Department of Economics and Finance, Chair Applied Statistics and Econometrics

THE EFFECTS OF EMPLOYMENT PROTECTION LEGISLATION ON EMPLOYMENT AND UNEMPLOYMENT RATE

SUPERVISOR
Prof. Giuseppe Ragusa

CANDIDATE
Edoardo Previti Flesca – 174021

A.Y. 2014/2015
Abstract

A labour market characterized by a high occupation rate is the dream that workers, entrepreneurs, politicians and in general people would like to achieve. The goal is indubitable clear for everyone, but still the way in which this could be achieved is source of a fierce debate. The main question that arises from the debate is about the contrast, in general terms, between flexibility and rigidity. The aim of this paper is to slip in the current debate among legislators and economists and try to shed light over the obscure parts that still today impede the implementation of a decisive action towards the reformation and improvement of the so important labour market. Flexibility or rigidity? With all its facets and nuances, this is the question that underlies at the heart of paper and it’s the loadstar that will guide the drawing of the whole research.

Keywords: EPL, employment, unemployment, youth unemployment, labour market, flexibility, rigidity, education
To my grandparents
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1. Introduction

“Nihilque tam certum est quam otii vitia negotio discuti” (Seneca, 62-65 a.C.)

(Labour hunts vices resulting from idleness)

Since the oldest times the role of labour in society has been a central one in the philosophical, political, and, later, economic debate. A fortiori today, the topic is a main issue not only for legislators and economists, as that is their job, but also for citizens and common-knowledge people that continuously ask and talk about labour market regulations and unemployment during their day-life. This could thus be seen as an indicator of how important are nowadays all the issues arising from a not-well-functioning labour market.

By observing the data it’s clear that the unemployment rate has highly increased after the 2008 Great Recession, reaching 12% at the end of 2013\(^1\) and still today remaining far above its pre-crisis level (7.3%\(^2\)). In Europe this very slow and disappointing recovery with rates clearly above the natural level, had led to a rough critique to all the institutions in charge of taking care of this situation\(^3\) along with the creation of anti-euro movements, as for instance in Italy, Spain and Greece\(^4\). A consequence of this frustrating condition is the fact that many people indicate as a scapegoat the rigidity and static nature of the labour market. This is not by chance. The reason why this happens is due to the fact that the United States, which is considered an example of flexible and dynamic country\(^5\), is yet experiencing a high

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1 OECD, referring to the Euro Area in Q3-2013.
2 OECD, referring to the Euro Area in Q1-2008.
3 Schivardi, 1999.
4 See Movimento Cinque Stelle (Italy), Podemos (Spain), Syriza (Greece).
5 Nickell, 1997.
growth and an incredible reduction of the unemployment rate (5.7%)\(^6\), today around half of the one of the Euro Area (11.2%)\(^7\). This is surprising when we take into consideration that the Great Recession all started in the US.

The matter does not end here. There is not only the issue of the quantity of labour, but also the issue concerning its quality. From the 2014 OECD Employment Outlook, but not only\(^8\), emerges also that there are many differences between socio-economic groups within countries.

“*Youth, low-skilled workers and those with temporary jobs appear to cumulate many disadvantages. In contrast, high-skilled workers not only obtain access to more jobs, but also to the best quality jobs.*”\(^9\)

Particularly problematic is indeed the youth\(^10\) situation perfectly represented by the respective European unemployment rate (23.3%)\(^11\), which compared with the US one (13.4%)\(^12\) turns out to be particularly high.

Given this broad overview it becomes clear how the topic is of crucial importance at any economic, social or political level and how pressing it is to find a guiding principle that could lead European countries out of this swamp. Hence, the aim of this paper is to slip into the current debate and try to assess which could be the effects of the nature of the labour market, in terms of flexibility, on other macro-

\(^6\) OECD, referring to the United States in Jan-2015.
\(^7\) OECD, referring to the Euro Area in Jan-2015.
\(^8\) Already in 1999 Katz and Autor noticed this trend. In particular they wrote about the difference between low vs high-skilled workers.
\(^9\) OECD Employment Outlook, 2014, pg. 17. This is explained by the dual market theory, modern theory of what John Elliott Cairnes first, and Alfred Marshall then, defined as “*the non-competing groups phenomenon*”. See also Reich, M. et al, 1973.
\(^10\) When the OECD refers to youth unemployment, is taking into consideration people aged 15-24 who are seeking a job. Therefore, for example, students are not considered.
\(^11\) OECD, referring to the Euro Area in Q3-2014.
\(^12\) OECD, referring to the United States in Q3-2014.
economic variables such as unemployment rate and employment, controlling for other variables such as trade unions and human capital.

The first part of the paper will be focused on the explanation of the main variables we are taking into consideration: Employment Protection Legislation Indexes (EPL)\(^{13}\). The basic items according to which the indexes are calculated will be presented and taken into examination in order to understand its composition along with its possible uses and limitations. In addition, some considerations about the types of flexibility (mainly internal and external) will be presented hand in hand with their relation with the EPL index.

Given all the limitations of EPL index, the second part will be focused on a review of already existing researches and on the assessment of the status quo.

The third part will be the heart of the research. It will be focused on the analysis of the effects that labour market flexibility (measured by the EPL indexes) has on important macro-economic variables, mainly employment and unemployment rate also controlling for others, such as trade unions and human capital. All considerations will be placed side by side to previous researches and presented with the support of data.

### 2. Employment Protection Legislation (EPL)

The first example of regulatory employment protection documented to be put in place was at the beginning of the past century\(^{14}\). Nevertheless, during all the period up to 1960 the principle of freedom of contracts was the dominant one\(^{15}\) and the most important workers protections were developed during the period 1960-1980. Then, at

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\(^{13}\) The EPL Indexes we refer to are yearly OECD elaborations.

\(^{14}\) OECD, Employment Outlook 2013.

\(^{15}\) Sigeman, 2002.
the end of this century, an equilibrium was found. But as anything in history, also regulatory employment protections are in the middle of a continuous shift, like a pendulum that incessantly moves from one edge to the other. No surprisingly, then, the last 7 years have been characterized by a deregulatory process, even more pronounced after the crisis.

The question that now spontaneously arises is: what is EPL? As defined by Andrea Barone (2001), EPL refers to

“... the entire set of regulations that place some limits to the faculties of firms to hire and fire workers, even if they are not grounded primarily in the law, but originate from the collective bargaining of the social partners, or are a consequence of court rulings.”

With this definition in mind it might seem easy to proceed to a calculation and quantification of the current legislation regarding EPL, but unfortunately this is not the case. Some aspects of the regulations can be easily measured, as for example the amount of payments due and, in general, all the numerical aspects. However these are just a part of the whole story. Other factors, such as the concept of just cause, are an important part of the composition of what we have called so far the EPL. In these cases there exists not only a problem of quantification, but also a problem of interpretation since reducing a whole regulation to a single index is not an easy task.

The matter does not end here either. The big differences of the European labour markets also pose serious challenges on the comparability of EPL’s among

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16 OECD, Employment Outlook 2013.
17 For a more detailed definition see Barone, A., 2001, pg. 2.
19 For example, from an article published on the Italian newspaper La Repubblica of 25/09/2014 emerges that the OECD researchers misinterpreted some regulations and therefore wrongly calculated the EPL index.
European countries. This is because regulations and interpretations are different and continuously updated\textsuperscript{20}, but still they have to be traced to a single and unique index.

2.1 How it’s Constructed

Taking into consideration all these problematic aspects regarding the EPL’s measurability we now turn to analyze the basic items according to which the OECD bases its calculations of the EPL Index in order to understand possible uses and limitations. The rationale of EPL is to

“... address the risks for workers associated with the dismissal through a series of requirements to be respected by the employer when dismissing workers. ”\textsuperscript{21}

This requirements include and define all the conditions so that dismissal is lawful: procedural requirements, notice period, payments due to workers in case of early termination of contract and so on. The key synthetics indicator allow us to compare different countries, and are calculated as a value between 0-6 (the higher the value, the higher the rigidity) by the average of 21 basic items which can be classified in three main areas (sub-indicators)\textsuperscript{22}:

1. Protection of regular workers against individual dismissal;

Which includes: notification procedures, delay involved before notice can start, length of notice period, severance pay, definition of justified or unfair dismissal, length of trial period, compensation following unfair dismissal, possibility of reinstatement following unfair advantage, maximum to make a claim of unfair dismissal.

\textsuperscript{20} More on this later. For more details about new developments in the field of labour regulations see also European Commission, 2013.


\textsuperscript{22} OECD, (2014). Calculating Summary Indicators of EPL Strictness: Methodology. See also for more details about the calculations procedure and details on the 21 items.
2. Regulation of temporary forms of employment;
Which includes: valid cases for use of (fixed-term contracts) FTC, maximum number of successive FTC, maximum cumulated duration of FTC, types of work for which (temporary work agency) TWA is legal, restrictions on number of renewals, maximum cumulated duration of TWA assignments, does the set-up of TWA require authorization or reporting obligations, if regulations ensure equal treatment of regular and agency workers at the user firm.

3. Addition, specific requirements for collective dismissal;
Which includes: definition of collective dismissal, additional notification requirements, additional delays involved before notice can start, other special costs to employers.\(^{23}\)

The index for a certain year takes into consideration all legislation in force as of the 1\(^{st}\) January of the same year. Moreover the methodology it has also been recently refined to take into consideration systematically interpretation of legislation and case law.\(^{24}\)

2.2 Limitations

Even though it seems that everything is taken into account with the right distances, there are still some important limitations to mention that have to be better analyzed.\(^{25}\)

1. Some changes in the legislation of Employment Protection do not change the EPL indexes;

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\(^{24}\) OECD, (2013). Employment Outlook 2013, Ch. 2.

\(^{25}\)  Fore more details see Addison and Texeira, (2003).
This might be due to the fact that the change is not big enough to change the value given in the calculation of the index to that specific area, but also because some kind of regulations are not included in the calculation of the index itself. This is the trade-off we are facing in reducing many different and complicated regulations into a summary numerical indicator.

2. *Subjectivity due to the codification of a national rule into a composite index;*

Since every country has it’s own legislation and it’s own interpretation to it’s own legislation, a standardized codification might suffer from subjectivity. For example, weights given to each sub-indicator may be valued differently and it may not include non-legislative data, which are still an important part of the whole story. Moreover exists also the so-called problem of *research Darwinism*, in fact the index are constructed *ex-post facto.*

EU has adopted some general directives setting the standards for a minimum, but as mentioned before even though there is a minimum requirement these directives have to be implemented into very different legal and institutional environment and therefore the index has to reflect these broad differences. In fact there are big differences also between countries of the same area or with similar socio-economic indicators.

The main differences regard the individual dismissal on regular contracts, first of all because of a different definition of *fair dismissal*. In some countries unfair dismissal are circumscribed at those cases not directly linked to economic reasons and, in general, on cases of discrimination (e.g. Belgium, Italy, Greece, Poland, Denmark and others) while in Anglo-Saxon countries there is no need to justify an

27 Venn, (2009).
economic dismissal, and still in other countries dismissal is not justified unless based on effective and relevant reasons\textsuperscript{31}. Other big differences regard protection of workers in case of unfair dismissal, where in some countries there is reinstatement (e.g. Austria, Luxembourg, Czech Republic), in others there is just to pay all foregone wages (e.g. Ireland) while others are required to do both, but there is also difference on the design of severance payments. In some countries they are guaranteed by law (e.g. France, Hungary, Portugal), in others decided through collective bargaining (e.g. Sweden, Denmark) and in others do not exist at all (e.g. Italy, Belgium, Finland)\textsuperscript{32}.

3. Types of flexibility: internal VS external;

In addition to all these, there is a more complicated issue concerning the type of flexibility: namely internal and external. External flexibility refers to the mobility of workers in the macro environment of the labour market at large, while internal flexibility refers to the mobility of workers within the firm\textsuperscript{33}.

“Flexibility in employment is essentially a labour market concept. As markets and the business cycle go through their usual changes, managers of firms find it desirable to shift the size of their work forces.”\textsuperscript{34}

In this perspective it seems clear how internal flexibility can play a very important role in determining unemployment rate. Imagine a situation in which there is a downturn and the managers of firms have to adapt the size of the work force according to the market. The firms might prefer not to dismiss workers, which might have been trained specifically for that position in the company, but rather let them work less in accordance with the workload the company is facing in that specific period. However this is only possible when a certain level of internal flexibility is in place. If for instance there are some regulations constraining the workload for each

\textsuperscript{31} OECD, (2013). Employment Protection Legislation.
\textsuperscript{32} OECD, (2013). Employment Protection Legislation.
\textsuperscript{33} Kucera, (1998).
\textsuperscript{34} Curry, (1993), pg. 101.
worker, then the manager finds himself with the back to the wall and is forced to dismiss some workers. This will increase unemployment rate and put the company in a situation where it’s not able to operate as it would be more profitable for the company itself. It is still not clear up to which point the issues related to internal flexibility are incorporated, if they are at all, in the OECD measures of EPL indexes.

Considering all these limitations these indexes have to be interpreted with extreme caution. Yet they are still a good proxy for quantitative studies regarding the labour market.

2.3 Analytical Overview

Three versions of the indicator are available, which reflects the changes over time in the availability and construction of the index itself.

Version 1: is an un-weighted average of sub-indicators for regular and temporary contracts. The one for regular contracts does not include item 9 (maximum to make a claim for unfair advantage), while the indicator for temporary contracts does not include items 16 (authorization and reporting requirements for TWA) and 17 (equal treatments for TWA workers). Annual times-series data are available from 1985-2008.

Version 2: is the weighted sum of the sub-indicators for regular and temporary contracts and collective dismissal. Annual time-series data are available from 1998-2008.

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35 In order to analyze in depth all limitations much more time and space would be needed. It’s not the purpose of this paper, which just schematically presents the problems.

36 Venn, (2009).

37 For more details see OECD, (2014). Calculating Summary Indicators of EPL Strictness: Methodology.
Version 3: it incorporates three new data items collected for the first time in 2008 (items 9, 16, 17). Data are available from 2008.

Here are presented the summary indicator for the extreme years: 2008 and 2013 for which version 3 is available<sup>38</sup>. The EPL overall strictness index is presented in the table below.

<table>
<thead>
<tr>
<th>Central and Western Europe</th>
<th>Overall Strictness Index - 2008&lt;sup&gt;39&lt;/sup&gt;</th>
<th>Overall Strictness Index - 2013</th>
<th>% Change - (2008-2013)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>2.46</td>
<td>2.46</td>
<td>-</td>
</tr>
<tr>
<td>France</td>
<td>3.32</td>
<td>3.30</td>
<td>-0.60 %</td>
</tr>
<tr>
<td>Germany</td>
<td>2.49</td>
<td>2.57</td>
<td>+3.21 %</td>
</tr>
<tr>
<td>Ireland</td>
<td>1.70</td>
<td>1.95</td>
<td>+14.71 %</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2.21</td>
<td>2.24</td>
<td>+1.36 %</td>
</tr>
<tr>
<td>UK</td>
<td>1.37</td>
<td>1.38</td>
<td>+0.73 %</td>
</tr>
<tr>
<td>Southern Europe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>3.05</td>
<td>2.75</td>
<td>-9.84 %</td>
</tr>
<tr>
<td>Italy</td>
<td>3.08</td>
<td>2.92</td>
<td>-5.19 %</td>
</tr>
</tbody>
</table>

<sup>38</sup> For more details about alternative indicators of employment protection, see Venn, (2009).

<sup>39</sup> Overall indexes are calculated using the following equation: 

\[ I = EPRC \cdot \frac{5}{12} + TC \cdot \frac{5}{12} + C \cdot \frac{2}{12} \]

where I is the overall index, EPRC is the strictness for regular contracts, ETC is the strictness for temporary contracts, and C are additional restrictions to collective dismissal.
<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portugal</td>
<td>2.73</td>
<td>2.40</td>
<td>-12.09%</td>
</tr>
<tr>
<td>Spain</td>
<td>3.19</td>
<td>2.79</td>
<td>-12.54%</td>
</tr>
</tbody>
</table>

**Eastern Europe**

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slovak Republic</td>
<td>2.63</td>
<td>2.51</td>
<td>-4.56%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>2.73</td>
<td>2.71</td>
<td>-0.73%</td>
</tr>
</tbody>
</table>

**Northern Europe**

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>2.17</td>
<td>2.19</td>
<td>+0.92%</td>
</tr>
<tr>
<td>Norway</td>
<td>2.65</td>
<td>2.80</td>
<td>+5.67%</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.80</td>
<td>1.95</td>
<td>+8.33%</td>
</tr>
</tbody>
</table>

**North America**

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>1.11</td>
<td>1.11</td>
<td>-</td>
</tr>
<tr>
<td>Canada</td>
<td>1.21</td>
<td>1.21</td>
<td>-</td>
</tr>
</tbody>
</table>

**Asia and Oceania**

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>1.49</td>
<td>1.72</td>
<td>+15.44%</td>
</tr>
<tr>
<td>China</td>
<td>2.56</td>
<td>2.62</td>
<td>+2.34%</td>
</tr>
<tr>
<td>Japan</td>
<td>1.93</td>
<td>1.93</td>
<td>-</td>
</tr>
</tbody>
</table>

**OECD - average**

<table>
<thead>
<tr>
<th>Country</th>
<th>2008</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD - average</td>
<td>2.33</td>
<td>2.31</td>
<td>-0.86%</td>
</tr>
</tbody>
</table>

*Table 1 – Strictness of EPL for some representative countries. SOURCE: OECD database.*

*Values for 2008 and 2013, Version 3*
By looking the table it is immediately clear that the geographic division captures a lot of the differences across countries. Indeed countries within the same area have similar and comparable indexes. This is true not only for the values in a given year, but in particular for the changes occurred during 2008-2013. Indeed since 2008 many in-depth EPL reforms have been undertaken\(^\text{40}\), this is because

“... European Countries have shown an increased commitment to tackle the structural weaknesses built-up over the last decade.” \(^\text{41}\)

In particular in southern Europe and some Eastern European countries the reforms provided less stringent protection against dismissal, cut the levels of severance payments and extended the duration of trial period\(^\text{42}\). It is notable that those countries that undertaken these reforms were the ones with the largest cumulated imbalance and very stringent legislation before the crisis\(^\text{43}\).

In addition, looking at the absolute values in 2008 it can be seen that the United States above all, but also former British colonies, are related to much lower values of EPL than all other OECD countries. This is why in recent times the debate is going into the direction that more flexibility is better\(^\text{44}\): if the leading world country has a very low rigidity then it must be the right way. However many other consideration should be taken into account before drawing such conclusion. Above all the concept of causality that is far from the concept of simple correlation, yet much harder to prove.

\(^{40}\) European Commission, (2013).
\(^{41}\) European Commission, (2013), pg. 60.
\(^{42}\) OECD, (2013).
\(^{43}\) In particular Spain, France and Italy.
\(^{44}\) Schivardi, (1999).
3. Literature Review

Before going in depth of the analysis, some previous researches are presented\textsuperscript{45} in order to give some knowledge about the \textit{status quo} and how did the debate evolved.

From an empirical point of view many studies were carried out. In particular many studies evaluating the effects of EPL on the aggregate employment and unemployment rate, referred by OECD as first generation studies\textsuperscript{46}. In general, the majority of these did not find any significant effects on neither on employment nor on the unemployment rate\textsuperscript{47}. However, as normal, there are also some exceptions. Indeed studies of the same kind\textsuperscript{48} found out that stricter regulations regarding employment protection are related to a higher unemployment rate and/or employment. However more recent studies abandoned the aggregate view and focused their studies on just some targeted groups of workers. These groups were selected on the fact that they were targeted by the government to be the recipients of certain employment protection reforms and these reforms were done on a regional or local basis therefore generating \textit{quasi-natural experiments}. These studies changed the approach to the problem and found small but significant negative effects of the strictness of employment protection on the employment of such targeted groups\textsuperscript{49}. The drawback is that when transposing the results up to an aggregate level, according to these studies, the effects on the aggregate level are uncertain and unclear, as substitution effect might play an important role. In fact when targeting certain regulations on a specific group of workers legislation induces substitution across groups as regarding hiring\textsuperscript{50}.

\begin{thebibliography}{99}
\bibitem{45} The order of presentation follows the OECD Employment Outlook, 2013.
\bibitem{46} OECD, (2013). Employment Outlook.
\bibitem{47} See for example Howell et al., 2007 and Boeri, 2011.
\bibitem{49} Kugler and Saint Paul, (2004).
\bibitem{50} Acemoglu and Angrist, (2001).
\end{thebibliography}
Other and more numerous studies focused on the single reforms and on the effects on job and worker flows. They found that EPL has a significant effect on job turnover.

In addition some studies, tried to demonstrate an empirical relation between EPL and the feeling of job insecurity. A research carried out in 2009 found out that employed workers are, on average, less satisfied about their job security in countries where EPL is higher. On the contrary, in 2013, another research found out that the relation becomes negative when analyzing the perceived probability of being displaced. These two different and almost opposite results can be unified and traced to a single origin by saying that

“... stricter dismissal rule protect the incumbent worker, but reducing the probability of hiring increases, at the same time, the probability of long unemployment spells.”

From a theoretical point of view it has been said that firing costs may be rationalized because of the existence of imperfect financial markets, which puts limits on the ability of risk-averse workers to get insured against possible dismissal. However it has to be said that the imposition of implicit or explicit costs and restrictions on the firms’ ability to adjust its workforce depending on the business cycle and therefore at an optimal level, it can impede efficient and natural job separations and reduce efficient and desired job creation.

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51 Boeri and Jimeno, (2005).
52 Clark and Postel Vinay, (2009).
53 Caroli and Godard, (2014).
54 OECD, (2013). Employment Outlook, pg. 70.
Even though according to some studies\textsuperscript{57} these inefficiencies, in principle, may be offset by factors such as wage adjustment, private payments or the design of efficient contracts, there exist market imperfections that pose serious challenges to this theoretical automatic adjustment and does not make it credible.

Other theoretical studies\textsuperscript{58} suggest that, due the restrictions on the firms’ independence, stricter employment protection necessary implies a slower rate of adjustment of employment towards its natural equilibrium level. For example Hopenhayn and Rogerson (1993) demonstrated that firing costs induce firms to use resources in a less efficient way. Indeed the final conclusion of these studies suggests that job mobility is negatively affected by EPL.

An important topic in the field of labour research is the contraposition between fixed-term contract and open-ended contracts and the consequent analysis of changes in regulations regarding just one of the two. In fact many studies tried to analyze the effects generated by a liberalization of employment protection of regular fixed-term contracts while open-ended contract are maintained with strict regulations. The result is the following:

\begin{quote}
“Firms would react by substituting temporary for regular workers with no long-run effect on employment.”\textsuperscript{59}
\end{quote}

This seems a desirable outcome, however one opposite thesis argues that in this case “insiders”, those workers who already have an open-ended contract, can easily ask for higher wages without incurring in any risk of job losses at all, since the actual risk is entirely bared by “outsiders”, those who still were not able to sign an open-ended contract and are bounded to a fixed-term contract (mainly youths and workers with not much experience)\textsuperscript{60}. This necessary leads to an increase in

\begin{itemize}
\item \textsuperscript{57} Lazear, (1990).
\item \textsuperscript{59} OECD, (2013). Employment Outlook, pg. 69, referring to Boeri and Garibaldi, (2007).
\item \textsuperscript{60} OECD, (2013).
\end{itemize}
unemployment rate. In this light it becomes really interesting to focus on regulations on fixed-term contracts along with employment protection for regular contracts. In this perspective, when regulations among different types of contracts vary considerably within the same labour market, the labour market at issue could be negatively denominated as a “dual market”. It means that the market would guarantee too much at the insiders and too less at the outsiders\(^61\). In fact there are some researches\(^62\) that demonstrated that stringent regulation on regular contracts are related to a higher usage of temporary contracts.

This negative situation might also influence human capita accumulation, because if finding a job is seen from outsiders as a mere speech of luck then people would prefer to enter in the labour as soon as possible without wasting time studying because what then makes the difference is not the level of education, but the condition of the worker, namely it’s an insider or an outsider. In fact some studies about the relation between education and employment protection were carried out\(^63\), demonstrating that when firing costs are high only the individuals with the highest ability would invest in education.

This had led some economists to claim that in order to avoid such complications it would be better to replace temporary and regular contract with a unique and permanent labour contract\(^64\). However a lot of attention must be posed on this aspect because, for example, temporary-work-agency contracts have the same guarantees as regular contracts, but, at the same time, they guarantee a much higher flexibility to the firm.

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\(^{63}\) Mathur, (2010).
\(^{64}\) Dolado et al., (2009).
4. Quantitative Analysis

Now we try to construct a simple but effective model that is able to explain the effects that the employment protection index has on employment and unemployment rate at an aggregate level.

The basic bivariate model we are considering is representing the effect that EPL has on unemployment rate and employment. Therefore there are necessary two models because the very strong correlation between unemployment rate and employment might misrepresent, if put together, the independent magnitude of each variable.\(^{65}\)

\[
Unemployment = \beta_0 + \beta_1 \cdot EPL
\]

\[
Employment = \beta_0 + \beta_1 \cdot EPL
\]

However this simple model represents many criticalities that can be at least partially avoided by refining and improving the model itself.

4.1 Omitted Variables

The first problem encountered when modeling data is necessarily omitted variable bias. This exists when some variables not included in the model affect both the independent and the dependent variable. Some omitted variables could be:

- Government Orientation;

Since employment protection regulations are developed and implemented by the government, the orientation of the latter it’s surely an important variable when establishing the stringency of regulations. In general a liberal party would adopt more flexible regulations, while on the contrary, a socialist party would tighten regulations.

\(^{65}\) It’s the same principle of the “dummy variable trap”. 
The government orientation is therefore theoretically correlated with employment protection regulations, however this is not always true in practice. In fact governments need time to change such regulations and do not always do it as it might not be a priority, and moreover these changes would need more time to manifest the desired effects. In addition it is not clear whether the government orientation should have some influence on the employment and unemployment rate. Therefore we believe that is not an omitted variable.

- Trade Union Density;

This variable is demonstrated to be correlated, even though not linearly, with the unemployment rate. The controversy on the relation between centralization of wage bargaining and labour market competitiveness is very old, indeed many economists did research into it in the past years. They supported the thesis that the more centralized was the wage bargaining process, the lower was the unemployment rate. This because

“... centralized bargaining forces unions to internalize negative externalities.”

Later on, other researches were made. The most relevant was presented by Calmfors and Driffill. Their hypothesis argued that there exists a non-linear relation between the centralization of wage bargaining and the level of unemployment, instead they found out that a hump-shaped relation exists. Indeed if wage bargaining occurs at a plant level, unemployment will not be affected at all (or at least, negligibly), while as long as wage bargaining becomes more centralized, unemployment increases as well, but at a certain point, when trade unions begin to

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exercise monopoly power, unemployment falls. These are good arguments in order to include the variable in the model\textsuperscript{69}.

- Human Capital;

This variable seems very interesting. Some studies tried to demonstrate that the relation between education attainment and labour market rigidities is negative, concluding that

“... in equilibrium, with high firing taxes, only the highest ability individuals invest in costly education.” \textsuperscript{70}

In addition if we take into considerations all the researches in the field of economic growth, we can find many attempts aimed at defining the relation between human capital, which seems to be one of the key factors involved in economic growth, and institutional environment. For example Glaeser et al.\textsuperscript{71} poses serious doubts about the setting of institutions as \textit{per se} growth fundamental, and counts them more as representation of human capital level than as exogenous deep determinants. The evidence it’s still not clear and not exempt from critiques, but it is indubitable that a relation exists. In this sense, if we include employment protection legislation in the sets of variables attributable to the institutional environment, it is also clear that in our model human capital is an omitted variable.

We should therefore include TUD and HC variables in the model to obtain a multivariate model:

\[
Unemployment = \beta_0 + \beta_1 \cdot EPL + TUD + HC
\]  
\text{(3)}

\[
Employment = \beta_0 + \beta_1 \cdot EPL + TUD + HC
\]  
\text{(4)}

\textsuperscript{69} More about the description of the variable in the \textit{Dataset} section.
\textsuperscript{70} Mathur, (2010), pg. 1.
\textsuperscript{71} Glaeser, (2004).
- State and Time Effects

Still the new multivariate model cannot be interpreted as causal. However, since we have data available for more countries and for more years, namely a panel data, we could therefore include in the model *time* and *state fixed-effect*. The first one would allow to eliminate omitted variable bias that are constant for each state within a given period of time, the second one eliminates omitted variable bias when the omitted variables are constant over time within a given state. This would eliminate all the variation of the selected variable that is due to other factors, state and time specific such as cultural attitude and demographic changes.

\[
Unemployment = \beta_0 + \beta_1 \cdot EPL + TUD + HC + state\; effect + time\; effect
\]  \hspace{1cm} (5)

\[
Employment = \beta_0 + \beta_1 \cdot EPL + TUD + HC + state\; effect + time\; effect
\]  \hspace{1cm} (6)

The necessary condition the variable must satisfy in order to be able to compute this kind of modeling is that it must have enough variations both in time and in space, otherwise the data would end up by deleting themselves.

While we can verify by looking at Table 1 that variations across countries is big enough, the variation in time it’s sometime zero but still positive for most of the countries. We will therefore compute the coefficients under state and time fixed-effect, but also relaxing such assumption in order to verify the validity of the model itself.

Also important seems to be the non-linearity of the variables of interests. This is proven for what concerns trade union density, but it’s reasonable also for employment protection legislation. In fact if a country with a very high EPL increases regulations and rigidity, it should have a different effect with respect to another
country that has an initial EPL index very low. In order to take into account this fact, we’ll use a logarithm scale. Here the final regressions:

\[
\ln(\text{Unemp}) = \beta_0 + \beta_1 \cdot \ln(\text{EPL}) + \ln(\text{TUD}) + \ln(\text{HC}) + \text{state effect} + \text{time effect}
\]

\[
\ln(\text{Emp}) = \beta_0 + \beta_1 \cdot \ln(\text{EPL}) + \ln(\text{TUD}) + \ln(\text{HC}) + \text{state effect} + \text{time effect}
\]

4.2 Dataset

PANEL DATA – unbalanced\(^7\)
Countries (34):

Australia, Austria, Belgium, Canada, Chile, Czech Rep., Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Rep., Slovenia, Spain, Sweden, Switzerland, Turkey, UK, United States.

Variables (9):


\(^7\) There are some variables (TUD and HC) which do not cover the entire timespan of the dataset. In particular they are missing years 2012 and 2013.


- **TUD** (1998 – 2011) – Trade Union Density. Is calculated by the ratio of wage and salary earners that are trade union members, divided by the total number of wage and salary earners (OECD Labour Force Statistics). Density is calculated using survey data, wherever possible, and administrative data adjusted for non-active and self-employed members otherwise. Unit: ratio, Source: OECD database;

- **Unemp** – (1998 – 2013) Harmonized Unemployment Rate. Is computed by the number of unemployed persons as a percentage of the labour force (the total number of people employed plus unemployed). Unit: percentage, Source: OECD database;


### 4.3 Results

The variable of interest we are presenting is EPL in both the two versions available, namely v.2 and v.3. This allow us to compute state and time fixed effect with a better result and see the differences that arise due to a change in the calculation of such indexes.

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THE EFFECTS OF EMPLOYMENT PROTECTION LEGISLATION ON EMPLOYMENT AND UNEMPLOYMENT RATE

\[
\ln (\text{Unemp}) = \beta_0 + \beta_1 \cdot \ln(\text{EPL}) + \ln (\text{TUD}) + \ln (\text{HC}) + \text{state effect} + \text{time effect} \tag{9}
\]

\[
\ln(\text{Emp}) = \beta_0 + \beta_1 \cdot \ln(\text{EPL}) + \ln(\text{TUD}) + \ln(\text{HC}) + \text{state effect} + \text{time effect} \tag{10}
\]

<table>
<thead>
<tr>
<th>Unemployment $\sim$ EPL_v2</th>
<th>Unemployment $\sim$ EPL_v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.81***</td>
</tr>
<tr>
<td></td>
<td>(0.369)</td>
</tr>
<tr>
<td>log(EPL_v2)</td>
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</tr>
<tr>
<td>log(TUD)</td>
<td>-0.09***</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
</tr>
<tr>
<td>log(HC)</td>
<td>-0.71**</td>
</tr>
<tr>
<td></td>
<td>(0.279)</td>
</tr>
<tr>
<td>State F.E.</td>
<td>✓</td>
</tr>
<tr>
<td>Time F.E.</td>
<td>✓</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.120</td>
</tr>
<tr>
<td></td>
<td>0.773</td>
</tr>
</tbody>
</table>

Table 2 – Regression (9) with EPL_v2 (1998-2011) and EPL_v3 (2008-2011)

Where: “***” p-value < 0.01; “**” p-value < 0.05; “*” p-value < 0.1. This is consistent within the whole research.
Starting the analysis of Table 2 from left to right, the first thing it comes to notice is the positive and highly significant positive coefficient estimated for EPL_v2. An increase in the EPL index by 10% would increase, on average and ceteris paribus, unemployment rate by 2.4%. It’s not a big change, yet very significant. The model seems indeed to be very robust, taking also into account the high significance of the other control variables.

However when including in the regression control for time and state effect the model looses it’s robustness. In fact the coefficient associated to the EPL index changes sign, but becomes not significant. This is true for all the other control variables. This might be due to the fact that the variation over time of variables is not sufficiently high to justify the use of such controls.

These facts tend to support the validity of the first model, but the results change when the regression is estimated using a new version of the EPL index. In fact the new EPL_v3 coefficient estimated is very close to zero and non significant, even though the other control variables are very significant and of the same magnitude of the first regression. This would suggest a very robust model, but no significant influence of EPL on unemployment. However what is also different is that when state and time fixed effect are included in the model, the coefficient related to EPL_v3 becomes significant, but the other control variables loose their significance. In addition, the low EPL_v3 index variation over time it’s also an important issue in this model and to some extent even more important given the lower number of observations. This poses serious doubts on the validity of the model itself.

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76 EPL_v3 it’s only available from 2008 to 2013, whereas EPL_v2 starts in 1998.
We now turn to analyze the effects of employment protection legislation on employment. Starting the analysis of Table 3 from left to right the first regression estimates a negative but not significant coefficient of EPL_v2 with a mixture of evidence regarding the control variables. By including time and state fixed effect the coefficient of interest becomes positive and significant, but the other control variables loose their robustness.

What is interesting also in this analysis, is the big difference in results when using the new EPL version with respect to the old one. In this specific case the sign on
the coefficient remains the same, but it become significant and of higher magnitude. Nevertheless, when using time and state fixed effect, the robustness of the other control variables vanishes.

The common factor that appears when analyzing the effects on unemployment and employment is given by the fact that when time and state effects are added to the regression the coefficients of interest change sign, going from positive to negative in case of unemployment and from negative to positive in case of employment.

### 4.4 More Evidence

The evidence coming from the previous analysis is very doubtful and not clear at all. This might be due to three main factors:

1. The first, already mentioned, is the scarce variation in the variable of interest (EPL) in time. In fact there are many countries that have the same EPL index all over the period and it therefore makes it difficult to understand up to which point the time fixed effect is capturing differences in time;
2. The second is reverse causality. Even though from a macroeconomic point of view makes sense to say that regulations influence labour performances, it’s true also that a government facing a particularly dramatic situation might be forced to take some actions in the reformation of the labour market. In this case the line that divides cause from consequence becomes very thin;
3. The third underlies in the dynamic evolution of the labour market. In other words, when a new act passes it necessary takes time before any effect can be seen and analyzed.
In order to avoid these problems, we developed a new model where the EPL index, along with the other control variables, is taken into consideration two years earlier. This allows us to better understand the causal effect in the dynamic evolution and avoid the risk of reverse causality. Here the model:

\[
ln(Unemp_t) = \beta_0 + \beta_1 \cdot ln(EPL_{t-2}) + ln(TUD_{t-2}) + ln(HC_{t-2})
\] (11)

\[
ln(Emp_t) = \beta_0 + \beta_1 \cdot ln(EPL_{t-2}) + ln(TUD_{t-2}) + ln(HC_{t-2})
\] (12)

<table>
<thead>
<tr>
<th></th>
<th>Unemployment</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.80***</td>
<td>3.93***</td>
</tr>
<tr>
<td></td>
<td>(0.414)</td>
<td>(0.641)</td>
</tr>
<tr>
<td>log(EPL_v2)</td>
<td>0.29***</td>
<td>-0.36</td>
</tr>
<tr>
<td></td>
<td>(0.073)</td>
<td>(0.247)</td>
</tr>
<tr>
<td>log(EPL_v3)</td>
<td>-0.08</td>
<td>-1.06*</td>
</tr>
<tr>
<td></td>
<td>(0.143)</td>
<td>(0.640)</td>
</tr>
<tr>
<td>log(TUD)</td>
<td>-0.09***</td>
<td>-1.08***</td>
</tr>
<tr>
<td></td>
<td>(0.034)</td>
<td>(0.063)</td>
</tr>
<tr>
<td>log(HC)</td>
<td>-0.71**</td>
<td>-0.44</td>
</tr>
<tr>
<td></td>
<td>(0.310)</td>
<td>(0.640)</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.140</td>
<td>0.307</td>
</tr>
</tbody>
</table>

Table 4 – Regressions (11) and (12) with EPL_v2 (1998-2011) and EPL_v3 (2008-2011).
According to this time lag model, an increase of 10% in the EPL index v.2 leads to an increase, on average and ceteris paribus, of 2.9% of unemployment. The coefficient is also highly significant as well as the control variables. However, if we consider the EPL index v.3, even though the other control variables remain significant and of the same sign, the coefficient of interests looses its robustness.

On the other hand, when considering the effects on employment, the EPL index v.2 appears to be not significant with mixture evidence from the control variables. Instead the EPL index v.3 appears to be negative and significant, as well as the other control variables. Indeed the new model yields very similar results to the previous one, whether we consider the sign or the magnitude of the coefficient of interest.

5. Conclusion

“Interpretation of data is something of an art in applied labour economics research.”

The question that underlies at the heart of the paper and that acted as guiding loadstar during the drawing of the whole research is the contrast between the flexibility and rigidity of the labour market, with all the issue related to the effects on employment and unemployment rate. Drawing defined and precise conclusions in the field of labour economics it’s very difficult because of the high complexity of the labour market and the importance it has in the entire economic system. In fact, also in our research, the evidence is mixed and confusing.

In the previous section the results yield by the developed models run in different ways and does not seem to have a common factor, which makes it very

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Addison and Texeira, (2001), pg. 38.
difficult to comment the results also because we have to take into account that the previous results refer to the average OECD country and some papers showed that effects are quiet different when analyzed for specific countries\textsuperscript{78}.

What still captures out attention is the fact that within the same regression, the change in version of the EPL index plays a fundamental role in determining its significance. Meaning that, \textit{ceteris paribus}, the results obtained by the use of one version are very different from the results obtained by the use of another version of the same index\textsuperscript{79}. This clearly poses serious doubts on the validity of the calculations of such indexes. In fact other researchers\textsuperscript{80} already tried to develop new ways to compute such indexes in a more accurate and complete way.

In order to be sure of the robustness of regression analysis, the first thing is to be sure of the robustness of the variables of interest: more research it to be done with respect to this point. What should also be taken into account for the calculation of the EPL index is everything related to the issue of internal and external flexibility, already mentioned in the paper. More research should be done when more accurate and precise calculations of EPL index will be available.

However, even if a necessary condition, the robustness of the variable of interest is not enough to ensure the validity of an entire model. What also seems important is the context the labour market is linked to. The labour market is a fundamental market within the entire economic system. In fact there are some researches that proved that institutions interact with each other concluding that policies’ effects cannot be analyzed in isolation\textsuperscript{81}. More research should be done in analyzing these effects in a broader context taking into account, also, the youth

\textsuperscript{78} Bassanini and Duval, (2006a), showed that positive effects of unemployment benefits decrease when extensive active labour market policies are developed.

\textsuperscript{79} The discussion is about EPL\textsubscript{v2} and EPL\textsubscript{v3}, both calculated by the OECD and used in the analysis of the previous section.

\textsuperscript{80} Venn, (2009).

\textsuperscript{81} Belot and Van Ours, (2004)
unemployment and considering the dualism of the labour market, which seems to be a very important issue in today’s world, especially in southern Europe\textsuperscript{82}.

To conclude, it is believed that the reduction of the debate to a mere dualism between rigidity and flexibility seems too narrow and too simplistic. To many variables and facets are left apart because not properly included in the calculations of EPL index. What, on the contrary, seems important, is the direction in which the economic decisions tend to: it’s not important whether they tend to a certain direction or to the opposite, yet they have to be well-balanced and consistent one with another in order to create a homogenous economic environment.

\textsuperscript{82} Above all Spain and Italy.
6. References


THE EFFECTS OF EMPLOYMENT PROTECTION LEGISLATION ON EMPLOYMENT AND UNEMPLOYMENT RATE


OECD, (2013), Employment Protection and Labour Market Regulation, Ch. 2.