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Did recent reforms facilitate EU labour market adjustment? Firm level evidence

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Abstract
The paper analyses the effectiveness of the labour market reforms implemented in a number of EU countries during the recent crisis using qualitative data from a firm-level survey conducted in 2014-2015 in 25 EU countries. This data set contains information on firms' perceptions on the easiness to adjust labour input and wages in 2013 compared to the prereform period together with firms' and workers' characteristics and information on the economic and institutional environment in which firms operate. We find that firms in countries that undertook wider labour markets reforms found it easier to adjust employment and wages, and they largely attribute this to the reforms in labour legislation. Consistent with the efficiency wage theory, we find that firms employing a higher share of skilled employees were less likely than those with relatively more unskilled workers to find it easier to adjust wages and lay off employees. Furthermore, firms applying firm-level agreements found it easier to adjust wages in 2013 than in 2010 suggesting that they benefited from the increased flexibility provided by these agreements.

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1. Introduction

Labour market rigidities tend to limit the margins firms have at their disposal in order to adjust costs when needed. This is typically more evident during periods of a significant downturn in economic activity when firms need to make large cost adjustments in order to survive. Downturns could be then particularly enlightening on the need for labour market reforms to overcome rigidities. The idea is that a crisis can spur reforms as policy-makers can justify the need of these reforms and, probably, the political costs of the reform are lower in that economic environment[1].

The global financial crisis and the subsequent sovereign debt crisis led to a reduction in output and increases in unemployment in many EU countries. In this context, many countries adopted various labour market measures in order to tackle the impact of the crisis on the labour market and increase firms' ability to adjust to shocks and foster competitiveness. However, the most comprehensive labour market reforms were implemented in the Southern European countries that were mostly affected by the crisis.

This paper sheds some light on the effectiveness of these reforms drawing on the third wave of the Wage Dynamics Network survey (WDN3), a firm-level survey that was conducted in 25 EU Member States during the second half of 2014 and the beginning of 2015 and covers the period 2010-13, when the bulk of these reforms were implemented[2]. The WDN3 collected information on how firms adjusted wages and employment to the various shocks and on the impact of labour market reforms on firms' ability to adjust.

The paper contributes to the literature by providing comparable information across countries on the effectiveness of reforms. It uses as the basis for the analysis firms' perceptions about the impact of reforms on their ability to adjust labour input and wages. Typically, reforms are evaluated on the basis of indicators (i.e. OECD EPL index) that capture the changes in the underlying legislation. These are very useful objective indicators; however, they do not provide any information either on the actual application of the legislation or on the impact of the legislation on firms' actual ability to adjust. The WDN3 survey overcomes this limitation as it asks firms about their actual experience with labour market reforms, making it possible to evaluate whether the changes in legislation had a noticeable impact on their ability to adjust labour costs and so giving an indication of the effectiveness of these reforms.

1. Studies focusing on the political economy of reforms suggest that crises often create opportunities for reforms, see for instance Annett (2007), OECD (2009) and Bentolina et al (2012).

2. The survey was conducted in the context of the Wage Dynamic Network (WDN), a research network organized by the European System of Central Banks (ESCB). Denmark, Finland and Sweden are the only three EU countries not covered by this WDN survey.

Our results suggest that recent reforms have been quite effective. In particular, in countries that have reformed their labour markets we find that a significant share of firms found it easier to adjust labour input and wages. Moreover, firms attribute these changes mainly to the reforms of labour laws. In addition, we also find that firm characteristics matter for these perceptions. In particular, firms employing a higher share of high skilled employees were less likely than those with relatively more unskilled workers to find it easier to adjust wages and lay off employees, which is consistent with the efficiency wage theory. It seems therefore than even if the legislation allows it some firms may not be willing to cut wages and lay-off employees as this would make future hiring of good quality employees more difficult. Finally,larger firms and those applying agreements negotiated at the firm level were more likely to find it easier to lay off and to hire employees; in addition, the latter also found it easier to adjust wages.

The rest of the paper is organised as follows. Section 2 provides a literature review. Section 3 discusses the data used in the paper. Section 4 discusses briefly the main reforms that took place in European countries during the survey reference period and provides some descriptive statistics about the effectiveness of labour market reforms. Section 5 presents the results of a multivariate analysis of the factors influencing firms' perceptions. A final section concludes.

2. Related literature

The studies on the role of labour market institutions and regulations for the adjustment capacity of European firms have a long history. In the 80s, the literature focused on the role of institutions in causing the so-called Eurosclerosis, i.e. European stagnation characterised by high and persistent unemployment.[3] Barro (1988) attached a key role to rigid labour market institutions in this regard, whereas Bertola (1990) claimed that job security provisions alone cannot be blamed for the high unemployment in European countries.

Blanchard and Wolfers (2000) initiated another strand of the literature that focused on the interaction between institutions and shocks to explain the rise in European unemployment since the 1960s. They find that rigid institutions, such as higher replacement rates, longer duration of unemployment benefits, higher employment protection legislation, higher tax wedges, higher union contract coverage and density lead to a larger effect of shocks on unemployment. In contrast, active labour market policies and coordination lead to a smaller

3. This term was coined by Herbert Giersch in the 1970s. He pointed to wage rigidity as the most important factor behind the limited adjustment capacity. Following Blanchard and Katz (1999) seminal paper on delayed responses of wages to the unemployment rate, wage rigidity has been studied comprehensively for the EU countries.

effect. Along similar lines, Bassanini and Duval (2006) show that high and long-lasting unemployment benefits, high tax wedges and stringent, anti-competitive product market regulation are found to increase aggregate unemployment. By contrast, highly centralised and/or coordinated wage bargaining systems are found to reduce unemployment. On the other hand, stringent employment protection and high union density seem to have no significant implications for unemployment in their setting.

More recently, the proliferation of micro data has further triggered the empirical literature on the importance of institutions for labour market developments. There is a general consensus that institutions matter for labour market outcomes. For example, Haltiwanger et al. (2014) show that even after controlling for industry and size effects, there remain significant differences in job flows across countries that could reflect differences in labour market institutions. Bertola et al. (2012), using firm level data from the first wave of the WDN survey, find that product market competition forces firms to do more frequent adjustments, but these are limited by institutions. Similarly, Fabiani et al. (2015) conclude that different combinations of labour adjustment strategies used by firms in EU countries depend crucially on countries' institutional settings. A recent paper by Boeri and Jimeno (2015, 2016), which partly relies on the WDN3 data, argues that labour market institutions and their interaction with shocks, in particular demand and financial shocks, play an important role in explaining cross-country differences in Europe.

There is however less consensus when examining the specific effects of each institution. The effects of employment protection (EPL)[4] and wage bargaining on labour market outcomes are among the most studied and most debated in the recent empirical literature. For example, Gómez-Salvador et al. (2004) find a negative effect of EPL on job reallocation even after controlling for the effect of other labour market institutions. Messina and Vallanti (2007) find that stricter EPL reduces job destruction in downturns, but has only marginal effects on job creation.[5]

4. Some authors have investigated the role of the EPL for other adjustment channels. For example, Cingano et al. (2010) found that higher EPL reduces investment, capital and value added per worker in high reallocation sectors relative to low reallocation sectors, while increasing the average frequency at which firms adjust their capital stock. Furthermore, reduction in capital per worker and value added per worker seems to be less evident in financially sound firms. Andrews and Cingano (2014) examined the extent to which regulations that affect product, labour and credit markets also influence productivity. They found that stricter EPL makes the reallocation of resources across heterogeneous firms less efficiency enhancing.

5. Some country studies also investigated similar questions. See, for instance, Schivardi and Torrini (2004, 2008), Boeri and Jimeno (2005), Kugler and Pica (2008), Leonardi and Pica (2007, 2013), Cingano el al. (2016), Gianfreda and Vallanti (2013), Battisti and Vallanti (2013) for Italy, Bauer et al. (2007) for Germany, Martins (2009) for Portugal or von Below and Thoursie (2010) for Sweden.

The impact of the degree of wage bargaining centralisation on employment and wages is even less clear. Outcomes seem to differ substantially between different countries, depending on the actual bargaining power of unions and large cross-country differences in the rules of the game. For example, Dustmann et al. (2014) show that sector-level agreements in Germany have allowed differentiated wage setting, thereby facilitating employment growth. In contrast, the widespread use of extensions of sector agreements in Portugal has been found to negatively affect employment (Martins 2014 and Guimarães et al., 2017). Galuscak et al. (2012) use previous waves of the WDN data to investigate the determinants of wages of newly hired workers and find that countries with higher-level collective agreements report more often internal pay structures as the main determinant of hiring payments. Using the same dataset, Bertola et al. (2012) show that reducing labour cost is less likely to be accomplished by wage reductions if wage contracts are signed at higher bargaining levels.

Most of the above-mentioned literature uses institutional indicators, such as the OECD's Employment Protection Legislation Index (EPL), which are constructed by classifying the various elements of the underlying legislation. While being praised because of standardization across countries, they have also been criticized in the literature. For example, Bertola et al. (2000) claim that methods used to construct those indicators do not mirror changes of the employment protection undertaken since 1980 and that the OECD EPL indicator cannot fully reflect the increased dualism of labour markets. To partly address these limitations, the so- called 'narrative approach' initiated by Romer and Romer (1989) was used lately in the empirical work.[6] This approach identifies the precise date of the reform implementation and has somewhat broader cross-country and time-series coverage, but is more subjective and therefore more prone to criticism. Furthermore, none of these approaches provide any information either on the actual application of the legislation or on the effectiveness of reforms. In this paper, we use the firm data to fill the gap and evaluate the effectiveness of reforms. The characteristics of our data set, as explained in the next section, can therefore overcome the above limitations.

3. Data and sample

This paper uses firm-level data from the third wave of the WDN survey (WDN3), which was conducted in 25 EU countries during the second half of 2014 and the beginning of 2015 in the context of a research network organized by the European System of Central Banks (ESCB).[7] The survey collected

6. See for instance International Monetary Fund (2016) and Duval et al. (forthcoming).

7. The first wave of the WDN survey (WDN1) was carried out by 17 national central banks (NCBs) between the end of 2007 and the first half of 2008. It collected information on wage

information from about 25,000 firms in manufacturing, energy, construction, trade, market services, and financial intermediation and, for some countries, non-market services. The sample used in this paper covers 23,226 firms.[8] The countries conducting the survey used a harmonised questionnaire which resulted in a cross-country data set that provides comparable information on firms' adjustment during the crisis. In particular, the value added of this survey, is that it also collected information on the impact of labour market reforms on firms' ability to adjust. This is done for the period 2010- 2013, when the bulk of reforms were implemented. In addition, as in the previous two waves, it provides information on various firms' characteristics, including some information about workers composition in terms of tenure or skill, as well as features of the institutional and economic environment in which firms operate.

4. Main labour market reforms and descriptive statistics

Labour market reforms took place in many EU countries during the period 2010-13. However, the composition of the measures adopted differed across countries as they responded to different labour market situations. During the initial phases of the crises, i.e. 2007-10, many EU countries adopted measures aimed at maintaining employment (i.e. employment subsidies, subsidised training programs, short-time work schemes), providing a safety net for the vulnerable (i.e. extension of unemployment benefits) and reducing labour cost (i.e. suspension of wage indexation schemes). As the crisis progressed, wider reforms in severely hit countries were adopted with the aim of making labour markets more efficient and increasing firms' ability to adjust to the shocks affecting them.

The structural measures adopted in the countries most affected by the crisis included mainly measures to reduce employment protection legislation for regular contracts and changes in the structure of wage bargaining with the main aim of making the adjustment of wages easier, especially, in the presence of negative shocks. For instance, employment protection for open- ended contracts was reduced in Estonia, Greece, Spain and Portugal. In Greece and Spain, the structure of the bargaining system has also changed. In Greece, firm-level agreements can now prevail over sectoral/occupational agreements giving firms

setting at the firm level during a period of economic stability and relatively stable growth, namely 2002-07. In the summer of 2009, ten NCBs conducted a more focused follow-up survey with the specific aim of understanding firms' reactions to the initial stage of the crisis (2008-09).

8. Firms with less than 5 employees and firms operating in non-market services are excluded from our analysis for homogeneity across countries since these firms are sampled only in some countries. A description of the sample by country is provided in Table A1 in the Appendix. The distribution of the sample across sectors and size categories is provided in Tables A2 and A3 in the Appendix.

the ability to adjust labour conditions and labour costs according to their needs. In Spain, also a widening of opt-out clauses gave firms more leeway to diverge from higher level agreements that generally account for average developments in wages and may restrict the ability of firms to adjust to idiosyncratic shocks. In Portugal, more stringent criteria for the extension of collective wage agreements were introduced and working time adjustment has become easier with the creation of the “working time accounts”.

Ireland and Cyprus were countries also much affected by the crisis. In Ireland, however, labour markets were already fairly flexible before the crisis. Therefore the measures adopted were less structural than those adopted in countries like Greece, Spain and Portugal. In Ireland therefore the measures adopted involved mainly short-time work schemes, training programs, and minimum wage reductions. In a similar vein in Cyprus, the labour market measures adopted involved mainly employment subsidies, training schemes and the suspension of the wage indexation scheme in the private sector.[9] Finally, in Italy the most important structural measures were adopted in 2013-2014, after the survey reference period. It is therefore highly unlikely that the survey will capture the impact of these reforms.

4.1. Firms perceptions about the easiness to perform certain actions

In order to collect information on the effect of reforms on the ability to adjust to shocks the WDN3 survey asked firms to indicate whether it had been easier or more difficult to perform a set of adjustments in 2013 than in 2010. More specifically, they were asked whether:

- it had become easier or more difficult to lay off employees (collectively, individually, temporarily and for disciplinary reasons);
- it had become easier or more difficult and to adjust working hours and hire employees;
- it had become easier or more difficult to move employees to other positions or other locations;
- it had become easier or more difficult to lower the wages of incumbent workers and offer new employees lower wages;

In each case firms were asked to provide a response on a five point scale: 1=much less difficult, 2= less difficult, 3=unchanged, 4=more difficult, 5=much more difficult.

Charts 1 to 4 show that a significant share of firms in many EU countries answer that it had become less difficult or much less difficult to perform each of the above actions. In particular, in countries, where the most structural

9. For a detailed analysis of the main labour market reforms taking place in the EU countries during the recent crises see Izquierdo et al. (2017), Annex 2.

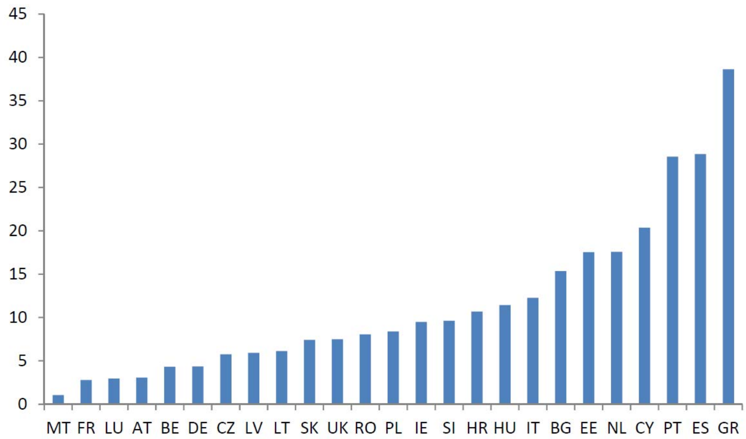

FIGURE 1: Easier to lay off employees (% of firms)

Source: WDN3.
Note: Figures weighted to reflect overall employment and rescaled to exclude non-responses.

measures were taken, the proportion of firms reporting that it had become easier to adjust is significantly higher than that of the other countries. For instance, around 39% of firms in Greece and 29% of firms in Spain and Portugal say that it had been easier to lay off employees.11,12 In Greece 63% of firms reported that it had become easier to lower the wages of incumbents, while 80% say that it had become easier to offer new workers lower wages. In Spain and Cyprus, a significant proportion of firms also stated that it had become easier to adjust their wage bill. The proportion of firms reporting that it had become easier to adjust hours, hire employees, move employees to other places and positions is also significant in the countries adopting the most significant labour market measures. In the other EU countries, the share of firms is around or even lower than 20%. However, many firms in these countries considered that adjusting working hours had become much easier than other strategies. This can be partly explained by the short-time work schemes, which were widely adopted during the crisis.

Another finding of the survey is that even in countries that had significantly reformed their labour markets there were still firms that found it more difficult to adjust in 2013 as compared with 2010. Charts 5 and 6 account for this fact and provide a cross-country overview of the effectiveness of labour market reforms In particular, they present the difference in the share of firms reporting that it had become easier and these reporting that it had become more

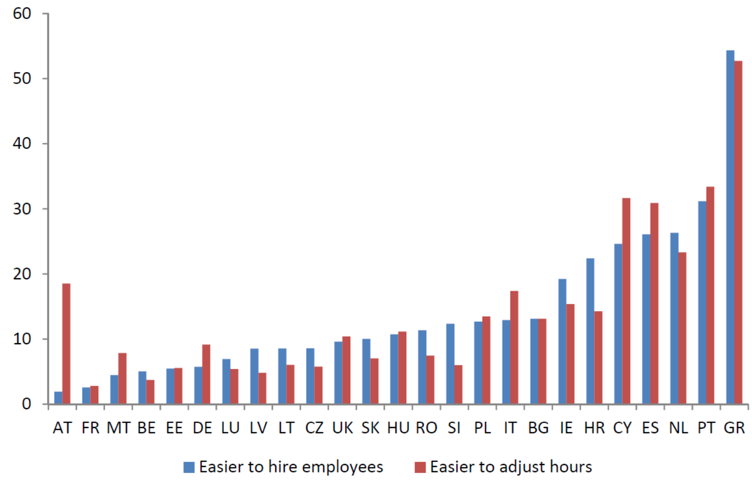

Figure 2: Easier to adjust hours and hire employees (% of firms)

Source: WDN3.
Note: Figures weighted to reflect overall employment and rescaled to exclude non-responses.

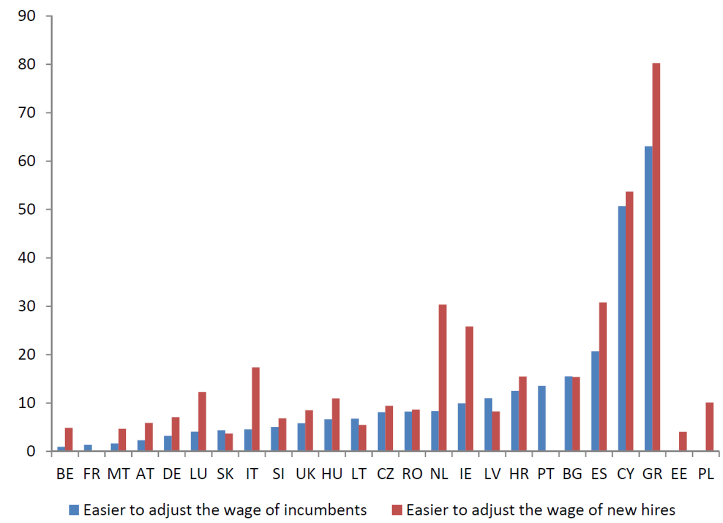

Figure 3: Easier to adjust wages (% of firms)

Source: WDN3.
Note: Figures weighted to reflect overall employment and rescaled to exclude non-responses.

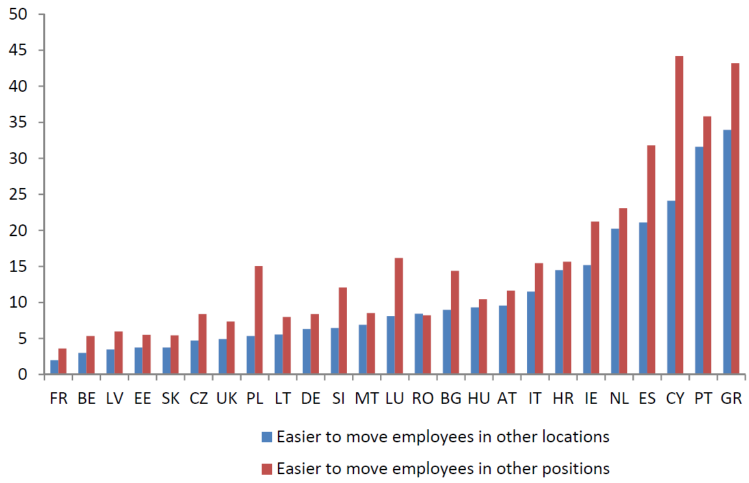

FIGURE 4: Easier to move employees (% of firms)

Source: WDN3.
Note: Figures weighted to reflect overall employment and rescaled to exclude non-responses.

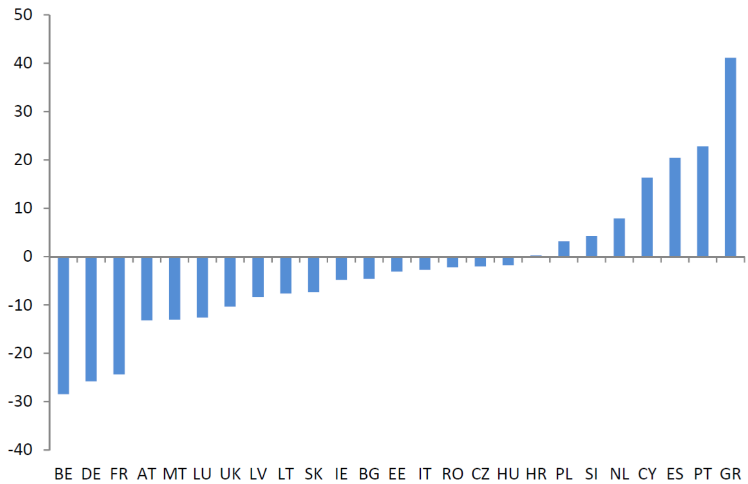

FIGURE 5: Net change in ease of adjustment of empl. 2010-2013 (% of firms)

Source: WDN3.
Note: Figures rescaled to exclude non-responses.

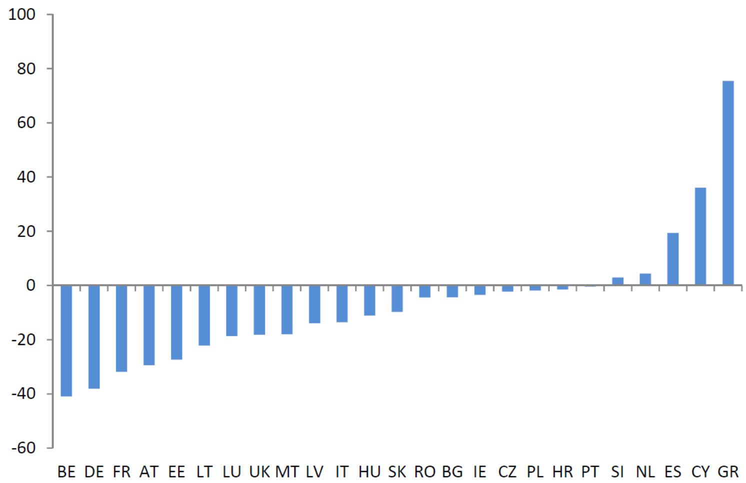

FIGURE 6: Net change in ease of adjustment of wages 2010-2013 (% of firms)

Source: WDN3.
Note: Figures rescaled to exclude non-responses.

difficult to adjust employment and wages in 2013 as compared with 2010.[10] Consequently, the positive values for the countries where the largest and most wide-ranging labour market reforms were implemented further show that reforms have been perceived as facilitators of labour market adjustment.

Another question, which was however not included in every country's questionnaires, allows us to relate directly firms perceptions about of the ease to perform certain actions with reforms. In particular, the survey asked firms to indicate the factors influencing their answer to the question on how easy it had become to perform certain actions.[11] Table 1 shows the modal answer, i.e. the most frequently cited reason for firms answering that it had become easier to perform an action. For those countries that have significantly reformed their

10. For expositional purposes, Chart 5 and 7 provide the average proportion of firms across the all the employment adjustment channels. Similarly, Chart 6 and 8 provide the average proportion of firms across both wage adjustment channels, i.e. adjustment of the wage of incumbents and new hires.

11. Firms were asked which of the following four factors made it easier or more difficult to perform the above actions: a) reforms of labour laws, b) a change in law enforcement, c) a change in the behaviour of trade unions, and d) a change in the behaviour of individuals. This question was not asked in every country in the sample; answers are available only for ten countries (the Czech Republic, Estonia, Spain, Greece, Croatia, Hungary, Italy, Luxembourg, Poland and Romania).

labour markets, i.e. Greece and Spain, the most frequently cited answer when it comes to the ability to adjust labour input and the wage bill is the reform of labour laws. In Estonia, where employment protection was significantly reduced, firms frequently cite labour reforms as the factor making it easier for them to adjust their labour input. Firms' perceptions of the ease of adjustment, as recorded in the WDN3 survey, therefore contain important information on the effectiveness of these labour market reforms. However, it must be borne in mind that the ease of adjustment may also hinge on other factors. For example, those Spanish and Greek firms that reported that cutting incumbents' wages was easier in 2013 than in 2010 attributed particular importance to changes in workers' attitudes, as did firms in non-reform countries. This confirms the notion that in an uncertain environment, workers are more likely to accept lower wages in order to save their position or when entering the labour market. The next section uncovers the possible interaction between firms' perceptions and firms' characteristic that may explain why labour market reforms may not benefit all firms equally.

	Lay off employees collectively	Lay off employees individually	Lay off employees for disciplinary reasons	Lay off employees temporarily	Hire employees	Adjust working hours	Move employees to other locations	Move employees to other positions	Adjust wages of incumbents	Offer new employees lower wages
CZ	4	4	4		4	4	4	4	4	4
EE	1	1	1		4	2	1/2*	4		4
ES	1	1	1	1	1	1	1	4	1	1
GR	1	1	1	1	1	1	4	4	1	1
HR	1	1	1	1	1	1	1	1/4*	4	4
HU	1	1	1	1	1	1	1	1	1	4
IT	1	1	2	1	1	4	4	4	4	1
LU	1	2	4	1	4	4	4	4	4	4
PL	1	2	4	4	4	4	4	4		4
RO	2	2	2	2	4	2	4	4	4	4

TABLE 1. Most frequently cited reason for the ability to perform the following actions (modal answer)

Source: WDN3.
Note: 1=reform of laws, 2=law enforcement, 3= changes in the behaviour of unions, 4= changes in the behaviour of individuals.
* Two reasons are cited most frequently.

5. Determinants of firms' perceptions about easiness to adjust

This section sheds some light on the features of those firms that were more prone to benefit from the greater ease of adjustment of labour costs. It presents the results of the regression analysis on the relationship between firms' perception about the easiness to perform certain actions, the various firms' characteristics and the environment in which they operate. In particular, we perform probit regressions where the dependent variable is the change in the ease to perform certain labour market adjustments. This variable takes the value of one if firms consider less difficult or much less difficult to perform these actions. All the regressions include country and sector fixed effects to control for unobserved country and sectoral effects. Country effects are likely to also capture the differences in the institutional environment across countries.

With these regressions, we are therefore able to capture how the various firm characteristics and the economic environment influence firms' perceptions controlling for the different institutions i.e. the fact that labour laws in some countries make the adjustment of firms easier. The main control variables are capturing the composition of firms' labour force (share of skilled and permanent workers), the economic environment, i.e. whether the firms have been negatively affected by demand shock and financial constraints, and some institutional variables, i.e. whether the firms are covered by agreements signed at the firm level or outside the firm.

5.1. Firm characteristics and the environment in which the firm operates

Table 2 presents the results of the baseline regression – the one with the set of main control variables. Firms facing a demand shock and financial constraints are more likely to perceive it easier to adjust wages and labour input using all the individual margins of labour cost adjustment. As firms' influenced by negative demand and credit constraint shocks may have actually used some of the above margins, this result is likely to indicate that firms that used these margins of adjustment are more likely to perceive it easier to adjust.

Interestingly, larger firms are more likely to find it easier to adjust labour input compared to smaller firms (5-19 employees) after the implementation of the different reforms. This is likely to indicate that larger firms are more able to have the infrastructure, such as specialized legal departments, that will allow them to exploit all available adjustment options or, at least, to reduce the period needed to fully learn how to use the new legal possibilities.

Regarding employees characteristics, firms employing a higher share of permanent workers are less likely to perceive it easier to adjust the wage of new hires. Probably, this is just reflecting that these firms are less likely to offer new hires a lower wage. This result could be interpreted in the context of insider-outsider theories (see Lindbeck and Snower, 1988). Incumbent workers may not cooperate with newly hired employees especially if they are hired to replace workers with higher wages that were made redundant.

Another interesting result is that firms employing a higher share of skilled workers are less likely to find it easier to lay off employees, adjust the wage of incumbents or adjust working hours. Again, the first two results could be interpreted in the context of efficiency wage theories (Bewley, 1995 and Campbell and Kamlani 1997). Firms employing a higher share of

high-skilled employees are less likely to be willing to lay-off employees, even if legislation allows it, since the cost of hiring and training high-skilled employees may be high. Further, they may not want to lay-off or cut the wages of skilled workers as they may not want to obtain the reputation of a bad employer that will in the future make hiring qualified employees difficult. Regarding the ease to adjust working hours this may be related to the fact that shift work, part-time work etc. is not widespread among skilled workers and therefore hours adjustment is a margin that cannot be easily used for this type of workers. Finally, firms applying firm level collective agreements are more likely to find it easier to lay- off employees, hire employees or adjust the wage of incumbents. For outside agreements, no significant results emerge. In general, firm-level agreements provide flexibility to firms, as negotiations can account for the firms' specific situations and facilitate the necessary adjustment. The increased flexibility provided to firms in the context of firm-level agreements is therefore confirmed by this finding

	Lay-off employees	Hire employees	Adjust working hours	Move employees to other locations	Move employees to other positions	Adjust wages of incumbents	Offer new hire a lower wage
Demand shock	0.07088***	0.01146**	0.02622***	0.01750***	0.02408***	0.02463***	0.05555***
	(9.345)	(2.022)	(4.638)	(3.526)	(4.213)	(5.158)	(8.936)
Finance shock	0.03872***	0.00467	0.01665***	0.01829***	0.02450***	0.01111**	0.02799***
	(4.610)	(0.767)	(2.729)	(3.352)	(3.876)	(2.170)	(4.145)
Permanent workers	-0.01460	-0.00047	0.00625	-0.00856	0.01353	0.00502	-0.03092**
	(-0.840)	(-0.0370)	(0.499)	(-0.768)	(1.012)	(0.462)	(-2.185)
Skilled workers	-0.03819***	-0.00413	-0.01520*	-0.00688	-0.00936	-0.01367**	-0.00205
	(-3.477)	(-0.513)	(-1.904)	(-0.949)	(-1.118)	(-2.004)	(-0.226)
Firm agreement	0.01895**	0.01308**	0.01068	0.00404	0.00432	0.01247**	0.01327*
	(2.107)	(1.961)	(1.606)	(0.686)	(0.632)	(2.187)	(1.806)
Outside agreement	0.00027	-0.00142	-0.00039	0.00716	0.00087	0.00571	-0.00574
	(0.0276)	(-0.195)	(-0.0535)	(1.140)	(0.120)	(0.936)	(-0.706)
20-49 employees	0.02729***	0.02279***	0.00529	0.01934***	0.03787***	0.00507	0.01242
	(2.650)	(2.978)	(0.708)	(2.735)	(4.613)	(0.808)	(1.539)
50-199 employees	0.04026***	0.01893**	0.02026**	0.04404***	0.07522***	0.00439	0.01210
	(3.720)	(2.334)	(2.547)	(5.773)	(8.523)	(0.650)	(1.388)
200 + employees	0.05090***	0.01288	0.00017	0.05347***	0.07467***	-0.01194	0.01793
	(3.927)	(1.332)	(0.0186)	(5.842)	(7.076)	(-1.508)	(1.643)
Observations	16318	16696	16677	16452	16587	15679	14785

TABLE 2. Firm' perceptions about the ease to perform certain actions-probit regressions

Notes: Robust z-statistics in parentheses*** p<0.01, ** p<0.05, * p<0.1.
Lay-off employees – the variable takes the value of 1 if the firm finds it much less difficult/less difficult to perform at least one of the following actions: to lay off employees collectively, individually, temporarily and for disciplinary reasons.

5.2. Firm perceptions and actions

It is would be also interesting to know whether firms that have actually adjusted labour input and wages perceive it easier to adjust in 2013 compared to 2010. This would give an indication of whether firms that have adjusted consider that it is now easier to adjust or that there are still factors impeding their adjustment or the margins they have at their disposal in order to adjust Table 3 shows that firms that have reduced permanent and temporary employment find it easier to lay-off employees now. Similarly, firms that have reduced hours are more likely to find it easier to adjust hours (Table 4) and firms that have cut wages or offered new hires lower wages are more likely to perceive it easier to adjust their wage bill (Table 5).[12] Therefore, firms that have actually adjusted wages or labour input seem to find it easier to adjust in 2013 compared to the pre-reforms period. Conclusively, we could say that firms that have adjusted their labour costs seem to have a positive view about the flexibility provided to them in the context of the environment in which they operate.

	Lay-off employees	Lay-off employees
Has reduced permanent employment	0.09589***	
	(11.18)	
Has reduced temporary employment		0.04922***
		(5.130)
Observations	16056	15585

Table 3. Actions and firms' perceptions about easiness to lay off employees-probit results

Robust z-statistics in parentheses*** p<0.01, ** p<0.05, * p<0.1.

Has reduced hours	0.07860***
	(8.731)
Observations	16301

Table 4. Actions and firms' perceptions about easiness to adjust hours-probit results

Robust z-statistics in parentheses*** p<0.01, ** p<0.05, * p<0.1.

12. The regressions presented in Tables 3 to 5 include all the control variables of the baseline regression in Table 2. The results for the main control variables are similar to those presented in Table 2.

	Adjust wages of incumbents	Offer new hire a lower wage
Has cut wages	0.13153***	
	(13.08)	
Has offered lower wage to new hires in 2010-2013		0.04922***
		(11.78)
Observations	14937	8708

Table 5. Actions and firms' perceptions about easiness to adjust wages-probit results

Robust z-statistics in parentheses*** p<0.01, ** p<0.05, * p<0.1.

6. Conclusion

This paper sheds some light on whether the labour market reforms that were implemented in various EU countries during the recent crisis facilitated firms' ability to adjust. We used a cross-country firm-level survey conducted in 2014-2015 in 25 EU countries that contains information on firms' perceptions regarding the ease to adjust labour input and wages before and after the labour market reforms undertaken in 2010-2013. On the basis of these perceptions we found that firms in countries that have reformed their labour markets find it significantly easier to adjust labour input and wages now. In addition, they attribute this ease mainly to the reforms of labour laws. We also find that firms' and employees' characteristics influence perceptions. Firms employing a higher share of skilled employees are less likely to find it easier to adjust wages or lay off employees, which is consistent with the efficiency wage theory. Additionally, firms applying agreements concluded at the firm level find it easier to adjust wages, suggesting that they benefited by the flexibility these agreements provide. Finally, firms that have actually taken action and adjusted labour input and wages, find it easier to adjust now compared to the pre-reforms period. This result is likely to imply that firms that have adjusted labour cost seem to have a positive view about the flexibility provided to them in the context of the environment in which they operate.

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Appendix

Austria	784
Belgium	991
Bulgaria	528
Croatia	301
Cyprus	182
Czech Republic	1011
Estonia	500
France	1156
Germany	2454
Greece	402
Hungary	2032
Ireland	1568
Italy	1102
Latvia	557
Lithuania	515
Luxembourg	674
Malta	178
Netherlands	727
Poland	1530
Portugal	1383
Romania	2043
Slovakia	621
Slovenia	1269
Spain	1975
United Kingdom	654

Table A.1. WDN3 survey - sample distribution by country

Manufacturing	7884
Electricity, gas, water	239
Construction	2306
Trade	5162
Business services	6947
Financial intermediation	688

Table A.2. Sample used in the paper - distribution by sector

5-19 employees	6844
20-49 employees	5705
50-199 employees	5904
200 employees and +	4773

Table A.3. Sample used in the paper - distribution by size

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