

IZA Policy Paper No. 27

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Labour Reallocation and Productivity**

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Setting It Right: Employment Protection, Labour Reallocation and Productivity*

This paper provides a critical review of the recent empirical evidence on the links between regulations affecting the hiring and firing of workers, labour reallocation and productivity growth. It also reviews how workers affected by labour mobility fare and discusses policy options to support them. The upshot is that employment protection has a sizeable effect on labour market flows and these flows, in turn, have significant impacts on productivity growth. At the same time, the evidence also shows that while greater labour market reallocation benefits many workers through higher real wages and better careers, some displaced workers lose out via longer unemployment durations and/or lower real wages in post-displacement jobs. In this context, reforms of employment protection should be considered as part of a comprehensive package that also includes an adequate safety net for the unemployed and effective re-employment services.

JEL Classification: J23, J53, K31

Keywords: job and worker flows, employment protection, productivity

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* We are grateful to Bertholt Leefink and other participants at the CPB-ROA Conference on “Flexibility of the Labour Market” (The Hague, 20-21 January, 2011) for helpful comments on an earlier version of the paper. The views expressed in the paper are our own and cannot be held to represent those of the OECD or its member governments.

Introduction

As Joseph Schumpeter argued long ago, recent empirical evidence across a wide range of countries suggests that the functioning of markets and innovation dynamics that are at their roots involve a continuous process of reallocation of labour and other productive resources across firms and sectors (*e.g.* OECD, 2009; Bartelsman *et al.*, 2009). Every year, many new firms enter the market and create new jobs, while other unprofitable firms exit the market, destroying jobs. Incumbent firms are also engaged in a continuous process of adaptation of their workforces in response to the development of new products and processes, the growth and decline in markets and changes in competitive forces (*e.g.* Sutton, 1997; Pakes and Ericson, 1998; Geroski, 1995).

The firm entry and exit process, as well as the reallocation of resources from declining to expanding businesses, contribute significantly to productivity and output growth (*e.g.* Griliches and Regev, 1995; Foster *et al.*, 2001; and Bartelsman *et al.*, 2009). From the perspective of workers, labour reallocation allows them to seize better job opportunities (*e.g.* Postel-Vinay and Robin, 2002; Connolly and Gottschalk, 2004; and Contini and Villosio, 2007). Notwithstanding these benefits, however, labour mobility also involves costs for both firms and workers. Opening and filling new vacancies is a resource intensive and costly process for firms; and searching for, and switching to, new jobs is costly for workers (*e.g.* OECD, 2005; Mortensen and Pissarides, 1999; and Caballero and Hammour, 2000).

While market conditions and technological forces play a major role in shaping the magnitude of labour reallocation and its characteristics, a host of regulations affect firm turnover, innovation and adoption of new technologies and the associated labor mobility. Employment protection (EP) regulations and practices, is one feature in the labour market that has attracted much attention in the ongoing debate about labour market flexibility.² By raising labour adjustment costs, EP may stifle the allocation of labour to the most productive uses and thus hinder productivity growth. Understanding how EP affects labour mobility, and assessing its consequences for economic performance, are thus key questions for policy makers. They assume an even greater relevance at present, when OECD countries are slowly emerging from the worst economic crisis of the past 50 years. The crisis has brought in its train large, but also greatly differentiated, job losses across countries (OECD, 2010), and these cross-country differences have often been ascribed to differences in the institutional settings, including the dismissal costs associated with EP.

There is a large literature, reaching back to Layard, Nickell and Jackman (1991) and the OECD *Jobs Study* of 1994 which seeks to assess the impact of EP on employment and unemployment rates across countries (*e.g.* Bassanini and Duval, 2006; Blanchard and Wolfers, 2000; Baker *et al.* 2005, Fiori *et al.* 2007). This literature has, however, paid little attention to any possible links between EP and productivity growth, and to labour mobility as the key transmission mechanism between the two.

Indeed, the knowledge base for assessing the links between employment protection, labour mobility and productivity growth is still limited. It is true that several models have provided theoretical foundations for the possible links between EP, labour mobility and productivity growth (*e.g.* Bentolila and Bertola, 1990; Bertola, 1990; Hopenhayn and Rogerson, 1993). However, until recently, the empirical

2. Another is the web of regulations governing product markets, which has been shown in a number of studies to interact with EP and other labour market institutions and policies in determining labour market dynamics, innovation and productivity (see *e.g.* OECD, 2007; Nicoletti and Scarpetta (2003, 2005). The focus of this paper, however, is mainly on the role of EP given the preeminence this has achieved in the debate on labour market flexibility

evidence on these links was scant, largely constrained by the limited availability of comparable cross-country data on firm and labour turnover.³

This paper provides a critical review of the recent empirical evidence on the effects of EP on labour reallocation and productivity growth drawing heavily on recent OECD work. Section 1 presents the OECD indicators of employment protection and discusses reforms of regulations affecting regular and temporary workers over the past two decades. Section 2 provides some stylized facts on job and worker flows in OECD countries and shows that, while sizeable everywhere, there is much cross-country variation in these flows. In some countries, annual job and worker reallocations are as large as 25% and 45%, respectively, of dependent employment. By contrast, in a number of other countries, less than 15% of jobs are created and/or destroyed, and about 25% of all workers are hired or separate from their employer in a given year (Bartelsman *et al.*, 2009, OECD, 2009). This suggests that country-specific policies and institutions can play an important role in determining the levels of job and worker reallocation, abstracting from the state of the business cycle. Section 3 provides a brief overview of the key theoretical models that have explored the links between labour adjustment costs, labour mobility and productivity.

In the following sections, we review the empirical evidence on the nexus between employment protection, labour reallocation and productivity, proceeding in three steps. First, we review the empirical evidence on the role that the reallocation of labour across firms plays for productivity growth (Section 4). While this evidence was, until recently, mainly confined to single-country studies – largely focusing on the United States – over the past few years several studies have provided comparative analyses, using harmonized data from a range of OECD countries. Second, we look at the empirical evidence on the effects of EP on labour reallocation (Section 5) and on productivity growth (Section 6). Third, we discuss how different workers affected by labour mobility fare (Section 7). The concluding section considers the implications of the evidence for policy.

1. Employment Protection in OECD countries

Employment protection usually refers to the rules and procedures governing the dismissal of individuals or groups of workers or the hiring of workers on fixed-term or temporary work agency (TWA) contracts. Employment protection for regular contracts typically defines conditions governing the termination of employment. In particular, they set procedures that have to be followed by firms when they initiate a dismissal process, including the notification and involvement of third parties (such as courts, labour inspectorates, works' councils, etc.); the notice periods and severance pay, which generally vary by tenure of the employee; and the conditions under which it is possible to lay off an individual employee (fair dismissal) and the repercussions for the employer if a dismissal is found to be unfair (such as compensation and reinstatement rights). Additional provisions exist in most OECD countries in the case of collective dismissals and typically include additional procedures for the employer. Employment protection also provides a regulatory framework for fixed-term and Temporary Work Agencies (TWA) contracts with respect to the types of work for which these contracts are allowed and their duration. It also includes regulations governing the establishment and operation of TWAs and requirements for agency workers to receive the same pay and/or conditions as equivalent workers in the user firm.

Employment protection can be specified in legislation, collective agreements or individual employment contracts. But its operation, in practice, also depends on the interpretation of rules by courts or tribunals and the effectiveness of enforcement. Ichino *et al.* (2003) and Bertola *et al.* (2000) suggest that jurisprudence may be affected by underlying labour market conditions; for instance, there is evidence that judges' decisions tend to be particularly favourable to workers when unemployment is high. Moreover,

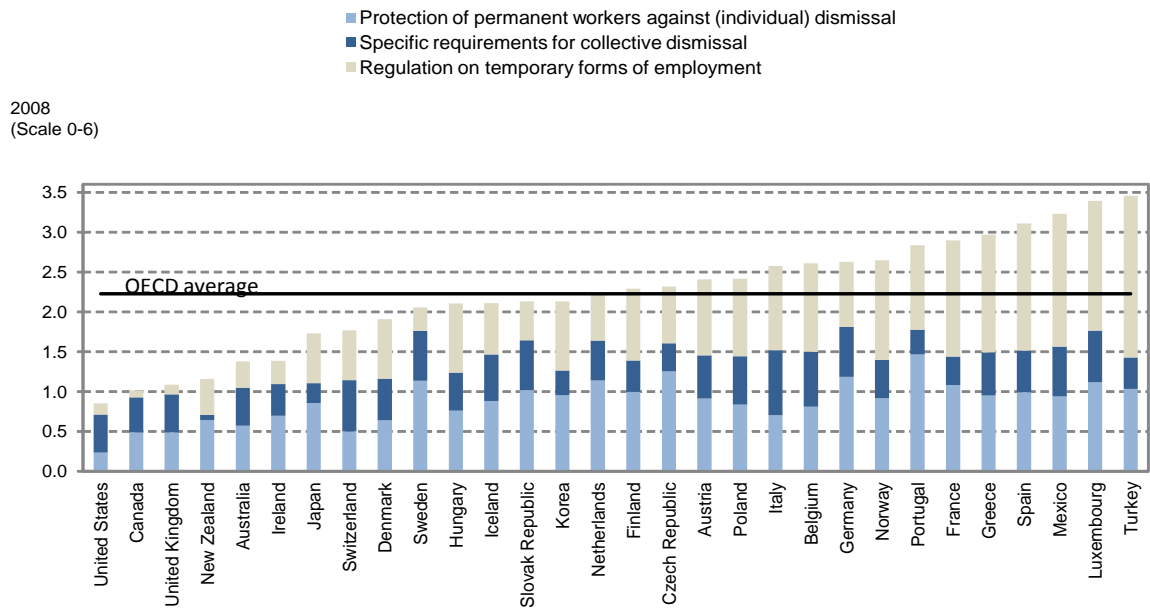
3. Bartelsman *et al.* (2009) and Haltiwanger *et al.* (2006) are among the few exceptions that provide comparative studies of firm and job turnover.

compensations for unfair dismissals can deviate largely from the minima set out by legislation because judges may account in their final decision for damages corresponding to past and future financial losses and psychological damages. There are also very large differences across sectors and countries in the number of cases brought to labour courts, the percentage of cases won by workers and the length of the legal procedure. With few exceptions, information on enforcement is generally scattered (see Venn, 2009). Therefore, cross-country comparable quantitative measures of the degree of stringency of employment protection that are available in the literature are essentially limited to mandatory legislative restrictions governing recruitments and dismissals. In this paper, we review the empirical evidence relating employment protection to job and worker flows and productivity, relying upon the well-known and widely used OECD indicators of the strictness of employment protection (see Venn, 2009).⁴

Figure 1 presents the summary indicators of the stringency of employment protection in the OECD countries for 2008. It also disaggregates the summary indicator into three sub-indicators referring to: employment protection for individual dismissal of regular workers; additional provisions in case of collective dismissal of regular workers; and employment protection for temporary workers. The Figure clearly shows considerable variation in the stringency of EP across OECD countries. The strictest employment protection is found in Turkey, Luxembourg and Mexico, while the least strict is in the United States, the United Kingdom, Canada and New Zealand. There are few or no restrictions on the use of temporary contracts in the Anglo-Saxon countries. In contrast, in Turkey and Mexico, temporary agency work is non-regulated and fixed-term contracts can only be used in limited circumstances. Spain, Greece and France also have strict rules governing the circumstances under which temporary employment is allowed, along with limits on the number of successive contracts and their maximum duration. There is relatively little cross-country variation in the level of additional regulation of collective dismissals.

4. The OECD employment protection indicators have been widely used in empirical analyses and policy debates. But they are not without critics (see Addison and Teixeira, 2003, for a review). The construction of composite indicators designed to measure qualitative features of the legal system inevitably involves some selection and use of judgment. In particular, higher weights are given to some sub-components than others to reflect their relative economic importance when firms are making decisions about hiring and firing workers (see Venn, 2009 for the weights used). In order to test the sensitivity of country rankings to the weights used, Venn (2009) recalculated the summary indicator using different weights and found that the cross-country rankings were robust to the use of different weights. In any event, detailed information on all sub-components is provided on the OECD employment protection website (www.oecd.org/employment/protection) to allow users to see how the indicators were constructed and, if desired, reconstruct their own version based on alternative weights or aggregation methods.

Figure 1. OECD, Strictness of employment protection indicators, 2008

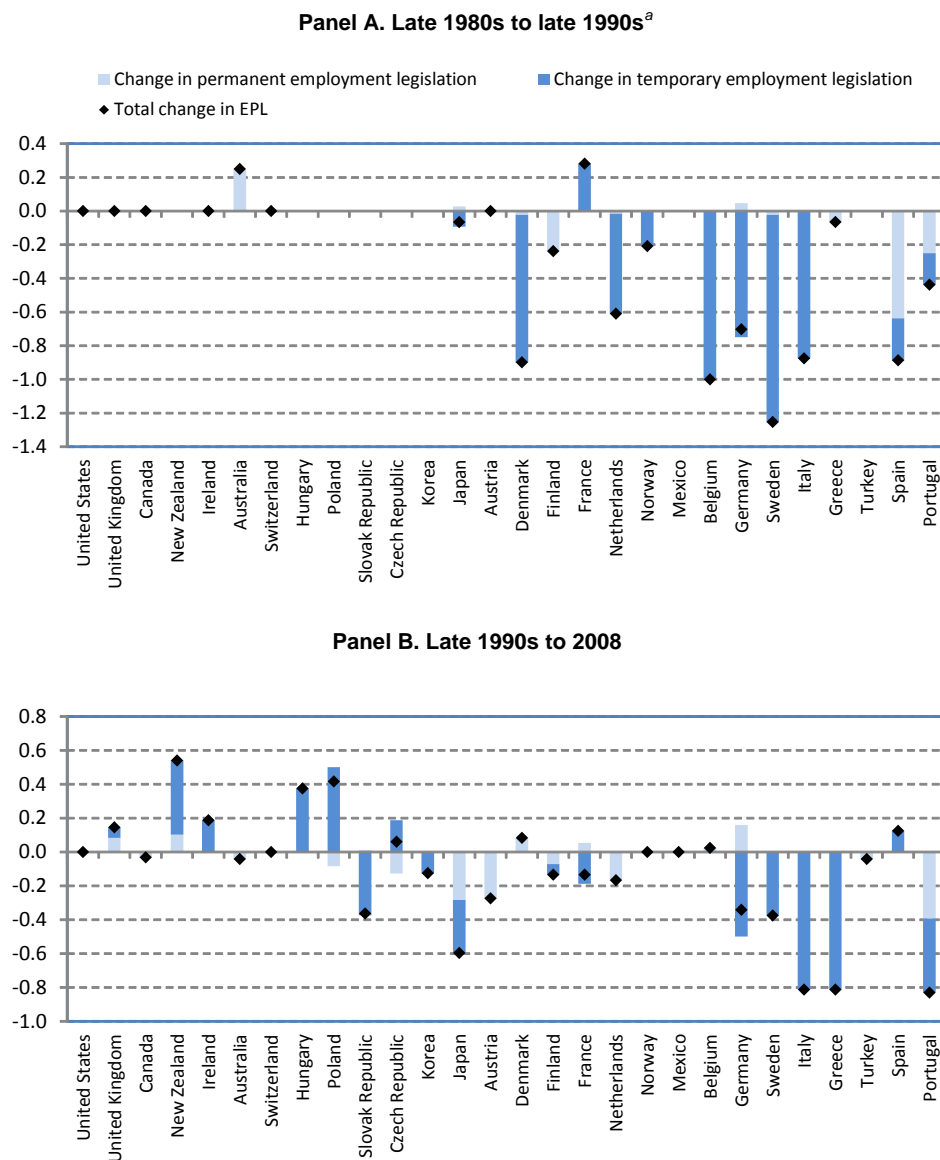


The EP indicators go from 0 (least stringent) to 6 (most stringent).

Source: OECD employment protection database; www.oecd.org/employment/protection.

Over the past two decades, most OECD countries have reformed their system of employment protection mainly to increase the adaptability of their labour markets in response to growing pressures from globalisation and rapid technological changes. However, as shown in Figure 2, most of the regulatory changes have focused on easing regulations governing temporary contracts. In particular, this was the dominant tendency in the 1990s, with nine OECD countries deregulating employment protection for temporary workers, while only three eased regulations for permanent workers. In the 2000s, the picture is more diverse, with eight countries further easing regulations on temporary contracts, but five strengthening protection for these contracts also in response to what was perceived as an excessive use of these contracts. At the same time, four countries eased regulations for regular contracts. Across the board, only Portugal (in 2008 in particular) and Spain (in the 1990s) eased regulations on both regular and temporary contracts – both from very high levels – and Japan – from relatively low levels.

Figure 2. Changes in the strictness of employment protection in OECD countries



Note: Countries are ranked from left to right in ascending order of the overall EP indicator in the late 1980s (late 1990s when 1980s data are not available).

a) Data for the late 1980s are not available for the Czech Republic, Hungary, Korea, Mexico, New Zealand, Poland, the Slovak Republic and Turkey.

The key issue now is to assess the possible links between employment protection and its changing levels and components over time and across countries to labour market dynamics, i.e. the reallocation of jobs and workers across sectors and firms and, in turn, assess the extent to which such dynamics have had implications for productivity growth. This is the task of the subsequent sections of the paper.

2. Reallocation of jobs and workers is sizeable in all countries

How sizeable are job and worker flows? To shed light on this question, we focus first on labour mobility across sectors and then, more importantly, across firms. In the decade prior to the global financial crisis of 2008-09, total OECD employment grew on average by about one half of a percentage point per year. This aggregate figure hides, however, significant differences across industries and, in particular, across firms, within each industry as a result of a continuous process of structural adjustment (see *e.g.* OECD, 2003, Bartelsman *et al.* 2009). For example, using a decomposition of the business sector in 20 industries, the absolute net rate of industry employment change, be it positive or negative, was on average about 4% per year, depending on the period and countries considered (OECD, 2009). Since the corresponding average net employment growth in the business sector was about 1 percentage point, this suggests that each year, on average, about 3% of jobs are destroyed in some industries, while an equal number of jobs are created in others. In other words, reallocation of labour resources across industries is three times as large as net aggregate employment growth.

But sizeable net employment changes at the industry level hide much greater churning at the firm level. To shed some light on overall labour mobility, we focus on both firm-level job reallocation – that is job creation and destruction by firms – and worker reallocation – that is hires and separations of workers. For this purpose, internationally harmonised datasets on job and worker flows are used. Data on job flows by country and industries are taken from Haltiwanger *et al.* (2006). These datasets are constructed using the same protocol from either business registers or tax files and are therefore comparable (see also Bartelsman *et al.*, 2009) and refer to firms as the units of observation.⁵ Data on worker flows are derived from employment and tenure figures obtained from individual micro-data available in national *Labour Force Surveys*.⁶ As the industry-level information of labour force survey data can be imprecise, these data are further harmonised on the basis of industry-level EU KLEMS employment data when possible, in order to ensure comparability over time at the industry level.

In this paper, job creation is the sum of net employment growth at all entering and expanding firms; job destruction is the total number of jobs lost at exiting and contracting firms; net employment growth is the difference between job creation and job destruction; and job reallocation is the sum of job creation and destruction. The definition of worker reallocation follows the approach used by Davis and Haltiwanger (1999) that is based on the comparison of worker statuses at two different points in time; hence, hirings are defined as the number of workers who are with the firm at time t , but were not with that employer at time $t-1$; and separations as the number of workers who were with the firm at $t-1$, but not at t .

Market and technological forces drive job and worker turnover across industries, but institutions and policy also play a significant role

The observed large job and worker reallocation flows are largely driven by market characteristics and technological changes. There is also a strong cross-country correlation of the industry distributions of job and worker reallocation rates.⁷ This evidence points to the fact that common industry-specific factors –

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5. The firm is defined here (as well as in the studies referred to above) as “an organizational unit producing goods or services which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources” (see Bartelsman *et al.*, 2009) .
 6. Hiring data are derived directly from tenure data, while separations data are estimated as the difference between hirings and employment growth (see OECD, 2009).
 7. See Bassanini and Marianna (2009).

including technological progress, market conditions and demand factors – are important drivers of job and worker reallocation.⁸

Despite these common industry-level patterns of job and worker flows, there remain significant differences across countries, which are largely driven by differences in economic structure of the countries and the characteristics of the firms within different industries. Of course, both the industry composition of the different countries and the characteristics of firms are partially endogenous, and possibly related to policies and institutions. OECD (2009) suggests that between 30% and 40% of the cross-country/cross-industry variation in job and worker reallocation rates is explained by country-specific effects.

Figure 3 presents estimates of labour reallocation – both job and worker flows – once differences in the economic structure (i.e. industry composition) are taken into account (see OECD, 2009 for more details).⁹ Average annual gross job reallocation was about 22% of dependent employment in the business sector between 1997 and 2004 (Panel A). The Figure also presents estimates of the so-called “excess job reallocation”, i.e. the difference between gross job reallocation and the absolute value of net employment growth in each industry. This indicator accounts for the reallocation of labour resources between firms within the same industry. At 18% of dependent employment on average, excess job reallocation implies that about 9% of all jobs were destroyed in some firms but this was offset by an equal number of jobs created in other firms within the same industry every year.¹⁰ From an accounting perspective, this is almost three times as much as the number of jobs that were created or destroyed on average in each industry due to net employment growth and the reallocation of labour resources across industries.¹¹

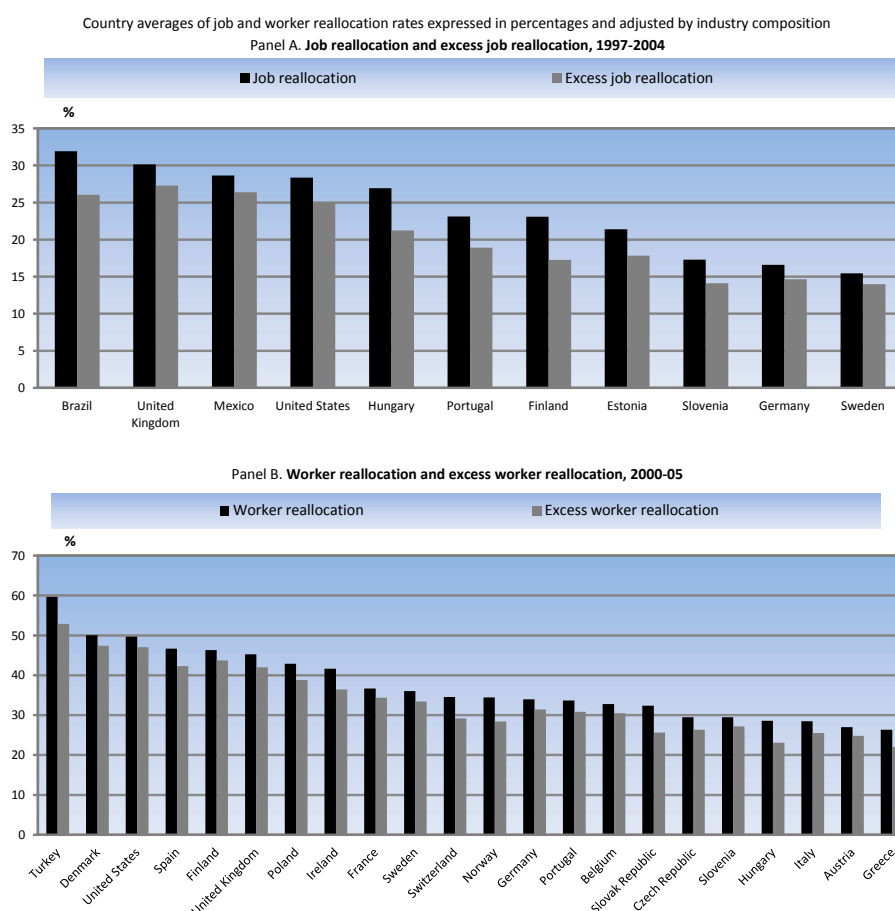
8. Haltiwanger *et al.* (2006) also show that, within each industry, differences in the size composition of firms play a key role in explaining aggregate job flows in all OECD countries.

9. These include ten OECD countries (Estonia, Finland, Germany, Hungary, Mexico, Portugal, Slovenia, Sweden, the United Kingdom, and the United States) and Brazil.

10. Excess job reallocation would be smaller if a finer industry disaggregation were employed. However, the literature has shown that excess reallocation remains large in comparison with net employment growth even within narrowly defined industries (see Davis and Haltiwanger, 1999). Put another way, growing and contracting firms coexist in the same industry, no matter how narrowly the latter is defined.

11. Similar findings are reported by Haltiwanger *et al.* (2006), the only cross-country comparative study in the literature based on internationally harmonised data on job flows.

Figure 3. There are significant cross-country differences in job and worker reallocation rates across all industries



Note: Estimated average rates that would be observed in each country if it had the same industry composition of the average country. Job flows: Brazil: 1998-2000; Estonia: 2003; Germany: 1997-98; Finland: 1997; Hungary: 1998-2000; Portugal: 1997; Mexico: 2000; Slovenia: 2002-03; Sweden: 1997-2003; United Kingdom: 1997-98; United States: 2001-04. Worker flows: Czech Republic: 2002-05; Ireland: 2000-03; Norway: 2000-04; Poland: 2004-05; Slovak Republic: 2003-05; Switzerland: 2002-07; Turkey: 2007; United States, 2000, 2002 and 2004; other countries: 2000-05.

Source: OECD (2009).

The turnover of workers is even greater than that of jobs. Available data for 22 OECD countries, based on micro-data from labour force surveys and other sources, suggest that annual worker reallocation (i.e. the sum of hirings and separations) averaged across industries, was about 33% of dependent employment during 2000-05 (Panel B). Of this, industry-level excess worker reallocation (i.e. the difference between total worker reallocation in each industry and the absolute value of industry-level net employment growth) was about 30% of dependent employment. This implies that, each year, on average almost 15% of all job matches were destroyed but were offset by new matches with other firms and/or with other workers within the same industry.

Having shown that job and worker turnover rates are large across all OECD countries and over time, it is of importance to assess their role in promoting a better allocation of labour and, ultimately, productivity and economic growth. The next two sections will examine this possible link, first from a theoretical perspective and then empirically.

3. What are the theoretical links between employment protection, labour reallocation and productivity?

Employment protection is generally justified by the need to protect workers from unfair behaviour on the part of their employer and the fact that imperfections in financial markets limit their ability to insure themselves against the risk of dismissal (see *e.g.* Pissarides, 2010). However, by imposing implicit or explicit costs on the firm's ability to adjust its workforce to optimal levels, employment protection may hinder efficient workforce adjustment, reducing job separations but also discouraging job creation (*e.g.* Mortensen and Pissarides, 1994) with an overall dampening effect on labour reallocation. In theory, the potential inefficiencies in the optimal allocation of labour generated by EP can be offset by private transfers as indicated by Lazear (1990). For example, firing costs imposed on firms may be passed onto workers *via* lower wages or obliging them to post performance bond, without necessarily affecting labour demand. However, in practice, wage setting mechanisms and financial market imperfections as well as the uncertainty future firm performance may weaken these mechanisms. Most equilibrium models of the labour market (*e.g.* Bentolila and Bertola, 1990; Bertola, 1990) suggest that in the presence of positive firing costs, the optimal firm strategy is to reduce both job creation and destruction, with an ambiguous effect on average employment levels. Moreover, EP, by raising labour adjustment costs, may also slow the reallocation of resources from declining industries to growing industries and may have negative implications for aggregate economic and labour market outcomes. At the same time, it should be stressed that some degree of job protection, by promoting job stability, may encourage work commitment and investment in firm-specific human capital (see *e.g.* Akerlof, 1984; Soskice, 1997; Belot *et al.* 2007; Pierre and Scarpetta, 2004). In turn, such investment in human capital could have positive impacts on productivity and real wage growth.

The theoretical links between the stringency of regulation on temporary contracts and labour mobility are more straightforward. In particular, asymmetric liberalisation of temporary contracts while leaving in place stringent regulations for permanent contracts – as observed in many, mainly European countries, over the past two decades (see Figure 2) – is expected to push firms to substitute temporary for regular workers. Potentially, this will have no long-run effect on overall employment, as the smaller costs involved with the termination of temporary contracts will compensate for the higher costs associated with the termination of regular contracts (see *e.g.* Boeri and Garibaldi, 2007; Bentolila *et al.*, 2008). But a shift from regular to temporary employment may distort the optimal composition of employment, reduce workers' involvement in training, etc.¹² Moreover, those who are able to maintain a regular contract (often the insiders) will enjoy an even higher level of job security, potentially raising their wage claims (Bentolila and Dolado, 1994). In contrast, those employed on temporary contracts (often youths and other workers with little work experience or low skills) will bear the brunt of employment adjustment (Saint Paul, 1996). This latter phenomenon has been very marked in the recent great recession, when a number of European countries and Japan, characterized by large shares of temporary workers in total employment, have seen job losses largely concentrated among these workers (see OECD, 2010).

What are the effects of strict EP on productivity and overall economic growth? To the extent EP raises the costs of workforce adjustments and/or distorts the optimal composition of employment between temporary and regular contracts, it is likely to have a negative impact on the efficient allocation of labour and, ultimately, on productivity growth. In this context, Hopenhayn and Rogerson (1993), using a general equilibrium model, show that a tax on job destruction reduces the pace of workforce adjustment with a negative effect on productivity. Poschke (2007) stresses the importance of firing costs in the selection of

12. Indeed, the evidence suggests that temporary workers are less likely to participate in job-related training (*e.g.* Albert *et al.*, 2005; Bassanini *et al.*, 2007) and tend to provide less effort when the probability of conversion of their contract into open-ended relationships is low (Dolado and Stucchi, 2008), although they might be more motivated when the latter is high (Engelland and Riphahn, 2005).

the most efficient firms and the exit decision of low-productivity firms, while Samaniego (2006) focuses on the impact of firing restrictions on the industry composition of the economy. Stringent firing costs, by discouraging investment in activities that require frequent changes in the workforce, including those characterized by rapid technological changes (e.g. ICT), may dampen aggregate productivity growth. Along similar lines, Bartelsman *et al.* (2004) suggest that stringent firing restrictions might discourage firms from experimenting with new technologies, characterized by higher mean returns but also higher variance, in order to avoid the risk of paying high firing costs.¹³

4. What role does labour reallocation play for productivity growth?

The availability for a growing number of OECD and emerging economies of harmonised firm-level data has allowed for comparative analyses of the links between job reallocation and productivity growth. In particular, several papers have used *static* and *dynamic* accounting decompositions to show that jobs are reallocated from firms with below-average labour productivity to firms with above-average labour productivity (see *e.g.* Olley and Pakes, 1996; Griliches and Regev, 1995; Foster *et al.*, 2001; Disney *et al.*, 2003; Baldwin and Gu, 2006; Bartelsman *et al.*, 2004).

Olley and Pakes (1996) have proposed a simple cross-sectional decomposition of productivity, whereby the level of productivity P for a sector at a point in time can be decomposed as follows:

$$P_t = \frac{1}{N_t} \sum_i P_{i,t} + \sum_i \Delta \theta_{i,t} \Delta P_{i,t}$$

where N is the number of businesses in the sector, $\theta_{i,t}$ is the market share of firm i and Δ is the operator that represents the cross-sectional deviation of the firm-level measure from the industry simple average. The simple interpretation of this decomposition is that aggregate productivity can be decomposed into two terms: i) the un-weighted average of firm-level productivity; and ii) a cross term that reflects the cross-sectional efficiency of the allocation of resources. Olley and Pakes (OP) found that the covariance term (using a decomposition of industry Total Factor Productivity, TFP) increased substantially in the U.S. telecommunications equipment industry following the deregulation of the sector in the early 1980s. They argued that this was because the deregulation permitted outputs and inputs to be reallocated more readily from less productive to more productive firms. Bartelsman *et al.* (2004) found that the OP covariance term for labour productivity averaged about 50 log points within U.S. manufacturing industries: in an accounting sense, this implies that the index of labour productivity in the average U.S. manufacturing industry was 50 percent higher than it would be if employment shares were randomly allocated within industries. However, the OP covariance term only averaged 20-30 log points in Western Europe and it was close to zero, if not negative, in Central and Eastern European countries at the beginning of their transition to a market economy. However, it was noticeable that the covariance term increased substantially in these latter countries during the 1990s, as their transition towards a market economy progressed.

From a *dynamic* perspective, several approaches have been proposed to decompose aggregate productivity growth into components that reflect the contributions of within-firm growth, the firm turnover process and the reallocation of resources, including labour, across continuing firms. One of these approaches, originally proposed by Baily *et al.* (1992) and then modified by Foster *et al.* (2001), decomposes aggregate (or industry-level) labour productivity growth into five components, commonly called the *within effect* that captures within-firm productivity growth; the *between-firm effect* that captures the gains in aggregate productivity coming from the expanding market of high-productivity firms, or from

13. Bartelsman *et al.* (2004) show that the dispersion of productivity among young businesses and businesses that actively change their technology is wider in the United States than in Germany, where firing costs are higher.

low-productivity firms' shrinking market shares; the *cross effect* that reflects gains in productivity from high-productivity *growth* firms' expanding shares or from low-productivity *growth* firms' shrinking shares; and the *entry* and *exit* effects that account for the differences between entering (and exiting) firm's productivity and *initial* productivity in the industry, weighted by their market share.

$$\Delta P_t = \sum_{i \in C} \theta_{it-k} \Delta p_{it} + \sum_{i \in C} \Delta \theta_{it} (p_{it-k} - P_{t-k}) + \sum_{i \in C} \Delta \theta_{it} \Delta p_{it} \\ + \sum_{i \in N} \theta_{it} (p_{it} - P_{t-k}) - \sum_{i \in X} \theta_{it-k} (p_{it-k} - P_{t-k})$$

where Δ means changes over the k -years' interval between the first year ($t - k$) and the last year (t); $\theta_{i,t}$ is as before; C, N, and X are sets of continuing, entering, and exiting firms, respectively; and P_{t-k} is the aggregate (*i.e.*, weighted average) productivity level of the sector in the first year ($t - k$). The method uses the first year's values for a continuing firm's employment share (θ_{it-k}), its labour productivity level (P_{it-k}) and the sector-wide average productivity level (P_{t-k}).

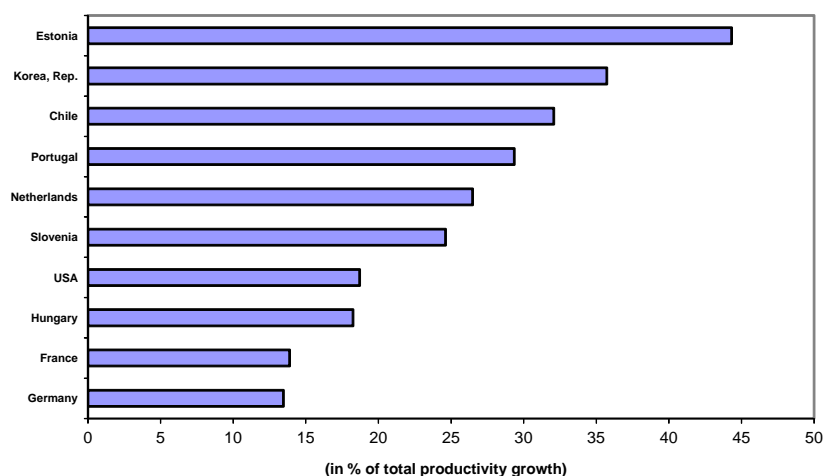
These decompositions suggest that, across all OECD countries for which suitable data are available, labour productivity growth is largely driven by *within-firm performance*. However, the reallocation of resources *across existing enterprises* also plays a sizeable role. Moreover, while the exit of unprofitable firms always contributes to raise aggregate labour productivity growth, the role of entry varies more across countries and sectors. However, in the more *technologically-advanced* sectors, the entry of new innovative firms has a positive and often large effect on productivity growth (Bartelsman *et al.* 2004). Figure 4 presents the contribution of *net entry* – the sum of the entry and exit effect for the manufacturing sector in a group of OECD countries with comparable data. It shows that the process of creative destruction accounts for a sizeable share of total labour productivity growth, ranging from a low of under 15 percent to a high of 45 percent.

OECD (2009) sheds further light on the link between job reallocation and firm-level productivity by exploiting firm-level data for a sample of the European countries. It provides further supporting evidence that job flows among continuing firms effectively reallocate labour resources from less efficient to more efficient firms. Indeed, there is a strong correlation between employment changes and a firm's efficiency level at the beginning of the period, even after controlling for firm heterogeneity.¹⁴ This result holds whether efficiency is proxied by labour productivity – consistent with most of the literature on dynamic accounting decompositions – or by TFP measures.

Overall, both productivity decomposition analyses and regression analyses provide convincing evidence of the important roles played by job reallocation, through the process of creative destruction and adjustments across continuing firms, in allocating efficiently resources and promoting productivity growth in the economy. The next step is to assess whether empirically there is a link between employment protection and labour reallocation.

14. The empirical analysis controls for firm age, detailed firm-size classes, detailed geographical area, detailed industry and common time shocks.

Figure 4. The effect of net entry on total labour productivity growth



Note: data show the sum of the contributions from new entrant firms and exiting firms to total labor productivity growth in manufacturing. Data cover different periods for the countries. For all but Hungary, the contributions are calculated on the basis of five-year rolling windows. For Hungary, data refer to three-year rolling windows and therefore tend to under-estimate the contribution of new firms to the total. Source: Bartelsman, Haltiwanger and Scarpetta (2009).

5. What are the links between employment protection and labour mobility?

There is a growing empirical literature that investigates the impact of EP on job and worker flows. One strand of the literature focuses on specific country case-studies exploiting regulatory reforms or differential treatment of workers or firms. Autor *et al.* (2007) analyse the impact of the adoption of wrongful-discharge protection norms by state courts in the United States on several firms' performance indicators. They exploit differences across US states in the timing of adopting stricter job security provisions and find a negative effect of these provisions on firm entry rates and job flows. Boeri and Jimeno (2005) exploit exemption clauses exonerating small Italian firms from job security provisions: their estimates confirm a significant effect of employment protection on job turnover and job destruction, in particular. Schivardi and Torrini (2008), using an Italian matched employer-employee dataset, find similar results as do Kugler and Pica (2008) who assess the effect of a reform in Italy in 1990 that increased firing restrictions for small firms. Along the same lines, Kugler *et al.* (2010) look at the effects of a reform in Spain in 1997, which lowered dismissal costs for older and younger workers, and find that it was associated with a relative increase in worker flows for these groups. Finally, Venn (2010) explores the impact on hirings of a recent reform of dismissal costs in Turkey that had a different application to small and large firms and reports large negative effects on the most affected firms.¹⁵

It is often difficult to generalise the results from these country case-studies as the nature and extent of the reforms often vary significantly, as do the underlying labour market and overall economic conditions in the countries under review. In this context, a second strand of the empirical literature has exploited cross-country datasets, using either aggregate data or cross-country comparable micro data.

15. It should be stressed, however, that a few micro studies find no impact of dismissal regulations on job or worker flows. Bauer *et al.* (2007) look at changes of small-firm exemption thresholds on worker turnover using German matched employer-employee data and find that such exemptions. Similarly, procedural requirements for dismissal have not been found to have a significant effect on hiring or firing in exempted firms in Portugal (Martins, 2009) and Sweden (von Below and Thoursie, 2010), perhaps because of the small economic significance of these specific exemptions.

Using aggregate data for a panel of 13 European countries over the 1990s, Boeri and Garibaldi (2009) find a negative impact of employment protection for temporary contracts on job-to-job transitions but no impact of provisions for regular workers. Using the European firm-level data, Gomez-Salvador *et al.* (2004) find a negative effect of employment protection on job reallocation, after controlling for the effect of other labour market institutions. Using similar data, Messina and Vallanti (2007) find that strict employment protection significantly reduces job destruction in downturns with mild effects on job creation. The negative impact of employment protection on job reallocation, job creation and job destruction is found to be larger in downsizing industries and where firms cannot achieve substantial reductions in employment levels purely by relying on voluntary quits.

Aggregate studies that exploit over-time variation in job flows and regulations tend to suffer from serious endogeneity and omitted-variable biases. A few recent studies have exploited within-country variations in the expected impact of EP using difference-in-difference econometric techniques. The main findings of two of these studies, OECD (2010) and Haltiwanger *et al.* (2010), are reviewed below.

A strong estimated effect of EP for regular workers on worker flows

OECD (2010) presents an empirical analysis of worker flows using industry-level data (averaged over the period 2000–07) for 24 business-sector industries and 24 OECD countries. The study focuses on EP for regular contracts (including additional restrictions for collective dismissals) and adopts a difference-in-difference estimation procedure. The latter relies on the assumption that employment protection has a potentially stronger impact on firms' behaviour – and thus on worker flows -- in industries that tend to have, in the absence of regulation, a greater need to adjust their workforce because of technological and market factors. In particular, the industry-level propensity to worker reallocation in the United States, the least regulated country as judged by the OECD indicators of employment protection, is used as a benchmark to proxy for the technological and market-driven differences in worker reallocation in the absence of policy-induced adjustment costs. The advantage of this approach compared to standard cross-country/cross-industry empirical studies is that it exploits *within-country* differences between industries based on the interaction between country and industry characteristics. Thus, the approach allows controlling for country and industry effects.¹⁶

The empirical results in OECD (2010) suggest that EP on regular contracts has a statistically significant negative direct effect on worker reallocation – once the impact of demographic characteristics and the share of temporary workers have been controlled for.¹⁷ A one-point increase in the OECD index of EP stringency for regular workers – roughly corresponding to two-thirds of the difference between the OECD average and the country with the lowest value of the EP index (United States) – appears to reduce, on average, total worker reallocation by between 5.2 and 6.7 percentage points, depending on the specification adopted. Similarly, the same variation in EP stringency is estimated to reduce separation rates by between 3 and 3.6 percentage points, and hiring rates by between 2.2 and 3 percentage points.

However, it should be noted that these results do not take into account any effect of EP for regular workers' reallocation arising from any impact of EP on temporary workers. Figure 5 presents the estimated effects of a one-point reduction in EP for regular workers, on both the share of temporary workers (between 3.2 and 4.2 percentage points) and, taking into account also direct effects, on overall

16. Alternative benchmark measures of this propensity are also considered, including UK reallocation rates, US dismissal rates, and the predicted value of reallocation when the EP index is equal to zero, estimated on the basis of all countries in the sample (see Bassanini *et al.*, 2010, for more discussion of data, estimation methods and detailed results).

17. Controlling for the share of temporary contracts allows estimating the effect of EP on the reallocation of workers on permanent contracts.

worker reallocation (between 2.9 and 3.6 percentage points).¹⁸ These are large effects, although it should be stressed that, as shown above, a one-point change of the index corresponds to an unusually large policy change from a historical perspective. From a different perspective, these estimated effects would imply that EP for regular workers (including additional restrictions on collective dismissals) explains more than 20% of the cross-country variation in gross worker reallocation, as measured by standard deviations in the respective distributions (adjusted for industry composition in the latter case).¹⁹ While this implies a non-negligible role for EP in explaining the large cross-country variation in labour reallocation, it does of course not mean that other factors are not also at play, including differences in regulations affecting the internal flexibility of firms, different returns to job tenure, technology shocks etc.

Figure 5. Regulation for individual and collective dismissals, share of temporary workers and overall impact on worker reallocation



Note:

Based on difference-in-difference OLS estimates. Estimates are obtained by assuming that, in each industry, the impact of employment protection is greater, the greater the US reallocation rate for that industry. The overall impact on total worker reallocation is the algebraic sum of the impact of the direct impact and the indirect one that occurs through the share of temporary contracts, simultaneously estimated. All specifications control for the shares of age groups. Estimates are based on 24 business-sector industries for 23 OECD countries. Data are averaged over the period 2000-07.

For each dependent variable, minimum and maximum indicate the smallest and greatest estimate (in absolute terms), respectively, obtained in different specifications, of the average effect of a one-point increase from the OECD average in the EP index for regular workers (including additional restrictions for collective dismissals).

** , ***: statistically significant at the 5% and 1% levels, respectively.

Source: OECD (2010).

Employment protection affects, in particular, job-to-job transitions

The empirical analysis provided in OECD (2010) also allows distinguishing between different types of worker transition, with reference to both hirings and separations, as well as movement within and across industries. Figure 6 presents the estimated effects of employment protection for individual and collective dismissals for the different transition paths. It suggests that EP has a strong and statistically significant effect mainly on *job-to-job* separations, with little or no impact on *job-to-jobless* separations. This could be taken as evidence that, at least in normal times, those workers who may end up being displaced in the aftermath of a reform easing EP for regular workers but would not have been displaced

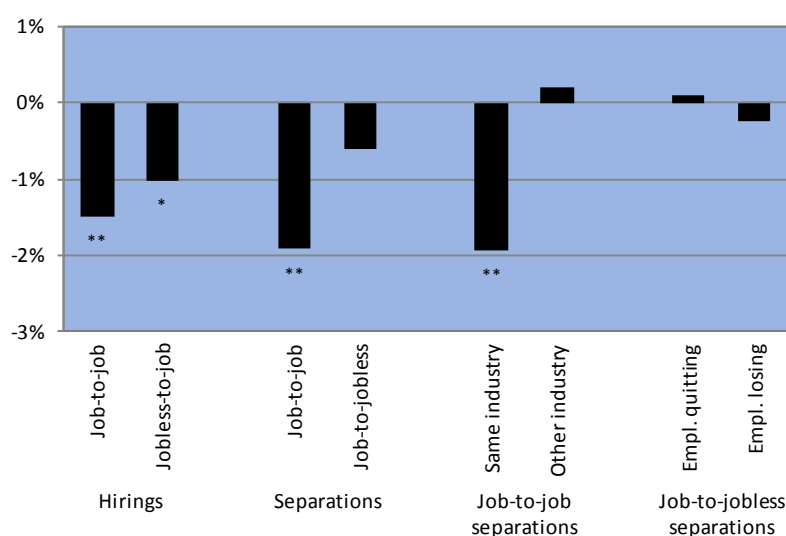
18 . In principle, this statement should refer only to partial-equilibrium labour demand effects.

19 . These results are robust to various sensitivity checks; see Bassanini *et al.* (2010) for more details.

without the reform, are likely to find another job within a relatively short period of time. This result might not hold, of course, in a major downturn – like in the recent great recession – when congestion in the labour market may lead to longer spells of joblessness.

Moreover, flexibility-enhancing EP reforms appear to be entirely associated with more frequent transitions within the same sector, which are typically associated with greater wage premia in the case of voluntary job changes and lower wage penalties in the case of displacement. By contrast, the impacts on *job-to-job* and *jobless-to-job* hirings are not significantly different (even though both are negative and significant), which suggests that more flexible EP regulations facilitate the transition from non-employment to employment.

Figure 6. The impact of regulation for individual and collective dismissals on worker reallocation, by type of transition



Note: Based on difference-in-difference OLS estimates. Average effect of a one-point increase from the OECD average in the indexes for each EP for regular workers (including additional restrictions on collective dismissals). Estimates are obtained by assuming that, in each industry, the impact of employment protection is greater, the greater the US reallocation rate for that industry. Estimates are based on 24 business-sector industries in a large sample of OECD countries, except Slovenia and Turkey. The specification controls for the shares of age groups and of temporary workers. Data are averaged over the period 2000-07.

**,: statistically significant at the 5% and 10% levels, respectively.

Source: OECD (2010).

EP affects both a firm’s decision to enter or exit the market, as well as the reallocation of labour among continuing businesses

Haltiwanger *et al.* (2010) exploit the same difference-in-difference estimation procedure using harmonised job flow data for a sample of OECD and emerging economies. Their data allow distinguishing between job creation and destruction of firms of different sizes and between job creation due to the entry of new firms and job destruction due to the exit of unprofitable companies. Their results support strongly the OECD findings of a marked effect of EP on job reallocation. In particular, their estimates suggests that, if countries with the most stringent employment protection (in the top 10% of the distribution) were to reform EP toward that of the least regulated countries (bottom 10%), they could experience an increase in job reallocation of almost one-half in the most dynamic sectors (i.e. those with highest flexibility requirement).

Haltiwanger *et al.* (2010) also shed light on the effects of EP on the different margins of reallocation, namely on job flows due to the entry and exit of firms in the market and those due to reallocation among incumbents. This is important because, as stressed above, one of the key drivers of productivity growth is the process of creative destruction, with the entry of new firms and the exit of unproductive ones. Their results suggest that while both negative and statistically significant, the effect of employment protection on labour mobility is stronger on the entry/exit margin than on the reallocation of labour among incumbents. This suggests that overly-strict employment protection tends to dampen the process of creative destruction with potentially particularly damaging effects on the most dynamic segments of the economy.

Overall, their results confirm the importance of employment protection in shaping labor adjustment patterns, particularly so in those industries and size classes where technological and market factors require more frequent employment changes. Controlling for other regulations influencing firm behavior does not significantly alter their results.

6. What are the links between employment protection and productivity?

Given the well-established empirical links between EP to labour mobility and, in turn, between labour mobility and productivity, the next obvious question is see whether there is also evidence in the data of an effect of EP on productivity. While the evidence from country-level studies is rather inconclusive (see OECD, 2007 for a review), a number of recent cross-country studies have found consistent evidence of a negative effect of EP on productivity. Autor *et al.* (2007) also use their data on differences across the US states in the timing of adopting stricter job security provisions to assess the impact on investment and productivity (see above for a discussion on their estimated effect on job flows). They find a positive effect on capital investment and a negative effect on TFP growth. Cingano *et al.* (2008) reach similar conclusions using Italian data to examine a 1990 reform that raised dismissal costs for firms with fewer than 15 employees only. Micco and Pages (2006) also found some weak evidence of a relationship between EP and labour productivity, using a difference-in-differences approach on a cross-section of industry-level data for several OECD and non-OECD countries.²⁰

OECD (2007) and the revised analysis in Bassanini *et al.* (2009) provide the most comprehensive analysis of the impact of EP on labour productivity and TFP growth. In particular, exploiting industry-level data for a sample of 19 industries in 11-16 OECD countries over the 1982-2003 period and using a difference-in-difference approach (see above), they found robust evidence that labour productivity and TFP growth tend to be weaker in industries with greater layoff propensity, the more stringent the level of EP. From this result they also derive an estimate of the impact of EP on aggregate productivity growth that takes into account that, given the empirical approach adopted, EP mainly affects industries with high job turnover propensity. Their estimates suggest that a one-point EP easing for regular workers (roughly corresponding to half of the difference between the OECD average and the country with the lowest value of the EP index) could translate into an aggregate yearly labour productivity growth effect of 0.14 percentage points.²¹ This is a sizeable effect if one considers that labour productivity growth averaged 1-2.5 per cent in OECD countries over the past decade.

20. However, their negative relationship between layoff costs and the level of labour productivity is not robust to changes in the country sample.

21. As indicated in Bassanini *et al.* (2009), this figure is a lower-bound estimate as it is based on the assumptions that the aggregate productivity effect is coming only from the impact on EP-binding industries and that EP has no impact on industry composition (between EP-binding and non-binding industries). In their analysis, EP-binding industries are those industries that appear to have layoff rates above the average in all years, so that, in the base sample of nineteen industries, only six of them – accounting, on average, for about 25% of total value added – appear to meet this criteria.

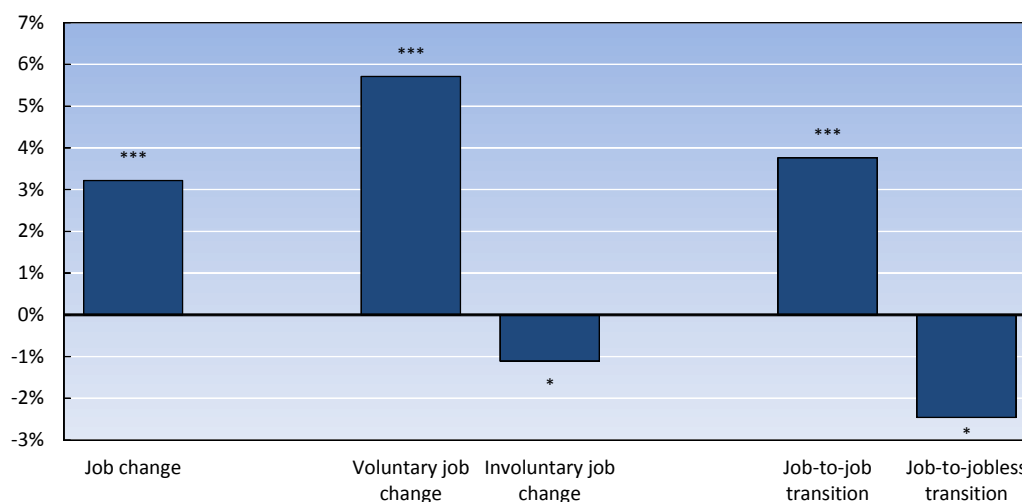
7. Do worker benefits from more flexible job security provision?

On average, workers benefit from labour mobility because of better job matching and stronger productivity growth

While there is ample evidence of the importance of labour reallocation for productivity growth and, in turn, of the impact of employment protection in shaping the magnitude and overall efficiency of labour reallocation, it is important to assess the impact that greater labour mobility would have on the involved workers. As stressed above, not all labour mobility promotes productivity growth. For example, OECD (2010) suggests that when labour mobility is largely achieved through the use of temporary contracts, leaving workers on permanent contracts largely untouched, it often leads to weaker accumulation of firm-specific human capital and weaker firm-level productivity growth. Secondly and more importantly, while some workers benefit from better job opportunities, others suffer from substantive losses in terms of post-displacement earnings and working conditions.

To shed some light on the effects of labour mobility on workers, OECD (2010) uses individual longitudinal data from the European Community Household Panel to assess the wage premia to job changes, controlling for individual heterogeneity (see OECD, 2010 for details). It shows that wage premia related to job changes are positive and significant in two-thirds of the OECD countries: on average, wage premia were around 3 per cent across the different European countries (see Figure 7).

Figure 7. Average wage premia to job change, 1995-2001



Note: Percentage-point estimated average differences between wages at the new and previous jobs (see OECD, 2010 for the list of countries), based on wage and salary employees only. Voluntary job changes occur when the reason to stop the previous job is that the worker obtained a better / more suitable job. An involuntary job change occurs when the reason why the worker stopped the previous job was: either obliged to stop by employer or end of temporary contract. *, ***: statistically significant at the 10% and 1% levels, respectively.

Source: OECD (2010).

There is also some evidence that the unemployed or those with limited attachment to employment, benefit from a more dynamic labour market (see *e.g.* Petrongolo and Pissarides, 2008). OECD (2010) reports evidence suggesting that about 44% of all hires in one year concern jobless-to-job hires, i.e. movements of individuals who were unemployed or out of the labour force into employment.

How does employment protection affect the impact of labour mobility on workers? OECD (2010) sheds some light on this issue by extending the analysis of wage premia associated with job changes to include also the impact of employment protection for regular workers. It should be stressed at the outset that this analysis focuses on the individual effects on workers and does not account for potentially sizeable general-equilibrium effects. Bearing this caveat in mind, the results suggest that EP for regular workers has no significant effect on the average wage premium to a job change. At the same time, strict EP appears to have substantially larger negative effects on the wage premium to voluntary separations and on the wage penalty at re-employment to involuntary separations (see Bassanini *et al.*, 2010). These results tentatively suggest that, overall, EP reforms, by promoting greater worker mobility, tend to create more job opportunities for those in employment who wish to search for better jobs, and, conditional on displacement, do not necessarily worsen job perspectives for displaced workers.

These estimated wage premia do not take into account the aggregate effects on workers stemming from the impact of greater labour reallocation on productivity growth and wage dynamics. As discussed in the previous section, recent studies have produced consistent evidence of the importance of labour market flexibility for aggregate productivity growth and the main transmission mechanism from EP to productivity is likely to be *via* the impact of EP on labour reallocation. Indeed, given the key role that labour reallocation plays for productivity growth and, in turn, the significant impact that employment protection has on labour reallocation, one can tentatively conclude that greater efficiency in the allocation of labour is the main enabling channel through which lighter restrictions on dismissals contribute to productivity growth. To the extent that EP reforms do not simultaneously reduce workers' bargaining power, thereby depressing the wage share of value added, wage and salary employees will benefit from greater productivity growth through higher wages.

But greater labour mobility also implies a higher fraction of displaced workers who need adequate support

All in all, the empirical evidence suggests that workers tend to benefit from a more dynamic labour market that ensures better matches between their skills and employers' needs and from the fact that their wages will also reflect the productivity-enhancing effects of efficient labour reallocation. However, not all workers benefit from the dynamism of the labour market in the same way. Displaced workers tend to suffer from substantive losses in terms of post-displacement earnings and working conditions. Indeed, as shown in Figure 7, while the average wage premium was almost 6 percentage points in the case of a voluntary job change, in the case of an involuntary separation wages after re-employment are, on average, about 1 percentage point smaller than what they would have been if the job match had not been destroyed. In addition, and consistent with the "scarring" effect of unemployment, the wage loss at re-employment was about twice as large in the case of job-to-jobless transitions, no matter whether voluntary or involuntary.²² To the extent vulnerable workers – including youth and the low skilled – are over-represented among those affected by labour mobility (see Figure 8) supporting policies to facilitate their re-integration into employment are a key component of an overall reform package that is aimed at strengthening efficiency in the allocation of labour but also pays due attention to equity considerations.

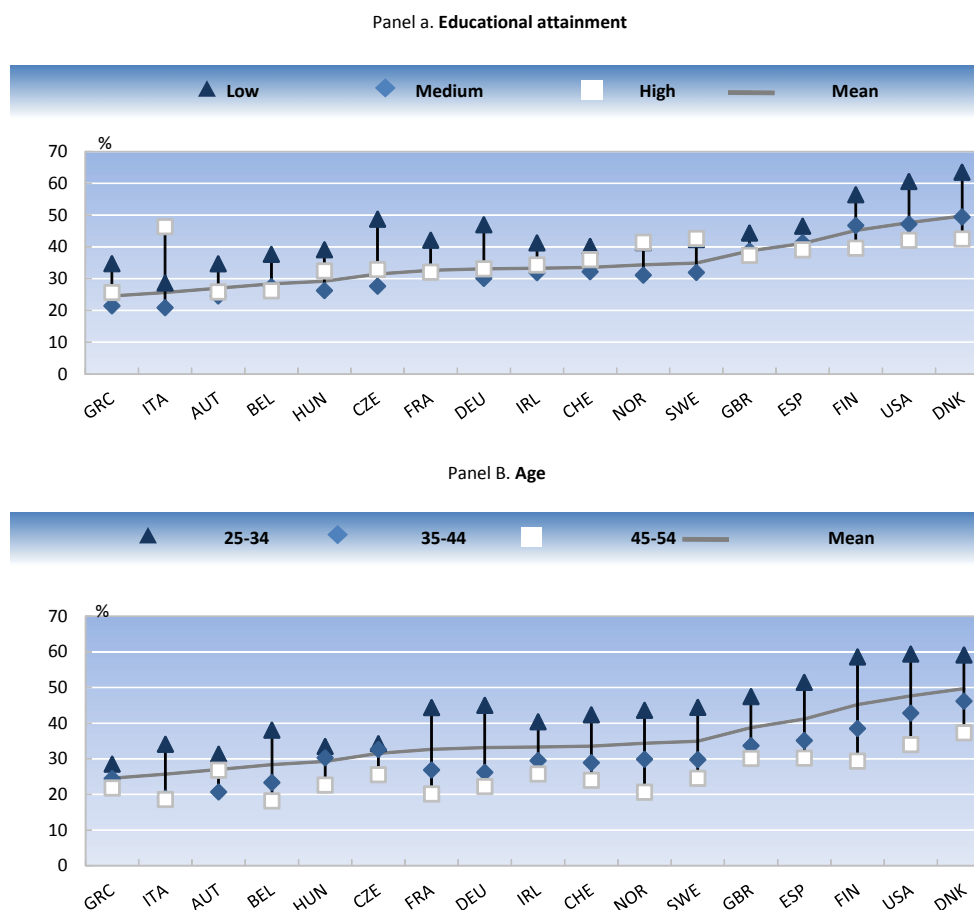
In this context, it is of key importance to accompany efficiency-enhancing reforms of employment protection with efforts to provide adequate income support to displaced workers coupled with

22. These results are consistent with the empirical literature. Moreover, evidence from the United States (see e.g. Farber, 2003) points to the fact that displaced workers are more likely to end up in precarious jobs and, in general, tend to have much smaller earnings, once re-employed. Moreover, there is some evidence for the US, Canada and a number of European countries suggesting that these wage losses can persist for a number of years after displacement (e.g. Burda and Maertens, 2001; OECD, 2003; Houle and van Audenrode, 1995; Browning and Crossley, 2008).

effective re-employment services to facilitate their reintegration into employment. This is important not only for equity but also for efficiency considerations. Indeed, OECD (2010) suggests that unemployment benefits appear to have a positive impact on average worker flows, with particularly strong effects on youth and young adults.

Figure 8. **Worker mobility is higher among young adults and low-qualified workers**

Worker reallocation, percentage rates adjusted by industry composition and other individual characteristics, 2000-05



Note: Data are ranked in ascending order of worker reallocation rates. Adjusted reallocation rates are estimated average rates that would be observed in each country if it had the same industry composition and individual characteristics as the average country other than the characteristic of interest. Adjusted reallocation, hiring and separation rates are estimated average rates observed across countries. The rates are based on 2002-2005 for the Czech Republic; 2000-2003 for Ireland; 2000-2004 for Norway; 2004-2005 for Poland; 2003-2005 for the Slovak Republic; 2002-2007 for Switzerland; 2007 for Turkey; and 2000, 2002 and 2004 for the United States.

Source: OECD (2009).

8. Conclusions/Implications for policy

The on-going debate on labour market flexibility, its effects, whether policies should seek to influence it and in what forms, etc. assigns an important role to employment protection. This is hardly

surprising when one considers the prominence assigned to EP in many theoretical models of the labour market and many empirical studies seeking to explain labour market performance across OECD countries. Much of the latter has focused on the possible impacts of EP on aggregate employment and unemployment rates and the evidence is mixed and hotly debated.

In this paper, we have sought to extend the debate on EP by focusing explicitly on its impacts on labour market dynamics, specifically how it is linked to worker and job flows, and how, in turn, this feeds into productivity growth. We do this by summarizing the empirical evidence and, in particular, drawing extensively from recent OECD analyses of these key links. The upshot is that employment protection impacts significantly on labour market flows and these flows, in turn, have significant impacts on productivity growth. At the same time, the evidence also shows that while greater labour market reallocation benefits many workers through higher real wages and better careers, some displaced workers lose out *via* longer unemployment durations and/or lower real wages in post-displacement jobs.

So what do these findings imply for reforms of EP to boost productivity growth and future living standards? First, OECD research for the *Reassessed Jobs Strategy* (RJS) of 2006 stresses that any such reforms should be tackled as part of a comprehensive strategy, not viewed as an end in itself. A comprehensive strategy has to include appropriate macroeconomic policies to deal with demand-side shocks – an important lesson from the recent Great Recession – and vigorous steps to strengthen product market competition. It should also seek to secure a new “flexicurity-type balance”, taking into account each country’s specific starting points and institutions, in order to ensure that the benefits and costs of the reforms are equitably shared between workers, firms and taxpayers.

A key factor in any such flexicurity bargain should be a reasonably generous social safety net that is backed by an effective activation regime which assists benefit recipients to get back into work. Such a cost-effective activation regime does need to be adapted to the specific circumstances of a steep downturn and OECD (2009, 2010) highlights some of the elements in this adaptation and how countries have responded to the jobs crisis and current recovery.

Finally, what might be desirable features of EP reform as part of such a comprehensive approach? At least three possible reform approaches could be considered. One, which has been championed by a group of European economists including Pierre Cahuc, Francis Kramarz, Samuel Bentolila, Juan Dolado and Tito Boeri, is to move sharply away from a two-tier EP system of the type which exists in many (mostly European) countries today, with relatively strict EP for permanent workers and relatively lax EP for temporary workers. Instead, they call for a single EP contract, with firing costs being set at initially low levels and rising with firm tenure. A second type of reform owes its inspiration to the Austrian reform of 2003 which converted uncertain firing costs for employers into a system of individual savings accounts, funded by an employer payroll tax. From the employer’s perspective, this system guarantees certainty about the cost of any future dismissal at the time of hiring. For the workers, costs associated with labour mobility are reduced because they do not lose their entitlement to severance pay when quitting to take a new job.²³ A third, more *ad hoc* type of reform would be tackle the asymmetry between temporary and permanent contracts more directly by relaxing the stringency of EP for the latter while at the same time increasing the degree of stringency for the former.

In sum, EP is an important feature of labour market adaptability. Its design and enforcement matter for turnover in the labour market which, in turn, has been shown to have significant impacts on productivity growth. But any reforms of EP should not be made in isolation; it should be assessed carefully and as part of a comprehensive reform package.

23. In the Austrian system the payroll tax is fixed. A more optimal version of this reform would experience-rate the firm’s payroll tax relative to its layoff rate.

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