different drawing rates for each size band (10-49, 50-249 and 250 or more employees), making the analysis of the distribution of establishments at the 50 employees threshold unreliable.

<sup>52</sup> Estimates available upon request.



dimensions: between time periods (before and after the transposition of the Directive), ii) across establishments (below and above 50 employees), and iii) across countries (CIPUK vs. unaffected countries). In order to exploit this additional source of variation, we modify equation (1) accordingly:

$$\begin{aligned}
Y_{jsct} = & \alpha + \beta_1 I(Size_{jsct} \geq 50) + \beta_2 Post_t + \beta_3 I(Size_{jsct} \geq 50) \times Post_t \times CIPUK_c + \\
& + \beta_4 I(Size_{jsct} \geq 50) \times \beta_5 CIPUK_c \times Post_t + \beta_6 I(Size_{jsct} \geq 50) \times Post_t \times CIPUK_c + \\
& + X'_{jsct} \gamma + \varepsilon_{jsct}
\end{aligned} \tag{2}$$

The basic idea is to use the same two groups of establishments from unaffected countries as an additional control group. We can therefore analyse whether the difference in the incidence of employee representation and utilization of working-time accounts between treated and control establishments in affected countries (CIPUK) was larger than that for corresponding establishment classes in unaffected countries. Our coefficient of interest is now  $\beta_6$ .

We report triple-difference estimates for the incidence of employee representation and working-time accounts in Table IX. Results are consistent with double-difference estimates. Employee representation increased by 11.3 percentage points in treated establishments located in the four countries (CIPUK) affected by the Directive and the effect is highly significant across all specifications.<sup>53</sup> Moreover, the use of working-time accounts increased by 5.7 percentage points. Clustering at the country level (21 clusters) leads to a standard error of 0.02

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<sup>53</sup> In columns 1-2, we report Huber-White robust standard errors. In columns 3-5, we report standard errors clustered at the country, industry-country, and country-year level respectively. It is worth noticing that clustering standard errors by country-year imposes the (implausible) restriction that observations are independent if they are in the same country but in different years. The coefficient for Treatment\*Post is significantly negative in some specifications when the outcome is the presence of employee representation, suggesting some erosion in the effectiveness of pre-existing legislation in countries other than CIPUK. However, the effect is not robust across specifications. Moreover, the coefficient is consistently insignificant when the outcome is working time accounts.

(column 3) that is smaller than the heteroskedastic robust standard error of 0.03 (columns 1-2). It is worth noticing that in the presence of few clusters standard errors may be downward biased, leading to over-rejection of the null hypothesis of no-effect (Cameron and Miller, 2015). To be conservative, our preferred estimates reported in column 4 include clustered standard errors at the industry-country level (126 clusters).<sup>54</sup> Finally, we replicate the placebo tests conducted in the double-difference framework by defining false treatment and control groups. Results reported in Appendix Table A.V show that the triple difference in all these placebos is not statistically significant.

**[Place Table IX about here]**

## **VIII. CONCLUSIONS**

Using repeated cross-section data on European establishments, this paper studied the effect of employee representation on the utilization of flexible working-time arrangements. We exploited the quasi-experimental variation in the presence of employee representation resulting from the implementation of a size-contingent EU Directive concerning employee information and consultation rights.

Our within-sample DID estimates indicates that the Directive, as expected, exogenously boosted the presence of employee representation structures in eligible establishments. Then we showed that there was a sizeable increase in the utilisation of working-time accounts in treatment establishments in relation to the comparison group. The greater utilisation of flexible working-time schemes found for eligible establishments seems to be driven by establishments with a low proportion of skilled employees, a high proportion of female workers, and in which

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<sup>54</sup> In line with results from previous double-difference estimates, we do not find any significant effect for flexitime.

wages are not negotiated locally. An important limitation of our analysis is that we could not check the common trend assumption using ECS data. As an alternative, we estimated a series of falsification tests using individual-level data from the EWCS and found no significant differences in the utilisation of flexible working schemes between individuals employed in treatment and control establishments in a period in which the Directive was not in place. Our alternative strategy can be seen as a compromise, given the lack of necessary pre-treatment periods in the ECS data.

Interestingly, while we found an increase in the use of working-time accounts, we did not find similar effects in the case of flexitime. This contrasting result suggests that commitment problems associated with the implementation of flexible working-time arrangements may be more severe for working-time banking schemes. As recognized by labour law scholars, the terms and conditions for exercising rights in relation to accumulated time credits or debits may be difficult to define unambiguously. Employees' actual use of compensatory time off may be subject to vague conditions over which employers have ample discretion to determine. For instance, the employer may refuse an employee's request arguing lack of sufficient advance notice or invoking "operational reasons" and disrupting effects on her business (Walsh, 1999). In such context, employee representation may serve as an enforcement mechanism. Employee voice may help to improve communication and information flows between the parties and protect workers against the potential opportunistic manipulation of flexible working-time schedules, making the employer's intertemporal commitment implicit in such schemes more credible.

Our analysis was restricted to a relevant but narrow subset of workplace practices. Unfortunately, information on other measures of flexible working (e.g. working from home, job sharing, parental leave) was not consistently available. Hence, our paper did not intend to

provide a full characterisation of the effects of ER on the utilisation of flexible working arrangements. This deserves further investigation.

## APPENDIX

TABLE A.I

DESCRIPTIVE STATISTICS. Pooled ECS 2004-2009-2013.

	Mean	Sd
Employee representation	0.289	0.453
Flexitime	0.550	0.497
Working-time accounts	0.401	0.490
Decreased employment 2010-2013	0.233	0.423
Absenteeism	0.135	0.342
Staff motivation problems	0.146	0.353
Very good econ. situation	0.135	0.342
Multi-plant	0.290	0.454
10-49 employees	0.845	0.362
50-249 employees	0.133	0.340
>249 employees	0.022	0.146
Manufacturing	0.241	0.428
Construction	0.088	0.284
Commerce & Hospitality	0.305	0.460
Transport	0.066	0.249
Financial services	0.172	0.378
Services	0.127	0.333
Female workers	3.480	1.560
Skilled	3.244	1.997
Part-time	2.127	1.266

*Notes:* Pooled data from the European Company Survey 2004, 2009, 2013. Sample restricted to private-sector establishments in EU21 countries. E21 includes the former 15 “old” member states (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom) plus six of the 10 new Member States which joined the European Union in 2004 (Czech Republic, Cyprus, Latvia, Hungary, Poland and Slovenia). Means are weighted by ECS sampling weights.

TABLE A.II  
DESCRIPTIVE STATISTICS (CYPRUS, IRELAND, POLAND, UK)

	Control group				Treatment group				Dif in Dif
	Pre-reform		Post-reform		Pre-reform		Post-reform		
	Mean	Sd	mean	Sd	mean	sd	mean	Sd	
Employee representative	0.11	0.31	0.20	0.40	0.23	0.42	0.39	0.49	0.0763***
Flexitime	0.49	0.50	0.56	0.50	0.47	0.50	0.56	0.50	0.0198
Working-time accounts	0.20	0.40	0.41	0.49	0.16	0.37	0.44	0.50	0.0555**
Absenteeism	0.11	0.31	0.08	0.27	0.17	0.38	0.11	0.31	-0.0325*
Motivation	0.13	0.33	0.16	0.36	0.16	0.36	0.17	0.38	-0.0125
Multi-plant	0.20	0.40	0.25	0.44	0.35	0.48	0.36	0.48	-0.0440*
Good economic situation	0.22	0.41	0.16	0.37	0.29	0.46	0.15	0.35	-0.0944***
Ireland	0.16	0.37	0.14	0.34	0.17	0.38	0.15	0.36	0.0005
Cyprus	0.17	0.37	0.17	0.38	0.15	0.35	0.14	0.35	-0.0097
Poland	0.21	0.41	0.28	0.45	0.19	0.39	0.26	0.44	0.0032
UK	0.46	0.50	0.41	0.49	0.49	0.50	0.45	0.50	0.006
Manufacturing	0.37	0.48	0.24	0.43	0.39	0.49	0.29	0.45	0.0297*
Construction	0.13	0.34	0.11	0.32	0.12	0.33	0.10	0.30	-0.0005
Commerce and hospitality	0.28	0.45	0.33	0.47	0.23	0.42	0.27	0.44	-0.0237*
Transport and communication	0.02	0.15	0.05	0.22	0.02	0.15	0.06	0.24	0.0090*
Financial services and real estate	0.10	0.30	0.16	0.37	0.12	0.33	0.20	0.40	0.0116
Other services	0.09	0.29	0.10	0.30	0.11	0.31	0.08	0.28	-0.0260*
Female	2.49	1.48	2.36	1.46	2.59	1.42	2.60	1.38	0.1628**
Skilled	2.72	1.67	2.02	1.48	2.63	1.61	2.16	1.51	0.2228**
Part-time	1.41	0.96	1.41	0.95	1.39	0.92	1.39	0.92	0.0056
Num. of establishments	1411	--	3503	--	367	--	1049	--	

*Notes:* The sample is restricted to establishments employing between 10 and 99 employees (Cyprus, Ireland, Poland and the UK). The data corresponds to the European Company Survey 2004, 2009, 2013. The Treatment variable equals 1 if the establishment has between 50 and 99 employees and 0 otherwise. The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. Female is a categorical variable measuring the fraction of female workers in each establishment (1. <20%, 2. 20-40%, 3. 40-60%, 4. 60-80%, 5. >80%). We report the average category. The fraction of part-time and skilled workers defined in a similar way.

TABLE A.III

## BALANCING TEST OF COVARIATES IN THE PRE-REFORM PERIOD (2004)

	Treatment	Control	Difference	t	p-value
<i>Establishment-level characteristics</i>					
Good economic situation	0.217	0.294	0.077	3.13	0.0018***
Ireland	0.163	0.174	0.011	0.52	0.6013
Cyprus	0.168	0.147	-0.021	0.96	0.337
Poland	0.208	0.191	-0.017	0.72	0.4741
UK	0.461	0.488	0.026	0.9	0.3674
Manufacturing	0.374	0.392	0.018	0.64	0.5228
Construction	0.134	0.123	-0.011	0.57	0.5675
Commerce and hospitality	0.278	0.234	-0.043	1.67	0.0943*
Transport and communication	0.022	0.022	0	0.02	0.984
Financial services and real estate	0.098	0.123	0.025	1.39	0.1636
Other services	0.094	0.106	0.012	0.69	0.4884
Female	2.493	2.586	0.094	1.09	0.2776
Skilled	2.719	2.627	-0.092	0.94	0.3456
Part-time	1.41	1.388	-0.022	0.38	0.701

Notes: The sample is restricted to establishments employing between 10 and 99 employees (Cyprus, Ireland, Poland and the UK). The data corresponds to the European Company Survey 2004. The Treatment variable equals 1 if the establishment has between 50 and 99 employees and 0 otherwise.

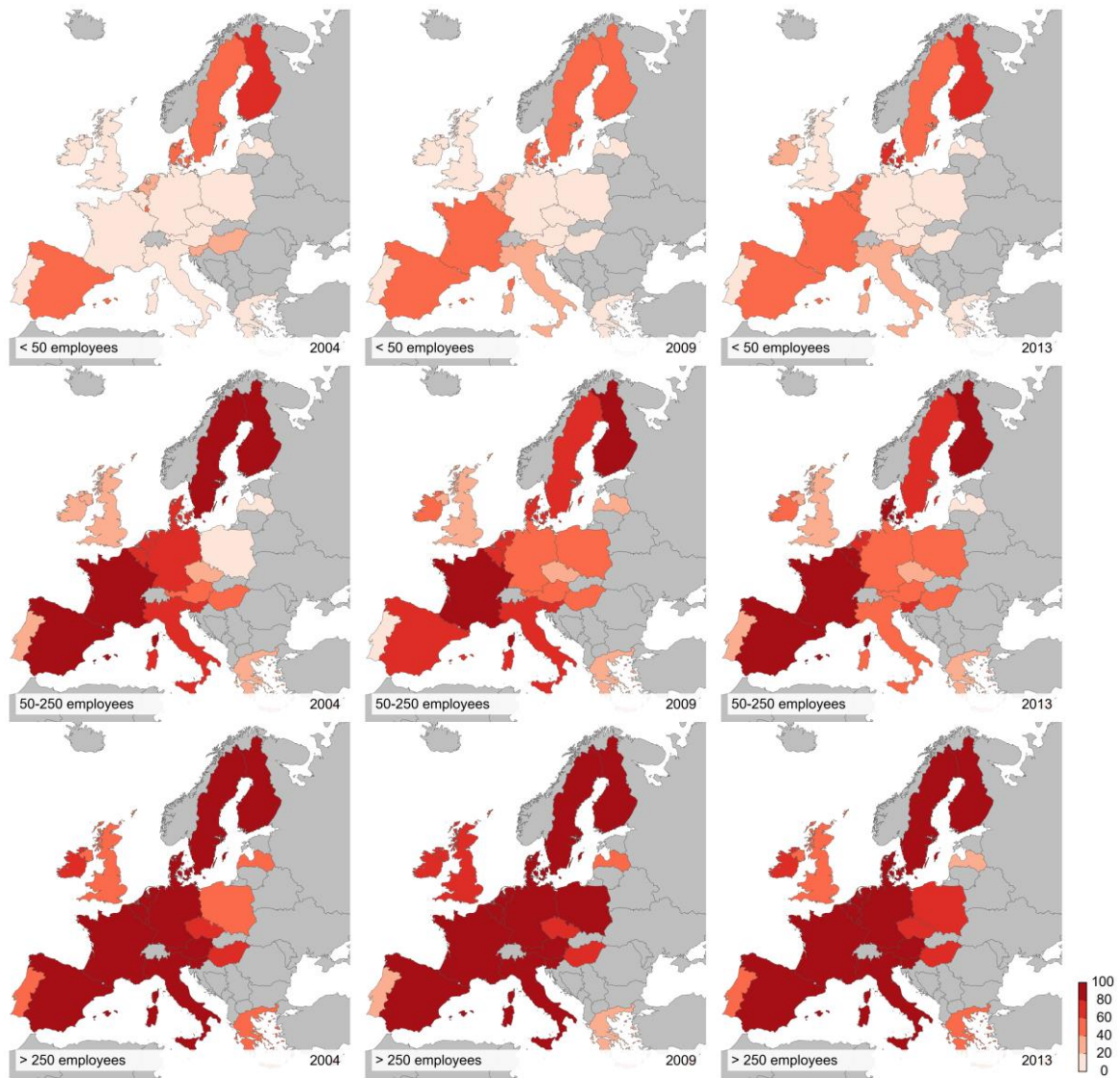


FIGURE A1  
 SHARE OF ESTABLISHMENTS HAVING AN EMPLOYEE REPRESENTATION STRUCTURE  
 BY ESTABLISHMENT SIZE

Notes: Fraction of private-sector establishments (10 or more employees) with employee representation by size.

Source: based on European Company Survey 2004, 2009, and 2013.



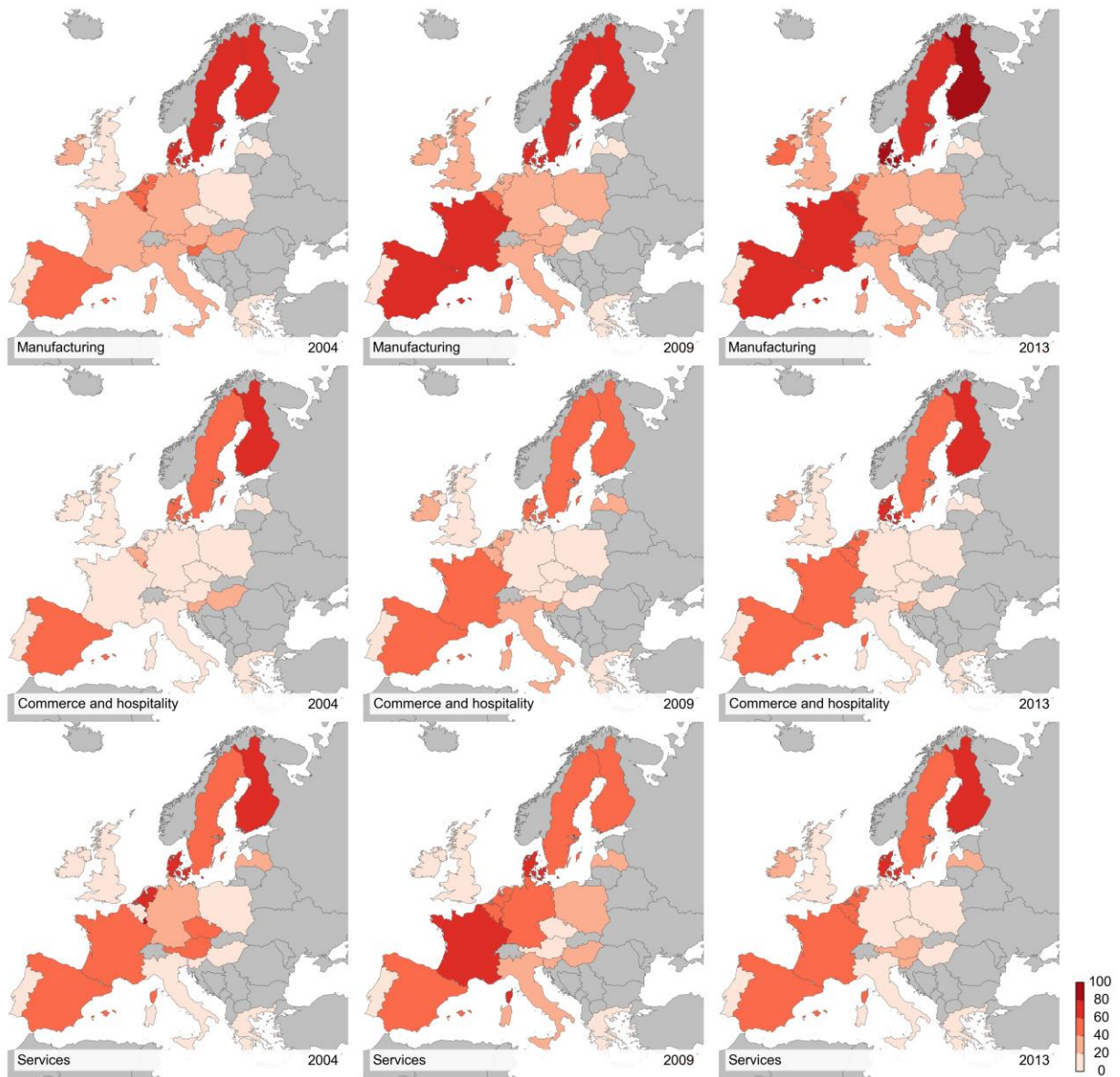


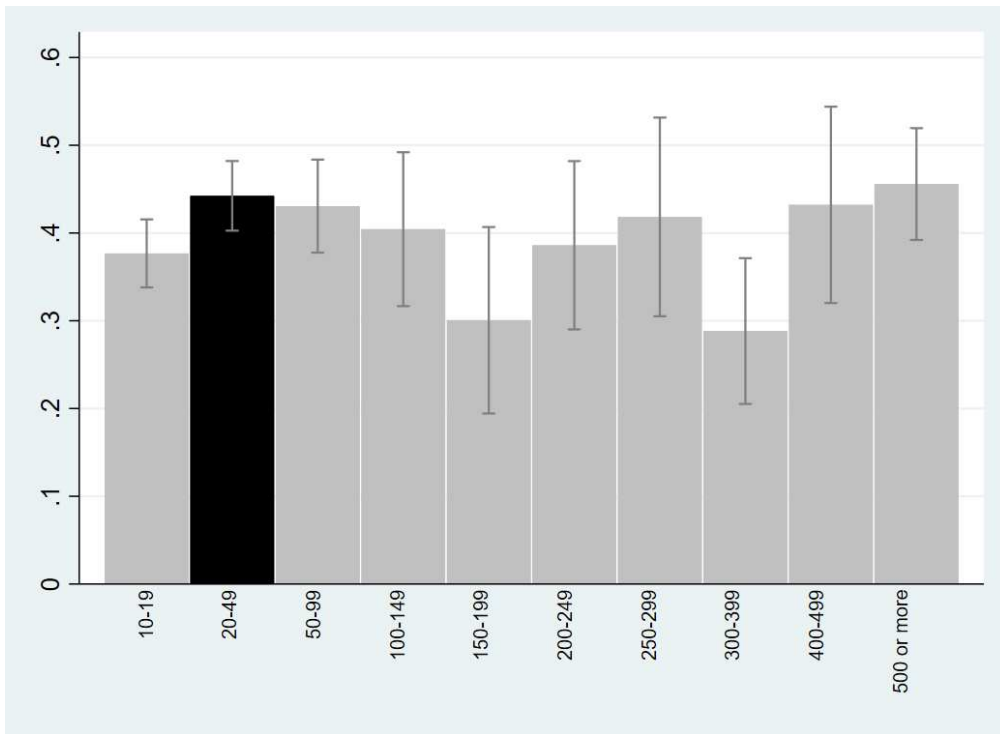
FIGURE A2  
 SHARE OF ESTABLISHMENTS HAVING AN EMPLOYEE REPRESENTATION STRUCTURE  
 BY INDUSTRY

Notes: Fraction of private-sector establishments (10 or more employees) with employee representation by industry. Source: based on European Company Survey 2004, 2009, and 2013.

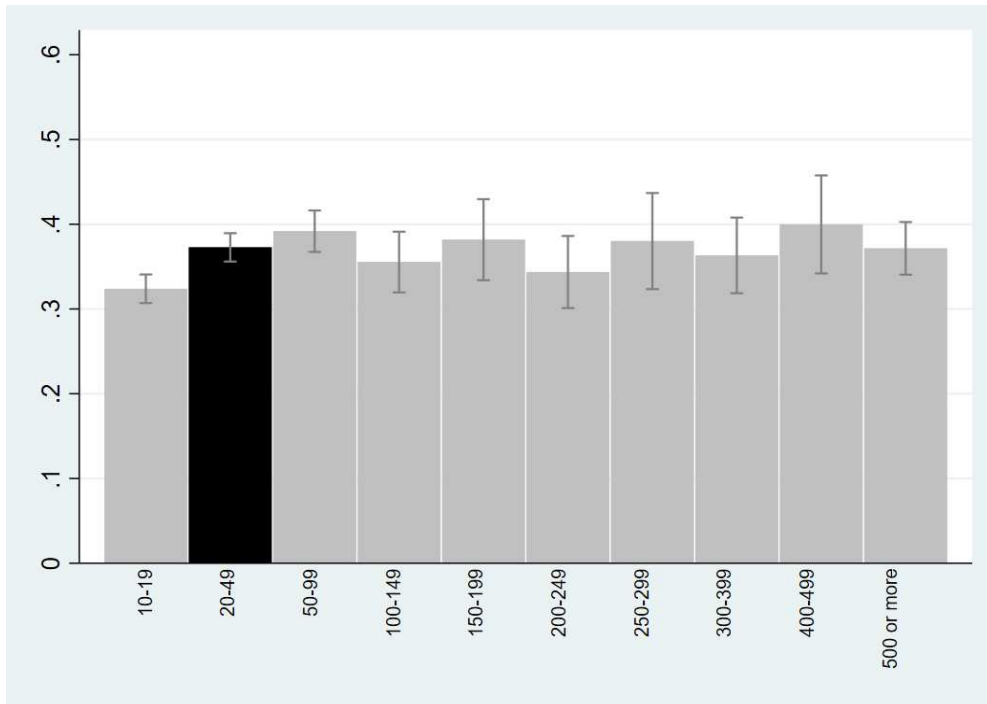
TABLE A.IV  
LABOUR POLICY DEVELOPMENTS RELATED TO WORKING-TIME MANAGEMENT

Country	Year	Description
Cyprus	2006	Regulation of shop opening hours in retail sector
Cyprus	2007	Equal terms and conditions of employment for part-time workers
Cyprus	2013	Extension of the Decree extending shop opening hours
Poland	2003	Introduction of guaranteed 11 hours of uninterrupted rest for every 24-hour
Poland	2010	Extension of working day for people with disabilities
Poland	2013	Possibility to settle irregular working time/Flexitime
UK	2007	Increase in the statutory minimum annual leave entitlement

Source: LABREF Database

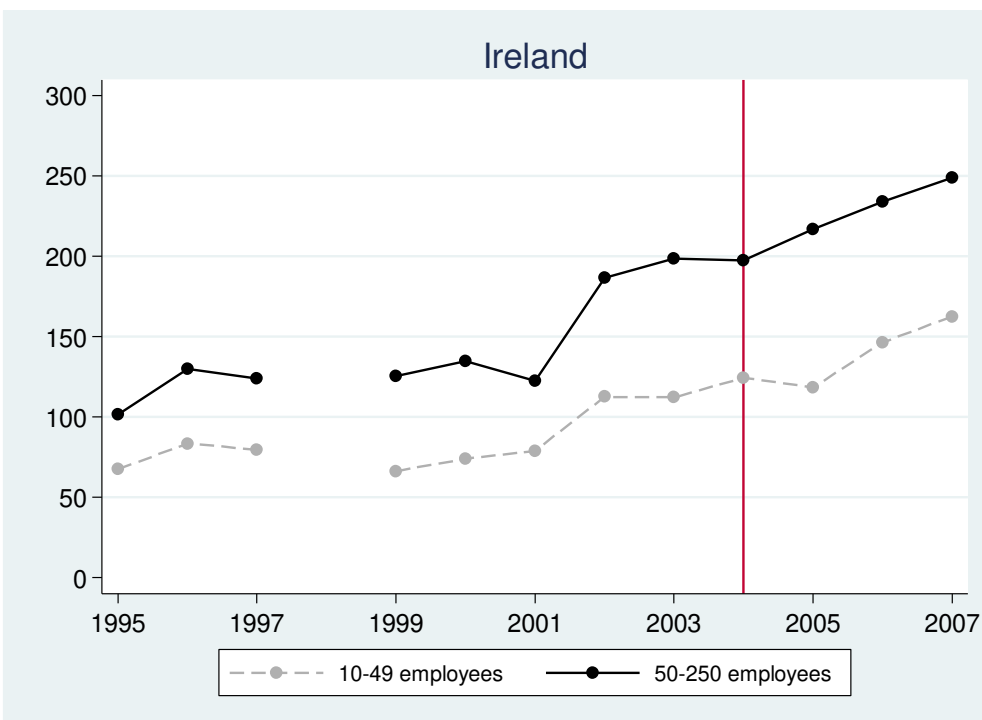
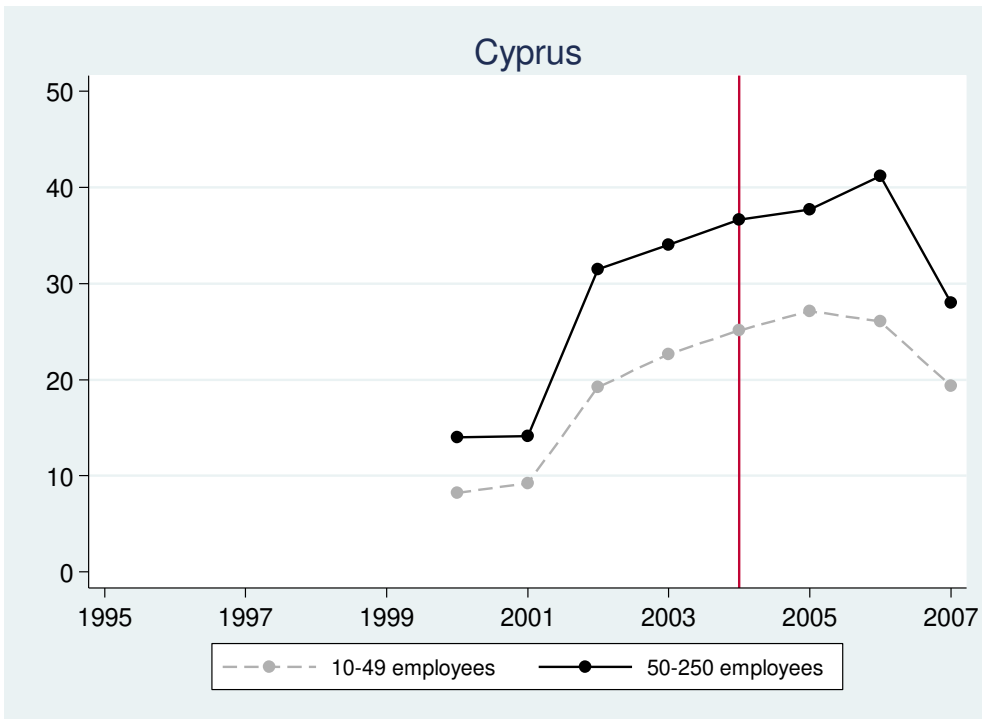


Panel A: CIPUK sample



Panel B: EU21 sample

FIGURE A3.  
 FRACTION OF ESTABLISHMENTS THAT INCREASED EMPLOYMENT IN THE LAST  
 THREE YEARS BY SIZE BAND. *Source:* based on ECS 2004.



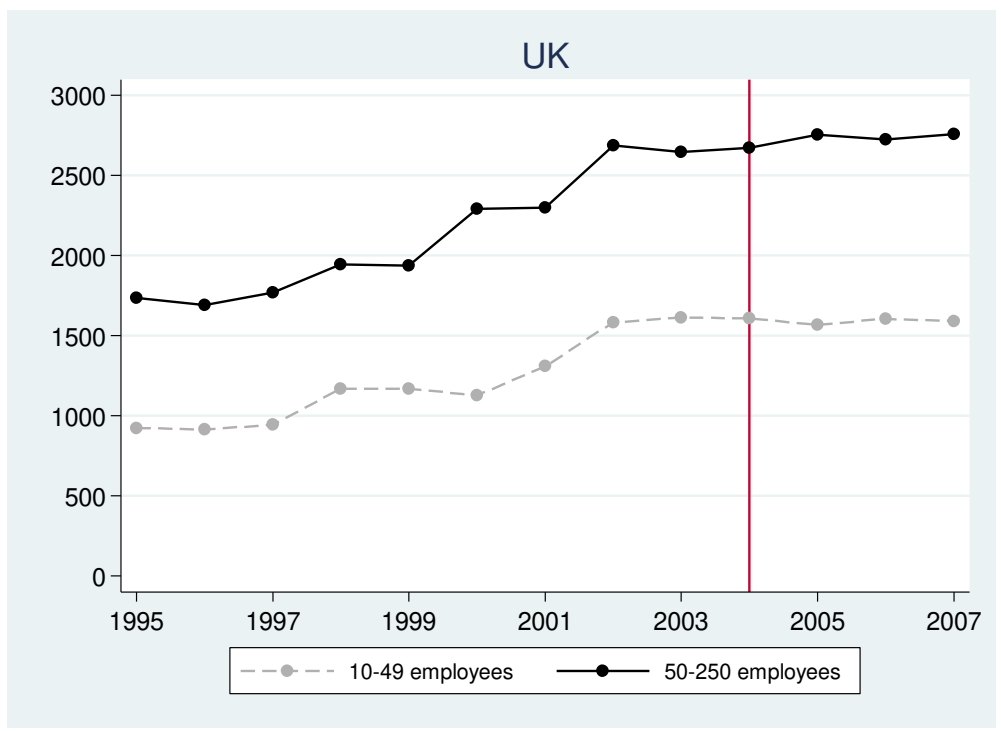
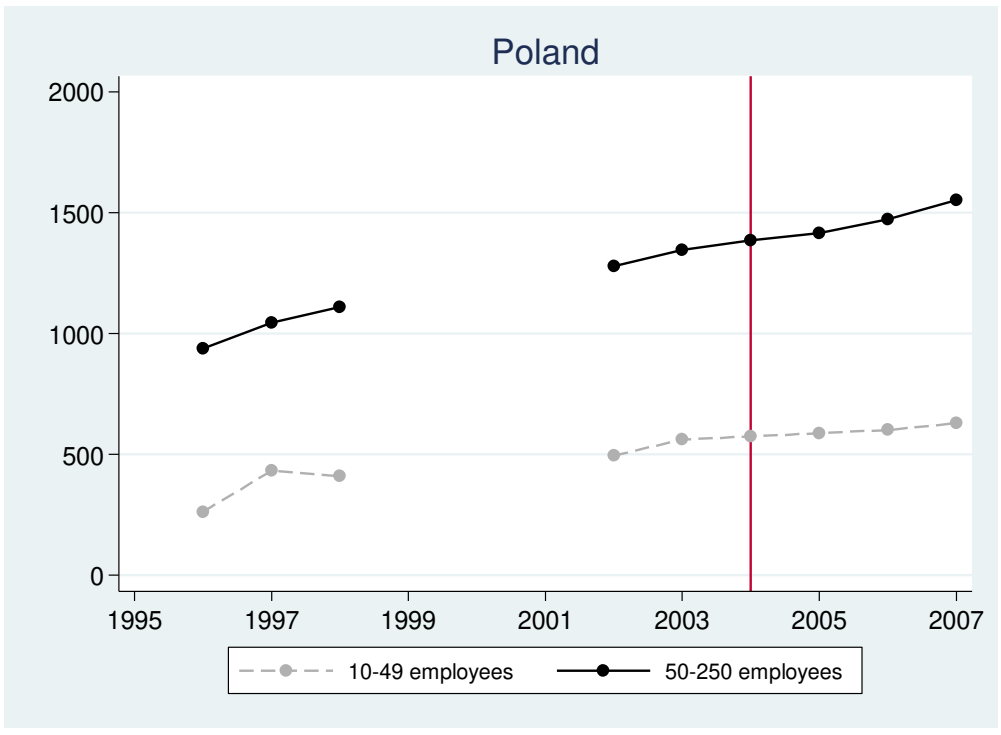


FIGURE A4.  
EMPLOYMENT BY FIRM SIZE (THOUSANDS OF EMPLOYEES). *Source: OECD*

TABLE A.V

## TRIPLE DIFFERENCE (DDD) ESTIMATE: PLACEBO TESTS (EU21 SAMPLE)

	(1)	(2)	(3)	(4)
	T: 20 ≤ L < 50	T: 100 ≤ L < 150	T: 150 ≤ L < 250	T: 250 ≤ L < 400
	C: 10 ≤ L < 19	C: 50 ≤ L < 100	C: 50 ≤ L < 150	C: 150 ≤ L < 250
<b><i>Employee Representation</i></b>				
<b>Treatment*Post*CIPUK</b>	<b>-0.004</b>	<b>-0.029</b>	<b>-0.045</b>	<b>-0.038</b>
	<b>(0.028)</b>	<b>(0.067)</b>	<b>(0.047)</b>	<b>(0.051)</b>
<b><i>Working-time accounts</i></b>				
<b>Treatment*Post*CIPUK</b>	<b>-0.013</b>	<b>-0.090</b>	<b>0.006</b>	<b>0.031</b>
	<b>(0.032)</b>	<b>(0.055)</b>	<b>(0.056)</b>	<b>(0.053)</b>
Establishment level controls	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes
Observations	28,249	11,865	15,699	7,437

*Notes:* Placebo tests: difference-in-differences regressions comparing false treatment and control establishments. The sample is restricted to establishments employing between 10 and 99 employees and EU21 countries. The data corresponds to the European Company Survey 2004, 2009, 2013. The CIPUK variable equals 1 for countries affected by the Directive (Cyprus, Ireland, Poland, and UK) and Treatment equals 1 if the establishment has between 50 and 100 employees and 0 otherwise. The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. The coefficients correspond to the regression in Equation 2 estimated as a Linear Probability Model. The model includes Post\*CIPUK, Treatment\*CIPUK, Treatment\*Post (the general effect for establishments employing 50 employees or more) and Treatment \*Post\*CIPUK (DDD: additional effect for establishments employing 50 employees or more in the 4 countries affected by the Directive). Establishment level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 21 country dummies, share of female employees, share of part-time. Standard errors clustered at the industry-country level in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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TABLE I  
CORRELATION BETWEEN EMPLOYEE REPRESENTATION AND FLEXIBLE WORKING-  
TIME ARRANGEMENTS

	Flexitime			Working-time Accounts		
	(1)	(2)	(3)	(4)	(5)	(6)
	EU21	EU21	CIPUK	EU21	EU21	CIPUK
<b>Employee Representation</b>	<b>0.108***</b>	<b>0.049***</b>	<b>-0.010</b>	<b>0.137***</b>	<b>0.056***</b>	<b>0.026***</b>
	<b>(0.004)</b>	<b>(0.005)</b>	<b>(0.011)</b>	<b>(0.004)</b>	<b>(0.004)</b>	<b>(0.010)</b>
Establishment-level controls	No	Yes	Yes	No	Yes	Yes
Country fixed effects	No	Yes	Yes	No	Yes	Yes
Industry fixed effects	No	Yes	Yes	No	Yes	Yes
Year dummies	No	Yes	Yes	No	Yes	Yes
Observations	52,820	52,293	8,906	52,820	52,293	8,906

*Notes:* All columns report Pooled OLS estimates based on the ECS 2004, 2009, and 2013 cross-section samples. In Columns (3) and (6) estimates are restricted to Cyprus, Ireland, Poland and the UK. Establishment level controls include: economic situation of the establishment as perceived by the manager, 3 plant size dummies (10-49, 50-249 and 250 or more employees), 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 21 country dummies, year dummies, share of female employees, share of skilled employees and share of part-time employees. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE II  
DID ESTIMATES. PRESENCE OF EMPLOYEE REPRESENTATION STRUCTURE

	Treatment: $50 \leq L < 100$			
	Control: $10 \leq L < 50$			
	(1)	(2)	(3)	(4)
<b>Treatment*Post-reform</b>	<b>0.076***</b>	<b>0.073***</b>	<b>0.076***</b>	<b>0.074***</b>
	<b>(0.029)</b>	<b>(0.028)</b>	<b>(0.028)</b>	<b>(0.028)</b>
Establishment level controls	No	Yes	Yes	Yes
Industry fixed effects	No	Yes	Yes	Yes
Country fixed effects	No	Yes	Yes	Yes
Country-specific time trends	No	No	Yes	Yes
Industry-specific time trends	No	No	No	Yes
Observations	6,330	6,300	6,300	6,300
R-squared	0.047	0.084	0.088	0.090

*Notes:* Difference-in-differences regressions comparing treatment (50-99 employees) and control (10-49 employees) establishments. Estimates based on repeated cross-section establishment data from the European Company Survey 2004, 2009, 2013 (Cyprus, Ireland, Poland, and the UK). The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Establishment-level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 4 country dummies, year dummies, share of female employees, share of part-time and skilled workers. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

TABLE III  
DID ESTIMATES. UTILISATION OF FLEXIBLE WORKING-TIME ARRANGEMENTS AND  
OTHER RESPONSES

	Treatment: 50≤L<100 Control: 10≤L<50					
	(1)	(2)	(3)	(4)	(5)	(6)
	Flexitime	Working- time accounts	Working- time accounts 2004-2009	Decreased employment 2010-2013	Absenteeism	Low staff motivation
<b>Treatment*Post-reform</b>	<b>0.012</b>	<b>0.054**</b>	<b>0.099*</b>	<b>0.044</b>	<b>-0.031</b>	<b>-0.022</b>
	<b>(0.033)</b>	<b>(0.026)</b>	<b>(0.055)</b>	<b>(0.027)</b>	<b>(0.024)</b>	<b>(0.025)</b>
Establishment level controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,300	6,300	2040	6,300	6,300	6,300
R-squared	0.084	0.217	0.071	0.093	0.035	0.046

*Notes:* Difference-in-differences regressions comparing treatment (50-99 employees) and control (10-49 employees) establishments. Estimates based on repeated cross-section establishment data from the European Company Survey 2004, 2009, 2013 (Cyprus, Ireland, Poland, and the UK). The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Establishment level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 4 country dummies, year dummies, share of female employees, share of part-time and skilled workers. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE IV  
UTILISATION OF WORKING-TIME ACCOUNTS: HETEROGENEOUS EFFECTS

	(1)	(2)	(3)	(4)	(5)	(6)
	Local wage-bargaining		% Female		% Skilled	
	Yes	No	Low	High	Low	High
<b>Treatment*Post-reform</b>	<b>-0.012</b>	<b>0.065**</b>	<b>0.005</b>	<b>0.094*</b>	<b>0.059*</b>	<b>0.020</b>
	<b>(0.051)</b>	<b>(0.031)</b>	<b>(0.037)</b>	<b>(0.051)</b>	<b>(0.033)</b>	<b>(0.054)</b>
Establishment level controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1717	4583	3538	1641	4182	1569
R-squared	0.296	0.188	0.237	0.210	0.232	0.182

*Notes:* Difference-in-differences regressions comparing treatment (50-99 employees) and control (10-49 employees) establishments. Estimates based on repeated cross-section establishment data from the European Company Survey 2004, 2009, 2013 (Cyprus, Ireland, Poland, and the UK). The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. High % female: the establishment's workforce comprises more than 60% of women. Low % female: the establishment's workforce comprises less than 40% of women. High % skilled: more than 60% of the establishment's employees have a university degree. Low % skilled: less than 40% of the establishment's employees have a university degree. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Establishment-level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 4 country dummies, year dummies, share of female employees, share of part-time and skilled workers. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



TABLE V  
FALSIFICATION TESTS. INDIVIDUAL LEVEL DATA (EWCS 2000-2005)

	Flexitime		Variable working hours per day		Variable working hours per week		Not satisfied	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Treatment*Post-reform</b>	<b>-0.061</b>	<b>-0.046</b>	<b>-0.017</b>	<b>-0.011</b>	<b>0.004</b>	<b>0.009</b>	<b>-0.014</b>	<b>-0.023</b>
	<b>(0.038)</b>	<b>(0.038)</b>	<b>(0.034)</b>	<b>(0.034)</b>	<b>(0.040)</b>	<b>(0.040)</b>	<b>(0.032)</b>	<b>(0.033)</b>
Individual controls	No	Yes	No	Yes	No	Yes	No	Yes
Industry/Country effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2,768	2,587	2,769	2,588	2,771	2,588	2,784	2,602
R-squared	0.002	0.052	0.002	0.033	0.000	0.056	0.003	0.027

*Notes:* The sample is restricted to individuals working at establishments employing between 10 and 99 employees (Cyprus, Ireland, Poland, and UK). The data corresponds to the European Working Condition Surveys 2000 and 2005. The Treatment variable equals 1 if the establishment in which the individual works has between 50 and 99 employees and 0 if it has 10-49 employees. The Post-reform variable equals 1 for the year 2005 and 0 for the year 2000. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Individual level controls include: female, part-time, age, 11 industry dummies, 4 country dummies. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE VI  
ROBUSTNESS CHECKS: PRESENCE OF EMPLOYEE REPRESENTATION STRUCTURE AND  
UTILISATION OF WORKING-TIME ACCOUNTS

	(1)	(2)	(3)	(4)	(5)	(6)
		Treatment: 50≤L<100			Treatment: 50≤L<100	
		Control: 10≤L<50			Control: 20≤L<50	
	Employee representation	Working-time accounts	Employee representation	Working-time accounts	Employee representation	Working-time accounts
<b>Treatment*Post-reform</b>	<b>0.086***</b>	<b>0.086***</b>	<b>0.071**</b>	<b>0.078***</b>	<b>0.063**</b>	<b>0.068**</b>
	<b>(0.029)</b>	<b>(0.029)</b>	<b>(0.028)</b>	<b>(0.027)</b>	<b>(0.031)</b>	<b>(0.030)</b>
Establishment level controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific time trends	No	No	Yes	Yes	Yes	Yes
Industry-specific time trends	No	No	Yes	Yes	Yes	Yes
Observations	6,300	6,300	6,300	6,300	3,837	3,837
R-squared	0.088	0.118	0.089	0.122	0.078	0.137

*Notes:* The sample is restricted to establishments employing between 10 and 99 employees. The data corresponds to the European Company Survey 2004, 2009, 2013. Estimates are restricted to affected countries (CIPUK). In columns 1-2, we include a full set of interactions between the treatment indicator and the covariates. In columns 3-4, we include a full set of interactions between the post-reform indicator and the covariates. Estimates reported in column 5-6 exclude establishments employing 10-19 employees from the control group. The Treatment variable equals 1 if the establishment has between 50 and 100 employees and 0 otherwise. The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Establishment level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 4 country dummies, share of female employees, share of part-time. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE VII  
ROBUSTNESS CHECKS: EMPLOYEE REPRESENTATION STRUCTURE AND UTILISATION  
OF WORKING-TIME ACCOUNTS IN SINGLE-SITE FIRMS

	Single-site firms	
	(1)	(2)
	Employee representation	Working-time accounts
<b>Treatment*Post-reform</b>	<b>0.099***</b> <b>(0.032)</b>	<b>0.060*</b> <b>(0.034)</b>
Establishment level controls	Yes	Yes
Industry fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
Country-specific time trends	Yes	Yes
Industry-specific time trends	Yes	Yes
Observations	4,629	4,629
R-squared	0.108	0.114

*Notes:* The sample is restricted to establishments employing between 10 and 99 employees. The data corresponds to the European Company Survey 2004, 2009, 2013. Estimates are restricted to single-site firms. The Treatment variable equals 1 if the establishment has between 50 and 100 employees and 0 otherwise. The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Establishment level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 4 country dummies, share of female employees, share of part-time. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE VIII  
PLACEBO TESTS. PRESENCE OF EMPLOYEE REPRESENTATION STRUCTURE

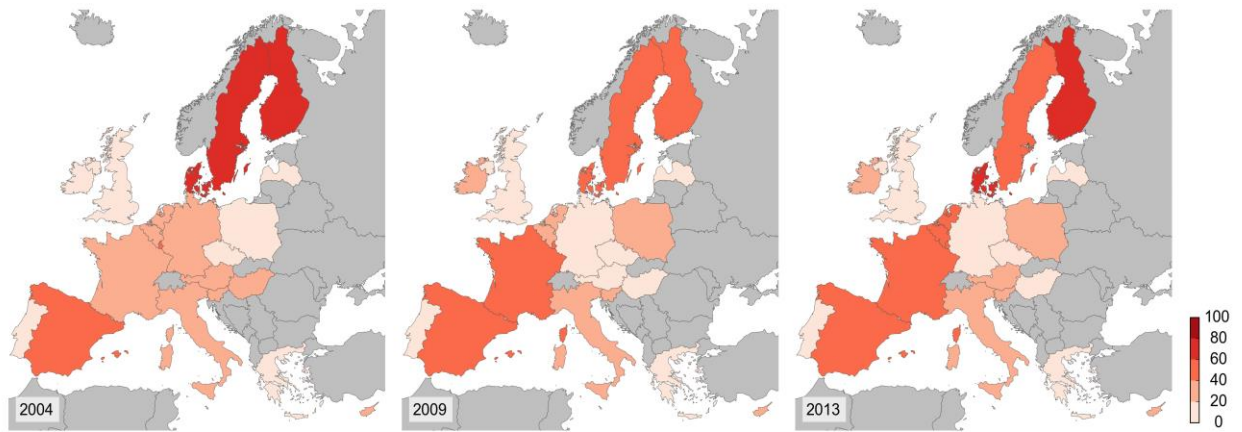
	Placebo tests				
	(False groups/ False pre-post policy period)				
	(1)	(2)	(3)	(4)	(5)
	T: 20 ≤ L < 50 C: 10 ≤ L < 19	T: 100 ≤ L < 150 C: 50 ≤ L < 100	T: 150 ≤ L < 250 C: 50 ≤ L < 150	T: 250 ≤ L < 400 C: 150 ≤ L < 250	Pre-policy: 2009 Post-policy: 2013
<b>Treatment*Post-reform</b>	<b>0.025</b>	<b>-0.067</b>	<b>-0.063</b>	<b>-0.045</b>	<b>-0.050</b>
	<b>(0.021)</b>	<b>(0.052)</b>	<b>(0.049)</b>	<b>(0.063)</b>	<b>(0.033)</b>
Establishment level controls	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	Yes	Yes	Yes	Yes
Industry-specific time trends	Yes	Yes	Yes	Yes	Yes
Observations	4,892	2,008	2,670	1,241	4,538
R-squared	0.067	0.087	0.101	0.079	0.074

*Notes:* Placebo tests: difference-in-differences regressions comparing false treatment and control establishments. Estimates based on repeated cross-section establishment data from the European Company Survey 2004, 2009, 2013 (Cyprus, Ireland, Poland, and the UK). The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. In column (4), post-reform equals 1 for 2013 and 0 for 2009. The coefficients correspond to the regression in Equation 1 estimated as a Linear Probability Model. Establishment level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), 4 country dummies, share of female employees, share of part-time and skilled workers. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

TABLE IX  
TRIPLE DIFFERENCE (DDD) ESTIMATE (EU21 SAMPLE)

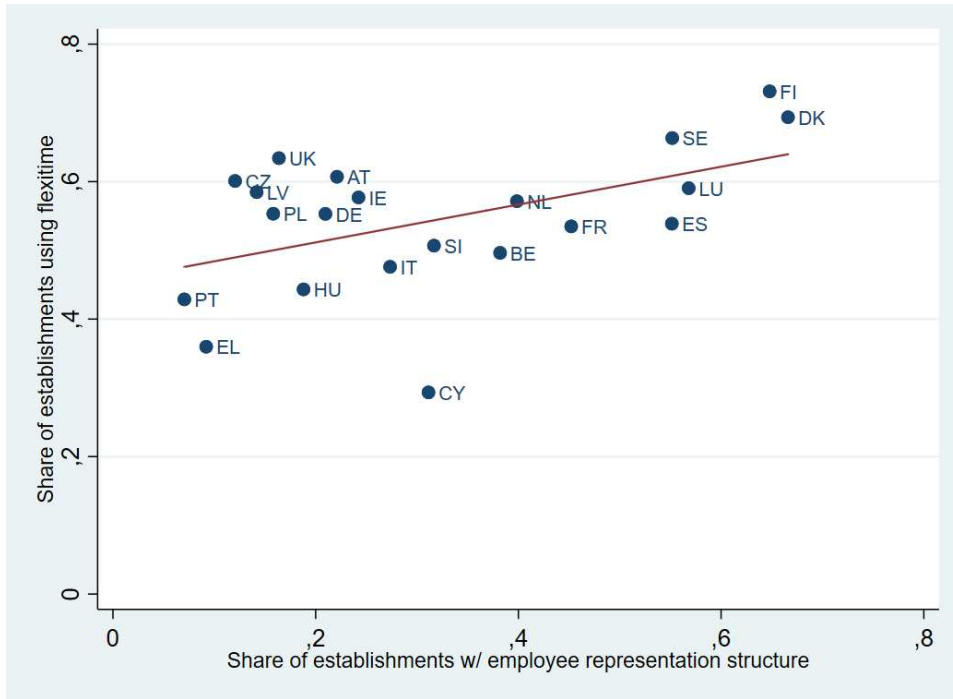
	(1)	(2)	(3)	(4)	(5)
<b><u>Employee Representation</u></b>					
Treatment*Post	-0.032** (0.014)	-0.038*** (0.013)	-0.038 (0.026)	-0.038* (0.021)	-0.038 (0.047)
<b>Treatment*Post*CIPUK</b>	<b>0.109*** (0.032)</b>	<b>0.113*** (0.031)</b>	<b>0.113*** (0.038)</b>	<b>0.113*** (0.038)</b>	<b>0.113** (0.052)</b>
<b><u>Working-time accounts</u></b>					
Treatment*Post	0.018 (0.013)	0.014 (0.013)	0.014 (0.012)	0.014 (0.013)	0.014 (0.014)
<b>Treatment*Post*CIPUK</b>	<b>0.051* (0.031)</b>	<b>0.057* (0.030)</b>	<b>0.057** (0.020)</b>	<b>0.057* (0.033)</b>	<b>0.057** (0.023)</b>
Establishment level controls	No	Yes	Yes	Yes	Yes
Industry fixed effects	No	Yes	Yes	Yes	Yes
Country fixed effects	No	Yes	Yes	Yes	Yes
Industry-specific time trends	No	Yes	Yes	Yes	Yes
Observations	36,778	36,553	36,553	36,553	36,553

*Notes:* The sample is restricted to establishments employing between 10 and 99 employees and EU21 countries. The data corresponds to the European Company Survey 2004, 2009, 2013. The CIPUK variable equals 1 for affected countries (Cyprus, Ireland, Poland, and UK) and Treatment equals 1 if the establishment has between 50 and 100 employees and 0 otherwise. The Post-reform variable equals 1 for years 2009 and 2013 and 0 otherwise. The coefficients correspond to the regression in Equation 2 estimated as a Linear Probability Model. The model includes Post\*CIPUK, Treatment\*CIPUK, Treatment\*Post (the general effect for establishments employing 50 employees or more) and Treatment\*Post\*CIPUK (DDD: additional effect for establishments employing 50 employees or more in the 4 countries affected by the Directive). Establishment level controls include: economic situation of the establishment as perceived by the manager, 6 industry dummies (Manufacturing, Construction, Commerce & Hospitality, Transport, Financial Services and Services), country dummies, share of female employees, share of part-time. In columns 1-2, robust standard errors reported in parentheses. In columns 3-5, standard errors are clustered at the country, industry-country and country-year level respectively \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

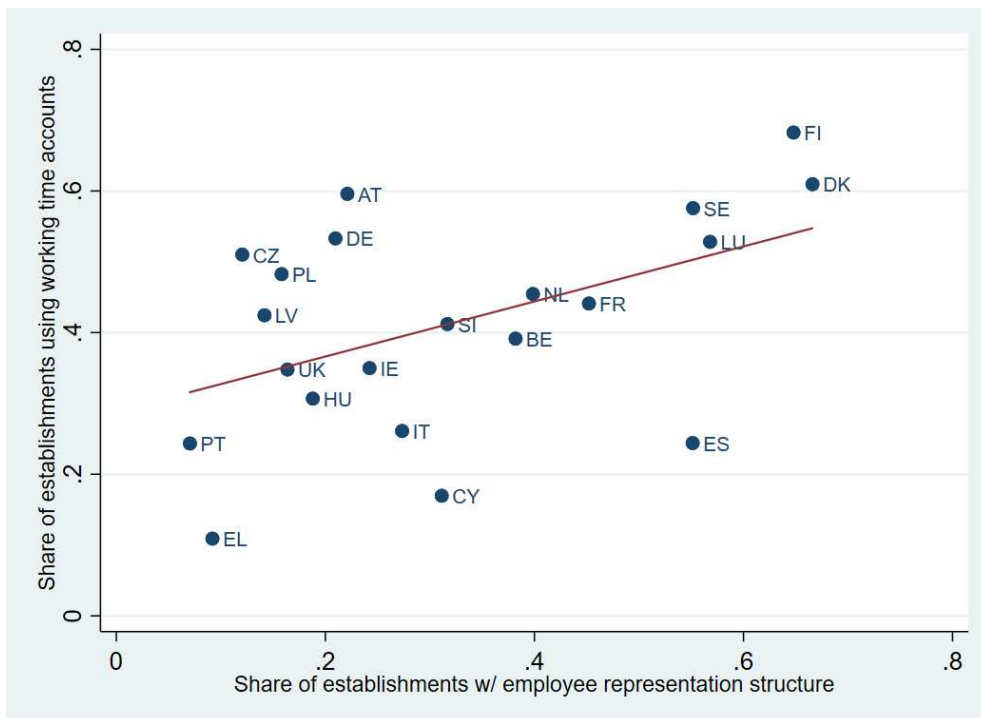


**FIGURE I**  
**SHARE OF ESTABLISHMENTS HAVING AN EMPLOYEE REPRESENTATION STRUCTURE**

Notes: Fraction of private-sector establishments (10 or more employees) with employee representation. Source: based on European Company Survey 2004, 2009, and 2013.



Panel A: Flexitime



Panel B: Working-time accounts

FIGURE II  
EMPLOYEE REPRESENTATION AND FLEXIBLE WORKING-TIME IN EU21 COUNTRIES