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**QUALITY OF EMPLOYMENT AND EMPLOYMENT PROTECTION.  
EFFECTS OF EMPLOYMENT PROTECTION ON TEMPORARY AND  
PERMANENT EMPLOYMENT**

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# **Quality of Employment and Employment Protection. Effects of Employment Protection on Temporary and Permanent Employment**

Philip Arestis, Jesus Ferreiro, Carmen Gómez

## **Abstract:**

For mainstream economics, rigidities in the labour market are a key determinant of the labour market results in terms of employment and unemployment. Thus, mainstream economics recommends full flexibility in the labour markets. Following these prescriptions, most European countries have introduced labour market reforms that have affected affect the conditions to hire and fire permanent workers and the constraints to the use of temporary employment contracts. However, the empirical evidence clearly shows that a conclusion about the impact of labour market reforms on total employment cannot be reached. Indeed, recent empirical evidence, argues that a higher flexibility in the employment protection has a negative impact on employment. This implies that a higher labour flexibility is associated with a higher labour segmentation, characterized by a rising share of temporary workers but not with a higher total employment

The aim of this paper is to determine whether the level and the changes in employment protection of permanent and temporary workers have any impact not only on total employment but also on permanent and temporary employment. Using panel data techniques, we investigate whether the level and the changes in the employment protection of permanent and temporary workers affect, first, the dynamics of total salaried employment; and, second, the dynamics on permanent employment, on the one hand, and temporary employment, on the other. Thus, the results of this contribution contribute to a better understanding not only of the determinants of the evolution of the employment, but also of the determinants of the quality of employment.

**Keywords:** Employment protection legislation, employment, unemployment

**JEL Classification:** E24, J21, J41, J48, J68

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## **1. Introduction**

The high rate of temporary employment is one of the main distinctive features of the European labour markets. According to Eurostat, in 2018 temporary employees represented 14.2% of total employees in the European Union and 16.2% in the case of the Eurozone. The share of temporary employees exceeded the 15% in Spain (26.9%), Poland (24.3%), Portugal (22%), Croatia (19.9%), Italy (17.1%), France (16.7%), Finland (16.2%), Slovenia (15.7%) and Sweden (15.6%). During the Global Financial Crisis and the Great Recession, between 2007 and 2013, due to the more intense adjustment in the temporary employment, the rate of temporary employees declined in the European Union from 14.6% to 13.6%, and in the Eurozone from 16.4% to 14.9%. However, since then the rate of temporary employees has increased in both regions, with significant increases taking place in countries like Italy (+3.9 percentage points), Croatia (+5.4 percentage points) and Spain (+6.7 percentage points).

This high share of temporary employment would not only be explained by a specific productive structure defined by a strong participation of sectors and activities with a marked seasonal nature, like tourism or construction, but also by other factors. Mainly, by the existence of an institutional configuration of the labour market that favours the use of temporary and fixed-term employment contracts against the alternative of using standard (permanent, open-ended) employment contracts.

The high rate of temporary workers would be the result of the measures approved to enhance the flexibility of the labour markets through the reforms that make easier the hiring of temporary workers. Thus, since the 1980s many countries approved measures to increase the flexibility of their labour markets with the purpose of reducing the high unemployment generated by the oil crises of the seventies (Blanchard and Wolfers, 2000). These countries approved labour reforms that curbed firing costs and reduced the restrictions on the use of non-standard employment contracts, thus promoting the use of temporary and part-time contracts. In many cases, the removal of restrictions on the use

of temporary contracts accompanied the setting of lower compensations for the extinction of this kind of contracts (in comparison with those for permanent contracts), giving rise to a segmented labour market with a rising share of atypical employment contracts. It was argued that an excessive employment protection for permanent employees had a negative impact on the figures of employment and unemployment. The relaxation of the constraints to the use of temporary employment contracts, and the measures curbing firing costs and making easier the individual and/or collective dismissal of permanent workers, would help to accelerate the employment creation and to reduce the unemployment rates (European Commission 2012; OECD 2012 and 2017).

However, as we show below, many studies question the alleged positive effects of the measures approved to reduce the employment protection for temporary and permanent employees. These measures have generated a dual and segmented labor market with a rising weight of temporary employees. The verification of the existence of an excessive number of temporary employees has led many countries, mainly since the onset of the Global Financial Crisis, to approve measures in order to reduce the rate of temporary employees, reducing the employment protection for permanent workers but also setting stricter employment provisions and constraints to the use of temporary employment contracts. These kind of measures are based on the belief that an excessive rate of temporary employment has negative micro and macroeconomic consequences, such as lower economic growth, lower private consumption, higher economic instability, lower productivity, lower competitiveness, lower incentives to the accumulation of physical and human accumulation, excessive household indebtedness. Also, non-economic consequences, such as lower welfare, rising inequalities and poverty, rise of populism. (Ferreiro and Gomez, 2017; Rubery and Piasna, 2016).

The objective of this contribution is to analyse the impact of the employment protection for permanent and temporary employment on the labor market performance. More precisely, we study the impact of employment protection on the salaried employment, total employees, but also we analyse separately the impact on the temporary and the permanent employees.

Our study makes a significant contribution to the literature on the impact of the employment protection legislation (EPL) due to the differences with respect to existing studies. First, contrary to most studies, which analyse the potential impact of EPL on unemployment rates and/or total employment, our contribution analyses whether the employment protection affects the dynamics of employees. Namely, salaried workers, which are the type of workers that are directly affected by the legislation related to the employment protection, that is, the conditions for hiring or firing a salaried worker. It should be noted that our dependent variables is not the figure of employees but the rate of growth of employees. Therefore, we are testing the hypothesis that the dynamics of salaried employment is explained by the interaction between economic shocks and the employment protection for permanent and temporary workers.

Second, contrary to other studies that analyse the impact of employment protection legislation on labour market performance focusing only on the impact of employment protection for permanent workers, we analyse the impact on salaried employment of the employment protection for permanent and temporary workers. Therefore, we use two different indexes of employment protection as explanatory variables: one index that measure the employment protection for permanent workers and another which measures the protection for temporary workers.

Third, besides the impact of EPL on total salaried employment, we analyse separately the impact of EPL on the evolution of permanent and temporary employees. In both cases, we use as explanatory variables the indexes corresponding to the employment protection for both categories of employees.

Fourth, although some theoretical studies argue that the relationship between employment protection and employment is not a linear one, implying that an excessive employment protection can have a negative impact on employment, most empirical studies test the existence of a linear relationship. In this sense, our study tests the potential existence of a non-linear relation between employment protection and employment results.

Fifth, our study also tests the hypothesis that the evolution of employees (total, permanent and temporary employees) not only is it affected by the individual levels

(and changes) of the employment protection for permanent and temporary workers, but also by the existence of significant differences between the protection for temporary and permanent workers.

The paper is structured as follows. In section 2, we provide a short review of the literature about the impact of employment protection legislation on employment and unemployment rates. In section 3, we present the theoretical model and the emerging testable hypotheses. Section 4 presents and analyses the results of the empirical analysis. Finally, section 5 summarises and concludes.

## **2. Labour market institutions, employment protection and labour market performance**

According to the New Consensus Macroeconomics (NCM), labour market institutions are the main determinants of the performances of the labour markets. Institutions that enhance the flexibility in the labour market, allowing a fast adjustment in prices (wages) and quantities (employment) when an economic shock takes place, lead to higher levels of employment and lower unemployment rates. In this approach, the bad results of employment and unemployment are explained by the interaction of adverse shocks with adverse labour market institutions: unproductive institutions increase the impact of shocks on unemployment, accentuating hysteresis effects through an increase in the long-term unemployment (Blanchard and Wolfers, 2000). Consequently, the countries with flexible labour markets show the best results of employment and unemployment. The policy recommendations are obvious: to enjoy low and stable unemployment rates, labour markets should be reformed, making them more flexible, acting on those legal and institutional elements that generate a low flexibility in the wage-setting process and in the adjustment of the company workforces.

Fuelled by these arguments, and the recommendations made by international organizations, such as the European Commission, the International Monetary Fund, the Organization for Economic Cooperation and Development (OECD), many economies have approved labour market reforms. These reforms have acted on what is presumed to be the main sources of rigidities in the labour market: the unemployment protection schemes, the collective bargaining and the employment protection legislation

(Brancaccio et al., 2018; Ferreiro and Gomez, 2017; Kugler, 2019; McBride and Watson, 2019; Tridico and Pariboni, 2017). It was taken for granted that in the long-term these reforms would lead to more employment and to lower and more stable unemployment rates.

Despite the spreading and intensity of these reforms, the empirical evidence on the impact on employment and unemployment of labour institutions is not conclusive (Avdagic and Salardi, 2013; Bertola, 2017; Kugler, 2019). For Keynesian economists, labour institutions are not a key determinant of the labour market results. Only an increase in capital accumulation, fuelled by expansionary demand-side policies, would reduce unemployment rates (Hein, 2017; Jump and Stockhammer, 2019; Stockhammer et al., 2014). This recommendation is shared by some mainstream economists, such as Ball (2009, 2014) and Blanchard and Summers (2017), who argue that the high unemployment rates in many European countries are explained by the hysteresis effects generated by restrictive demand-side policies; hence, the need for a change in the relevant strategies of macroeconomic policies.

Furthermore, many studies argue that labour market institutions have positive effects on the labour market and economic activity. Such as lower unemployment, higher employment, more quality of jobs, smoother fluctuations of economic activity, more egalitarian distribution of income, higher accumulation of human and physical capital, and more innovations. Relevant studies on this score are: Brancaccio, et al. (2018), Ciminelli et al. (2018), Dosi et al. (2017, 2018), European Commission Directorate-General for Employment, Social Affairs and Inclusion (2015), Flaschel et al. (2012), Kugler (2019), and Lavoie (2017).

Mainstream studies on the role played by labour market institutions have focused on the impact of employment protection legislation (EPL) on labour market results. The employment protection legislation is the set of rules that in each country governs the hiring and firing of employees. The hiring rules are the conditions for the use of standard (full-time permanent contracts) and non-standard employment contracts (part-time, fixed-term, and temporary agency workers). The firing rules govern individual and collective dismissals of workers with standard permanent contracts. This legislation aims to provide workers with certain levels of protection and security in their jobs by

specifying the requirements that employers must observe and respect in hiring and dismissing (permanent) workers.

In the NCM, the employment protection legislation generates rigidities in the functioning of the labour market, leading to unemployment and, if firing costs or restrictions differ among groups of workers, labour segmentation emerges. To reduce the high unemployment rates, since the eighties, many countries have introduced labour reforms curbing firing costs and favouring the use of non-standard employment contracts. In many cases, the removal of restrictions on the use of temporary contracts accompanied the setting of lower compensations for the extinction of temporary contracts (in comparison with those for permanent contracts); thereby giving rise to a segmented labour market and a rising share of atypical employment contracts. Labour segmentation would be the result of the differences in the employment protection for permanent and temporary workers (OECD, 2017). The increase in the use of temporary employment contracts would be explained by the lower protection of these workers (in terms of lower compensations in case of dismissal or expiration of the fixed-term employment contract) and by the possibility to using workers with temporary contracts for jobs with a structural-permanent nature. Furthermore, the possible lower wages of temporary workers would add another incentive to use this kind of employment contracts.

Despite the generalization of these reforms, there is no unambiguous empirical evidence on the impact of these measures on employment and unemployment rates (Bertola, 2017; Boeri, et al., 2015; Heyes and Lewis, 2015; OECD, 2018). For Blanchard and Wolfers (2000), the implementation of measures increasing employment protection in the late seventies led to the rise in the structural unemployment in European economies. These measures would have implied a disincentive to hiring (and to capital accumulation and productivity growth) resulting in higher structural unemployment. These arguments were accepted by international organizations, which recommended reducing employment protection, mainly for permanent workers, to ensure lower and more stable unemployment rates (European Commission, 2012; OECD, 2006, 2012, 2017, 2018).

However, many studies conclude that a high employment protection has no negative impact on unemployment (Adams et al., 2019; Avdagic, 2015; Avdagic and Salardi, 2013; Bertola, 2017; Boeri et al., 2015; Flaschel et al., 2012; Heyes and Lewis, 2015; Myant and Brandhuber, 2013). Consequently, labour market reforms implemented since the 1980s have not contributed to reducing high unemployment rates. Indeed, many papers focus on the adverse economic consequences generated by these reforms, highlighting the negative effects on labour segmentation, income distribution, job quality, household consumption and borrowing, innovation, competitiveness, productivity growth, and poverty (Brancaccio et al., 2018; Damiani et al., 2016; Gutierrez-Barbarrusa, 2016; Heyes and Lewis, 2015; Kleinknecht et al., 2013; OECD, 2018; Rubery and Piasna, 2016; Tridico, 2017).

To great extent, these negative consequences would be the result of an excessive use of temporary employment contracts and the consequent excessive rate of temporary employees. In this sense, since the onset of the Global Financial Crisis in August 2007, some European countries have approved measures to reduce excessive labour segmentation, thus increasing the employment protection of temporary workers. However, this stronger protection for temporary workers in many cases has come in tandem with a smaller protection for permanent workers (Ferreiro and Gomez 2017).

The doubts about the effects of the EPL have increased with recent studies that focus on the period after the onset of the Global Financial Crisis. Anderton et al. (2012), Boeri and Jimeno (2016) and Sharma and Winkler (2018) argue that a high employment protection for permanent workers is associated with higher increases of unemployment in Europe. By contrast, Stockhammer et al. (2014) conclude that EPL does not have a significant impact on unemployment rates in OECD countries. For Blanchard (2017), replicating the paper by Blanchard and Wolfers (2000), EPL is not a significant determinant of unemployment rates when the period analysed is extended to 2015. Lastly, Ferreiro and Gomez (2017) and Tridico (2013, 2017) show that, during the Great Recession, the European Union countries with high employment protection show the best labour market results.

It should be emphasised that some studies conclude that the impact of the reforms that have reduced the employment protection of workers had an uncertain effect on total

employment. The reason is that the impact of employment protection can differ among groups of workers, depending on factors such as gender, age, skills, or type of employment contract (Boeri et al., 2015; Gal and Theising, 2015). Furthermore, some recent papers (Boeri and Jimeno, 2016; de Almeida and Balasundharam, 2018; Duval and Furceri, 2018; Duval et al., 2019; OECD, 2012, 2017) argue that the impact of employment protection depends on the phase of the business cycle; therefore, it has no impact on employment and unemployment in the long-term. In this sense, it must be highlighted the recent view adopted by the OECD. Thus, for the OECD (2018), the employment protection for permanent workers “tends to have either no or a small negative effect on employment” (p. 124). Only an *excessive* employment protection for these workers can have negative consequences on job quality, inclusiveness and productivity, but in case, it comes with a lower protection for temporary workers.

This view implies that the negative impact of employment protection on employment would be the result of an excessive protection for workers and a significant difference between the employment protection for permanent and temporary employees (OECD, 2012). This reasoning is implicitly assuming that the effects of the levels (and the changes) of employment protection can be opposite for permanent and temporary employment, leaving unchanged the total employment (permanent plus temporary employment). The only impact would be in terms of the composition of employment, leading to a segmentation between temporary and permanent employees, with a rising share of the former.

It is also argued that the evolution of temporary and permanent employees may differ along the business cycle. In other words, that the elasticity employees/GDP may be different for permanent and temporary workers, making labour markets less resilient to economic shocks, amplifying the response of employment to demand shocks. Thus, for Duval et al. (2019) the reforms making more flexible the hiring of temporary workers increase employment during strong economic conditions, but reduce employment during downturns.

### 3. Empirical Framework

The objective of this contribution is to analyse whether the dynamics of the total salaried employment, the temporary employees and the permanent employees, are determined by the interaction between the employment protection legislation and the economic growth (the GDP growth rate).

To estimate the effects of the employment protection legislation, we use the Employment Protection Legislation (EPL) strictness indexes elaborated by the OECD. OECD EPL indexes measure the strictness of employment protection for permanent and temporary contracts, constructing synthetic indicators based on the values attached to different items. Each indicator is measured on a 0-6 score, where higher values represent a stricter regulation and, consequently, a more rigid labour market. The score of each index is calculated based on the regulation in force on the 1st of January of each year.<sup>1</sup>

These indexes have several advantages. Given the common methodology to estimate the indexes, they allow comparison of the employment protection legislation among countries. Moreover, the changes in the labour law imply a change in the value of the indexes. A labour law reform making the labour market more flexible implies a decline of the score, and vice versa, with more intense reforms implying larger changes in the indexes. These indexes have problems to measure the true flexibility-rigidity of the labour markets, such as the inability to measure employment protection based on other norms than legal ones, and the failure to account for procedural requirements in assessing the difficulties and costs of carrying out individual and collective dismissals (Harcourt et al., 2019; Myant and Brandhuer, 2016). Nonetheless, their use in empirical analyses is widespread, thus allowing comparisons of the results from different studies.

The OECD calculates four indexes: the EPRC index measures the protection of regular-permanent workers against individual and collective dismissals, while the EPT index measures the regulation of temporary forms of employment, mainly, fixed-term and temporary agency workers. The EPRC index is split into two indexes: the EPR index,

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<sup>1</sup> Available at: <http://www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm>

related to the protection of permanent workers against individual dismissal, and the EPC index, related to the specific additional requirements for collective dismissals of permanent workers. The OECD elaborates different versions of these indexes, that differ among them in terms of the data items included in the index and the period covered.

In this contribution, we seek to analyse separately the impact on the dynamics of salaried employment of the protection of permanent workers against individual and collective dismissals. Consequently, our models will use two indexes: the EPR (EPR\_V1) and the EPT (EPT\_V1) indexes. The choice of these versions of both indexes is due to the longer span of the analysed period covered (since 1985).

It is important to emphasize that, as seen in the previous section, the employment protection can affect the dynamics of employment in different ways. A first impact would be that generated on employees by the level of employment protection for workers. As mentioned, one advantage of the OECD EPL indexes is that we can include in our empirical model the level of the EPL index for the permanent workers (EPR) and the temporary and agency employees (EPT).

Furthermore, some studies claim that the relationship between the levels of employment protection and the results of employment and unemployment is not linear, and that the negative effects of employment protection on employment occur when there is an excessive protection, mainly for permanent workers. Consequently, our estimation tests the existence of a non-linear quadratic relation between the rate of growth of employees and the levels of employment protection. In this way, we can test the existence of increasing or decreasing marginal effects of employment protection, what would imply the existence of a threshold from which the size and, perhaps, the sign of these effects change.

It must also be noted that some studies argue that the impact of the employment protection on employment is larger when there is a big difference between the employment protection for permanent and temporary employees. EPR and EPT indexes are not homogenous, and consequently are not comparable. This implies that if, for instance, the value of the index EPR is higher than that of the index EPT, it cannot be

concluded that the employment protection for permanent workers is higher than for temporary workers. In any case, in our estimation we have included as explanatory variable the ratio  $EPR/EPT$ , as a proxy of the difference in the employment protection for both groups of workers. Regardless of the true difference in the employment protection for both groups of employees, a higher value of this ratio can be interpreted as a bigger gap in the employment protection in favour of the permanent workers. Indeed, in a country  $i$ , an increase in the ratio between the years  $t$  and  $t+1$  would involve that the employment protection for permanent workers has increase or that the employment protection for temporary workers has declined. In both cases, the relative protection for permanent workers has improved in relative terms; that is, compared to that for temporary workers.

Besides the levels in country  $i$  of the EPR and EPT indexes at the beginning of year  $t$  ( $EPR_{i,t}$  and  $EPT_{i,t}$ ), we also test the impact of the labour reforms, which change the rules affecting the employment protection for permanent and temporary workers. The variables  $\Delta EPR_{i,t}$  and  $\Delta EPT_{i,t}$  shows, respectively, for each year  $t$  the change in country  $i$  of the EPR and EPT indexes.

The changes in the current year of the EPL indexes can provide a limited information about the impact of the changes in the employment protection legislation. Employers' decisions of firing and hiring may be influenced by past decisions and experiences and not so much by new regulations. Therefore, there can be a lag between the time when a labour reform is introduced and the time when it effectively changes the decisions of hiring-working workers. Moreover, the change in the indexes does not inform about which date of the year such a reform is approved and comes into force. Surely, a reform approved in January has a bigger impact in that year on labour markets than a similar reform approved in December. To avoid these problems, our models include as explanatory variables the lagged change in the EPL indexes:  $\Delta EPR_{i,t-1}$  and  $\Delta EPT_{i,t-1}$ .

It must be noted that we use the employment protection for permanent and temporary employees as explanatory variables of the rate of growth of total employees and of permanent and temporary employees. This implies that we assume that the evolution of

both groups of employees are affected by the employment protection for permanent and temporary employees

In sum, we estimate the following three equations:

$$\text{Eq. 1: } \Delta \text{Total Employees}_{i,t} = \beta_0 + \beta_1 \text{GDP}_{i,t} + \beta_2 \text{EPR}_{i,t} + \beta_3 \text{EPR}_{i,t}^2 + \beta_4 \text{EPT}_{i,t} + \beta_5 \text{EPT}_{i,t}^2 + \beta_6 \text{EPR/EPT}_{i,t} + \beta_7 \Delta \text{EPR}_{i,t} + \beta_8 \Delta \text{EPR}_{i,t-1} + \beta_9 \Delta \text{EPT}_{i,t} + \beta_{10} \Delta \text{EPT}_{i,t-1} + \epsilon_{i,t}$$

$$\text{Eq. 2: } \Delta \text{Permanent Employees}_{i,t} = \beta_0 + \beta_1 \text{GDP}_{i,t} + \beta_2 \text{EPR}_{i,t} + \beta_3 \text{EPR}_{i,t}^2 + \beta_4 \text{EPT}_{i,t} + \beta_5 \text{EPT}_{i,t}^2 + \beta_6 (\text{EPR/EPT})_{i,t} + \beta_7 \Delta \text{EPR}_{i,t} + \beta_8 \Delta \text{EPR}_{i,t-1} + \beta_9 \Delta \text{EPT}_{i,t} + \beta_{10} \Delta \text{EPT}_{i,t-1} + \epsilon_{i,t}$$

$$\text{Eq. 3: } \Delta \text{Temporary Employees}_{i,t} = \beta_0 + \beta_1 \text{GDP}_{i,t} + \beta_2 \text{EPR}_{i,t} + \beta_3 \text{EPR}_{i,t}^2 + \beta_4 \text{EPT}_{i,t} + \beta_5 \text{EPT}_{i,t}^2 + \beta_6 \text{EPR/EPT}_{i,t} + \beta_7 \Delta \text{EPR}_{i,t} + \beta_8 \Delta \text{EPR}_{i,t-1} + \beta_9 \Delta \text{EPT}_{i,t} + \beta_{10} \Delta \text{EPT}_{i,t-1} + \epsilon_{i,t}$$

Data for the EPC index are available since 1985. However, given that we seek to estimate the impact of the current and lagged changes in the EPR and EPT indexes on total employees, temporary and permanent employees, the choice of the period analysed is affected by the availability of data of employees (total, permanent and temporary employees) from the Eurostat database analysed. The period analysed in the study covers 25 years, from 1988 to 2012. Therefore, we have a balanced panel with 275 observations (11 countries<sup>2</sup> and 25 years).

#### 4. Empirical Estimation

Table 1 shows the main descriptive statistics of the explained and explanatory variables used in the study. Regarding the evolution of employees, it must be noted that the rate of growth of temporary employees is almost three times that of the permanent employees. This higher growth of temporary employment explains the increase recorded in the rate of temporary workers, which for the eleven countries analysed increased from 10.3% in 1987 to 15% in 2018.

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<sup>2</sup> Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, and the United Kingdom.

Table 1. Descriptive statistics

	Mean	Median	Maximum	Minimum	Standard Deviation
$\Delta$ Employees	1.255	1.101	2.951	-9.530	3.153
$\Delta$ Permanent Employees	1.103	0.924	3.014	-9.326	3.210
$\Delta$ Temporary Employees	2.957	2.260	7.136	-3.781	1.159
$\Delta$ GDP	2.201	2.337	1.728	-9.133	2.838
EPR	2.479	2.385	5.000	1.095	0.872
$\Delta$ EPR <sub>t</sub>	-0.015	0.000	0.190	-1.190	0.100
$\Delta$ EPR <sub>t-1</sub>	-0.012	0.000	0.190	-1.190	0.096
EPT	2.352	2.375	4.875	0.250	1.454
$\Delta$ EPT <sub>t</sub>	-0.050	0.000	0.563	-2.250	0.250
$\Delta$ EPT <sub>t-1</sub>	-0.050	0.000	0.563	-2.250	0.250

Source: Own calculations, based on Eurostat and OECD.

Regarding the EPL indexes, the mean value of the EPR and EPT indexes has declined, showing a generalized - though with exceptions, as we will see later - process making the conditions to hire and fire workers more flexible. We want to emphasize the larger decrease recorded in the EPT index. For the eleven countries, the mean value of the EPR index fell from 2.61 in 1987 to 2.30 in 2012: However, in this period the EPT index fell from 3.00 to 1.74, showing that the larger flexibility in the use of temporary employment contracts was the main measure approved to enhance the flexibility of the labour markets.

However, the median value of the changes in the EPL indexes is zero because of the small number of observations with changes in the indexes. Out of the 275 yearly observations included in our analysis, the EPR index changed in 34 observations, and the EPT index changed in 29 observations.

In addition to the above mentioned explanatory variables, our estimations include a dummy (Germany 1991) to account for the impact of the German reunification on the

size of the German GDP and the size of the number of employees (total, permanent and temporary). The estimations we have carried out show, first, that the dummy is significant when we estimate the determinants of the rate of growth of total employees and permanent employees; and, second, that the explanatory capacity of the model, as measured by the coefficient of determinations, is much higher. Consequently, the dummy has been included in both estimations. Nonetheless, it also creates some problems: first, we cannot apply a panel data model with fixed or random effects; second, the significance of some variables changes.<sup>3</sup> This implies, that we must accept that the results of the study can be influenced by the ‘our’ choice of countries and years, and that with another different set of observations (different countries and/or years) the results obtained can be different.

In the case of the rate of growth of temporary employees, the dummy for Germany in the year 1991 is not significant at all. The redundant variable test shows that the exclusion of the dummy does not affect the model, consequently it has not been included in the estimations of the growth of temporary employees, thus allowing the use of fixed and random effects panel models.

The Lagrange multiplier (LM) test reports the existence of cross-section effects.<sup>4</sup> Consequently, our estimations include cross-section effects. European economies are highly interrelated; therefore, they are affected by common shocks, such as the Global Financial Crisis and the subsequent Great Recession. The cross-section dependence panel tests show the existence of cross-section dependence.<sup>5</sup> Therefore, we apply SUR estimators to correct the contemporaneous correlation between cross-sections.

The first column of table 2 shows the results of the estimation of the determinants of the rate of growth of total employees. The data show that only economic growth is a significant explanatory variable of the growth of employees. The data also show that the employment protection variables are not significant. The only exception is squared-EPR. The positive sign of the corresponding coefficient would imply that there would be a positive impact of employment protection on employees’ creation, with an

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<sup>3</sup> Data available upon request.

<sup>4</sup> Data available upon request.

<sup>5</sup> Data available upon request.

exponential impact, making that the positive impact increases exponentially with the higher level of protection for permanent workers. Nonetheless, this result must be taken with caution: if we exclude the dummy Germany-1991, the variable maintains its statistical significance but there is a change in the sign: the effect would be negative, with higher levels of employment protection for permanent workers having a negative impact on salaried employment creation. Therefore, this result is not a robust one.

Table 2. Determinants of the growth rate of employees

	Employees	Permanent Employees	Temporary Employees	
Constant	-2.956* (1.511)	-3.630** (1.765)	17.177 (12.347)	2.693 (26.478)
GDP	0.716*** (0.062)	0.612*** (0.071)	1.368*** (0.269)	0.744* (0.411)
EPR	0.874 (0.653)	0.479 (0.831)	-1.126 (3.887)	12.108 (16.280)
EPR <sup>2</sup>	0.167* (0.100)	-0.157 (0.134)	0.466 (0.717)	-0.140 (2.747)
EPT	1.009 (0.737)	1.847** (0.811)	-8.259 (5.457)	-14.204** (6.515)
EPT <sup>2</sup>	-0.147 (0.106)	-0.255** (0.118)	1.074 (0.778)	1.742* (0.895)
EPR/EPT	0.190 (0.284)	0.498 (0.306)	-3.854* (2.215)	-6.059** (2.670)
ΔEPR	0.798 (1.383)	0.671 (1.668)	2.283 (7.119)	6.276 (7.842)
ΔEPR <sub>t-1</sub>	0.093 (1.423)	-0.074 (1.718)	1.789 (0.807)	-0.112 (7.844)
ΔEPT	0.569 (0.442)	0.864* (0.480)	-2.630 (2.518)	-3.347 (2.836)
ΔEPT <sub>t-1</sub>	-0.176 (0.435)	0.557 (0.468)	-7.924*** (2.506)	-9.185*** (2.703)
Germany 1991	17.076* (2.158)	19.288*** (2.220)		
R <sup>2</sup>	0.666	0.592	0.143	0.275
Cross-section random effects	No	No	Yes	
Cross-section fixed effects	No	No		Yes
Period fixed effects	No	No		Yes

Source: Own Calculations

Notes:

Standard error in parentheses

\*p-value<0.1

\*\* p-value <0.05

\*\*\* pvalue<0.01

In sum, the creation of salaried employment is not affected by the employment protection legislation. We do not find a significant relationship between the rate of

growth of total employees and the levels of employment protection for permanent and temporary employees, the (current and lagged) changes in the indexes (the reforms approved that increase or reduce the employment protection of workers, and the differences in the employment protection for both groups of employees). We must emphasize that this result is robust to possible changes in the explanatory variables included in the estimation. Although the results are not presented by space constraints, the conclusion is the same when current and lagged changes in EPR and EPT indexes are not included; or when we test separately the levels of the EPR and EPT index, the possible existence of a quadratic relationship between the growth of employees and the EPT and EPR indexes, or the relative differences between both groups of employees.

Column 2 shows the results of the estimation of the determinants of the rate of growth of permanent employees. As expected, the economic growth leads to an increase in the permanent employees. A striking result is that the employment protection for permanent workers does not affect the evolution of this kind of workers. We have not found a linear or non-linear relationship between the level of protection for permanent employees and the rate of growth of these workers. Furthermore, the current and lagged changes in the protection of these workers do not either affect the growth of permanent employees. On the contrary, we find a non-linear relationship between the growth of permanent employees and the employment protection for temporary employees, with a decreasing marginal effect, in a way that with levels of the EPT index above 3.45, the impact is smaller. Nonetheless, given that the score of the EPT index ranges from 0 to 6, the impact of the EPT index on the creation of permanent employment is always positive.

We should highlight the relevance of the threshold. The mean and median of the EPT index EPT are 2.35 y 2.37, respectively. This implies that in a high number of cases there was an 'excessive' protection (strong provisions to the use of temporary contracts) for temporary employees, that is, values of the EPT index above the estimated threshold. Thus, the EPT index was above 3.45 in Belgium in the period 1988-1998, in Spain in 1988-1994, in France since 1991, in Italy in 1988-1999, and in Greece in 1988-2003. The strong constraints to the use of temporary contracts in these countries would have curbed the growth of permanent employees. This non-linear relation is also

detected when we do not include in the estimations the current and lagged changes of the EPT and EPR indexes; a proof of the robustness of the conclusion.

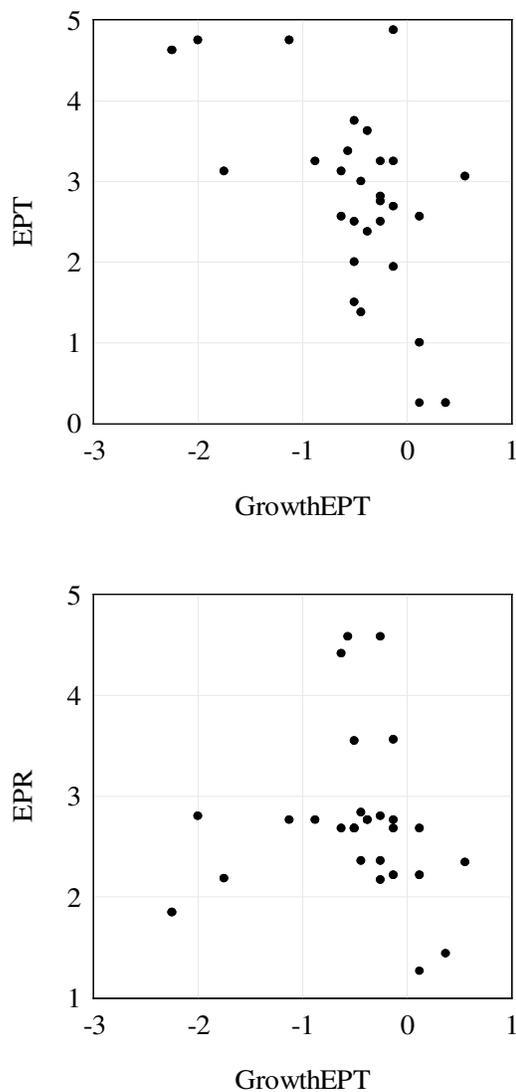
The results of the estimation shows that more severe constraints to the use of temporary contracts accelerate the creation of permanent employees, although above a threshold the impact is smaller. That is, an excessive protection for temporary workers leads to a smaller increase of permanent employment. A possible explanation for this results is that when the constraints to the use of temporary contracts, the protection for temporary employees is more similar to that for permanent employees, and therefore the potential benefits of a more intensive use of fixed-term employment contracts decline, what implies a larger incentive to hire permanent workers. However, the marginal effects are decreasing. It is likely that a stronger protection for temporary employees has a negative impact on the number of these workers. In an economy with a high weight of sectors whose activity has a clear seasonal nature, where the number of temporary workers is more intensive, for instance, agriculture, construction, tourism, etc., the disincentive to the hiring of fixed-term workers can have a negative impact on the activity of these sectors, and consequently, on the level of employment in these industries, included the permanent employees. Similar results emerge if there is an optimal or structural rate of temporary workers; this makes these firms to need to have a certain number or share of temporary employees (to develop some activities, like R&D, and employ new and trainee employees; or to face seasonal demand fluctuations, for instance). A disincentive to temporary hiring may affect the activity of these companies, and, consequently, to their permanent workforce.

The above conclusions are reinforced by the impact of current changes in the EPT index on the growth of permanent employees. The sign of the coefficient  $\Delta EPT$  is negative, implying the existence of a direct relation between the change in the EPT index, the reforms approved changing the provisions to the use of temporary employment contracts, and the rate of growth of permanent employees. As the data from Table 1 shows, the mean value of this variable is -0.05. Consequently, the reforms reducing the constraints to the use of fixed-term employment contracts reduce the growth of the permanent employment. Indeed, the declines in the EPT indexes range from 0.125 to 2.25 points. Given the high value of the coefficient of the variable (0.86), the reforms in

the protection for temporary workers have a strong negative impact on the growth of permanent employees.

This conclusion seems to be in contradiction with the former conclusion that a higher level of protection for temporary workers have a positive effect on the growth of permanent employees. A reasonable explanation would be that the largest declines in the EPT indexes have happened in the countries with high levels of employment protection for these employees.

Figure 1. Relationship between the growth of EPT index and the EPT and EPR indexes



Source: Own construction

Figure 1 shows the relation between the changes recorded in the EPT index and the level of the EPR and EPT index at the beginning of those years. The highest declines in the EPT index take place in cases in which the value of the EPR index is close or below the mean and also in which the protection for temporary workers is higher, well above the mean of the EPT index and above or close the threshold (3.45) that generates a negative marginal impact; in other words where the protection for temporary workers can be considered excessive. Thus, for instance, the largest declines in the EPT index took place in Belgium in 1998 and Greece in 2003. In the Belgian case, the values of the EPR and EPT indexes were, respectively, 1.84 and 4.62, and in the Greek case 2.80 and 4.75. This high protection for temporary employment can make that strong decline in the constraints to using temporary employment contracts can lead to a strong rise in the hiring of these employees and to a substitution of permanent employees by temporary workers. Thus, in 1998 in Belgium the temporary employment increased by 24.6% in parallel to a decline of permanent employees by 1.3%. In Greece, in 2003 temporary employees declined by 1.2%, with permanent employment growing by 2.9%; however, in 2004, with the GDP growing at a rate of 5%, permanent employment grew 3.5% but temporary employment rose by 16.4%

Columns 3 and 4 show the estimations of the determinants of the rate of growth of temporary employees. In column 3 we have estimated a panel data model with (cross-section) random effects, and in column 4 we have used a panel data model with cross-section fixed effects. Although with differences, both estimations lead to similar and coherent conclusions.

It must be highlighted that the  $R^2$  coefficient is quite low in both estimations. This outcome implies that the high rate of growth of temporary employment is mostly explained by other variables not included in our model, different from the economic growth and the employment protection for employees. This conclusion leads to the need to analyze in future researches, the increase in the working age population, the higher weight of industries and activities characterized by a stronger use of temporary contracts (tourism, construction, retail trade, etc.), a process of technological change based on a more intense use of temporary workers, a bigger uncertainty about the economic activity in the short and medium term that disincentivates the permanent hiring, the growth of segments of population with a higher rate of temporary employment (young

people, women), or a change in the business and management culture that promotes the use of temporary employment contracts.

On both estimations, the GDP growth is a significant determinant of the rate of growth of temporary employees, with a value of its coefficient that is much higher than that of the permanent employees. This means that the economic growth creates more temporary employment than permanent one, thus raising the rate of temporary workers.

Like in the case of the permanent employment, protection employment for permanent employees does not explain the changes in the temporary employments. This is a robust result that is not affected by changes in the specification of the model, like the existence of a linear relation between EPL indexes and the growth of temporary employment, or when the only impact tested is that of the levels of EPR and EPT indexes (data available upon request).

The lagged change in the EPT index is a significant variable in both models (random and fixed-effect). The sign of the coefficients is negative. This implies that the recorded decline in the EPT index has accelerated the growth of temporary employees. Although the mean value of this variables is low (see Table 1), the high value of the coefficients (-7.9 and -9.2) implies a substantial impact on the rate of growth of temporary employment (above 0.4 percentage points). Indeed, the true impact would be much greater. The observed declines in the EPT index oscillate between 0.125 and 2.25, what implies that the reforms facilitating the use of temporary employment contracts have had, at least in the short-term, a substantial impact on the growth of temporary employees.

Although in the random effects estimation, the employment protection for temporary employees does not significantly affect the rate of growth of temporary employees. This is not the case when the model is estimated using a fixed effects model. In this model, a non-linear impact of the EPT index is detected, where an increasing marginal impact is detected, and with a threshold of 4.05. Since the EPT index ranges between 0 and 6, the employment protection for temporary employees has negative impact on the growth of temporary employees, although when the EPT exceeds the aforementioned threshold, the negative impact is less and less. The existence of a decreasing marginal negative

impact implies that, given that during period studied the mean value of the EPT index has declined, as a result of the reforms that have reduced the constraints in terms of the use of temporary employment contracts, the rate of growth of the temporary employment has accelerated, contributing to rise of the rate of temporary workers.

Contrary to what happened in the case of permanent employees, the ratio  $EPR/EPT$ , that proxies the differences between the protection for permanent and temporary workers, is a significant determinant of the growth of temporary employees. The sign of the coefficient is negative, which implies an inverse (negative) relation between the differences in the employment protection for both groups of workers and the growth of temporary workers. The larger the difference between the employment protection for both groups of workers, the lower the growth of the temporary workers. This result implies that the differences in the employment protection for different workers has an impact on the growth of temporary workers. The higher the relative protection for permanent workers the lower growth of temporary employees, a result that can be the result of the difficulties faced by companies to substitute permanent workers for temporary ones.

Between 1987 and 2012, the ratio  $EPR/EPT$  has recorded a small increase from 1.69 to 1.76. It should be noted that the rise in the ratio is the consequence of a decline in the EPT index higher than what occurs in the EPR index. In any case, the result obtained is contrary to what is argued by mainstream analyses, which claim that the existence of these differences contributes to rise the creation of temporary employment.

In sum, our findings show that, contrary to what is argued in mainstream analysis, the employment protection is not a significant determinant of the growth of total employees. It cannot be claimed that rigid labour markets, that is, labour markets characterized by high employment protection for permanent and temporary workers, generate bad results in terms of employment protection. Consequently, the reforms approved that have contributed to rise the flexibility of the labour markets by reducing the employment protection for permanent and/or temporary workers are not empirically justified.

In this sense, our results prove that the above reforms, mainly the reforms that have reduced the constraints for the use of temporary and agency workers, have contributed to generate a higher labour segmentation, accelerating the growth of temporary employees and, consequently, the rate of temporary employees

## **5. Summary and Conclusions**

The results of our analysis show that the employment protection legislation does not explain the dynamics of salaried employment in the set of 11 European Union countries analyzed. Our estimations show that only the GDP growth is a significant determinant of the rate of growth of employees and that the different variables related to the employment protection for permanent and temporary workers and to the differences between the respective protection did not explain the dynamics of total employees. In this sense, our paper reinforces those studies that claim that the generalized reforms implemented in Europe in the last decades making the labour market more flexible have not led to a higher growth of employment.

This does not mean that the reforms in the employment protection have not had an impact on labour markets. Indeed, the performance of European labour markets is characterized by a rising rate of temporary workers. This implies that those labour market reforms have had different consequences on permanent and temporary employees.

Our results show that the employment protection for permanent employees has not affected the evolution of permanent or temporary employment, with employment protection for temporary employees being the only variable related to the employment protection affecting the dynamics of permanent and temporary employment. The results of our estimations mean that a high protection for temporary workers has a positive impact on the growth of permanent employment, and that the reforms that have led to a lower protection for temporary employment have had a negative impact on permanent workers. Regarding the impact on temporary employment, the reforms that reduced the constraints to the use of temporary workers and agency workers have accelerated the growth of temporary workers. In coherence with this result, high values of the EPT index, that is tighter provisions to the use of temporary workers, contribute to slow

down the growth of these workers. This implies that the declining value of the EPT in the European Union explains the more intense growth of temporary employees and the consequent rise of the rate of temporary workers.

In sum, our study proves that the reforms approved in the last decades in the employment protection have not contributed to generate more employment, but to a higher segmentation of the labour market and to a rising weight of temporary workers.

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