

Bentolila, Samuel; Dolado, Juan J.; Jimeno, Juan F.

Working Paper

Dual Labour Markets Revisited

IZA Discussion Papers, No. 12126

Provided in Cooperation with:

IZA – Institute of Labor Economics

Suggested Citation: Bentolila, Samuel; Dolado, Juan J.; Jimeno, Juan F. (2019) : Dual Labour Markets Revisited, IZA Discussion Papers, No. 12126, Institute of Labor Economics (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/196624>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

DISCUSSION PAPER SERIES

IZA DP No. 12126

Dual Labour Markets Revisited

Samuel Bentolila
Juan J. Dolado
Juan F. Jimeno

JANUARY 2019

DISCUSSION PAPER SERIES

IZA DP No. 12126

Dual Labour Markets Revisited

Samuel Bentolila

CEMFI

Juan J. Dolado

Universidad Carlos III de Madrid and IZA

Juan F. Jimeno

Banco de España and IZA

JANUARY 2019

Any opinions expressed in this paper are those of the author(s) and not those of IZA. Research published in this series may include views on policy, but IZA takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The IZA Institute of Labor Economics is an independent economic research institute that conducts research in labor economics and offers evidence-based policy advice on labor market issues. Supported by the Deutsche Post Foundation, IZA runs the world's largest network of economists, whose research aims to provide answers to the global labor market challenges of our time. Our key objective is to build bridges between academic research, policymakers and society.

IZA Discussion Papers often represent preliminary work and are circulated to encourage discussion. Citation of such a paper should account for its provisional character. A revised version may be available directly from the author.

ABSTRACT

Dual Labour Markets Revisited*

This paper provides an overview of recent research on dual labour markets. Theoretical and empirical contributions on the labour-market effects of dual employment protection legislation are revisited, as well as factors behind its resilience and policies geared towards correcting its negative economic and social consequences. The topics covered include the stepping-stone or dead-end nature of temporary contracts, their effects on employment, unemployment, churn, training, productivity growth, wages, and labour market inflows and outflows. The paper reviews both theoretical advances and relevant policy discussions on a very relevant topic in many European countries, in particular in several that had a very poor employment performance during the recent global economic and financial crisis.

JEL Classification: J41

Keywords: dual labour markets, employment protection, temporary contracts, job creation, job destruction, churn

Corresponding author:

Juan F. Jimeno
Banco de *España*
Calle Alcalá 48
28014 Madrid
España
E-mail: juan.jimeno@bde.es

* Prepared for the Oxford Research Encyclopedia of Economics and Finance. Bentolila is also affiliated with CEPR and CESifo, and Dolado and Jimeno with CEPR and IZA

1. Introduction

Firms require flexibility, but workers need some job stability. Dealing with continuous shocks to demand, technology, and costs requires companies to vary their workforce nimbly, but income stability is crucial for workers' welfare. Analysing the consequences of labour market flexibility (or the lack thereof) for employment, unemployment, productivity and other outcomes has a long tradition in economics.¹ Among other factors, the degree of labour market flexibility, narrowly defined as external flexibility (i.e. the cost for firms of carrying out workforce adjustments), depends on the strictness of firing and hiring regulations, which are commonly referred to as Employment Protection Legislation (EPL hereafter).

Starting in the 1980s, labour market institutions have often been blamed for the abnormally high structural unemployment experienced in many European countries. Among these regulations, stringent EPL took centre stage in the so-called *Eurosclerosis* debate. Since then, most EPL reforms, first in Southern Europe and then elsewhere, followed a new strategy. Rather than modifying EPL for regular jobs, they pursued labour market flexibility at the margin, introducing temporary contracts with lower adjustment costs. This path was adopted in view of the deep unpopularity of the first route and the insufficient political clout of the groups who are usually covered by temporary contracts, namely young, less educated, and less-skilled workers.² In some countries, a direct consequence of this EPL reform strategy was to create a divide between workers under a regular or open-ended contract (OEC) and workers under a temporary or fixed-term contract (FTC). Subsequently, the term *dual EPL* was coined to refer to the regulation that induces this two-tier segmentation of labour markets.

How to characterise, measure, and analyse a myriad of hiring and firing regulations on jobs of different nature –e.g. regular, determined-duration, seasonal, or interim jobs– has long been an important topic in the research and policy agendas.³ A natural starting point for this analysis is to ask whether higher firing costs raise the unemployment rate in non-dual labour markets. The gist of the results from both theoretical and empirical work is the lack of a clear relationship between EPL and unemployment rates. Two reasons for this finding are that higher firing costs induce both less hiring but also less firing –i.e. they reduce labour market flows– and that wages adjust to changes in these costs.⁴ Do higher firing costs reduce efficiency? They are expected to do so, because the lower labour flows that they induce hamper the reallocation of workers from lower to higher productivity jobs. The evidence is again mixed, although cross-country, cross-industry estimates suggest that EPL on regular contracts reduces productivity growth in industries where layoff restrictions are more likely to be binding.⁵

The economic analysis of dual labour markets has also addressed these issues. As will be discussed below, the idea that introducing flexibility at the margin is a good substitute for relaxing EPL regulations on OECs has been completely discredited. In particular, the result that firing costs have an ambiguously signed effect on

¹ See Nickell and Layard (1999).

² See Dolado (2017) on the timing of the reforms in several European countries, and Saint-Paul (2000) on the political economy of the reforms.

³ See Boeri (2011) for a survey of economic analysis and OECD (2014) regarding policies.

⁴ See Bentolila and Bertola (1990).

⁵ See Bassanini et al. (2009).

unemployment also tends to hold for dual EPL, while there is stronger support for its being detrimental to productivity growth. Moreover, duality induces changes in the organization of production leading to high labour turnover rates. In dual labour markets, this outcome overcomes the potentially beneficial role of FTCs as stepping stones toward stable jobs for workers, having negative effects on job stability, wages, and inequality.

In what follows, we first provide an overview of dual labour markets in Europe (Section 2), present a simple conceptual framework for analysing dual labour markets and review the key theoretical results (Section 3), revisit the empirical evidence (Section 4), and discuss policies to overcome the segmentation that prevails in dual labour markets and its negative economic and social consequences (Section 5). Finally, we include a few concluding remarks (Section 6).

2. An overview of duality in Europe

There is no agreed definition of what constitutes a dual labour market. The main feature of such market is the coexistence of OECs and FTCs, and so the usual measure of duality is the *FTC rate*, i.e. the share of employees under an FTC.⁶ This rate is shown in Figure 1 for several EU member states alongside the EU average. On the one hand, the UK labour market, currently with an FTC rate around 6%, is clearly not dual. Germany, with a share around 13%, can be seen as a borderline case. On the other hand, the remaining countries should be considered as dual labour markets, currently all being above the European average of 14%.

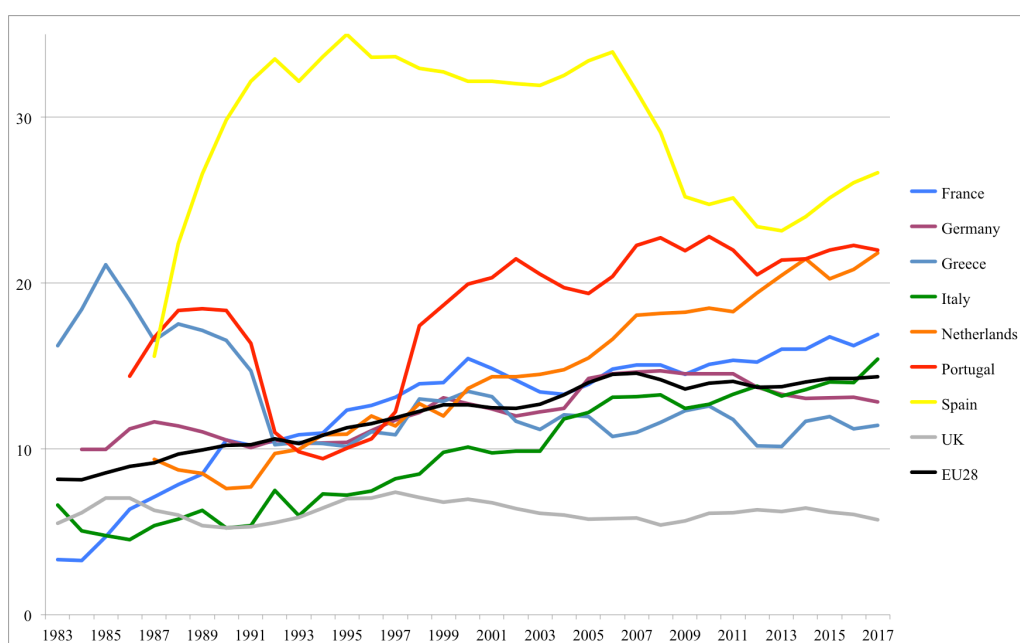
The Figure shows stable FTC rates in Germany, Greece, and the UK, and a growing trend in the average of the EU28 countries (increasing by 6 percentage points between 1983 and 2017) and in France, Italy, the Netherlands, Portugal, Poland, and Spain. Beyond Europe, FTCs have also gained ground elsewhere (ILO, 2015). Regarding population groups, their incidence is significantly higher for youth, low-educated, and low-skilled workers, and, to a lesser extent, women (OECD, 2014).

2.1. The different faces of fixed-term contracts

The FTC rate, however, is not a sufficient statistic for the degree of labour market segmentation by contract status, because FTCs are used in different ways across countries. Their use can be mostly restricted to short-duration jobs, which then provide firms with higher flexibility and workers with easier access to employment and the expectation of landing an OEC job. In this case, FTCs act as stepping stones. Alternatively, firms can use FTCs mostly as a way to adjust their workforce at a lower cost in the face of shocks. In this case, FTCs jobs do not usually lead to an OEC and they become dead ends.

⁶ In OECD (2014), *non-regular employment* is defined as comprising all forms of employment that do not benefit from the same degree of protection against contract termination as permanent employees, namely, fixed-term contracts, temporary-work-agency employment, casual contracts, and contracts for services regulated by commercial law under similar conditions as employees.

Figure 1. Share of employees with fixed-term contracts (%)



Source: Organisation for Economic Co-operation and Development, OECD Statistics (stats.oecd.org).

Examining the differences in firing costs between OECs and FTCs is therefore crucial. A key element here is the legal principle of causality, according to which there can be different EPL provisions for jobs with different expected durations. Contracts for regular jobs are assumed to be open-ended and the employer can only terminate them for specified disciplinary or economic reasons, with severance pay being due only for the latter. Moreover, workers can appeal their dismissal in court. The labour court verifies that the dismissal is not discriminatory (if it is, the worker is entitled to reinstatement) and that the alleged cause applies, i.e. that the dismissal is *fair*. Judicial intervention raises firing costs above severance pay, due to legal expenses, procedural delays, and uncertainty about the ruling (see Section 4).

Contracts for temporary jobs are assumed to be FTCs, being renewable up to a maximum duration of employment at the same firm. Severance pay at expiry is either zero or significantly below that for OECs. Termination before the expiry date is forbidden in some countries, while in others it entails the same severance pay as for OECs. FTC workers cannot appeal the termination in court, unless they claim that their job was not really temporary.

Dual EPL would seem to be a flexible framework, which allows the protection of workers' employment to be combined with the flexibility needs of companies. However, it is usually hard to anticipate when a new job will end in the face of economic shocks. These shocks can make an apparently open-ended job become non-viable whereas they make a determined-duration job very profitable in the medium term. Thus, when employers are required to choose a contract for a new job, in practice their decision heavily depends on the relative dismissal cost and not, as intended by dual EPL, on objective differences in the job's expected duration. This mechanism therefore favours dead-end rather than stepping-stone outcomes, especially the larger is the EPL gap between contract types.

2.2. Fixed-term contracts and labour market performance

It is difficult to find significant relationships between the prevalence of FTCs and indicators of labour market performance. In his review of fifteen observational studies that use the standard OECD EPL strictness indicator, Boeri (2011) reports no statistically significant correlation between EPL stringency and employment or unemployment levels, but a strong one between EPL and unemployment inflows and outflows. In Section 4 we will review recent empirical studies.

In the case of dual EPL, the effects are different. Figure 2 represents the FTC rate in 2011-2017 against three quarterly flow rates from labour force surveys, for workers aged 25-54 (25-64 for the conversion rate). It shows that the higher the FTC rate, the higher is the flow rate from employment to unemployment, and the lower are both the unemployment to employment flow rate and the conversion rate of FTCs into OECs.

Cahuc et al. (2016a) alternatively quantify monthly labour flows using administrative records of labour contracts for France and Spain. They observe three stylized facts in these dual labour markets. First, the vast majority (about 90%) of entries to employment are into FTCs. Second, the duration of most FTCs is very short. Contracts lasting up to one-month account for two-thirds of entries into employment in France and one-half in Spain. Third, most fluctuations in employment inflows are due to FTCs. The deviations of total inflows from trend are on average 7 times larger for FTCs than for OECs in France and 11 times in Spain.

How have EPL regulations evolved over time? Figure 3 shows the OECD indices on the stringency of EPL for regular and temporary contracts in 1990 and 2013, for all available OECD countries. Convergence is apparent in both cases: most countries with initially low EPL have raised it, while most of those with initially high EPL have lowered it, more so in the case of FTCs. The change in the gap between the stringency of EPL on OECs and FTCs cannot be computed from these indices, since they are qualitative in nature.

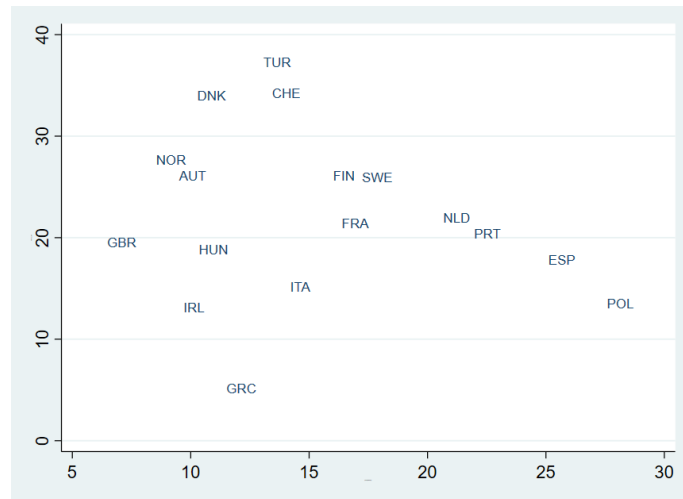
3. Effects of dual EPL: Theoretical results

In this Section we discuss the main economic effects of dual EPL. The early analysis is well captured in Saint-Paul (1996), further discussion appears in Dolado et al. (2002), while Boeri (2011) surveys subsequent work and provides a useful model. Here we go beyond the latter, by highlighting more recent theoretical developments. Theoretical work on dual EPL in the 1990s relied on idiosyncratic shocks to firms' productivity or demand as the source of adjustments in employment, in either partial or general equilibrium.⁷ Since the early 2000s, the analysis has been dominated by job search and matching general equilibrium models à la Mortensen and Pissarides (1994), which focus on individual firm-worker matches and job market frictions. The first subsection presents a simplified model of this type, to explain how dual EPL affects labour flows, and the second subsection describes the main mechanisms studied and results obtained in the most recent work.

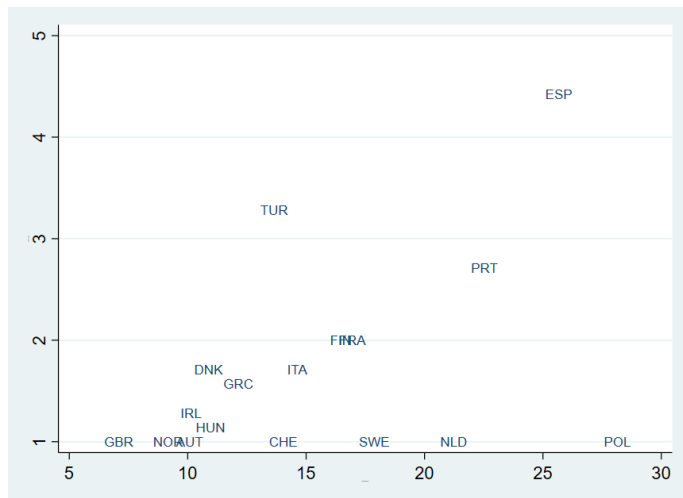
⁷ See Bentolila and Saint-Paul (1992) and Cabrales and Hopenhayn (1993), respectively.

Figure 2. Labor flows and the fixed-term contract rate in selected OECD countries, 2011-2017

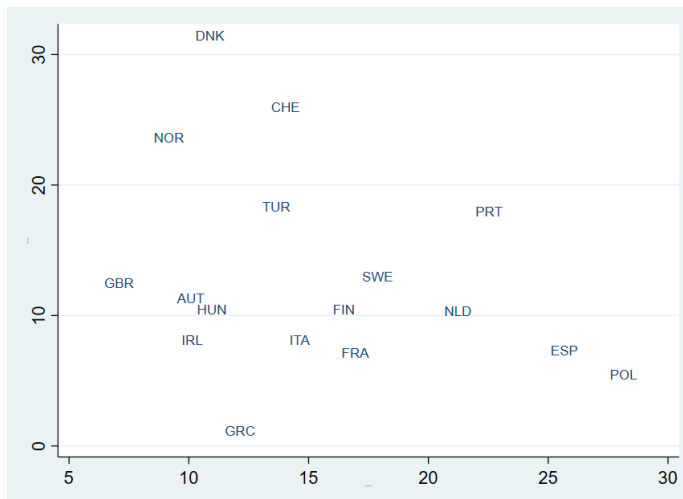
A. Employment to unemployment flow rate as a share of employees



B. Unemployment to employment flow rate as a share of the unemployed

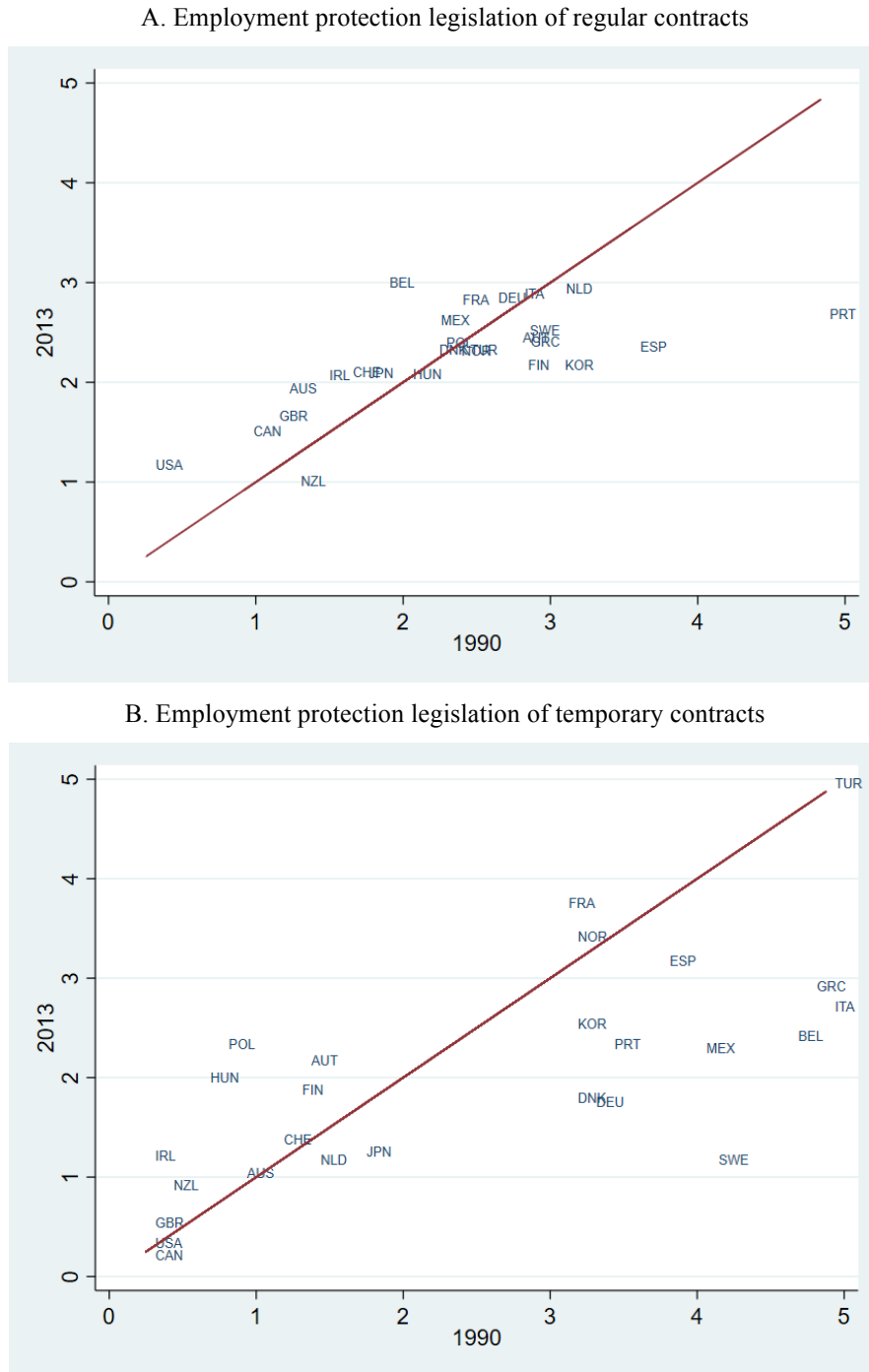


C. Conversion rate of fixed-term into open-ended contracts



Note. Horizontal axis: Temporary employment rate. Quarterly rate averages for the period 2011-2017, workers aged 25-54 (25-64 in Panel C). Source: Organisation for Economic Co-operation and Development, OECD Statistics (stats.oecd.org).

Figure 3. Employment protection legislation of regular and temporary contracts in selected OECD countries, 1990 and 2013



Source: Organisation for Economic Co-operation and Development, OECD Statistics (stats.oecd.org).

3.1. A simple model of labour demand in dual labour markets

The key difference between OECs and FTCs lies with the higher firing costs of the former. If this was the only difference, firms should only use FTCs if available. Thus, researchers have explored additional reasons why firms would wish to use OECs. It has often been assumed that all new jobs are temporary or that regulation forces firms to

create OEC jobs due to limits on FTC duration. Other alternatives posit that firms want to create OEC jobs because: (i) their job-filling rate is faster than that of FTCs, (ii) FTC workers continue to search on the job whereas OEC workers do not, and (iii) the latter are ex-ante more productive than FTC workers.⁸

A recent alternative approach, proposed by Cahuc et al. (2016a, b), is motivated by the fact that in several countries, dismissal of temporary workers before their FTC expires is prohibited (e.g. France, Germany, or Italy) or it entails the same severance pay as an OEC (e.g. Spain). In addition, firms are assumed to have access to production opportunities of different expected durations: some are expected to end soon whereas others are expected to last longer. Then firms will want to use FTCs for the former and OECs for the latter, even if firing costs are the only difference between the two types of workers.

Here we present a simple, partial equilibrium framework, which is inspired by Cahuc et al. (2016a), though for simplicity we retain the assumption of dismissals being possible at any time. This setup helps us analyse how the gap between firing costs for OECs and FTCs affects both the FTC rate and the job flows by contract.

Consider a one-worker firm that is deciding whether to hire a worker and the type of contract to offer: an OEC (subscript o) or an FTC (subscript f). OECs have indefinite duration, while FTCs have an exogenous fixed duration d , after which the contract is either converted to an OEC or terminated. All workers have the same productivity y and receive the same wage w under either type of contract. At the recruitment stage, jobs can become unproductive at a constant arrival rate, which is randomly chosen from the support $[\lambda_{min}, 1)$ with $0 < \lambda_{min} < 1$. Notice that $1/\lambda$ captures the expected duration of the job. Firms incur a firing cost F when dismissing workers on OECs, whereas workers under FTCs are entitled to a termination compensation f , regardless of whether the job is destroyed before period d or not, such that $[1 - (1 - \lambda_{min})^d]F < f < F$.⁹

Let us denote by $J_i(\lambda)$, ($i=o, f$), the asset value of a firm hiring a worker with each type of contract for a job with probability λ of becoming unproductive, and let us assume for simplicity that there is no discounting. Then, it holds that:

$$J_o(\lambda) = \sum_{s=0}^{\infty} (1 - \lambda)^s (y - w - \lambda F) = \frac{y-w}{\lambda} - F \quad (1)$$

$$J_f(\lambda) = \sum_{s=0}^{d-1} (1 - \lambda)^s (y - w) - f + (1 - \lambda)^d \max \{J_o(\lambda), 0\} \quad (2)$$

The RHS of (1) is the expected profit from hiring under OEC (while the job lasts), namely, the flow profit, $y-w$, minus the expected firing cost multiplied by the probability of job survival in each period, λF . Likewise, the first term of the RHS of (2) is the expected profit under an FTC, followed by the termination cost f , and the option value for a firm of converting the FTC into an OEC at d or not renewing it.¹⁰

It is easy to check that both $J_o(\lambda)$ and $J_f(\lambda)$ are decreasing and convex in λ , i.e. the riskier the job the lower the firm's asset values. It can also be shown that:

⁸ See Berton and Garibaldi (2012), Cao et al. (2010), and Bentolila and Saint-Paul (1992), respectively.

⁹ The lower limit ensures that OECs are preferred to FTCs for low values of λ , i.e. for more stable jobs.

¹⁰ Notice that the first term in the RHS of (2) can be written as $[1 - (1 - \lambda)^d](y-w)(1/\lambda)$.

$$\lim_{\lambda \rightarrow \lambda_{min}^+} J_o(\lambda) > \lim_{\lambda \rightarrow \lambda_{min}^+} J_f(\lambda) > 0 \quad (3a)$$

$$\lim_{\lambda \rightarrow 1^-} J_o(\lambda) < \lim_{\lambda \rightarrow 1^-} J_f(\lambda) < 0 \quad (3b)$$

Thus, for low values of λ (highly stable jobs), it is more profitable to offer an OEC than an FTC, since the firm has an unlimited profit flow and is unlikely to dismiss the worker and pay the firing cost. By contrast, in the case of an FTC, the firm always has to pay the termination cost and has a limited amount of profits. Conversely, for high values of λ (highly unstable jobs) neither contract is profitable, but losses are higher under an OEC than under an FTC, since $F > f$.

Three cut-off values of λ then determine the firm's decision. The first one is the value above which firms offering OECs make losses:

$$\lambda_o = \frac{y-w}{F} \quad (4)$$

The second one is the value beyond which firms offering an FTC make losses:

$$\frac{[1-(1-\lambda_f)^d](y-w)}{\lambda_f} + (1-\lambda_f)^d \max\{J_o(\lambda_f), 0\} = f \quad (5)$$

where $J_o(\cdot)$ denotes the asset value of an FTC job at this threshold. Finally, there is a threshold value that makes the firm indifferent between hiring under an OEC or an FTC:

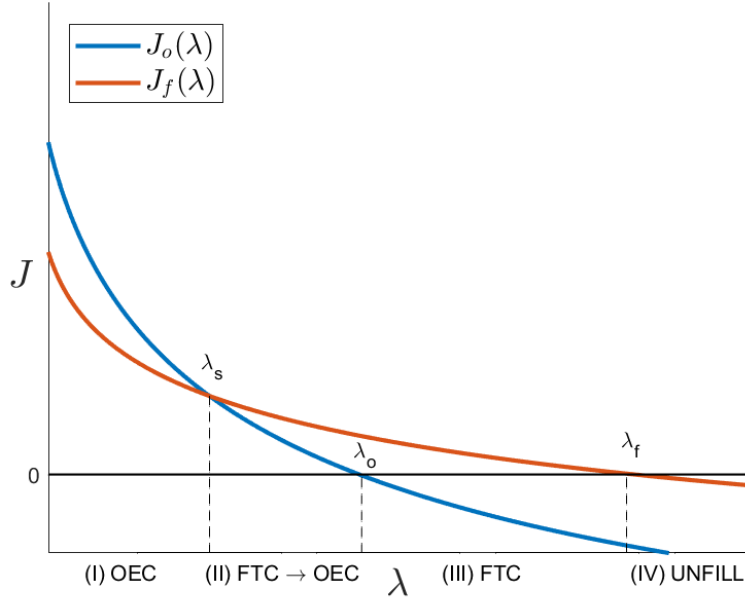
$$\frac{1}{1-(1-\lambda_s)^d} = \frac{F}{f}$$

Then, it can be shown that the following inequalities hold: $\lambda_{min} < \lambda_s < \lambda_o < \lambda_f < 1$, implying the existence of four relevant intervals of λ :

- (I) for $\lambda \in [\lambda_{min}, \lambda_s]$, firms prefer to offer an OEC rather than an FTC, since the former is more profitable for low values of λ ,
- (II) for $\lambda \in [\lambda_s, \lambda_o]$, firms convert the FTC into an OEC when the FTC reaches its final period,
- (III) for $\lambda \in [\lambda_o, \lambda_f]$, firms only offer an FTC since (3b) holds and $J_o(\lambda) < 0$, so that the term $\max\{\cdot, \cdot\} = 0$, and finally,
- (IV) for $\lambda \in (\lambda_f, 1)$, firms decide not to fill the vacancy.

Figure 4 displays these intervals.

Figure 4. Value of fixed-term (*f*) and open-ended (*o*) contracts as a function of the productivity shock (λ)



Note. OEC: Open-ended contract. FTC: Fixed-term contract. Areas: (I) Hiring on OEC. (II) Conversion from FTC to OEC. (III) Hiring on FTC. (IV) No hiring.

Let us define the ratio $F/f > 1$ as the relative gap in firing costs between OECs and FTCs, labelled as *EPL gap* for short. We now examine the effects of an increase in this gap in two alternative ways: a rise in F for a given value of f and a reduction in f for a given value of F .

When F rises, it can be checked that:¹¹

$$\frac{\partial \lambda_s}{\partial F} < \frac{\partial \lambda_o}{\partial F} < 0, \frac{\partial \lambda_f}{\partial F} = 0.$$

Hence, intervals (I) and (II) shrink, while (III) and (IV) expand. Thus, firms will offer less OECs directly and will convert less FTCs into OECs, in exchange for offering more FTCs and declining to hire more often. As a result, there will be less hiring and firing of workers under OECs and more churning of temporary workers, who transit between FTCs and unemployment, due to the lower conversion rate.

On the other hand, when f decreases, we get that:

$$\frac{\partial \lambda_f}{\partial f} > \frac{\partial \lambda_s}{\partial f} > 0, \frac{\partial \lambda_o}{\partial f} = 0.$$

¹¹ Notice that $\partial \lambda_f / \partial F = 0$ since $\max\{\cdot, \cdot\} = 0$ in (5), given that $J_o(\lambda) < 0$ when $\lambda > \lambda_o$.

Thus, again, intervals (I) and (II) shrink (less direct OEC offers and conversions) while (III) increases (more FTCs) but (IV) gets narrower (more job creation). The difference with the previous case is that now the average level of firing costs falls, whereas it goes up when F increases and f stays constant. Thus, job creation and destruction will be lower in the first case than in the second.

Next, we consider the case with no EPL gap and positive firing costs, i.e. $F=f>0$, to analyse how the threshold values of λ respond to a change in F . It then holds that:

$$\frac{\partial \lambda_o}{\partial F} < \frac{\partial \lambda_f}{\partial F} < 0, \frac{\partial \lambda_s}{\partial F} = 0.$$

Thus, a reduction in F leads to wider intervals (I) and (III) (more direct offers of OECs and FTCs) and narrower intervals (II) and (IV) (less conversions and jobs unfilled).

Next, let us assume that $F > f$ and that firms using FTCs are penalized with a tax rate τ , the cut-off value λ_o is the same as in (4), but the new asset value $J_f(\lambda)$ becomes:

$$J_f(\lambda) = \sum_{s=0}^{d-1} (1-\lambda)^s [y - w(1+\tau)] - f + (1-\lambda)^d \max \{J_o(\lambda), 0\}$$

The new values of λ_s and λ_f , denoted as λ_s^τ and λ_f^τ verify that $\lambda_s^\tau < \lambda_s$ and $\lambda_f^\tau < \lambda_f$ (see Appendix). As a result, intervals (I) and (III) become narrower (less direct OEC and FTC offers), (II) widens (more conversions, but from a lower number of FTCs), and (III) increases as well, so that more vacant jobs remain unfilled (less job creation). The insight is that, though FTCs become relatively less attractive than OECs, taxing FTCs implies a rise in overall labour costs, leading to lower labour demand.¹²

Finally, we can also consider the case where firms choose the optimal duration of an FTC prior to the contract. If the termination cost for FTCs depends on the duration of the contract d , so that $f=sd$, where s is the per-period compensation, we can prove that the duration of FTCs decreases with their termination costs and with the EPL gap.

Summing up, from the previous comparative statics it follows that, on the one hand, reducing the EPL gap and lowering the overall level of firing costs will reduce the share of FTCs in the labour market, decrease churn, and lead to higher job creation and lower job destruction. On the other hand, taxing FTCs will reduce the share of these contracts, also decreasing job creation and labour demand.

3.1. Theoretical results on the effects of duality

Many theoretical analyses have shed light on the impact of dual EPL on several economic variables. Rather than trying to cover the existing large body of work, we will now highlight the main results for a few key variables, on the basis of a number of recent articles.

Labour market flows. The early work showed that duality unambiguously increases

¹² Cahuc et al. (2016b) show that the tax on FTCs also reduces their average duration.

worker turnover.¹³ More recently, the general equilibrium model by Cahuc et al. (2016a), calibrated for the French economy, delivers the three stylized facts mentioned in Section 2, namely, the large shares of FTCs in employment inflows and with very short duration, and the large contribution of FTCs to fluctuations in total employment inflows. It also finds that duality with stringent EPL on OECs hardly affects total employment but induces large-scale replacement of OEC jobs by temporary jobs. This indicates a large degree of substitution between OEC and FTC jobs, which is confirmed by empirical estimates.

Productivity. Another result from Cahuc et al.'s (2016) model, and from many others, is that dual EPL reduces efficiency. The reason is that when F increases, the average productivity of OEC workers drops. This is because firms retain OEC jobs with lower productivity, i.e. standard labour hoarding. A higher F also raises the duration of FTC jobs, since firms face lower incentives to convert them into OEC jobs due to the smaller surplus of the latter. As a result, in countries where FTC jobs cannot be destroyed before they expire, they are kept more often, leading firms to pay positive wages to unproductive FTC workers. This reduces their entry wage (which is not renegotiated). Therefore, the increase in the share of FTC jobs also reduces productivity. The same holds in Dolado et al. (2016), through a different mechanism (see Section 4).

Unemployment rate. The impact of dual EPL on unemployment is ambiguous, due to the negative impact of firing costs on both job creation and destruction. It may become certain, though, for a high enough EPL gap. Bentolila et al. (2012) analyse the case in which FTCs entail no firing cost, so that the OEC dismissal cost (F in Section 3) captures the EPL gap. In their model, there is also an exogenous probability of obtaining an FTC when a match is formed, which is meant to capture the enforcement of legal limitations on the use of FTCs. In this model, a rise in F induces firms to fire OEC workers less and transform FTCs into OECs less frequently.

Although in principle the ambiguity on the effect of F on unemployment holds, a further increase in F will raise unemployment when the EPL gap is high enough. The insight is that, if the conversion rate is low to start with, a further rise in F exacerbates FTC workers' turnover precisely when less vacancies are being posted. Thus, unemployment is likely to increase. When calibrating their model, Bentolila et al. (2012) exploit the fact that France has both a lower firing cost for OECs and a lower probability of hiring on an FTC than Spain, and they find that Spain could have avoided about 45% of its unemployment surge during the Great Recession had it adopted the French EPL rules.

Employment volatility. One of the most robust empirical facts is the large increase in employment volatility that is observed after dual EPL reforms. This is not surprising, since lower firing costs for FTCs must lead to higher churn. But Costain et al. (2010) further ask whether a dual labour market is more volatile than an otherwise identical economy with a single EPL. In an economy that is subject to both aggregate and idiosyncratic productivity shocks, employment grows smoothly in booms, due to matching frictions. However, the onset of a recession brings forth a burst of firing of so-called *fragile* low-productivity jobs. Unlike OEC jobs, some newly created FTC jobs are already near their destruction threshold, which makes them more fragile, therefore playing a disproportionate role in employment fluctuations. A calibration of their model

¹³ See Abowd et al. (1999), Blanchard and Landier (2002), and Cahuc and Postel-Vinay (2002).

to Spain indicates that unemployment fluctuates 21% more under duality than in a unified economy with the same average firing cost.

4. Effects of dual EPL: Empirical evidence

Initial empirical research on dual labour markets, starting in the 1990s, exploited mainly time-series data for a given country. Later on, following the shocks and institutions approach popularized by Blanchard and Wolfers (2000), the focus moved to cross-country panel data studies that combined time-series data on labour market variables and measures of labour market institutions. Over the past decade, researchers have firmed up their identification strategies by focusing instead on within-country variation across firms and over time, either using quasi-experimental techniques that exploit firm-size thresholds in EPL or through natural experiments afforded by changes in the regulation of FTCs. This work focuses on European countries, where duality is most prevalent, although there is some related work on temporary employment agencies in the US (Autor and Houseman, 2010).

Due to its limitations for addressing general-equilibrium effects, this body of research has mostly produced microeconomic evidence. For this reason, the analysis of the aggregate behaviour of dual labor markets has been left to the calibrated search and matching models of the type reviewed in Section 3.

Stepping stones v. dead-ends. One of the most frequent alleged motivations for introducing FTCs is to facilitate both firms' screening and workers' access to entry jobs that provide human capital and work experience. Thus, a central research issue is whether FTCs really serve as stepping stones to more stable jobs or whether they are dead ends leading to a sequence of alternating periods of FTC jobs and unemployment.

As discussed in Section 3, a robust theoretical finding is that the higher the EPL gap the higher is hiring on FTCs and the lower is their rate of conversion into OECs, and therefore the more churn there is and the less of a stepping stone FTCs are. What are the empirical findings in this respect?

Starting with unemployment outflows, work on unemployment duration that treats FTCs and OECs as competing risks conclusively establishes that the availability of FTCs leads to shorter duration of unemployment spells. Of course, this finding does not settle the issue, since workers on FTCs are more likely to enter unemployment as well, so the question is whether workers can transit from FTCs to OECs, at the same or at a different firm.¹⁴ As pointed out by Eichhorst (2014), one should compare the careers of labour market entrants or unemployed workers who take up an FTC to those of similar workers who forgo that option, or to compare labour market dynamics before and after the introduction or liberalization of FTCs.

There is empirical evidence both in favour and against the stepping-stone hypothesis, but it is geographically segmented. The evidence in favour mostly refers to countries with low firing costs on OECs and a lower prevalence of FTCs, in some cases through temporary work agencies –such as Austria, Denmark, Germany, Sweden, the Netherlands, the UK or the US–, though even for these countries there are conflicting

¹⁴ See, e.g., Berton and Garibaldi (2012) for Italy or Bentolila et al. (2018) for Spain.

results.¹⁵ On the other hand, the evidence against the stepping-stone hypothesis pertains mainly to dual labor markets with high EPL gaps and a high FTC incidence –such as Italy and Spain.¹⁶

This segmentation is consistent with the theoretical predictions. Where EPL gaps are small, FTCs facilitate access to more stable jobs. This role fits well with empirical results showing a stronger stepping-stone effect when FTCs are used for training, especially in countries with strong vocational education systems where FTCs facilitate screening as well –such as Austria or Germany. On the other hand, with large EPL gaps the screening role fades and the buffer role prevails, so that employers organize production to have a large share of FTC workers, most of whom are unlikely to be promoted to an OEC.

We end this part with an informative study on the long-term effects of FTCs. García-Pérez et al. (2018) track the cohorts of male high school dropouts entering the Spanish labour market right before and right after a 1984 reform that strongly liberalised the use of FTCs, i.e., a cohort discontinuity design. They find that the second cohort had a larger probability of working before age 19. Yet, over their first ten years in the labour market, they also showed less days of work, around 5%, and lower earnings, around 10%. Over the first 27 years of their careers, yearly earnings losses still amounted to 7.3%. No effects are found however for high school graduates.

Productivity and wages. There is evidence indicating that FTC workers are less productive than OEC workers and that a higher FTC rate leads to lower productivity growth. To start with, firms tend to invest less in training their FTC employees than their OEC employees. For instance, a study based on the Survey of Adult Skills (collected by the OECD over 2008-2013 in 21 countries) reports that being on an FTC reduces the probability of receiving employer-sponsored training by 14% (OECD, 2014). The shortfall in training, except for training contracts, makes sense for firms, since the shorter the expected duration of the match, the less time there is to reap the returns from the training investment.

The impact of overall EPL on productivity is a priori ambiguous. In particular, EPL reduces labour flows, hindering reallocation of workers to their most productive matches and thus TFP growth (Hopenhayn and Rogerson, 1993).¹⁷ Yet, another line of work stresses that EPL induces firms and workers to invest more in match-specific training, therefore improving TFP growth (Belot et al., 2007). However, this literature refers to labour markets where all workers are hired on OECs, so we can still ask whether firms that employ more FTC workers experience, ceteris paribus, lower TFP growth.

Several studies for Italy examine changes in labour productivity (rather than TFP) following various labour market reforms that increased the use of FTCs. All find a

¹⁵ Favourable evidence is given by Heinrich et al. (2005) for Austria, Holmlund and Storrie (2002) for Sweden, and Booth et al. (2002) for the UK, whereas negative results are found by Autor and Houseman (2010) for the US and De Graaf-Zijl et al. (2011) for the Netherlands.

¹⁶ See Gagliarducci (2005) for Italy, and Güell and Petrongolo (2007) and García-Pérez and Muñoz-Bullón (2011) for Spain.

¹⁷ For empirical evidence at the firm level, see Petrin and Sivadasan (2013).

negative relationship between these two variables.¹⁸ Dolado et al. (2018) present a dual EPL model in which, for FTCs not to be detrimental to TFP growth, OEC workers should respond to a higher EPL gap by exerting significantly more effort –thus making their jobs much more attractive for both firms and FTC workers. Otherwise, a higher EPL gap reduces the profitability of OEC jobs, thereby decreasing firms’ conversion rate and their training of temporary workers. As a result, FTC workers opt for lower effort, hindering firm productivity. Using micro data on Spanish manufacturing firms with very high and very low FTC employment rates, they find a rather minor response of OEC workers to changes in the EPL gap in comparison with the response of temporary workers. This validates firms’ policy of low conversion rates and low training of FTC workers.

On top of these, there are other mechanisms through which FTCs affect productivity: (i) worker productivity varies with the type of contract (Ichino and Riphon 2005), (ii) incentives to accumulate general and firm-specific human capital change (Cingano et al., 2014), (iii) labour reallocation patterns in the aftermath of shocks are altered (Kugler and Pica, 2008), and iv) the existence of financial constraints that interact with labour demand (Caggese and Cuñat, 2008).

Regarding wages, following Lazear’s (1990) *bonding critique* argument, it is accepted that a government-mandated pure transfer (e.g. severance pay) from firms to dismissed workers can be neutralised by an appropriately designed wage contract: the entry wage of the worker is reduced by an amount equal to the present value of the future transfer, so as to leave the expected cumulative wage bill unchanged.¹⁹ Consequently, the vast majority of researchers interpret firing costs as layoff taxes paid outside the firm-worker pair (e.g. red-tape costs), which cannot be undone by side negotiations. The main conclusions of this research line agree with the ones discussed above (Ljungqvist, 2002): a higher firing tax lowers job destruction and unemployment incidence by making dismissals costlier to employers, while it increases unemployment duration because the larger labour costs weaken job creation, with an overall ambiguous effect on unemployment.

However, Garibaldi and Violante (2005) argue that wage-setting constraints in many countries may induce the transfer component to affect equilibrium unemployment. In particular, they show that in a two-tier labour market, with insiders (OEC workers) and outsiders (FTC workers), severance pay can increase unemployment if wages negotiated by insiders for all workers are rigid. By contrast, if they are flexible, severance pay is still neutral. The intuition is that outsiders’ wages are increasing in severance pay, since they contain the rent on the firing cost extracted by the insiders.²⁰ At the firm level, Centeno and Novo (2014) find that a Portuguese labour reform that increased EPL protection of OECs in a subset of firms caused a fall in the wages of newly-hired OEC and FTC workers, with no impact on workers with seniority above 3 years. These wage

¹⁸ See Boeri and Garibaldi (2007), who interpret this finding as resulting from a transitory increase in labour demand induced by the higher flexibility (the so-called “honeymoon effect”), Hijzen et al. (2011), and Cappellari et al. (2012).

¹⁹ The transfer component includes advance notification and severance pay for no-fault dismissal and for unfair dismissal. The tax component includes pure red-tape costs, legal expenses in case of trial, and any financial penalties imposed by a labour court.

²⁰ Similarly, Bentolila and Dolado (1992) showed that there could be upward wage pressure by OEC workers, who benefit from the brunt of employment adjustment falling disproportionately on FTCs.

reductions did partially offset the higher cost arising from the new EPL. Overall, these results indicate that a setting with generous severance pay and centralised wage bargaining in the hands of insiders should lead to higher wage inequality and unemployment. Hence the need to reform collective bargaining in parallel with dual EPL.

Churn. Churn takes place when there is excess worker turnover, namely when worker flows are higher than net job creation. In Section 2 we saw that high-frequency data on gross worker flows can be computed from administrative records on labour contracts. For example, in Spain, the stock of employees increased by 75% from 1988 to 2016, while the number of contracts increased by 300%. Thus, over that period the yearly number of contracts per employee went from 0.6 to 1.3, and more than 90% of those contracts were FTCs.

Alternative measures of churn can be computed with data on firms or establishments. Pioneering work regarding dual EPL was carried out by Abowd et al. (1999), who used monthly data to show that in French establishments in the late 1980s there were three workers hired and two people separated for each job created in a given year, and that one person was hired and two were separated for each job destroyed. They also reported that 70% of entry flows and one-half of exit flows in French establishments pertained to FTC workers.

The rise in churn caused by labor reforms that promote the use of FTCs has been confirmed empirically. A standard measure of churn is given by the sum of the gross hiring and separation rates minus the absolute net job creation rate (Davis et al., 1996). Centeno and Novo (2012) compute this measure for Portugal, finding that the ratio of hires to created jobs and the ratio of separations to destroyed jobs is equal to 2, as in the US. They also find that excess turnover of FTCs increased after a labour market reform in 2014, whereas excess turnover for OEC workers remained unchanged. Note that this is a lower bound measure of churn, since hiring is given by workers who are at the firm in a given month of a given year but not one year before, and the opposite for separations. These measures, in contrast with Abowd et al.'s (2016), miss gross flows that happen strictly in between.

5. Policies to roll back duality

With the benefit of hindsight, it is apparent that countries that adopted a dual EPL did not improve significantly their labour market performance, while they suffered from high employment volatility and increasing earnings and wage inequality. Hence, this reform strategy has been reconsidered. In this section we review some of the reforms and policy proposals that have been either implemented or discussed in several countries, mostly in Southern Europe.²¹

5.1. Reducing the dual EPL gap

One of the most popular measures to reduce the inefficiency induced by dual EPL is to decrease the EPL gap, by either decreasing the firing costs of OECs, increasing those of

²¹ However, no substantial reforms of EPL for OECs have been undertaken in recent years in other European countries with high FTC rates –like Finland, Poland, or Sweden.

FTCs or redefining the causes of dismissal under either. This has been the main strategy of recent EPL reforms in Italy, Greece, Portugal, and Spain.

In Italy, the 2015 Jobs Act reform changed Article 18 of the Workers' Statute, which required firms with at least 15 employees to reinstate them if their OECs were unfairly terminated (e.g. for economic reasons). Workers are now entitled to mandatory redundancy pay instead (60 days of wages per year of service, *dwys* hereafter, with a floor and a cap). In addition, project-based labour contracts (*co.co.co*), which were often misused by employers, are now prohibited. Last and foremost, a new type of OEC was introduced, which includes gradual protection for new employees with an increasing tenure profile (see below).

In Greece, OECs were forbidden in public sector hiring, the duration of most FTCs was extended from 18 to 36 months, the trial period of OECs went up from 2 to 12 months, and the notice period for dismissals and the cap on severance pay for OECs were halved.

In Portugal, severance pay for OECs has been aligned with that of FTCs (to 20 *dwys* with a cap), while a mutual fund was established to partly finance severance pay along the lines of the US experience-rating system. Finally, the definition of fair individual dismissals for economic reasons has been broadened.

In Spain, the 2012 EPL reform lowered mandatory severance pay for workers under OECs (from 45 to 33 *dwys*, with a reduced cap), while the compensation at the end of FTCs was increased (from 8 to 12 *dwys*). In addition, interim wages in judicial processes were eliminated and a new OEC was introduced for firms below 50 employees, entailing no severance pay during an extended probationary period of one year.

In France, following the 2017 labour law reform, severance pay for unfair dismissal follows a set scale starting at 3 months' salary for every two years of service, whereas previously most cases were handled in an unpredictable way, with potentially much higher payments. In exchange, minimum severance pay has increased. Likewise, the number of renewals and the duration allowed for the most common short-term FTC (CDD) is now determined at the sectoral level, rather than by national law.

In the Netherlands, the 2015 Work and Security Act brought a clarification rather than a deregulation of EPL, reducing red-tape costs associated with judicial appeals for unfair dismissals.

Redefining the causes of dismissal and attempting to decrease the red-tape costs associated with uncertain judicial decisions are also key measures to address the inefficiency induced by dual EPL. However, they are difficult to implement in countries with a long tradition of judicial review of employer decisions –especially those which signed the ILO Article 158 requiring an explicit cause for dismissals (Jimeno et al., 2018). Even if the EPL gap is severely reduced, firms may still use FTCs excessively, since workers under OECs must receive advance notice of their dismissal and they can challenge it in court. Moreover, collective dismissal procedures usually entitle OEC workers to higher compensation than in individual dismissals for economic reasons. These obligations could explain why the FTC rate is still high today in countries that have implemented EPL reforms.

A partial reduction of this asymmetry was provided by the introduction in the 2015 Italian Jobs Act of a new OEC, called *fast-track* or *graded security* contract, for firms with more than 15 employees. This OEC can be used for new hires and for conversions of FTCs into OECs, and it involves redundancy pay of 60 *dwys* (with a floor and a cap) in case of wrongful dismissal, which is exempted from income taxation. In parallel, the use of an ordinary OEC is allowed, which entails severance compensation of 30 *dwys* (also with a floor and a cap) which is however subject to income taxation. An important novelty is that, if the worker accepts the fast-track contract, the right to appeal in court for unfair dismissal is given up.²² In addition, firms offering the new OEC received a sizeable temporary rebate of social security contributions. Boeri and Garibaldi (2018) and Sestito and Viviano (2018) find a very large employment effect from the introduction of the fast-track contract, although the separate effects of the change in firing costs and the subsidy are hard to disentangle.

5.2 *Unified open-ended contracts*

An alternative to these partial reforms is to aim at full convergence of FTCs and OECs by eliminating a wide range of FTC types and introducing a *unified open-ended contract* (UOEC) that applies to all hires, with termination costs smoothly increasing with job tenure. In principle, the level of severance pay could be chosen to match each country's social and political preferences for EPL.

There have been several proposals for introducing an UOEC in France, Italy, and Spain, among other countries. Although the details differ between them, their basic features coincide. Most importantly, the gap in severance pay between most FTCs and OECs becomes narrower or disappears altogether, so as to ease conversions and direct offers of stable contracts. None of these proposals, however, calls for the complete abolition of FTCs, which should still be allowed for temporary replacements, to hire workers from temporary work agencies to cover seasonal demand fluctuations, and for training contracts.

Three types of UOEC proposals can be considered (OECD, 2014). The first one calls for the introduction of an UOEC with an entry phase (2 to 3 years), during which worker entitlements in case of fair or unfair dismissals would be low or zero, followed by a stability phase, during which the worker would be entitled to the prevailing EPL (Boeri and Garibaldi, 2008). The main shortcoming of this proposal is that, by keeping a gap in mandatory EPL and red-tape firing costs between the two phases, it could maintain inefficient churn.

A second type of UOEC focuses on avoiding sizeable gaps in severance pay and, thus, proposes a smooth increasing job tenure profile jointly with a redefinition of unfair dismissal, which would be restricted to cases of discrimination and forbidden dismissals (Andrés et al., 2009). A potential problem with this kind of proposal is that, by tying EPL rights to job tenure in a given firm, it may reduce efficient turnover and prevent desirable relocation across jobs. To address this problem, Lepage-Saucier et al. (2013) propose an UOEC based on experience-increasing rights to severance pay, so that during the job spell employers would pay a fraction of social security contributions into a worker-specific fund, which would be portable across jobs, as happens in Austria since 2003 (Kettemann et al., 2017). Upon dismissal, the fund would finance part of the worker's severance pay.

²² Workers may prefer the certain, non-taxed fast-track OEC compensation to the higher but uncertain and taxed compensation attached to the ordinary OEC, especially those with long tenures.

The third type, proposed by Blanchard and Tirole (2008) and extended by Cahuc (2012), argues for financing unemployment insurance (UI) benefits through a layoff tax on OECs (as in the US experience-rating system), whose receipts would be deposited in a mutual fund. The main objective here is to tax inefficient job destruction by internalizing the social cost of dismissals: as with pollution, firms that fire more should contribute more to financing UI. In addition, the layoff tax would yield resources to mutualize the relocation costs of displaced workers.

Dolado et al. (2018) develop an equilibrium search and matching model to analyze the effects of introducing an UOEC with a tenure profile chosen according to some optimality criterion (e.g., the welfare of new labour-market entrants, in terms of consumption equivalent units). In their setup, there is a life-cycle structure where risk-averse young and old workers demand insurance to smooth consumption in the presence of idiosyncratic productivity shocks. In their calibration for Spain they find that an initial eligibility phase of 5 months (involving no redundancy compensation) and a severance pay slope of 20 *d*wys afterwards maximizes the chosen welfare criterion. The rationale for this profile is that older workers face larger difficulties than younger ones in finding jobs when unemployed, and therefore need more insurance.²³ They also show that, while young workers benefit from this reform, a majority of older workers is negatively affected, but the net effect is still positive. Finally, they find that the optimal UOEC provides twice the welfare gain as the 2012 Spanish EPL reform.²⁴

6. Concluding remarks

Our review of the theoretical and empirical analysis of dual EPL suggests that this institutional configuration of the labour market tends to create more problems than it solves. Moreover, recent technological and economic developments make it likelier that this reform strategy will fail to improve labour market performance. We therefore conclude with a few remarks about the challenges facing dual labour markets in future.

EPL interacts with other institutions. For example, the FTCs are more likely to serve as stepping stones if a country has a well-functioning vocational education system and the impact of duality on wage inequality and unemployment is stronger if collective bargaining is controlled by insider workers under OECs. These interactions deserve further research.

Regarding policy, on the one hand, the new digital technologies behind the so-called *gig economy* have further enhanced firms' demand for flexibility. In these new industries, the line between FTCs and the self-employed (e.g. freelancers and independent contractors) is becoming increasingly blurry. These developments suggest a looming further increase in workers' employment instability. This is confirmed by the trends observed in Spain – a bellwether country regarding duality– after the Great Recession,

²³ A profile that is increasing with tenure has also been rationalized on the basis of the higher psychic costs of dismissed workers with long tenures (Blanchard and Tirole, 2003) and of employers' lack of commitment to keep workers who have invested in specific training through wage deferrals, when there are large productivity shocks (Boeri et al., 2017).

²⁴ Garcia-Perez and Osuna (2014) calibrate a similar model for Spain to analyse the introduction of a specific UOEC in place of the existing EPL before the reform. They find significant reductions in the unemployment rate, the job destruction rate, the share of short-term FTCs, and the average severance pay.

where contracts lasting up to one-week have gone from representing 17% to 28% of FTCs in just one decade.²⁵ For both reasons, revenues from social security contributions are likely to fall.

On the other hand, FTCs are now not prevalent only among young workers, but they are also becoming more common among adult workers. When these workers reach pensionable age, it is unlikely that their labour history will meet the statutory requirements for a contributory pension, so that they will fall into much less generous assistance pensions. This development is bound to cause social unrest and a demand for higher non-contributory pension levels.

This outlook entails a tremendous challenge, which calls for a revamping of labor market regulations, so that both OECs contracts and other forms of employment provide both flexibility to firms and stable labour income to workers (what is labelled *flexicurity* in Scandinavian countries), in a financially viable social security system. Ending the scourge of duality seems paramount to achieve these goals.

²⁵ See Felgueroso et al. (2018).

References

Abowd, J., Corbel, P., and Kramarz, F. (1999). The Entry and Exit of Workers and the Growth of Employment: An Analysis of French Establishments. *Review of Economics and Statistics*, 81, 170-187.

Andrés, J., Bentolila, S., Dolado, J. J., and Felgueroso F. (2009), Propuesta para la Reactivación Laboral en España. *El País*, 26 April.

Autor, D. and Houseman, S. N. (2010). Temporary Help Jobs Improve Labor Market Outcomes for Low-Skilled Workers? Evidence from 'Work First'. *American Economic Journal: Applied Economics*, 2, 96-128.

Bassanini, A., Nunziata, L., and Venn, D. (2009). Job Protection Legislation and Productivity Growth in OECD Countries. *Economic Policy*, 24, 349-402.

Belot, M., Boone, J. and van Ours, J. (2007). Welfare Effects of Employment Protection. *Economica* 74, 381-396.

Bentolila, S., and Saint-Paul, G. (1992). The Macroeconomic Impact of Flexible Labor Contracts, with an Application to Spain. *European Economic Review* 6, 1992.

Bentolila, S. and G. Bertola (1990). Firing Costs and Labour Demand: How Bad is Eurosclerosis? *Review of Economic Studies*, 57, 381-402.

Bentolila, S., and Dolado, J. (1994). Labour Flexibility and Wages: Lessons from Spain. *Economic Policy*, 18, 53-99.

Bentolila, S., Cahuc, P., Dolado, J., and Le Barbanchon, T. (2012). Two-Tier Labour Markets in the Great Recession: France vs. Spain. *Economic Journal*, 122, F155-F187.

Bentolila, S., García-Pérez, J. I., and Jansen, M. (2018). Are the Spanish Long-Term Unemployed Unemployable? *SERIEs-Journal of the Spanish Economic Association*, 8, 1-41.

Belot, M., Boone, J. and van Ours, J. (2007). Welfare Effects of Employment Protection, *Economica*, 74, 381-396.

Berton, F., and Garibaldi, P. (2012). Workers and Firms Sorting into Temporary Jobs. *Economic Journal*, 122, F125-F154.

Blanchard, O. and Wolfers, J. (2000). The Role of Shocks and Institutions in the Rise of European Unemployment. *Economic Journal*, 116, 1-33.

Blanchard, O., and Landier, A. (2002). The Perverse Effects of Partial Labour Market Reform: Fixed-Term Contracts in France. *Economic Journal*, 112, F214-F244.

Blanchard, O., and Tirole, J. (2003). Contours of Employment Protection Reform. MIT Department of Economics Working Paper 03-35. Cambridge, Massachusetts: MIT.

- Blanchard, O., and Tirole, J. (2008). The Joint Design of Unemployment Insurance and Employment Protection: A First Pass. *Journal of the European Economic Association*, 6, 45-77.
- Boeri, T. (2011). Institutional Reforms and Dualism in European Labor Markets. In Ashenfelter, O. and Card, D. (eds.), *Handbook of Labor Economics*, vol. 4B, 1173-1236. Amsterdam: Elsevier.
- Boeri, T., and Garibaldi, P. (2007). Two Tier Reforms of Employment Protection Legislation. A Honeymoon Effect? *Economic Journal*, 117, F357-F385.
- Boeri, T., and Garibaldi, P. (2008). *Un Nuovo Contratto per Tutti (2008)*. Turin: Chiarelettere.
- Boeri, T., and Garibaldi, P. (2018). Graded Security and Labor Market Mobility: Clean Evidence from the Italian Jobs Act. Manuscript, Bocconi University.
- Boeri, T., Garibaldi, P., and Moen (2017). Inside Severance Pay. *Journal of Public Economics*, 145, 211-225.
- Booth, A., Francesconi, M., and Frank, J. (2002). Temporary Jobs: Stepping Stones or Dead Ends? *Economic Journal*, 112, F189-F213.
- Cabrales, A., and Hopenhayn, H. (1997). Labor Market Flexibility and Aggregate Employment Volatility. *Carnegie-Rochester Conference Series on Public Policy*, 46, 189-228.
- Cahuc, P. (2012). For a Unified Contract. *European Labour Law Journal*, 3, 191-206.
- Caggese, A., and Cuñat, V. (2008). Financing Constraints and Fixed Term Employment Contracts. *Economic Journal*, 118, 2013-2046.
- Cahuc, P., and Postel-Vinay, F., (2002). Temporary Jobs, Employment Protection and Labor Market Performance. *Labour Economics*, 9, 63-91.
- Cahuc, P., Charlot, O. and Malherbet, F. (2016a), Explaining the Spread of Temporary Jobs and its Impact on Labor Turnover. *International Economic Review*, 57, 533-571.
- Cahuc, P., Charlot, O., Malherbet, F., Benghalem, H. and Limon, E. (2016b). Taxation of Temporary Jobs: Good Intentions with Bad Outcomes? IZA Discussion Paper 10352. Bonn: Bonn: Institute of Labor Economics.
- Cao, S., Shao, E., and Silos, P. (2010). Fixed-Term and Permanent Employment Contracts: Theory and Evidence. Atlanta Fed Working Paper 2010-13. Atlanta: Federal Reserve Bank of Atlanta.
- Cappellari, L., Dell' Aringa, C., and Leonardi, M. (2012). Temporary Employment, Job Flows and Productivity: A Tale of Two Reforms. *Economic Journal*, 122, F188-F215.

- Centeno, M., and Novo, A. (2012). Excess Worker Turnover and Fixed-Term Contracts: Causal Evidence in a Two-Tier System. *Labour Economics*, 19, 320-328.
- Centeno, M., and Novo, A. (2014). Paying for Others' Protection: Causal Evidence on Wages in a Two-Tier System. IZA Discussion Paper 8702. Bonn: Bonn: Institute of Labor Economics.
- Cingano, F., Leonardi, M., Messina, J. and Pica, G. (2014). Employment Protection Legislation, Capital Investment and Access to Credit: Evidence from Italy. *Economic Journal*, 126, 1798-1822.
- Costain, J., Jimeno, J. F., and Thomas, C. (2010). Employment Fluctuations in a Dual Labor Market. Bank of Spain Working Paper 1013. Madrid: Banco de España.
- De Graaf-Zijl, M., Van den Berg, G., and Heyma, A. (2011). Stepping Stones for the Unemployed: The Effect of Temporary Jobs on the Duration until (Regular) Work. *Journal of Population Economics*, 24, 107-139.
- Davis, S. J., Haltiwanger, J., and Schuh, S. (1996). *Job Creation and Destruction*. Cambridge, Massachusetts: MIT Press.
- Dolado, J. (2017). EU Dual Labour Markets: Consequences and Potential Reforms. In Matyas, L. et al. (eds.), *Economics without Borders. Economic Research for European Policy Challenges*. Cambridge: Cambridge University Press.
- Dolado, J., García-Serrano, C., and Jimeno, J. (2002). Drawing Lessons from the Boom of Temporary Jobs in Spain. *Economic Journal*, 112, F270-F295.
- Dolado, J. J., Lalé, E., and Siassi, N. (2018). From Dual to Unified Employment Protection: Transition and Steady State. Manuscript, European University Institute.
- Dolado, J., Ortigueira, S., and Stucchi, R. (2016). Does Dual Employment Protection Affect TFP? Evidence from Spanish Manufacturing Firms. *SERIEs-Journal of the Spanish Economic Association*, 7, 421-459.
- Eichhorst, W. (2014). Are Fixed-Term Contracts a Stepping Stone to a Permanent Job or a Dead End? *IZA World of Labor*, 45. Bonn: Institute of Labor Economics.
- Felgueroso, F., García-Pérez, J.I., Jansen, M., and Troncoso, D. (2018). The Surge in Short-duration Contracts in Spain. *De Economist*, 166, 503-534.
- Gagliarduci, S. (2005). The Dynamics of Repeated Temporary Jobs. *Labour Economics*, 12, 429-448.
- García Pérez, J.I. and Muñoz Bullón, F. (2011). Transitions into Permanent Employment in Spain: An Empirical Analysis for Young Workers. *British Journal of Industrial Relations*, 49, 103-143.
- García-Pérez, I., Marinescu, I., and Vall-Castello, J. (2018). Can Fixed-Term Contracts Put Low Skilled Youth on A Better Career Path? Evidence from Spain. *Economic Journal* (forthcoming).

- García Pérez, J. I. and Osuna, V. (2014). Dual Labour Markets and the Tenure Distribution: Reducing Severance Pay or Introducing a Single Contract. *Labour Economics* 29, 1-13.
- Garibaldi, P. and Violante, G. L. (2005). The Employment Effects of Severance Payments with Wage Rigidities. *Economic Journal*, 115, 799-832.
- Güell, M. and Petrongolo, B. (2007). How binding Are Legal Limits? Transitions from Temporary to Permanent Work in Spain. *Labour Economics*, 14, 64-76.
- Heinrich, C. J., Mueser, P. R., and Troske, K. R. (2005). Welfare to Temporary Work: Implications for Labor Market Outcomes. *Review of Economics and Statistics*, 87, 154-173.
- Hijzen, A., Mondauto, L., and Scarpetta, S. (2017). The Impact of Employment Protection on Temporary Employment: Evidence from a Regression Discontinuity Design. *Labour Economics*, 46, 64-76.
- Holmlund, B., and Storrie, D. (2002). Temporary Work in Turbulent Times: The Swedish Experience. *Economic Journal*, 112, F245-F269.
- Hopenhayn, H., and Rogerson, R. (1993). Job Turnover and Policy Evaluation: A General Equilibrium Analysis. *Journal of Political Economy*, 101, 915-938
- Ichino, A., and Riphan, R. (2005). The Effect of Employment Protection on Worker Effort - A Comparison of Absenteeism During and After Probation. *Journal of the European Economic Association*, 3, 120-143.
- International Labour Office (ILO) (2015). Non-standard forms of employment. Conditions of Work and Equality Department. Geneva: ILO.
- Jimeno, J. F., Martínez-Matute, M. and Mora-Sanguinetti, J. S. (2018). Employment Protection Legislation, Labor Courts, and Effective Firing Costs. CEPR Discussion Paper 12554. London: Centre for Economic Policy Research.
- Kettemann, A., Kramarz, F., and Zweimüller, J. (2017). Job Mobility and Creative Destruction: Flexicurity in the Land of Schumpeter. CEPR Discussion Papers 12112. London: Centre for Economic Policy Research.
- Lepage-Saucier, N., Schleich, J., and Wasmer, E. (2013). Moving Towards a Single Labour Contract: Pros, Cons and Mixed Feelings. OECD Economics Department Working Papers, 1026, Paris: OECD.
- Kugler, A., and Pica, G. (2008). Effects of Employment Protection on Job and Worker Flows: Evidence from the 1990 Italian Reform. *Labour Economics*, 15, 78-95.
- Lazear, E. (1990). Job Security Provisions and Employment. *Quarterly Journal of Economics*, 105, 699-726.
- Ljungqvist, L. (2002). How Do Layoff Costs Affect Employment? *Economic Journal*, 112, 829-853.

Mortensen, D., and Pissarides, C. (1994). Job Creation and Job Destruction in the Theory of Unemployment. *Review of Economic Studies*, 61, 397-415.

Nickell, S., and Layard, R. (1999). Labor Market Institutions and Economic Performance. In Ashenfelter, O. and Card, D. (eds.), *Handbook of Labor Economics*, vol. 3. Amsterdam: Elsevier.

Organisation for Economic Cooperation and Development (OECD) (2014). *OECD Employment Outlook 2014*, Ch. 4. Paris: OECD.

Petrin, A., and Sivadasan, J. (2013). Estimating Lost Output from Allocative Inefficiency, with an Application to Chile and Firing Costs. *Review of Economics and Statistics*, 95, 286-301.

Saint-Paul, G. (2000). *The Political Economy of Labour Market Institutions*. Oxford: Oxford University Press.

Saint-Paul, G. (1996). *Dual Labor Markets: A Macroeconomic Perspective*. Cambridge, Massachusetts: MIT Press.

Sestito, P., and Viviano, E. (2018). Firing Costs and Firm Hiring: Evidence from an Italian Reform. *Economic Policy*, 33, 101-130.

Wasmer, E. (1999). Competition for Jobs in a Growing Economy and the Emergence of Dualism in Employment. *Economic Journal*, 109, 349-371.