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# **Employment protection and collective bargaining during the Great Recession: A comprehensive review of international evidence<sup>1</sup>**

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09 July 2015

## **Abstract**

In this article, we present information from a unique database of labour market reforms implemented in 111 developed and developing countries between 2008 and 2014. We show that the number of reforms implemented each year has gradually increased and that the majority of reforms were passed in advanced economies – with EU member states being particularly active reformers. Moreover, the results show that permanent contracts and collective bargaining were the most popular areas of policy intervention in the labour market domain and that the majority of reforms decreased the strictness of employment protection legislation – although large disparities emerge across world regions in this respect. Finally, the paper compares our database to different indicators of employment regulation in order to check the consistency of our results.

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<sup>1</sup> This article is partially based on Sections 1 and 2 of Cazes et al. (2012), prepared by Sameer Khatiwada and Miguel Á. Malo. We thank ILO Research Department colleagues for their valuable comments and suggestions. They are not in any way responsible for the remaining errors. The opinions expressed in this article correspond exclusively to those of the authors and do not engage the institutions to which they are affiliated.

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## I. Introduction

Employment growth remains tepid in both developed and developing countries and unemployment levels are set to increase globally over the next years. Moreover, large disparities in labour market opportunities persist within countries across different societal groups – e.g. women and young people – as well as across countries. Globally, the jobs gap is estimated at 61 million jobs for 2014 with respect to pre-crisis trends and forecasts suggest that it will reach 80 million jobs by 2019 (ILO 2015a). The attention of policy makers towards labour market reforms has increased during the recent crisis, as these interventions have been viewed as important policy tools to address the emerging labour market challenges. In advanced economies, reforms of employment regulation have been regarded as helpful policy instruments to reduce layoffs and/or incentivise hiring in periods of high joblessness and limited fiscal space. By comparison, in developing economies, the attention to labour market regulation has been related to their importance in contributing to economic resilience in times of fluctuating global demand and international trade.

In order to monitor these trends, we developed a database collecting recent changes to labour market regulation in 111 developed and developing countries between 2008 and 2014. The database distinguishes between different areas of labour market regulation (permanent contracts, temporary contracts, collective dismissals, collective bargaining, working hours and other forms of employment); while seeking to provide a comprehensive coverage of all geographical regions – thus substantially expanding with respect to traditional sources of information that are currently available. We compared national and international data and cross-checked the gathered information with primary and secondary sources. For each change in labour market regulation, we noted together the content of the reform, the respective year of approval, the policy domain where the change intervened, as well as whether the reform increased or decreased existing levels of labour market regulation. If a single reform introduced several changes to the legislation (so-called “umbrella laws” or reform packages), these changes were coded separately.

Employment protection can be achieved either through legislation or through collective bargaining agreements. Studies have shown that labour legislation tends to set minimum standards, while collective agreements tend to include provisions that are generally more generous to employees (Venn, 2009).<sup>3</sup> These institutions, when combined with effective labour market policies (e.g. unemployment insurance, minimum wage and activation policies), ensure labour market security – a more comprehensive understanding of protection that goes beyond one job or employer. Studies have shown that there is a non-linear relationship between employment protection and labour market outcomes and most countries tend to be on the plateau where tinkering with the legislation or weakening collective bargaining does not have a statistically significant impact on employment rates (ILO, 2012a). These mechanisms naturally tend to differ between advanced and developing economies, since labour markets function differently in the two groups of countries (e.g. high share of informal employment in the latter group).

This paper aims to track recent reform efforts in both the area of employment protection legislation (EPL) and collective bargaining in developed and developing economies. Other areas of employment policy such as passive and active policies and minimum wages are instead left outside the scope of the analysis. This analysis expands the attention towards areas of legislation that are generally not covered by traditional EPL indicators (e.g. working hours, other forms of employment) and also expanding the

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<sup>3</sup> Collective agreement coverage ranges from less than 20 per cent to more than 90 per cent and it tends to occur primarily at the firm level.

geographical coverage to include a large number of developing countries for which little information is currently available. Importantly, in doing so, this database does not aim to substitute – but rather to complement – the information provided by traditional indicators of strictness of employment regulation.<sup>4</sup> The rest of the paper is organized as follows: Section II provides an overview of EPL and collective bargaining with a focus on their theoretical links with macroeconomic performance and labour market outcomes. It also looks at the complementarities between EPL and collective bargaining and draws out the importance of looking at these institutions in tandem, in order to better understand the level of employment protection in a particular country. Section III includes an overview of changes in EPL and collective bargaining between 2008 and 2014 – covering over 100 countries where qualitative data is available in terms of legislative changes. Section IV provides a regional overview of the changes; while, Section V provides a comparison of our findings to other indicators of employment regulation – such as the OECD EPL indicator. Section VI concludes the paper.

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<sup>4</sup> Indeed, this article does not seek to use the available information to construct an indicator of employment regulation; but rather to provide a description of recent reform trends in developed and developing countries.

## II. Literature review

### *Employment protection legislation (EPL)*

Employment protection legislation is one of the many labour market institutions designed to give employees protection against unfair dismissals as well as from the fluctuations in earned income, which normally occur when the employee loses his job – individually or collectively. Generally speaking, EPL governs firms' ability to fire employees, while it also regulates the use of temporary workers. However, there are exemptions to EPL, which usually depend on the size of the firm. A well-functioning system of EPL – which balances the need to provide fair treatment as well as income security to workers with firms' need to adjust employment (hours and/or jobs) based on fluctuations in aggregate demand – is an important determinant of a country's ability to weather an economic downturn and create employment in times of expansion. Economic theory says that EPL has a direct impact on the allocation of labour (especially on the dynamics of labour demand), but since internationally comparable quantitative measures of EPL have numerous problems, the labour market impact of EPL still remains a debated empirical question (Bertola et al., 2000).

EPL has three main pillars: i) termination of regular employment (permanent or open-ended contracts), ii) hiring of temporary workers, and iii) collective dismissals.<sup>5</sup> With respect to termination of regular employment, legislation addresses substantial and procedural requirements (administrative and legal), notice periods and severance pay. Severance pay is a direct cost of dismissals for employers, and it is usually defined as a number of wage days (or months) per seniority year. Legislation usually requires either a valid reason for a dismissal or a list of valid reasons that generally include personal circumstances of the employee (e.g. conduct and capacity related reasons) and economic reasons (e.g. loss in revenues). If the dismissal is challenged and the employer cannot show that there are valid reasons, the dismissal can be declared unjustified and allows for remedies in the form of reinstatement or compensation.

The second pillar of EPL covers temporary contracts, which are generally aimed at giving firms flexibility in adjusting employment (by hiring temporary workers) during economic fluctuations. In order to prevent the excessive use of temporary contracts, there are laws governing their use, the chief among which is the regulation that stipulates the reasons for which a firm can hire workers on temporary contracts. For example, temporary contracts are generally accepted for seasonal works, and also for employing specific groups of workers such as young people and new entrants to the labour market (Skedinger, 2010). The primary restriction an employer faces is the length of time for which he/she can keep an employee on a temporary contract.

Finally, the third pillar of EPL is the regulation governing collective dismissals, which tends to comprise stringent restrictions because it usually entails additional legal requirements (information, consultation etc.). The definition of collective dismissals depends on the number of employees concerned and it tends to vary among countries. Collective dismissals have broader economic and social consequences; hence regulation is meant to strike a right balance between the socio-economic costs of collective dismissals (on individuals, enterprises, and the community as a whole) and the need for the employer to adjust employment levels. The requirements put in place for employers include mandatory consultations with union or worker's organizations, notification to and approval from the public

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<sup>5</sup> ILO Convention No. 158 concerning termination of employment by an employer provides for minimum standards for individual and collective dismissal. The convention can be consulted at the following link: [http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100\\_ILO\\_CODE:C158](http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C158)

administration offices, priority rules for selecting workers (or selection criteria), priority rules for re-employment, in some cases higher severance pay than in cases of individual dismissals, and mandatory steps to help the laid-off employees find new employment through job-placement services and training (Muller, 2011; Skedinger, 2010).

The empirical evidence on the effects of EPL can be divided into the following three categories: i) cross-country studies using aggregate data; ii) cross-country studies using disaggregate data; and iii) within country studies using disaggregate data (Figure 1). Most commonly found empirical evidence is of the first type, but in the last few years there has been a notable shift towards using disaggregated data and also there is increasingly more reliance on within country evidence. However, irrespective of the methodology used, there is a general consensus that the impact of EPL on employment/unemployment levels is rather mixed. However, in terms of the distribution of effects of EPL, there is stronger evidence that vulnerable groups such as youth and women could be negatively affected by high levels of EPL (as reforms have often changed regulations only for a subset of the workforce).

**Figure 1: Empirical evidence on the effects of employment protection legislation (EPL)**

Cross-country studies using aggregate data	Cross-country studies using disaggregate data	Within country studies using mostly disaggregate data
<ul style="list-style-type: none"> <li>• Mixed and rather small effects on aggregate levels of employment/unemployment</li> <li>• Negative effects on vulnerable groups, especially youth</li> <li>• Hump-shaped relationship between EPL and growth</li> </ul>	<ul style="list-style-type: none"> <li>• Mixed effects on aggregate levels of employment/unemployment</li> <li>• Reduced employee turnover (job creation/destruction)</li> <li>• Negative effects on productivity</li> <li>• Weak/ negative connection between EPL and perceived job security</li> </ul>	<ul style="list-style-type: none"> <li>• Mixed and rather small effects on aggregate levels of employment/unemployment</li> <li>• Reduced employee turnover (job creation/destruction)</li> <li>• Negative effects on productivity</li> <li>• Increased worker absenteeism</li> </ul>

Note: Disaggregated data refers to disaggregation by industry and firms, and most recently by individuals. The summary is based on over 100 studies conducted since 1990.

Source: Cazes et al. (2012).

Within the cross-country studies using aggregate data, some studies find that employment declines and unemployment increases with the strictness of EPL (for e.g., Blanchard and Wolfers, 2000; Botero et al, 2004; Feldmann, 2003, 2009; Heckman and Pagés-Serra, 2000; Nickell, 1997; and Lazear, 1990); while other studies find no effect or even a positive one (for e.g., Allard and Lindert, 2007; Baccaro and Rei, 2007; Cazes and Nesporova, 2007; ILO, 2015b; Garibaldi and Violante, 2005; and Griffith et al.

2007). Meanwhile, studies in this stream of literature show that there is a hump shaped relationship between EPL and growth. This means that an increase in EPL from a low level leads to increased GDP per capita, but the effect turns negative above a certain threshold (Skedinger, 2010).

However, there are several problems with cross-country studies with aggregate data. The first one relates to measurement issues with the indices of EPL. The OECD's EPL indicator is the most commonly used, but it had very few observations over time until 2006. It is only recently that the data has gotten more extensive. Second, self-constructed indices – used by several studies – have comparability problems. Third, the problem of reverse causality is persistent across several studies (it is difficult to separate whether unemployment levels are affecting the stringency of EPL or vice versa). Given these weaknesses, one of the main strengths of cross-country studies based on aggregate data is that they tend to capture general equilibrium effects that are not possible with disaggregated data without strong assumptions. However, the advantage of studies that use disaggregated data is that they tease out effects that could be hidden in aggregate data (Skedinger, 2010).

Cross-country studies that use data disaggregated by industry, region, and size indicate that there is a measurable negative impact on job reallocation (job creation and destruction) but that this effect varies by industry (Caballero et al, 2004; Gomez-Salvador et al., 2004; Haltiwanger et al., 2006; Messina and Vallanti, 2007). When disaggregating by contract type, job creation and destruction are much higher for temporary than for open-ended contracts. For example, among large firms in Spain, it is 5 to 7 times higher (Garcia-Serrano, 1998; Amuedo-Dorantes and Malo, 2008), but job creation and destruction move together for both types of contracts over the business cycle. In any case, different studies find the use of temporary contracts as partial buffers against business cycle fluctuations (Bentolila and Dolado, 1994; García-Martínez and Malo, 2007).

Meanwhile, some studies also show that there is a negative impact of EPL on productivity (see for e.g. Bassanini et al, 2009). However, these results vary considerably by industries and it is practically impossible to aggregate at the national level. In contrast, there are studies that cast doubt on the negative impact on productivity by showing that stronger EPL increases patents at the industry level (Acharya et al, 2009). The advantage of using disaggregated data is that the problem of reverse causality is less severe, and, at the same time, the likelihood of omitted variable bias entering into the estimates is relatively low. However, one clear disadvantage is that the results depend crucially on the choice of industries (Skedinger, 2010).

Besides cross-country studies, there are several within-country studies that have exploited the fact that in some countries EPL was made more/less stringent for small firms while it was left unchanged for large firms (Skedinger, 2010). In other words, there were partial labour market reforms, which in turn provide treatment and control groups. Besides the natural experiment provided by changes in EPL, one of the main advantages of within country studies is that it controls for country specific conditions that cross-country studies cannot do. Findings from this group of studies indicate that EPL decreases flows in the labour market, but the effects on employment levels are mixed. Meanwhile, studies show that there is a negative impact on worker's productivity as measured by absenteeism and sickness absence.

It is finally important to consider separately those studies focusing on the effect of EPL on labour market outcomes in developing economies (Boeri et al., 2008; Cazes and Verick, 2013). Indeed, most studies on the effects of EPL on labour market and economic performances reviewed above cover developed economies – and their results cannot be easily extended to developing countries. However, there are some recent attempts to investigate the impact of labour legislation in developing countries using both

cross-country and within-country information. In developing economies, the studies usually aim at analysing the impact of legislation on employment and unemployment rates – as in developed economies – but also on the level of informal employment – under the assumption that more stringent legislation may increase firms’ incentives to remain informal. Some cross-country studies confirm this hypothesis and show that higher levels of workers’ protection in developing countries are associated with higher unemployment and informality (Botero et al. 2004; Djankoc and Ramalho, 2008; Freeman, 2010; Micco and Pages, 2006; Lafontaine and Sivadasan, 2009). However, other cross-country studies do not find any statistically significant effect of EPL on aggregate labour market outcomes (Freeman, 2010; Heckman and Pagés, 2000; ILO, 2015b). Finally, a number of studies using within country disaggregated data (generally for India or Latin American countries) find that more stringent regulation is associated with lower employment and productivity levels (Besley and Burgess, 2004; Almeida and Carneiro, 2008).

### ***Collective bargaining***

Collective bargaining is a process of negotiation between employer and workers that determines the employment relationship, and in particular, wages, working time and working standards. By design, collective bargaining entails a process of joint decision making where work-related issues between employer and workers are negotiated.<sup>6</sup> However, depending on the structure and coverage of collective bargaining, it can also be a means to regulate the labour market. For instance in some countries (for e.g. Denmark and Iceland), EPL is mostly regulated through collective bargaining agreements. At the same time, in many cases governments set the rules for collective bargaining but allow the social partners to self-regulate. Therefore the conventional distinction between EPL as being government enacted and collective bargaining as a result of negotiations between employers and workers does not always hold.

Meanwhile, collective bargaining occurs at several levels, namely inter-sectoral (or national), sectoral and firm level (see Table 1). The most prevalent types are multi-level bargaining, which involve national, sectoral and firm level bargaining (varies by country). In some cases, national level bargaining represents the dominant level for negotiations (e.g. Belgium, France, Finland and Norway); with sectoral and enterprise agreements complementing the norms stipulated at the central level. Instead, in other countries (such as Bulgaria, Greece, Hungary and Ireland), enterprise bargaining represents the prevailing level of negotiation. Since wages and working time are important components of economic production, depending on the degree of coverage, collective bargaining over these factors has a direct impact on labour market and macroeconomic performance. This is particularly important because the institutional structure of collective bargaining (i.e. whether it occurs mostly at the national or enterprise level) has a direct impact on the level of coverage of collective agreements.

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<sup>6</sup> For more, see: ILO Convention No. 98 concerning the application of the principles of the right to organize and bargain collectively ([http://www.ilo.org/dyn/normlex/en/f?p=1000:12100:0::NO::P12100\\_ILO\\_CODE:C098](http://www.ilo.org/dyn/normlex/en/f?p=1000:12100:0::NO::P12100_ILO_CODE:C098)) as well as Convention No. 154 concerning the promotion of collective bargaining ([http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100\\_ILO\\_CODE:C154](http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO:12100:P12100_ILO_CODE:C154)).



**Table 1 : Collective bargaining over wages, 2015**

	National level	Sectoral level	Firm level		National level	Sectoral level	Firm level
Australia	.	XX	XX	Latvia	.	X	XXX
Austria	.	XXX	X	Lithuania	X	X	XXX
Belgium	XXX	XX	X	Luxembourg	.	XX	XX
Brazil	.	XX	XX	Malaysia	.	.	XXX
Bulgaria	X	X	XXX	Malta	.	.	XXX
Canada	.	.	XXX	Mexico	.	.	XXX
Chile	.	.	XXX	Netherlands	.	XXX	X
China	.	X	XXX	New Zealand	.	.	XXX
Cyprus	.	XX	XX	Norway	XXX	XX	X
Czech Republic	.	X	XXX	Philippines	.	.	XXX
Denmark	X	XXX	X	Poland	.	X	XXX
Estonia	X	X	XXX	Portugal	.	XXX	X
Finland	XXX	XX	X	Romania	.	X	XXX
France	XXX	XX	X	Russia	X	XX	X
Germany	.	XXX	X	Singapore	.	.	XXX
Greece	X	X	XXX	Slovakia	.	XX	XX
Hungary	X	X	XXX	Slovenia	X	XXX	X
India	.	XX	XXX	South Africa	.	XXX	X
Indonesia	.	X	XXX	Spain	XX	XX	X
Ireland	X	X	XXX	Sweden	.	XXX	X
Israel	.	XX	XX	Switzerland	.	XXX	X
Italy	.	XXX	X	Turkey	.	.	XXX
Japan	.	.	XXX	UK	.	X	XXX
Korea	.	.	XXX	USA	.	.	XXX

Note: X = existing level of wage bargaining, XX = important, but not dominant level of wage bargaining; XXX = dominant level of wage bargaining.  
Source: Authors' calculations based on ICTWSS and ETUI national reports.

There is a considerable literature on the links between the degree of centralization of collective bargaining and macroeconomic performance. In particular, examining the 1970s and the 1980s, Bruno and Sachs (1985) find a positive association between centralization and macroeconomic performance as measured by lower inflation and/or lower unemployment rates. The rationale for this empirical result lies primarily in the fact that firms tend to internalize externalities when bargaining takes place at a centralized level (for e.g., national level). In the late 1980s, Calmfors and Driffill (1988) opened a long-lasting debate, questioning this linear association by showing that there is a hump-shaped relationship between centralization of collective bargaining and macroeconomic performance. In other words, the best macroeconomic results are obtained for full centralization (i.e., at national level) and for full decentralization (i.e., at firm level), while the worst macroeconomic results are associated with intermediate levels of centralization.

Following the study by Calmfors and Driffill (1988), academic research has focussed on either supporting or rejecting the non-linear link between collective bargaining and macroeconomic performance. One of the main criticisms of the study is that the authors focussed heavily on the level at which agreements were struck, and not enough on informal forms of coordination amongst social partners. For example, Japan is a decentralized but highly coordinated economy. After taking into

account the degree of coordination in countries, the relationship appeared to be rather linear.<sup>7</sup> In 1997 the OECD also showed that there was no convincing evidence in support of the results obtained by Calmfors and Driffill (OECD, 1997). Most recently, some studies have shown that collective bargaining institutions have no impact on employment performance in the OECD countries (see Traxler and Brandl, 2011). Meanwhile, economic research has evolved towards analysing the impact of collective bargaining on macroeconomic performance by examining the type of shocks, while industrial relations research has focussed on looking at the impact of collective bargaining on wage inequality.

Macroeconomic performance differs depending on the type of shocks and the collective bargaining structure. Full centralization allows countries to better respond to generalized macroeconomic shocks, while when the shock is sector or industry specific, such systems tend to suffer and are slower to respond. This is mainly due to the fact that sector specific shocks ultimately require adjustments to relative prices for recovery to take place. This shows that besides the design of collective bargaining, the type of shocks is pertinent to a better understanding of macroeconomic outcomes (Bentolila et al., 2012; Blanchard and Galí, 2007, 2010).

Meanwhile, examining aggregate macroeconomic outcomes could potentially hide the distributional impact of collective bargaining. For example, according to the OECD (2004), an intermediate level of centralization and coordination increases the relative wage of older workers (55-64) and women. More recently, the economic literature in this discipline has focussed on other characteristics of collective bargaining and their role in creating nominal wage rigidities. For example, the duration of collective agreements, when they cover relatively long time periods, tends to increase nominal wage rigidities. This in turn, leads to a higher persistence of unemployment rate deviations from its structure rate (Blanchard and Galí, 2010). Furthermore, studies have shown that among advanced economies, coverage and centralization of collective bargaining play a role in reducing wage inequalities but the size of these effects is rather debatable (see, for e.g. Wallerstein, 1999, and Golden and Londregan, 2006). In case of developing economies, empirical evidence shows that unions reduce overall wage dispersion in the labour market (Hayter and Weinberg, 2011). Within country studies corroborate these findings – they show that centralized wage bargaining reduces wage dispersions (Kahn, 1998).

To sum up the empirical evidence on collective bargaining, since the 1990s there is a trend in Western economies towards deregulation and decentralization, despite experiences in Europe (and elsewhere) that bargaining at above levels has indeed facilitated the adaptability of enterprises to the macroeconomic shocks while saving jobs (mainly through reductions in working hours) (Hayter, 2011). Moreover, the discussion over the design of collective bargaining has moved away from stressing the virtues of centralization and coordinated structures to emphasizing the virtues of firm-level bargaining. Not surprisingly, the period of decentralization and deregulation is also associated with a general increase in wage inequality. Despite these findings, the recent financial and economic crisis has further accelerated the legal reforms towards increasing decentralization.

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<sup>7</sup> Recent studies tend to focus more on the degree of coordination rather than the level of bargaining. For the empirical analyses, this paper also uses coordination instead of bargaining level.

### *Complementarities between EPL and collective bargaining*

In order to truly understand the level of protection in a country, it is important to consider the complementarities between EPL and collective bargaining. Studies have shown that in some countries it is collective bargaining that determines the level of protection, while for a large set of countries it is EPL that governs protection (Freeman, 2010; Venn, 2009). In the last few years, the OECD has started to take into account this heterogeneity by including the stringency of collectively bargained provisions in their composite indicator for EPL. Furthermore, the OECD has also started considering the enforcement of employment protection legislation in their indicator (Venn, 2009).

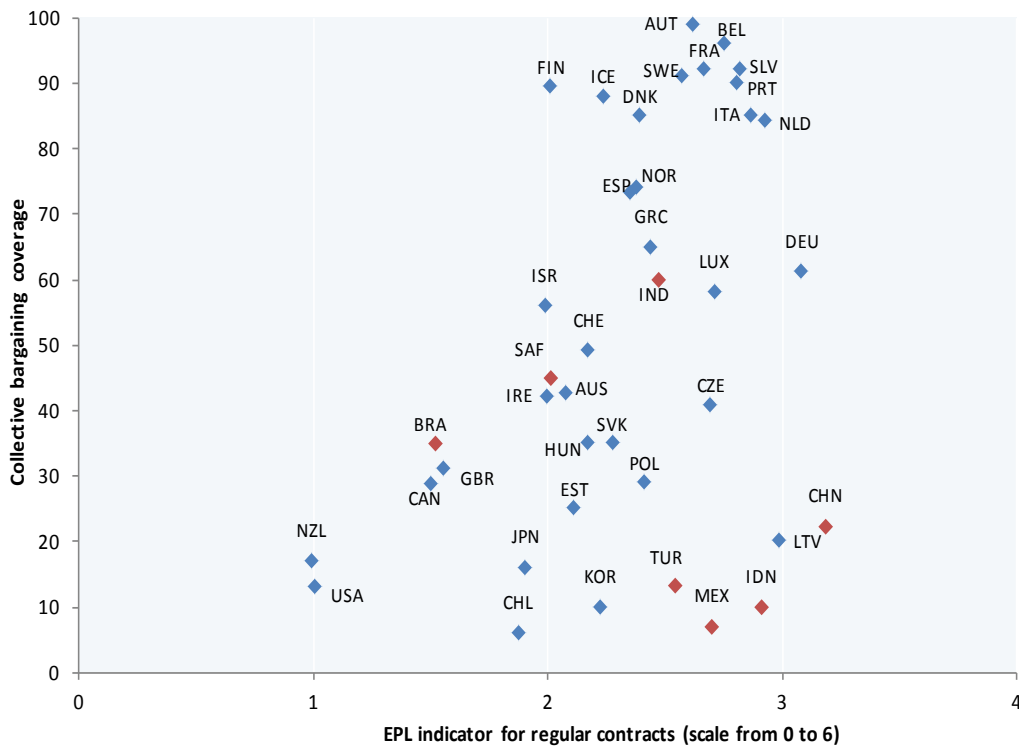
Moreover, a majority of studies on EPL argue that its effects are stronger when wages cannot be adjusted downwards to compensate for the increased costs due to the legislation (Skedinger, 2010). This depends on the collective bargaining framework prevalent in a country, in particular, whether it is centralized or decentralized. Also, if insiders have strong bargaining power, then the likelihood that the employer will be able to shift the cost of EPL to the employees is minimal. Hence, it is vital to examine the effects of EPL in relation to the collective bargaining framework and other labour market institutions prevalent in a country (Cazes et al., 2012; Boeri et al., 2010; Bertola et al., 2000).

In the case of developing countries, where there is generally a high incidence of informality (ILO, 2012b), EPL and collective bargaining tend to leave out a large part of workers. Evidence shows that labour market institutions such as minimum wage laws, which typically govern the formal sector, also tend to have a “lighthouse effect” – i.e. anchoring effect – on informal sector workers as well (Souza and Baltar, 1980; Amadeo et al., 2000; Maloney and Nuñez, 2004; Neri, Gonzaga and Camargo, 2000). Notwithstanding the challenges that arise when we try to examine the strength of labour market institutions and their impact on employment outcomes, with the increasing formalization of informal workers in developing and emerging economies, EPL and collective bargaining together provide a good snapshot of the level of protection that workers enjoy in these countries (Cazes and Verick, 2013; Freeman, 2010).

Indeed, even a cursory reading of the empirical and theoretical evidence shows that collective bargaining and EPL tend to interact in shaping other labour market institutions. This is confirmed by Figure 2, which shows that there is a generally positive relation between collective bargaining coverage and the strictness of EPL – as measured by the OECD indicator. However, this relation vastly reflects the experience of industrialized economies (blue dots in the figure below); while no clear relation can be drawn from the experience of developing and emerging economies (in red). For instance, India and Turkey have a similar degree of strictness of EPL but extremely different levels of collective bargaining coverage. Similarly, Brazil and China have comparable levels of collective bargaining coverage but very different degrees of EPL. If however these countries are excluded from the chart, there is a positive relationship between the coverage rate and strictness of EPL, with countries such as Ireland and the US being at the lower end, while countries such as France and Spain are at the higher end.

In sum, when we consider both EPL and collective bargaining, we tend to get a better picture of employment protection, even though there is no clear relationship between these two institutions at a global level. However, as in this article we are using information on these two institutions in over 100 countries, these descriptive results have a considerable value added to the empirical literature on the topic compared to, for example, the OECD indicator covering only industrialized countries and a handful of emerging economies, or others available far from being global in their scope (see the following sections for more).

**Figure 2: Collective bargaining coverage and strictness of employment protection legislation, 2013/14**

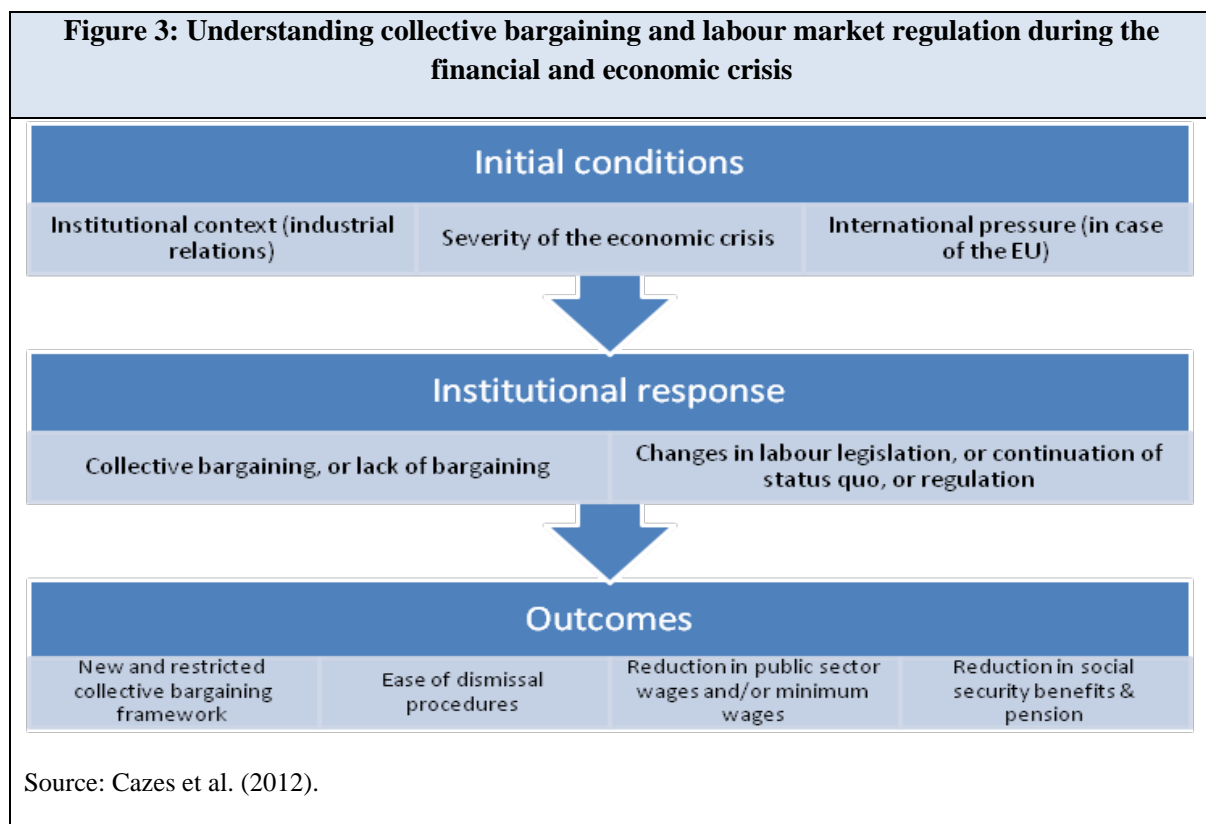


Note: Data for collective bargaining coverage refers to the most recent year available in the ICTWSS database. Data on EPL refers to 2013 (or 2012 when not available) and they capture the level of protection for individual and collective dismissals of regular contracts. Blue points represent advanced economies, red points developing ones.

Source: Authors' calculations based on OECD (EPL) and ICTWSS (collective bargaining).

### III. A global overview of recent labour market reforms on EPL and collective bargaining

In order to understand the changes in employment protection and collective bargaining in the last few years, it is key to look at the initial conditions that countries were faced with (Figure 3). First, the existing industrial relations and collective bargaining framework played an important role in determining how countries responded to the crisis. For example, in countries where collective bargaining was relatively strong (as measured by coverage rate and union density), the response to the crisis included extensive consultations with social partners. Second, the severity of the crisis differed across countries and played an important role in countries' response. Furthermore, the debt overhang exacerbated the response in many troubled economies. Third, international pressures, most notably in the European Union, have played an important role in steering some countries toward further deregulation of their labour markets. Given the initial conditions, the institutional response has greatly varied across countries.



As a result, a number of changes to labour market regulation have been approved since the start of the crisis in both advanced and developing economies. To monitor these trends, we developed a compendium of recent changes to labour market regulation in 111 developed and developing countries between 2008 and 2014.<sup>8</sup> Although the focus on reforming labour market regulation was relatively widespread, clear differences emerge regarding the intensity of the reform process both across areas of policy intervention and geographical regions. In order to account for these differences, we classified separately legislative changes pertaining to: (i) collective dismissals; (ii) permanent employment contracts; (iii) temporary employment contracts; (iv) working hours; (v) other forms of employment – such as casual workers and dependent self-employees and (vi) collective bargaining. This classification

<sup>8</sup> Sources: LABREF, EPLex, Natlex and ILO (2012a).

expands with respect to the more traditional understanding of EPL in order to include policy measures that are typically implemented in times of crisis (e.g. reduction in working hours to avoid layoffs), as well as to give a more accurate depiction of the changes to the legislation that apply to other forms of work beyond the traditional dependent and permanent employment relation (e.g. dependent self-employees).

Furthermore, we compared national and international data and cross-checked the gathered information with primary and secondary sources. For each change to labour market regulation, we noted together the content of the reform, the respective year of approval, the policy domain where the change intervened as well as whether the reform increased or decreased existing levels of labour market regulation. For the purpose of the analysis, policy interventions that decrease (increase) existing levels of labour market regulation are considered as those that make hiring and firing procedures less (more) costly and/or less (more) time consuming. For collective bargaining, a reform is considered as decreasing (increasing) regulation if it decentralizes (centralizes) collective bargaining towards the firm (more central) level. With respect to working hours, reforms that increase (decrease) the ability of the employers to set and change working hours are considered as increasing (decreasing) labour market regulation. If a single reform introduced several changes to the legislation (so-called “umbrella laws” or reform packages); these changes have been coded separately.

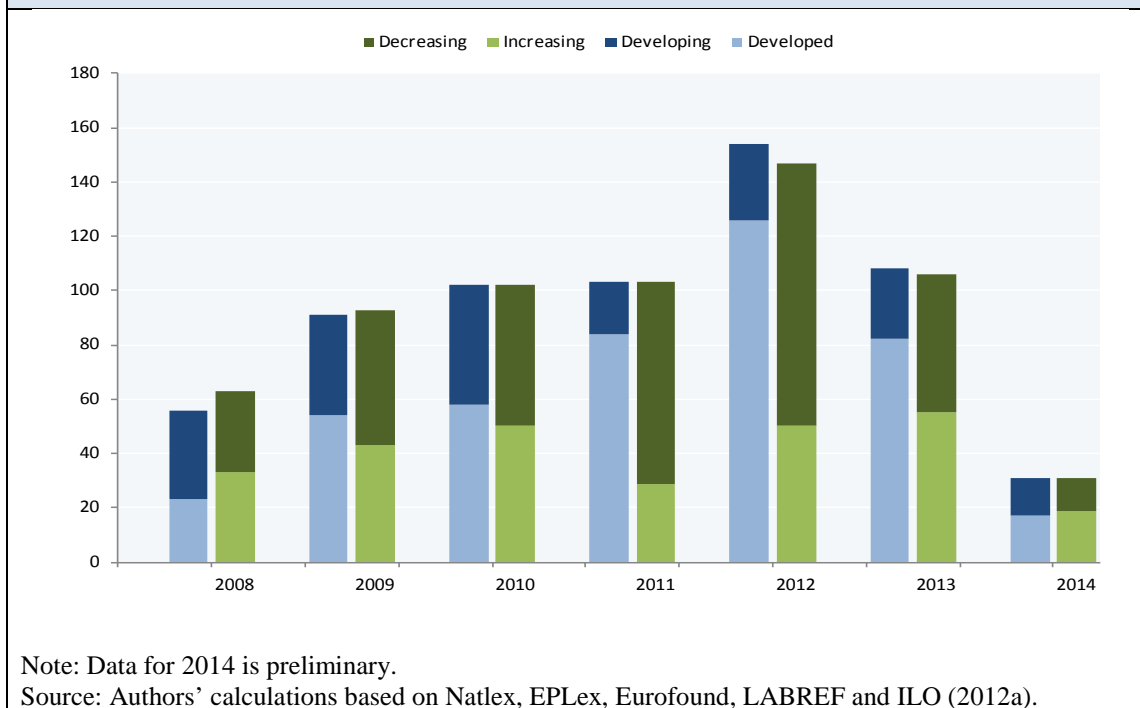
Overall, a total number of 643 changes to labour market regulation have been registered between 2008 and 2014 in the 111 countries covered by the compendium. A clear increase in the number of policy interventions has occurred with time. Indeed, the number of changes to labour market regulation implemented each year has increased from 63 reforms in 2008 to a maximum of 147 in 2012. The trend has then stabilized with 106 changes to labour market regulation registered in 2013; before decreasing to 31 changes in 2014.<sup>9</sup> Another important result is that the majority of reforms (equal to 69 per cent) have been passed in advanced economies; while the remaining 31 per cent was implemented in developing and emerging economies.

The policy compendium shows also a general trend towards relaxing existing levels of workers’ protection. Indeed, 56 per cent of the total interventions have reduced existing levels of regulation – with this share varying significantly between advanced economies (68 per cent of reforms decreasing EPL) and developing ones (32 per cent). This difference can be explained by the fact that governments in advanced economies have been faced by rising levels of unemployment and limited fiscal space and have eased employment protection legislation in an attempt to incentivize employment growth. By contrast, many developing economies have continued in the recent years a more long-term trend towards reinforcing labour market institution in an effort of improving employment quality and transition to formality (see ILO, 2012a and Adascalitei and Pignatti, 2015). The trend towards relaxing labour market regulation has also increased in the period under consideration. Indeed, the share of reforms decreasing existing levels of employment protection has gone from 47 per cent of the total number of reforms in 2008 to 73 per cent in 2011 and 65 per cent in 2012 – before stabilizing at 48 per cent in 2013 and decreasing to 39 per cent in 2014 (Figure 4).

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<sup>9</sup> Data for 2014 is preliminary.

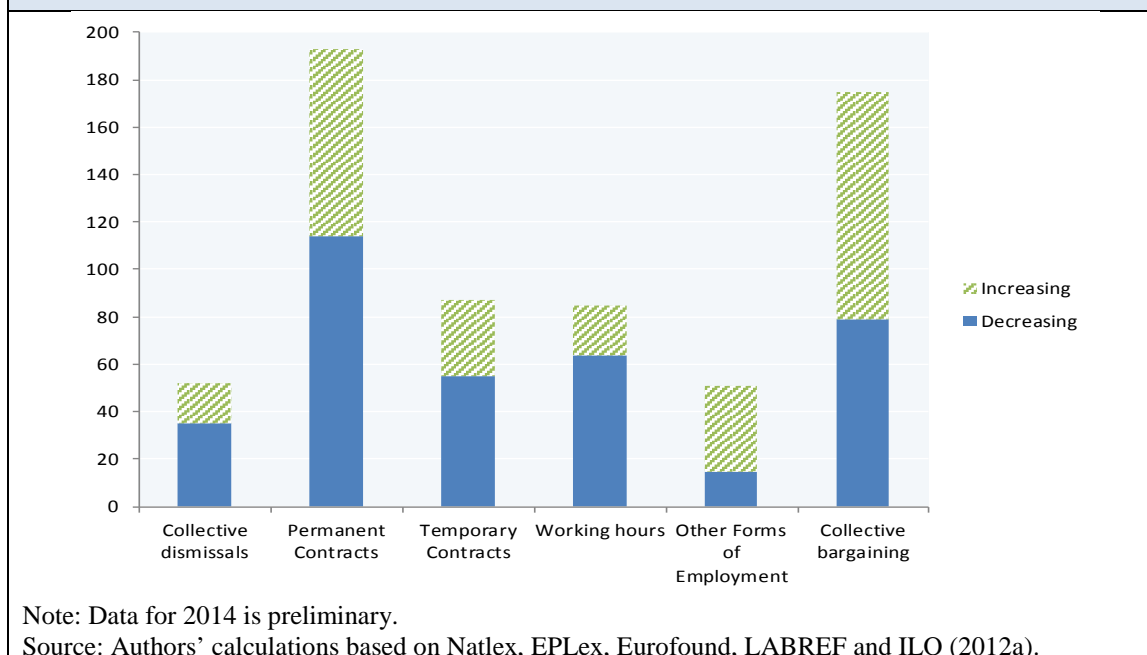
**Figure 4: Number of changes in labour market regulation by year of implementation**



Overall, the results stemming from the analysis show that the majority of reforms has been implemented in the area of permanent employment contracts (193 changes, equal to 30 per cent of the total) (Figure 5); followed by reforms in collective bargaining regulation (175 changes, equal to 27 per cent) and changes to the legislation of temporary employment contracts (87 changes, equal to 14 per cent). Great attention has also been devoted to reforming the legislation on working hours (85 changes, 13 per cent), collective dismissals (52 changes, 8 per cent) and other forms of employment (51 changes, 8 per cent). In general these trends in the number of reforms by policy domain are rather consistent between developed and developing economies. However, the former group of countries have reformed relatively more in the area of working hours (17 per cent of the total interventions compared to 4 per cent only in developing economies); while developing economies have reformed more collective bargaining regulations (46 per cent of total reforms compared to 19 per cent in developing economies).

Finally, the trend towards relaxing labour legislation was common to most areas of policy interventions, although some differences emerge. In particular, the share of reforms decreasing existing levels of protection has been the highest in the area of working hours (75 per cent), followed by collective dismissals (67 per cent), temporary employment contracts (63 per cent) and permanent contracts (59 per cent). The reforms have instead reinforced protection in 55 per cent of the cases for collective bargaining and 71 per cent of the cases for other forms of employment. This result is also confirmed by ILO (2015b); which shows how protection of other forms of employment has increased in most countries – including EU member states – over the last years. This can be related to the fact that in many countries – especially in the EU – workers in other forms of employment (e.g. dependent self-employees) were more likely to lose their jobs in the aftermath of the recession – given their lower dismissal costs – and governments intervened to address this gap in the level of protection.

**Figure 5: Number of changes in labour market regulation by policy area, 2008-2014**



#### IV. Regional outlook

##### *Developed economies and European Union*

In advanced economies and the EU a total of 444 changes to labour market regulation have been registered between 2008 and 2014 – equal to 69 per cent of the registered changes. These changes have mostly concerned the regulation of permanent employment contracts (135 changes), collective bargaining legislation (83 changes) and working hours (77 changes). Overall, 68 per cent of these changes have decreased existing levels of protection in an effort to facilitate the capacity of firms to adjust over the business cycle. Examples include the reduction of severance payments for unjustified dismissals in Spain from 45 to 33 days per year worked, the cut from one year to 60 days of the length of time employees have to launch an unfair dismissal claim in Portugal and the shortening of the notice period from 24 to six months in Greece for workers with at least 28 years of job tenure.<sup>10</sup> In other cases, the possibility for the employers to adjust working hours over the business cycle has been increased in an effort to avoid layoffs. These include increasing the maximum period allowed for the recourse to limited working hour schemes in Austria and Germany. Other interventions have instead aimed at increasing employment protection for specific categories of workers such as fixed-term employees – e.g. restrictions in the admissibility of consecutive fixed-term contracts in Finland – and dependent self-employees – e.g. shifting the burden of proof of dependent self-employment from the worker to the employers in Portugal and Greece. Similarly, in Australia the Fair Work Act approved in 2009 has reinforced industrial relations at the firm level by requiring employers to conclude collective agreements if the majority of the workers in the company ask them to do so.

<sup>10</sup> ILO (2014a, 2013, 2014b), respectively.



### ***Central and South Eastern Europe (non-EU) and CIS***

All other geographical regions have registered a lower number of reforms than advanced economies and the EU. This can be explained by the less severe impact of the crisis in most of the developing countries, as well as the generally more limited role that labour market legislation plays in most developing countries – due to, for instance, its enforcement to a smaller share of the workforce.<sup>11</sup> In Central and South Eastern Europe (non-EU) and the members of the Commonwealth of Independent States (CIS), a total number of 49 changes to labour market regulation have been approved since 2008. Policy areas that have been at the centre of reform efforts in this region are the regulation of permanent employment contracts (16 changes) and of collective bargaining (14 changes); while relatively less attention has been devoted to policy tools specific to crisis periods such as the legislation governing collective dismissals (6 changes) and working hours (3 changes). Overall, 47 per cent of these changes have reduced workers’ employment protection – while the remaining 53 per cent has reinforced it. In some countries, reforms have eased employment protection by eliminating the requirement for third-party notification in cases of individual dismissals (Montenegro, Belarus and Kyrgyzstan) or increased the maximum duration allowed for fixed-term employment contracts (Armenia). In others, employment legislation was reinforced by introducing a limit to the maximum number of working hours (40 hours per week in Georgia), increasing workers’ right of representation (Moldova and Montenegro), and introducing industrial works councils (Russian Federation). Macedonia is an example of a country that reformed extensively its labour legislation across different policy areas.

### ***South Asia, South-East Asia and the Pacific and East Asia***

Asian countries are those that have reformed the least during the global financial crisis in comparison to other regions. This might be related to the more limited role that labour market institutions play in the economic policy debate in these countries – given for instance the high level of informality – as well as the more limited impact of the global crisis in these regions. Indeed, between 2008 and 2014 a total number of 53 changes to labour market regulation has been registered – 33 in South-East Asia and the Pacific, 12 in South Asia and 8 in East Asia. Most of the reforms approved in these regions have increased existing levels of regulation. In particular, the share of changes that decreased workers’ protection has been equal to 28 per cent in South-East Asia and the Pacific, 31 per cent in South Asia and 38 per cent in East Asia. However, in many circumstances concerns remain with respect to the coverage of these interventions – given for instance the high levels of informal employment. In many countries, the changes approved have aimed at reforming the system of industrial relations – 32 out of 53 changes have been targeted at collective bargaining systems. For example, national institutions for industrial relations and/or dispute resolutions have been introduced and/or their competencies expanded in Pakistan, the Maldives and the Philippines; while workers’ right to collective bargaining has been reinforced in Bangladesh (no need of approval from factory’s owner to form a trade union) and Cambodia (clarification of workers’ rights of organization at the enterprise level). Collective bargaining rules have also been reformed in the Republic of Korea – where a multiple-union system has replaced the “one company one union” rule<sup>12</sup> – as well as in Pakistan. Reform efforts in other policy areas include stricter rules for collective dismissals in China, the introduction of a maximum of nine working hours

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<sup>11</sup> An additional explanation concerns the fact that advanced economies and the EU represent the largest group of countries included in the analysis (37 countries covered).

<sup>12</sup> The “one company one union” rule provides that only one trade union is allowed to exist in each company. In the case of the Republic of Korea, prior to 2012, multiple unions were allowed in a single workplace only in cases of mergers and acquisitions.

per day in Indonesia and the introduction of the requirement of third-party approval for collective dismissals in Afghanistan.

### ***Latin America and the Caribbean***

Countries in Latin America and the Caribbean have registered a total number of 34 changes in labour market regulation between 2008 and 2014 – 21 per cent of them decreasing existing levels of employment protection. Similarly with the Asian countries, reforms of collective bargaining legislation have been the most common (19 changes), followed by changes in the regulation of permanent employment contracts (11 changes). At the same time, reforms to temporary employment contracts and other forms of employment have been relatively scarce – three and one changes introduced respectively – while no change to the legislation of collective dismissals and working hours has been registered in the policy compendium for the countries covered in the analysis. Examples of changes to employment legislation for permanent workers include the introduction of the right to reinstatement in case of unfair dismissal in Barbados and the increase in the notice period for individual dismissals in Brazil. Other changes concern the introduction of stricter requirements for the conclusion of new employment contracts (that now have to be in written form, Barbados) as well as increasing requirements for outsourced employees (Uruguay). On the opposite side, severance payments for permanent employees were reduced in Peru. Regarding collective bargaining, a number of reforms have aimed at strengthening worker's rights to representation (e.g. in Colombia and Uruguay). For instance, in Bolivia, the law has introduced immunity for trade union leaders and decriminalized the right to strike. In other cases, legislation went in the opposite direction – introducing restrictions in the trade unions' right to organize and strike (Panama). Argentina has also continued its efforts to reform labour legislation in a process started after the eruption of the 2001 crisis in the country.

### ***North-Africa, the Middle East and Sub-Saharan Africa***

Finally, 63 changes to labour market regulation have been registered in African countries between 2008 and 2014 – 19 changes in North Africa and the Middle East and 44 changes in the Sub-Saharan region. Among these, 27 have been changes to the regulation of collective bargaining and 21 to the legislation of permanent employees. Seven changes have been implemented to the legislation of temporary employment contracts and four to collective dismissals, while the other areas of policy intervention have remained mostly untouched. Overall, 32 per cent of the total changes have reduced workers' protection in Sub-Saharan Africa; while the same share is equal to 16 per cent in North Africa and the Middle East. In the area of collective bargaining, one of the most frequent interventions has been the creation of national *fora* of social dialogue – in a process of institution building. Among others, this has occurred in Angola (*National Council for Social Dialogue*), Cameroon (*Committee for Consultation and Monitoring of Social Dialogue*) and Congo (*National Committee for social Dialogue*). Other interventions in the area of collective bargaining include reforms in the Central African Republic (the law no longer prevents unemployed from joining a trade union) and Egypt (dispute resolution). Interventions in other policy areas include the obligation of third-party notification in cases of individual and collective dismissals (Congo and Uganda respectively), a new regulation on dismissal procedures (Gabon) and the increase in the maximum duration of fixed-term contracts.

## V. Comparison to other databases

The interventions analysed in this compendium have produced substantive changes in the existing levels of employment regulation. Although the compendium distinguishes between reforms that have increased or decreased EPL, it does not allow measuring the impact of these changes on the overall level of protection. This is because the compendium (i) does not collect information on the initial level of strictness of protection before the crisis and (ii) does not measure the exact impact of the changes occurred on this initial level (i.e. it measures only if the change increased and decreased legislation, but not by “how much”).

For these reasons, it is useful to compare the results obtained here with those coming from traditional indicators of EPL and collective bargaining legislation. This is done in order to check the robustness of the trends described above to changes in the methodology; while keeping in mind the added value of the compendium presented above with respect to traditional indicators of labour market institutions. Indeed, this added value lies in the greater ability of the compendium to capture policy responses and short-term trends; the more detailed differentiation between areas of policy intervention (e.g. other forms of employment, collective bargaining, working times), and the substantially wider country coverage – 111 developed and developing economies.

Keeping in mind these differences, a first comparison of the results of the compendium can be made with the OECD indicator of EPL, which is the most widely used indicator of stringency of employment legislation – although it covers only around 40 advanced and emerging economies.<sup>13</sup> Looking at this indicator, mostly confirms the trends described above. In particular, the OECD indicator of EPL for regular contracts has decreased between 2008 and 2014 in 14 countries, remained unchanged in 21 cases and increased in only 5 countries. Additionally and as concluded from this compendium, the countries with the sharpest reductions in EPL are EU member states – including Portugal, Estonia and Greece. By contrast, countries where the EPL index of employment legislation has increased are generally outside the EU – with the exception of Denmark (Figure 6, Panel A).

Another meaningful comparison can be made using the Cambridge University Centre for Business Research’s Labour Regulation Index (CBR-LRI). This indicator expands the geographical coverage of the OECD index (including 63 developed and developing economies since the 1970s) and it is based on a slightly different methodology.<sup>14</sup> The results from CBR-LRI show that, since the beginning of the crisis, employment protection for regular workers has decreased in EU member states; while it has increased in advanced non-EU economies and emerging economies and it remained stable in developing economies. Meanwhile, the indicator measuring employment protection for other forms of employment (e.g. part-time, temporary and agency workers) has increased since 2007 in almost all regions – except in developing countries, where it has remained stable (Figure 6, Panel B). These results are broadly in line with those emerging from the compendium as presented above – showing that the majority of reforms on other forms of employment have increased existing levels of workers’ protection.

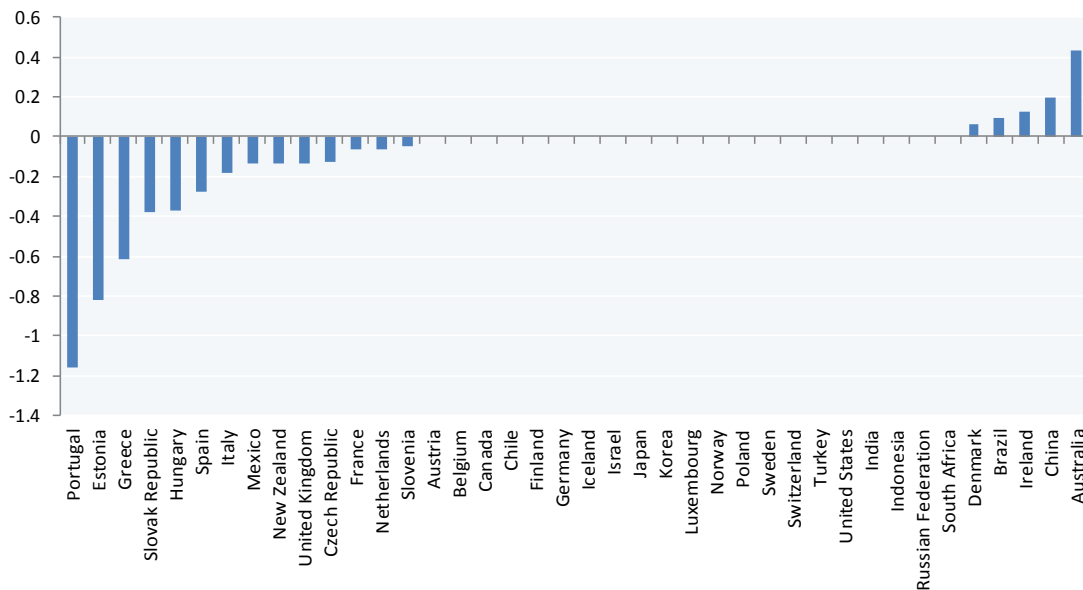
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<sup>13</sup> The exact number of countries that are covered depends on the different versions of the OECD indicator that are used and the years taken into consideration.

<sup>14</sup> See ILO (2015b) for information on the methodology and main trends of the indicator.

**Figure 6: Change in EPL indicators during the crisis**

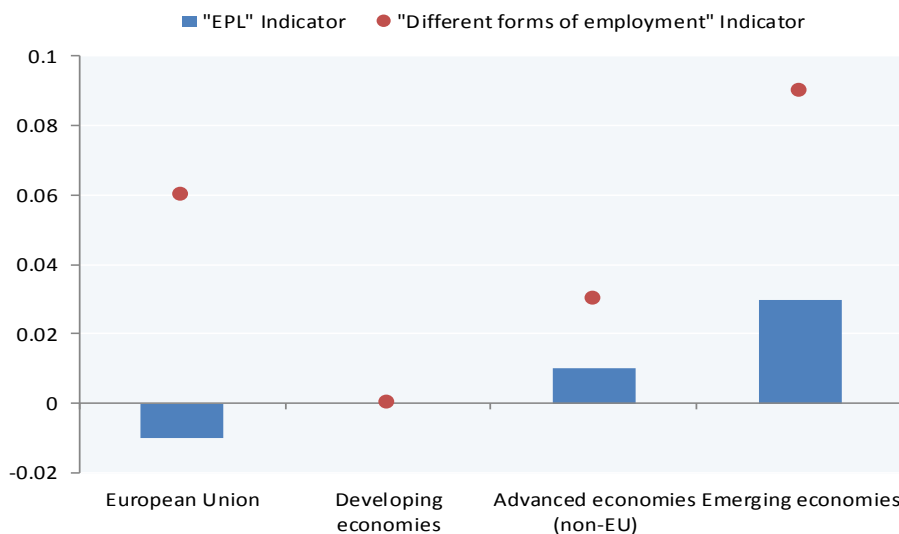
**Panel A: Change in the OECD EPL indicator between 2008 and 2013**



Notes: An increase in the value of the “index” denotes that legislation is more stringent and a reduction in the value of the “index” indicates less stringent legislation.

Source: Authors’ calculations based on OECD.

**Panel B: Changes in the CB-LRI indicators of EPL and different forms of employment, 2007-2013**

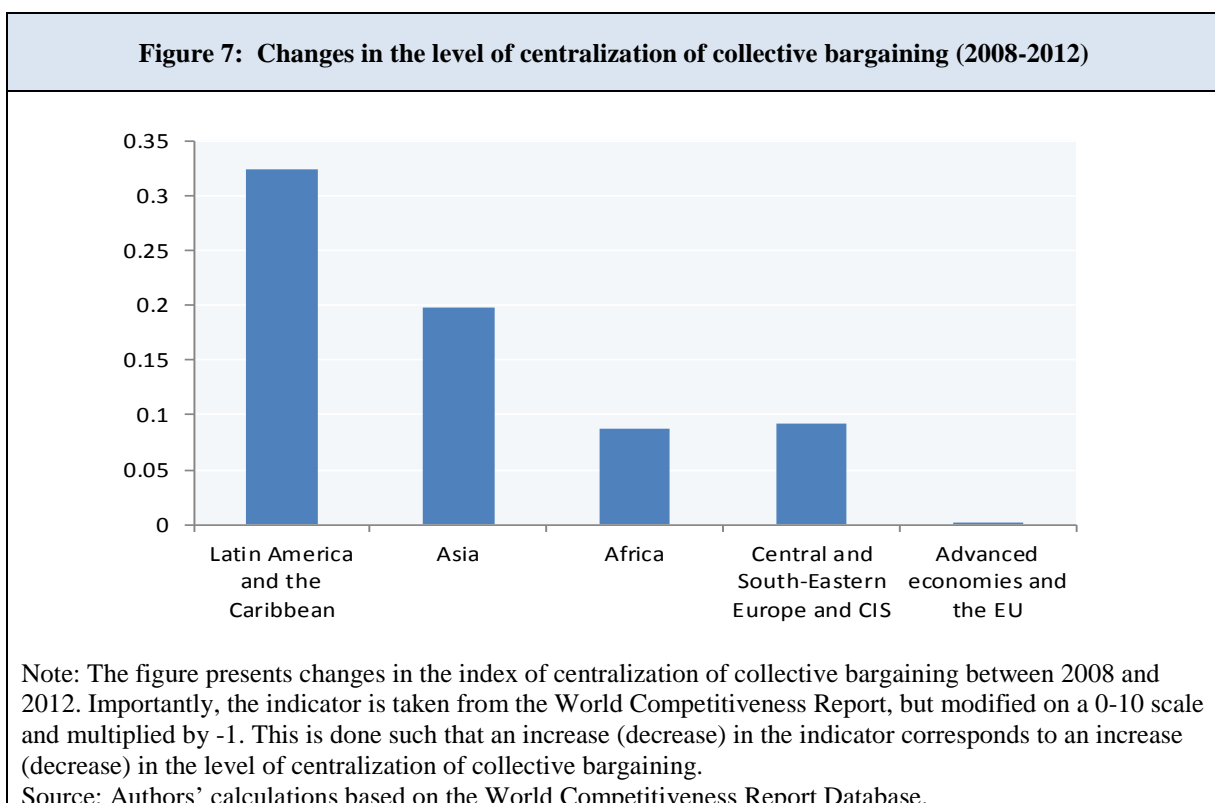


Note: The figure shows the change in the “EPL” indicator and the “Different forms of employment” indicator occurred between 2007 and 2013. Each indicator goes from 0 to 1. Data covers 63 countries.

Source: Authors’ calculations based on ILO (2015b).

A similar exercise can be conducted by looking at changes in the strictness of collective bargaining legislation. Although there is a smaller set of indicators available in this domain, the World Economic Forum compiles a useful index of the level of centralization of collective bargaining. This is computed by looking at whether wages in an economy are set by a centralized process or rather by each individual company independently – with countries ranking between these two extremes. Although this does not necessarily capture changes in collective bargaining legislation, it might be taken as a valid comparison for the results obtained in our database. Indeed, looking at changes in this indicator between 2008 and 2012 reveals that collective bargaining centralization has increased in all developing countries – with

the most relevant increase occurring in Latin America and the Caribbean – while it has remained almost unchanged in advanced economies and the EU. Importantly, the result for this latter group would have been a decrease in the level of collective bargaining centralization if Australia was to be excluded. This reflects the results of the ILO database, which has shown that collective bargaining legislation has been reinforced in the majority (55 per cent) of the cases during the crisis; with the notable exception of EU member states – where legislation over collective bargaining has been reduced (Figure 7). This latter trend has reinforced a longer-term trend of reduction of union density and collective bargaining coverage in advanced economies. In particular, between 2000/2001 and 2011/2012, collective bargaining coverage has decreased in 27 out of 40 advanced and emerging countries with available information.



## VI. Conclusion

In the aftermath of the Great Recession, many economies embarked upon reforms in order to adjust labour markets and prop up aggregate demand. In some regions such as the Euro Area, given that the monetary policy was at the hands of the European Central Bank and governments had limited fiscal space due to high levels of public debt, labour market reforms were seen as a budget neutral means to improve employment outcomes – when compared for instance with active labour market policies or unemployment subsidies. The database presented in this paper – covering 111 countries, both advanced and developing and emerging – shows that there have been a total number of 643 changes to labour market regulation between 2008 and 2014. In terms of the regional breakdown of labour market reforms, advanced economies and EU member states have been those most actively engaged, followed by countries in Central and South-Eastern Europe and CIS, Sub-Saharan Africa and Latin America respectively.

Furthermore, the analysis of this global database shows that there has been a general trend towards relaxing existing levels of workers' protection – 56 per cent of the total interventions have reduced existing levels of regulation – with this share varying significantly between advanced economies (68 per cent of reforms decreasing EPL) and developing ones (32 per cent). Meanwhile, labour market regulation reforms have covered a number of different policy domains, although the reform intensity differed across areas of intervention. In particular, there have been 193 changes to the legislation governing hiring and firing procedures for permanent employees; while 173 changes have been approved to the collective bargaining legislation – with their incidence particularly high in developing countries. Other areas of intensive reforms have been the regulation over temporary employment contracts, working hours, collective dismissals.

The global and regional trends presented by our database match the ones that already exist in terms of the direction of the reforms. However, as it is evident from the paper, our database is more comprehensive in both country coverage and types of labour market reforms. Going forward, there is a need to include more countries and come up with an index that accurately captures the state of reforms and their general efficacy. There are existing databases such as the OECD database that does this, but they provide only a limited understanding of the state of employment protection legislation beyond the rich world. The CBR-LRI indicator makes an important step to improve country coverage. This paper is an attempt to fill that gap in the study of labour institutions by looking at reforms in a specific period of time – the Great Recession – and draw conclusions on the state of labour market institutions in the countries covered.

## Appendix A: Main sources of information on employment protection and collective bargaining legislation

Data presented in this paper on the main trends of reforms to employment protection and collective bargaining legislation (Section III) comes from a variety of legal and economic sources. In particular, we use both national and international databases collecting qualitative information on legislative measures in the area of employment legislation and – when possible – cross-checked the gathered information with primary sources. Given the wide range of countries that are covered in this paper, we limited the analysis of the legislative measures to those aspects that could be consistently compared across databases and countries. The table below presents the main international sources of information used for completing the database.

**Main international databases on labour legislation used in the analysis**

<b>Name of database</b>	<b>Institution in charge</b>	<b>Country coverage</b>	<b>Brief description</b>	<b>Web-link</b>
LABour market REForm database (LABFREF)	European Commission	EU member states (changing composition)	Collects information on measures adopted by EU member states in different policy domains of labour legislation. For each measure, it presents the year of implementation a brief description and the direction of the reform (increasing or decreasing strictness of legislation).	<a href="http://ec.europa.eu/social/main.jsp?catId=1143&amp;langId=en">http://ec.europa.eu/social/main.jsp?catId=1143&amp;langId=en</a>
Database of national labour, social security and related human rights legislation (NATLEX)	International Labour Organization	196 countries	Contains information on measures undertaken in the areas of labour, social security and human rights legislation. Provides links to relevant legislation and a short description of the policies.	<a href="http://www.ilo.ch/dyn/natlex/natlex4.home?p_lang=en">http://www.ilo.ch/dyn/natlex/natlex4.home?p_lang=en</a>
Employment protection legislation database (EPLex)	International Labour Organization	95 countries	Provides information on the legislation governing key topics on employment termination, with a breakdown of more than 50 variables to facilitate cross-country comparability.	<a href="http://www.ilo.org/dyn/epllex/termmain.home">http://www.ilo.org/dyn/epllex/termmain.home</a>

In Section V of the paper, we compared the results obtained in our analysis with the main trends registered since 2008 by traditional indicators of strictness of employment legislation. Although the database presented in this paper follows a different methodology and does not aim to assess the overall level of workers' protection (and its variation over time), these indicators represent useful benchmarks to test the validity of our approach. Unfortunately, these indicators are available only for a limited number of countries – compared to the 111 economies covered in our database. The table below presents the main indicators used for comparing trends in employment legislation.

## Indicators of employment legislation and collective bargaining

Name of database	Institution in charge	Country coverage	Brief description	Web-link
Indicator of Employment Protection	Organisation for Economic Co-operation and Development	43 countries	Measures the stringency of legislation for dismissing workers individually or collectively as well as the procedures needed to hire individuals on fixed-term or temporary work agency contracts.	<a href="http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm">http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm</a>
Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts	Amsterdam Institute for Advanced Labour Studies	34 countries	Collects a wide range of information of collective bargaining legislation and developments, including issues such as workers' rights of association, social pacts and level of coordination of collective agreements.	<a href="http://www.uva-aias.net/208">http://www.uva-aias.net/208</a>
World Competitiveness Report Database	World Economic Forum	144 countries	The Database is constructed around 12 pillars that define competitiveness (e.g. institutions, macroeconomic environment, skills, labour market efficiency).	<a href="http://www.weforum.org/reports/global-competitiveness-report-2014-2015">http://www.weforum.org/reports/global-competitiveness-report-2014-2015</a>
Labour Regulation Index	Cambridge University Centre for Business Research	63 countries	The indicator is constructed using 40 variables, grouped in 5 sub-indices: different forms of employment, working time, dismissal, employee representation and industrial action.	<a href="http://www.cbr.cam.ac.uk/fileadmin/user_upload/centre-for-business-research/downloads/working-papers/wp458.pdf">http://www.cbr.cam.ac.uk/fileadmin/user_upload/centre-for-business-research/downloads/working-papers/wp458.pdf</a>



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