European Union: Collective bargaining and internal flexibility during the Great Recession

Santos M. Ruesga, María Isabel Heredero de Pablos,
Julimar Da Silva Bichara, Laura Pérez Ortiz, Ana Viñas Apaolaza
and Sandro Eduardo Monsueto

Abstract

The paper's main objective is to analyze the collective bargaining response in terms of internal flexibility during the Great Recession (GR) in five EU countries (Spain, Germany, France, Italy, United Kingdom), and three economic sectors (industry, commerce and hospitality, and financial services and real estate), at the establishment level (ECS2013 database). The theoretical framework used is linked to the varieties of unionism and to the debate on the tendency towards the international homogenization or heterogenization of collective bargaining between the European Union countries. Using a descriptive statistical analysis and a probit model, this paper presents new evidences. However, the responses were heterogeneous between countries and sectors, the use of internal functional flexibility has been more intense than the numerical and salary internal flexibility. Moreover, it is related to the intensity of GR. These results, in general, while requiring a more detailed analysis of the effects of the GR on internal flexibility in the EU countries, contribute to introducing a new perspective in the socioeconomic literature about the collective bargaining and internal flexibility.

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Authors

Santos M. Ruesga, Universidad Autonóma de Madrid, Spain
María Isabel Heredero de Pablos, Universidad Autonóma de Madrid, Spain
Julimar Da Silva Bichara, Universidad Autonóma de Madrid, Spain, julimar.dasilva@uam.es
Laura Pérez Ortiz, , Universidad Autonóma de Madrid, Spain
Ana Viñas Apaolaza, Universidad Europea de Madrid, Spain
Sandro Eduardo Monsueto, Universidade Federal de Goiás, Brazil

1   Introduction

There is a consensus in the socioeconomics literature that the Great Recession (GR) has introduced heterogeneous transformations on the industrial relations over the European Union (EU) countries, although has not changed the long-term tendency of decentralization, declining union density and reducing union wage bargaining power. These heterogeneous effects are related to the sources of trade union power, which could be associated to structural power (unemployment rate), organizational power (union density), institutional power (collective bargaining coverage) and social power (capability to move and mobilized the society). In other words, on the particular varieties of unionisms and the welfare state in which they are developed (Frege and Kelly, 2004; Lehndorff et al 2017; Visser, 2016; Gumbrell-McCormick and Hyman, 2013).

This general perspective, however, opens a window for a more disaggregated analysis, at sectoral and company level to evaluate the effects of GR (with a microscopic view, using a Gumbrell-McCormick and Hyman (2013) terminology). A company-level analysis allows a more accurate evaluation of the GR effects over the industrial relations. To do that, this paper focuses on the GR effects over the collective bargaining in the EU countries through the internal flexibility.

The relationship between internal flexibility and collective bargaining is one of the most important issues in the recent industrial relations transformations in the EU countries. The main responses in the EU countries at national level were the increase of short-time work and/or temporary layoff; changes in working time arrangements; prevention or mitigation of job loss; measures to support redundant workers; employee concessions (no wage increase or reduction, flexible working time, other changes in working conditions); and some types of employment guarantees (Glassner et al., 2011; Glassner and Keune, 2010; and Carley and Marginson, 2011).

Related to the determinants of those responses, Glassner et al. (2011) and Carley and Marginson (2011) argue that the intensity of the crisis did not affect the cross-country incidence of crisis-response agreements, particularly because measures related to short-time work and/or temporary lay-offs are instruments that existed in many countries before the crisis (such as Austria, Belgium, France, Germany, Italy and the Netherlands). Therefore, they have not been developed during the crisis. The main change has been observed in the participation of the governments, which have extended the criteria to access to short-time working and part-time unemployment benefits and expanded the duration of the measures. This paper aims to contribute to this debate presenting new evidence at the establishment level, which allows measuring the type and the intensity of the responses in terms of internal flexibility and its relation to the economic situation.

Specifically, the paper's main objective is to analyze the collective bargaining response to the GR in terms of internal flexibility during the economic crisis in five EU countries (Spain, Germany, France, Italy, United Kingdom (UK)),[1] and three economic sectors (industry;

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[1] Following the Gumbrell-McCormick and Hyman (2013) classification, we choose one country classified as central (Germany), three south countries (France, Italy and Spain) and UK as member of liberal market economy (LME). The sectoral election relates to the diverse collective bargaining structure, as we will explain in details in the following section. That choice was done in order to cover the diversity of different European industrial relations tradition, as explained by the theory of Variety of Capitalism (VoC) of Hall and Soskice (2001) and updated by Gumbrell-McCormick and Hyman (2013). In addition, and this is the main reason for the election, these five

tourism, commerce and hospitality; and bank-financial services and real estate).[2] We specifically identify the main responses in terms of both existing internal flexibility instruments and the development of new ones through collective bargaining. These responses are classified by sector and country, highlighting similarities and differences, and testing whether the transformations in internal flexibility were the result of some characteristics of the economic sectors or of a particular structure of collective bargaining. We also estimate the role of other factors, such as how the crisis played out in different economic sectors (employment, production, finances); the collective bargaining level in each company; the firm/establishment size; the productive changes in terms of productive reorganization; or the incorporation of new technologies.

For the empirical analysis, we used the database of the European Company Survey 2013 (ECS2013). This survey involved a questionnaire that sought information about how labor is organized inside the company in all EU countries and how these different ways are managed and bargaining at the establishment level. Furthermore, in terms of the objective of this paper, this database allows us to obtain information about the changes occurred since 2010, in internal flexibility, production, employment, and adoption of new methods of organizing production and technologies, by sector and size of the establishment. The methodological analysis uses two empirical methods. First, we discuss some descriptive statistics, in order to establish relations among the target variables. Second, an econometric analysis (probit model) is undertaken, in order to estimate the main factors related to internal flexibility.

After this introduction, the following section summarizes the referenced theoretical framework. The third section highlights the database and methodology. To conclude, we discuss the main insights.

2   Analytical and theoretical framework

The collective bargaining responses to the economic situation could be related to a number of economic, institutional, structural, and technological factors, as well as to the nature of collective bargaining. Synthesizing this complex network of relationships and factors in a theoretical and conceptual analytical framework is a difficult task. Several authors, however, have made outstanding and substantial contributions, among them Freyssinet and Seifert (2001) and Sisson and Martín Artiles (2000), who developed the "Pact for Employment and Competitiveness" (PEC). Frege and Kelly (2004), inspired in Hall and Soskice (2001), developed the variety of unionism framework to show that union strategies are shaped by national industrial relations institutions, as well as by the interactions between union, employer and state strategies. Related to that, Glassner et al. (2011) and Glassner and Keune (2010)

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countries are the biggest European countries, in terms of GDP, employment and industrial complexity. According to Eurostat, in 2013, year of the used database in this paper - ECS2013, Germany, Spain, France, Greece, Italy and the United Kingdom, weighted up to 77 percent of the EU15 GDP and above 78 percent of the total EU15 employment.

[2] In order to simplify, to refer to these three sectors will be used, respectively, industry, tourism and bank.

established an analytical framework for interpreting collective-bargaining responses to the crisis in the EU.

Following Sisson and Martín Artiles (2000), the nature of collective bargaining can be classified by the results of two different negotiation processes: distributive bargaining, where there are winners and losers in a zero-sum game; or integrative bargaining, in which both parts of the negotiation seek to integrate their objectives in a positive-sum game, thus benefitting both parts. These two categories of collective bargaining are not static, and there is a wide-ranging debate in the literature about their dynamics, and about the role played by public policy and the company management.

Another question refers to the meaning of collective bargaining in periods of productive transformation. The main interpretation emphasizes that the PECs assume that concessions will be made by workers (concession bargaining). Sisson and Martín Artiles (2000) feel that in PECs, a concession bargaining scheme, such as "give-and-take" or "win-win," might be considered, in which workers would accept more internal flexibility in exchange for job stability. Nevertheless, other authors, such as Mitchell (1994), consider that concession bargaining does not solely imply concessions by workers, because it also involves a change in equilibrium in employment relations that favors employers, with little or no quid pro quos on their part.

A study from Glassner et al. (2011) complements this analytical framework. They highlight three different aspects that characterize collective bargaining responses to the economic crisis. First, the different measures adopted in the search for protection during the crisis, understanding protection to mean a guarantee of employment and income for workers. For companies, this means ensuring their survival, maintaining market shares, and retaining the most skilled and experienced workers (the response depends on the economic sector since substitution rates are not the same in all sectors). Collective bargaining would be the opportunity for both parties to dialogue and come to an agreement on these matters.

Second, this analytical framework considers the balance between protection measures (from a long-term perspective, maintaining jobs and skilled workers) in contrast to the need to reduce costs (lowering or freezing wages, flexibility, and eliminating jobs). In this sense, the analytical framework of Walton and McKersie (1965) highlights the idea of integrative and distributive collective bargaining. Then, if lower costs predominate, distributive bargaining prevails; or when protection against uncertainty predominates, then integrative negotiation prevails.

The third aspect related to procedural innovation in collective bargaining involves changes in the legal framework that regulates the way collective bargaining is carried out, the aspects of the labor relationship that can be regulated, which eventually may end up destabilizing the equilibrium between distributive and integrative factors in the negotiations. Examples of these factors include the ultra-activity of collective-bargaining agreements, the way in which wages are negotiated, whether company agreements have preference over sector agreements, and more. Despite substantive changes in some EU countries because of the GR, the authors emphasize that procedural innovation is more likely to be incremental and to follow trends already in place.

In this analytical framework, there is also a synthetic structure designed by Glassner et al. (2011) and Glassner and Keune (2010), in the same perspective of the main determinants of trade union power, inspired in the literature about VoC (Lehndorff et al 2017; Gumbrell-McCormick and Hyman, 2013). These authors highlight the role played by four factors on labor

relations. These are labor market institutions, public policies, trade union and company strategies, and the economic situation at the national, sectoral, or company level. Together they provide a synthetic and appropriate framework for analyzing the effects of the GR on collective bargaining. After some adaptations, this framework is the reference to the econometric model in this article.

3   The national and sectoral context

As we highlight at the beginning of this paper, at the national level the GR has introduced heterogeneous transformations on the industrial relations over the EU countries, although do not change the long-term tendency of decentralization, declining the union density and reducing the union wage bargaining power (Lehndorff et al 2017; Visser, 2016; Gumbrell-McCormick and Hyman, 2013).[3]

In the five countries analyzed here, these studies show that the crisis has influenced particularly in the European southern countries (especially in Spain and Italy), deepening that long-term trend, due to a relatively greater reduction of the organizational structural power. Nevertheless, in France and Italy, the unions maintained their capacity of mass mobilization and were able to put on public arena their labor demands; but not in Spain, where the unions have lost much of their social support. Despite this, the coverage rate in these three countries remains among the highest in the EU. On the other hand, in the UK and Germany, the GR has not changed the long-term tendency to reduce the union power (lower density and coverage, and greater collective bargaining fragmentation) observed since the 1980s. However, this reduction has been more adverse in Germany than in the UK, where the union membership and coverage rate have been reducing faster than in the UK and the EU average.[4]

This heterogeneity is also observed in the structure of collective bargaining and in the union's power at the sectoral level, as shown in Table 1.

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[3] "The Great Recession has sharpened the divide between a smaller group of countries with more cohesive and coordinated industrial relations and wage bargaining institutions, and lower inequality levels, and a larger group of countries where 'markets make policies', wage bargaining institutions are divisive and uncoordinated, and income inequality levels are higher" Visser (2016). According to Gumbrell-McCormick and Hyman (2013), among other authors, and following the perspective of VoC or Varieties of Unionism, Lehndorff et al 2017 point out four main conclusions from the effects of GR in Collective Bargaining: "i. Density varies remarkably across countries; ii. Density has declined universally in the past three decades, but far more severely in some countries than others. Consequently, disparities have increased over time. In general, unions where membership level was initially high, have proved more resilient; iii. There are clear differences in bargaining coverage, but they are not to dramatic; iv. In some countries the coverage level has fallen far less than union density, and indeed in some countries is still higher today than thirty years ago".

[4] Visser Data Base.

Table 1. Collective Bargaining predominant at sectoral level and coverage rate (%). Bank, Industry, and Tourism. Spain, Germany, France, Italy, and the UK.

Sector	Spain	Germany	France	Italy	UK
Bank (2011)	Sector/ National (95-100%)	Sector/ National (88% West; 64% East)	Sector/ National (95-100%)	Sector/ National (95-100%)	Company (20%)
Industry[1] (2010)	Sector/ Regional (100%)	Sector/ Regional (65%)	Sector/ National (95%)	Sector/ National (100%)	Company (60%)
Tourism[2] (2012)	Sector/ Regional (100%)	Sector/ Regional (48% West; 25% East)	Sector/ National (100%)	Sector/ National (100%)	Company/ Establishment (5%)

OBS: Coverage rate of Hospitality, data from 2012; banking data from 2011; and metal data from 2011.

OBS: 1. Metal sector; 2. HORECA sector: hotel, restaurant, and cafes.

Source: EurWORK: https://www.eurofound.europa.eu/observatories/eurwork/representativeness-studies

According to EurWORK[5], in Spain, France and Italy between 95% and 100% of the workers in these three sectors were covered by a collective agreement (the collective agreement is extended to no affiliated workers or companies). In Germany, the coverage rate is higher in the East than in West. In France and Germany, every company and employer organization can negotiate in their own sub-sector on several issues (including wages and working time).

The collective bargaining predominant sectoral level does not change during the GR in all countries. However, in a microscopic analysis, it is possible to observe important procedural innovations in the Spanish and Italian sectoral collective agreement. The productive transformation associated to the GR, the high reduction of employment and GDP, and the reduction of trade union social support, created a suitable context to concession bargaining scheme that implied both concessions by workers in terms of internal flexibility and changes in the industrial relations equilibrium in favor of employers. This process, which is also a general trend in the EU, is resulting in a disorganized decentralization in these countries because of the absence of a social pact.

One characteristic of the trade union structure in the three south European countries is the existence of trade union competition in each sector. In spite of this, during the GR in France and Spain, the big unions have coordinated the bargaining process. It is not the case in Italy. Collective bargaining in Italy takes place at two levels: at a national sectoral level, reflecting general wages and working conditions, and, at a second level, agreements are negotiated at the company level. In 2009, once the crisis began, a new Framework Agreement that introduced changes in the structure of the agreements was presented but not signed by all unions, because it altered the balance between the two levels of bargaining and divided the unions (CGIL-Confederazione Generale Italiana del Lavoro, did not sign this agreement).

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[5] European Observatory of Working Life,
https://www.eurofound.europa.eu/observatories/eurwork/representativeness-studies

This labor reform introduced changes in favor of a company collective agreement since it supposedly allows internal flexibility to adapt more quickly and effectively than in the case of sectoral/national agreements.[6] In this inter-union conflict, the rupture that marked the Pomigliano Agreement,[7] transformed into a specific collective agreement for a FIAT production plant, also stands out.

In Spain, the union bargaining power during the GR reduced significantly,[8] although there is a difference between sectors. Sectors formed by large companies, such as industrial, banking and public services, relatively maintained their bargaining power, allowing them to negotiate internal flexibility instead of external flexibility. In the other sectors, its power has significantly decreased cause the lack of structural, organizational and social power. Moreover, the institutional power was severely damaged since the 2012 labor reform that promoted decentralization (prioritizing firm agreement face to upper level) and the end of ultra-activity clauses.[9]

4   Database and methodology of analysis

The analysis used microdata from the European Company Survey 2013 (ECS2013), conducted in 2013 to establishments with more than 10 workers in all economic sectors, except agriculture, household activities, and organizations with extraterritorial activities (NGOs or similar). The survey includes variables such as work organization, working time, and the pay system, which allow us to measure internal functional flexibility (IFF), internal numerical flexibility (INF), and salary or financial flexibility (SF), as defined by Atkinson (1984).

Three indicators measure the degree of IFF. First, it considers the existence of work teams with certain functions, although their internal mechanisms are, in general, autonomous. Second, it accounts for workers who carry out their activities in more than one work team and, finally, it includes functional flexibility, in other words, if workers can carry out more than one task. The ECS2013 indicates that multitasking or task rotation occurs when a worker moves between two or more tasks.

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[6] For example, the *Accordo interconfederale in materia di rappresentanza*, signed on June 28th of 2011 between Confindustria (employer's representativeness) and the three main unions (CGIL, CISL and UIL), gave prominence to company agreements (LABREF Database).

[7] Pomigliano is the name of a factory, located near of Naples, for which an agreement was reached between the FIAT company and two of the three main unions in the sector (FIOM-CGIL was left out). This agreement, after leaving FIAT from the sectoral employers' association, meant a break in the sectoral labor relations with consequences in others sectoral collective bargaining.

[8] Because of the high growth of unemployment rate, the structural power has reduced significantly during the GR (high unemployment rate - 24% in 2012 and almost 5 million unemployed people).

[9] Despite this, sectoral collective bargaining has been able to maintain its importance, the sectoral coverage rate remains higher than the company coverage rate and has even increased between 2008 and 2016, from 90% to 93% of total employees in Spain (Source: Ministerio de Empleo y Seguridad Social de España: *Encuesta Annual Laboral – Annual Labour Survey –* http://www.mitramiss.gob.es/estadisticas/EAL/welcome.htm).

INF refers to the organization of working time within establishments to meet the needs of both employees and employers and is measured in ECS2013 with three indicators:

Flexible working hours: the possibility of workers adapting to changes at the start or the end of the working day (flextime);
Bank hours: the possibility of saving working time and using it later;
Part-time: the percentage of part-time workers.

SF refers to the variable share of worker payments, i.e., a supplement to the basic wage that varies both in amount and over time, that is, it is not fixed. It is defined by a series of elements normally associated with the productive and financial performance of the company and its workers. ECS2013 shows five different forms of wage flexibility, three associated with the productive performance of workers and the establishment, and two associated with the financial performance of the establishment or company. The flexible wage:

Depends on the performance of the establishment.
Depends on individual performance.
Is associated with the performance of the work team or department.
Depends on the profit-sharing scheme.
Depends on workers' participation in the capital of the company (shares).

ECS2013 has a variable that allows us to evaluate the percentage of establishments that have introduced changes in all three indicators of internal flexibility since 2010, by country, sectors of activity, size, etc.

In order to achieve the objective of this study, our analysis will focus on the changes made in workforce organization and allocation (a proxy for IFF), the changes in working time (a proxy for INF), and the changes in remuneration systems (a proxy for SF).

Further, we shall attempt to relate the changes observed in each indicator, representative of the different types of flexibility, to economic situation variables, i.e., changes in employment, production, and finances; the incorporation of technology; and changes in the wage bargaining level. The empirical study has a descriptive statistical analysis and an estimation of the main determinants of the changes in the three types of internal flexibility at the establishment level in the five countries using a probit model. Following the synthetic structure designed by Glassner et al. (2011) and Glassner and Keune (2010), the explanatory variables will represent the labor market institutions (wage-bargaining level), the economic situation at the company level, and three variables: the company size, the sector, and the introduction of new technology.

By estimating a probability model, we can define, for example, the marginal effect of factors such as company size or wage-negotiation level on the change in internal flexibility. To do this, the main purpose of the model is to estimate the probability of creating any type of change in one of the three types of internal flexibility, controlled by a series of sectoral variables, the establishment size, the economic situation, technology and wage-bargaining level, expressed in the following equation:

$$P(Y_{ij} = j) = f(\beta_k X_i , \dots , \varepsilon_i) \tag{1}$$

where:

- Y_{ij} assumes the value 1 when establishment *i* has introduced a change in the internal flexibility of type *j*;
- X_i represents the explanatory variables which are:

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  ➢ *X_i represents the explanatory variables which are:*

  ➢ Wage-bargaining level, which can be at the occupation level (reference), establishment (necoempresa), sectoral/regional (necosector) and national (neconational).

  ➢ Economic situation variables. Of the three possible economic-situation variables, i.e., employment, production, and finances, we decided to use only employment because of its greater effect on labor relations and the existence of multicollinearity with the other two variables. The employment variable has three dimensions: increase, decrease, and stability.

  ➢ Establishment size: small (from 10 to 49 workers); medium (50 to 249 workers); and large (more than 250 workers);

  ➢ Sectoral variables: Industry, construction, commerce and hospitality, transport and communication, financial services, and other services;

  ➢ Technology, reflecting whether the establishment has introduced changes in the use of technology; and

  ➢ A country dummy for each of the EU15.

The β_k coefficients represent the effects of the selected variables and the term ε represents the random error.

We estimated six probit models, one for the EU15 and five for each of the countries considered in the study. In addition, we observed a high degree of multicollinearity between changes in the use of technology since 2010 and the establishment size, because that these variables are used alternatively in each model. Therefore, this involves six estimates for each of the models (two for each type of internal flexibility).

An initial cross-correlation analysis of the three types of internal flexibility shows (Annex 2) a low coefficient of correlation between them, which means some independence between them. It also means that there could be different determinants for each type of change in internal flexibility and, thus, the suitability of carrying out the estimation of separate models.

5   Main results

5.1   Internal functional flexibility (IFF)

Our analysis of descriptive statistics shows that Spain has undertaken more changes in IFF, followed by Italy, France, UK, and Germany. Medium and large establishments undertook the most changes. In terms of the economic sectors, the outcomes are heterogeneous, since in Germany the most frequent changes occurred in the industrial sector, in Spain and France they

occurred in commerce and hospitality, and in Italy and the UK, they occurred in the financial services and the real estate.

Types of IFF also observe these heterogeneity answers. A significant percentage of establishments in Italy employs workers who are engaged in more than one task involving teamwork, while all five countries have a larger percentage of establishments in which most workers are multi-task and belong to a work team. However, when we analyze the IFF indicator, Spain and Italy are the countries that have introduced more changes since 2010. These results are related to the initial level of functional flexibility in each country and sector. (Table 2).

The relationship between changes in IFF and the economic situation, the introduction of new technologies and the bargaining level, by country and sector, are homogeneous. Nevertheless, these outcomes occur with different intensity: there is a direct relationship between changes in IFF and the introduction of new technologies, the production of goods and services and the employment level, but there is no apparent relation with the wage-bargaining level.

For all countries and sectors, the deeper the economic crisis, in terms of production and employment at the establishment level, the higher the changes in IFF since the beginning of 2010. This is a new finding since the existing evidence does not find a relationship between the GR and the response of collective bargaining (Glassner et al., 2011; and Carley and Marginson, 2011).

We also observe a direct relationship between IFF change and the introduction of new technology (Annex 3). There is a debate in the economic literature on the direction of causality, whether from functional flexibility to the use of new technologies or vice-versa. Although studies abound, no consensus exists regarding the relationship between the two variables. For some agents the relationship is direct: the greater the flexibility, the greater the ability to introduce technology (European Commission, 2005). For other analysts, however, excess internal flexibility diminishes the company's ability to innovate in the long term (Franceschi and Mariani, 2016; Wachsen and Blind, 2016). On the other hand, other studies draw a link between introducing technology and internal flexibility. Here, there is a consensus that the introduction of new technologies favors internal flexibility (Treu, 1992; Love, Simpson, and Walker, 1989).

Table 2. Percentage of establishment that use IFF by type, country, and change in IFF since 2010

	Work Team	Multi Work Team	Multi-Task	Change IFF since 2010
Germany	79.5	35.7	64.1	20.7
Spain	81.3	54.0	68.4	42.0
France	78.6	40.4	68.7	28.9
Italy	72.6	58.2	60.7	34.8
UK	75.4	38.2	72.4	26.6

Source: Prepared by the authors based on ECS2013.

5.2 Internal numerical flexibility (INF)

The analysis of the changes in INF since 2010 reveals that Spanish establishments have introduced the most changes, followed by Italy and the UK. Germany, on the other hand, has changed the least in numerical flexibility. Despite this, the percentage of Spanish and Italian establishments using numerical flexibility mechanisms such as bank hours and part-time jobs is still lower than in Germany, France, and the UK. The latter result is mainly related to the low incidence of INF mechanisms before 2010 and that the GR forced to introduce them faster. The most important changes introduced by these countries are the *Temporary Employment Regulations* (EREs) in Spain and the *Cassa Integrazione* in Italy, although these changes were introduced before 2010. The changes come in addition to an increased use of flexible forms such as bank hours, part-time contracts, and temporary work agencies.

Regarding the economic situation, the establishments that posted the greatest loss of employment and production and felt their financial situation worsen made the most changes in the organization of working time, however, is important to note that it doesn't mean causality (Annex 4). Otherwise, establishments in Germany within the three sectors of activity experienced less intense negative consequences of the crisis in terms of employment, production, and finances, and made less frequent changes in work organization. Spain recorded an opposite situation. France and the UK are closer to the German situation. In the industrial and financial services sectors, the relationship between these two variables in Italian establishments shows a behavior close to that of the UK and France. Only the commerce and hospitality sector in Spain and Italy have an equivalent situation. This relation between INF and the GR is the same outcome found previously in the case of IFF.

With respect to the relationship between changes in INF and the introduction of new technology, there is a positive correlation with each of the three economic sectors considered, although with a certain heterogeneity between countries and sectors. Among sectors, the correlation is higher for commerce and hospitality, and financial services have a higher correlation than the industrial sector. In this latter sector, establishments in Spain and the UK have introduced proportionally more changes in the use of technology. In the commerce and hospitality sector, it is the case in Spain and Italy. In the financial sector, we found a higher level of correlation between INF and the changes in use of new technology in the UK.

There is no clear relationship between union-bargaining power and the percentage of establishments that introduced changes in INF. In Germany and France, for example, the frequency of changes in INF indicates a direct relationship with the degree of centralization of collective bargaining; in the other countries, however, there is no clear relationship.

Table 3. Internal Numerical Flexibility by type, country, and change since 2010 (% of establishment)

	Working Time	Bank Hour	Part Time	Change INF
Germany	71.4	92.9	79.1	12.6
Spain	74.5	49.3	57.3	30.6
France	72.5	76.3	64.2	17.6
Italy	68.2	55.1	64.1	20.8
UK	72.1	58.8	76.8	19.4

Source: Prepared by the authors based on ECS2013.

5.3 Salary or financial flexibility (SF)

The analysis of descriptive statistics regarding SF shows some heterogeneity by sectors and countries. The most used forms are flexible payments linked to the individual performance, followed by extra pay linked to the results of the establishment and linked to the performance of the team, working group or department. With regard to the financial participation of the company, the most used form is based on profits, followed by extra pay in form of share ownership scheme offered by the company.

All countries show the SF described above, but Italy applies all types of wage flexibility less frequently (except for extra payments for workgroup performance, where we detect a lower percentage among Spanish establishments.) France and the UK have a higher relative incidence of wage flexibility for financial participation.

Changes in SF show that Spain has introduced changes more frequently since 2010, for the total economy, and in commerce and hospitality, and the financial services sectors. The UK places second, but first in the industrial sector; Italy and Germany follow with similar results: Italy leads in the financial-services sector and Germany in the commerce and hospitality sector. France introduced the least changes in SF since 2010. We observe that the greater the size of the company, the greater SF in all countries, by sector and type of SF.

Regarding the establishment size, there is a clear tendency for the frequency of different types of SF to increase with the size of the establishment, in all countries, sectors, and types of flexibility. France is an exception: smaller establishments have introduced the most changes, followed by medium and large ones.

Variables related to the economic situation apparently show a low level of relationship with changes in SF in establishments of all five countries and in the three sectors (Annex 5). Perhaps only in the financial-services sector is the relationship somewhat stronger, revealing a certain positive correlation between those establishments/companies that have suffered the most from the crisis and the introduction of changes in SF, without revealing causality.

All the three sectors show a positive relationship between changes in SF and changes in the use of technology.

The relationship between SF and the wage-bargaining level is not homogeneous in countries and sectors. Current empirical literature suggests that there is no compatible relationship because the more bargaining is centralized, the lower the degree of wage flexibility (Calmfors and Driffill, 1988). Moreover, the same theoretical relation would be expected with regard to the changes introduced in SF, that is, the greater worker resistance is to changes in the payment system, the greater their bargaining power. Thus, we would expect that the change in SF is negatively related to the collective-bargaining level.

Table 4. SF by type, country, and change since 2010 (% of establishment)

	Results	Individual performance	Performance of the team	Profit share scheme	Share ownership	Change SF
Germany	34.9	50.9	23.8	38.7	5.1	24.5
Spain	41.5	43.5	30.0	31.9	7.7	31.1
France	42.1	45.8	31.1	49.1	10.9	17.1
Italy	22.5	44.5	26.6	30.3	4.3	22.5
UK	38.9	46.8	30.7	32.5	11.8	23.7

Source: Prepared by the authors based on ECS2013.

5.4 The probit model of IF determination

The previous analyses do not produce definitive results regarding the main determinants of changes in the internal flexibility of the countries and sectors. Therefore, a probit model complements the study to estimate the main determinants of changes in the three different types of internal flexibility at the company level in the five countries. We estimated one model for the EU15 and five for the countries considered.

In all models, the introduction of new technology is the most important determinant of changes in the three types of internal flexibility in the EU15 countries. The establishment size is only statistically significant for the probability of changes in INF and SF. Large establishments are relatively more important in terms of the probability of changes in INF, while mid-sized establishments are relatively more important regarding the probability of changes in SF.

The economic-cycle variable, represented by employment, is used as a reference to keep the number of workers constant. It is statistically significant in the three types of internal flexibility. Since the variables that show increases and decreases in the number of employees are statistically significant, this would imply that establishments that maintained a constant number of workers are less likely to introduce changes in the different types of internal flexibility than those establishments that posted both positive and negative variations in the number of employees.

In terms of the wage-bargaining level, there is some heterogeneity in the determination of internal flexibility. In the case of IFF and SF, only wage bargaining at the establishment/company and national levels is statistically significant, while the sectoral/regional level is not. In the case of INF, all wage-bargaining levels are statistically significant, although we see that the weight of wage bargaining at the sectoral/regional level is slightly lower than the other two. In all cases, wage bargaining at the occupational level, used as a reference in the models, appears with a lower weight than the other areas in determining the probability of changes in the different types of internal flexibility.

Finally, there is also a high degree of heterogeneity in the economic sectors. In IFF, only the construction sector is statistically significant; for INF, only the construction, commerce and hospitality sectors are significant; and in SF, the commerce and hospitality, transport, communications, financial services, and other services are statistically significant. The construction sector reduces the probability of changes in both the INF and IFF for the industrial

sector, which is the reference for the estimations; the other statistically significant sectors have a slightly higher probability of change than the industrial sector.

The main results of the analysis for the five countries estimations are:

Changes in the use of technology are the main determinant of changes in the three types of internal flexibility for all countries. The most important changes take place in IFF, then in payment systems and, finally, in INF.

In terms of the establishment size, there is considerable heterogeneity between countries. In Spain and UK, the establishment size accounts for changes in internal flexibility, while in contrast, it is not important in Germany and France. In Italy, only medium-sized establishments are statistically significant.

The economic situation has positive effects on the likelihood of change in all types of estimated flexibility. There are some exceptions, but in general, changes in employment, regardless of its sign, increase the probability of introducing changes in internal flexibility. This result could be associated with the need for adjustment resulting from the change in the number of workers employed in the establishment, that is, a change in the number of employees brings with it the need for changes in the internal flexibility of companies.

This result raises two issues: First, the direction of causality, i.e., whether from flexibility to changes in the volume of employment or vice-versa. Second, the effects of flexibility on employment. We undertook these analyses based on the PECs hypothesis (Freyssinet and Seifert, 2001; Sisson and Martín Artiles, 2000). This implies an effort to preserve employment or minimize job losses in exchange for decreasing production costs and improved adaptation to changes in market conditions. Seen this way, the relationship should be nonexistent, once changes in flexibility guarantee the volume of employment. Yet, without accounting for job quality (once more-flexible forms of work are introduced, such as temporary or part-time contracts, and lead to a decrease in the quality of employment), some studies associate the introduction of internal flexibility to reduced unemployment, while other studies point to the increase in long-term unemployment. In any event, the matter requires much more microeconomic and qualitative research to determine the direction of causality.

Regarding the wage-bargaining level in Spain, Italy, and France, we found a small relationship with internal flexibility, with a few exceptions: In Spain, wage bargaining at the sectoral/regional level reduces IFF; however, it increases SF at the establishment level. In Italy, wage bargaining at the national level increases the probability of changes in the INF and SF. In Germany, the wage-bargaining level seems to have more effect on IFF and SF, and there was no relationship with INF. In the UK, bargaining wage at the national level increases the likelihood of changes in all types of internal flexibility; however, bargaining at the sectoral/regional level increases the rigidity in INF.

In terms of the economic sectors, we also found no homogeneous relationship among countries in the different models. In Spain, the commerce and hospitality sector and the financial services sector have a greater probability of changes in internal flexibility; in Germany, this is the case of the industrial sector. There are no significant differences between sectors of economic activity in Italy and the UK. In France, the results are contradictory, because belonging to the financial-services sector increases the probability of changes in SF, but reduces the probability of changes in INF.

6   Conclusions

This study aimed to analyze the effects of the GR on the internal flexibility of the EU countries, focusing the analysis on five countries (Spain, Germany, France, Italy, and the UK) and three sectors of economic activity (industry, tourism, and bank). The descriptive statistics analysis shows that the level and the intensity of internal flexibility changes since 2010 were heterogeneous between countries and sectors. These changes are related to the existed degree of internal flexibility before the GR. Therefore, Spain and Italy made the most changes in internal flexibility since 2010. This response is more intense in medium and large establishments. By sector of activity, changes have been more frequent in German industrial establishments; in the Spanish and French commerce and hospitality sectors; and in the Italian and UK financial sectors. We found, moreover, the response was more intensive in terms of IFF, which is a new evidence in the industrial relations literature. The *probit model* estimations confirm that two variables, the economic situation and the introduction of new technologies, were the main determinants of changes in internal flexibility, with greater intensity in IFF, followed by SF and then INF.

These results, in general, while requiring a more detailed analysis of the effects of the GR on the internal flexibility of the EU countries, contribute with several novel results to the literature. First, the process of adapting to the economic situation, while showing a certain convergence to greater internal flexibility, is not homogeneous among countries and sectors of activity within countries, despite the findings showed by Glassner et al. (2011) and Carley and Marginson (2011). Thus, the study of effects must consider not only regional labor market institutions differences but also sectoral ones. The evidence on the effects of the intensity of the crisis and the productive and technological characteristics of each sector seems to point in this direction.

Moreover, the conclusions also show that the wage bargaining level has little effect on adjustments to the economic situation in terms of internal flexibility. This could be evidence in favor of the perspective that the process of adjustment of collective bargaining to the business cycle is a distributive bargaining type, particularly in Spain and Italy. Therefore, using Traxler (1995), we could associate the German case to an "organized decentralization" leading by the social partners, however, the Spanish and Italian case follow a "disorganized decentralization", imposed by the government in Spain and driven by the firm in Italy.

Although these findings contribute to the understanding of the EU15 industrial relations change during the GR, they are limited by the database characteristics (ECS2013) and the quantitative analysis. Regarding the database, and taking into account the paper objective, the effects of GR on industrial relations, particularly those related to the consequences of GR and the financial imbalance at company level. On the other side, the empirical analysis throughout a qualitative methodology, would offer complementary evidences about effective answer of the employees and the employer, through the collective bargaining, to the GR; capturing, moreover, the sectoral heterogeneity. In this sense, future research would focus on the relationship between company finance situation and industrial relations, since a theoretical and empirical perspective.

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Annex 1: Sample by sector and country

	Industry	Commerce and Hospitality	Financial services and real state
Germany	623	286	39
Spain	432	300	49
France	379	399	80
Italy	659	288	42
UK	300	495	75

Source: Prepared by the authors based on ECS2013

Annex 2. Cross-correlation Coefficient among the Functional, Numerical, and Wage Internal Flexibility (EU15) Variables

	Functional	Numerical	Wage
Functional	1.0000		
Numeric	0.2967	1.0000	
Wage	0.2499	0.2252	1.0000

Source: Prepared by the authors based on ECS2013.

Annex 3. IFF change since 2010 by sectors, economic situation variables, wage bargaining level and countries (% establishment)

		Changes IFF		Changes (reducing)		Worsening	Change in use of	Wage Bargaining level		
		Total	Sector	Employment	Production	Finance	technology	National	Sector/Regional	Establishment
Industry	Germany	20.7	20.8	14.8	9.4	13.8	71.7	11.4	39.2	28.2
	Spain	42.0	36.9	50.9	32.7	43.8	74.2	26.7	45.1	49
	France	28.9	26.6	23.2	12.6	31.6	58.6	30.4	47.9	65.7
	Italy	34.8	33.7	37.3	28	31.4	78.2	79.2	19.7	34.8
	UK	26.6	31.4	27.8	17.7	19.3	82.5	10.6	14	44.2
Commerce and Hospitality	Germany	20.7	17.0	12.5	0	10.9	72.9	13.3	45.8	37.5
	Spain	42.0	46.6	50	32.9	48.6	71.5	23.9	71.4	30.5
	France	28.9	31.4	24.4	11.9	23.3	57.7	28.2	33.9	40.5
	Italy	34.8	34.3	27.3	30.4	44.4	73.7	83.5	13.7	8.2
	UK	26.6	25.2	15.3	7.3	10	71.9	19.8	12.8	41.5
Finance	Germany	20.7	17.8	0	0	8.3	61.5	15.4	38.5	23.1
	Spain	42.0	39.3	50	25	59.1	72.7	42.9	54.5	18.2
	France	28.9	30.0	8.3	0	12.5	66.7	20.8	47.8	75
	Italy	34.8	44.4	35	16.7	30	85	70	50	30
	UK	26.6	33.8	40.7	0	25.9	70.4	13	12.5	40

Source: Prepared by the authors based on ECS2013

Annex 4. INF change since 2010 by sectors. economic situation variables. wage bargaining level and countries (% establishment)

		Changes INF		Changes (reducing)		Worsening	Change in use of		Wage Bargaining level	
		Total	Sector	Employment	Production	Finance	technology	National	Sector/Regional	Establishment
Industry	Germany	12.6	14.2	25	17.6	17.9	59.8	6	47.1	35.6
	Spain	30.6	24.2	43.8	39.2	46.9	63.6	32.7	53	44.6
	France	17.6	15.8	27.6	19	24.6	50	30.4	45.6	67.2
	Italy	20.8	17.2	49.5	31.1	41.3	61.5	81.3	24.5	40.6
	UK	19.4	18.6	24.6	10.5	15.4	79.8	11.5	9.3	46.2
Commerce and Hospitality	Germany	12.6	14.5	12.2	2.6	15.4	70.7	12.8	48.8	39
	Spain	30.6	30.0	37.8	37	55.6	70.7	24.4	71.1	27.5
	France	17.6	24.3	26	10.9	18.1	56.3	31.9	42.6	41.1
	Italy	20.8	29.8	32.6	40.3	48.2	57	84.7	14.5	14.1
	UK	19.4	20.5	11.5	4.4	8.5	66.3	19.3	11.2	48.3
Finance	Germany	12.6	2.5	0	0	25	100	0	75	25
	Spain	30.6	31.6	50	58.8	70.6	61.1	44.4	66.7	16.7
	France	17.6	7.3	33.3	16.7	16.7	83.3	20	75	83.3
	Italy	20.8	20.0	44.4	12.5	44.4	100	66.7	33.3	55.6
	UK	19.4	23.5	26.3	0	21.1	68.4	16.7	11.1	44.4

Source: Prepared by the authors based on ECS2013

Annex 5. SF change since 2010 by sectors. economic situation variables. wage bargaining level and countries (% establishment)

		Changes SF		Changes (reducing)		Worsening	Change in use of	Wage Bargaining level		
		Total	Sector	Employment	Production	Finance	technology	National	Sector/Regional	Establishment
Industry	Germany	24.5	22.3	12.3	7.3	12.4	66.9	6	44	48.5
	Spain	31.1	25.5	50.9	37.5	51.9	67.9	28.6	59.4	46.2
	France	17.1	13.6	20	12.2	26	56	26.1	39.6	63.3
	Italy	22.5	21.8	34.8	27.7	38.5	67.2	81.5	20	35.6
	UK	23.7	26.7	23.5	10.1	12.3	79	13.5	12.2	45.9
Commerce and Hospitality	Germany	24.5	26.1	14.9	4.5	20.8	67.1	8.5	56.2	43.8
	Spain	31.1	28.0	50	40.7	54.8	73.3	24.1	61.4	32.1
	France	17.1	19.3	30.3	14.7	31.1	59.2	32.9	33.8	43.2
	Italy	22.5	19.2	30.9	40.4	53.7	74.5	83.3	13	13
	UK	23.7	23.5	13.8	7.8	11.5	72.5	17.2	10.3	38.1
Finance	Germany	24.5	13.7	10	0	30	80	20	80	60
	Spain	31.1	38.6	50	33.3	61.9	63.9	38.1	59.1	31.8
	France	17.1	27.2	13.6	4.5	18.2	63.6	36.4	40.9	86.4
	Italy	22.5	31.1	42.9	0	30.8	100	78.6	28.6	35.7
	UK	23.7	26.3	42.6	0	14.3	61.9	26.3	15	40

Source: Prepared by the authors based on ECS2013

Annex 6: Internal flexibility determination models

Model 1: UE-15

	(1)	(2)	(3)	(4)	(5)	(6)
	IFF 1	IFF 2	IFN1	IFN 2	SF 1	SF 2
TECHNOLOGY	0.353*		0.166*		0.223*	
	(0.01)		(0.01)		(0.01)	
NECOEMPRESA	0.018**	0.040*	0.039*	0.043*	0.062*	0.071*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
NECOSECTOR	0.003	0.013	0.022*	0.024*	-0.006	-0.001
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
NECONACIONAL	0.023**	0.036*	0.040*	0.045*	0.014***	0.022*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Employment =increase	0.092*	0.128*	0.042*	0.060*	0.065*	0.089*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Employment =decrease	0.086*	0.090*	0.073*	0.075*	0.062*	0.066*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Construction	-0.022	-0.033**	-0.041*	-0.036*	0.023	0.021
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Commerce and hospitality	0.008	0.004	0.031*	0.039*	0.018***	0.022**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Transport and communication	0.005	0.005	0.011	0.015	0.036**	0.038**
	(0.02)	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)
Financial services and real estate	0.011	0.024	-0.018	-0.012	0.040**	0.048*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Other services	0.005	0.015	-0.012	-0.003	0.026*	0.034*
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Denmark	0.070*	0.128*	0.023	0.050**	0.011	0.049**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Germany	-0.169*	-0.161*	-0.051*	-0.057*	0.050**	0.042**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Ireland	-0.063**	-0.029	0.023	0.036	0.073*	0.090*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Greece	0.162*	0.168*	0.120*	0.134*	0.110*	0.122*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Spain	0.004	0.040***	0.100*	0.114*	0.071*	0.091*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
France	-0.049**	-0.090*	0.005	-0.017	-0.040**	-0.067*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)

Italy	-0.058*	-0.036***	0.006	0.012	-0.005	0.004
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Luxembourg	0.010	-0.002	0.054**	0.049***	-0.040	-0.047***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
Netherlands	0.048**	0.058**	0.048**	0.049**	0.006	0.010
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Austria	0.008	0.042***	0.090*	0.100*	0.073*	0.093*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Portugal	0.035	0.102*	0.008	0.042**	0.209*	0.252*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Finland	0.104*	0.158*	0.102*	0.133*	0.057*	0.096*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Sweden	0.192*	0.229*	0.038***	0.063*	0.016	0.051**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
UK	-0.133*	-0.109*	0.013	0.017	0.009	0.016
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Medium Size		0.012		0.030*		0.030*
		(0.01)		(0.01)		(0.01)
Large Size		-0.009		0.047*		0.022**
		(0.01)		(0.01)		(0.01)
Constant	*	*	*	*	*	*
Pseudo - R2	0.1457	0.0535	0.0663	0.0327	0.0827	0.0306
N.	15977	15977	16027	16027	15944	15944
Chi2	3131.66	1149.89	1149.40	567.91	1535.44	568.94
Prob>Chi2	0.00	0.00	0.00	0.00	0.00	0.00

Standard deviation in bracket. *** $p<0.10$. ** $p<0.05$. * $p<0.01$

Source: Prepared by the authors based on ECS2013

Models by Countries: Model 2: SPAIN

	(1) IFF 1	(2) IFF 2	(3) IFN1	(4) IFN 2	(5) SF 1	(6) SF 2
TECHNOLOGY	0.378*		0.174*		0.221*	
	(0.02)		(0.02)		(0.02)	
NECOEMPRESA	0.007	0.034	0.021	0.020	0.063**	0.071**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
NECOSECTOR	-0.063**	-0.055***	0.004	0.006	0.023	0.022
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
NECONACIONAL	0.002	-0.007	-0.013	-0.015	-0.004	-0.008
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Employment =increase	0.092**	0.124*	0.011	0.023	0.106*	0.125*
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Employment =decrease	0.031	0.023	0.069**	0.062**	0.110*	0.100*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Construction	0.037	0.051	0.015	0.042	0.116**	0.136**
	(0.06)	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)
Commerce and hospitality	0.098**	0.114*	0.040	0.066***	0.044	0.068***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Transport and communication	-0.015	0.047	0.041	0.084	0.039	0.089
	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)
Financial services and real estate	-0.034	0.018	0.006	0.026	0.140***	0.165**
	(0.08)	(0.08)	(0.07)	(0.07)	(0.08)	(0.08)
Other services	0.037	0.069**	0.124*	0.142*	0.103*	0.124*
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Medium Size		0.020		0.065**		0.048***
		(0.03)		(0.03)		(0.03)
Large Size		0.018		0.103*		0.065***
		(0.04)		(0.04)		(0.04)
Constant	*	*	*	*	*	*
Pseudo - R2	0.1223	0.0143	0.0441	0.0216	0.0707	0.0274
N.	1416	1416	1422	1422	1414	1414
Chi2	235.61	27.61	77.24	37.83	123.82	47.99
Prob>Chi2	0.00	0.01	0.00	0.00	0.00	0.00

Standard deviation in bracket. *** $p<0.10$. ** $p<0.05$. * $p<0.01$

Source: Prepared by the authors based on ECS2013

Model 3: GERMANY

	(1) IFF 1	(2) IFF 2	(3) IFN1	(4) IFN 2	(5) SF 1	(6) SF 2
TECHNOLOGY	0.283*		0.123*		0.270*	
	(0.02)		(0.02)		(0.02)	
NECOEMPRESA	-0.063*	-0.052**	-0.004	0.002	0.083*	0.096*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NECOSECTOR	0.030	0.048**	0.050*	0.053*	0.095*	0.108*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
NECONACIONAL	0.038	0.062***	0.029	0.033	-0.011	0.006
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
Employment =increase	0.055**	0.098*	0.055*	0.064*	0.063**	0.093*
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)
Employment =decrease	0.057	0.083**	0.115*	0.118*	0.048	0.059
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Construction	0.027	0.002	-0.055**	-0.043	-0.023	-0.029
	(0.04)	(0.04)	(0.02)	(0.03)	(0.04)	(0.04)
Commerce and hospitality	-0.033	-0.051***	0.003	0.012	0.031	0.014
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
Transport and communication	0.037	0.021	-0.033	-0.031	0.100**	0.083***
	(0.05)	(0.05)	(0.03)	(0.03)	(0.05)	(0.05)
Financial services and real estate	-0.075	-0.074	-0.083***	-0.088***	-0.115***	-0.122***
	(0.05)	(0.05)	(0.02)	(0.03)	(0.05)	(0.05)
Other services	-0.001	-0.003	-0.039***	-0.033	0.026	0.021
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
Medium Size		-0.019		0.033		0.031
		(0.03)		(0.02)		(0.03)
Large Size		-0.043		0.042***		-0.036
		(0.03)		(0.03)		(0.03)
Constant	*	*	*	*	*	*
Pseudo - R2	0.1323	0.0230	0.0842	0.0436	0.1176	0.0384
N.	1448	1448	1453	1453	1451	1451
Chi2	195.83	34.01	92.66	47.95	190.19	62.06
Prob>Chi2	0.00	0.00	0.00	0.00	0.00	0.00

Standard deviation in bracket. *** $p<0.10$. ** $p<0.05$. * $p<0.01$

Source: Prepared by the authors based on ECS2013

Model 4: FRANCE

	(1) IFF 1	(2) IFF 2	(3) IFN1	(4) IFN 2	(5) SF 1	(6) SF 2
TECHNOLOGY	0.372*		0.227*		0.207*	
	(0.03)		(0.03)		(0.02)	
NECOEMPRESA	-0.051***	-0.023	-0.010	-0.009	-0.010	0.004
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
NECOSECTOR	-0.006	-0.006	0.028	0.026	-0.024	-0.024
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
NECONACIONAL	0.007	0.036	0.019	0.036	0.001	0.019
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Employment =increase	0.093*	0.137*	0.024	0.054**	0.029	0.059*
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Employment =decrease	0.092*	0.090*	0.102*	0.105*	0.057**	0.059**
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Construction	-0.024	-0.020	-0.006	0.005	0.058	0.061
	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Commerce and hospitality	0.044	0.044	0.082*	0.092*	0.060**	0.062**
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Transport and communication	0.041	0.030	0.033	0.033	0.069	0.065
	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)
Financial services and real estate	0.030	0.061	-0.097**	-0.081***	0.150*	0.173*
	(0.06)	(0.06)	(0.03)	(0.04)	(0.06)	(0.06)
Other services	0.055	0.050	-0.005	-0.003	0.023	0.023
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Medium Size		-0.027		0.012		-0.016
		(0.03)		(0.02)		(0.02)
Large Size		-0.045		-0.005		-0.033
		(0.04)		(0.03)		(0.03)
Constant	*	*	*	*	*	*
Pseudo - R2	0.1311	0.0218	0.1049	0.0308	0.0826	0.0194
N.	1424	1424	1423	1423	1421	1421
Chi2	224.83	37.38	138.49	40.71	107.15	25.17
Prob>Chi2	0.00	0.00	0.00	0.00	0.00	0.01

Standard deviation in bracket. *** $p<0.10$. ** $p<0.05$. * $p<0.01$

Source: Prepared by the authors based on ECS2013

Model 5: ITALY

	(1) IFF 1	(2) IFF 2	(3) IFN1	(4) IFN 2	(5) SF 1	(6) SF 2
TECHNOLOGY	0.392*		0.131*		0.177*	
	(0.02)		(0.02)		(0.02)	
NECOEMPRESA	0.013	0.036	0.068*	0.061**	0.057**	0.051***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
NECOSECTOR	-0.037	-0.001	0.041	0.051	0.010	0.025
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
NECONACIONAL	0.006	0.009	0.048***	0.048***	0.054***	0.053***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Employment =increase	0.086*	0.133*	0.056**	0.071**	0.067**	0.086*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Employment =decrease	0.031	0.036	0.095*	0.098*	0.038	0.041
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Construction	-0.004	-0.003	0.007	0.017	-0.034	-0.028
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)
Commerce and hospitality	0.002	0.021	0.150*	0.165*	-0.032	-0.015
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
Transport and communication	0.011	-0.012	0.045	0.041	0.014	-0.000
	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)
Financial services and real estate	0.036	0.109	-0.028	0.000	0.023	0.065
	(0.08)	(0.08)	(0.06)	(0.07)	(0.07)	(0.07)
Other services	0.060***	0.063***	0.050***	0.054***	0.020	0.023
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Medium Size		0.057***		0.066**		0.060**
		(0.03)		(0.03)		(0.03)
Large Size		0.004		0.039		0.053
		(0.04)		(0.03)		(0.03)
Constant	*	*	*	*	*	*
Pseudo - R2	0.1459	0.0177	0.0585	0.0377	0.0594	0.0217
N.	1503	1503	1512	1512	1505	1505
Chi2	283.50	34.38	90.65	58.46	95.25	34.82
Prob>Chi2	0.00	0.00	0.00	0.00	0.00	0.00

Standard deviation in bracket. *** $p<0.10$. ** $p<0.05$. * $p<0.01$

Source: Prepared by the authors based on ECS2013

Model 6: UNITED KINGDOM

	(1) IFF 1	(2) IFF 2	(3) IFN1	(4) IFN 2	(5) SF 1	(6) SF 2
TECHNOLOGY	0.309*		0.198*		0.266*	
	(0.02)		(0.02)		(0.02)	
NECOEMPRESA	0.004	-0.004	0.048**	0.040***	0.014	0.004
	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
NECOSECTOR	0.030	0.038	-0.054***	-0.051	0.026	0.031
	(0.04)	(0.04)	(0.03)	(0.03)	(0.04)	(0.04)
NECONACIONAL	0.071***	0.107*	0.115*	0.146*	0.095**	0.123*
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Employment =increase	0.049***	0.086*	0.035	0.065*	0.069*	0.100*
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
Employment =decrease	0.099*	0.137*	0.011	0.042	0.044	0.080**
	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Construction	-0.008	-0.032	-0.025	-0.039	-0.024	-0.041
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Commerce and hospitality	-0.017	-0.023	0.036	0.032	-0.015	-0.005
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Transport and communication	-0.016	-0.028	-0.001	-0.008	0.002	-0.007
	(0.05)	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)
Financial services and real estate	0.046	0.004	0.052	0.027	0.014	-0.012
	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)	(0.05)
Other services	-0.054	-0.060***	-0.001	-0.005	-0.071**	-0.072**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Medium Size		0.071*		0.034		0.110*
		(0.03)		(0.02)		(0.03)
Large Size		0.083**		0.065**		0.112*
		(0.04)		(0.03)		(0.04)
Constant	*	*	*	*	*	*
Pseudo - R2	0.1274	0.0282	0.0838	0.0241	0.1135	0.0388
N.	1435	1435	1441	1441	1397	1397
Chi2	211.67	46.83	118.02	33.92	173.84	59.50
Prob>Chi2	0.00	0.00	0.00	0.00	0.00	0.00

Standard deviation in bracket. *** p<0.10. ** p<0.05. * p<0.01

Source: Prepared by the authors based on ECS2013