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Labour market reforms since the crisis: Drivers and consequences

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Abstract

The paper analyses the determinants and effects of reforms of employment protection legislation (EPL), using a novel inventory that covers 111 developed and developing countries between 2008 and 2014. The analysis finds that in developed economies, reforms were mostly directed towards relaxing labour regulation and were driven by high unemployment rates and low levels of GDP growth. By contrast, in developing economies reforms tended to increase workers' protection and were more likely to occur in countries experiencing high levels of GDP growth – while not being sensitive to unemployment rates. Furthermore, we test the effects of these reforms on labour market outcomes. We find that deregulation decreases employment rates in both developed and developing countries in the year after implementation. Deregulation also increases unemployment rates in developed economies in the short-term; but the effect is not statistically significant in developing countries.

Keywords: EPL reforms, developed economies, developing economies, crisis.

JEL Codes: J08, J23, J52, K31

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1. Introduction

Labour market reforms have been amongst the most widely spread policy intervention used by governments in recent years to address the negative effects of the global financial and economic crisis. However, these interventions have differed both with respect to their (i) motivation (e.g. enhance competitiveness or kick-start job creation); (ii) scope (e.g. increasing or decreasing protection), and; (iii) area of intervention (e.g. permanent or temporary workers, collective bargaining). This raises important questions about the different macroeconomic determinants behind these changes as well as their effectiveness in improving labour market outcomes.

In an effort to answer these questions, an inventory of labour market reforms was constructed covering 111 developing and developed countries between 2008 and 2014. The inventory includes data on the number of reforms passed in each year by country, the direction of the reform (increasing or decreasing protection), as well as the policy domain in which the reform took place (categorized as collective dismissals, permanent contracts, temporary contracts, working hours, collective bargaining and other forms of employment). The inventory shows that the number of reforms increased during the crisis and that developed economies were most likely to reform labour market regulation – in most of the cases for permanent employment contracts, while many developing economies were relatively more focused on collective bargaining institutions.

Using this inventory, the purpose of the paper is twofold. First, it seeks to explain the recent intensification of labour market changes around the world. Furthermore, it examines whether these changes have produced the desired labour market and macroeconomic results – in terms of either reducing unemployment or improving employment.[1]

The results from the empirical analysis show that in developed economies, higher unemployment rates and lower rates of GDP growth have positively affected the probability of implementing reforms to labour market regulation – that in the majority of the cases decreased the strictness of legislation. By contrast in developing economies, labour market reforms – that generally reinforced labour regulation – were more likely to occur in countries experiencing high economic growth rates – while the relationship with unemployment is not statistically significant.[2] However, these effects vary depending on the specific policy domain in which the change took place (permanent contracts, temporary contracts, working hours etc.).

Turning to the short-term effects of these interventions, we find that more reforms decreasing existing levels of labour market regulation are associated with an increase in the unemployment rate in the following year in developed economies; while the relation is not statistically significant for developing ones.[3] This difference can be related to the lower relevance of the unemployment rate as a

[1] Labour market reforms can of course aim to affect other outcomes (e.g. employment elasticity, productivity). See for instance Bertola (1990), Acemoglu (2001) and Kahn (2010).

[2] No statistically significant effect is associated between the number of reforms and the unemployment rate in developing countries.

[3] We follow Turrini et al. (2015) that use similar data and methodology and focus only on the short-term effects of labour market reforms (i.e. whether reforms in one year had any effect on labour market performances in the following year).

measure of labour market performances in developing countries (i.e. underemployment and informal employment play a greater role and as a result unemployment levels are generally lower). However, reforms that decrease employment regulation have a negative and statistically significant effect on employment rates in the following year in both developed and developing economies. In this way, we confirm results from previous literature on the possible short-term negative effects of structural reforms (Cacciatore et al. 2010).

The remainder of the paper is organized as follows. Section 2 describes the database created and presents the main trends in labour market policy reforms covering 111 countries between 2008 and 2014. Section 3.1 presents the results of an empirical analysis aimed at measuring the macroeconomic determinants of policy initiatives during the crisis. Section 3.2 turns to the analysis of the effects of the reforms on labour market outcomes – notably the employment and unemployment rates. Section 4 summarizes and concludes.

2. Recent changes to labour market regulation around the world

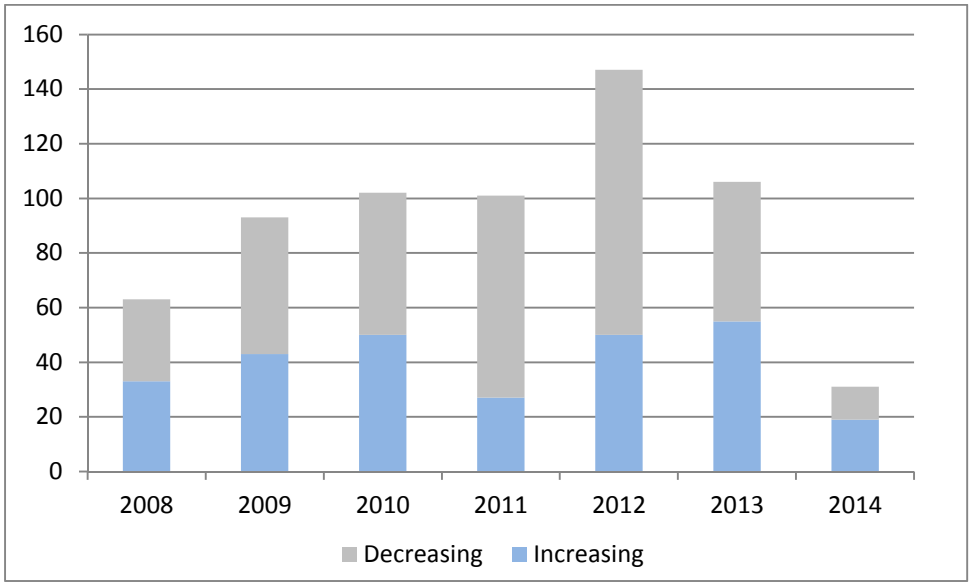
Employment growth remains tepid in both developed and developing countries and unemployment levels are set to increase globally over the next years. Moreover, large disparities in labour market opportunities persist within countries across different societal groups – e.g. women and young people – as well as across countries (ILO 2015c). The attention towards labour market reforms has increased during the crisis as these interventions have been viewed as important policy tools to address the emerging labour market challenges. In cases such as the euro area, inefficiencies in the systems of labour legislation have been even credited as the main drivers behind divergences in economic performances across countries – for instance by impeding the necessary price adjustment through wages (see for instance ILO (2014) for the case of Spain). Accordingly, policy makers have increasingly paid attention at the design and implementation of effective labour market institutions that can lead to the achievement of a right balance of incentives between employers' need of adjustment over the business cycle and workers' call for income security (ILO 2015b).

As a result, a number of changes to labour market regulation have been approved since the start of the crisis in both developed 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. The compendium distinguishes between different areas of labour market regulation; while seeking to provide a comprehensive coverage of all geographical regions. 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.[4] If a single reform introduced several changes to the legislation (so-called "umbrella laws" or reform packages), these changes were coded separately (see Adascalitei et al. 2015 for a detailed description of trends in labour market reforms).

[4] 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) procedurally complicated. 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 decreasing (increasing) labour market regulation.

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 (see Figure 1).[5] Overall, a trend towards relaxing existing levels of workers' protection can be identified. Indeed, 56 per cent of the total interventions have reduced existing levels of regulation – with this share varying significantly between developed and developing economies, see below. The trend towards relaxing labour market regulation has also increased over 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 66 per cent in 2012 – before stabilizing at 48 per cent in 2013 and decreasing to 39 per cent in 2014.

Figure 1: Number of changes in labour market regulation by year of implementation



Note: Data for 2014 is preliminary.
Source: Authors' calculations based on Natlex, EPLex, Eurofound, LABREF and ILO (2012).

Although the focus on reforming labour market regulation was widely shared by different countries, 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 expands with respect to the more traditional understanding of employment protection legislation (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) that are becoming increasingly common in the world of work (see ILO, 2015a).

[5] Data for 2014 is preliminary.

Overall, the results stemming from the inventory 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); 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 over working hours (85 changes, 13 per cent), collective dismissals (52 changes, 8 per cent) and other forms of employment (51 changes, 8 per cent). However, the trends in the reform processes highly differ across regions. In particular, reforms have been more frequent in developed than in developing economies – with European Union (EU) member states being particularly active.[6] Additionally, reforms in developed economies have principally concerned the legislation of permanent employment contracts; while collective bargaining has been at the centre of reform efforts in developing economies (see Table 1). Finally, the share of reforms decreasing existing levels of protection has varied from 65 per cent in the EU-28 to 16 per cent in North Africa and the Middle East. This is confirmed for the recent years also by looking at traditional indicators of EPL (ILO, 2015b).

Table 1: Number of changes in labour market regulation by geographical region and area of policy intervention (2008-2014)

	Collective Dismissals	Permanent Contracts	Temporary Contracts	Working Hours	Other Forms Employment	Collective Bargaining
European Union	39	123	62	75	44	75
Non-EU Developed Economies	0	12	2	2	2	8
Central and South Eastern Europe (non-EU) and CIS	6	16	8	3	2	14
South Asia	1	2	1	1	0	7
South-East Asia and the Pacific	1	6	3	2	0	21
East Asia	1	2	1	0	0	4
Latin America and the Caribbean	0	11	3	0	1	19
North Africa	2	4	2	2	1	8
Sub-Saharan Africa	2	17	5	0	1	19
Total	52	193	87	85	51	175

Note: Data for 2014 is preliminary.
Source: Authors' calculations based on Natlex, EPLex, Eurofound, LABREF and ILO (2012).

3. Drivers and effects of reforms to labour regulation

After having described the main results of the policy compendium of labour market reforms during the crisis, this section will present the results of the analysis on the macroeconomic determinants (3.1) and effects (3.2) of the reforms implemented.

3.1. Drivers of labour market regulation reforms

The literature on the macroeconomic determinants of policy reforms is relatively recent and mostly focused on developed economies. Great attention has been generally paid to the analysis of the timing of reforms over the business cycle – e.g. whether governments are more likely to implement reforms

[6] Croatia is considered as part of the European Union for the entire period under consideration.

during economic crises.[7] In these cases, the underlying hypothesis is that deteriorating macroeconomic conditions make reforms more needed from an economic viewpoint as well as more feasible in terms of political support – the so-called "back against the wall" argument (Turrini et al. 2015; Duval and Elmeskov 2006). This relationship is particularly strong for certain areas of reforms that are deemed to benefit the economy without generating negative externalities (e.g. financial reforms); while the relation becomes less evident for other policy interventions that require the disbursement of public resources (e.g. tax wedge, employment protection and benefit systems) (Høj et al. 2006; IMF 2004). Related to this, the empirical literature has also shown that structural reforms are more likely to be implemented in times and/or countries characterised by sound public budget balances – given for instance the possibility for governments to compensate the losers of the reforms with side payments (Duval 2008).

Existing levels of regulation have also been found to be important determinants of the likelihood of implementing reforms. Indeed, countries characterised by more stringent levels of regulation in either the product or the labour markets are more likely to implement structural reforms – generally towards relaxing regulations (Bernal-Verdugo et al. 2012). Similarly, exposure to foreign competition – as measured for instance by the share of trade in GDP – has been reported to be associated with a higher probability of introducing reforms. Intuitively, countries that are more integrated in global markets have a higher interest in aligning their legislation to that of their international competitors in order to maintain their attractiveness to foreign investors and secure their presence in global value chains (Høj et al. 2006). Connected to this, small countries have been reported being more likely to implement reforms due to spill-over effects from large economies (Duval and Elmeskov 2006). Finally, evidence suggests that the pace of reforms increases with time due to policy interconnections across areas of legislation – i.e. implementation of a reform in one policy area triggers the approval of subsequent changes in other domains. In particular, labour market reforms are more likely to occur after the implementation of product market reforms (Høj et al. 2006) or financial reforms (Campos and Nugent 2012).

One important shortcoming of the literature is that it focuses on a limited number of cases, particularly the set of developed economies, for which data availability is not a problem. We seek to address this issue by expanding the coverage of our sample to 111 developed and developing countries. This is important because, as reviewed in Section 2, the reform efforts in developed and developing economies have been different during the crisis – as a result of differences in country contexts and macroeconomic performances. However, the only studies that cover developing countries use as dependent variables some indicators of labour market regulation (Campos and Nugent 2012; Bernal-Verdugo et al. 2012); rather than a measure of the degree of the intensity of the reform activity – that is instead a popular methodology of studies that cover developed economies (Turrini et al. 2015; Duval and Elmeskov 2006). This is done due to the unavailability of policy compendiums that track reform processes in large sets of countries and that can be used to construct a measure of reform intensity. However, using an overall indicator of legislation – rather than a measure of reform frequency – changes the nature of the research question and it is also more susceptible to endogeneity (e.g. reverse causality). In this contribution, we use the database presented in Section 2 of this paper to construct a measure of reform intensity that is consistent over a large number of both developed and developing economies.

[7] Another strain of the literature examines the political determinants behind reforms' implementation (e.g. ideology of the executive, decentralization of political power, election cycles). See for instance Duval (2008) for an overview of the main arguments and results of this literature.

Furthermore, compared with previous studies, our data allows for a more accurate assessment of labour market reforms by direction (i.e. increasing and decreasing protection) and policy domains. Since not all areas of labour market reforms matter to the same extent to governments in times of crisis, it is plausible to hypothesize that their determinants will differ. Indeed, governments will follow different economic logics when changing legislation for permanent contracts as compared to adjusting legislation for other forms of employment. In the first case, they might advocate for changes in order to push for more flexible conditions for employers, and thus promote employment, whereas in the second case changes might aim at bringing workers from the informal to the formal economy. Similarly, the macroeconomic determinants behind reforms that increase and decrease protection are likely to differ – something that has been seldom analysed in previous studies.

In order to test the above hypotheses, we use a negative binomial regression model (NBRM). Repeated tests of fit between Poisson models, Zero Inflated Negative Binomial models and NBRM models indicated that the latter fits the best our data. Furthermore, NBRM is an optimal choice in our case since it produces efficient estimators when using over-dispersed data. Tests between a random model and a fixed effects model indicated that the former should be chosen, giving our data. Therefore, our model, takes the following form:

$$Reforms_{it} = \beta_0 + \beta_1 * Unr_{it} + \gamma * GDP\_Growth_{it} + \delta * Debt_{it} + \zeta * Trade_{it} + \eta * GDP\_Capita_{it} + \lambda_t + \varepsilon_{it}$$

where $Reforms_{it}$ represents the total number of reforms passed at time *t* in country *i*; β_0 represents the constant in the model; Unr_{it} is the total unemployment rate; GDP_Growth_{it} is the growth rate of GDP; $Debt_{it}$ represents general government net debt as share of national GDP; $Trade_{it}$ is the sum of exports and imports of goods and services as share of GDP; GDP_Capita_{it} is the natural logarithm of GDP per capita; λ_t are the time dummies and ε_{it} is the error term. When it comes to the unemployment variable, we prefer including current – rather than lagged – unemployment rates because our measure of policy reforms captures relatively small changes in the legislation and is thus not likely to be subject to issues of endogeneity; while better capturing current labour market distress. Since data on reforms for 2014 is preliminary, we restricted the analysis up to 2013. The results of the empirical analysis are shown in Table 2.

The results show strong and statistically significant effects of unemployment levels on the likelihood to pass labour market reforms across different model specifications. This holds in the total sample of countries and for developed economies; while the relation is still positive but not statistically significant for developing economies. The effect of GDP growth on reform intensity is negative and statistically significant in developed economies – countries reform more when experiencing low growth – and positive and significant for developing economies – countries reform more when undergoing periods of higher GDP growth. We will see how these differences are related to the different direction of the reforms implemented in the two groups of countries – decreasing and increasing labour regulation respectively, see Table 3. Furthermore and unlike previous studies, we find that government net debt is associated with an increased probability to pass labour market reforms – suggesting that countries with limited fiscal space are more likely to turn to labour market reforms as a budget neutral means for improving employment outcomes. However, the effect is of limited magnitude and also statistically significant only when analysing the full sample of countries.

Finally, we find that trade openness is not statistically associated with the probability of implementing reforms – an effect that is more likely to be captured over the long run.[8]

Table 2: Estimated coefficients of linear predictors of the negative binomial regression models (NBRM) – reporting marginal effects (dependent variable: total number of reforms [2008-2013])

	Total sample				Developed countries	Developing countries
Unemployment rate	0.0401***	0.0357***	0.0341***	0.0341***	0.1055***	0.0054
	(3.77)	(3.31)	(3.18)	(3.14)	(2.77)	(0.95)
Logarithm of per capita GDP	0.3417***	0.2973***	0.2852***	0.2527***	-1.0363**	0.067*
	(6.47)	(4.98)	(4.59)	(3.82)	(-2.40)	(1.66)
GDP growth		-0.0231	-0.0091	-0.0167	-0.1247**	0.0405***
		(-1.43)	(-0.54)	(-0.91)	(-2.07)	(3.31)
Government net debt			0.0046**	0.0051**	0.0059	0.0001
			(2.42)	(2.51)	(1.35)	(0.05)
Trade openness				0.0008	0.0008	0.0003
				(0.76)	(0.31)	(0.57)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	622	622	610	587	207	380

z statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In the next step, we estimate the full model for different areas of labour market reforms as well as for reforms that increase and decrease labour regulation separately. This represents an important contribution to the literature, which has instead only looked at the determinants of labour market reforms without differentiating by domain and policy direction.

Table 3 presents the results of our estimations. The results show that, indeed, the impact of the institutional and macroeconomic variables changes depending on the labour market subdomain. For example, unemployment is a significant predictor of the likelihood to pass more reforms in the areas of permanent contracts, collective bargaining, collective dismissals and working hours; while it does not reach the significance thresholds in the case of temporary contracts and other forms of employment. This might be due to the fact that in the case of the latter domains, governments adopt changes in order to address structural – rather than cyclical – challenges in the labour markets – such as labour force polarization between temporary and permanent workers or high levels of informality (Berg 2015). In comparison, changes in the legislation of collective dismissals and working hours are indeed typically implemented in times of recessions.

[8] We also include in the analysis a measure of stringency of labour legislation (the CB-LRI index, used in ILO, 2015b) – the regression is not reported, as the indicator is available only for 63 countries. The results however confirm that countries with higher levels of initial legislation are more likely to implement labour market reforms.

Table 3: Estimated coefficients of linear predictors of the negative binomial regression models (NBRM) – reporting marginal effects (dependent variable: total number of reforms in each specific area [2008-2013])

	Increasing	Decreasing	Collective bargaining	Collective dismissals	Permanent contracts	Temporary contracts	Working hours	Other forms employment
Unemployment rate	0.0071	0.022***	0.0078*	0.0047***	0.009**	0.004	0.0028**	0.0001
	(1.37)	(3.04)	(1.94)	(3.36)	(2.23)	(1.59)	(2.49)	(0.82)
Logarithm of per capita GDP	0.1022***	0.1419***	0.0059	0.0211*	0.0962***	0.0341**	0.0401***	0.0238***
	(3.21)	(3.10)	(0.23)	(1.97)	(3.35)	(2.01)	(4.62)	(3.05)
GDP growth	0.0085	-0.021*	-0.002	-0.0008	-0.0062	-0.0024	-0.0054***	-0.0064***
	(0.90)	(-1.73)	(-0.33)	(-0.31)	(-0.80)	(-0.57)	(-2.40)	(-2.94)
Government net debt	0.0004	0.0034**	0.0017**	0.0012	0.0005	0.0001**	0.0004*	0.0001
	(0.45)	(2.48)	(2.36)	(0.45)	(0.65)	(2.01)	(1.93)	(0.06)
Trade openness	0.003	0.0003	0.0001	0.0001	0.0001	-0.0001	0.0001	0.0001
	(0.71)	(0.42)	(0.25)	(0.28)	(0.02)	(-0.20)	(0.90)	(0.44)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	587	587	587	587	587	587	587	587

z statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Finally, we look at the determinants of labour market reforms that increase and decrease existing levels of protection separately. Indeed, it can be assumed that the macroeconomic motivations behind a reinforcement of the labour legislation might be different than those that lead a government to reduce EPL. The analysis confirms this prediction and shows that the coefficients for unemployment, GDP growth and government net debt are statistically significant only in the specification that seeks to explain reforms that decrease labour regulation (Table 3). This suggests that in times of crisis, governments are more likely to implement reforms that decrease existing levels of regulation – rather than labour market reforms in general – and they are more likely to do so if faced by high levels of government debt. These results also shed light on the differences in determinants of labour market reforms between developed and developing, as presented in Table 2 above.

3.2. Effects of labour market regulation reforms on unemployment

While the above analysis showed that countries have reacted to the recent crisis through an intensive reform activity in the labour market domain, from a policy perspective the most important aspect is to know whether the changes that were adopted had the desired effects of improving labour market performances.

There is a rich literature discussing the effect of EPL on labour market outcomes. On the one hand, a number of studies have found no statistically significant effect of the stringency of labour legislation on employment and unemployment rates. The World Bank (2013) notes that the estimated effect of labour market regulations on macroeconomic outcomes is either positive or negative – but in all cases extremely modest. The same conclusion has been recently reached among others by IMF (2015), ILO (2015b) and Avdagic and Salardi (2013). This result has been related to a number of different factors. Some studies have pointed to the so-called *plateau effect*; suggesting that most countries have reached a level of employment protection such that changes to the legislation produce only very limited effects on employment outcomes (World Bank 2013 and ILO 2012). Alternatively, other studies have connected the lack of statistically significant effects to the difficulties in precisely measuring the legal and effective stringency of labour legislation (IMF 2015). Finally, a number of studies have argued that while EPL has no effect on overall employment or unemployment rates; it does have an effect on some specific categories of workers – such as youth and women (Bassanini and Duval 2006).

At the same time, other studies have found that employment regulation does have an impact on labour market performances – notably on unemployment rates. In a cross-national study of labour market regulations in 73 developed and developing countries, Feldman (2009) finds that stricter labour market regulations increase unemployment all over the world. Likewise, Bernal-Verdugo et al. (2012) argue that increased labour market flexibility can have an important effect in reducing unemployment. However, the authors are careful in interpreting deregulation as a necessary route for increasing employment and propose that labour market policies "should be properly designed to also improve the quality of employment and to minimize the possible negative short-term effects" (Bernal-Verdugo et al. 2012, 4). Furthermore, Nickel et al. (2005) find that in the case of the OECD economies, employment protection increases unemployment through its impact on raising unemployment persistence. The identified effect is strong, with 55 per cent of unemployment rise being explained by changes in labour market institutions (Nickel et al. 2005, 22).

Additionally, the impact of labour market institutions on labour market outcomes has been assessed by studies discussing the short term effects of reforms. For example Cacciatore et al. (2012) find that in the short-term labour market reforms increase unemployment and decrease wage levels. This happens because in the short-term deregulation hurts the bargaining position of workers, thus leading to an increase in layoffs and compressed real wages. In contrast, Bouis et al. (2012) report that labour market reforms decrease unemployment levels already in the short-run, showing that reductions in the unemployment benefit replacement rates are positively correlated with increases in employment rates. However, they also find that EPL reforms pay off more quickly in countries experiencing an economic expansion.

Thus, the relation between labour market institutions and employment performance remains largely debated. To contribute to this literature, we leverage the compendium presented above and assess the effects of labour market reforms during the recent economic crisis. Importantly, given the content of the compendium and the time period covered, the present analysis will address the effects of EPL reforms by looking exclusively at their short-term effects, namely to whether increasing or decreasing regulation has any impact on labour market performances in the following year. In doing so, we expand on Turrini et al. (2015) who use a compendium of labour market reforms in the EU to assess the impact of EPL reforms on labour market outcomes. However, since our data is limited to the crisis period, the results of the analysis should be treated with caution.

Bearing these caveats in mind, already a simple descriptive analysis can be informative in understanding the effects of reforms to labour legislation. In particular, countries that relaxed labour legislation in the period under consideration experienced an average increase in the unemployment rate by 3.7 percentage points between 2008 and 2014. During the same time period, countries that reinforced labour legislation saw their unemployment rates increasing on average by only 0.3 percentage points.[9] Furthermore, employment rates fell by an average of 1.5 percentage points in countries that decreased protection for workers and remained almost unchanged in countries that increased it. Finally, labour force participation went up marginally in countries that reinforced labour legislation; while it remained unchanged in countries that decreased the levels of workers' protection (Figure C.1 and Figure C.2 in Appendix C).

However, simple descriptive analysis is likely to suffer from endogeneity – especially given the results presented in Section 3.1 – and in order to better disentangle the effects of reforms on labour market outcomes, we conduct panel econometric analysis using unemployment and employment rates as dependent variables. Following Avdagic and Salardi (2013) and Nickell et al. (2005) we opt for a country and time fixed effects model and allow for panel-level heteroskedastic standard errors. In order to check for the robustness of our results, we also estimate a generalized least squares model (GLS) with country and time fixed effects. As a measure of deregulation, we follow Turrini et al. (2015) by creating a reform stance variable defined as the total number of reforms decreasing legislation net of the total number of reforms increasing it. For the purpose of the analysis, we do not distinguish between policy domains. Since current unemployment levels normally depend on the past levels of unemployment, we estimate dynamic models. Furthermore, since the effect of legal

[9] Countries that increased (decreased) the stringency of labour legislation are considered as those where the majority of the reforms implemented during the period under consideration increased (decreased) existing levels of protection.

regulation is likely to take some time until it impacts unemployment rates, we lag our variable that measures the reform stance. Our baseline model takes the following form:

$$Unr_{i,t} = \beta_0 + \beta_1 * Unr_{i,t-1} + \gamma * Ref\_Stance_{it-1} + \sum_k \delta_k * z_{k,it} + \alpha_i + \lambda_t + \varepsilon_{i,t}$$

where $Unr_{i,t}$ represents the unemployment rate in county *i* at time *t*, β_0 is the constant, $Unr_{i,t-1}$ is the lagged unemployment rate, Ref_Stance is the variable representing the reform stance constructed from the policy compendium to capture the degree of deregulation, $z_{k,it}$ are the macroeconomic covariates that we included in the model (GDP gap growth[10], trade openness, tax rate and inflation differential), α_i is the vector containing the country specific fixed effects, λ_t denotes the year dummies and $\varepsilon_{i,t}$ represents the vector of standard errors. Since data on labour market reforms implemented in 2014 is preliminary, the analysis is conducted up to 2013.

The results of the estimations are presented in Table 4 and 5 below[11] – analysing the effect of reforms on unemployment and employment rates respectively. Furthermore, we estimate separate models for developed and developing economies as well as for the entire sample of countries – under the assumptions that labour market reforms interact differently with labour market outcomes in the two groups of countries. Our results show that deregulation contributes to increasing unemployment in the short-term. This result holds in the total sample of countries and for developed economies; while it is not statistically significant for developing ones. However, when turning to the effects of deregulation on employment rates, the results show a negative correlation which is statistically significant for the total sample of countries as well as for developed and developing economies separately. The difference in the results of unemployment and employment for developing economies might be connected to the fact that in these countries, unemployment does not necessarily represent a precise indicator of labour market distress – given for instance the higher role played by informal employment and underemployment in developing countries. Finally, the analysis confirms the findings of previous studies with respect to the relation between unemployment and other macroeconomic variables – such as Baccaro and Rei (2007) and Bassanini and Duval (2006) (see Tables 4 and 5 for details).

[10] Difference between GDP growth at time t and the five year moving average centred at time t.

[11] Additionally, the results of the partial model for the OLS-PCSE and the GLS estimations for the unemployment rate can be consulted in Appendix D.

Table 4: Estimated coefficients of dynamic fixed effects models for unemployment rates (2008-2013)

	OLS-PCSE			GLS		
	Total	**Developed**	**Developing**	**Total**	**Developed**	**Developing**
Unemployment (lag)	0.679***	0.824***	0.393***	0.743***	0.771***	0.472***
	(10.7)	(14.44)	(3.19)	(27.56)	(19.44)	(11.24)
Reform stance	0.200***	0.149***	0.0671	0.0858***	0.0764**	0.0342
	(3.36)	(2.58)	(1.03)	(3.11)	(1.98)	(1.36)
Gap growth	-0.177***	-0.259***	-0.0962***	-0.128***	-0.211***	-0.0787***
	(-6.56)	(-5.36)	(-3.87)	(-12.59)	(-7.33)	(-10.89)
Trade openness	-0.00824	-0.00826	-0.0124**	-0.0110***	0.0105*	-0.00759***
	(-1.08)	(-0.52)	(-2.08)	(-5.71)	(1.68)	(-5.29)
Tax Rate	0.0207***	0.0212*	0.0129**	0.00962***	0.0132**	0.00690**
	(3.13)	(1.88)	(2.07)	(2.65)	(2.21)	(2.37)
Inflation (difference)	-0.00779***	-0.165***	-0.00394**	-0.00495***	-0.185***	-0.00385***
	(-3.58)	(-2.77)	(-2.13)	(-5.00)	(-6.79)	(-5.87)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	466	175	291	466	175	291
Pseudo R2	0.9747	0.95	0.9878			

z statistics in parentheses

$^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 5: Estimated coefficients of dynamic fixed effects models for employment rates (2008-2013)

	OLS-PCSE			GLS		
	Total	**Developed**	**Developing**	**Total**	**Developed**	**Developing**
Employment (lag)	0.737***	0.868***	0.627***	0.747***	0.813***	0.656***
	(15.96)	(13.15)	(10.1)	(33.72)	(18.47)	(23.98)
Reform stance	-0.119***	-0.0836**	-0.0949*	-0.0579***	-0.0267	-0.0624***
	(-3.20)	(-2.17)	(-1.88)	(-2.72)	(-0.98)	(-3.25)
Gap growth	0.120***	0.174***	0.0871***	0.0819***	0.133***	0.0681***
	(6.96)	(4.4)	(5.95)	(10.2)	(5.28)	(11.59)
Trade openness	0.00685	-0.00735	0.0108**	0.00563**	-0.00473	0.00477***
	(1.22)	(-0.54)	(2.33)	(2.42)	(-0.64)	(3.37)
Tax rate	-0.0128**	-0.0281***	-0.000409	-0.00276	-0.0215***	0.00223
	(-2.39)	(-2.76)	(-0.09)	(-0.99)	(-3.73)	(0.75)
Inflation (difference)	0.00498***	0.147***	0.00341***	0.00258***	0.170***	0.00297***
	(3.05)	(3.02)	(2.72)	(2.61)	(5.42)	(4.16)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
N	466	175	291	466	175	291
Pseudo R2	0.9959	0.95	0.9878			

z statistics in parentheses

p < 0.1, ** p < 0.05, *** p < 0.01

4. Conclusions

This paper has examined the determinants of labour market reforms during the recent economic crisis and whether these reforms helped to reduce unemployment rates and increase employment. In order to do so, we exploit a novel policy compendium of labour market reforms that covers policy interventions implemented in 111 developed and developing economies between 2008 and 2014. The compendium shows that the number of reforms has increased since the beginning of the crisis and that most of the reforms have been approved in developed economies – and EU member states in particular. Moreover, the majority of the interventions (equal to 56 per cent) have decreased existing levels of regulation – although this trend largely differs across regions.

Our results indicate that, the presence of an economic crisis followed by high unemployment levels were the strongest predictors of reform activity in developed economies; while in contrast reforms in developing countries were more likely to occur in countries experiencing higher GDP growth. This difference can be related to the fact that reforms in developed economies have mostly aimed at decreasing labour regulation; while the opposite is true in developing countries. In addition, the results show that while reforms of permanent employment contracts, collective dismissals and collective bargaining are sensitive to macroeconomic developments; reforms to temporary employment contracts and other forms of employment do not necessarily respond to business cycle fluctuations.

The paper also looks at the short-term effects of the reforms on labour market outcomes. The results show that developed countries that relaxed existing levels of workers' protection experienced a temporary increase in the unemployment rate; while the effect was not statistically significant in developing countries. However, in both groups of economies deregulation is associated with a fall in the employment rate in the following year. These findings point towards negative short-term effects of deregulatory labour market reforms – while the medium to long-term effects cannot be explored at this point with the data at hand.

Two caveats of our analysis should be noted. Our analysis is temporarily restricted to reforms that have taken place between 2008 and 2014. Further studies should test whether the relationships we uncovered in our empirical analysis also hold for longer time periods. Second, although our geographical coverage improves the scope of analysis to countries not covered by previous studies, our data sources are limited to English language sources. This suggests that our database might have excluded a number of interventions, leading us to underestimate the scale of changes.

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Appendix A: List of countries included in the analysis

Developed Economies and European Union
European Union
Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
Poland
Portugal
Romania
San Marino
Slovakia
Slovenia
Spain
Sweden
United Kingdom

Non-EU Developed Economies

Canada
United States
Australia
Israel
Japan
New Zealand
Norway
Switzerland

Central and South Eastern Europe (non-EU) and CIS
Central and South Eastern Europe
Albania
Macedonia
Montenegro
Serbia
Turkey

Commonwealth of Independent States
Armenia
Azerbaijan
Belarus
Georgia
Kyrgyzstan
Republic of Moldova
Russian Federation
Tajikistan
Ukraine

South Asia
Afghanistan
Bangladesh
India
Maldives
Pakistan

South-East Asia and the Pacific
South-East Asia
Cambodia
Indonesia
Lao People's Democratic Republic
Malaysia
Philippines
Thailand
Viet Nam
Pacific Islands
Fiji
Kiribati
East Asia
Afghanistan
Bangladesh
India
Korea, Republic of
Maldives
Pakistan

Latin America and the Caribbean
Antigua and Barbuda
Argentina
Barbados
Bolivia
Brazil
Colombia
Costa Rica
El Salvador
Grenada
Jamaica
Mexico
Panama
Peru
Uruguay
Venezuela

North Africa and the Middle East
Egypt
Iran, Islamic Republic of
Jordan
Morocco
Sudan
Syria
United Arab Emirates

Sub-Saharan Africa
Angola
Burkina Faso
Cameroon
Cape Verde
Central African Republic
Congo
Djibouti
Ethiopia
Gabon
Guinea
Madagascar
Malawi
Mauritius
Mozambique
Rwanda
Senegal
South Africa
Swaziland
Uganda
Zambia
Zimbabwe

Appendix B: Summary of the variables used in the empirical analysis

Table B.1: Description of the variables included

	Definition	Number of Countries	Years	Source
Total Reforms	Number of labour market reforms passed in each country annually	111	2008-2014	Own coding based on LABREF, NATLEX and EPLEX databases.
Reform Stance	Number of reforms that decrease labour market regulation, net of the number of reforms that increase it	111	2008-2014	Own coding
Unemployment	Total unemployment rate (%)	107	2007 -2014	ILO WESO Database
Gap Growth	Difference between GDP Growth at time t and the five year moving average centered around time t	107	2007-2014	IMF WEO Database
GDP Growth	Annual GDP Growth	107	2007-2014	IMF WEO Database
GDP per Capita	GDP per Capita based on purchasing power parity	110	2007-2014	IMF WEO Database
Government Net Debt	General Government net debt as % of GDP	107	2007-2014	IMF WEO Database
Trade Openness	Sum of Exports and Imports of goods and services as a share of GDP	108	2007-2014	IMF WEO Database
Tax Rate	Top marginal income tax rate (variable 1Di)	97	2007-2012	Economic Freedom of the World Dataset
Inflation	Annual percentages of average consumer prices, year-on-year changes	110	2007-2014	IMF WEO Database

Table B.2: Descriptive statistics

Variable	Mean	Std. Dev.	Min	Max	N
Total Reforms	0.81	2.02	0	24	770
Reform Stance	0.1	1.4	-5	18	868
Unemployment	8.58	5.62	0.2	34.9	828
GDP Growth	3.13	4.4	-36	25	828
Gap Growth	-0.09	3.12	-31.58	10.04	834
GDP per Capita (log)	9.14	1.21	6.18	11.29	863
Government Net Debt	51.7	32.56	3.685	243.519	835
Trade Openness	93.49	57.07	22.11	458.33	723
Tax Rate	39.18	22.15	0	100	573
Inflation (difference)	-0.08	11.3	-150.7	229.6	757

Appendix C: Additional Graphs

Figure C.1 Relation between the average number of reforms decreasing/increasing protection (2008-2014) and the unemployment rate (2014)

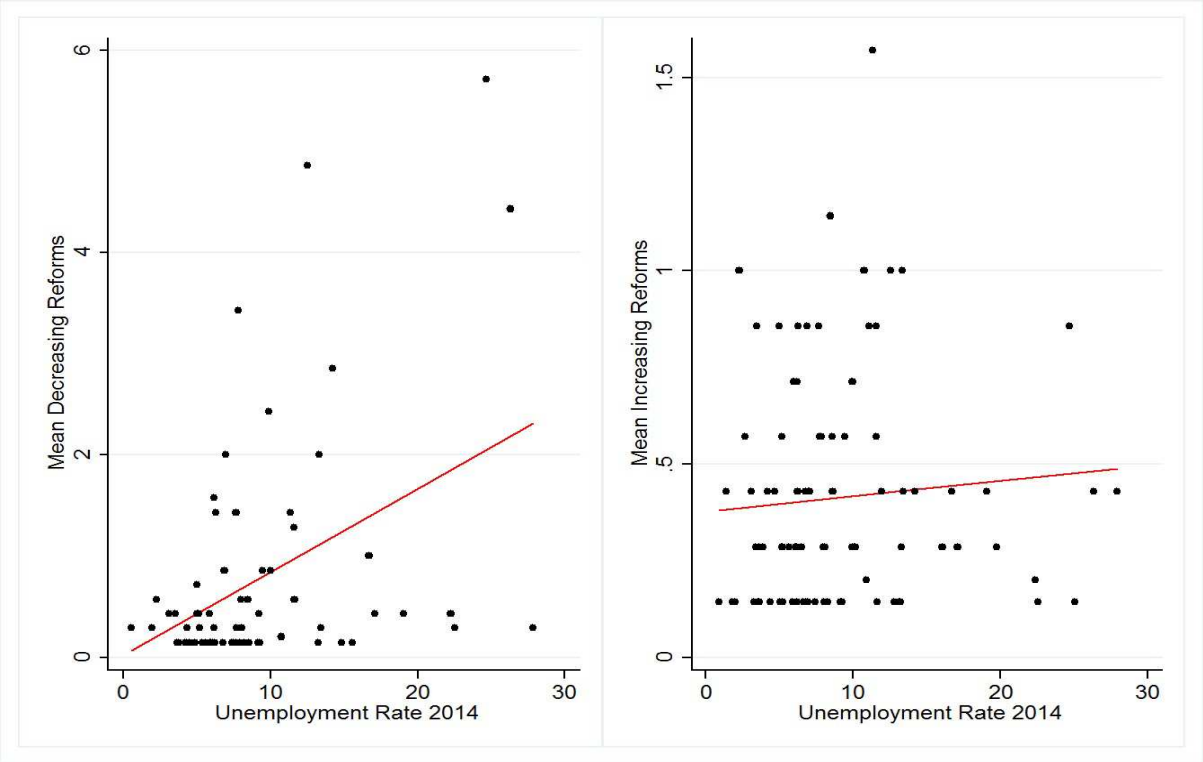
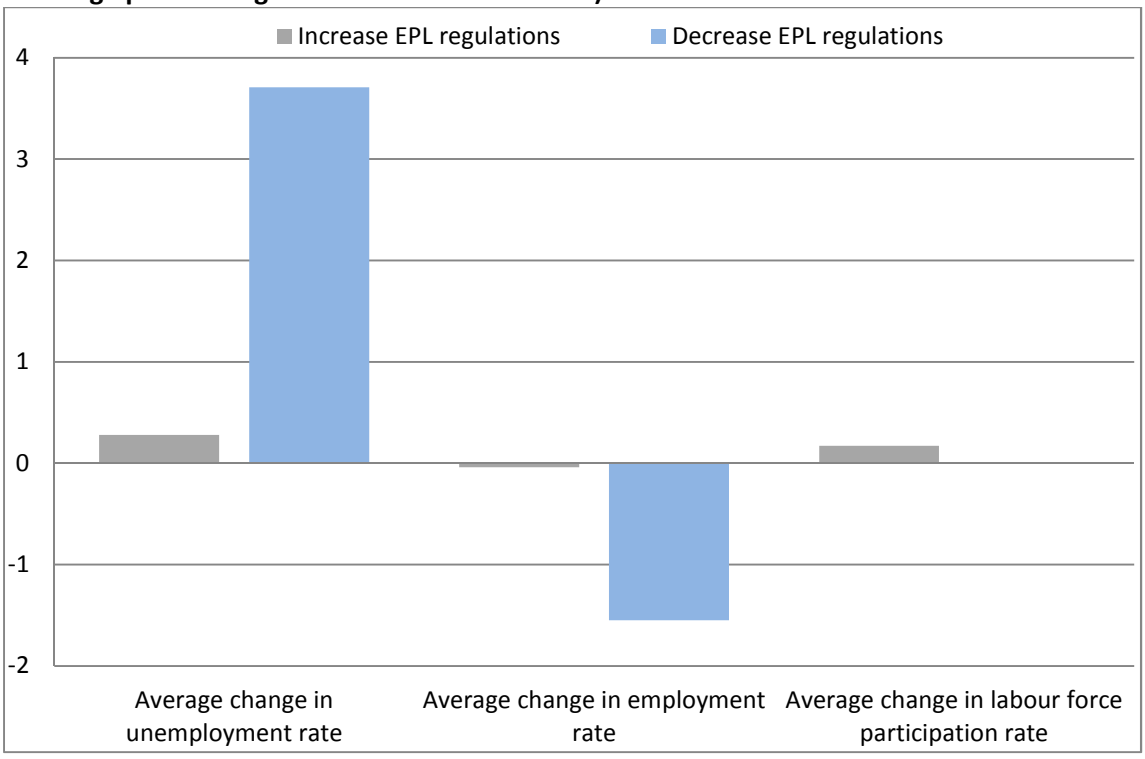


Figure C.2 Labour market developments by countries classified by overall changes in EPL (percentage point changes between 2008 and 2014).



Appendix D: Specifications of the OLS-PCSE and GLS Regressions

Table D.1 Estimated coefficients of the partial OLS-PCSE regression models of unemployment (2008-2013).

	Model(1)	Model(2)	Model(3)	Model(4)	Model(5)
Unemployment(lag)	0.672***	0.715***	0.731***	0.674***	0.679***
	(13.27)	(15.34)	(12.68)	(10.51)	(10.7)
Reform Stance (lag)	0.0998**	0.0894**	0.0939**	0.200***	0.200***
	(2.49)	(2.41)	(2.26)	(3.34)	(3.36)
Gap Growth		-0.124***	-0.149***	-0.161***	-0.177***
		(-6.62)	(-7.18)	(-6.64)	(-6.56)
Trade Openness			-0.00642	-0.0113	-0.00824
			(-1.19)	(-1.48)	(-1.08)
Tax Rate				0.0202***	0.0207***
				(3.05)	(3.13)
Inflation(difference)					-0.0077***
					(-3.58)
Constant	3.116***	2.943***	3.175***	6.319**	5.018
	(5.78)	(6.76)	(5.4)	(1.98)	(1.58)
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
N	723	723	595	466	466

z statistics in parentheses
*p < 0.10, ** p < 0.05, *** p < 0.01

Table D.2: Estimated coefficients of the partial GLS regression models of unemployment (2008-2013).

	Model(6)	Model(7)	Model(8)	Model(9)	Model(10)
Unemployment(lag)	0.669***	0.712***	0.789***	0.750***	0.743***
	(31.14)	(35.32)	(44.84)	(27.7)	(27.56)
Reform Stance (lag)	0.0293*	0.0284*	0.016	0.0805***	0.0858***
	(1.66)	(1.65)	(0.81)	(2.81)	(3.11)
Gap Growth		-0.0865***	-0.106***	-0.127***	-0.128***
		(-11.18)	(-13.16)	(-14.10)	(-12.59)
Trade Openness			-0.00684***	-0.0122***	-0.0110***
			(-3.62)	(-8.21)	(-5.71)
Tax Rate				0.0106***	0.00962***
				(2.9)	(2.65)
Inflation(difference)					-0.00495***
					(-5.00)
Constant	2.888***	2.530***	2.397***	2.114***	2.148***
	(8.77)	(11.82)	(9.44)	(4.91)	(6.62)
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes
N	723	723	595	466	466

z statistics in parentheses
*p < 0.10, ** p < 0.05, *** p < 0.01