Dual Labour Markets Revisited*

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Revised version, July 2019

Abstract

This paper provides an overview of empirical and theoretical research on dual labour markets. It revisits the labour-market effects of dual employment protection legislation as well as the main factors behind its resilience. Characterised by a high incidence of temporary contracts, which may lead to stepping-stone or dead-end jobs, dual labour markets exhibit specific features regarding the determination of employment, unemployment, churn, training, productivity growth, wages, and labour market flows. Relying on the contrasting experiences of several OECD countries with different degrees of duality and, in particular, on the very poor employment performance of some EU countries during the Great Recession, lessons are drawn about policy-reform strategies aiming to correct the inefficiencies of dual labour markets.

Keywords: Dual labour market, employment protection, temporary contracts, job creation, job destruction, churn

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Introduction

Firms require flexibility, but workers need job stability. Dealing with continuous shocks to demand, technology, and costs requires companies to vary their workforce nimbly. Yet, income stability is crucial for workers' welfare. Hence, 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 from 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, rather than modifying EPL for regular jobs, pursued labour market flexibility at the margin, extending the use of 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 population 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 how higher firing costs affect unemployment in non-dual labour markets. The gist of the results from both theoretical and empirical work, is the absence of a clear relationship between EPL and unemployment rates. Two insights for understanding this finding are that higher firing costs induce both less hiring and less firing –i.e. they reduce labour market flows– and that wages adjust to changes in these costs.[4] Furthermore, do higher firing costs reduce efficiency? They are expected to do so because the induced lower labour flows hamper the reallocation of workers from lower to higher productivity jobs. The evidence on this last topic 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 analysis of dual labour markets has also addressed these issues. A general message throughout this paper is that the idea that introducing flexibility at the margin is a good substitute for relaxing EPL regulations on OECs has been completely discredited. In

[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).

particular, the result that firing costs have an ambiguous effect on unemployment also tends to hold for dual EPL, whereas there is stronger support for its detrimental effect on productivity growth. Moreover, duality induces changes in the organization of production leading to excessive labour turnover rates. In dual labour markets, this outcome overcomes the potentially beneficial role of FTCs as stepping stones toward stable jobs for workers. On the contrary, they have strong negative effects on job stability, wages, and inequality.

In what follows, this paper first provides an overview of dual labour markets in Europe (Section 2), presents a simple conceptual framework for analysing dual labour markets and reviews the key theoretical results (Section 3), revisits the empirical evidence (Section 4), and discusses policies to overcome the segmentation that prevails in dual labour markets and its negative economic and social consequences (Section 5). Finally, it includes a few concluding remarks (Section 6).

Duality: An Overview

The main feature of dual labour markets is the coexistence of OECs and FTCs. Hence, the standard 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 together with the EU28 average. In 2017 the UK labour market had an FTC rate around 6% while Germany, with a share around 13%, is close to the EU average of 14%. Most of the remaining countries shown in the Figure have rates well above the EU average.

[Insert Figure 1]

Figure 1 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), among which France, Italy, the Netherlands, Portugal, Poland, and Spain provide neat illustrations of this pattern. Beyond Europe, FTCs have also gained ground elsewhere (ILO, 2015). Regarding population groups, Table 1 displays the FTC rates by gender, age, educational level, occupation, and sector in the EU28 countries, Germany (close to the EU28 average), Spain (well-known for its high duality), and the UK (where EPL for regular employment is not strict and, hence, the FTC incidence is low). As seen in Table 1, differences across these areas are large in all of the dimensions considered. Also, in Spain, and to a lesser extent in the EU28 and Germany, there are noticeable differences across groups, with the FTC rate being significantly higher for youth, low-educated, and low-skilled workers, and, to a lesser extent, among women.[7]

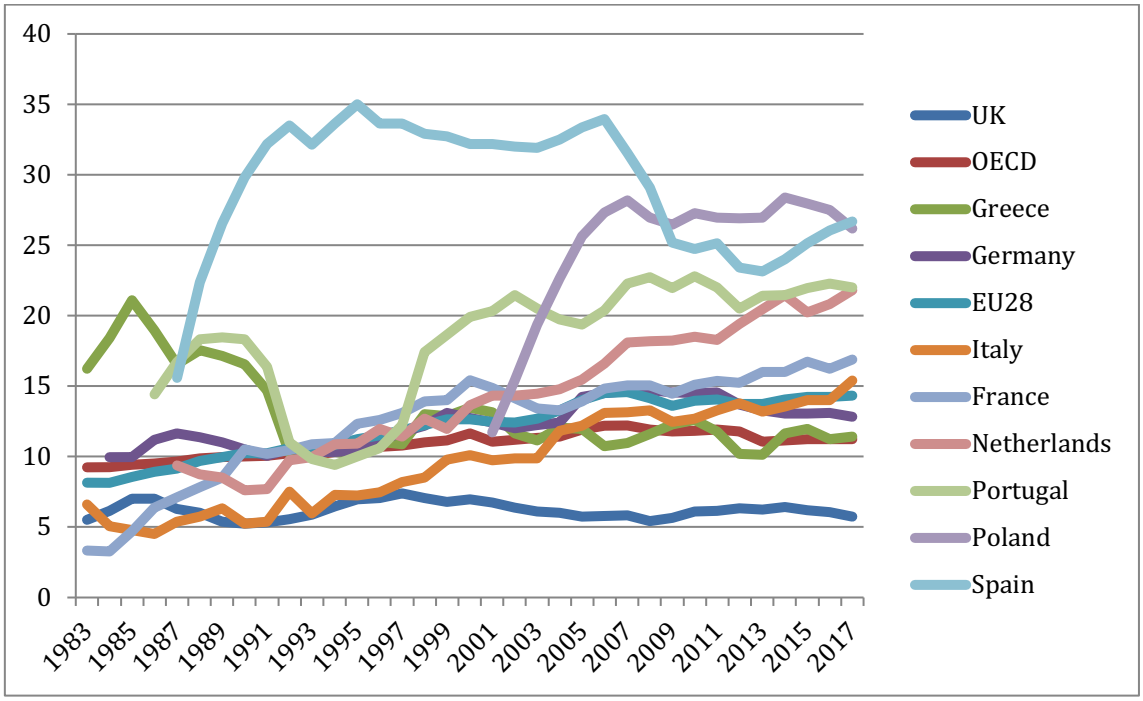
A. The Different Faces of Fixed-Term Contracts

Nevertheless, despite its popularity, the FTC rate often is not a sufficient statistic for the degree of labour market segmentation by contract status because FTCs are used in different ways across countries. In effect, in some countries FTCs provide firms with

[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.

[7] For more details on the different incidence of temporary employment by groups, see OECD (2014).

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



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

Table 1. Incidence of temporary employment by socioeconomic group

A. By gender, age, and educational level (% of employees)

		EU28	Germany	Spain	UK
All		14.1	12.6	26.9	5.4
Men					
	15 to 24	43.1	53.0	70.4	14.2
	25 to 54	11.4	9.2	25.3	3.7
	55 to 64	6.5	3.3	12.9	3.5
	Total	13.7	12.8	26.0	5.2
Women					
	15 to 24	44.0	50.2	72.1	14.2
	25 to 54	12.9	9.5	27.5	4.6
	55 to 64	6.7	3.3	12.6	4.6
	Total	14.7	12.3	27.7	5.9
Education					
	Primary	22.4	29.7	32.0	4.3
	Secondary	13.1	10.1	28.3	5.4
	Tertiary	11.6	9.8	22.4	5.9

B. By occupation and sector of activity (% of employees)

	EU28	Germany	Spain	UK
All	14.1	12.6	26.9	5.4
By occupation:				
Managers	3.4	3.5	6.7	1.6
Professionals	11.3	12.8	23.1	5.7
Technicians and associate professionals	11.0	11.8	19.4	4.5
Clerical support workers	12.6	11.2	19.5	6.0
Service and sales workers	17.8	15.0	28.7	6.7
Skilled agricultural, forestry and fishery workers	25.1	14.5	31.8	4.0
Craft and related trades workers	14.9	14.5	30.7	3.5
Plant and machine operators and assemblers	14.0	10.1	25.3	5.5
Elementary occupations	24.0	13.5	42.5	8.9
By sector of activity:				
Agriculture, forestry, and fishing	32.1	10.5	59.3	4.4
Mining and quarrying	7.8	n.a.	24.6	4.9
Manufacturing	12.0	10.5	21.4	3.6
Electricity, gas, steam, air conditioning, water supply sewerage and waste management	8.9	8.7	15.8	3.4
Construction	15.1	10.3	40.8	3.8
Transportation and trade	13.1	12.2	22.8	4.2
Hotels and restuarants	24.2	14.5	38.4	8.4
Information and comunication	9.5	10.5	16.6	4.0
Finance and real state	7.1	7.5	10.5	2.8
Professional, scientific and technical activities	11.0	12.5	19.5	4.7
Administrative and support service activities	18.1	12.9	27.4	6.9
Public Administration	10.9	12.3	19.4	4.4
Education and Health services	14.9	17.0	29.2	7.1
Entertainment and other services	19.6	15.0	32.8	9.6

Source: OECD and Eurostat.

higher flexibility and facilitate workers easier access to stable OEC jobs. In this case, FTCs act as stepping stones to regular jobs. By contrast, in other countries firms use FTCs mostly as a way to ease the adjustment of their workforce in the face of shocks. In this instance, FTCs jobs usually fail to lead to OECs and, as a result, they become dead ends. The same argument applies to other forms of temporary work, such as Temporary Work Agency (TWA) employment.

An illustration of cross-country differences in the design and regulation of FTCs is provided by the OECD Indicators of Employment Protection,[8] which include the following items on temporary employment: valid cases for the use of FTCs, maximum number of FTCs during an employment spell, maximum cumulated duration of FTCs, types of work for which TWA employment is legal, restrictions on the number of renewals of temporary contracts, and maximum cumulated duration of TWA assignments. In the synthetic index of EPL strictness for FTCs, which ranges from 0 to 6, Anglo-Saxon countries achieve the lowest values (Canada, 0.21; US, 0.33; UK, 0.54; Australia, 1.04), while some Southern European countries display the largest ones (Italy, 2.71; Spain, 3.17; France, 3.75; Turkey, 4.96).[9]

Moreover, for the assessment of duality, examining the differences in firing costs between OECs and FTCs is also 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 usually raises firing costs above severance pay, due to legal expenses, procedural delays, and uncertainty about the ruling, all these being labelled red-tape costs (see Section 4).

In what follows, contracts for temporary jobs are assumed to be akin to 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. By contrast, workers under FTCs cannot appeal the termination in court, unless they claim that their job was not really temporary.

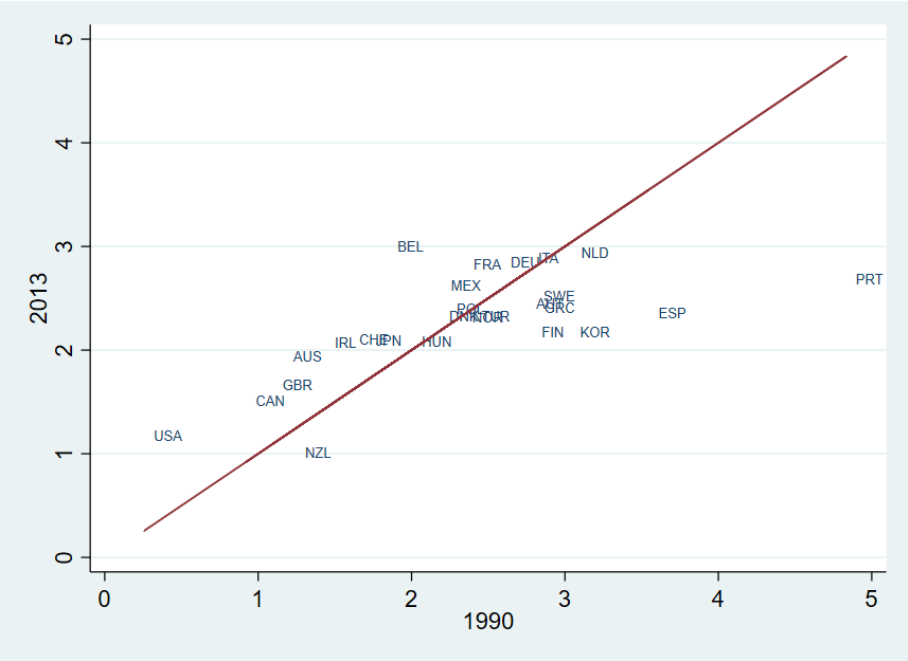
How have EPL regulations evolved over time? Figure 2 shows the OECD indicators on the stringency of EPL for OECs and FTCs in 1990 and 2013, for all available OECD countries. Convergence is apparent in both cases: while most countries with initially low EPL have raised it, the majority of those with initially high EPL have lowered it, and more so in the case of FTCs. Notice that the change in the gap between the stringency of EPL on OECs and FTCs (denoted *EPL gap* for short) cannot be computed from these indices, since they are qualitative in nature.

[Insert Figure 2]

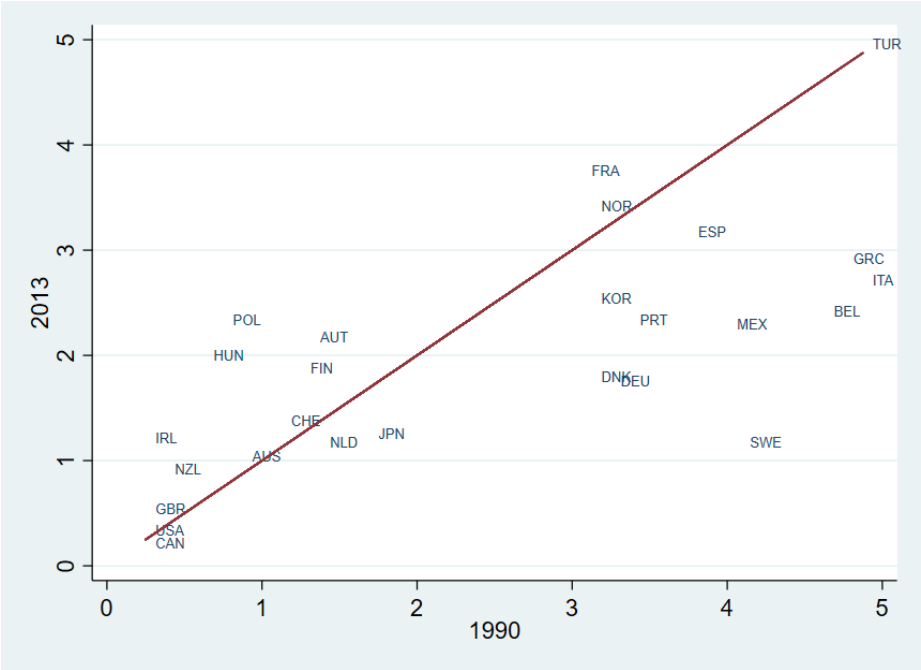
[8] Available at http://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm.
[9] Data refer to the regulation in place circa 2013.

Figure 2. Employment protection legislation of regular and temporary contracts in selected OECD countries, 1990 and 2013

A. Employment protection legislation of regular contracts



B. Employment protection legislation of temporary contracts



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

Dual EPL would seem to provide a flexible framework, which allows the protection of workers' employment while accommodating the flexibility needs of companies. However, it may be 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 so much, 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 two labour contracts.

B. 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 OECD EPL strictness indicator of regular employment, Boeri (2011) reports statistically non-significant correlations between EPL stringency and employment or unemployment levels, but rather strong ones between EPL and unemployment inflows and outflows. In Section 4 more recent empirical studies on this issue are reviewed.

In the case of dual EPL, the effects are different. Figure 3 displays the FTC rate in 2011-2017 against three quarterly flow rates from labour force surveys, for workers aged 25-54 (25-64 for the contract conversion rate). It can be seen 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 of FTCs into OECs.

[Insert Figure 3]

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 for 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.

Effects of Dual EPL: Theoretical Results

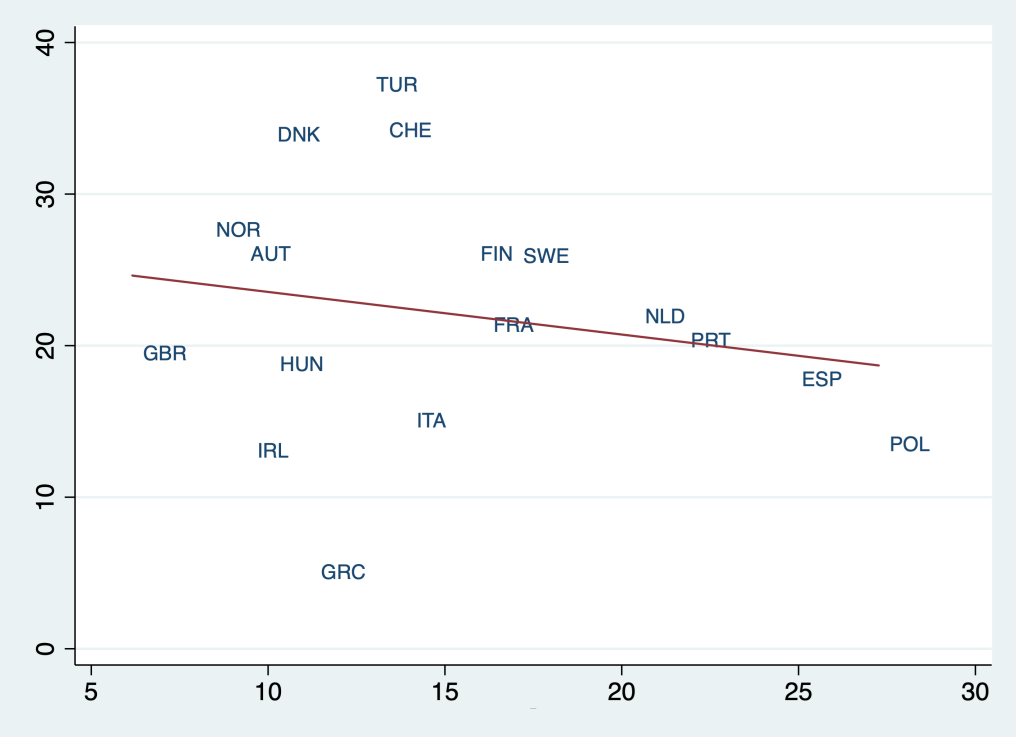
In this Section the main economic effects of dual EPL from a theoretical perspective are discussed. The early analysis is well captured in Saint-Paul (1996), further discussion appears in Dolado et al. (2002), and Boeri (2011) surveys subsequent work. This paper goes beyond the latter by highlighting 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 setups.[10] 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. In

[10] See Bentolila and Saint-Paul (1992) and Cabrales and Hopenhayn (1993), respectively.

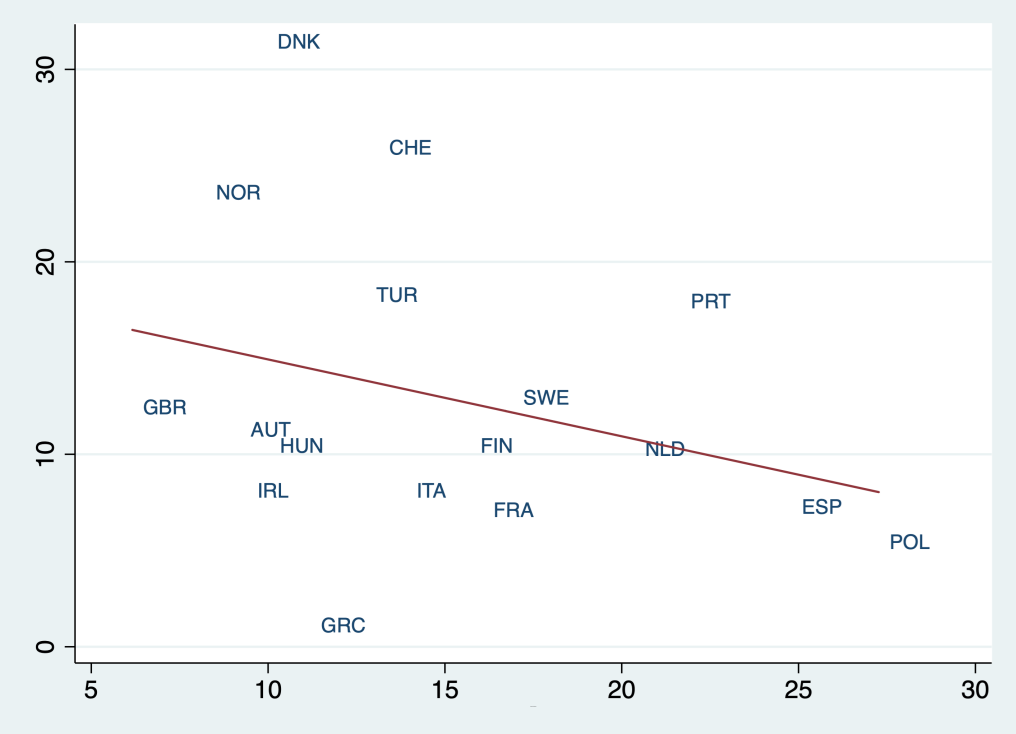
Figure 3. Labor flows and the fixed-term contract rate in selected OECD countries, 2011-2017

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).

what follows, the first subsection presents a simplified model of this type to explain how dual EPL affects labour market flows, while the second subsection describes the main mechanisms at play and presents the results obtained in the most recent work.

A. A Simple Model of Labour Demand in Dual Labour Markets

As already stressed, the key difference between OECs and FTCs lies with the higher firing costs of the former contracts. 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 legal 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 often do not, and (iii) OEC workers are ex-ante more productive than FTC workers.[11]

A recent alternative approach, proposed by Cahuc et al. (2016a, b), is motivated by the fact that in several countries either dismissal of FTC workers before their contract expires is prohibited (e.g. France, Germany, or Italy) or it entails the same severance pay as for OECs (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. As a result, firms will wish to use FTCs for the former and OECs for the latter, even when the level of firing costs is the only difference between both types of contracts.

Hereafter, inspired by Cahuc et al. (2016a), a simplified, partial equilibrium model of a dual labour market is presented. In the model, the key ingredient is the existence of different EPL for OECs and FTC. Accordingly, this setup helps us analyse how the EPL gap affects both the FTC rate and the job flows by contract.

Consider a one-worker firm that is deciding whether to hire labour 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.[12] It is assumed that 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, λ, which is randomly selected from a distribution with support $[\lambda_{min}, 1)$ with $0<\lambda_{min}<1$, such 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. For convenience, the plausible assumption that $[1-(1-\lambda_{min})^d]F < f < F$ applies hereafter.[13] Let us denote by $J_i(\lambda)$, $i=o, f,$ the asset value of a firm hiring a worker under 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:

[11] See Berton and Garibaldi (2012), Cao et al. (2010), and Bentolila and Saint-Paul (1992), respectively.
[12] The assumption of fixed duration of FTCs is adopted here for the sake of simplicity. It is straightforward to alternatively assume that FTCs expire according to some random process (as, e.g., in Costain, Jimeno, and Thomas, 2010) to make the model closer to the practical use of FTCs in several countries, as discussed in Section 2.
[13] The lower limit ensures that OECs are preferred to FTCs for low values of λ, i.e. for more stable jobs.

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

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

The RHS of (1) captures the expected profit for a firm offering an OEC (while the job lasts), i.e. the difference between the flow profit, *y*–*w*, and the expected firing cost in each period, λF. Likewise, the first term of the RHS in (2) captures the expected profit for a firm offering an FTC, followed by the termination cost *f* when the contract expires, and the option value of either converting the FTC into an OEC at the end date *d* or proceeding with its termination.[14]

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

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

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

Thus, for low values of λ (very stable jobs), equation (3a) implies that firms find it more profitable to offer workers OECs rather than FTCs. This is because they have an unlimited profit flow and they are unlikely to dismiss the worker and pay the firing cost. By contrast, in the case of an FTC, they always have to pay the termination cost and have a limited amount of profits. Conversely, for high values of λ (highly unstable jobs), equation (3b) implies that neither contract is profitable, though losses are higher under OECs than FTCs because firms have to pay $F > f$. In such circumstances, the vacant job is kept unfilled.

From the previous analysis, there are three cut-off values of λ determining the firm's decisions on filling the vacancy and on which type of contract to offer. The first one is the value of λ (=λ_o) above which firms offering OECs make losses, i.e. the solution to $J_o(\lambda) = 0$:

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

The second cut-off value is the value of λ (=λ_f) beyond which firms offering FTCs make losses, i.e. the solution to $J_f(\lambda) = 0$:

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

where $J_o(.)$ denotes the asset value of an FTC job at this threshold. Finally, the last threshold value of λ (=λ_s) is the one that makes the firm indifferent between hiring under an OEC or an FTC, i.e. the solution to $J_o(\lambda) = J_f(\lambda)$:

$$\frac{1}{1-(1-\lambda_s)^d} = \frac{F}{f} \quad (6)$$

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

Then, it can be easily shown that the following inequalities hold among these thresholds: $\lambda_{min} < \lambda_s < \lambda_o < \lambda_f < 1$, leading to the following four relevant intervals of λ:

(I) for $\lambda \in [\lambda_{min}, \lambda_s]$, firms prefer to offer workers 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 former contract reaches its expiration date,

(III) for $\lambda \in (\lambda_o, \lambda_f)$, firms only offer workers 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 since the expected job duration is too short given the firing cost they will have to pay.

Figure 4 displays the firm's asset values for OEC, $J_o(\lambda)$, and FTC, $J_f(\lambda)$, as a function of λ, together with a graphical representation of the above-mentioned four intervals.

[Insert Figure 4]

Interpreting the ratio $F/f>1$ as the *EPL gap* between OECs and FTCs, the first step is to examine the effects of an increase in this gap in two alternative ways: a rise in F (keeping f constant) and a reduction in f (keeping F constant).

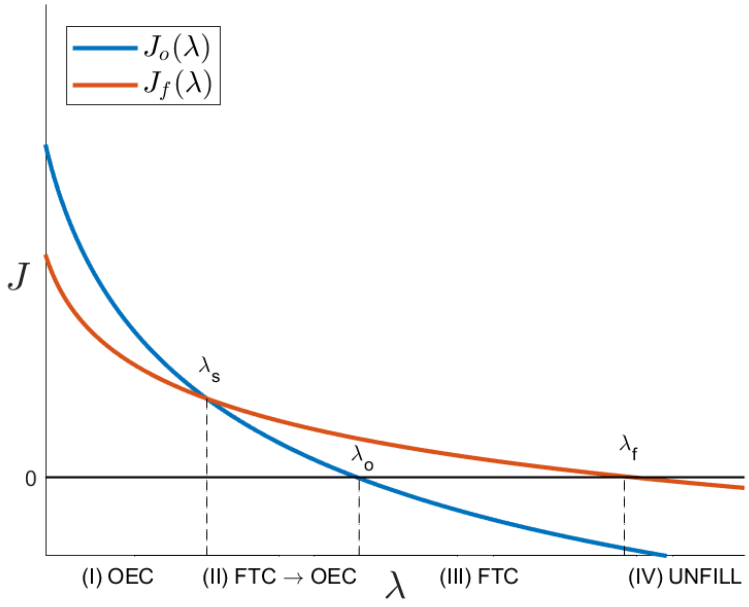
When only F rises, it can be checked that $\frac{\partial \lambda_s}{\partial F} < \frac{\partial \lambda_o}{\partial F} < 0, \frac{\partial \lambda_f}{\partial F} = 0$.[15] Hence, when EPL for OECs becomes stricter, intervals (I) and (II) shrink, while (III) and (IV) expand. Thus, firms will offer less OECs directly and will convert less FTCs into OECs; in exchange they will offer more FTCs and decline to hire more often. As a result, there will be less hiring and firing of workers under OECs and more churning of FTC workers. The latter move between FTCs and unemployment due to the lower conversion rate implemented by firms.

On the other hand, when only f decreases, it holds that: $\frac{\partial \lambda_f}{\partial f} > \frac{\partial \lambda_s}{\partial f} > 0, \frac{\partial \lambda_o}{\partial f} = 0$. Thus, when EPL becomes less strict for FTCs, intervals (I) and (II) shrink again (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 increases when only F increases. Thus, job creation and job destruction flows will be smaller with stricter EPL for OECs than with weaker EPL for FTCs.

Second, consider the case where there are firing costs but no EPL gap, i.e. $F=f>0$. This case allows the analysis of the threshold values of λ respond to a change in the stringency of overall firing costs, captured by $F(=f)$. 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, an identical reduction in both F and f leads to broader intervals (I)

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

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.

and (III) (more direct offers of OECs and FTCs) and narrower intervals (II) and (IV) (less conversions and jobs unfilled).

Third, let us go back to the case where $F > f$ and consider a policy that penalizes firms using FTCs with a tax rate τ, so that the cut-off value λ_o remains the same as in (4), but the new asset value $J_f(\lambda)$ now becomes:

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

It can be shown that 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 $\lambda_f^\tau < \lambda_f$. As a result, intervals (I) and (III) become narrower (less direct OEC and FTC offers), interval (II) widens (more conversions, but from a lower number of FTCs), and interval (III) increases as well, so that more vacant jobs remain unfilled (less job creation). The insight for these results is that, despite FTCs becoming relatively less attractive than OECs, taxing FTCs implies a rise in overall labour costs, leading to lower overall labour demand, which hampers both types of contracts.[16]

Finally, consider the case where firms choose the optimal duration of an FTC prior to offering such a contract. If the termination cost for FTCs depends on the duration of the contract d, so that $f=sd$ (where s denotes the per-period compensation), it can be easily shown that the duration of FTCs decreases with their termination costs as well as with the EPL gap.

Summing up, from the previous comparative statics several implications follow. On the one hand, policies 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 also reduce their share, but in this case hurting job creation and labour demand. This model, which focuses on the determinants of the use of FTCs, also highlights some important potential implications of duality for job flows, productivity, wages, and unemployment that are reviewed in the next section.

B. Theoretical Results on the Effects of Duality

Many theoretical studies have shed light on the impact of dual EPL on several economic variables. Rather than trying to cover the large body of existing work on this topic, the main implications of duality for a few key variables are highlighted, on the basis of a number of recent articles.

Labour Market Flows

The early work on this topic showed that duality unambiguously increases worker turnover.[17] More recently, the general equilibrium model by Cahuc et al. (2016a), calibrated for the French economy, delivers the main stylized facts mentioned in Section 2, namely, the large shares of FTCs in employment inflows, the major contribution of these contracts in explaining fluctuations in those inflows, and the very short duration of

[16] Cahuc et al. (2016b) show that the tax on FTCs also reduces their average duration.
[17] See Abowd et al. (1999), Blanchard and Landier (2002), and Cahuc and Postel-Vinay (2002).

FTCs. It also finds that duality with stringent EPL on OECs hardly affects total employment but induces large-scale replacement of OEC jobs by FTC jobs. This indicates a large degree of substitution between OEC and FTC jobs, which is confirmed by available empirical estimates in countries where FTCs are dead-ends.

Productivity and Wages

Another result stemming 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 from the latter. As a result, in countries where FTC jobs cannot be destroyed before their expiration date, they are kept more often, leading firms to pay positive wages to unproductive FTC workers. Firms anticipate this and reduce entry wages. Therefore, the increase in the share of FTC jobs also reduces productivity and wages. The same holds in Dolado et al. (2016), albeit through a different mechanism (see Section 4). It is important to notice, however, that the effect of duality on productivity is not a mere composition effect arising from the lower productivity of FTC workers. The hiring rules and incentives for OEC jobs are changed by the presence of FTC jobs and, as a result, more unproductive jobs under OECs are maintained too. Hence, depending on the technological complementarities between FTC and OEC jobs, the initial productivity distribution shifts to another one with lower mean and higher variance the larger is the EPL gap.[18]

Moreover, FTCs affect productivity through the incentives to invest in firm-specific human capital. Whether FTCs are used to cover stepping-stone jobs as opposed to dead-end jobs is crucial for those incentives. When the EPL gap is large and the conversion rate is low, neither the employer nor the employee foresee a return from on-the-job training and, consequently, less training leads to lower productivity growth and job creation increases in those sectors where training is less important for firm competitiveness.

It should also be noticed that the implications of duality for job productivity are translated into wages, once the latter are modelled as endogenous variables. Following the widening of the job productivity distribution, wage inequality is larger and the average wage is lower the higher the degree of duality is. This relationship obviously depends upon the wage setting mechanism in place, whether it is wage posting or wage bargaining, but in either case the whole wage distribution is affected by the EPL gap. First, lower firing costs for FTCs imply a higher surplus from matching (due to their lower red-tape costs when there is a separation) but also lower bargaining power for FTC workers. Secondly, if wage-setters mostly represent the preferences of insiders with OECs (since these workers are often the median voters in union elections) and wages are jointly negotiated for both FTCs and OECs, then bargained wages tend to be higher the lower are firing costs for FTCs. This happens because unions anticipate that FTC workers will be the ones losing their jobs when wage pressure is excessive.[19]

Unemployment

[18] As shown by Costain, Jimeno, and Thomas (2010).
[19] See, respectively, Bentolila and Dolado (1994) and Dolado, Jansen, and Jimeno (2009).

As mentioned earlier, the impact of dual EPL on unemployment is in principle ambiguous, due to the negative impact of firing costs on both job creation and destruction flows. However, as shown in Bentolila et al. (2012), this effect may become unambiguously detrimental for a high enough EPL gap. In effect, when this gap is sufficiently large, conversion rates are very low and firms refrain from opening OEC job vacancies. As a result, a further rise in the EPL gap exacerbates FTC workers' turnover precisely when less vacancies are being posted and this leads to a rise in unemployment. When calibrating their model to real data, Bentolila et al. (2012) exploit the fact that France has both a lower firing cost for OECs and a lower probability of hiring on FTCs 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 findings is the large increase in employment volatility that is observed after the implementation of dual EPL reforms. This is not surprising, as lower firing costs for FTCs must lead to higher churn. Yet, Costain et al. (2010) address the additional issue of whether a dual labour market is more volatile than an otherwise identical economy with a single EPL. In a dual 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 to Spain indicates that unemployment fluctuates 21% more under duality than in a unified economy with the same average firing cost.

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 shifted to cross-country panel data studies combining 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 has focused primarily on those European countries where duality is most prevalent, although there is some related work on TWA in the US (Autor and Houseman, 2010).

Due to its limitations for addressing general-equilibrium effects, this body of research has mostly produced micro-econometric 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.

A. Stepping Stones versus 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 they become 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. 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. Thus, the key question is whether workers are able to transit from FTCs to OECs, at the same or at a different firm.[20] 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 TWA –such as Austria, Denmark, Germany, Sweden, the Netherlands, the UK or the US–, though even for these countries there are conflicting results.[21] 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.[22]

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.

This part ends 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,

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

[21] 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.

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

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 however found for high school graduates.

B. 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 hired 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 total factor productivity (TFP) growth (Hopenhayn and Rogerson, 1993).[23] Yet, another line of work stresses that strict EPL, by increasing job duration, 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 it can still be asked whether firms that employ more FTC workers experience, ceteris paribus, lower TFP growth.

Several studies for Italy have examined changes in labour productivity (rather than TFP) following various labour market reforms facilitating the use of FTCs. They all find a negative relationship between these two variables.[24] And 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 FTC 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 FTC workers. This validates firms' policy of low conversion rates and low training of FTC workers.

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. Consequently, the vast majority of researchers interpret firing costs as layoff taxes paid outside the firm-worker

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

[24] 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"), as well as Hijzen et al. (2011), and Cappellari et al. (2012).

pair (e.g. red-tape costs), which cannot be undone by side negotiations.[25] The main conclusions of this research line agree with the ones discussed in Section 3 (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 dual labour market with insiders (OEC workers) and outsiders (FTC workers), severance pay can increase unemployment if wages negotiated by insiders for all workers turn out to be rigid. The intuition is that outsiders' wages are increasing in severance pay, since they contain the rent on the firing cost extracted by the insiders. This makes FTC workers less attractive to firms than when their wages fall as EPL rises.[26] 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, in line with Lazear's argument, with no impact on workers with seniority above three years,. These wage reductions did partially offset the higher cost for firms arising from the new EPL.

The fact that FTCs play different roles in wage setting is illustrated by Addison et al. (2018). They find that in German firms with works councils there is a higher incidence of TWA employment when demand volatility is high, while FTCs are more prevalent when demand volatility is low. Hence, these findings support the view that FTCs may act as a buffer stock in an insider-outsider model of wage determination and also as stepping stones to regular jobs under more certain and stable labour demand conditions.

Overall, these results indicate that a setting with generous severance pay and centralised wage bargaining in the hands of insiders should lead to both higher wage inequality and unemployment. Hence the need to reform collective bargaining in parallel with dual EPL.

C. Churn

Churn takes place when there is excess worker turnover, namely when worker flows are higher than net job creation. Section 2 showed 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

[25] 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.

[26] 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 disproportionally on FTCs.

monthly data to show that in French establishments during the late 1980s there were three workers hired and two workers separated for each job created in a given year, and that one worker 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. [27]

A related issue with important policy implications is to what extent the increase in churn brought up by FTCs reflects individual preferences about labour supply or rather a loss of job stability and employment security related to the rise in atypical work accommodated by labour legislation. In the latter case, FTCs would also imply a loss in the representation and rights of employees under these employment arrangements. The proportion of workers who declare that they chose voluntarily to work under an FTC varies widely across countries (see Figure 5), a variation that reflects the already-mentioned cross-country heterogeneity in the design and use of FTCs. Nevertheless, the evidence is pretty conclusive about the negative welfare consequences of FTCs. Even in the UK and in the US, where the gap in job stability and employment security between OECs and FTCs is small, the majority of employees prefer the traditional attributes of the regular employment-employee relationship to those associated to FTCs (Datta, 2019).

Policies to Roll Back Duality

With the benefit of hindsight, it is apparent that countries that adopted a dual EPL for political economy reasons suffered from high employment volatility, increasing earnings and wage inequality, and a loss in worker representation and rights. Hence, not surprising, this reform strategy had been reconsidered. Some of the reforms and policy proposals that have been either implemented or discussed in several countries, mostly in Southern Europe, are briefly reviewed in what follows.[28]

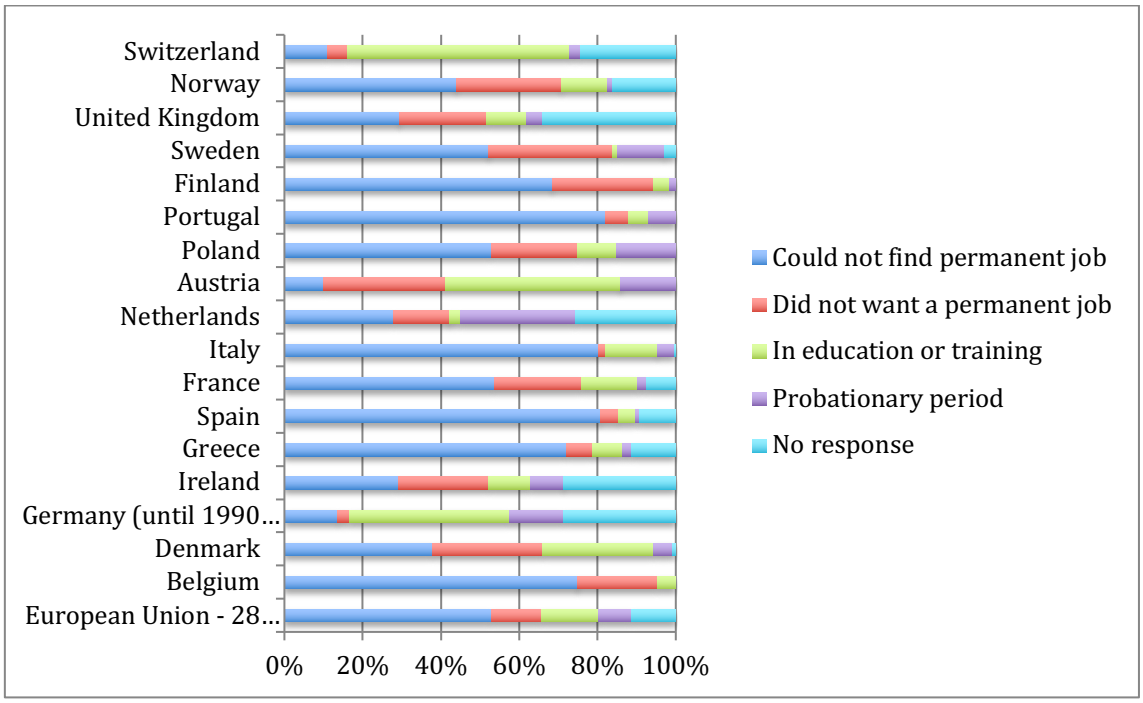
A. Reducing the Dual EPL Gap

Decreasing the EPL gap, by either lowering the firing costs of OECs or increasing those of FTCs has been the main strategy of recent EPL reforms in Italy, Greece, Portugal, and Spain. For example, in Italy, the 2015 Jobs Act implied two major reforms. On the one hand, it abolished the previous requirement for firms with at least 15 employees to reinstate OEC workers whose contracts had been unfairly terminated (e.g. for economic reasons), and instead introduced mandatory redundancy pay. In addition, to reduce

[27] Note, however, 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. Thus, these measures miss gross flows that take place strictly in between years.

[28] 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.

Figure 5. Proportion of temporary workers by main reason, 2018 (%)



Source: Eurostat.

judicial intervention in dismissal conflicts, it introduced a new OEC, called *fast-track* or *graded security* contract, for new hires and contract conversion by those same firms. The new OEC involves redundancy pay in case of wrongful dismissal, which is exempted from income taxation and coexists with ordinary OECs that entail cheaper severance pay but are subject to income taxation. The key novelty is that, if the worker accepts the fast-track contract giving up the option of taking the ordinary OEC, the right to appeal in court for unfair dismissal is given up.[29] 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 substantial employment effects from this reform.

As regards Greece, OECs were forbidden in public sector hiring, the duration of most FTCs was extended, and the trial period of OECs went up. In Portugal, severance pay for OECs was aligned with that of FTCs, while a mutual fund was established to partly finance severance pay. Finally, the definition of fair individual dismissals for economic reasons has been broadened. Lastly, the 2012 EPL reform in Spain lowered mandatory severance pay for workers under OECs, while the compensation at the end of FTCs was increased. In addition, interim wages in judicial processes disappeared.

Northern countries also aimed at reducing duality. The 2017 labour law reform in France implemented a compensation scale for every two years of service in unfair dismissals, replacing judicial processes 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 (the CDD) is determined at the sectoral level, rather than by law. In the Netherlands, a 2015 law brought a clarification reducing red-tape costs associated with judicial appeals for unfair dismissals.

B. Unified Open-Ended Contracts

The lack of success of partial reforms motivated some proposals in France, Italy, and Spain, among other countries, aiming 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 that smoothly increase with job tenure. Its rationale is to narrow significantly or even eliminate the EPL gap. None of these proposals, however, calls for the complete abolition of FTCs, which should still be allowed for temporary replacements, for TWA workers 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 severance pay 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). Its main shortcoming 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 smoothly increasing pay with tenure jointly with a redefinition of unfair

[29] Notice that the new and the conventional OECs are allowed to coexist because reforms attempting to decrease red-tape costs are difficult to implement in countries with a long tradition of judicial review of employer decisions (Jimeno et al., 2018).

dismissal, which would be restricted to cases of discrimination (Andrés et al., 2009). A potential problem is that, by tying EPL rights to job tenure in a given firm, it may reduce efficient turnover and desirable worker relocation. For this reason, 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, that is 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.

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 goal is to tax inefficient job destruction by internalising the social cost of dismissals: firms that fire more should contribute more to financing UI. In addition, the layoff tax would fund the relocation costs of displaced workers.

To evaluate some of these proposals, Dolado et al. (2019) 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, measured in terms of consumption equivalent units). They pose 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 days of wages per year of service 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.[30] 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.[31]

Concluding Remarks

The theoretical and empirical analysis of dual EPL reviewed in this paper suggests that this institutional configuration of the labour market tends to create more problems than it solves. Moreover, there are new challenges facing dual labour markets in the future.

First of all, as clearly indicated along the paper, EPL interacts with other institutions that are in a state of flux. For example, FTCs are more likely to serve as stepping stones in countries with well-functioning vocational education systems. Hence other countries need to contemplate EPL and educational reforms in parallel. Likewise, the impact of duality on wage inequality and unemployment is stronger when collective bargaining is controlled by insiders. Therefore, the negative consequences of duality in this regard are

[30] An increasing EPL-tenure profile 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).

[31] García-Pérez 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.

augmented by the current trend towards decentralisation of collective bargaining. These interactions deserve further research.

Secondly, the new digital technologies behind the so-called *gig economy* have further enhanced firms' demand for flexibility and created new forms of employment. In these new industries, the line between OECs/FTCs on the one hand, and the self-employed (e.g. freelancers and independent contractors), on the other, is becoming increasingly blurry. These developments suggest a looming further increase in workers' employment instability.[32] Moreover, automation and digitalisation are not only changing the nature of employment but also the boundaries and organizations of firms. These changes will have implications for EPL, which will have to be reconsidered beyond the current debate about the advantages and disadvantages of dual labour markets.

Lastly, as far as social policies are concerned, FTCs are 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 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.

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[32] This is confirmed by the trends observed in Spain –a bellwether country regarding duality– after the Great Recession, where contracts lasting up to one-week have gone from representing 17% to 28% of FTCs in just one decade (see Felgueroso et al., 2018).

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