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INNOREG: A Comprehensive Dataset on Government Policies Affecting Innovation

Giorgia Casalone
Federico Biagi

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Preface

This report was prepared in the context of the three-year research project on *European Innovation Policies for the Digital Shift* (EURIPIDIS) jointly launched in 2013 by JRC-IPTS and DG CONNECT of the European Commission in order to improve understanding of innovation in the ICT sector and of ICT-enabled innovation in the rest of the economy.¹

The purpose of the EURIPIDIS project is to provide evidence-based support to the policies, instruments and measurement needs of DG CONNECT for enhancing ICT Innovation in Europe, in the context of the Digital Agenda for Europe and of the ICT priority of Horizon 2020. It focuses on the improvement of the transfer of best research ideas to the market.

EURIPIDIS aims are:

- 1 to better understand how ICT innovation works, at the level of actors such as firms, and also of the ICT “innovation system” in the EU;
- 2 to assess the EU's current ICT innovation performance, by attempting to measure ICT innovation in Europe and measuring the impact of existing policies and instruments (such as FP7 and Horizon 2020); and
- 3 to explore and suggest how policy makers could make ICT innovation in the EU work better.

This report describes the methodology used to develop a comprehensive dataset, denominated INNOREG, which provides information on several potential drivers and barriers to firms’ innovation activity, related to labour market regulation, generosity of the tax treatment for R&D and indices of the “ease” of doing business. The report also provides summary statistics on the three types of measures mentioned above.

¹ For more information, see the project web site:
<http://is.jrc.ec.europa.eu/pages/ISG/EURIPIDIS/EURIPIDIS.index.html>

Abstract

The purpose of this report is to describe the methodology used to develop a comprehensive dataset, denominated INNOREG, which provides information on several potential drivers and barriers to firms' innovation activity. All the examined drivers and barriers depend, in a more or less direct way, upon the decisions taken by national policy makers. By merging INNOREG with data on ICT use, innovation, productivity and employment it will be possible to investigate the effect of several policies (mainly concerning labour market and taxation) and of the efficiency of bureaucracy on measures of economic performance such as production, employment, innovation etc..

The data are of three main types:

1. reforms of labour market regulation, computed using the EU Commission LABREF database, and which gives us information on the direction and intensity of reforms affecting the labour markets of 27 EU countries from 2000 to 2012 (LABREF_DRF.DTA);
2. generosity of the tax treatment for R&D, as measured by the B-Index over the period 1990-2013 (not all years are available) for a set of EU countries (B_INDEX.DTA);
3. indices of business regulation, as measured by various indicators taken by the Wordbank *DoingBusiness* project, reported annually from 2004 to 2014 for all EU countries (DOINGBUSINESS.DTA).

For each of the above three topics, we developed a specific dataset (name in parenthesis). The three resulting datasets were then merged to form the comprehensive INNOREG dataset (INNOREG.dta).

In this report we also provide summary statistics on the three types of data mentioned above.

1. Introduction and motivation

Improvements in efficiency of production (or “multi-factor productivity”) are among the main drivers of economic growth. Governments can shape firms’ innovation activity and the diffusion of new production techniques and, as a consequence, firms’ productive efficiency through several channels: the regulation of product and labour markets, fiscal rules, direct funding on R&D, bureaucracy efficiency, etc.

As a consequence, market regulation affects not only the wellbeing of consumers, producers and workers, but also the size of the economy and the resources available to the whole population.

The OECD (2002) provides evidence of persistent differences between countries in both economic performance and regulatory patterns. The study concludes that “easing product market regulation and employment protection positively affects multi-factor productivity levels and technological catch-up by raising the incentives to improve efficiency and lowering the costs of doing so”. According to European Commission (2004) and Bassanini and Ernst (2002) the effect of easing product market regulation is clear: it positively affects multi-factor productivity levels, technological catch-up and the innovative efforts of firms. Concerning job market protection, however, its effects are mixed: while reducing job market protection might positively affect multi-factor productivity (by means of within-firm productivity gains or through the reallocation of output to more efficient firms), easing hiring and firing rules has an ambiguous effect on the R&D activities leading to innovation. Indeed on the one hand, innovation activity may require a change in the optimal skills mix and, as a consequence, it may benefit from easier (and less costly) worker turnover. On the other hand, if the new skills mix can be achieved by providing training to the existing workforce, more flexible rules on hiring and firing workers may not have any impact on innovation activity.

A further tool which is increasingly used by governments to leverage business R&D are fiscal incentives.² The main advantage of using these indirect incentives is that they are market-based non-discriminatory tools, they reduce the marginal costs of R&D activities, enhance the attractiveness for foreign investments in R&D activities, and increase company cash flows by reducing operating costs (OECD, 2011). A potential downside is the tax competition across countries triggered by massive use of these fiscal incentives and also the fact that the costs of tax credits, in terms of foregone earnings, do not usually appear as R&D support in government budgets.

Finally, the regulatory environment as a whole, the efficiency of bureaucracy and administrative complexity, all affect entry into the market of new potentially innovative enterprises, access to credit for both incumbents and entrants, and, in general, the productivity of the economic system.

In order to take account of all these potential drivers and barriers to firms’ innovation we have developed a comprehensive dataset called INNOREG. This dataset gathers information on policies which affect labour markets, fiscal rules and the “ease” of doing business which, according to the literature, can in turn affect firms’ innovation activity.

In this report we describe the methodology followed to create the dataset and the main features of INNOREG.

² The role played by fiscal incentives in driving firms’ R&D in Europe has been recognized and analyzed by two expert groups at the European Commission: the 2005 CREST OMC Working Group on Evaluation and Design of R&D Tax Incentives, and the 2008 Expert Group on R&D Tax Incentive Evaluation (European Commission, DG Research, 2009).

2. The INNOREG dataset

We developed a comprehensive dataset, denominated INNOREG, which provides information on several potential drivers and barriers to firms' innovation activity. All the examined drivers and barriers depend, in a more or less direct way, upon the decisions taken by national policy makers. By merging INNOREG with data on ICT use, innovation, productivity and employment it will be possible to investigate the effect of several policies (mainly concerning labour market and taxation) and of the efficiency of bureaucracy on the overall efficiency of production, innovation, labour productivity and employment.

The data are of three main types:

1. reforms of labour market regulation (LABREF_DRF.DTA);
2. generosity of the tax treatment for R&D (B_INDEX.DTA);
3. indices of the ease of doing business (DOINGBUSINESS.DTA).

For each of the above three topics, we developed a specific dataset (name in parenthesis). The three resulting datasets were then merged to form the comprehensive INNOREG dataset (INNOREG.dta).

Most of the work was devoted to developing the indices in 1. For the other two, we took advantage of existing published databases that we cleaned and re-organized in order to obtain easily interpretable indicators that can be immediately used for the specific purposes.

2.1 Data on labour market reforms

To build a panel of indices of labour market regulation for all EU countries, we identified two main potential sources of data:

- 1) The FRdB-IZA Social Reforms database (new release).
- 2) The LABREF.

In the following paragraphs, we briefly describe both datasets, their main advantages and drawbacks and the motivation for choosing to rely on LABREF.

2.1.1 FRdB-IZA Social Reforms Database

The aim of this database is to provide qualitative information, with a comparative perspective, about core labour market reforms in a number of European countries.

The database covers, at the time of writing, 14 European Union Countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom) for the time interval 1980 - 2007.

Reforms are classified in two broad policy areas:

- Employment Protection Legislation (EPL)
- Non-Employment Benefits (NEB)

Each reform is then classified according to the specific topic covered. Both areas include several topics which help users to aggregate reforms in several ways. Overall, there are 50 topics (Table 1).

A positive or negative sign is then attributed to each reform. For the EPL area reforms, a measure has a positive sign if it increases the flexibility of the system (in particular, if it makes the dismissal of workers easier or cheaper). For the reforms in the NEB area, measures have a positive sign if they increase the rewards from labour market participation (i.e. if they reduce the amount or the duration of non-employment benefits, or if they make eligibility conditions stricter).

Main advantage of the *FRdB-IZA Social Reforms Database*:

- Long period covered (27 years).

Main drawback of the *FRdB-IZA Social Reforms Database*:

- Only 14 EU countries out of the current 28.

Table 1: Topics covered by FRdB-IZA Social Reforms database by policy area

EMPLOYMENT AND PROTECTION LEGISLATION (EPL)	NON EMPLOYMENT BENEFITS (NEB)
Apprenticeship	ALMP - Duty to seek for a job
Collective dismissals	ALMP - For specific categories
Duty to inform?	ALMP - For unemployed
Employment rights	Contributions
Fixed-term contracts	Disability benefits
Individual dismissals - Compensation	Early retirement
Individual dismissals - Procedural obligations	Earnings disregards
Individual dismissals - Reasons	In-work benefits
Individual dismissals - Reinstatement	Private placement services
Individual dismissals - Taxes	Public employment services
Interim wages	Sickness benefits
Labour disputes	Social assistance
New types of contract	Taxation
Notice period	Unemployment benefits - Benefits
Part-time contracts	Unemployment benefits - Contributions
Public sector employment	Unemployment benefits - Duration
Restrictions to employment	Unemployment benefits - Earnings disregard
Self-employment	Unemployment benefits - Eligibility
Severance payments	Unemployment benefits - For specific categories
Temporary work	Unemployment benefits - Indexation
Trade union rights	Unemployment benefits - Others
Training contracts	Unemployment benefits - Procedural obligations
Trial period	Unemployment benefits - Reference earnings
	Unemployment benefits - Replacement rate
	Unemployment benefits - Sanctions
	Unemployment benefits - Single instalment
	Unemployment benefits - Taxation

We consider that the disadvantages resulting from partial coverage of EU countries (50%) and from the fact that, as of today, the database cover reforms implemented up to 2007 exceed the advantages of the longer time period covered by the *FRdB-IZA Social Reforms Database*. For this reason, we have decided to focus on the second available database that will be described in greater detail in the following section.

2.1.2 LABREF - DG ECFIN and Economic Policy Committee (EPC)

LABREF is a database of labour market reforms undertaken in the European Union (European Commission, 2013). It provides qualitative information on those reforms implemented by each Member State which could affect labour market performance. The objective of the LABREF database is to help EU policy makers to understand and compare the labour market institutions of each EU country, and to enhance economic policy coordination³.

The database covers 27 European Union countries (excluding Croatia) in the period from 1999 to 2012, though the coverage is only reliable from 2000.

For each reform, LABREF provides information on several relevant features:

- general description;
- reference (budget law, decree, law, etc.);
- year of adoption (the year when a measure is legally enacted);
- timing of implementation (which does not necessarily correspond to the year of adoption);
- socio-economic group targeted (e.g. young people);
- domain of application (new entrants and also incumbents);
- comprehensiveness (is the measure embedded in a policy programme or is it part of a reform package?);
- information source.

Reforms are categorized in nine main policy domains. Each area is then subdivided into a total of 48 fields⁴ (Table 2).

Table 2: Fields covered by LABREF database by Policy Domains

POLICY DOMAINS	POLICY FIELDS
1. Active Labour Market Policy	Active labour market policies - Other
	Direct job creation schemes
	Employment subsidies
	Public Employment Services (job assistance)
	Special schemes for the disabled
	Special schemes for youth
	Training
2. Early Withdrawal	Disability schemes
	Early retirement
3. Immigration and Mobility	Immigration control
	Internal mobility
	Measure to facilitate labour market integration
	Mobility - Other
	Selective immigration policies
4. Job Protection	Collective dismissals
	Definition of fair dismissal

³ For a description of the LABREF database see Turrini et al. (2015).

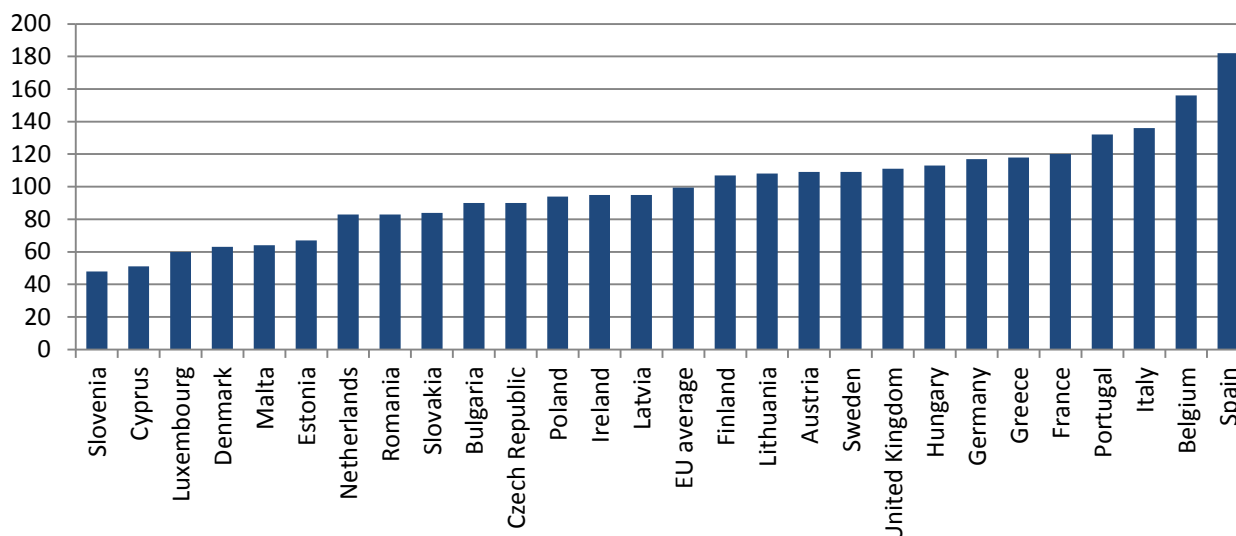
⁴ The fields are 49 but one of them ("Working time -Other") was empty at the time of the analysis.

POLICY DOMAINS	POLICY FIELDS
	Definition of valid reasons for fixed-term contracts
	Maximum duration of fixed-term contract
	Maximum number of renewals of fixed-term contract
	Notice and severance payments
	Permanent contracts - Other
	Procedural requirements
	Temporary agency work
	Temporary contracts - Other
5. Labour Taxation	Employees' social security contribution
	Employers' social security contribution
	Income tax
	Labour Taxation - Other
	Self-employed peoples' social security contributions
6. Other welfare-related benefits	Family-related benefits
	In-work benefits (employment conditional)
	Short time working scheme
	Sickness schemes
	Social assistance (housing, means-tested)
7. Unemployment benefits	Coverage and eligibility conditions
	Duration of unemployment benefits
	Net replacement rate
	Search and job availability requirement
	Unemployment benefits - Other
8. Wage Setting	Public wages
	Regulation by the Government of the wag
	Social pacts, bipartite or tripartite framework agreements on wage setting
	Statutory Minima
	Wage setting - Other
9. Working Time	Family-related working-time organisation
	Part-time work
	Sabbatical and other special leave scheme
	Working hours management

Table A1 in the Appendix reports the number of reforms undertaken by each EU country during the period 2000-2012, by year of implementation.

The total number of reforms ranges from a minimum of 48 in Slovenia (with 4 reforms per year on average) to a maximum of 182 in Spain (with 14 reforms per year on average) (Figure 1). Large countries, especially in Continental (France, Germany) and Southern Europe (Greece, Italy, Portugal and Spain), have implemented more labour market reforms, above the EU average (almost 100 reforms) during the analysed period. Small Northern economies (Luxemburg, Denmark, Netherlands, Ireland), and EU late entrants (Slovenia, Estonia, Romania, Slovakia, Bulgaria, Poland, Latvia) are below the average value.

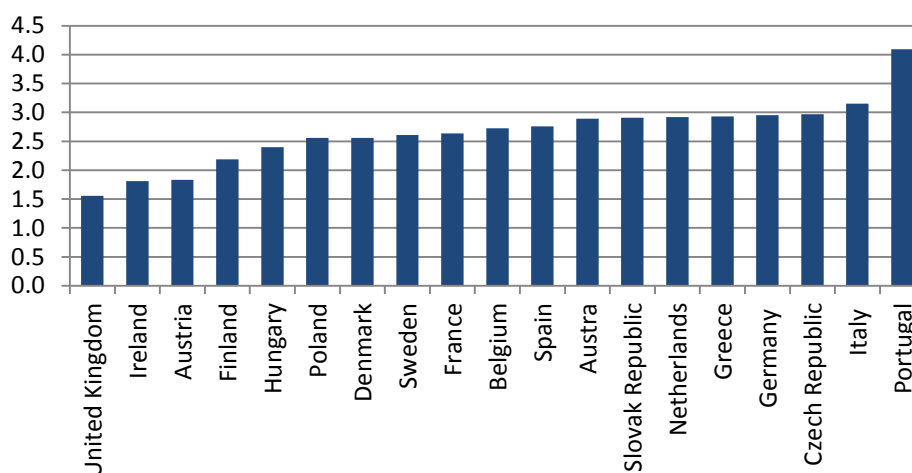
Figure 1: Total number of labour market reforms in EU Countries (2000-2012)



Source: our elaboration on LABREF database

The intensity of the labour market reform process undertaken in the last decade in Southern European countries is not surprising if we consider that, according to the OECD Indicator of Employment Protection for 1999 reported in Figure 2, Greece, Italy and Portugal were among the five EU countries with the highest degree of employment protection⁵.

Figure 2: OECD Indicator of Employment Protection in 1999

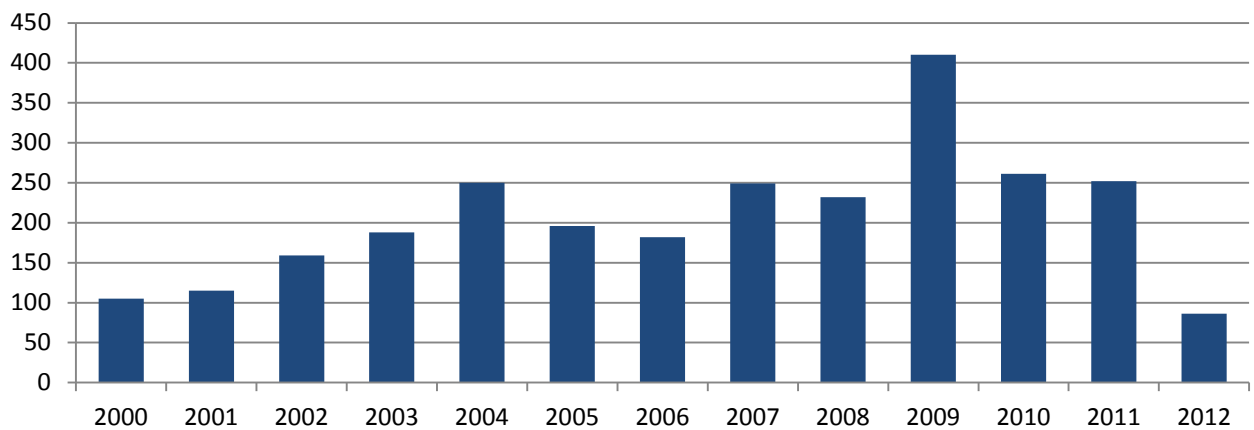


Source: our elaboration on OECD Employment Protection Indicators 2009

Looking at the temporal dimension, we observe that the number of reforms implemented by year (Figure 3) varies considerably. The peak year was 2009, when more than 400 different measures were implemented across the EU. This intense reforming activity was probably a reaction of EU governments to the first signs of the financial and economic crisis that had just started.

⁵ Among several indices calculated by the OECD, here we present the EPRC_V2 available for the period 1998-2013 which is Version 2 of the original OECD indicator.

Figure 3: Total number of labour market reforms by year (2000-2012)

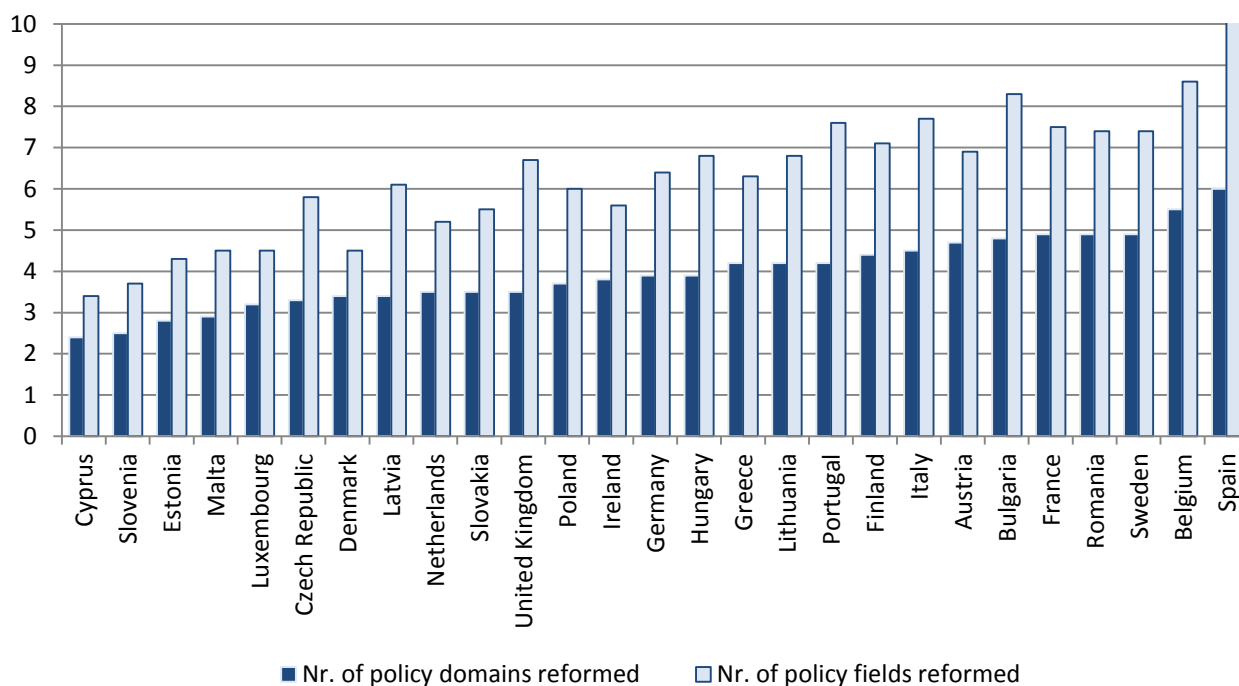


Source: our elaboration on LABREF database

This picture is however incomplete. There were differences in the number and breadth of the policy domains affected by some reforms (see Table 2). If reforms affect only a limited number of domains and fields, we would expect more limited impact on the relevant economic variables. If, however, reforms have a broader scope, we would expect larger and more durable effects. Table A2 and A3 (see the Appendix) report, respectively, the number of policy domains (out of 9) and fields (out of 48), which have had at least one reform by year of implementation and country.

Figure 4 illustrates the per-year average number of policy domains and policy fields that have been affected by at least one reform in each EU country. Cyprus, Slovenia, Estonia and Malta, where less than three policy domains were reformed on average per year, are the countries that experienced the least “extensive” process of labour market reform. Belgium and Spain, where more than five policy domains were reformed are, on the other hand, the countries that undertook the broadest reforms of their labour market. As expected, there is a positive correlation between the number of reforms implemented and the number of policy domains affected by a reform. However Italy, Portugal and Greece, which were among the first six countries in terms of number of reforms implemented, are ranked respectively 8th, 10th and 12th as regards the number of policy domains reformed. On the other hand, countries such as Romania or Bulgaria, which were below the EU average as regards the number of reforms undertaken, are now in the upper end of the distribution. As expected, again, there is a positive correlation between the number of policy domains reformed and the number of specific topics (policy fields) addressed by the reforms. Spain is the country that has most deeply changed its labour market over the last few years, followed by Belgium. The governments of Bulgaria, Italy and Portugal have also intervened in several aspects of labour market regulation. The smaller countries (Cyprus, Slovenia, Estonia, Malta, Luxembourg), however, have more stable legislative frameworks.

Figure 4: Average number of labour policy domains (out of 9) and of policy fields (out of 48) affected by reforms by country



Source: our elaboration on LABREF database

LABREF also provides information on the “direction” of each measure. Since reforms can be very heterogeneous, the meaning of the term “direction” varies across the nine policy areas. Table 3 shows when a reform is classified as “increasing” the underlying policy settings by policy area.

Table 3: Direction of the reforms

POLICY AREA	MEANING OF “INCREASING”
1. Active Labour Market Policy	Measures increasing the availability, generosity or effectiveness of Active Labour Market Policies (ALMP)
2. Early Withdrawal	Measures increasing the generosity of early withdrawal schemes or easing eligibility conditions
3. Immigration and Mobility	Measures tightening regulatory restrictions on migration or reducing support to mobility
4. Job Protection	Measures increasing protection against job dismissal
5. Labour Taxation	Measures increasing the tax burden on labour
6. Other Welfare-related Benefits	Measures increasing the generosity of benefits or easing entitlement conditions
7. Unemployment Benefits	Measures increasing the generosity of unemployment benefits or easing search and job availability requirements
8. Wage Setting	Measures tightening framework conditions for wage setting on the part of employers
9. Working Time	Measures tightening regulatory requirements on working time

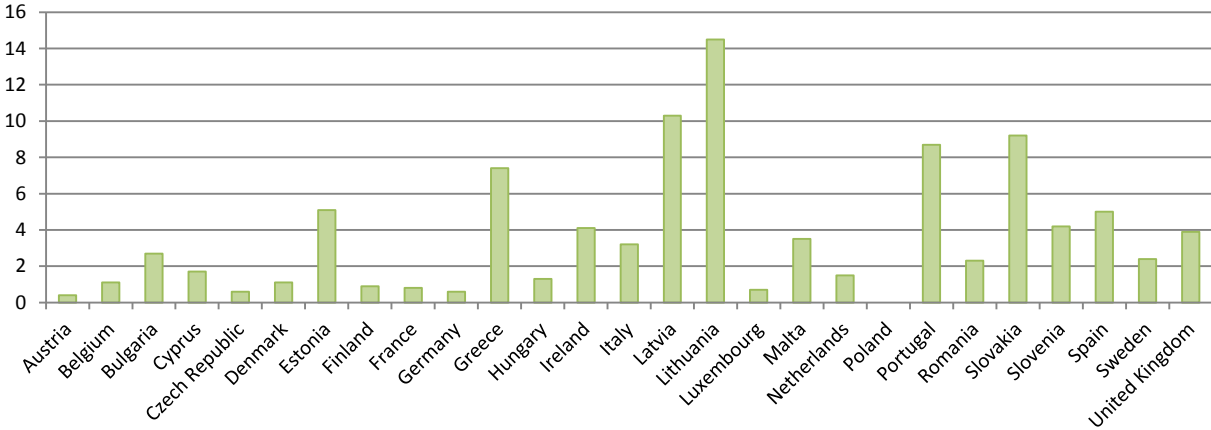
We define as “positive” those reforms which, at least in principle, should enhance job market flexibility⁶. As a result, for us a measure is defined as “positive” if it is classified as “Decreasing” by LABREF for all policy domains, with the exception of ALMP (reforms increasing the generosity and effectiveness of ALMP). On the other hand, we define as “negative” those measures which are expected to tighten the rules applied to labour market relations. During the analysed 12 years (2000-2012), EU countries approved a total of 2,703 labour market reforms, of which 64% are classified as “positive” and 32% as “negative” in the sense explained above (Table 4). For a number of reforms (101), it is not possible to determine the direction.

Table 4: Labour market reforms implemented by all EU countries (2000-2012) and their directions

	Nr.	%
All reforms	2703	100%
Of which “positive”	1726	64%
Of which “negative”	876	32%

The share of reforms that cannot be clearly classified as “positive” or “negative” is rather heterogeneous across countries as it ranges from a minimum of zero in Poland to a maximum of 14.5% in Lithuania (Figure 5). The non-uniform distribution of “unclassified” reforms across EU Member States makes it necessary to consider in the following analyses the shares of both positive and negative reforms, as the latter is not simply the complement to 1 of the former.

Figure 5: Share of labour market reforms that cannot be classified as “positive” or “negative” by country (values in %)



Source: our elaboration on LABREF database

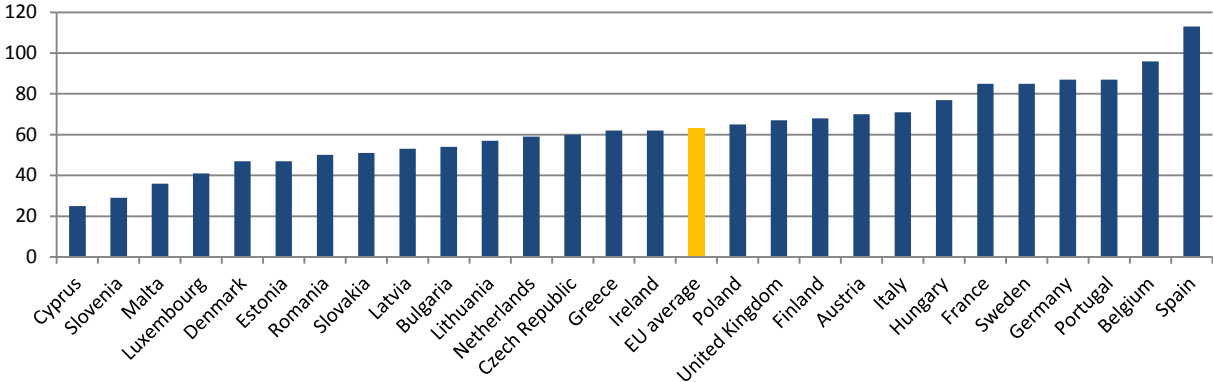
As mentioned in the introduction, there is no consensus about the effect of a more flexible labour market on firms’ innovation activity. The main aim of the analyses based on INNOREG will be to provide further evidence on this issue by using very detailed indexes which capture the multiple dimensions of labour market flexibility, as explained below. For the moment, we will report only the overall amount of “positive” or “negative” (in the sense specified above) labour market reforms. Then, we will try to provide some

⁶ On this we differ from Turrini et al. (2015) who explicitly write that they do not classify reforms based on their potential impact of labour market functioning.

evidence about the intensity and magnitude of the measures implemented by calculating, for each country, the number of policy areas and topics affected by reforms which aimed to increase labour market flexibility.

Table A4A and A4B in the Appendix report the number of positive and negative labour market reforms by country and year, respectively. On average, each EU Member State has implemented 63 positive reforms (Figure 6) during the analysed period, i.e. slightly more than 60% of all reforms approved. Apart from Spain, Belgium and Portugal, also among the countries which reformed their labour markets most, Germany and Sweden implemented the greatest number of reforms to decrease employment protection (they enters with a “positive” sign in our measurement framework). In Greece, though rules regulating the labour market have been modified several times in the last few years (Figure 1), the number of positive reforms is slightly below the EU average.

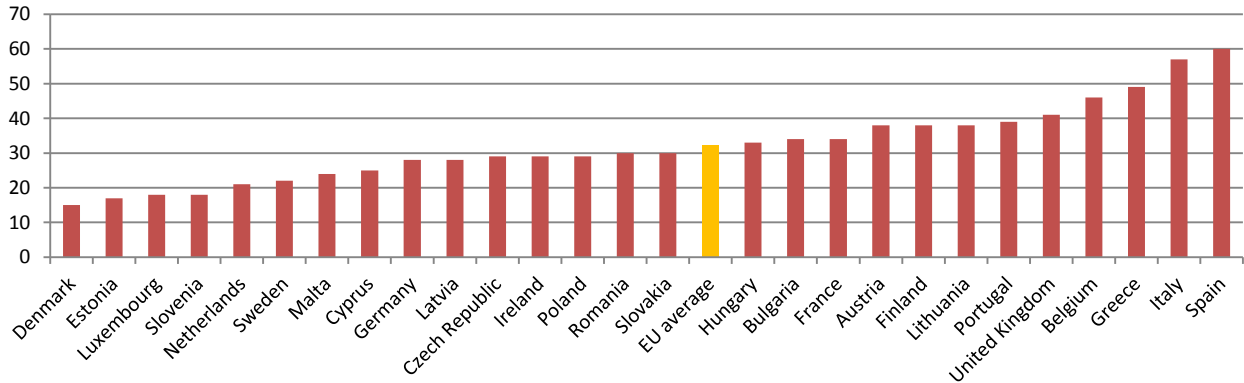
Figure 6: Total number of reforms increasing labour market flexibility (“positive” reforms) in European Union Countries (2000-2012)



Source: our elaboration on LABREF database

The direction of the reforming processes implemented by each EU Member State can be appreciated by comparing Figures 6 and 7 where countries are ranked according to the number of positive and negative reforms adopted, respectively. This comparison confirms that Greece, and to some extent Italy, have been implementing a non-negligible share of reforms to tighten labour market rules, whereas Spain is the EU country which approved the greatest number of both positive and negative reforms.

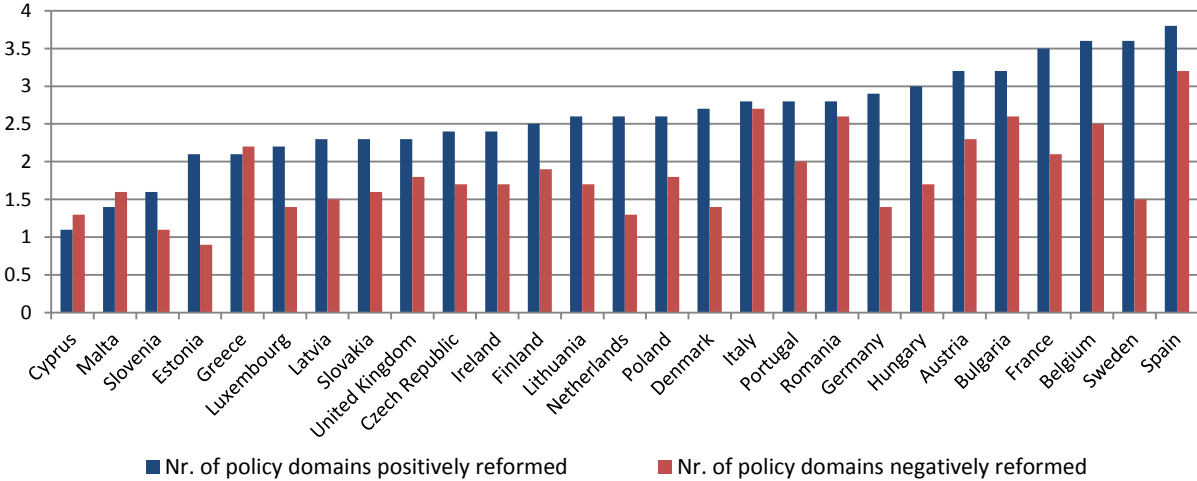
Figure 7: Total number of reforms decreasing labour market flexibility (“negative” reforms) in European Union Countries (2000-2012)



Source: our elaboration on LABREF database

As shown above, the number of positive reforms is only a partial indicator of the changes occurring in EU Member States. To provide some evidence about the intensity of the reformatory process, tables A5A and A5B, in the Appendix report the number of policy domains (out of 9) affected by at least a positive or a negative reform, respectively, by year of implementation and country. Similarly, Table A6A and A6B detail the number of policy fields (out of 48) affected by the two types of reforms.

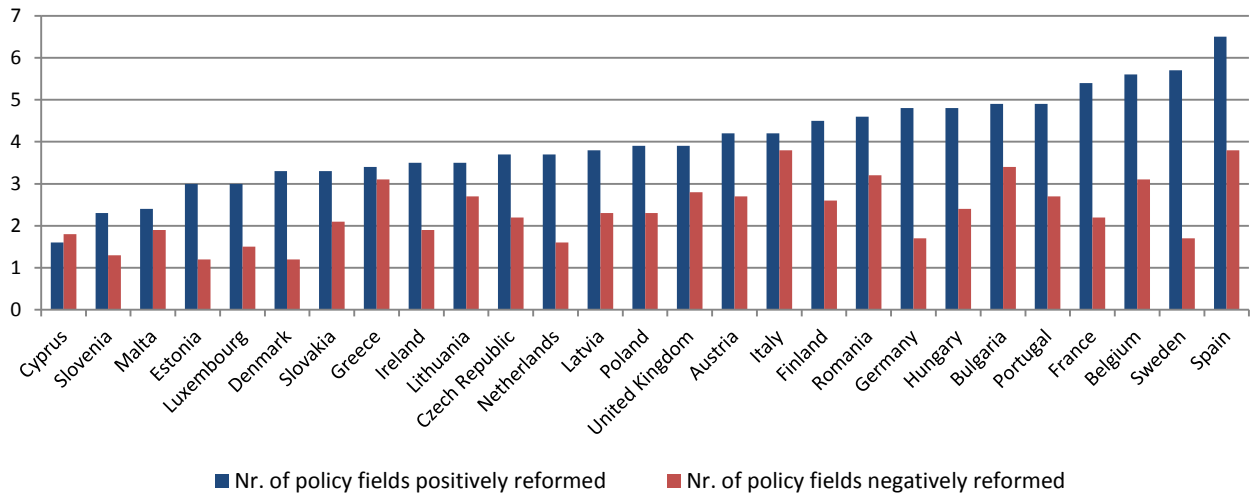
Figure 8: Yearly average number of policy domains (out of 9) affected by “positive” and “negative” reforms



Source: our elaboration on LABREF database

Sweden, Belgium and France, after Spain, were the countries that implemented positive labour market reforms in the early 2000s most intensively (Figure 8 and 9). Continental Northern countries such as Denmark and the Netherlands, which were below the EU average for the total number of measures approved, score higher if we look at the average number of policy domains and policy fields positively affected by a reform. On the other hand, it is confirmed that, in spite of the intense reform undertaken by Greece and Italy during the last few years, the number of policy fields and policy domains positively affected by these reforms is quite low in these countries. Finally, all Southern European countries (Greece, Italy, Malta and Spain) have experienced a rather inconsistent reform process, as the number of policy domains affected by measures intended to enhance labour market flexibility is close to the number of domains affected by reforms with the opposite aim.

Figure 9: Yearly average number of policy fields (out of 48) affected by “positive” and “negative” reforms



Source: our elaboration on LABREF database

To synthesize the huge amount of information on labour market reforms, we calculate for each country and year a number of indexes which can be found, together with all the variables described in this report, in the dataset INNOREG. They provide synthetic information on both the direction (towards more flexible labour markets or not) and the magnitude (policy domains and policy fields covered) of the reforming process undertaken in the EU Member States’ labour markets and can be used (together with other covariates) to explain the heterogeneity in the economic performance of countries and firms. We define:

$$SRP = \frac{NRP \times 100}{NR} : \text{Share of positive reforms (all policy domains)}$$

$$SRN = \frac{NRN \times 100}{NR} : \text{Share of negative reforms (all policy domains)}$$

$$SpoldomR = \frac{NpoldomRx100}{Npoldom} : \text{Share of policy domains reformed}$$

$$SPpoldomR = \frac{NPpoldomRx100}{NpoldomR} : \text{Share of policy domains positively reformed}$$

$$SNpoldomR = \frac{NNpoldomRx100}{NpoldomR} : \text{Share of policy domains negatively reformed}$$

$$SRpolfieldR = \frac{NpolfieldRx100}{Npolfield} : \text{Share of policy fields reformed}$$

$$SPpolfieldR = \frac{NPpolfieldRx100}{NpolfieldR} : \text{Share of policy fields positively reformed}$$

$$SNpolfieldR = \frac{NNpolfieldRx100}{NpolfieldR} : \text{Share of policy fields negatively reformed}$$

Where:

NR = Number of reforms

NRP = Number of positive reforms

NRN = Number of negative reforms

NpoldomR = Number of policy domains reformed

Npoldom = Number of policy domains

NPpoldomR = Number of policy domains positively reformed

NNpoldomR = Number of policy domains negatively reformed

NpolfieldR = Number of policy fields reformed

Npolfield = Number of policy fields

NPpolfieldR = Number of policy fields positively reformed

NNpolfieldR = Number of policy fields negatively reformed

Tables A7-A12 in the Appendix report all the above calculated indexes for each country and year.

Table 5 shows the average indexes over the whole period of analysis (2000-2012). In particular, the indexes *SRP*, *SRN*, *SPpoldomR*, *SNpoldomR*, *SPpolfieldR*, and *SNpolfieldR* offer a picture of the direction of the reforming process. The sum of the shares of positive and negative reforms (*SRP* and *SRN*) is always below 100 because of the "unclassified" reforms. On the other hand, the sum of the shares of policy domains (fields) positively and negatively reformed can be greater than 100, as some policy domains (fields) involved were affected by both "positive" and "negative" reforms during the analyzed period.

Denmark, Estonia, France, Germany and Sweden, with values of all the "positive" indexes (*SRP*, *SPpoldomR*, *SPpolfieldR*) above 70, are the countries which implemented the highest share of "positive" labour market reforms. The countries which undertook the greatest shares of reforms to tighten labour market regulation (more than 40%) are mainly in Southern Europe (Cyprus, Greece, Italy and Malta): Italy and Malta are the only countries in the European Union where the share of policy domains (and fields) "negatively" reformed is higher than the corresponding positive shares. *SpoldomR* and *SpolfieldR*, by construction, provide indications of the magnitude of the reforming process. The higher these indexes are, the higher the number of policy domains and policy fields, as described in Table 2, which are affected by at least one reform of whichever type. Belgium, Bulgaria, France, Romania, Spain and Sweden have reformed more than 50% of the 9 policy domains and more than 15% of the 48 policy fields. According to our indexes, these countries have undertaken the most extensive labour market reforms in the EU. Ranked lowest for both indexes are Cyprus, Estonia, Malta and Slovenia, where only around 30% of the policy domains and less than 10% of the policy fields were affected by a reform.

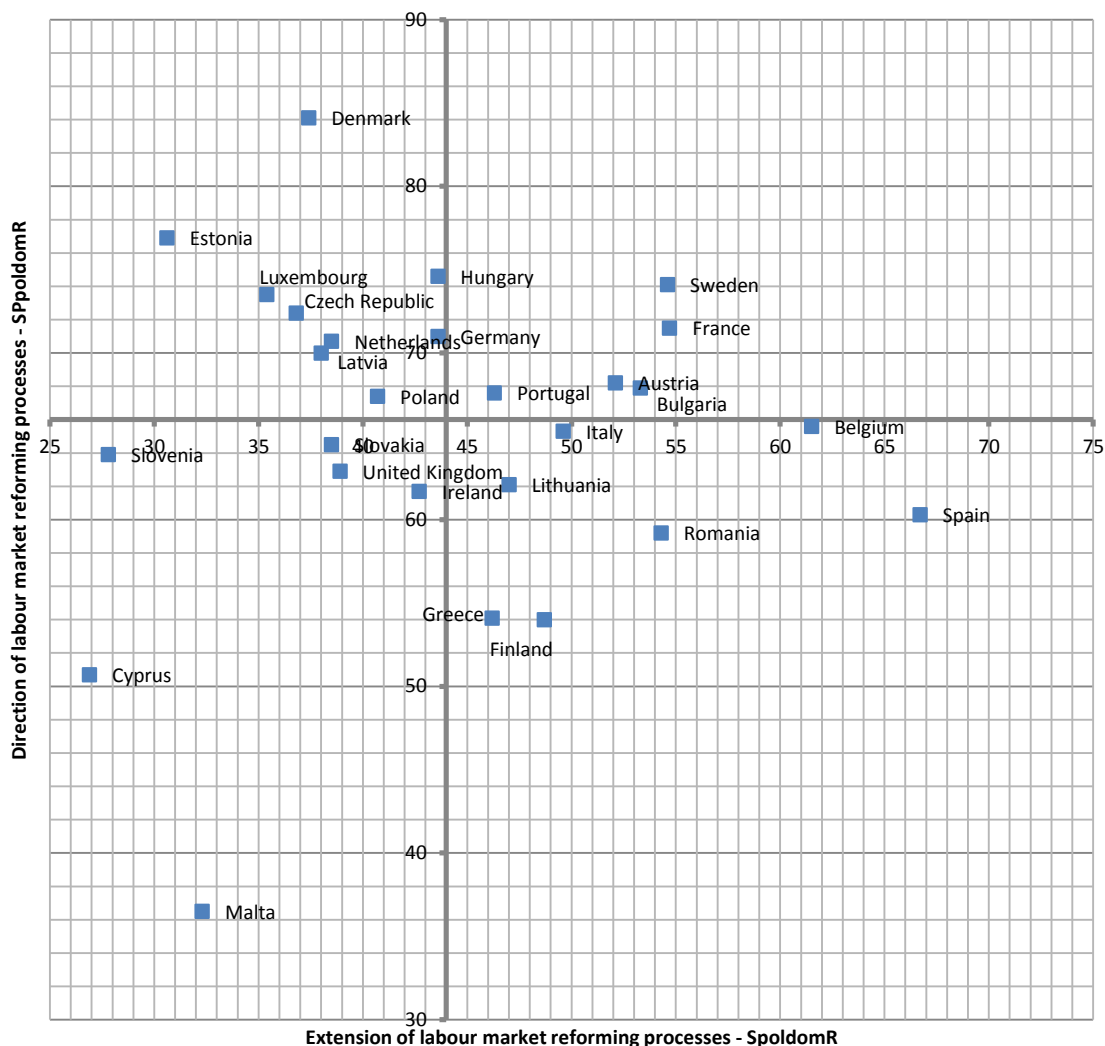
Table 5: Synthetic indexes on labour market reforms in EU countries – Average 2000-2012

	SRP	SRN	SpoldomR	SppoldomR	SNpoldomR	SpolfieldR	SPolfieldR	SNPolfieldR
Austria	65.9	33.6	52.1	68.2	44.5	14.4	63.7	36.4
Belgium	69.1	29.8	61.5	65.6	46.9	17.9	66.2	35.1
Bulgaria	60	37.3	53.3	67.9	51.8	17.3	59.7	39.6
Cyprus	53.2	45.2	26.9	50.7	49.3	7.1	51.4	46.5
Czech Republic	62.7	36.7	36.8	72.4	52.8	12.2	60.9	39.6
Denmark	73.6	25.3	37.4	84.1	42.4	9.3	73.6	29.8
Estonia	72.5	22.4	30.6	76.9	29.1	8.9	72.9	23.4
Finland	56.6	42.6	48.7	54	48	14.7	57.4	42.5
France	70.4	28.8	54.7	71.5	40	15.7	71	29.5
Germany	70.5	28.9	43.6	71	37.7	13.3	71.4	30.6
Greece	50.7	42	46.2	54.1	47.6	13.1	54	45.3
Hungary	64.6	34.2	43.6	74.6	47.8	14.1	70.1	41.5
Ireland	64.2	31.8	42.7	61.7	43.3	11.7	62.8	34.4
Italy	49.2	47.6	49.6	65.3	62.9	16	53.5	56.9
Latvia	56.5	33.2	38	70	44.2	12.7	62.3	38.3
Lithuania	52.7	32.8	47	62.1	36.7	14.1	53	35.4
Luxembourg	68.7	30.6	35.4	73.5	44.7	9.3	68.5	36.1
Malta	40.9	55.5	32.3	36.5	64.5	9.3	39.9	57
Netherlands	68.3	30.2	38.5	70.7	37.9	10.7	68.1	33.5
Poland	62.9	37.1	40.7	67.4	55.2	12.5	62	41.1
Portugal	60.6	30.7	46.3	67.6	42.3	15.8	61	32.6
Romania	56.1	41.6	54.3	59.2	52.4	15.5	59.8	46.8
Slovakia	57.9	32.9	38.5	64.5	42.9	11.4	59.4	35.3
Slovenia	62.5	33.3	27.8	63.9	40.3	7.6	63.5	36.5
Spain	59.3	35.8	66.7	60.3	53.9	21	61.5	38.3
Sweden	78.1	19.4	54.6	74.1	29.3	15.5	76.7	21.3
United Kingdom	58	38.2	38.9	62.9	53.9	13.9	56.7	41.2

Source: our elaboration on LABREF database

If we read all the proposed indexes together, it emerges that France and Sweden are the countries in the EU which changed their labour market regulation most intensively (towards greater flexibility) and extensively during the first decade of 2000. Italy is, of the largest EU Member States, the country in which the direction of the reform process is less clear: according to the proposed indexes, the Italian labour market in the last few years has been characterized by a number of reforms directed at smoothing labour market rules equal to the number of reforms aimed at tightening labour market rules.

Figure 10: Extension and direction of labour market reforming processes



Source: our elaboration on LABREF database

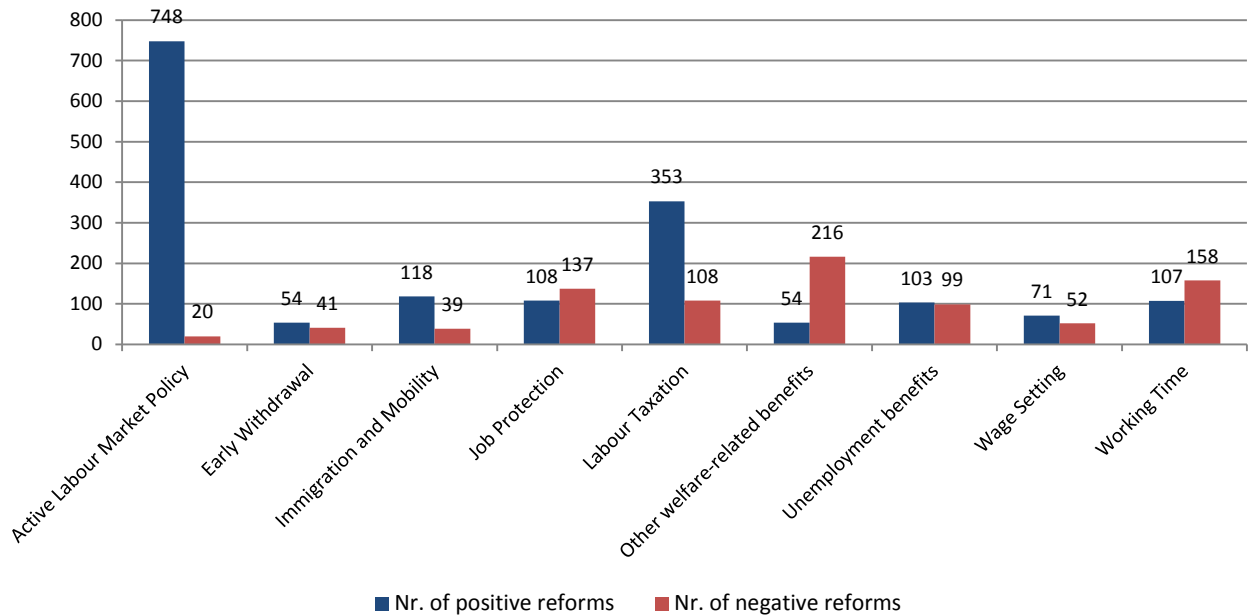
Patterns also emerge when we look at Figure 10 where EU countries are plotted along two dimensions: the share of policy domains reformed (*SpoldomR*) and the share of positively reformed policy domains (*SppoldomR*). The thick gray lines correspond to EU average values. The top right quadrant shows countries which have undertaken labour market reforms with an intensity and on a magnitude greater than the EU average. The bottom right quadrant contains countries that have modified labour regulation more broadly than the European average, but have introduced fewer elements of flexibility. In the bottom left quadrant lie countries where the reform process has been weaker than average, in terms of both extent and flexibility. Finally, the top left quadrant shows countries which reformed their labour markets less than average but have achieved greater flexibility.

These indicators offer a picture of the intensity and extent of the reforms undertaken by the governments in EU countries. However, LABREF data allows us to go a step further and to answer the following questions:

- which of the 9 policy domains described in Table 2 are most often reformed by governments in the European Union?
- which are most often positively reformed?
- which are most often negatively reformed?

Figure 11 shows the number of “positive” and “negative” reforms implemented in the EU over the whole period 2000-2012, by policy domain.

Figure 11: Number of “positive” and “negative” reforms in all EU countries by policy domain 2000-2012



Source: our elaboration on LABREF database

Most reforms covered two features of the EU labour markets: active labour market policies (ALMP) and labour taxation. Quite interestingly, almost all reforms affecting active labour market policies have been classified as “positive”, in the sense that they are expected to enhance labour market flexibility by increasing returns to employment (with respect to unemployment). For the other policy domains, the rate of positive reforms is lower, less than 50% for the job protection, unemployment and welfare-related benefits, and working-time domains.

Looking at the distribution of the reforms by country (Table 6), we note that almost all policy domains were affected by at least one reform in all countries during the analyzed period. The greatest share of reforms concerned the ALMP domain in all countries but Hungary, Italy, Romania, and Slovakia: these countries have also channelled their reforms to labour taxation and job protection. Denmark has repeatedly reformed its immigration and mobility policy, Romania and Slovakia their job protection systems, Hungary its labour taxation, and Greece its wage setting regulations.

Table 6: Share of reforms by policy domain

	Active Labour Market Policy	Early Withdrawal	Immigration & Mobility	Job Protection	Labour Taxation	Welfare-related benefits	Unemployment benefits	Wage Setting	Working Time	Total
Austria	36%	6%	9%	7%	11%	9%	8%	3%	10%	100%
Belgium	29%	3%	2%	5%	24%	14%	7%	2%	13%	100%
Bulgaria	26%	2%	9%	12%	19%	7%	11%	2%	12%	100%
Cyprus	31%	0%	10%	4%	18%	14%	2%	6%	16%	100%
Czech Republic	17%	4%	7%	17%	14%	17%	11%	7%	7%	100%
Denmark	38%	5%	16%	0%	8%	8%	11%	0%	14%	100%
Estonia	43%	0%	4%	10%	18%	4%	12%	3%	4%	100%
Finland	31%	6%	11%	6%	14%	9%	13%	5%	6%	100%
France	29%	3%	3%	8%	17%	13%	8%	8%	13%	100%
Germany	38%	3%	6%	4%	11%	13%	6%	3%	15%	100%
Greece	19%	1%	4%	15%	16%	6%	6%	15%	17%	100%
Hungary	21%	4%	3%	10%	37%	11%	5%	3%	6%	100%
Ireland	34%	1%	5%	5%	23%	13%	6%	5%	7%	100%
Italy	21%	1%	7%	15%	24%	9%	10%	4%	10%	100%
Latvia	29%	3%	1%	16%	22%	8%	7%	3%	9%	100%
Lithuania	24%	2%	4%	10%	19%	11%	10%	8%	11%	100%
Luxembourg	37%	2%	2%	3%	22%	15%	3%	5%	12%	100%
Malta	42%	0%	2%	8%	16%	8%	3%	2%	20%	100%
Netherlands	27%	8%	8%	4%	14%	16%	11%	1%	11%	100%
Poland	38%	7%	5%	9%	12%	6%	5%	5%	12%	100%
Portugal	34%	5%	8%	8%	14%	8%	11%	6%	5%	100%
Romania	16%	1%	2%	18%	20%	10%	11%	10%	12%	100%
Slovakia	13%	11%	6%	18%	18%	10%	7%	6%	12%	100%
Slovenia	29%	2%	8%	10%	17%	13%	6%	4%	10%	100%
Spain	26%	9%	7%	10%	22%	9%	5%	6%	5%	100%
Sweden	35%	2%	13%	4%	18%	7%	11%	3%	7%	100%
United Kingdom	38%	1%	5%	10%	20%	14%	2%	3%	8%	100%
EU average	30%	3%	6%	9%	18%	10%	8%	5%	11%	100%

Source: our elaboration on LABREF database

Table 7: Share of “positive” reforms by policy domain

	Active Labour Market Policy	Early Withdrawal	Immigration & Mobility	Job Protection	Labour Taxation	Welfare-related benefits	Unemployment benefits	Wage Setting	Working Time
Austria	97%	43%	60%	25%	83%	10%	33%	33%	55%
Belgium	96%	100%	100%	38%	97%	0%	64%	67%	38%
Bulgaria	100%	100%	25%	36%	76%	33%	30%	0%	45%
Cyprus	94%		60%	0%	33%	14%	100%	67%	0%
Czech Republic	87%	50%	83%	40%	69%	73%	80%	50%	50%
Denmark	96%	67%	80%		80%	40%	57%		44%
Estonia	97%		100%	57%	67%	33%	25%	50%	0%
Finland	100%	100%	92%	0%	100%	0%	7%	40%	0%
France	97%	33%	100%	70%	90%	13%	56%	56%	67%
Germany	93%	75%	100%	80%	77%	7%	100%	0%	76%
Greece	96%	0%	40%	44%	32%	0%	14%	89%	35%
Hungary	92%	100%	100%	18%	67%	42%	100%	33%	71%
Ireland	97%	0%	100%	20%	50%	33%	100%	60%	14%
Italy	93%	0%	50%	35%	67%	0%	15%	67%	38%
Latvia	89%	0%	100%	33%	62%	25%	43%	33%	33%
Lithuania	96%	0%	100%	18%	48%	17%	55%	33%	42%
Luxembourg	91%	100%	100%	0%	92%	11%	50%	33%	57%
Malta	85%		0%	0%	90%	0%	0%	100%	23%
Netherlands	95%	86%	57%	100%	75%	46%	67%	100%	33%
Poland	94%	57%	100%	38%	55%	50%	60%	60%	36%
Portugal	98%	43%	60%	90%	47%	18%	60%	38%	29%
Romania	100%	100%	0%	47%	65%	25%	78%	75%	30%
Slovakia	100%	33%	60%	67%	87%	13%	50%	40%	50%
Slovenia	100%	100%	25%	60%	100%	0%	0%	50%	20%
Spain	98%	24%	92%	53%	73%	0%	11%	64%	40%
Sweden	95%	100%	100%	50%	100%	25%	50%	33%	25%
United Kingdom	98%	100%	33%	55%	45%	20%	100%	33%	11%
EU average	95%	55%	73%	43%	71%	19%	49%	54%	39%

Source: our elaboration on LABREF database

As previously noted, the ALMP domain has the greatest share of reforms classified as “positive” in all countries (Table 7). In addition, immigration and mobility regulation and labour taxation have been reformed largely to reduce barriers to workers’ mobility (both across countries and within countries) and to lower the tax burden on work in almost all countries. As regards immigration policy, the only countries in which more than 50% of the approved reforms aimed to tighten regulatory restrictions on migration and mobility

are Bulgaria, Greece, Slovenia and the United Kingdom (Table 8). In Italy, 50% of the labour reforms approved aimed to facilitate the entry of foreign workers, and the other 50% aimed to do the opposite. With regards to labour taxation, the only countries which approved reforms which could have increased the tax burden on labour during the first decades of 2000s were Cyprus and Greece, while Ireland, Lithuania and Portugal had a rather “fluctuating” labour taxation policy.

Table 8: Share of “negative” reforms by policy domain

	Active Labour Market Policy	Early Withdrawal	Immigration & Mobility	Job Protection	Labour Taxation	Welfare-related Benefits	Unemployment benefits	Wage Setting	Working Time
Austria	2.1%	50%	19.4%	73.3%	8.3%	92.9%	66.7%	66.7%	50%
Belgium	1.9%	0	0	64.3%	2.6%	100%	41.7%	33.3%	66.7%
Bulgaria	0	0	55%	54.2%	23.8%	62.5%	75%	100%	61.9%
Cyprus	0		40%	100%	50%	80%	0	50%	100%
Czech Republic	10.7%	50%	25%	78.3%	40%	40.5%	16.7%	50%	38.9%
Denmark	2.8%	33.3%	12.5%		0	60%	50%		60%
Estonia	0		0	25%	21.4%	75%	70%	0	100%
Finland	0	0	4.8%	80%	0	100%	97.2%	60%	100%
France	2%	66.7%	0	46.7%	9.1%	92.6%	42.9%	47.6%	29.6%
Germany	4.2%	25%	0	25%	2.8%	85.7%	0	100%	29.6%
Greece	0	100%	25%	57.4%	40.9%	100%	73.3%	22.2%	55%
Hungary	2%	0	0	87.5%	27.6%	72.2%	0	66.7%	33.3%
Ireland	6.3%	100%	0	80%	19.4%	73.3%	0	37.5%	91.7%
Italy	0	100%	36.1%	74.8%	26.8%	95.8%	85.7%	50%	50%
Latvia	0	66.7%	0	58.3%	14.4%	60%	25%	25%	58.3%
Lithuania	0	100%	0	86.7%	17.9%	92%	31.7%	25%	45.8%
Luxembourg	8.3%	0	0	100%	0	94.4%	50%	66.7%	37.5%
Malta	3.3%		100%	100%	0	100%	100%	0	72.2%
Netherlands	4.2%	25%	37.5%	0	8	60%	20%	0	66.7%
Poland	10%	50%	0	44.4%	54.2%	44.4%	37.5%	66.7%	58.3%
Portugal	4.2%	50%	30.6%	4.2%	28.6%	71.4%	43.3%	44.4%	83.3%
Romania	0	0	100%	72.4%	39.3%	70%	33.3%	20%	78.6%
Slovakia	0	43.3%	37.5%	33.3%	18.8%	75%	58.3%	62.5%	48%
Slovenia	0	0	83.3%	62.5%	0	83.3%	100%	50%	75%
Spain	0	75%	7.1%	51.3%	18.2%	100%	83.3%	33.3%	42.9%
Sweden	3.1%	0	0	66.7%	0	77.8%	54.2%	33.3%	50%
United Kingdom	0	0	72.2%	47.2%	33.4%	71.4%	0	66.7%	80%
EU average	2.1%	50%	19.4%	73.3%	8.3%	92.9%	66.7%	66.7%	50%

Source: our elaboration on LABREF database

It should be stressed that the proposed exercise offers a purely quantitative description of the reforms implemented by each EU Member State. It does not allow us to assess the size and relevance of each reform. However, the reported indicators can draw a general picture of the direction and strength of the measures to reform labour market regulation in the EU.

3. R&D tax incentives

Since the 90s, several countries have progressively shifted from direct (grants or procurements) to indirect (fiscal incentives) funding of business R&D.

There are two main types of fiscal incentives: expenditure-based (R&D tax credits, R&D tax allowances, payroll withholding tax credit for R&D wages) or income-based (preferential tax rates on royalty income and on other income from knowledge capital). They can be volume based (i.e. they apply to all qualified R&D expenditures) or incremental (i.e. they apply to the additional amount of R&D expenditures) or hybrid (volume-increment-based). Finally they can be general or targeted at specific firms (SME, start-ups, new claimants, etc.) or at specific R&D expenditures.

According to the OECD (2010 and 2011), in recent years R&D tax incentive schemes have become increasingly simple and generous. Moreover, longer carry-forward of unused R&D credits have been progressively introduced during the financial crisis to help firms reporting losses.

Given the complexity of national business tax systems in general, and of fiscal incentives to R&D in particular, comparing these schemes across countries is not an easy task. However, a synthetic and comparable index of the generosity of tax incentives in most OECD countries was developed in 1990 by Jazek Warda, and revised in 1995, 1999, 2001, 2004, 2006, 2008, 2012 and 2013 (see for instance Warda, 2009).

The 'B-index' is the before-tax income needed to break even on one dollar of R&D outlays and is calculated for representative small and large corporations (Warda 2001). For the sake of clarity, we have collected data on the tax subsidy rate (TSR hereafter) which is 1 minus the B-index. Estimates of this rate are easy to interpret as they amount to the tax subsidy (if positive) or the tax burden (if negative) on an additional dollar of R&D.

Table 9 reports the source of the TSRs and the meaning of the variables for all the available years.

Table 9: TSRs data source

Variable	Meaning	Source	
L1990	Large firms 1990	STIOutlook2006 Table 35	
L1995	Large firms 1995		
L1999	Large firms 1999		
S1999	SME firms 1999		
L2001	Large firms 2001		
S2001	SME firms 2001		
L2004	Large firms 2004		
S2004	SME firms 2004		
L2006	Large firms 2006		
S2006	SME firms 2006		
L2008	Large firms 2008		STIOutlook2008 Table related to Figure 2.3
S2008	SME firms 2008		
LP2012	Large Profit-making firms 2012	File directly provided by OECD	
SP2012	SME profit-making firms 2012		
LP2013	Large Profit-making firms 2013		
SP2013	SME profit-making firms 2013		
LL2013	Large Loss-making firms 2013		
SL2013	SME Loss-making firms 2013		

Table 10 shows the countries and years for which TSRs are available. Table A12 in the Appendix reports the estimated TSRs for all available years and countries.

Table 10: EU countries and years covered by the B-index

	1990	1995	1999	2001	2004	2006	2008	2012	2013
Austria	X	X	X	X	X	X	X	X	X
Belgium	X	X	X	X	X	X	X	X	X
Bulgaria									
Cyprus									
Czech Republic						X	X	X	X
Denmark	X	X	X	X	X	X	X	X	X
Estonia									
Finland	X	X	X	X	X	X	X	X	X
France	X	X	X	X	X	X	X	X	X
Germany	X	X	X	X	X	X	X	X	X
Greece			X	X	X	X	X		
Hungary				X	X	X	X	X	X
Ireland	X	X	X	X	X	X	X	X	X
Italy	X	X	X	X	X	X	X		
Latvia									
Lithuania									
Luxembourg							X	X	X
Malta									
Netherlands	X	X	X	X	X	X	X	X	X
Poland						X	X	X	X
Portugal	X	X	X	X	X	X	X	X	X
Romania									
Slovakia						X	X	X	X
Slovenia							X	X	X
Spain	X	X	X	X	X	X	X	X	X
Sweden	X	X	X	X	X	X	X	X	X
United Kingdom	X	X	X	X	X	X	X	X	X

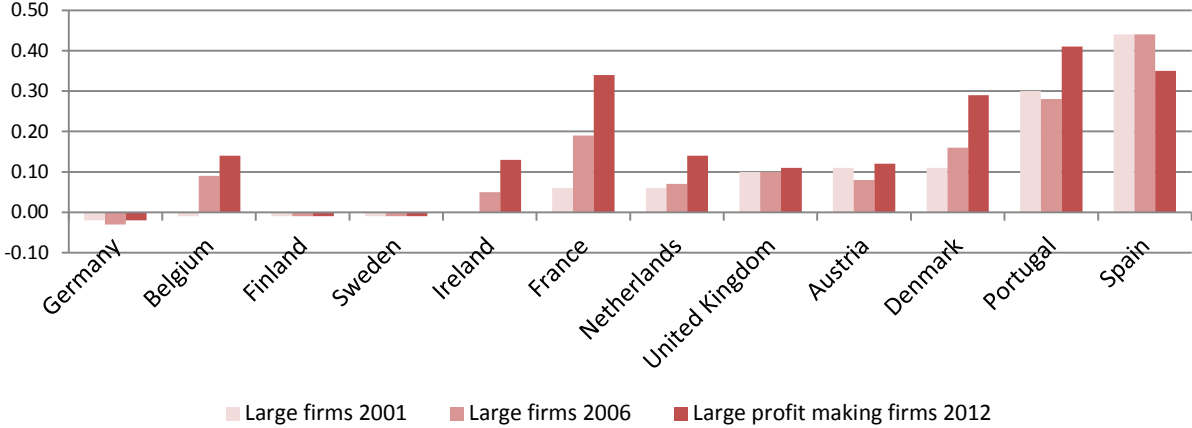
To be consistent with the time interval for which we have developed labour market indicators (see Section 2.2), here we comment on TSRs only for three representative years (2001, 2006 and 2012) and only for EU countries for which TSRs have been calculated continuously during the period 2001-2012.

Figure 12 ranks countries according to their TSR on *large* firms in 2001⁷. Countries with the least generous R&D tax incentive schemes during the whole period were Germany, Finland and Sweden. Belgium and Ireland, which in 2001 had either no tax subsidies (Ireland) or a small tax burden (Belgium), considerably re-oriented their fiscal system

⁷ From 2012, TSRs are calculated for both large and small firms which are making profit or losses. For previous years this information is not available and we report the indexes only for all large and small firms.

towards more generous R&D tax incentives for large firms. Spain, Portugal, and Denmark were relatively more generous in terms of R&D tax incentives during the whole period, but it was France that enhanced the generosity of its fiscal system the most.

Figure 12: R&D Tax Subsidy Rate on Large firms in 2001, 2006 and 2012

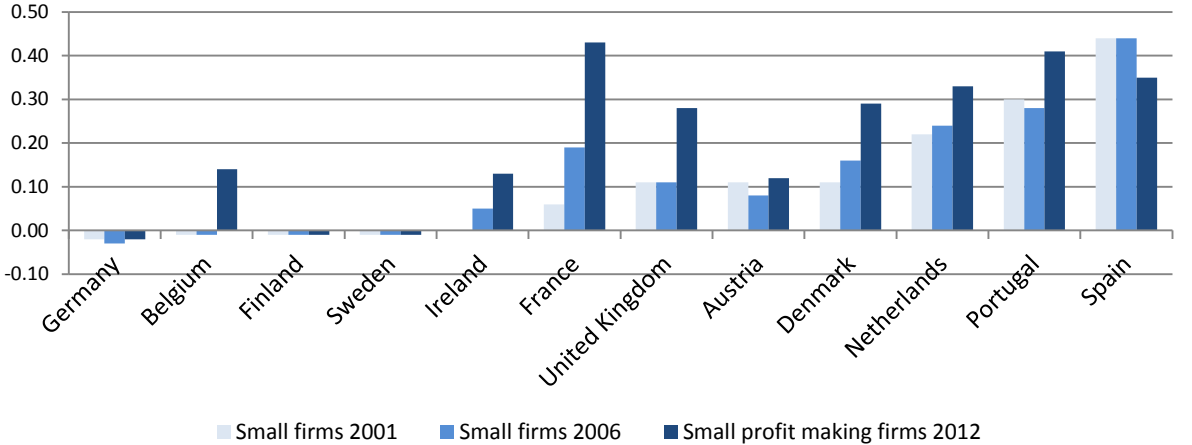


Source: our elaboration on OECD (several years), STI Outlook

A similar picture emerges from Figure 13 which ranks countries according to their TSRs on *small and medium* firms. The Netherlands is among the most generous countries with regard to the incentives given to SMEs for innovative activity, after Spain and Portugal. Spain is the only country which decreased the generosity of its R&D tax relief for both large companies and SMEs in 2012. On the other hand, France was the country which enlarged the subsidies for R&D to small firms the most during the analyzed period.

By comparing the two figures it also emerges that two countries (the Netherlands and the United Kingdom) have implemented measures over the last few years which favour the R&D activity of SMEs more than that of large firms.

Figure 13: R&D Tax Subsidy Rate on SME firms in 2001, 2006 and 2012



Source: our elaboration on OECD (several years), STI Outlook

4. Business Regulation

Together with labour market rules and tax policies, business rules and regulations are also under the direct control of policy makers. Business regulations can represent a barrier to the opening and operation of firms. However, if they are clear, well designed and neutral with respect to firms' strategic decisions, they can enhance firms' activity, by providing investors with safe and stable regulatory frameworks. Internationally comparable indicators of the ease of doing business in EU countries, and also other developed and emerging countries, are provided by the *DoingBusiness* project. The project started in 2003, and progressively enlarged the number of topics covered up to 11 in 2013. These topics, once aggregated, allow us to rank countries according to the overall ease of doing business. *DoingBusiness* focuses on SMEs operating in the largest business city of each country, and provides quantitative indicators on the regulation that applies to these firms at different stages of their life cycle. *DoingBusiness* reported annually from 2004 to 2014 for all EU countries. The topics covered by the report and the corresponding indicators are shown in Table 11.⁸

Table 11: Topics and indicators covered by the DoingBusiness report

Topic	Indicator
Starting a Business	Rank
	Procedures (number)
	Time (days)
	Cost (% of income per capita)
	Paid-in Min. Capital (% of income per capita)
Dealing with Construction Permits	Rank
	Procedures (number)
	Time (days)
	Cost (% of income per capita)
Getting Electricity	Rank
	Procedures (number)
	Time (days)
	Cost (% of income per capita)
Registering Property	Rank
	Procedures (number)
	Time (days)
	Cost (% of property value)
Getting Credit	Rank
	Strength of legal rights index (0-10)
	Depth of credit information index (0-6)
	Public registry coverage (% of adults)
	Private bureau coverage (% of adults)
Protecting Investors	Rank
	Extent of disclosure index (0-10)
	Extent of director liability index (0-10)
	Ease of shareholder suits index (0-10)
	Strength of investor protection index (0-10)

⁸ An Appendix B is available on request, which contains further information on data used in this study. Table B3 in this Appendix reports the indicator names (and corresponding labels) as defined in the Doing Business Stata file.

Topic	Indicator
Paying Taxes	Rank
	Payments (number per year)
	Time (hours per year)
	Profit tax (%)
	Labour tax and contributions (%)
	Other taxes (%)
	Total tax rate (% profit)
Trading Across Borders	Rank
	Documents to export (number)
	Time to export (days)
	Cost to export (US\$ per container)
	Documents to import (number)
	Time to import (days)
	Cost to import (US\$ per container)
Enforcing Contracts	Rank
	Time (days)
	Cost (% of claim)
	Procedures (number)
Resolving Insolvency	Rank
	Time (years)
	Cost (% of estate)
	Outcome (0 as piecemeal sale and 1 as going concern)
	Recovery rate (cents on the dollar)

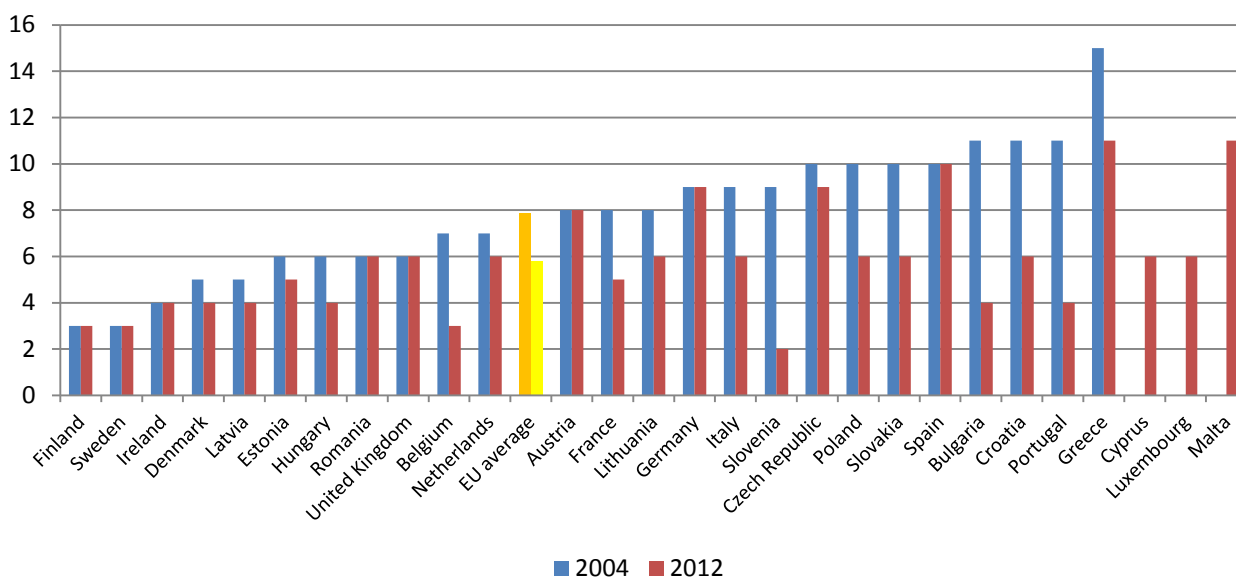
Given the large number of indicators, each scholar should make a selection according to specific research questions. As an example of the potential of the dataset, we show here a very partial picture of the complexity of business regulations in EU countries, by focusing on two indicators that are calculated for several topics, i.e. the number of procedures and the time needed to achieve a certain objective. Among the objectives for which these indicators have been calculated by *DoingBusiness*, we focus on two which can affect the innovative capacity of the economic system as a whole: starting a business and enforcing contracts.

Figures 14 and 15 rank EU countries according to the number of procedures and the time (days) needed to start a business in 2004 and compare these rankings with the corresponding figures for 2012.

The number of procedures to be completed to start a business in 2004 goes from a minimum of 3 in Finland and Sweden, to a maximum of 15 in Greece (where it decreased to 11 in 2012). The average number of procedures in EU countries was 8 in 2004 and it dropped to 6 in 2012. In general, procedures for starting a business are lighter in Nordic countries, and more complex in Southern European countries, at least according to this indicator.

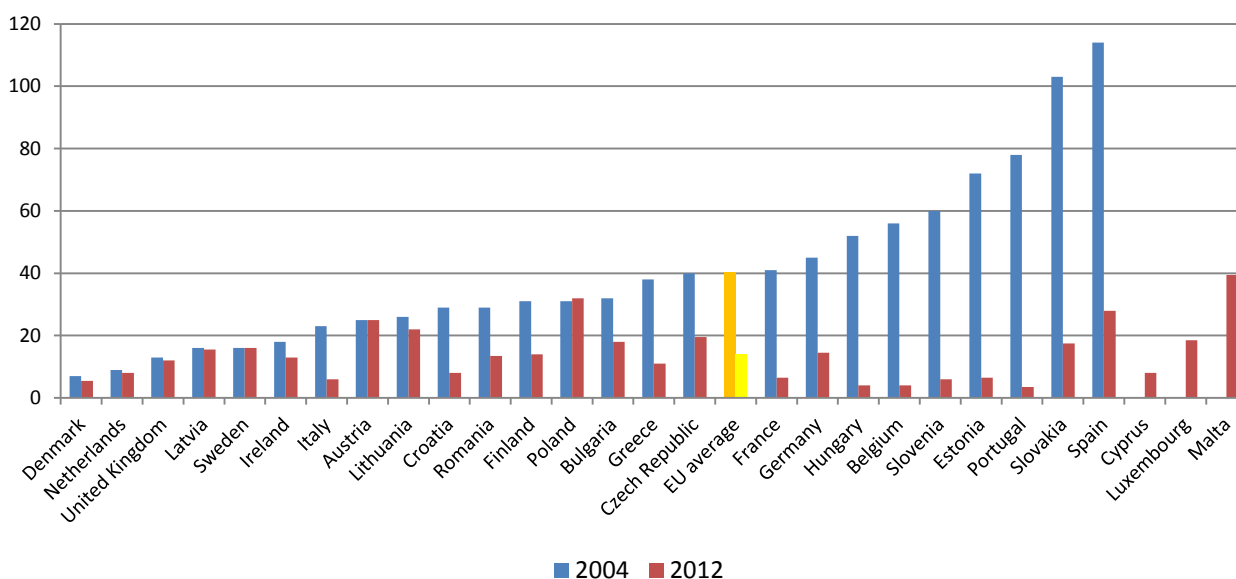
Rather unexpectedly, the number of procedures is not greatly correlated with the time needed to start a business: Finland and Greece, which ranked at the opposite ends of the distribution of the number of procedures, are very similar in terms of the number of days needed, on average, to start a new business.

Figure 14: Number of procedures needed to start a business



Source: our elaboration on DoingBusiness database

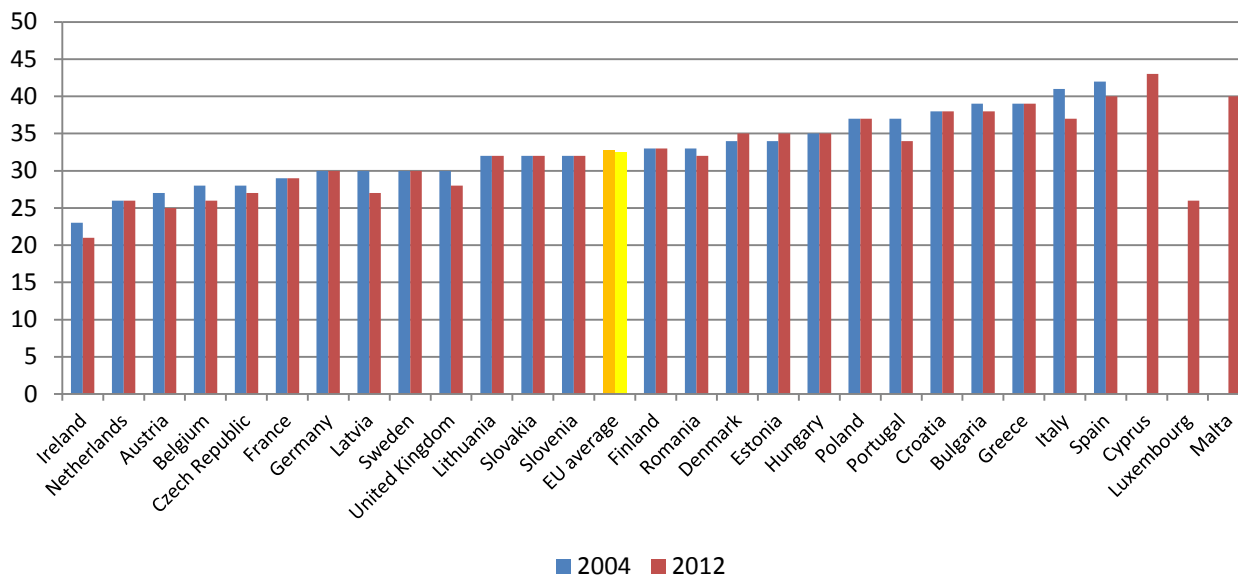
Figure 15: Number of days needed to start a business



Source: our elaboration on DoingBusiness database

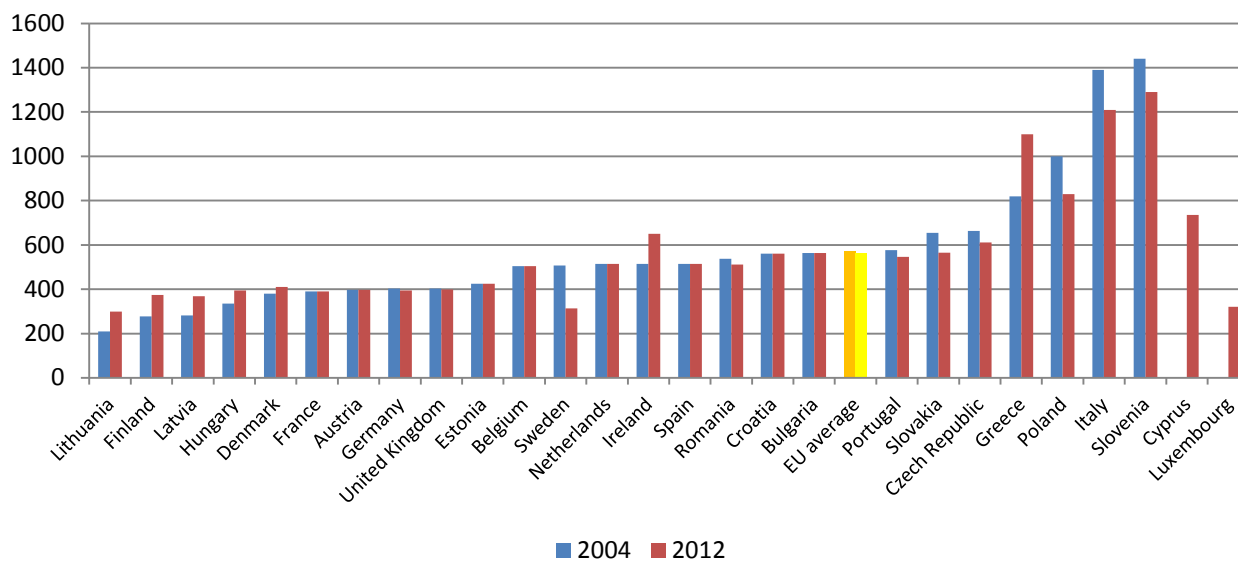
In 2004, the countries with the fastest procedures were Denmark, Netherlands and the United Kingdom (less than two weeks), while the slowest procedures were in Slovakia and Spain (more than three months needed). However, looking at the bars corresponding to 2012, the tremendous effort made by countries, which in 2004 had very long procedures, is evident: for example, Spain dropped the number of days needed to start a business from 114 to 28, Portugal from 78 to 3. This effort by all EU countries to make the opening of new entrepreneurial activities easier and faster is also evident when we look at the EU average value, which has dropped from 40 days to two weeks. It would be interesting to investigate whether this speeding up of bureaucratic procedures over the last few years has positively affected the innovative capability of EU countries.

Figure 16: Number of procedures needed to enforce a contract



Source: our elaboration on DoingBusiness database

Figure 17: Number of days needed to enforce a contract



Source: our elaboration on DoingBusiness database

A different picture emerges when we look at the procedures needed to enforce contracts. In this case (Figures 16 and 17), neither the number of procedures nor the time required to complete the procedures significantly dropped during the analysed period. Southern European countries (Greece, Italy and Spain, together with Cyprus and Malta in 2012) with some Eastern countries (Bulgaria, Poland, Czech Republic) have the longest and most complex bureaucratic processes to enforce contracts, whereas Nordic countries – and also France and Germany - have lighter and faster procedures. Ineffective commercial dispute resolution can discourage investors and new business relationships, and the impact of this on companies’ innovation activities should be taken into account.

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Data Source

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Appendix A

Table A1: Number of measures concerning labour market by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	12	4	14	9	6	8	4	4	18	14	6	9	1
Belgium	9	7	13	8	14	13	9	11	13	20	18	11	10
Bulgaria				7	9	7	7	11	6	15	18	8	2
Cyprus	1	1	1	8	2		6	2	3	14	5	4	4
Czech Republic	8	6	2	2	18	8	3	6	12	10	1	7	7
Denmark		2	5	8	8	3	3		12	9	6	2	5
Estonia	3	1	1		5	3	1	3	9	25	6	6	4
Finland	9	9	12	6	18	6	6	3	9	10	15	3	1
France	3	5	5	3	13	20	13	10	13	18	7	9	1
Germany	4	10	9	13	9	9	6	6	10	25	6	2	8
Greece	1	9	5	5	10	3	3	4	24	8	25	18	3
Hungary	4	2	2	5	7	10	10	9	7	20	15	20	2
Ireland	8	5	3	1	6	8	9	8	5	18	11	4	9
Italy	5	11	11	15	6	8	3	22	20	7	14	12	2
Latvia		1	9	8	7	4	11	12	16	8	7	10	2
Lithuania	3	3	2	11	9	7	6	10	6	15	13	12	11
Luxembourg	2	3	5	1	4	8	3	6		13	11	4	
Malta			5	3	10	11	1	5	13	9	4	2	1
Netherlands	3	7	6	2	11	7	13	17	1	9	5	1	1
Poland	3	1	13	9	20	5	2	16		12	5	5	3
Portugal	3	4	3	8	10	4	5	16	7	49	16	7	
Romania				7	5	13	9	4	6	10	8	21	
Slovakia	2	1	6	6	10	4	3	11	1	14	4	19	3
Slovenia	1	2	2	3	4	4	1	9		10	4	6	2
Spain	11	13	17	17	11	13	24	18	6	8	13	27	4
Sweden	7	5	6	6	5	8	20	15	8	14	11	4	
United Kingdom	3	3	2	17	13	2	1	11	7	26	7	19	

Table A2: Number of policy domains (out of 9) affected by reforms by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	7	3	7	5	5	4	4	4	7	5	4	5	1
Belgium	6	6	6	5	5	5	4	6	6	7	4	7	5
Bulgaria				4	4	4	6	6	4	7	7	4	2
Cyprus	1	1	1	4	1		4	2	3	4	2	3	3
Czech Republic	5	3	1	2	6	5	2	4	4	4	1	4	2
Denmark		1	3	4	4	2	2		6	6	4	1	4
Estonia	2	1	1		3	2	1	3	5	7	4	2	2
Finland	6	7	7	5	5	4	5	2	4	4	5	2	1
France	3	5	4	3	7	5	7	6	7	6	4	6	1
Germany	4	7	1	5	4	5	4	4	4	5	4	1	3
Greece	1	8	4	2	5	3	3	4	7	5	6	4	2
Hungary	3	2	2	4	4	5	3	6	5	5	4	7	1
Ireland	6	3	2	1	5	5	4	5	3	5	4	3	4
Italy	3	5	5	5	4	6	2	5	7	4	5	6	1
Latvia		1	5	5	4	2	5	4	5	3	3	3	1
Lithuania	2	2	1	6	6	6	4	5	2	6	5	6	4
Luxembourg	1	3	4	1	3	3	2	4		6	6	2	
Malta			2	1	5	3	1	3	6	4	4	2	1
Netherlands	2	4	4	2	7	4	6	6	1	4	3	1	1
Poland	2	1	7	4	8	3	2	5		4	3	3	2
Portugal	2	4	2	5	6	2	4	7	2	8	5	3	
Romania				4	3	6	7	4	2	6	4	8	
Slovakia	2	1	4	3	6	4	2	6	1	4	3	7	2
Slovenia	1	2	2	2	2	3	1	4		4	4	4	1
Spain	5	7	7	7	6	7	8	7	4	4	5	7	4
Sweden	6	3	4	3	4	6	6	7	6	5	6	3	
United Kingdom	2	3	1	4	5	2	1	5	4	6	4	5	

Table A3 Number of policy fields (out of 48) affected by reforms by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	12	3	11	7	6	6	4	4	13	9	6	8	1
Belgium	8	7	11	8	8	9	6	8	10	13	9	7	8
Bulgaria				7	9	7	7	10	6	14	14	7	2
Cyprus	1	1	1	6	2		6	2	3	8	4	4	3
Czech Republic	7	6	2	2	14	6	3	6	7	8	1	7	7
Denmark		2	5	5	8	2	3		9	6	4	1	4
Estonia	2	1	1		5	3	1	3	6	18	5	3	3
Finland	8	9	11	6	11	6	6	3	9	8	11	3	1
France	3	5	5	3	11	13	11	9	9	13	7	8	1
Germany	4	9	4	11	7	6	4	5	9	11	5	2	6
Greece	1	9	5	3	7	3	3	4	12	8	15	9	3
Hungary	3	2	2	5	6	9	9	9	6	10	8	18	1
Ireland	8	5	2	1	6	6	8	6	4	9	8	3	7
Italy	5	7	9	11	5	7	3	12	15	4	10	11	1
Latvia		1	8	8	7	4	11	5	9	6	6	6	2
Lithuania	3	2	1	10	8	7	5	9	3	12	10	11	7
Luxembourg	2	3	5	1	4	7	2	6		8	9	2	
Malta			4	2	9	5	1	4	10	7	4	2	1
Netherlands	3	6	4	2	9	5	10	12	1	8	5	1	1
Poland	3	1	9	8	16	3	2	10		8	4	5	3
Portugal	3	4	3	6	9	4	5	13	4	25	9	6	
Romania				7	4	11	8	4	3	9	5	16	
Slovakia	2	1	5	6	8	4	3	11	1	9	4	15	2
Slovenia	1	2	2	3	4	4	1	8		8	4	6	1
Spain	7	12	13	10	8	11	15	12	6	7	11	15	4
Sweden	7	4	6	5	5	8	12	12	8	10	8	4	
United Kingdom	3	3	2	10	10	2	1	8	6	16	7	12	

Table A4A: Amount of reforms enhancing labour market flexibility (i.e. "positive" reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	8	3	6	9	2	6	2	2	12	9	4	6	1
Belgium	5	5	7	5	11	9	5	9	7		15	8	1
Bulgaria				4	4	5	4	7	6	7	13	3	1
Cyprus	1		1	1	2		4		2	8	3		3
Czech Republic	3	3	1	2	10	6	2	3	10	9		5	6
Denmark		1	4	6	6	1	3		9	7	5	2	3
Estonia	2		1		5	2	1	2	5	16	5	4	4
Finland	7	4	6	3	17	4	4	3	5	9	6		
France	1	2	4	3	9	16	11	7	11	11	4	5	1
Germany	3	7	9	12	9	8	5	4	8	15	3		4
Greece	1	2	2	2	4	3	1	1	12	3	19	11	1
Hungary	3	1	1	3	7	9	3	4	5	14	11	15	1
Ireland	3	3	3		5	5	4	5	4	12	9	4	5
Italy	3	8	7	8	1	2	1	12	7	2	10	9	1
Latvia			3	3	4	3	7	4	7	5	5	10	2
Lithuania		2	2	3	4	5	3	6	2	1	9	5	6
Luxembourg	1	1	4	1	3	6	3	3		9	8	2	
Malta					7	1		4	7	5	2	1	
Netherlands	3	4	6	2	8	6	5	13		7	4		1
Poland	3		12	7	11	3	2	13		9	1	3	1
Portugal	1	2	2	2	5	1	3	11	7	33	13	7	
Romania				2	4	1	2	1	5	5	5	16	
Slovakia	2		2	5	7	2	1	3	1	11	3	13	1
Slovenia	1	1	1	2	4	3	1	5		7	2	2	
Spain	8	5	9	9	10	6	15	11	4	6	10	2	
Sweden	6	4	4	6	4	4	16	12	8	12	6	3	
United Kingdom	3	2	1	7	6	1		5	6	17	5	14	

Table A4B: Amount of reforms reducing labour market flexibility (i.e. “negative” reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	4	1	8	0	4	2	2	2	5	5	2	3	0
Belgium	4	2	6	3	3	4	4	2	6	8	2	2	0
Bulgaria				2	5	2	3	4	0	8	5	4	1
Cyprus	0	1	0	7	0		2	2	1	6	1	4	1
Czech Republic	5	3	1	0	8	2	1	3	1	1	1	2	1
Denmark		1	1	2	1	2	0		3	2	1	0	2
Estonia	1	1	0		0	0	0	1	3	9	1	1	0
Finland	2	4	6	3	1	2	2	0	4	1	9	3	1
France	2	3	1	0	4	4	2	2	2	7	3	4	0
Germany	1	3	0	1	0	1	1	2	2	8	3	2	4
Greece	0	5	3	1	6	0	2	2	10	5	6	7	2
Hungary	1	1	1	2	0	1	7	5	2	5	3	4	1
Ireland	4	2	0	1	1	3	4	3	0	6	1	0	4
Italy	2	3	4	5	5	6	2	6	11	5	4	3	1
Latvia		1	5	2	3	1	4	2	5	3	2	0	0
Lithuania	2	0	0	7	4	1	3	1	2	4	4	6	4
Luxembourg	1	2	1	0	1	2	0	3		3	3	2	
Malta			5	3	3	0	1	1	5	2	2	1	1
Netherlands	0	3	0	0	3	1	7	2	1	2	1	1	0
Poland	0	1	1	2	9	2	0	3		3	4	2	2
Portugal	1	2	1	6	3	2	1	5	0	16	2	0	
Romania				5	1	3	6	3	1	5	3	3	
Slovakia	0	0	4	1	1	2	2	8	0	3	1	6	2
Slovenia	0	1	1	1	0	1	0	4		3	2	4	1
Spain	3	8	6	8	1	7	9	4	2	2	3	4	3
Sweden	1	1	2	0	0	4	4	3	0	2	4	1	
United Kingdom	0	0	1	10	7	1	1	5	1	8	2	5	

Table A5A: Amount of policy domains (out of 9) affected by at least one reform enhancing labour market flexibility (i.e. "positive" reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	6	2	4	5	2	2	2	2	5	3	3	4	1
Belgium	3	4	4	3	3	3	2	5	4	2	3	6	5
Bulgaria				3	3	3	3	3	4	4	5	3	1
Cyprus	1		1	1	1		3		2	1	1		2
Czech Republic	2	3	1	2	4	3	1	3	4	3		3	2
Denmark		1	3	4	4	1	2		4	5	3	1	2
Estonia	1		1		3	2	1	2	3	5	3	2	2
Finland	4	4	3	3	5	2	3	2	2	3	2		
France	1	2	4	3	6	4	6	4	5	5	2	2	1
Germany	3	5	1	5	4	4	3	2	3	4	2		2
Greece	1	2	1	1	2	3	1	1	4	2	5	3	1
Hungary	2	1	1	2	4	4	2	4	3	4	4	7	1
Ireland	2	2	2		4	2	1	2	2	5	3	3	3
Italy	2	3	4	4	1	2	1	5	4	2	4	4	1
Latvia			3	3	2	2	3	2	3	3	3	3	1
Lithuania		1	1	2	3	5	2	4	2	5	3	4	2
Luxembourg	1	1	3	1	2	3	2	2		3	5	1	
Malta					3	2		2	2	3	2	1	
Netherlands	2	2	4	2	6	3	3	5		3	3		1
Poland	2		6	3	5	2	2	3		3	1	3	1
Portugal	1	2	2	2	3	1	2	6	2	6	3	3	
Romania				1	2	4	2	1	2	2	4	7	
Slovakia	2		2	2	5	2	1	3	1	4	2	5	1
Slovenia	1	1	1	1	2	2	1	3		3	2	2	
Spain	3	4	4	4	5	3	6	5	2	2	4	7	
Sweden	5	3	2	3	3	3	5	5	6	3	3	2	
United Kingdom	2	2	1	2	3	1		1	3	5	2	5	

Table A5B: Amount of policy domains (out of 9) affected by at least one reform reducing labour market flexibility (i.e. "negative" reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	3	1	6	0	4	2	2	2	4	2	2	2	0
Belgium	3	2	3	3	2	3	4	2	2	5	2	2	0
Bulgaria				2	3	2	3	3	0	5	5	2	1
Cyprus	0	1	0	3	0		1	2	1	3	1	3	1
Czech Republic	4	1	1	0	5	2	1	3	1	1	1	1	1
Denmark		1	1	2	1	2	0		3	2	1	0	2
Estonia	1	1	0		0	0	0	1	1	5	1	1	0
Finland	2	2	4	2	1	2	2	0	2	1	4	2	1
France	2	3	1	0	4	3	1	2	2	2	3	4	0
Germany	1	3	0	1	0	1	1	2	2	2	2	1	2
Greece	0	4	3	1	3	0	2	2	4	3	3	2	1
Hungary	1	1	1	2	0	1	3	3	2	3	1	3	1
Ireland	4	2	0	1	1	3	2	3	0	2	1	0	3
Italy	2	2	3	2	3	5	1	3	4	3	3	3	1
Latvia		1	2	1	2	1	3	2	3	1	2	0	0
Lithuania	1	0	0	3	3	1	2	1	1	3	2	3	2
Luxembourg	1	2	1	0	1	1	0	2		3	2	2	
Malta			2	1	3	0	1	1	4	2	2	1	1
Netherlands	0	2	0	0	3	1	5	2	1	1	1	1	0
Poland	0	1	1	2	4	2	0	2		3	3	2	2
Portugal	1	2	1	3	3	1	1	4	0	6	2	0	
Romania				3	1	3	5	3	1	4	1	2	
Slovakia	0	0	3	1	1	2	2	4	0	1	1	4	2
Slovenia	0	1	1	1	0	1	0	3		1	2	2	1
Spain	2	6	4	3	1	5	3	4	2	2	3	4	3
Sweden	1	1	2	0	0	3	3	2	0	2	3	1	
United Kingdom	0	0	1	3	3	1	1	4	1	4	2	2	

Table A6A: Amount of policy fields (out of 48) affected by at least one reform enhancing labour market flexibility (i.e. "positive" reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	8	2	5	7	2	4	2	2	7	6	4	5	1
Belgium	5	5	6	5	5	6	3	6	6	6	7	5	8
Bulgaria				4	4	5	4	6	6	6	10	3	1
Cyprus	1		1	1	2		4		2	4	2		2
Czech Republic	3	3	1	2	7	4	2	3	5	7		5	6
Denmark		1	4	4	6	1	3		6	5	3	1	2
Estonia	1		1		5	2	1	2	3	11	4	3	3
Finland	6	4	6	3	11	4	4	3	5	7	5	0	
France	1	2	4	3	8	10	10	6	7	10	4	4	1
Germany	3	6	4	10	7	5	3	3	7	8	3	0	4
Greece	1	2	2	2	3	3	1	1	7	3	13	5	1
Hungary	2	1	1	3	6	8	3	4	4	8	7	15	1
Ireland	3	3	2		5	3	4	3	3	7	6	3	4
Italy	3	4	6	5	1	2	1	8	6	1	8	8	1
Latvia			3	3	4	3	7	3	6	4	5	6	2
Lithuania		1	1	3	3	5	3	6	2	7	6	5	3
Luxembourg	1	1	4	1	3	6	2	3		5	6	1	
Malta					6	4		3	6	4	2	1	
Netherlands	3	3	4	2	6	4	5	10		6	4		1
Poland	3		8	6	8	2	2	7		6	1	3	1
Portugal	1	2	2	2	5	1	3	9	4	18	6	6	
Romania				2	3	8	2	1	3	4	4	14	
Slovakia	2		2	5	5	2	1	3	1	7	3	11	1
Slovenia	1	1	1	2	4	3	1	5		6	2	2	
Spain	5	5	8	7	7	4	11	8	4	5	8	12	
Sweden	6	3	4	5	4	4	9	10	8	8	4	3	
United Kingdom	3	2	1	3	6	1		3	5	9	5	9	

Table A6B: Amount of policy fields (out of 48) affected by at least one reform reducing labour market flexibility (i.e. "negative" reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	4	1	7	0	4	2	2	2	5	3	2	3	0
Belgium	3	2	5	3	3	3	4	2	4	7	2	2	0
Bulgaria				2	5	2	3	4	0	8	5	4	1
Cyprus	0	1	0	5	0		2	2	1	4	1	4	1
Czech Republic	5	3	1	0	8	2	1	3	1	1	1	2	1
Denmark		1	1	1	1	2	0		3	1	1	0	2
Estonia	1	1	0		0	0	0	1	2	8	1	0	0
Finland	2	4	5	3	1	2	2	0	4	1	6	3	1
France	2	3	1	0	4	3	1	2	2	4	3	4	0
Germany	1	3	0	1	0	1	1	2	2	4	2	2	3
Greece	0	5	3	1	4	0	2	2	5	5	6	5	2
Hungary	1	1	1	2	0	1	6	5	2	4	3	4	1
Ireland	4	2	0	1	1	3	3	3	0	3	1	0	4
Italy	2	3	4	4	4	6	2	5	9	3	4	3	1
Latvia		1	5	2	3	1	4	2	4	3	2	0	0
Lithuania	2	0	0	6	4	1	2	1	1	4	4	6	4
Luxembourg	1	2	1	0	1	1	0	3		3	3	2	
Malta			4	2	3	0	1	1	4	2	2	1	1
Netherlands	0	3	0	0	3	1	7	2	1	2	1	1	0
Poland	0	1	1	2	8	1	0	3		3	4	2	2
Portugal	1	2	1	4	3	2	1	5	0	11	2	0	
Romania				5	1	3	6	3	1	5	2	3	
Slovakia	0	0	3	1	1	2	2	8	0	2	1	5	2
Slovenia	0	1	1	1	0	1	0	3		2	2	4	1
Spain	2	8	5	3	1	7	5	4	2	2	3	4	3
Sweden	1	1	2	0	0	4	4	2	0	2	3	1	
United Kingdom	0	0	1	7	4	1	1	5	1	7	2	4	

Table A7A: SRP index: Share of reforms enhancing labour market flexibility (“positive” reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	66.7	75	42.9	100	33.3	75	50	50	66.7	64.3	66.7	66.7	100
Belgium	55.6	71.4	53.8	62.5	78.6	69.2	55.6	81.8	53.8	60	83.3	72.7	100
Bulgaria				57.1	44.4	71.4	57.1	63.6	100	46.7	72.2	37.5	50
Cyprus	100	0	100	12.5	100		66.7	0	66.7	57.1	60	0	75
Czech Republic	37.5	50	50	100	55.6	75	66.7	50	83.3	90	0	71.4	85.7
Denmark		50	80	75	75	33.3	100		75	77.8	83.3	100	60
Estonia	66.7	0	100		100	66.7	100	66.7	55.6	64	83.3	66.7	100
Finland	77.8	44.4	50	50	94.4	66.7	66.7	100	55.6	90	40	0	0
France	33.3	40	80	100	69.2	80	84.6	70	84.6	61.1	57.1	55.6	100
Germany	75	70	100	92.3	100	88.9	83.3	66.7	80	60	50	0	50
Greece	100	22.2	40	40	40	100	33.3	25	50	37.5	76	61.1	33.3
Hungary	75	50	50	60	100	90	30	44.4	71.4	70	73.3	75	50
Ireland	37.5	60	100	0	83.3	62.5	44.4	62.5	80	66.7	81.8	100	55.6
Italy	60	72.7	63.6	53.3	16.7	25	33.3	54.5	35	28.6	71.4	75	50
Latvia		0	33.3	37.5	57.1	75	63.6	33.3	43.8	62.5	71.4	100	100
Lithuania	0	66.7	100	27.3	44.4	71.4	50	60	33.3	66.7	69.2	41.7	54.5
Luxembourg	50	33.3	80	100	75	75	100	50		69.2	72.7	50	
Malta			0	0	70	90.9	0	80	53.8	55.6	50	50	0
Netherlands	100	57.1	100	100	72.7	85.7	38.5	76.5	0	77.8	80	0	100
Poland	100	0	92.3	77.8	55	60	100	81.3		75	20	60	33.3
Portugal	33.3	50	66.7	25	50	25	60	68.8	100	67.3	81.3	100	
Romania				28.6	80	76.9	22.2	25	83.3	50	62.5	76.2	
Slovakia	100	0	33.3	83.3	70	50	33.3	27.3	100	78.6	75	68.4	33.3
Slovenia	100	50	50	66.7	100	75	100	55.6		70	50	33.3	0
Spain	72.7	38.5	52.9	52.9	90.9	46.2	62.5	61.1	66.7	75	76.9	74.1	0
Sweden	85.7	80	66.7	100	80	50	80	80	100	85.7	54.5	75	
United Kingdom	100	66.7	50	41.2	46.2	50	0	45.5	85.7	65.4	71.4	73.7	

Table A7B: SRN index: Share of reforms reducing labour market flexibility (“negative” reforms) by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	33.3	25	57.1	0	66.7	25	50	50	27.8	35.7	33.3	33.3	0
Belgium	44.4	28.6	46.2	37.5	21.4	30.8	44.4	18.2	46.2	40	11.1	18.2	0
Bulgaria				28.6	55.6	28.6	42.9	36.4	0	53.3	27.8	50	50
Cyprus	0	100	0	87.5	0		33.3	100	33.3	42.9	20	100	25
Czech Republic	62.5	50	50	0	44.4	25	33.3	50	8.3	10	100	28.6	14.3
Denmark		50	20	25	12.5	66.7	0		25	22.2	16.7	0	40
Estonia	33.3	100	0		0	0	0	33.3	33.3	36	16.7	16.7	0
Finland	22.2	44.4	50	50	5.6	33.3	33.3	0	44.4	10	60	100	100
France	66.7	60	20	0	30.8	20	15.4	20	15.4	38.9	42.9	44.4	0
Germany	25	30	0	7.7	0	11.1	16.7	33.3	20	32	50	100	50
Greece	0	55.6	60	20	60	0	66.7	50	41.7	62.5	24	38.9	66.7
Hungary	25	50	50	40	0	10	70	55.6	28.6	25	20	20	50
Ireland	50	40	0	100	16.7	37.5	44.4	37.5	0	33.3	9.1	0	44.4
Italy	40	27.3	36.4	33.3	83.3	75	66.7	27.3	55	71.4	28.6	25	50
Latvia		100	55.6	25	42.9	25	36.4	16.7	31.3	37.5	28.6	0	0
Lithuania	66.7	0	0	63.6	44.4	14.3	50	10	33.3	26.7	30.8	50	36.4
Luxembourg	50	66.7	20	0	25	25	0	50		23.1	27.3	50	
Malta		1	0	100	30	0	100	20	38.5	22.2	50	50	100
Netherlands	0	42.9	0	0	27.3	14.3	53.8	11.8	100	22.2	20	100	0
Poland	0	100	7.7	22.2	45	40	0	18.8		25	80	40	66.7
Portugal	33.3	50	33.3	75	30	50	20	31.3	0	32.7	12.5	0	
Romania				71.4	20	23.1	66.7	75	16.7	50	37.5	14.3	
Slovakia	0	0	66.7	16.7	10	50	66.7	72.7	0	21.4	25	31.6	66.7
Slovenia	0	50	50	33.3	0	25	0	44.4		30	50	66.7	50
Spain	27.3	61.5	35.3	47.1	9.1	53.8	37.5	22.2	33.3	25	23.1	14.8	75
Sweden	14.3	20	33.3	0	0	50	20	20	0	14.3	36.4	25	
United Kingdom	0	0	50	58.8	53.8	50	100	45.5	14.3	30.8	28.6	26.3	

Table A8: SpoldomR index: Share of policy domains affected by at least one labour market reform by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	77.8	33.3	77.8	55.6	55.6	44.4	44.4	44.4	77.8	55.6	44.4	55.6	11.1
Belgium	66.7	66.7	66.7	55.6	55.6	55.6	44.4	66.7	66.7	77.8	44.4	77.8	55.6
Bulgaria				44.4	44.4	44.4	66.7	66.7	44.4	77.8	77.8	44.4	22.2
Cyprus	11.1	11.1	11.1	44.4	11.1		44.4	22.2	33.3	44.4	22.2	33.3	33.3
Czech Republic	55.6	33.3	11.1	22.2	66.7	55.6	22.2	44.4	44.4	44.4	11.1	44.4	22.2
Denmark		11.1	33.3	44.4	44.4	22.2	22.2		66.7	66.7	44.4	11.1	44.4
Estonia	22.2	11.1	11.1		33.3	22.2	11.1	33.3	55.6	77.8	44.4	22.2	22.2
Finland	66.7	77.8	77.8	55.6	55.6	44.4	55.6	22.2	44.4	44.4	55.6	22.2	11.1
France	33.3	55.6	44.4	33.3	77.8	55.6	77.8	66.7	77.8	66.7	44.4	66.7	11.1
Germany	44.4	77.8	11.1	55.6	44.4	55.6	44.4	44.4	44.4	55.6	44.4	11.1	33.3
Greece	11.1	88.9	44.4	22.2	55.6	33.3	33.3	44.4	77.8	55.6	66.7	44.4	22.2
Hungary	33.3	22.2	22.2	44.4	44.4	55.6	33.3	66.7	55.6	55.6	44.4	77.8	11.1
Ireland	66.7	33.3	22.2	11.1	55.6	55.6	44.4	55.6	33.3	55.6	44.4	33.3	44.4
Italy	33.3	55.6	55.6	55.6	44.4	66.7	22.2	55.6	77.8	44.4	55.6	66.7	11.1
Latvia		11.1	55.6	55.6	44.4	22.2	55.6	44.4	55.6	33.3	33.3	33.3	11.1
Lithuania	22.2	22.2	11.1	66.7	66.7	66.7	44.4	55.6	22.2	66.7	55.6	66.7	44.4
Luxembourg	11.1	33.3	44.4	11.1	33.3	33.3	22.2	44.4		66.7	66.7	22.2	
Malta			22.2	11.1	55.6	33.3	11.1	33.3	66.7	44.4	44.4	22.2	11.1
Netherlands	22.2	44.4	44.4	22.2	77.8	44.4	66.7	66.7	11.1	44.4	33.3	11.1	11.1
Poland	22.2	11.1	77.8	44.4	88.9	33.3	22.2	55.6		44.4	33.3	33.3	22.2
Portugal	22.2	44.4	22.2	55.6	66.7	22.2	44.4	77.8	22.2	88.9	55.6	33.3	
Romania				44.4	33.3	66.7	77.8	44.4	22.2	66.7	44.4	88.9	
Slovakia	22.2	11.1	44.4	33.3	66.7	44.4	22.2	66.7	11.1	44.4	33.3	77.8	22.2
Slovenia	11.1	22.2	22.2	22.2	22.2	33.3	11.1	44.4		44.4	44.4	44.4	11.1
Spain	55.6	77.8	77.8	77.8	66.7	77.8	88.9	77.8	44.4	44.4	55.6	77.8	44.4
Sweden	66.7	33.3	44.4	33.3	44.4	66.7	66.7	77.8	66.7	55.6	66.7	33.3	
United Kingdom	22.2	33.3	11.1	44.4	55.6	22.2	11.1	55.6	44.4	66.7	44.4	55.6	

Table A9A: SPpoldomR index: Share of policy domains affected by at least one labour market reform enhancing flexibility (“positive” reform) out of those reformed, by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	85.7	66.7	57.1	100	40	50	50	50	71.4	60	75	80	100
Belgium	50	66.7	66.7	60	60	60	50	83.3	66.7	28.6	75	85.7	100
Bulgaria				75	75	75	50	50	100	57.1	71.4	75	50
Cyprus	100	0	100	25	100		75	0	66.7	25	50	0	66.7
Czech Republic	40	100	100	100	66.7	60	50	75	100	75	0	75	100
Denmark		100	100	100	100	50	100		66.7	83.3	75	100	50
Estonia	50	0	100		100	100	100	66.7	60	71.4	75	100	100
Finland	66.7	57.1	42.9	60	100	50	60	100	50	75	40	0	0
France	33.3	40	100	100	85.7	80	85.7	66.7	71.4	83.3	50	33.3	100
Germany	75	71.4	100	100	100	80	75	50	75	80	50	0	66.7
Greece	100	25	25	50	40	100	33.3	25	57.1	40	83.3	75	50
Hungary	66.7	50	50	50	100	80	66.7	66.7	60	80	100	100	100
Ireland	33.3	66.7	100	0	80	40	25	40	66.7	100	75	100	75
Italy	66.7	60	80	80	25	33.3	50	100	57.1	50	80	66.7	100
Latvia		0	60	60	50	100	60	50	60	100	100	100	100
Lithuania	0	50	100	33.3	50	83.3	50	80	100	83.3	60	66.7	50
Luxembourg	100	33.3	75	100	66.7	100	100	50		50	83.3	50	
Malta			0	0	60	66.7	0	66.7	33.3	75	50	50	0
Netherlands	100	50	100	100	85.7	75	50	83.3	0	75	100	0	100
Poland	100	0	85.7	75	62.5	66.7	100	60		75	33.3	100	50
Portugal	50	50	100	40	50	50	50	85.7	100	75	60	100	
Romania				25	66.7	66.7	28.6	25	100	33.3	100	87.5	
Slovakia	100	0	50	66.7	83.3	50	50	50	100	100	66.7	71.4	50
Slovenia	100	50	50	50	100	66.7	100	75		75	50	50	0
Spain	60	57.1	57.1	57.1	83.3	42.9	75	71.4	50	50	80	100	0
Sweden	83.3	100	50	100	75	50	83.3	71.4	100	60	50	66.7	
United Kingdom	100	66.7	100	50	60	50	0	20	75	83.3	50	100	

Table A9B: SnpoldomR index: Share of policy domains affected by at least one labour market reform reducing flexibility (“negative” reform) out of those reformed, by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	42.9	33.3	85.7	0	80	50	50	50	57.1	40	50	40	0
Belgium	50	33.3	50	60	40	60	100	33.3	33.3	71.4	50	28.6	0
Bulgaria				50	75	50	50	50	0	71.4	71.4	50	50
Cyprus	0	100	0	75	0		25	100	33.3	75	50	100	33.3
Czech Republic	80	33.3	100	0	83.3	40	50	75	25	25	100	25	50
Denmark		100	33.3	50	25	100	0		50	33.3	25	0	50
Estonia	50	100	0		0	0	0	33.3	20	71.4	25	50	0
Finland	33.3	28.6	57.1	40	20	50	40	0	50	25	80	100	100
France	66.7	60	25	0	57.1	60	14.3	33.3	28.6	33.3	75	66.7	0
Germany	25	42.9	0	20	0	20	25	50	50	40	50	100	66.7
Greece	0	50	75	50	60	0	66.7	50	57.1	60	50	50	50
Hungary	33.3	50	50	50	0	20	100	50	40	60	25	42.9	100
Ireland	66.7	66.7	0	100	20	60	50	60	0	40	25	0	75
Italy	66.7	40	60	40	75	83.3	50	60	57.1	75	60	50	100
Latvia		100	40	20	50	50	60	50	60	33.3	66.7	0	0
Lithuania	50	0	0	50	50	16.7	50	20	50	50	40	50	50
Luxembourg	100	66.7	25	0	33.3	33.3	0	50		50	33.3	100	
Malta		1	0	100	60	0	100	33.3	66.7	50	50	50	100
Netherlands	0	50	0	0	42.9	25	83.3	33.3	100	25	33.3	100	0
Poland	0	100	14.3	50	50	66.7	0	40		75	100	66.7	100
Portugal	50	50	50	60	50	50	25	57.1	0	75	40	0	
Romania				75	33.3	50	71.4	75	50	66.7	25	25	
Slovakia	0	0	75	33.3	16.7	50	100	66.7	0	25	33.3	57.1	100
Slovenia	0	50	50	50	0	33.3	0	75		25	50	50	100
Spain	40	85.7	57.1	42.9	16.7	71.4	37.5	57.1	50	50	60	57.1	75
Sweden	16.7	33.3	50	0	0	50	50	28.6	0	40	50	33.3	
United Kingdom	0	0	100	75	60	50	100	80	25	66.7	50	40	

Table A10: SpolfieldR index: Share of policy fields affected by at least one labour market reform by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	25	6.3	22.9	14.6	12.5	12.5	8.3	8.3	27.1	18.8	12.5	16.7	2.1
Belgium	16.7	14.6	22.9	16.7	16.7	18.8	12.5	16.7	20.8	27.1	18.8	14.6	16.7
Bulgaria				14.6	18.8	14.6	14.6	20.8	12.5	29.2	29.2	14.6	4.2
Cyprus	2.1	2.1	2.1	12.5	4.2		12.5	4.2	6.3	16.7	8.3	8.3	6.3
Czech Republic	14.6	12.5	4.2	4.2	29.2	12.5	6.3	12.5	14.6	16.7	2.1	14.6	14.6
Denmark		4.2	10.4	10.4	16.7	4.2	6.3		18.8	12.5	8.3	2.1	8.3
Estonia	4.2	2.1	2.1		10.4	6.3	2.1	6.3	12.5	37.5	10.4	6.3	6.3
Finland	16.7	18.8	22.9	12.5	22.9	12.5	12.5	6.3	18.8	16.7	22.9	6.3	2.1
France	6.3	10.4	10.4	6.3	22.9	27.1	22.9	18.8	18.8	27.1	14.6	16.7	2.1
Germany	8.3	18.8	8.3	22.9	14.6	12.5	8.3	10.4	18.8	22.9	10.4	4.2	12.5
Greece	2.1	18.8	10.4	6.3	14.6	6.3	6.3	8.3	25	16.7	31.3	18.8	6.3
Hungary	6.3	4.2	4.2	10.4	12.5	18.8	18.8	18.8	12.5	20.8	16.7	37.5	2.1
Ireland	16.7	10.4	4.2	2.1	12.5	12.5	16.7	12.5	8.3	18.8	16.7	6.3	14.6
Italy	10.4	14.6	18.8	22.9	10.4	14.6	6.3	25	31.3	8.3	20.8	22.9	2.1
Latvia		2.1	16.7	16.7	14.6	8.3	22.9	10.4	18.8	12.5	12.5	12.5	4.2
Lithuania	6.3	4.2	2.1	20.8	16.7	14.6	10.4	18.8	6.3	25	20.8	22.9	14.6
Luxembourg	4.2	6.3	10.4	2.1	8.3	14.6	4.2	12.5		16.7	18.8	4.2	
Malta			8.3	4.2	18.8	10.4	2.1	8.3	20.8	14.6	8.3	4.2	2.1
Netherlands	6.3	12.5	8.3	4.2	18.8	10.4	20.8	25	2.1	16.7	10.4	2.1	2.1
Poland	6.3	2.1	18.8	16.7	33.3	6.3	4.2	20.8		16.7	8.3	10.4	6.3
Portugal	6.3	8.3	6.3	12.5	18.8	8.3	10.4	27.1	8.3	52.1	18.8	12.5	
Romania				14.6	8.3	22.9	16.7	8.3	6.3	18.8	10.4	33.3	
Slovakia	4.2	2.1	10.4	12.5	16.7	8.3	6.3	22.9	2.1	18.8	8.3	31.3	4.2
Slovenia	2.1	4.2	4.2	6.3	8.3	8.3	2.1	16.7		16.7	8.3	12.5	2.1
Spain	14.6	25	27.1	20.8	16.7	22.9	31.3	25	12.5	14.6	22.9	31.3	8.3
Sweden	14.6	8.3	12.5	10.4	10.4	16.7	25	25	16.7	20.8	16.7	8.3	
United Kingdom	6.3	6.3	4.2	20.8	20.8	4.2	2.1	16.7	12.5	33.3	14.6	25	

Table A11A: SPpolfieldR index Share of policy fields affected by at least one labour market reform enhancing flexibility (“positive” reform) out of those reformed by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	66.7	66.7	45.5	100	33.3	66.7	50	50	53.8	66.7	66.7	62.5	100
Belgium	62.5	71.4	54.5	62.5	62.5	66.7	50	75	60	46.2	77.8	71.4	100
Bulgaria				57.1	44.4	71.4	57.1	60	100	42.9	71.4	42.9	50
Cyprus	100	0	100	16.7	100		66.7	0	66.7	50	50	0	66.7
Czech Republic	42.9	50	50	100	50	66.7	66.7	50	71.4	87.5	0	71.4	85.7
Denmark		50	80	80	75	50	100		66.7	83.3	75	100	50
Estonia	50	0	100		100	66.7	100	66.7	50	61.1	80	100	100
Finland	75	44.4	54.5	50	100	66.7	66.7	100	55.6	87.5	45.5	0	0
France	33.3	40	80	100	72.7	76.9	90.9	66.7	77.8	76.9	57.1	50	100
Germany	75	66.7	100	90.9	100	83.3	75	60	77.8	72.7	60	0	66.7
Greece	100	22.2	40	66.7	42.9	100	33.3	25	58.3	37.5	86.7	55.6	33.3
Hungary	66.7	50	50	60	100	88.9	33.3	44.4	66.7	80	87.5	83.3	100
Ireland	37.5	60	100	0	83.3	50	50	50	75	77.8	75	100	57.1
Italy	60	57.1	66.7	45.5	20	28.6	33.3	66.7	40	25	80	72.7	100
Latvia		0	37.5	37.5	57.1	75	63.6	60	66.7	66.7	83.3	100	100
Lithuania	0	50	100	30	37.5	71.4	60	66.7	66.7	58.3	60	45.5	42.9
Luxembourg	50	33.3	80	100	75	85.7	100	50		62.5	66.7	50	
Malta			0	0	66.7	80	0	75	60	57.1	50	50	0
Netherlands	100	50	100	100	66.7	80	50	83.3	0	75	80	0	100
Poland	100	0	88.9	75	50	66.7	100	70		75	25	60	33.3
Portugal	33.3	50	66.7	33.3	55.6	25	60	69.2	100	72	66.7	100	
Romania				28.6	75	72.7	25	25	100	44.4	80	87.5	
Slovakia	100	0	40	83.3	62.5	50	33.3	27.3	100	77.8	75	73.3	50
Slovenia	100	50	50	66.7	100	75	100	62.5		75	50	33.3	0
Spain	71.4	41.7	61.5	70	87.5	36.4	73.3	66.7	66.7	71.4	72.7	80	0
Sweden	85.7	75	66.7	100	80	50	75	83.3	100	80	50	75	
United Kingdom	100	66.7	50	30	60	50	0	37.5	83.3	56.3	71.4	75	

Table A11B: SNpolfieldR index Share of policy fields affected by at least one labour market reform reducing flexibility ("negative" reform) out of those reformed by year of implementation and country

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	33.3	33.3	63.6	0	66.7	33.3	50	50	38.5	33.3	33.3	37.5	0
Belgium	37.5	28.6	45.5	37.5	37.5	33.3	66.7	25	40	53.8	22.2	28.6	0
Bulgaria				28.6	55.6	28.6	42.9	40	0	57.1	35.7	57.1	50
Cyprus	0	100	0	83.3	0		33.3	100	33.3	50	25	100	33.3
Czech Republic	71.4	50	50	0	57.1	33.3	33.3	50	14.3	12.5	100	28.6	14.3
Denmark		50	20	20	12.5	100	0		33.3	16.7	25	0	50
Estonia	50	100	0		0	0	0	33.3	33.3	44.4	20	0	0
Finland	25	44.4	45.5	50	9.1	33.3	33.3	0	44.4	12.5	54.5	100	100
France	66.7	60	20	0	36.4	23.1	9.1	22.2	22.2	30.8	42.9	50	0
Germany	25	33.3	0	9.1	0	16.7	25	40	22.2	36.4	40	100	50
Greece	0	55.6	60	33.3	57.1	0	66.7	50	41.7	62.5	40	55.6	66.7
Hungary	33.3	50	50	40	0	11.1	66.7	55.6	33.3	40	37.5	22.2	100
Ireland	50	40	0	100	16.7	50	37.5	50	0	33.3	12.5	0	57.1
Italy	40	42.9	44.4	36.4	80	85.7	66.7	41.7	60	75	40	27.3	100
Latvia		100	62.5	25	42.9	25	36.4	40	44.4	50	33.3	0	0
Lithuania	66.7	0	0	60	50	14.3	40	11.1	33.3	33.3	40	54.5	57.1
Luxembourg	50	66.7	20	0	25	14.3	0	50		37.5	33.3	100	
Malta		1	0	100	33.3	0	100	25	40	28.6	50	50	100
Netherlands	0	50	0	0	33.3	20	70	16.7	100	25	20	100	0
Poland	0	100	11.1	25	50	33.3	0	30		37.5	100	40	66.7
Portugal	33.3	50	33.3	66.7	33.3	50	20	38.5	0	44	22.2	0	
Romania				71.4	25	27.3	75	75	33.3	55.6	40	18.8	
Slovakia	0	0	60	16.7	12.5	50	66.7	72.7	0	22.2	25	33.3	100
Slovenia	0	50	50	33.3	0	25	0	37.5		25	50	66.7	100
Spain	28.6	66.7	38.5	30	12.5	63.6	33.3	33.3	33.3	28.6	27.3	26.7	75
Sweden	14.3	25	33.3	0	0	50	33.3	16.7	0	20	37.5	25	
United Kingdom	0	0	50	70	40	50	100	62.5	16.7	43.8	28.6	33.3	

Table A12: R&D tax subsidy rates (1-Bindex)

	L1990	L1995	L1999	S1999	L2001	S2001	L2004	S2004	L2006	S2006	L2008	S2008	LP2012	SP2012	LP2013	SP2013	LL2013	SL2013
Austria	0.02	0.07	0.07	0.07	0.11	0.11	0.11	0.11	0.08	0.08	0.09	0.09	0.12	0.12	0.12	0.12	0.12	0.12
Belgium	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.09	-0.01	0.09	0.09	0.14	0.14	0.15	0.15	0.14	0.14
Czech Republic	-	-	-	-	-	-	-	-	0.27	0.27	0.27	0.27	0.20	0.20	0.20	0.20	0.15	0.15
Denmark	0.00	0.13	0.13	0.13	0.11	0.11	0.18	0.18	0.16	0.16	0.16	0.16	0.29	0.29	-0.01	-0.01	-0.01	-0.01
Finland	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.28	0.28	0.22	0.22
France	0.09	0.08	0.09	0.09	0.06	0.06	0.13	0.13	0.19	0.19	0.37	0.37	0.34	0.43	0.28	0.51	0.23	0.51
Germany	-0.05	-0.05	-0.04	-0.04	-0.02	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Greece	-	-	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-	-	-	-	-	-
Hungary	-	-	-	-	-	-	0.16	0.16	0.16	0.16	0.16	0.16	0.22	0.22	0.33	0.33	0.16	0.16
Ireland	0.00	0.00	0.06	0.06	0.00	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.13	0.13	0.29	0.29	0.23	0.23
Italy	-0.04	-0.05	-0.03	0.45	-0.03	0.44	-0.03	0.45	-0.02	0.43	-0.02	-0.02	-	-	-	-	-	-
Luxembourg	-	-	-	-	-	-	-	-	-	-	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Netherlands	-0.02	0.05	0.05	-	0.06	0.22	0.07	0.24	0.07	0.24	0.07	0.24	0.14	0.33	0.14	0.34	0.13	0.32
Poland	-	-	-	-	-	-	-	-	0.01	0.02	0.01	0.02	-0.01	-0.01	0.00	0.00	0.00	0.00
Portugal	-0.02	-0.02	0.15	0.15	0.30	0.30	-0.01	-0.01	0.28	0.28	0.29	0.29	0.41	0.41	0.49	0.62	0.38	0.48
Slovakia	-	-	-	-	-	-	-	-	-	-	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	0.05	0.05	0.18	0.18	0.14	0.14
Spain	0.25	0.28	0.31	0.31	0.44	0.44	0.44	0.44	0.44	0.44	0.39	0.39	0.35	0.35	0.38	0.38	0.30	0.30
Sweden	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
United Kingdom	0.00	0.00	0.00	0.11	0.10	0.11	0.10	0.11	0.10	0.11	0.11	0.19	0.11	0.28	0.08	0.28	0.06	0.28

L	Large firms (all)
S	SME firms (all)
LP	Large profit making firms
LL	Large loss making firms
SP	SME profit making firms
SL	SME loss making firms

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