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The Costs of Flexibility-Enhancing Structural Reforms: A Literature Review

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Abstract/Résumé

The Costs of Flexibility-Enhancing Structural Reforms: A Literature Review

This survey highlights the key results of the empirical literature concerning the costs of flexibility-enhancing reforms in product and labour markets. The documented costs include reduced employment, loss of government revenue, undesirable distributional consequences and political instability. The literature suggests that: i) once implemented, product and labour market reforms affect prices and quantities quite rapidly; ii) there are no major differences between the overall effects in the short and long run; iii) the costs of reforms are very much related to interactions with other policies and institutions; and iv) the costs of reforms change over the business cycle.

JEL codes: J3; J5; J6

Keywords: flexibility, structural reforms, short run, long run

Les coûts des réformes de flexibilité : revue de littérature

Cette revue de la littérature met en relief les principaux résultats empiriques sur les coûts des réformes qui améliorent la flexibilité des marchés du travail et des biens. Ces coûts se comptabilisent en termes de pertes d'emplois et de revenus fiscaux, mais tiennent aussi compte d'éventuels effets redistributifs et de l'instabilité politique. Cette revue de la littérature montre que : i) les réformes des marchés du travail et des biens agissent rapidement sur les prix et les quantités dès qu'elles sont mises en œuvre ; ii) il n'y a pas de différences majeures dans la nature des effets de long-terme et de court-terme ; iii) les coûts des réformes dépendent fortement des interactions existantes entre les diverses politiques publiques et institutions façonnant les marchés, et iv) : les coûts des réformes ne sont pas les mêmes selon les phases du cycle des affaires.

Classification JEL : J3 ; J5 ; J6

Mots clés : flexibilité, réformes structurelles, court-terme, long-terme

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THE COSTS OF FLEXIBILITY-ENHANCING STRUCTURAL REFORMS: A LITERATURE REVIEW

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1. Introduction

1. It is often believed that the positive effects of many flexibility-enhancing structural reforms take time to materialise and that some costs may persist. Typical examples are reforms of dismissal legislation whose gains in terms of better allocation of labour need time to materialise, while there are immediate effects on job destruction; and reforms of product markets where productivity gains are realised mainly through a creative destruction process involving in the short-run significant job losses.

2. This survey highlights the key results of the empirical literature on product and labour market reforms concerning these potential costs. Various types of costs may arise: increased unemployment, loss of government revenues, undesirable distributional consequences and political instability.

3. There are some insights that are common across studies and institutional contexts:

1. Once implemented, product and labour market reforms affect prices and quantities quite rapidly (within a year);
2. There are no major differences between the overall effects in the short and long run; some (supposedly short-run) costs do not fade away rapidly and some (supposedly long-run) benefits materialise immediately.
3. The costs of reforms are very much related to interactions with other policies and institutions.
4. The costs of reforms change over the business cycle. For unemployment benefits, for instance, there is a strong case for counter-cyclical adjustments, notably increasing generosity during downturns and cutting entitlements during recoveries. Similarly for other institutions, such as employment protection, the costs of flexibility-enhancing reforms are larger during downturns.
5. More democratic and transparent political institutions facilitate the implementation of flexibility-enhancing reforms.

4. Within the huge literature on the subject, particular attention is devoted to empirical studies that are relatively recent and use sound identification strategies. We also take into account cross-country studies, whenever they exist, whose results seem worth of interest even if they ought to be confirmed by other studies with more reliable identification procedures. For each type of reform we analyse the costs and benefits in the short run, in the long run, the distribution of net benefits over the business cycle, and how

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1. The Inclusive Growth and Well-Being research team of the OECD Economics Department commissioned this report as part of a broader, on-going study about the consequences of structural reforms for individuals. Some parts of this paper related to labour reforms draw on our recent textbooks, Tito Boeri and Jan van Ours, *The Economics of Imperfect Labour Markets,* Princeton University Press, 2013, and Pierre Cahuc, Stéphane Carcillo, André Zylberberg, *Labour Economics,* MIT Press, 2014. We thank Giuseppe Nicoletti and other members of the OECD Economics Department for very useful comments. Tito Boeri thanks the Department of Economics of Sciences Po for its hospitality during the work on this paper. OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the author(s).

interactions with other policies may affect these costs. The main insights are summarised in table format at the end of this introduction (Tables 1-6).

5. The second section of this paper considers product market reforms. Next, reforms of minimum wages and collective bargaining systems are analysed. Reforms increasing labour mobility by reducing costs of hiring and dismissals or changing housing regulations represent the third group of studies that are covered. The last two sections of the survey are devoted to unemployment insurance and retirement plans. Appendix 1 provides a brief overview of the relevant papers on these topics in table format.

Table 1. Product market reforms

Topic	Short term	Long term	Business cycle
Effects on prices and quantities	Competitive pressures associated with product market reforms bring about relatively quick price drops as well as output, productivity and employment gains. These price drops are costly for the incumbents (employers and employees), who face stronger competitive pressures (Brown and Goolsbee, 2002; Goolsbee and Syverson, 2008; Bertrand and Kramarz, 2002; Skuterud, 2005).		Product market reforms improve the capacity of markets to cope with economic shocks through price adjustments (Alvarez and Hernando, 2006).
Effects on productivity	- Product market reforms that facilitate the entry of firms and the reallocation of workers and investment from less productive to more productive firms can have a strong and relatively quick impact on productivity (Andrews and Cingano, 2014; Schmitz, 2005). - Liberalisation of the regulatory environment increases productivity quickly (Knittel, 2002; Ng and Seabright, 2001), but productivity gains are realised thanks to reductions in overstaffing and job reallocations that generate job losses and unemployment (Olley and Packes, 1996; Disney et al., 2003)		
Innovation, quality of products		In the long run, liberalisation of product markets fosters innovations (Aghion et al., 2009; Schivardi and Viviano, 2011) and the quality of products (Matsa, 2011; Bloom et al., 2010; Cooper et al., 2011)	
Political economy		In OECD countries, better democratic institutions are significantly correlated with the adoption of product market reforms in electricity and telecommunication industries (Giuliano et al., 2013).	

Table 2. Collective bargaining and minimum wages

Topic	Short term	Long term	Business cycle
Overall employment effects of the minimum wage	Most of the evidence points to negative employment effects of the minimum wage, especially for the least skilled (Flinn, 2002; Neumark et al., 2004; Neumark and Wascher, 2007). However, not all studies find negative effects on employment (Card and Krueger, 1994), and publication seems biased against studies finding no effects (Doucouliagos and Stanley, 2009).	In the United States, no adverse employment effects (Dube et al., 2010; Allegretto et al., 2011).	
Employment effects of the minimum wage on the young	Most studies point to a negative effect of minimum wage hikes on youth employment (Abowd et al., 1999; Kramarz and Philippon, 2001; Anton and Muñoz de Bustillo, 2011). Sometimes, no effect is detected (Shannon, 2011; Stewart, 2004).	With data from Portugal, a study finds that minimum wage hikes reduced hiring of young workers. But it also highlights a "supply effect": young people aged 19 and under had a greater tendency to keep their jobs. It also gives some evidence of a positive participation effect (Portugal and Cardoso, 2006).	
Effects of collective bargaining coverage	Extensions of collective bargaining coverage negatively affect employment and may increase the informal sector (Martins, 2014).	- Unionization reduces wage inequality especially for men (Card et al., 2004). - A study on Spain shows that employees covered by firm-specific contracts earn about 10% more than those covered by industry-level contracts (Card and de la Rica, 2006).	Decentralisation of collective bargaining increases the correlation of wages and productivity over the business cycle (Gnocchi, 2015).
Effects on labour productivity		In the United Kingdom, the introduction of a minimum wage in 1999 positively affected average wages and, consequently, negatively affected profits. Nevertheless, no significant effect is found on employment and firms' productivity. (Draca et al., 2011).	
Distributional issues		In the United States, an increase in the minimum wage reduces wage inequality (DiNardo et al., 1996; Lee, 1999) but has an ambiguous impact on the poverty rate because it raises the income of the worker if her job is not destroyed and lowers it if the job is destroyed (Addison and Blackburn, 1999; Neumark et al., 2005; Sabia and Burkhauser, 2010; Brown, 1999).	

Table 3. Employment Protection Legislation

Topic	Short term	Long term	Business cycle
Effects on layoffs	Reforms increasing flexibility via reductions in EPL tend to increase lay-off rates and hence unemployment (Boeri and Jimeno, 2005; Von Below and Thoursie, 2010; Marinescu, 2009)		- Judges tend to be more protective of workers in bad times, as they feel that under such circumstances, workers should be more heavily protected against dismissals than in a buoyant labour market (Ichino et al., 2003). - The nature and stringency of EPL enforcement vary across countries and over time and are influenced by labour market conditions (Bertola et al., 1999).
Effects on hiring	- Short-run effects on hiring are limited as it takes time for employers to anticipate the lower costs of job termination in hiring decisions (Behagel et al., 2008). - Reforms increasing flexibility at the margin by liberalising labour contracts only for new hires tend to have initially a positive "honeymoon effect" on employment, as firms still face very high costs of dismissals for the stock of employees with open-ended contracts while they can almost fire at will new hires (Boeri and Garibaldi, 2006).	The transient "honeymoon effect" fades away as the stock of permanent workers is gradually replaced with flexible contracts (Boeri and Garibaldi, 2006).	
Employment effects		- Firm size becomes more persistent when EPL is reinforced but the magnitude of such an effect is fairly small (Garibaldi et al., 2003; Schivardi and Torrini, 2008). - Stronger EPL reduces the employment rate, and the effects on skilled and experienced workers take time to materialize (Besley and Burgess, 2004; Autor et al., 2006; Ahsan and Pagés, 2009).	Reforms reducing EPL involve an increase in the volatility of unemployment and employment (Bentolila et al., 2012; Gnocchi et al., 2014).

Table 3. Employment protection legislation *(cont.)*

Topic	Short term	Long term	Business cycle
Employment effects		Reducing contractual dualism, i.e. the difference in the asymmetry between open-ended and temporary employment contracts, increases relative employment with open-ended contracts (Kugler et al., 2005)	
Effects on productivity	Job protection can lower the effort (measured by poor work performance or absenteeism) of workers because there is less threat of lay-off (Ichino and Riphahn, 2005; Olsson, 2009).	- Stringent employment protection legislation discourages firms from experimenting with new technologies that may exhibit higher mean returns but also higher variance (Bartelsman et al., 2014; Pierre and Scarpetta, 2005; Cingano et al., 2013). - Job protection has a negative impact on productivity (Autor et al., 2007; Micco and Pagés, 2006; Bassanini et al., 2009; Martins, 2009)	
Effects on labour market segmentation		- Stringent regulation of permanent jobs increases labour market duality (Kahn, 2007). - More stringent regulation is associated with stronger feelings of job insecurity not only for temporary workers but also for permanent workers (Clark and Postel-Vinay, 2009)	

Table 4. Housing

Topic	Short term	Long term	Business cycle
Home ownership rate	In a Finnish experiment, home ownership has a significant positive and immediate effect on unemployment (Laamanen, 2013)	Doubling the home ownership rate can lead to more than a doubling of the unemployment rate (Blanchflower and Oswald, 2013b)	

Table 5. Unemployment insurance

Topic	Short term	Long term	Business cycle
Generosity	- The elasticity of the duration of unemployment with respect to the replacement ratio varies between 0.4 and 1.6. An increase of a week in the potential duration of benefit payments leads to an increase in the duration of unemployment ranging between 0.1 and 0.4 of a week (Tatsiramos and van Ours, 2014).	- The existing evidence on the relationship between benefit provision and job match quality is mixed, a number of studies finding positive but in most cases small effects, while others find no effects (Tatsiramos, 2014)	In the United States, the elasticity of unemployment duration with respect to the level of unemployment benefit is weaker when the local unemployment rate is high (Kroft and Notowidigdo, 2014; Landais, 2014). Hence, the optimal unemployment benefit should be counter-cyclical: it should increase when the unemployment rate increases.

Table 5. Unemployment insurance *(cont.)*

Topic	Short term	Long term	Business cycle
	- The exit rate from unemployment to employment rises more at the end of the entitlement period for better qualified job-seekers (Dormont et al., 2001)	- The peak observed at the exhaustion of benefits is markedly more pronounced if all types of exit from unemployment are taken into account. It depends on institutional factors and labour market conditions that include the availability of post-exhaustion benefits (Card et al., 2007)	
Job search assistance	- Help given to job seekers significantly reduces the duration of unemployment (Björklund and Regnér, 1996; Dolton and O'Neill, 1996; Crépon et al., 2005). - Mandatory participation in active labour market programmes (ALMPs) programmes shorten unemployment duration (Rosholm and Svarer, 2008; Black et al., 2003). - Disadvantaged individuals seem to benefit more than well qualified ones from job search assistance (Van den Berg and van der Klaauw, 2006).		Reinforcing job search assistance during downturns has a positive impact on the return to employment (Martins and Pessoa e Costa, 2014).
Threats and sanctions	- It is difficult to isolate the effect of threats and sanctions from the effect of job search assistance per se (Card et al., 2010; Kluve, 2010). - The ex-ante impact (the threat) and an ex-post impact (the effective application of the sanctions) both contribute to reducing the duration of unemployment (Lalive et al., 2005; Van den Berg et al., 2004)	The quality of the jobs found might be negatively affected by the system of sanctions associated with insufficient search effort (Arni et al., 2009; Van den Berg and Vikström, 2009).	
Interactions with other policies	A natural experiment in Austria shows that according to the age of the unemployed and the existing possibilities to exit from the labour market, there can be substitution or complementarity between unemployment benefits, disability insurance benefits and retirement benefits (Inderbitzin et al., 2013)		Unemployment benefits appear to be substitutes of other schemes that may be more effective to deal with temporary shocks, such as subsidised short-time work (Boeri and Bruecker, 2011). Cahuc and Carcillo (2011) find that during severe recessions short-time working schemes save jobs.

Table 6. Retirement

Topic	Short term	Long term	Business cycle
Decreasing the retirement age	Decreasing the retirement age diminishes the employment rate of older workers without increasing that of younger ones (Bingley et al., 2010; Börsch-Supan and Schnabel, 2010).	Estimates based on cross-country time series data suggest that, in the short and long run, the growth of youth employment happens in parallel with the growth of older workers' employment (Gruber et al., 2010).	No relation with the business cycle (Börsch-Supan and Schnabel, 2010).
Increasing the retirement age	- Increasing the retirement age has a positive impact on the participation rate and on the employment rate of older workers and it does not hurt the employment of younger workers (Cribb et al., 2014; Lalive and Staubli, 2014). - The unemployment rate of older workers increases because their employment rate increases less than their participation rate (Cribb et al., 2014). This rise in unemployment is detrimental to older workers if their unemployment benefits are lower than their retirement pensions. It is therefore important to coordinate the unemployment insurance of older workers with the retirement pension schemes to ensure that older workers have sufficient income when they are unemployed, but also sufficient incentives to remain employed.	- Generous early retirement provisions make it more attractive for workers to retire early and provide an incentive to firms to encourage more workers to retire early (Dorn and Sousa-Poza, 2005). - An increase in the retirement age has a stronger impact on growth than a reduction in benefits paid to the pensioners or an increase in the contribution rates because it is the measure that has the greatest effects on labour supply (Karam et al., 2014).	Firms use early retirement programmes to lay off workers during recessions and circumvent employment protection legislation (Dorn and Sousa-Poza, 2005).
Interactions with other policies	In Austria, an increase in the early retirement age was followed by a significant rise in the employment and unemployment rates of men and women. Thus, there were large spillover effects of the pension reform on unemployment insurance (Staubli and Zweimüller, 2013).		
Political economy of reforms			Reforms that cause important damages to well-organised groups – such as reforms of retirement or employment protection measures – have the largest negative impact on the re-election probability (Buti et al., 2010).

2. Product market reforms

6. Product market reforms aim at improving the flexibility of goods and services markets by lowering the cost of entry and making the process of price setting more competitive. Hence, product market reforms lower prices and increase production because more competitive markets produce more at a lower cost. Product market reforms have also an impact on economic activity through two channels that raise productivity and the variety of products: i) Increased competition facilitates the entry and the growth of more productive firms and induces the less productive firms to exit the market, which improves the allocation of resources across firms. ii) The pressure of competition strengthens incentives to improve the utilisation of inputs and to innovate.

Short-run effects of product market reforms

Effects on prices and quantities

7. Microeconomic empirical studies show that lifting barriers to firm entry can induce quick price drops and output hikes. A striking example is provided by the analysis of the response of incumbent major airlines to the threat of entry of Southwest Airlines in the United States. Goolsbee and Syverson (2008) use the evolution of Southwest Airlines' route network to identify routes where the probability of future entry rises abruptly. They find that incumbents cut fares significantly when threatened by Southwest's entry. Over half of Southwest's total impact on incumbent fares occurs before Southwest starts flying. The lower prices increase the number of passengers flying on the incumbents prior to entry. In the same vein, Brown and Goolsbee (2002) estimate that the growth of the Internet, which reduced the cost of price comparisons, has reduced the prices of term life insurances by 8-15% in the United States in the 1990s. Price adjustments were quick. The 8-15% drop in prices occurred within a two-year period.

8. Bertrand and Kramarz (2002) provide further evidence of the potential strong impact of competition on prices and quantities in the retail trade sector in France, where commercial zoning regulation restricts entry. They show that higher barriers to entry in an area are associated with higher prices and weaker job creation. They assess that increasing the approval entry rate from 30% to 50% would imply about a 7% increase in retail employment. In the same perspective, Hausman and Liebtag (2007) have shown that the increased competition that supercentres such as Wall-Mart exert on the retail trade sector in the United States significantly lowered the price of food products. The less favoured households benefited the most from these price drops.

9. Limitations to the opening of stores during certain periods, especially at night and Sunday, are another form of indirect entry restriction. Mikal Skuterud (2005) exploited the change of the legislation in the province of Quebec in 1985 that authorised the opening of shops in the retail trade sector on Sunday. He estimated that this reform led to an increase in employment of 3.1% in this sector. Burda and Weil (2005) reached similar conclusions with the same order of magnitude in their study of the phasing out, in the early 1980s, of the "blue laws" that restricted the Sunday opening of retail shops in the United States.

10. All in all, increasing competitive pressures associated with product market reforms might bring about relatively quick price drops as well as output and employment gains. These price drops are costly for incumbent firms, who face stronger competitive pressures.

11. Price drops due to product market reforms in a sector have spillover effects on other sectors. Upstream and downstream producers may benefit, depending on the extent of inter-industry linkages, from the productivity enhancements. A number of studies suggest that these effects can be rather sizeable (Barone and Cingano, 2011; Bourlès et al., 2013). Moreover, since product market reforms reduce prices, consumers have more purchasing power. They can buy more goods and services in other sectors. Such

positive spillover effects raise output and employment in these sectors. Spillover effects can also be detrimental to sectors that produce goods and services substitutable to those where the reforms have been implemented. Hence, in theory, the macroeconomic employment impact of product market reforms in a sector depends on the degree of substitutability of the products and on the productivity of all sectors. Cross-country empirical studies provide evidence that economy-wide entry regulation increases mark-ups, has a negative effect on firm entry or turnover and on the process of reallocation of resources, and has a negative impact on employment growth (Alesina et al., 2005; Griffith et al., 2007; Schiantarelli, 2010). Nevertheless, in the short run, product market reforms may have an uncertain impact on employment because they can induce important job reallocations as will be discussed below. This is also confirmed by a number of cross-country studies on the short-run effects of reforms and on their effects on specific sectors (e.g. Bouis et al., 2012; Boylaud et al., 2001; Steiner, 2001; and Gönenç and Nicoletti, 2001).

Effects on productivity

12. The microeconomic empirical literature on productivity shows that there are large within-industry differences in labour productivity and total factor productivity in all countries (Syverson, 2011). For instance, on average, in the United States, firms at the 90th percentile of the productivity distribution are about twice as productive as the 10th percentile firms. Moreover, although a significant share of productivity differences across firms is persistent, productivity at the firm level can evolve rather quickly over time. For example, in the United States, each year, one-third of firms see their revenues either grow by 60% or more, or drop by 40% or more (Davis et al., 2006). Very large changes in firms' revenues and inputs on a yearly basis are frequent. In this context, product market reforms that facilitate the entry of firms and the reallocation of workers and investment from less productive to more productive firms can have a strong and relatively quick impact on productivity. The importance of these reallocation effects is confirmed by two recent cross-country studies on the effects of product market reforms (Andrews and Cingano, 2014; Arnold et al., 2011).

13. The potentially huge impact of competitive pressures on productivity is well illustrated by the iron ore industry in the United States in the 1980s. At the end of the 1970s, Great Lakes iron ore producers had faced no competition from foreign producers in the Great Lakes steel market for nearly a century. In the early 1980s, as a result of developments in the world steel market, Brazilian producers were offering to deliver iron ore to the Great Lakes market at prices which were substantially lower than those of local iron ore. Schmitz (2005) shows that, in response to this arrival of new competitors, Great Lakes iron ore producers dramatically increased productivity. Labour productivity doubled in a few years. Schmitz shows that most of the productivity gains were realised as a result of cost-cutting measures and organisational changes that were costly for incumbent workers and firms. In particular, productivity gains were realised by reducing over-staffing, optimising the production process by using equipment more hours per day, and by changing work practices, which increased materials and capital productivity. The changes occurred quickly. Productivity (production of tons of iron ore per hour) increased by 50% in two years and doubled in five years.

14. Several studies analysed the consequences of product market reforms on productivity. Olley and Pakes (1996) assessed the consequences of liberalisation of the regulatory environment in the provision of telecommunication services and in the use of telecommunication equipment in the United States from 1974 to 1987. They find that aggregate productivity increased sharply after deregulation. They estimate that the productivity gains resulted from the downsizing and the destruction of less productive plants and the disproportionate growth of more productive plants, many of which were new entrants. The impact of changes in regulations is significant and quick. Productivity grew faster from 1978 to 1980 after the new regulations were introduced in 1977 and 1978. Productivity also improved from 1984 to 1987, after the changes of 1982. Disney et al. (2003) also find that external restructuring played an important role in labour productivity growth in the UK manufacturing industry between 1980 and 1992. They estimate that

external restructuring accounted for 50% of establishment labour productivity growth and 80–90% of establishment TFP growth. Much of the external restructuring effect comes from multi-establishment firms closing down poorly performing plants and opening high-performing new ones.

15. Knittel (2002) analyses the impact of alternative regulatory programmes in US electricity markets on the efficiency of a large set of coal and natural gas generation units. He finds that plants experienced significant efficiency gains after shifts in the regulatory environment. The most effective regulations increase output by 10% to 15% for a given level of input. Fabrizio et al. (2007) use data on the US electric generation sector to evaluate the effect of shifting regulated monopolies to more market-based environments. They find that the plant operators most affected by restructuring reduced labour and non-fuel expenses, holding output constant, by 3-5% relative to other investor-owned utility plants, and by 6-2% relative to government and cooperatively owned plants that were largely insulated from restructuring incentives.

16. Ng and Seabright (2001) focus on the consequences of state ownership on the airline industry. Their study relies on a panel of twelve European and seven major US airlines. They estimate that European airline costs in 1990-95 were approximately 25% above the level they could attain if the European companies had been privately owned and had been operating in the same competitive environment as in the United States.

17. These studies indicate that the positive impact of product market reforms on productivity can be very strong and can materialise quickly. However, this impact is associated with transitory costs. Productivity gains are realized thanks to reductions in overstaffing and job reallocations, which generate job losses and unemployment. The restructuring induced by product market reforms can also destroy physical capital and firm-specific human capital. We are not aware of studies that measured these transitory costs.

Heterogeneous effects across population groups

18. As effects of liberalisation on prices take some time to unfold, in the short run there may be an even greater heterogeneity in the distribution of the costs and benefits of reforms than in the long run. Liberalisations tend to take away rents from incumbents, hence the beneficiaries of such rents, whether employers or workers (notably in terms of wage premia, see Jean and Nicoletti, 2002), can be a stumbling block against reform. There are, however, important differences across industries in the profile of losers and in the nature of the coalitions that may oppose reforms. In industries with natural monopoly elements, such as energy, telecommunications, or railways, the combination of significant public ownership, large size of firms and strong unionisation allows for significant rents and non-pecuniary benefits for workers in terms of lower effort and greater job security (Jean and Nicoletti, 2002), strengthening the degree of political clout (Boeri et al., 2006) in the opposition to the liberalisation of product markets. In other non-manufacturing industries, such as road freight, retail distribution or professional services, where the size of firms is smaller and the presence of the state is negligible, some powerful lobbies may emerge that strongly oppose reforms, by taking advantage of the fact that the costs are relatively concentrated, while benefits spread out over a large population.

Long-run effects of product market reforms

19. The drop in prices and the increases in productivity, employment and output induced by product market reforms persist also in the long run. But competition pressures influence a number of other outcomes in the long run.

Innovation, R&D spending and productivity

20. Product market reforms influence the propensity to innovate. Aghion et al. (2009) analyse how firm entry affects innovation incentives of incumbent firms in UK industries. They find that the threat of technologically advanced entry spurs innovation in sectors close to the technology frontier, where successful innovation allows incumbents to survive the entry threat, but discourages innovation in laggard sectors, where the threat reduces incumbents' expected rents from innovating. This implies that removing product market barriers to entry is growth enhancing on average. But removing product market barriers to entry also induces restructuring costs in the long run.

21. Bloom et al. (2011) analysed the effects of the penetration of Chinese imports on innovation in a number of OECD countries, using exogenous trade liberalisation episodes as instrumental variables. They found that import penetration led to increases in research and development, patenting, information technologies and total factor productivity within firms. It reallocated employment between firms towards more innovative and technologically advanced firms. These within and between effects were about equal in magnitude, and accounted for about 15% of European technology upgrading between 2000 and 2007.

22. Schivardi and Viviano (2011) exploit regional variation in a 1998 reform of the Italian retail trade sector that delegated the regulation of entry of large stores to the regional governments. They found that liberalising entry is associated with a stronger investment in information and telecommunication technologies while entry barriers are associated with substantially larger profit margins and substantially lower productivity of incumbent firms. Moreover, lower productivity coupled with larger margins results in higher consumer prices. Consistent with earlier studies on the consequences of removing entry barriers in the US retail sector, notably on the effects of the opening of Wal-Mart (Neumark et al., 2008), they found a negative effect on wages of liberalisations. Thus, liberalisations may affect workers, in the long run, not through job loss, but through lower incomes.

The quality of products

23. Pressure from competition can have effects on the quality of products. In theory, competition allows the exchange of a larger variety of products. Empirical studies find that competition allows consumers to get products of better quality. Matsa (2011) documents the impact of competition on product quality in the US supermarket industry from 1988 to 2004. He finds that stock outs at supermarkets facing competition from Wal-Mart decrease on average by about 10%. The effect is not attributable to a change in store composition that may have followed Wal-Mart's entry. Bloom et al. (2010) analysed reforms that increased competition in the health care sector in the UK in 2006. They show that these reforms improved management quality and hospital performance. They estimate that adding a rival hospital increases survival rates from emergency heart attacks by 9.7%. Cooper et al. (2011) find similar results. They estimate that service quality improved more quickly for patients living in more competitive hospital markets. Compared to the mean, mortality rates for patients diagnosed with an acute myocardial infarction fell by approximately 0.31 percentage points per year faster in places that were one standard deviation higher on their market structure index. Mazzeo (2003) examines the relationship between competition and the quality of airline services in the United States in 2000. He finds that flight delays are more frequent on routes where only one airline provides direct service and through airports where the airline represents a larger share of total flights.

Adjustment to economic shocks

24. Product market reforms improve the capacity of markets to cope with economic shocks through price adjustments. Alvarez and Hernando (2006) use surveys on pricing behaviour in nine euro area countries between 1997 and 2002. It appears that firms operating in more competitive environments revise

prices more frequently. The most competitive firms have more flexible prices and adjust their quantities to a lesser extent when they are hit by shocks. Duval et al. (2007) reach similar conclusions. All in all, more competitive environments are associated with larger price changes and smaller changes in quantity over economic cycles.

Timing and political economy

25. The transitory costs of product market reforms can change over the business cycle. In expansionary periods, unemployment spells are shorter and there are more opportunities to make profits. This implies that costs are lower for those who lose their jobs when the reforms are implemented. Moreover, during upturns it might be easier to increase public expenditure in order to compensate the losers. Hence, it can also be easier to limit the political opposition to reforms. All these arguments imply that it might be more appropriate to implement product market reforms during economic expansions.

26. However, there are also arguments to implement reforms during recessions. For example, product market reforms allow unemployed workers to find jobs. Since unemployment spells are longer during recessions, the social returns to job creation are larger in bad times. This argument is especially relevant for young workers: product market reforms facilitate the entry of new firms, which hire younger workers than older firms.

The cost of product market reforms and the political cycle

27. In the 2000 presidential election, George W. Bush won the state of West Virginia where major steel companies, sharply less productive than their foreign competitors, were located and whose employees traditionally voted for the Democratic Party. His victory may have been related to his pre-election promise to limit steel imports. Once elected President, he kept his promise. Hufbauer and Goodrich (2003) studied the impact of these barriers on import. They calculated that such tariff barriers have effectively preserved about 3 500 jobs among producers, but destroyed between 12 000 and 43 000 for business users. Other losers are the consumers who buy goods for which steel enters into their production and for which the prices did not fall, as it would have happened without these protectionist measures.

28. Rajan and Zingales (2004) stressed that this episode is emblematic of the dilemma faced by politicians with product market reforms. The losers are not numerous, but they can lose a lot from a reform. They are well organised, they can initiate spectacular actions and they can often appear in the media. In some cases, as in West Virginia, they can moreover weigh on the result of a local election. At the opposite, the winners are numerous but each one gains relatively little and is not even aware of the potential gains due to the withdrawal of entry barriers.

29. This mechanism can explain why Giuliano et al. (2013) find that better democratic institutions are significantly correlated with the adoption of product market reforms in electricity and telecommunication industries, using a database that covers almost 106 countries over the period 1960-2003.

Interactions with other policies

30. Blanchard and Giavazzi (2003) have stressed that product market reforms in one sector decrease the rents to the firms in that sector, and also the rents to the workers. Ng and Seabright (2001) provide empirical evidence for this effect in the European airline sector in the 1990s. This implies that workers oppose product reforms in sectors that are being deregulated. This opposition could be softened by widespread product market reforms that reduce prices and then increase the real wage. At the same time, product market reforms, to the extent that they increase the wage elasticity of labour demand, tend to

increase pressures to reform labour markets (Bertola and Boeri, 2002). Thus, there is not an obvious case for a particular type of sequencing of reforms.

31. A fundamental asymmetry between product and labour market reforms relates to their scope. Most labour market reforms have been engineered as partial reforms to be politically viable. Partial reforms affect only a sub-segment of the population, typically less represented in the political process, and they are introduced on a flow basis. For instance, most reforms of employment protection (Section 3) confine themselves to allow for new hires on more flexible contracts, not changing rules for those who already have a job. Such partial reforms in a specific product market would result in a market with different set of rules applied to different firms. On the one hand, incumbent firms would operate under the traditional set of protection and rents (i.e. government subsidies). On the other hand, new entrants would be forced to operate without these rents. This cannot work as the incumbent firm (a former monopolist) would easily drive away the new competitive fringe from the market.

3. Collective bargaining and minimum wages

32. Most of the public debate on labour market flexibility is centred on dismissal rules. Much less attention has been devoted to wage setting, although recently important reforms have been carried out in this domain. In terms of the evaluation literature, there is a large body of work on the effects of minimum wage hikes on employment, while much less is known about the labour market consequences of reforming the overall collective bargaining system. Interactions between the two institutions are very relevant since collective bargaining also defines wage floors for specific industries or regions if not for the economy as a whole. For these reasons, collective bargaining and minimum wage regulations are jointly addressed in this section.

Short-run

Effects of minimum wages

33. Many studies on the effects of the minimum wage are based on firm-level data and estimate the impact of minimum wages on employment. Most of the evidence points to negative employment effects, especially for the least skilled and young people (Flinn, 2002; Neumark et al., 2004; Neumark and Wascher, 2007).

34. However, not all studies find negative effects on employment. Furthermore, Doucouliagos and Stanley report evidence that academic journals are biased against publishing minimum-wage research that finds no statistically significant effects of minimum wages on employment. The absence of negative effects in some studies may be because of i) monopsony power inducing adjustment along labour supply rather than demand, ii) job search effects as a larger gap between the expected gains of employed and jobless persons provides an incentive for the latter to search harder for work, iii) poor enforcement of minimum wages or iv) failure to detect effects for other miscellaneous reasons. The jury is still out as to which of these mechanisms is at work. The earlier academic discussion has been more on the robustness of the findings than on tests of the underlying mechanisms that could generate positive employment effects of minimum wage hikes. More recently, studies using matched worker-firm data tried to test the presence of monopsony power by establishing whether individual firms are facing an upward sloping labour supply curve. Evidence of monopsony power of firms and potential positive effects of the minimum wage were found by Staiger et al. (2010) in the case of labour supply to individual hospitals in the United States, with a short-run elasticity estimated at about 0.1. Higher elasticities, in the order of 1-1.9, are observed by Falch (2010) in the Norwegian teacher labour market, while Ransom and Sims (2010) reports a labour supply elasticity of about 3.7 for public schools in Missouri. However, there are few workers paid at the minimum

wage in these sectors, thus the presence of monopsony power may not be so relevant in assessing the impact of changes in the level of minimum wages.

35. Going back to the standard results, negative employment effects are typically observed in the short run (see Dolado et al., 1996, and OECD, 2006, for cross-country surveys of the literature). The magnitude of these dis-employment costs is generally found to depend on the characteristics of the bottom end of the wage distribution and on the actual enforcement of minimum wages. Typically these studies compare employment and wage outcomes of workers whose wages have to be raised to comply with the minimum wage with respect to employment and wage outcomes of workers higher up in the wage distribution, presumably unaffected by changes in the minimum wage.

36. Enforcement is measured by using the so-called Kaitz index, the proportion of people earning a wage between the old and the new minimum wage (Card, 1992 and 1995; Brown, 1999), or the fraction affected by the minimum wage increase. An increasingly used measure of enforcement is the spike at the minimum wage, defined as the proportion of people earning exactly the minimum wage. If the minimum wage is properly enforced, one would expect the spike to increase after a minimum wage is raised, as lower wages rise to the new minimum. If there is no spike or the spike lies to the right of the minimum, then this may be interpreted as indicating that the minimum wage has little effective “bite”.

37. As mentioned above, the short-run effects of the minimum wage are identified comparing outcomes of the fraction affected with those of a group of workers earning from the start above the minimum wage. The problem with this approach is that persons receiving the minimum wage are not representative of the entire population. Thus, one may end up attributing to the minimum wage effects that are related to different characteristics of workers (e.g. lower labour market attachment) located at different portions of the wage distribution. Moreover, there can be spillover effects of minimum wage hikes well above the minimum wage, related to the bargaining power acquired by unions involved in collective bargaining, lighthouse (signal) effects on wage bargaining in other segments (including the informal sector) or substitution of low-skilled workers with more productive workers.

38. Natural experiments take these selection problems into account, making it possible to better identify the effects of the minimum wage. They exploit exogenous changes in the economic environment of certain persons to compare their reactions to those of other (a priori identical) persons who have not faced these changes. In practice this means finding a counterfactual or another difference that makes it possible to control for the difference in the compositions of those affected by the minimum wage and those who are not affected by it.

39. A typical example of difference-in-differences estimators is provided by the widely quoted study by Card and Krueger (1994 and 1995), exploiting cross-state variation in minimum wages in the United States. They investigated the impact of increases in the minimum wage on the fast-food industry in New Jersey in 1992 from $4.25 to $5.05 using as control group Pennsylvania, where the minimum wage remained at $4.25 throughout this period. New Jersey and Pennsylvania are bordering states and have similar economic structures. They found a positive effect of the minimum wage on employment, which was challenged by the subsequent literature, but survived a number of severe robustness checks (see in particular Neumark and Wascher, 2000). In particular, the adequacy of the control groups used in the studies was questioned by Deere et al. (1995), who pointed out that teenage employment rates in New Jersey diverged significantly from those in Pennsylvania beginning in 1988, casting doubt on Card and Krueger's claim that Pennsylvania represents a sensible control group with which to compare New Jersey. Dube et al. (2010) pointed out that this issue is important in practice. They used policy discontinuities at all US state borders between 1990 and 2006 to identify the effects of minimum wages on earnings and employment in restaurants and other low-wage sectors. By taking all contiguous county-pairs in the United States that straddle a state border, they compared individuals belonging either to the treatment or the

control group, but all living in areas with closely-similar employment conditions, controlling for county-pair specific time effects and county fixed effects. They found strong earnings effects but no employment effects of minimum wage increases.

40. In the same spirit, Allegretto et al. (2011) used information on state-level minimum wages and individual-level data on teens from the Current Population Survey (CPS) from 1990-2009. By estimating a model that includes state and period fixed effects and other controls, they found a negative employment effect of minimum wages. But when state-specific linear trends are included, the estimated employment and hours elasticities become indistinguishable from zero in their study. These results would seem to confirm the findings of Card and Krueger. However, the detailed analysis of the papers of Dube et al. (2010) and Allegretto et al. (2011) by Neumark et al. (2013) argues that the results of these papers rely on questionable choices of control groups (states or counties). In particular, Neumark et al. show that identifying minimum wage effects from the variations within contiguous cross-border county pairs, or states in the same census division, does not isolate the most reliable information. For instance, it is possible that the minimum wage might have changed in the areas included in the control groups in a short time interval before or after the change in the treatment groups. Using the same data as those of Dube et al. (2010) and Allegretto et al. (2011) with different choices of control groups, Neumark et al. (2013) find significant negative employment effects of the minimum wage. The reliability of the data used in these case studies was also questioned. For instance, Neumark and Wascher (2000) criticised the data of Card and Krueger (1994), drawn from telephone interviews. Neumark and Wascher carried out the same exercise as Card and Krueger, but utilised administrative payroll records for the same fast-food restaurants in the same states. Contrary to Card and Krueger, they found that the minimum wage reduced employment in New Jersey. Nonetheless, Card and Krueger (2000), this time using a larger sample of administrative payroll records than that of Neumark and Wascher, obtained results that confirm, to some extent, their earlier work.

41. The disturbing fact is that a satisfactory explanation for this positive effect has not been found yet. The presence of monopsony power is indeed inconsistent with the observation of rising product prices in the fast-food industry. A monopsonist employer increases its profit by paying below-market wages and selling its products at above-market prices. Thus, the increase in production achieved by imposing a higher minimum wage to a monopsonist should have reduced the sale price. There must also be product demand effects involved, as those pointed out by Kennan (1995) and Dolado et al. (1996), who emphasised that consumers of fast food are likely to be over-represented among minimum wage earners, and hence the increase in the purchasing power of those who regularly consume them may entail a rise in demand, production and employment in fast-food places, despite the increase in the cost of labour.

42. Similar techniques were used to investigate the effect of introducing a minimum wage in the United Kingdom in 1999 (with the adult rate set at 3.6 pounds per hour) and of the subsequent increases in 2000 (3.7) and 2001 (4.1). Stewart (2004) compared employment outcomes of individuals just above the minimum wage and higher up the wage distribution before and after the introduction of the minimum wage. He repeated this exercise for different demographic groups (males and females in different age groups) and controlled for cyclical conditions. Stewart found no adverse effect of the introduction of the minimum wage for any of the demographic groups considered. Draca et al. (2011) also exploited the introduction of the national minimum wage in Britain in 1999 to study its economic consequences using a difference-in-differences approach and focusing on the effects of the minimum wage on profits and productivity of firms. In particular, they distinguished two types of firms – low-wage and non-low-wage firms – and before and after the introduction of the minimum wage. They found that average wages were positively affected by the introduction of the minimum wage, causing a statistically significant decline in profit margins. However, no significant effects were observed on employment and productivity, as if firms had decided not to react to the decline in profit margins.

Effects of collective bargaining coverage

43. Reforms of collective bargaining typically have to do with derogations to norms or practices extending the coverage of bargaining beyond membership. Insofar as collective bargaining puts downward constraints to wage adjustment, such reforms are akin to a lowering of the minimum wage, although this is not happening uniformly across the board, but limited to the firms exploiting such additional room for wage adjustment. Conversely, administrative extensions of the coverage of collective bargaining can play the same role as the increase in the minimum wage insofar as collective bargaining tends to set higher floors than government legislated minima (Boeri, 2012). Although these extension procedures may also address coordination issues, encouraging investment in human capital, they end up imposing minimum wages and other work conditions that may not be appropriate for many firms and workers, especially if unions or employer associations involved in collective bargaining are not representative of these firms. Moreover, by increasing the scope for downward nominal wage rigidity and reducing external competitiveness, these extension clauses may negatively affect employment, particularly during downturns.

44. Card and de la Rica (2006) studied the impact of collective bargaining in Spain where, as in several other European countries, sector-level bargaining agreements are automatically extended to cover all firms in an industry. Employers and employees can also negotiate firm-specific contracts. Card and de la Rica found that employees covered by firm-specific contracts earn about 10% more than those covered by sector-level contracts. The estimated premium is about the same for men in different skill groups but higher for more highly skilled women, suggesting that firm-level contracts raise wage inequality among women. This result is related to those of Card et al. (2004), who found that unions reduce inequality for men but not for women in the United States, Canada, and Great Britain.

45. Germany after unification introduced opting-out (or exit) clauses from regional bargaining. More recently, Greece (2011), Portugal (2011), and Spain (2012) allowed for plant-level bargaining to dominate over industry or national bargaining outcomes, by potentially setting wages below the minima set at "higher" bargaining levels. France and Italy also extended the scope of derogations from multi-employer bargaining. Regrettably there is not much literature on these episodes. The few studies are reviewed below as such changes in the bargaining structure can be enforced only together with the frequency of multi-employer collective bargaining which is typically not higher than two to three years, and the approval of higher bargaining levels is required for the derogations at lower levels to be effective.

46. Extensions of collective bargaining beyond unionised firms are found by Martins (2014) to negatively affect employment and the total wage bill of the firms involved. His study is based on monthly observations of individual firms in Portugal. The effect is sizeable, notably among small firms, and tends to increase the size of the informal sector vis-à-vis the formal sector.

Heterogeneous effects across population groups

47. In the short run, an increase of the minimum wage or in the coverage of collective bargaining may crowd out low-productivity workers (e.g. youth and the unskilled) and involve relatively long-lasting effects on these groups, while benefitting low-skilled workers with some seniority in the firm. To reduce these supposedly undesirable costs of minimum wages, they may be graded by age and accompanied by measures (such as employment conditional incentives and wage subsidies) reducing labour costs of employers in the proximity of the minimum wage. Moreover a proper setting of the minimum wage is essential to minimise negative employment effects in the short run. And the way in which the minimum wage is set – within collective bargaining institutions, by the government or in the context of hybrid procedures involving governmental bodies and social partners – is crucial in this respect.

Longer-run effects

Following individual histories

48. Longer-term effects of minimum wages can be analysed by using longitudinal data on worker histories, tracking labour market outcomes of workers whose wages are at the minimum wage or close to it over time. Recent studies found that changes in the minimum wage have a significant impact on employment among this group of workers. Nevertheless, there is no agreement about the directions of these changes. Abowd et al. (1999) found that in France an increase of 1% in the minimum wage reduces the probability that men receiving the minimum wage keep their previous jobs by 1.3%, while for women this figure is 1%. In the United States, a reduction in the minimum wage by 1% increases the probability that workers paid at this level will keep their jobs by 0.4% for men and by 1.6% for women. Neumark et al. (2004) found negative effects of minimum wage hikes in the United States on both employment and hours of workers initially earning the minimum wage or slightly more, contrary to Zavodny (2000), who found that an increase in the minimum wage reduced the probability that an affected worker remained employed, but for those who kept their jobs, there was a positive effect on hours.

49. A few studies looked specifically at the relationship between the youth minimum wage and the labour market position, adopting a difference-in-differences approach, which exploited changes in the age gradient of the minimum wage. In 1987 the legal minimum wage for workers aged 18 and 19 in Portugal was raised by almost 50%. Pereira (2003) compared the employment growth of 18 and 19-year-old workers with the employment growth of older workers. Her main findings are that the increase in the minimum wage significantly reduced employment of 18 and 19-year-olds, but increased employment of 20- to 25-year-olds. The latter results from a substitution effect: the relative increase in the minimum wage of younger workers made slightly older workers more attractive to hire. New Zealand introduced some changes in the age gradient of the youth minimum wage in 2001 and 2002, making it less steep. In 2001 a change was introduced that entitled 18 and 19-year-olds to the adult minimum wage, while the minimum wage of 16 and 17-year-olds was increased from 60 to 70% of the adult minimum wage. For the youngest group there was a further increase to 80% of the adult minimum wage in 2002. Hyslop and Stillman (2007) exploit these changes in the structure of the youth minimum wage to establish its effects on employment rates and working hours. They find no significant effects on employment rates, but a significant positive effect on working hours. Pacheco (2011) exploited the same changes in the relative youth minimum wage for New Zealand as Hyslop and Stillman, but reaching the conclusion that employment of individuals who had a higher probability of being affected by a rising minimum wage was negatively affected. Between 1986 and 1998, six of the ten Canadian provinces abolished their lower minimum wage rates for 15 and 16-year-old workers. Shannon (2011) used these province-specific changes to establish the relationship between the minimum wage and employment. The findings are mixed. For some provinces a significant negative effect is found, while for others no employment effect is observed. Anton and Muñoz de Bustillo (2011) performed an analysis for Spain exploiting a similar type of policy change. From 1995 to 1998 the Spanish youth minimum wage for 16- and 17-year-olds was abolished. The authors find that this relative increase in the minimum wage of older youth reduced their employment and probability of remaining in formal education.

50. The comparative study of Abowd, Kramarz, Lemieux, and Margolis (1999) on France and the United States exploits the fact that during the 1980s the minimum wage increased in real terms in France, while it declined in the United States. For France, the authors analysed the histories of individuals whose current wage fell below the minimum wage in the interval between one increase in the minimum wage and the next. They found that such persons had a higher probability of losing their jobs than those whose wage was not overtaken by the minimum wage. For example, young people of 21-25 years whose wage was marginally higher than the latest value of the minimum wage (i.e. lying between minimum wage and 1.15 times minimum wage) had a probability of losing their jobs equal to 10%, whereas this probability

rose to 16% for young people whose wage lay between the previous value of the minimum wage and the latest one. For the United States, this study looked at the outcomes of persons whose wage became higher than the minimum wage, as the latter gradually declined in real terms. They found that these individuals had a higher probability of keeping their jobs. To sum up, this study suggests that in France an increase of 1% in the minimum wage reduces the probability, among men receiving the minimum wage, of keeping their jobs by 1.3%, while for women the figure is 1%. In the United States a reduction of 1% in the minimum wage increases the probability that workers paid at this level will keep their job by 0.4% for men and 1.6% for women.

51. The study of the French case by Kramarz and Philippon (2001) uses the same methodology, but takes the cost of labour as the pertinent variable in trying to assess the impact of the minimum wage on employment. It estimates that an increase of 1% in the cost of jobs at the minimum wage level entails a rise of 3% in the probability of job loss for workers who are being paid the minimum wage. Portugal and Cardoso (2006) obtained different results using the same type of methodology. They exploited changes made in 1987 to Portuguese legislation regarding the minimum wage of young people 19 and under. The minimum wage was raised by 50% for youths aged 17 and 33% for youths aged 18 and 19. Portugal and Cardoso found that these minimum wage hikes reduced hiring of this category of workers. But they also highlight a "supply effect": after the reform of 1987, young people 19 and under had a greater tendency to keep their jobs. Portugal and Cardoso observed fewer separations, which counteracted the fall in hires. This result, coherent with the prediction of the monopsony model and of the search model, probably reveals a greater attachment of youth to their jobs when wages improve. Overall, this research shows that the minimum wage can have significant effects on the probabilities of being hired, and of losing a job. However, it does not invariably exert a positive effect on the probability of job loss among the populations whose livelihoods are directly dependent on this level of compensation.

Effects on labour productivity

52. In the long run, the minimum wage may affect not only employment, but also the type of jobs offered. In particular, it may improve the allocation of resources by favouring the creation of more productive jobs. Models built on different premises confirm this view, and there is some empirical evidence that these effects can be important.

53. Jones (1987) looked at the impact of the minimum wage on a labour market in which "good" jobs requiring the accomplishment of complex tasks coexist with "bad" jobs, the results of which are perfectly verifiable. The workers with the good jobs, whose effort at work can only be observed imperfectly, receive an efficiency wage, while the ones with the bad jobs are paid at a lower rate, equal to their reservation wage. When a minimum wage lying somewhere between the reservation wage and the efficiency wage is introduced in this model, it reduces the efficiency wage and increases the number of good jobs. In some circumstances, the increase in the number of good jobs even exceeds the decline in the number of bad ones, and that makes for an overall reduction in unemployment.

54. Substitution effects among different skill levels may also help to bring about a rising relationship between the minimum wage and employment when compensation lying above the minimum wage is bargained over. From this perspective, Cahuc et al. (2001) considered a model with skilled workers who bargain over their wage collectively, and unskilled workers paid at the minimum wage. The impact of the minimum wage on the employment of the unskilled workers then depends on the elasticity of substitution between the two categories of worker. The model suggests that an increase in the minimum wage can lead to higher employment overall and among the unskilled.

55. The minimum wage can improve global efficiency in other settings. Drazen (1986) assumes that workers and employers know the productivity of jobs imperfectly before hiring takes place. He also

assumes that there is a positive linkage between the productivity of a worker and the compensation that he can obtain outside the labour market. In consequence, the payment of high wages makes it possible to attract good workers. If it is not possible for workers to look for a job while simultaneously receiving compensation outside the labour market, then an individual only decides to take part in the labour market if he will receive an expected gain that exceeds the compensation available outside the market. Obviously, this expected gain increases with the average wage observed in the labour market. In this setting, the equilibrium is sub-optimal, for single employers have no market power and therefore no capacity to affect the average wage: each has an individual interest in offering low wages. Therefore, the introduction of a minimum wage makes it possible to attract high-productivity workers into the market and improve efficiency.

56. Acemoglu (2001) has analysed the effect of the minimum wage on the structure of employment in a matching model with good and bad jobs. The good jobs have higher productivity and cost more to create than the bad ones. Wages, over which firms and employees bargain, are therefore higher for the good jobs. Acemoglu showed that a decentralised equilibrium systematically results in too few good jobs, and that introducing a minimum wage slightly higher than the lower bound of the distribution of wages makes it possible to improve welfare thanks to an increase in the number of good jobs. Cahuc and Michel (1996) obtained the same type of result in a model of endogenous growth in which the introduction of the minimum wage improves welfare by giving individuals an incentive to accumulate human capital, which favours growth.

Distributional issues

57. DiNardo et al. (1996) and Lee (1999) suggest that the fall in the real value of the minimum wage contributed strongly to increasing wage inequality in the United States in the 1980s. DiNardo et al. (1996) looked at the evolution of the distribution of men's and women's wages between 1979 and 1988, finding that the fall in the minimum wage in real terms explains one quarter of the rise in the standard deviation of the distribution of men's wages, and 30% of that for women. Lee (1999) for his part estimated that the shrinking minimum wage over this period explains 70% of the increase in the ratio of average fifth-decile wages to average first-decile wages. Changes in the minimum wage have thus had a significant impact on wage inequality in the United States. Similarly, the study of Addison and Blackburn (1999) suggests that the increases in the minimum wage that occurred in the United States in the 1990s contributed to reducing the poverty rate among youth aged 24 and under and workers older than 24, but only among school dropouts.

58. However, Neumark et al. (2005) found that minimum wage increases over the period 1986-95 did not decrease the number of families in poverty and may even have increased this number slightly. In the same vein, Sabia and Burkhauser (2010) find that state and federal minimum wage increases between 2003 and 2007 had no effect on state poverty rates. These conflicting results may be explained by two offsetting mechanisms. On the one hand, a poor individual employed at minimum wage sees her income rise if her job is not destroyed, and this will tend to bring the poverty rate down if this individual belongs to a family with few or no labour earnings. On the other, an increase in the minimum wage may destroy jobs, and hence some individuals see their incomes diminish, and this tends to push the poverty rate up, especially if these individuals belong to households with few labour earnings (see Brown, 1999).

Timing

59. Changes in collective bargaining institutions typically involve a relatively long phase-in period as they only become effective when contracts expire. As reforms typically moved in the direction of decentralising bargaining, and national contracts last about three years on average, their full phasing in requires at least three years. Moreover, collective bargaining regimes are rarely set by governments, as

they are decided by unions and employers' associations. Government often can indirectly affect bargaining regimes by increasing or weakening union power, as discussed below. By contrast, reforms of the minimum wage affect immediately the wage distribution, and their employment effects, as also suggested by the literature review, do not seem to be much different in the short and medium run.

60. The reforms introduced by the Thatcher government in the United Kingdom in the 1980s are a typical example of reforms limiting union power, notably by abolishing the "closed shop" (the obligation for all workers in a firm with a collective agreement to belong to the union). The effect of these reforms was to diminish the rate of unionisation and the collective bargaining coverage of collective agreements. Studies find that the response of wages and employment to variations in demand rose gradually over time following these changes. However, the comparison of wages and employment between the unionised and the non-unionised sectors suggests that the reforms do not appear to have had an impact on unemployment or on the chances of exiting from unemployment (Blanchflower and Freeman, 1994). The study of Maloney (1994), which looks at reforms introduced in New Zealand in 1991 that substantially reduced union power, comes to different conclusions. Maloney finds that the strong reduction in the rate of unionisation had a positive impact on employment.

61. The unemployment costs of minimum wages and collective bargaining tend to be stronger during recessions. While collective bargaining generally takes into account business conditions, as the trade unions moderate their wage aspirations during downturns, the setting of the minimum wage may not internalise macroeconomic constraints when political decisions and hence electoral cycles are involved. Reforms of collective bargaining, notably those inducing more decentralisation in wage setting appear to increase the correlation of wages with labour productivity over the business cycle (Gnocchi et al., 2015).

62. Fiscal costs of minimum wages and collective bargaining tend also to be particularly pronounced during downturns, as displaced workers draw unemployment benefits for a relatively long time before finding employment.

Institutional interactions

63. Active labour market policies, notably properly set employment-conditional incentives, can reduce the employment costs of minimum wages and minima established by collective bargaining. There are also strong complementarities between reforms of EPL and collective bargaining, as the removal of obstacles to downward wage flexibility enhances the scope of wage adjustment in the case of negative shocks, which reduces pressure on employers to lay off workers. Also the greater scope for hours adjustment offered by a decentralisation of bargaining allow to put at least part of the cost saving measures on hours reductions rather than on outright dismissals.

4. Employment protection legislation

64. Employment protection legislation (EPL) is a set of norms governing the dismissal and the hiring of employees. It aims at increasing the stability of employment, but its actual effects are controversial. Firing costs can reduce job destruction, but they can also reduce job creation. Hence, the net effect on employment is a priori ambiguous. Furthermore, EPL can increase the stability of some jobs and increase the instability of other jobs not concerned by the most restrictive provisions, leading to more dualism in the labour market. EPL can also have a negative impact on productivity because it may weaken the necessary reallocation of the labour force towards more productive jobs. A stronger EPL, notably one heavily sanctioning unfair dismissals also gives more power to the judicial system because there is a larger stake involved in labour disputes.

Short-run

Effects on layoffs

65. The recent literature on EPL exploits natural experiments provided by reforms of EPL. These reforms occur at high frequencies, and studies typically consider a limited time span before and after the reforms. In order to obtain double-differences, the studies exploit discontinuities in EPL rules at firm size thresholds or the "treatment" and "control" groups provided by workers with fixed-term contracts and workers with open-ended contracts in case of two-tier reforms. Examples of this literature are Garibaldi et al. (2003), Kugler and Pica (2008), Schivardi and Torrini (2008), as well as Boeri and Jimeno (2005) analysing dismissal rates for temporary and permanent employees in establishments of different sizes by drawing on data from the Italian Labour Force Survey in the 1993-95 period. In Italy the most restrictive EPL provisions concern permanent workers in firms with more than 15 employees. Because temporary workers are not covered by EPL provisions upon termination of their contract, their dismissal rates are higher than those of permanent employees, but only limited to large firms, where the strictest EPL provisions for permanent workers hold. These difference-in-differences effects of EPL hold also in different partitions of the sample, for example, by industry, region, gender, age, and skills, and when all these personal characteristics are simultaneously taken into account. A similar quasi-experiment taking place in Sweden was used by Von Below and Thoursie (2010) to study the effects of EPL on employment and turnover. They find that separations increased by 5% in small firms relative to large firms. Similar results were also found in the United Kingdom, where the probation period during which workers may not sue for unfair dismissal was lowered in 1999 from two years to one year. This was associated with a decrease in the firing hazard for workers with up to two years of tenure relative to those with more tenure (Marinescu, 2009).

66. Overall, reforms increasing flexibility via reductions in EPL tend to increase lay-off rates, and hence unemployment, at least in the short-run (Cacciatore et al., 2012).

Effects on hiring

67. Short-run effects on hiring are found to be fairly limited presumably as it takes time for employers to anticipate the lower costs of job termination in hiring decisions and the impact effect of flexibility-enhancing reforms is on the job destruction side. An example of this positive, but fairly limited, effect on job creation is provided by the relaxation of the so-called Delalande tax in France in 1992. French firms laying off workers aged 50 and above had to pay this tax to the unemployment insurance system. It was meant to internalise the cost of laying off older workers who are likely to stay unemployed for a long time. Since the tax had to be paid to the unemployment insurance fund, the tax could not be undone by a private transfer, that is, a reduction of wages for these workers. In addition to be a deterrent to lay-offs, the tax discouraged firms from hiring workers aged more than 50. After July 1992 firms were exempted from the tax for workers who were hired after age 50. Using a difference-in-differences approach Behagel et al. (2008) analysed how the 1992 policy change affected the age-specific outflow from unemployment to employment. The authors compared the monthly transition rate from unemployment to employment under open-ended contracts for workers aged 49 and aged 50 before July 1992 and after July 1992 finding that while for 49-years old men the outflow had declined by 0.5 percentage points, for 50-years old men it had increased by 0.04 percentage points. Thus, the treatment effect of the change in law was 0.54 percentage points, a small absolute increase, but a substantial relative increase in the outflow from unemployment to employment with about 45%. For women the treatment effect was 0.31 percentage points, an increase of about 35%. All in all, this is evidence that reducing EPL has effects on the hiring side even if, in the short-run, these can be fairly limited, notably on experienced workers.

68. Two-tier reforms of employment protection – that is, reforms increasing flexibility at the margin by liberalising labour contracts only for new hires – tend to have initially a positive effect on employment, as firms still face very high costs of dismissals for the stock of employees with open-ended contracts, while they can fire almost at will new hires. The transient "honeymoon effect" (Boeri and Garibaldi, 2006) fades away as the stock of permanent workers is gradually replaced with flexible contracts. Hence, the firms can build up a buffer stock of workers with flexible contracts (Bentolila and Dolado, 1994), allowing them to adjust employment optimally to improvements in business conditions. When all permanent contract workers are replaced, the economy is under a fully flexible regime. However, thresholds to the share of temporary workers imposed by collective bargaining may stand in the way of this transition to a fully flexible regime.

Heterogeneous effects across population groups

69. EPL has strong redistributive implications. It protects those who already have a job, notably a permanent contract in the formal sector. Unemployed individuals and workers with temporary contracts generally suffer in the presence of strict EPL rules for permanent contracts and therefore gain from labour market flexibility enhancing reforms, notably when they are implemented uniformly across the board rather than being confined to new hires in new types of contracts. Two-tier regimes that allow for the coexistence of very rigid and very flexible contract types indeed increase labour market segmentation, preventing the outsiders from having access to the primary labour market of permanent contracts. In this context, there is some scope for the creation of coalitions of unemployed and fixed-term contract holders in promoting a reduction of EPL for the regular, permanent, contract (Cahuc and Postel-Vinay, 2002). The build-up of such a coalition and its gradual becoming a majority would seem to have been a major factor behind the Spanish labour market reforms of 1994 that was the first to tackle rights of workers with open-ended contracts (Dolado and Jimeno, 2004).

70. Employers always gain in the short-run from reductions of EPL. In the long run, however, two-tier reforms of EPL may also negatively affect employers by reducing incentives to provide on-the-job training, as further discussed below.

Long-run

71. The early cross-country empirical literature on EPL typically finds no unambiguous effects of EPL on employment or unemployment. Most studies capture long-run effects of EPL as they average out fluctuations in employment/unemployment occurring over the business cycle, when comparing labour market indicators of countries having different levels of EPL. This finding is consistent with economic theory: as a tax on labour adjustment (or on the capitalized value of the firm), EPL should affect hirings and separations, and hence unemployment inflows and outflows, but it should not be correlated with employment and unemployment stocks. The most influential studies in this cross-country literature are Lazear (1990), Di Tella and MacCulloch (2005), Grubb and Wells (1997), Belot and van Ours (2001; 2004) as well as Addison and Grosso (1996) and Nickell et al. (2005) that concentrate on stocks. Other cross-countries studies investigating the effects of EPL on both stocks and flows are Emerson (1998), Bertola (1990), Garibaldi et al. (1997), Jackman et al. (1996), Gregg and Manning (1997), Boeri (1999), and Kugler and Saint-Paul (2000). However, the results of these studies should be interpreted cautiously because changes in employment protection legislation and changes in unemployment can be codetermined by common factors. For instance, it is possible that negative macroeconomic shocks, which increase unemployment, also lead insiders to demand more job protection. Then positive correlations between job protection and unemployment do not reflect the positive impact of job protection on unemployment but the common impact of macroeconomic shocks on unemployment and employment protection legislation.

Employment effects

72. Longer-run effects of reforms of EPL on firms' growth have been investigated by analysing the relaxation of threshold effects penalizing job creation at firms just below some relevant threshold for EPL costs. For instance, an Italian reform that, in 1990, increased the costs of dismissals for units with fewer than 15 employees was used to make inferences as to the effects of EPL on firm growth. Studies exploiting this experiment (Garibaldi et al., 2003; Schivardi and Torrini, 2008) found that firm size became more persistent after the reform only in units with fewer than 15 employees, an indication of the role played by EPL in reducing adjustment of employment levels in firms. But quantitatively the effect is fairly small. Firm size effects of EPL were also found by Almeida and Carneiro (2007) who looked at stricter enforcement of labour regulations on formal and informal employment in Brazil.

73. Other studies looking for longer-run effects exploited the fact that some reforms of employment protection legislation were targeted at sub-groups in the labour force, providing researchers with a natural experiment in which outcomes can be compared across sub-groups over relatively long time periods. For instance, Autor et al. (2006) estimated the effects of wrongful discharge protections adopted by U.S. state courts during the last three decades on employment and wages. Because state courts adopted the common-law wrongful discharge doctrines in different months and years during the 1980s and 1990s, the authors can compare, using a difference-in-differences approach, changes in employment and wages in states adopting a given wrongful discharge doctrine in a given period with corresponding developments in states not adopting any doctrine during the same period. They base their analysis on the Current Population Survey (CPS) monthly files that provide data for approximately 100 000 adults over that period. They found that wrongful discharge protections reduced state employment rates by 0.8% to 1.7%. Importantly, while the initial impact of protection was found to be largest for female and less-educated workers, the longer-run effect was found to be greater for older and more-educated workers. This may suggest that the benefits from the relaxation of EPL on the hiring of skilled and experienced workers unfold as employers gradually adjust the input mix and the organisation of production. Using manufacturing data for India, Ahsan and Pagés (2009) studied the economic effects of legal amendments on employment protection and labour dispute resolution legislation. They found that laws that increase employment protection or increase the cost of labour disputes substantially reduce formal sector employment and output in the long run. Micco and Pagés (2006) examined manufacturing data for a number of developed and developing countries and found that employment protection legislation constrains output and employment growth. Besley and Burgess (2004) isolated the effect of a labour reform at the state level in India. They found labour regulations to have important adverse effects on output and employment, particularly on the formal manufacturing sector.

74. Other studies looked at the effects of reducing contractual dualism, that is, the difference in the asymmetry between open-ended and temporary employment contracts. For instance, the Spanish reforms of 1997, which reduced the dismissal costs of permanent jobs for workers under 30 years, and for those over 45 years, but not for those aged 30-44, were found by Kugler et al. (2005) to be associated with a relative increase in permanent employment for these groups. Similarly, in Colombia in 1990, dismissal costs were lowered for jobs in the formal sector but not for the informal sector. This was associated with higher labour market turnover into and out of unemployment in the formal sector relative to the informal sector (Kugler, 1999).

75. Overall, the three main conclusions one can draw from this set of studies are as follows:

1. Relaxing EPL has immediate effects on hiring and firing of unskilled and inexperienced workers, while the effects on skilled and experienced workers take more time to materialise.

2. While in the short-run the effects of relaxing EPL on employment are ambiguous or negative, in the long-run there seems to be a positive effect of reforms enhancing flexibility on employment, as other mechanisms associated to these policy changes unfold.

3. Two of these mechanisms can be the growth of firms and the strengthening of the effects on the hiring margin, notably on skilled and experienced workers.

Effects on productivity

76. EPL may affect labour productivity via a variety of channels.

1. EPL can create labour hoarding by making it more difficult for firms to react quickly to rapid changes in technology or product demand that require reallocation of staff or downsizing, slowing the flow of labour resources into emerging high productivity firms, industries or activities (Hopenhayn and Rogerson, 1993). For instance, Saint-Paul (2002a) argues that stringent job protection may induce secondary innovations that improve existing products rather than introducing new products that may be more efficient, but also riskier.

2. EPL may induce workers to invest more in specific skills and to put more effort into cooperation within the firm because they anticipate that their long employment spell will allow them to benefit from the returns on such investments (Wasmer, 2006, Belot et al. 2007, Boeri et al., 2014). This can improve labour productivity.

3. EPL can lower the effort of workers because there is less threat of lay-off in response to poor work performance or absenteeism.

77. The above suggests that EPL can have negative but also positive effects on productivity. The empirical literature can therefore shed light on the actual impact on productivity of EPL. Regrettably most of this literature does not look at the underlying mechanisms, but at the net effect of EPL in productivity. There is, however, some empirical evidence, confirming the relevance of the three effects listed above.

78. Bartelsman et al. (2014) looked at the effects on innovative activity (the first type of effect), finding that stringent employment protection legislation discourages firms from experimenting with new technologies that may exhibit higher mean returns but also higher variance. Pierre and Scarpetta (2005) also showed that innovative firms are the most negatively affected by stringent employment protection legislation. Cingano et al. (2013) found that reforms reducing the costs of dismissals improve the financing of high-risk companies that are liquidity constrained under strict EPL. Henrekeson (2010) finds that reduced EPL fosters entrepreneurship. The reallocation effects of reforms reducing EPL are more difficult to document as this would ideally require tracking workers across jobs. Petrin and Sivadasan (2013) are quite ingenious in this respect, as they use Chilean administrative data to measure allocative efficiency in terms of distance between marginal product and marginal cost of labour inputs. They find an increase in inefficiency after an increase in severance pay. The quantity of reallocation may actually increase after a tightening of EPL in dual labour market countries as employers make a larger use of temporary contracts. This is documented, inter alia, by Hijzen et al. (2013) who exploit the discontinuity in EPL regulations above and below the 15 employees' threshold in Italy.

79. Ichino and Riphahn (2005) showed that the hike in job security at the end of the probation period induces a significant increase in absenteeism for white collars workers in Italy, providing support for the third mechanism listed above. Similar findings were obtained by Riphahn (2004) with German data. Olsson (2009) analysed the consequences of an exemption in the Swedish Employment Security Act (LAS) in 2001, which made it possible for employers with a maximum of ten employees to exempt two workers from the seniority rule at times of redundancies. Using this within-country enforcement variation,

the relationship between employment protection and sickness absence among employees was examined. The average treatment effect of the exemption is found to decrease sickness absence by more than 13% at those establishments that were treated relative to those that were not, and this was due to a behavioural rather than a compositional effect. The results suggest that the exemption had the largest impact on shorter spells and among establishments with a relatively low share of females or temporary contracts. Needless to say, there is not a one to one relationship between absenteeism and productivity. Whether reduced absenteeism increased productivity also depends on the nature of the absenteeism. If ill workers report to work and infect their co-workers, there can be adverse effects on productivity and well-being. However, Olsson also concludes that the drop in absenteeism would seem to have occurred especially for shorter spells for those that held permanent contracts, suggesting that an effect of EPL on productivity via absenteeism.

80. Most studies on the effects of EPL on productivity rely on aggregate cross-country data. These studies do not provide clear-cut conclusions. DeFreitas and Marshall (1998) find that stricter job protection has a negative impact on labour productivity growth in the manufacturing industries of a sample of Latin American and Asian countries. Nickell and Layard (1999) and Koeniger (2005) find weak positive relationships between the stringency of job protection, total factor productivity growth, and research and development intensity for OECD countries. These results are difficult to interpret because correlations observed with aggregate cross-country data do not allow to pinpoint a causal impact of employment protection legislation on productivity.

81. A second set of contributions, using data at the industry, the firm or the plant levels provides more conclusive and more convincing results:

- Autor et al. (2007) study the impact of the adoption of wrongful-discharge protection norms by state courts in the United States using plant-level data from 1970 to 1999. They find that capital deepening is increased while employment flows, firm entry and productivity are reduced.

- Cingano et al. (2013) obtain similar results using Italian data to examine a 1990 reform that raised dismissal costs for firms with fewer than 15 employees only.

- In a study on job protection and job flows, Micco and Pagés (2006) also provided some weak evidence of a relationship between job protection and productivity, using a difference-in-differences estimator on a cross-section of industry level data for several OECD and non-OECD countries. They found a negative relationship between lay-off costs and labour productivity.

- Bassanini et al. (2009) examine the impact of employment protection legislation on productivity in the OECD, using annual cross-country aggregate data on the degree of regulation and industry level data on productivity from 1982 to 2003. They adopted a difference-in-differences framework, which exploits likely differences in the productivity effect of dismissal regulations in different industries. Their identifying assumption is that stricter employment protection influences worker or firm behaviour, and thereby productivity, more in industries where the policy is likely to be binding than in other industries. The advantage of this approach is that, in contrast to standard cross-country analyses, it can control for unobserved factors that, on average, are likely to have the same effect on productivity in all industries. They found that mandatory dismissal regulations depress productivity growth in industries where lay-off restrictions are more likely to be binding.

- Martins (2009) studied a quasi-natural experiment generated by a law introduced in Portugal in 1989: out of the twelve paragraphs in the law that dictated the costly procedure required for dismissals for cause, eight did not apply to firms employing 20 or fewer workers. Using detailed

matched employer-employee longitudinal data and difference-in-difference matching methods, Martins examined the impact of that differentiated change in firing costs upon several variables, measured from 1991 to 1999. The results suggest that firing costs of the type studied here hurt firm performance, decrease workers' effort and increase their bargaining power.

82. Overall, the empirical literature suggests that job protection tends to have negative effects on productivity. The reasons why this happens have not been fully characterised. There is however some evidence of adverse effects of EPL on innovative activity and workers' effort.

Effects on wages

83. Reforms of EPL may affect wage setting, as the power of insiders is reduced. This channel was investigated by van der Wiel (2010) exploiting a change in the terms of notice that resulted from the introduction of a new law in 1999 in the Netherlands. Under the old law the length of the notice period depended on the tenure of the workers who would be dismissed with a maximum notice period of three months. For workers aged forty-five or more the maximum was six months. Under the new law, age dependency disappeared and the maximum notice period was four months. Van der Wiel found that longer terms of notice caused wages to be higher.

84. Asymmetric or two-tier reforms of employment protection, however, may increase the bargaining power of insiders, insulating them from competition of the outsiders (Bentolila and Dolado, 1994). Boeri (2010) reports a large premium of permanent contracts with respect to fixed-term contracts in all countries of the European Community Household Panel.

Some neglected long-run costs

85. As discussed above, there is evidence of efficiency enhancing effects of EPL reforms, notably in the long run. However, even in the long run, there can be gross costs of flexibility enhancing reforms reducing EPL that should not be overlooked.

86. First, insofar as these reforms increase unemployment inflows and outflows, and replacement rates are declining over the unemployment spell, higher turnover of the unemployment pool per any given level of unemployment, will increase the fiscal costs associated with paying unemployment benefits, exerting negative fiscal externalities on workers and firms. This is even more the case if EPL reforms are accompanied by an increase in the generosity of unemployment benefits, as in the flexicurity reforms.

87. Second, EPL reforms affect the composition of employment and unemployment (OECD 2004 and 2014): countries with stricter EPL display higher youth unemployment rates and lower unemployment among prime age groups. Thus, there are important distributional effects of reforms and non-negligible costs for some segments of the workforce.

88. Third, asymmetric or two-tier reforms of employment protection may increase labour market segmentation between unstable jobs with poor working conditions, and stable jobs with better working conditions. This is because firms need to use more temporary jobs when protection of permanent jobs is stronger in order to adapt employment to changes in production: temporary jobs are more widespread in countries where permanent jobs get greater protection.

89. An increasing body of empirical research indeed suggests that stringent regulation of permanent jobs increases labour market duality. Kahn (2007), using 1994-98 International Adult Literacy Survey micro data, investigates the impact of employment protection laws on the incidence of temporary employment by demographic group. His study covers Canada, Finland, Italy, the Netherlands, Switzerland, the United Kingdom and the United States, countries with widely differing levels of mandated employment

protection. He finds that more stringent employment protection for permanent jobs (as measured by the OECD) increases the relative incidence of temporary employment for less experienced and less skilled workers, and for young workers, native women, immigrant women and those with low cognitive ability. This result is important since temporary jobs generally pay less and offer less training than permanent jobs, all other things being equal. Moreover, workers in temporary jobs express lower levels of job satisfaction than comparable workers in permanent jobs (Booth et al., 2002). Thus, policies that effectively substitute temporary for permanent jobs may actually worsen the welfare of the average worker, if they do not lower unemployment.

90. Stringent regulation of permanent jobs makes permanent jobs more secure at the expense of higher instability of temporary jobs. Therefore, protecting permanent jobs has an ambiguous impact on overall job security. This property has been illustrated in search and matching models with temporary and permanent jobs (Blanchard and Landier, 2002, Cahuc and Postel-Vinay, 2002, Cahuc and Carcillo, 2006, Cahuc et al., 2015). More stringent regulation of permanent jobs can be associated with stronger feelings of job insecurity not only for temporary workers but also for permanent workers, as shown by Clark and Postel-Vinay (2009). They construct indicators of the perception of job security for various job types in 12 European countries using individual data from the European Community Household Panel. Then, they consider the relationship between reported job security and OECD summary measures of employment protection legislation strictness on the one hand, and unemployment insurance benefit generosity on the other. They find that, after controlling for selection into job types, as well as the state of local labour markets, workers feel most secure in permanent public sector jobs, least secure in temporary jobs, with permanent private sector jobs occupying an intermediate position. They also find that perceived job security in both permanent and temporary jobs is positively correlated with unemployment insurance generosity, while the relationship with employment regulation strictness is negative: workers feel less secure in countries where jobs are more protected. These correlations are absent for permanent public jobs, suggesting that such jobs are perceived to be largely insulated from labour market fluctuations. While care needs to be taken in establishing the causality of these correlations, this result suggests that job protection is not the best response to the problem of job insecurity.

Timing

91. There is not much literature on the effects of EPL reforms over the business cycle. As the short-run impact of reforms is on the job destruction side, it is likely that a flexibility-enhancing reform would amplify the responsiveness of unemployment to output changes. This is consistent with estimates of Okun's law "beta" coefficients during downturns (IMF, 2010). The presence of a stock of temporary jobs built up after a two-tier reform significantly increases the response of unemployment to output decline (Bentolila et al., 2012). Gnocchi et al. (2014) also find that reforms reducing EPL involve an increase in the volatility of aggregate employment. They also report a lower correlation between real wages and productivity in the aftermath of the reform, which may be harder to explain.

92. One fact that has been highlighted by the literature is that it is more difficult to reduce EPL during downturns not only for political economy reasons, but also because of enforcement issues. Indeed, judges tend to be more protective of workers in bad times, as they feel that under severe labour market slack in a region or during a cyclical downturn; workers should be more heavily protected against dismissals than in a buoyant labour market (Ichino et al., 2003).

93. Available information on the enforcement of EPL, discussed in Bertola et al. (1999), suggests that the nature and stringency of EPL enforcement indeed vary across countries and over time, with a strong influence of labour market conditions. In particular, long-term unemployment is positively correlated with the number of cases brought before courts (as a fraction of the population of working age) across the OECD countries for which data on EPL enforcement were available. Another dimension of

jurisprudence that seems to be linked to labour market conditions, both across countries and over time, is the percentage of cases favourable to workers: the countries where tribunals are most frequently involved in labour disputes on the termination of a contract are those with the highest percentage of cases favourable to workers. In Spain, almost 72% of cases in 1995 were won by workers, compared with less than 50% in North America and a low of 16% in Ireland, all countries where tribunals seem to intervene rather infrequently in labour disputes concerning contract termination. The high incidence of judicial procedures in France may also be partly explained by a large share (74%) of cases favourable to workers. The likelihood that court rulings are favourable to employees tends to play an important role in inducing workers to bring their cases to the courts, although it may, on the other hand, also encourage employers to reach extrajudicial agreements.

94. With regard to time-series variation in EPL enforcement, Bertola et al. (1999) found a marked covariation of the incidence of jurisprudence (cases brought to court as a percentage of the labour force) and unemployment in Germany. Co-movements of indicators of jurisprudence and unemployment are also observed in Spain, especially when the focus is on cases ended with sentences favourable to employees, and in Italy, where evidence on case law points to a strong link between law enforcement and regional labour market conditions.

Interactions

95. The short-run unemployment costs of EPL tend to be larger in the presence of compressed wage structures (Bertola and Rogerson, 1997) presumably because collective bargaining reduces the scope of price-driven adjustment mechanisms: if employers cannot adjust wages when they face changes in the demand for their product, they are forced to adjust employment. There is therefore a complementarity between reforms of EPL and reforms of collective bargaining institutions.

96. Reforms of EPL also strongly interact with the design of unemployment benefits, as discussed when surveying the literature on the costs of reforms of unemployment benefits.

5. Housing

97. There is a tendency in a majority of developed countries to favour home ownership through various measures such as low credit rates or subsidies for first time buyers (a notable exception is Switzerland that collects taxes on the imputed rents of home owners). Yet there is no evidence that a high rate of home ownership is associated with better economic outcomes.

98. Oswald (1996, 1997) suggested that the opposite may be true. Using aggregate data from Western Europe and US states, he showed that there exists a positive correlation between the home ownership rate and the unemployment rate. This statistical relationship has been recently documented in a more elaborate manner by Blanchflower and Oswald (2013a; 2013b). They used annual data from all contiguous US states covering the period 1985-2011 and found a strong statistical link between high levels of home ownership in a geographical area and high subsequent levels of joblessness in that area. For the effects to be significant the lag must be of five years at least, which means that the labour market reacts gradually to changes in the housing market. The Blanchflower and Oswald's regressions hence suggest that the effects of the housing market on the labour market fully materialise only in the long run. At that horizon, they estimate that doubling the home ownership rate in a given state can lead to more than a doubling of the unemployment rate.

99. According to Blanchflower and Oswald, home ownership deteriorates labour market performance because it reduces labour mobility, matching efficiency and business formation. Theoretical models shed some light on these mechanisms. Generally these models assume that owners are, in a way or another, less

mobile than renters. A good example of this kind of models is Head and Huw Lloyd-Ellis (2012) that assume that the decision of owners to take a job in another area depends on the state of the housing market in their own area. Calibrating their model to reproduce the main characteristics of the US housing and labour markets, they find that home ownership can have a positive but small effect on unemployment. Rupert and Wasmer (2009) also use a model with search frictions on both the housing and labour markets, but they do not distinguish between owners and renters. Instead, they assume commuting costs when workers move across areas. Their simulations suggest that housing market frictions can account for a large part of the differences in mobility and unemployment between Europe and the United States. Cross-country studies also find an inverse relationship between home ownership and residential mobility, which is stronger in countries that have high transaction costs in the housing market (e.g. Andrews and Caldera-Sanchez, 2011). However, it is difficult to establish a causal relationship in these cross-country analyses.

100. Calibration or regression exercises are suggestive, but they do not identify a causal link between the state of the housing market and the unemployment rate. To our knowledge, the only study that tried to identify a causal link of this sort is that of Laamanen (2013). He analyses the deregulation of the rental housing market that happened in Finland at the beginning of the 1990s. The main changes concerned the lifting of rent-ceilings and the facilitation of breaking renting contracts. But before the law was applied to the whole country, the government decided to run an experiment where the deregulation was implemented in seven counties of northern and central Finland. These counties were selected on the presumption that their rental housing market was balanced, i.e. that it did not display abnormal excess demand or supply. These counties formed the treated group. As could be expected, the rate of home ownership declined in these counties because renting became more profitable. Laamanen found that home ownership has a significant positive and immediate effect on unemployment. Hence, at least in this Finnish experiment, the link between the rate of home ownership and unemployment is present also in the short run.

101. The results of Blanchflower and Oswald (2013a, b) and Laamanen (2013) seem apparently in contradiction with the fact that, everything else being equal, owners are less unemployed than renters (Laamanen, 2013, showed that this is indeed the case in the Finish experiment; see also Coulson and Fischer, 2009). One possible explanation is that home ownership, rather than negatively affecting labour market outcomes of the owners themselves, exerts a negative externality on regional unemployment. In this perspective, Laamanen notes that home ownership is most often financed by indebtedness, thus an area with a high rate of home ownership could have a lower aggregate consumption demand (and consequently less labour demand) than an area with a low rate of home ownership. Another source of externality could stem from the knowledge of workers' productivity: it has been shown that more information on workers' productivity is associated with more mobility in the US labour market (Serafinelli, 2013). Another possibility is that home-owners may have a more restrictive attitude towards new businesses or migrants – the "not in my backyard" syndrome – that negatively affects the local labour market (Blanchflower and Oswald, 2013a).

102. More studies are necessary to establish a firm link between the status on the housing market (owner or renter) and the performance of the labour market. If these studies confirm that home ownership raises unemployment, governments should revise their housing policy in order to favour renting and residential mobility (more policy options to promote household mobility are examined in OECD, 2011). Better knowledge of the underlying mechanism is also warranted. For instance, if liquidity problems explain the effects of house ownership on regional unemployment, and there are many individuals who are "house rich" and "cash poor", then lowering taxes on house transactions could be a step in the direction of making the housing market more liquid.

6. Unemployment benefits, job search assistance, sanctions

Short run

103. Microeconomic evidence shows that unemployed workers adapt their behaviour very quickly when their environment is modified. This implies that changes in unemployment insurance schemes and job search assistance have a quick (infra annual) impact on unemployment exit rates. These effects operate through diverse channels.

The effects of benefit duration and replacement rate

104. In line with the predictions of the job search model, empirical studies find that benefit duration and the replacement rate exert significant effects on the duration of unemployment.

The main result

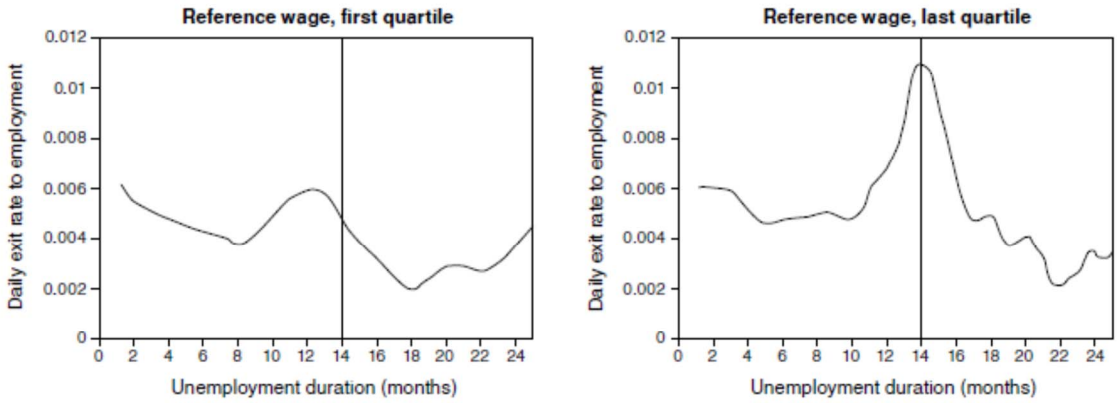
105. The survey of Tatsiramos and van Ours (2014) which selects studies with relevant identification strategies from the United States and many European countries, shows that the direction of the effects of unemployment benefits does not differ between countries although their magnitude may differ. According to this survey the elasticity of the duration of unemployment with respect to the replacement ratio varies between 0.4 and 1.6. An increase of a week in the duration of benefit payments leads to an increase in the duration of unemployment ranging between 0.1 and 0.4 of a week.

Exhaustion of benefits and distributional issues

106. Following the contribution of Meyer (1990), numerous studies highlight a significant discontinuity in the exit rate from unemployment in the period immediately preceding the exhaustion of entitlement to unemployment insurance benefits. The size of the spike is influenced by the characteristics of workers and by the institutional environment. This is illustrated by the study of Dormont et al. (2001) on French data. They show that the exit rate from unemployment to employment rises more at the end of the entitlement period for better qualified job-seekers. Figure 1 clearly illustrates this phenomenon. It traces the exit rate from unemployment for individuals whose benefits fell significantly in the fourteenth month of unemployment. At that time, benefits pass from a magnitude of 57 to 75% of the previous wage to a fixed sum corresponding to roughly 60% of the minimum monthly wage. Figure 1 shows that the probability of exit rises significantly as the fourteenth month approaches but it shows also that a fall in benefits hurts more those with low previous wages. The exit from unemployment is much more marked for job-seekers who previously earned high wages. Two causes contribute to this phenomenon. First, better-qualified workers, the ones earning higher wages, are also those who can find jobs more easily and behave in a more opportunistic manner. Second, the fall in income in the fourteenth month is weaker to the extent that the reference wage was low to begin with. The question of the relative importance of these two causes remains open.

Figure 1. Exit rate from unemployment into employment and the end of entitlement to benefits

1986–92



Note: Population: individuals aged 25 and older. The reference wage corresponds to the average wage for the 12 months immediately preceding job loss.

Source: Dormont et al. (2001).

Job search assistance

107. Job search assistance programs consist of interviews with job seekers to guide them in their efforts to find work. Two recent meta-analyses of labour market policies (Card et al., 2010; Kluve, 2010) concluded that job search assistance, sometimes associated with sanctions for non-compliance, has a favourable impact on the entry or return to work, notably in the short term.

Main results

108. Starting in the 1980s in the United States, job search assistance programmes have been evaluated on the basis of social experiments targeted at unemployment insurance recipients. A firm conclusion is that the help given to the job seekers in the treatment groups significantly reduces the duration of unemployment. Furthermore, Meyer (1995) stresses that it generally leads to a reduction in the total expenditure of the bodies administering unemployment insurance, inasmuch as the benefits that flow from this help outweigh its costs. It should nevertheless be noted that these experimental situations mingle help for the unemployed with surveillance of the search effort they are making. The contribution of each of these components is generally difficult to isolate. In what follows, a few examples of job search assistance programmes and their evaluations are reviewed.

109. Björklund and Regnér (1996) looked at a social experiment in which the services delivered to the unemployed in 1975 in a small city in central Sweden were intensified. For three months the 216 unemployed persons in the treated group received intensive job search assistance of 7.5 hours per week, while the 194 in the control group received normal assistance of around 1.5 hours per week. Nine months after the experiment, the percentage of persons belonging to the treated group who had found a job was 13% higher than that of the persons belonging to the control group.

110. Dolton and O'Neill (1996) studied the impact of the "Restart" placement programme in the United Kingdom in 1989. This programme had been introduced in 1987 with the purpose of helping the long-term unemployed. Individuals unemployed for six months were contacted and given six monthly interviews, each lasting about 15-25 minutes, with a counsellor who attempted to improve their job search strategies, and who could initiate contacts with possible employers. Persons who refused to join this

programme lost their unemployment benefits. Dolton and O'Neill could use experimental data, as the authorities set up a random sample of individuals summoned to the interviews in 1989. Individuals not summoned formed the control group, but they could ask to take part in these interviews. The method adopted by Dolton and O'Neill is to compare the performance of the beneficiaries of the Restart programme with that of individuals belonging to the control group. They found that the exit rate from unemployment of the control group was 20% to 30% lower than that of the treatment group during the six months subsequent to the missed interview. After one year, the beneficiaries had an average employment rate 4% higher than that of the non-beneficiaries.

111. Crépon et al. (2005) studied the effects of intensive counselling schemes introduced in France in 2001 that are provided to about 20% of the unemployed. Using duration models and a very rich data set, they found significant favourable effects on both unemployment duration and recurrence, but the impact on unemployment recurrence is stronger than on unemployment duration. In particular, the programme shifted the incidence of recurrence, one year after employment, from 33% to 26%.

The effects of mandatory participation

112. When participation in labour market programmes is compulsory, for instance after a number of months of registered unemployment, they can incite workers to search more actively for a job in order to avoid having to attend the scheduled sessions. Rosholm and Svarer (2008) were able to estimate the impact of the risk of programme participation in Denmark between 1992-2002. They conclude that mandatory participation in active labour market policy programmes does shorten unemployment duration, even if actual programme participation does not. The magnitude of this effect is three weeks on average. Within the OECD, only five countries have compulsory programme participation after a defined spell of unemployment (Australia, Denmark, the Netherlands, Sweden and the United Kingdom). But participation can become compulsory in many other countries upon referral by the counsellor in charge (see OECD, 2007, Chapter 5, Table 5.5). These results are confirmed by Geerdsen (2006), who finds effects on exit rates comparable in size to the effect of benefits exhaustion found in studies on the US unemployment insurance system.

113. The study by Black et al. (2003) on the programme of job search help which the state of Kentucky set up in 1993 confirms the previous results and those of several studies of European programmes. This programme lends itself to a natural experiment, since participation is in principal compulsory for all unemployed persons, but because of the limited capacity of the employment agencies only a portion of the unemployed are actually enrolled. More precisely, in Kentucky, unemployment insurance claimants are assigned profiling scores predicting unemployment spell duration. Among those with higher scores (predicting long spell duration), random assignment allocates only a fraction to mandatory programme participation, while other unemployed persons with the same scores but who have been excluded from participation constitute a control group. Black et al. find that on average the treatment group receives unemployment benefits for a period that is shorter by 2.2 weeks than the control group does. This study also shows that the rate at which the treatment group returns to work rises sharply during the interval between notification of (compulsory) participation in the programme and the date at which it actually begins. In other words, the disagreeable prospect of having to have regular contact (two to three hours per week) with the employment agencies, and of having them check on one's job search effort, is enough to quickly force those who are not experiencing any real difficulty in finding work out of the unemployment insurance system. As a general rule, the establishment of surveillance and counselling programmes has the effect of exerting pressure on a percentage of the eligible unemployed.

114. In an experimental setting with Danish job seekers, Graversen and Van Ours (2008) confirm the results of Black et al. (2003). They highlight a perceptible rise in exits into employment prior to enrolment

in the programme. This spike generally follows the dispatch of a letter reminding job seekers that the programme is obligatory, and that non-attendance implies the suspension of benefit payments.

Heterogeneous effects across population groups

115. It should be noted that empirical studies do not systematically find a positive impact of counselling on the entry rate into employment, at least not for all groups. For instance, in examining the impact of a randomized experiment, Van den Berg and van der Klaauw (2006) find that counselling and monitoring did not affect the exit rate to work in the Dutch unemployment insurance system at the end of the 1990s. The monitoring of relatively well-qualified individuals in favourable macroeconomic conditions leads to substitution of search methods and small net effects on the exit rate to work: these individuals resorted less to the sort of informal methods that were not observable by the agency (social networks, checking the newspapers), and more to formal methods of the sort that the agency could observe, especially the use of the services offered by the agency itself. However, individuals with worse prospects may have less scope for such substitution, and monitoring of their search activity may lead to an increase in the exit rate to work. Van den Berg and van der Klaauw do find that both the older and the longer-term unemployed benefit more from counselling and monitoring.

116. Fougère et al. (1999) studied the impact of job search assistance in France in the period 1986-88. Their results suggest that public placement services do have a positive impact on the exit rates from unemployment of women and poorly trained youth.

Threats and sanctions

117. As already mentioned, it is difficult to isolate the effect of threats and sanctions from the effect of job search assistance per se. Moreover, the sanctions can have an ex ante impact (the threat) and an ex post impact (the effective application of the sanctions). Some studies have tempted to clarify those points.

118. For instance, in the Netherlands welfare recipients can be sanctioned if they do not comply with job search requirements (for those who are able to work). Van den Berg et al. (2004) identified the impact of such sanctions for the city of Rotterdam when they were introduced in the 1990s. They estimate a duration model, and find that a reduction in the benefit paid to job seekers by 20% over a two week period, imposed as a sanction for not adhering to job search rules, doubles the exit rates from unemployment of the individuals thus sanctioned. Further, they find that these effects persist beyond the two week period. They also conclude that the earlier the sanctions kick in over the course of the unemployment spell, the lower the probability of becoming long-term dependent. The impact of sanctions, ex-ante (the threat) and ex-post (the effective application of the sanctions), are also confirmed in an experimental setup by Boone et al. (2009). They find that the ex ante effect of programmes is stronger than the ex post effect. Van der Klaauw and van Ours (2013) also find that sanctions were more effective than re-employment bonuses in shifting the unemployed from welfare to work more quickly in Rotterdam.

119. The threat effect is closely linked to the possibility of sanctioning benefit recipients in case of non-compliance. The contribution of Lalive et al. (2005) relies on Swiss data covering all persons who entered into unemployment between September 1997 and March 1998. Job seekers were observed up until May 1999. Lalive et al. were able to identify specifically the effect of warning and administering sanctions in Switzerland, where job search requirements are monitored (through the number of job applications) and where programme participation can be mandatory. The available data are sufficiently precise to allow them to distinguish the impact, on all unemployed, of the threat of being sanctioned – the ex ante effect – from the impact of the sanction on the unemployed persons effectively sanctioned – the ex post effect. Lalive et al. find that the two effects exert similar pressure on search efforts and that both contribute to reducing the duration of unemployment.

Long run

120. Unemployment benefits, job search assistance and sanctions have in general a significant and fast impact on unemployment exit rates. In the medium run and in the long run, their impact on economic activity is positive if individuals go from unemployment to employment but can be negative if they go from unemployment to inactivity.

121. Card et al. (2007) find, on Austrian data, that the peak observed at the exhaustion of benefits is markedly more pronounced if all types of exit from unemployment are taken into account. They find that the rate of exit from unemployment is multiplied by 2.4 around the maximum duration of benefit, compared to the rate observed at the onset of an unemployment spell. The rate of return to employment, in contrast, is multiplied by only 1.15. In the case of senior workers, the results of Hunt (1995) suggest that a substantial portion of the transitions observed at the exhaustion of benefit entitlement amount to exits from the labour market. More generally, Card et al. (2007) stress that the magnitude of any spike in the re-employment rate depends on institutional factors and labour market conditions that include the availability of post-exhaustion benefits (Pellizzari, 2006), the participation of UI recipients in the uncovered sector and the incentives for firms to cycle workers through temporary unemployment.

122. Dolton and O'Neill (2002) examine the long-run effects of the Restart program described above. They find that five years after the programme began; the unemployment rate for men in the treated group was 6 percentage points lower than it was for men in the control group. In contrast, they find no significant long-term improvement for women. From this they conclude that, for men, the sanctions triggered by non-participation in the interview have a stronger effect in the short term than the effects of the programme, whereas the services to help them in their job search, of which they are informed when they attend the interviews, have more weight in the long term.

123. More generous unemployment insurance can have detrimental effects on human capital accumulation to the extent that human capital deteriorates when workers remain on the dole. On the other hand, a too short unemployment spell can weaken the quality of the jobs that are found and consequently have a lasting negative influence. However, as stressed by Tatsiramos (2014), who provides a recent survey of the literature on this issue, the existing evidence on the relationship between benefit provision and job match quality is mixed, with a number of studies finding positive but in most cases small effects, while others find no effects.

124. There is also some evidence that monitoring and sanctions can have negative effects on post-unemployment earnings and on labour market participation (McVicar, 2014). For instance, two recent studies suggest that the quality of the jobs found might be negatively affected by sanctions associated with insufficient search effort. Using Swiss data, Arni et al. (2009) find that the threat of being sanctioned (the ex ante effect) reduces the wages of future jobs, while sanctions effectively applied (the ex post effect) reduce both the wages and the duration of the jobs accepted. On data covering job seekers in Sweden between 1999 and 2004, Van den Berg and Vikström (2009) find that the hourly wages and the number of hours worked are, on average and all other things being equal, weaker for the unemployed who were sanctioned than for others. They also hold less highly qualified jobs.

Timing

Job search assistance in downturns

125. One can think that reinforcing job search assistance during downturns does not have a great impact because the probability of returning to employment does not depend much on search effort when

there is a massive lack of jobs. The evaluation made by Martins and Pessoa e Costa (2014) of a programme implemented in Portugal in 2012 proves that this is not necessarily true.

126. At the beginning of 2012, the unemployment rate reached 14.9%. The Portuguese authorities decided to implement a programme of augmented job search assistance called *Convotorias*. This programme was directed towards unemployed aged at least 45 or being out of work for at least six months. They were obliged to attend meetings in job centres and, if the caseworkers thought it was necessary, they could benefit from more counselling, training or job subsidies. Their search efforts could also be better monitored than before. In order to appreciate the effects of this programme Martins and Pessoa e Costa used a regression discontinuity design where the control group is composed of the unemployed aged 44 or less.

127. The estimates of Martins and Pessoa e Costa indicate that *Convotorias* had an important positive effect. More precisely, they calculate that the probability of being reemployed during the next month has doubled for the beneficiaries of the programme. Furthermore, they do not find any effect on the reemployment probability of the non-eligible unemployed which means than there is no substitution between the beneficiaries of the programme and the other unemployed.

Unemployment insurance and the business cycle

128. Following the Great Recession and the important extension of potential duration of unemployment benefits in the United States, the question of the effects of unemployment benefits over the course of the cycle became the focus of much analysis. Should these payments be pro-cyclical, counter-cyclical, or a-cyclical? With reference to the theory of optimal unemployment insurance, the level of benefits must reflect a trade-off between the incentive to search for work, the objective of smoothing consumption between periods of employment and unemployment, and the necessity for the body in charge of the unemployment insurance system to have a balanced budget (see Cahuc et al., 2014, Chapter 13 for an overview of this theory). Intuition suggests that the elasticity of unemployment duration with respect to the amount of benefit plays a central role in the formulas determining the optimal level of unemployment benefits, the latter being inversely related with the magnitude of the elasticity of unemployment duration. Hence, the question of unemployment benefit over the cycle mainly comes down to determining how this elasticity varies with the economic cycle, in this case with the unemployment rate.

129. Kroft and Notowidigdo (2014) carry out such an exercise on the basis of data on the unemployment rates in different states of the United States between 1985 and 2000. They find that the elasticity of unemployment duration with respect to the level of unemployment benefit is 0.563 at the average state unemployment rate. But they also show that this elasticity varies widely with local labour market conditions, or more precisely that the duration elasticity proves to be weaker when the local unemployment rate is high. The effect is of considerable magnitude, for Kroft and Notowidigdo estimate that a one standard deviation increase in the unemployment rate (an increase of 1.3 percentage points from a base of 6.2%) reduces the magnitude of the duration elasticity from 0.563 to 0.304. In light of this empirical analysis, the optimal unemployment benefit should be counter-cyclical: it should increase when the unemployment rate increases. Kroft and Notowidigdo estimate that a one standard deviation (1.3 percentage point) increase in the local unemployment rate leads to a roughly 14 to 27 percentage point increase in the optimal replacement rate, depending on the value of the coefficient of relative risk aversion. The policy decision in the United States to lengthen the duration of unemployment benefit during the Great Recession was thus "theoretically well-grounded" according to Kroft and Notowidigdo.

130. Landais (2014) approaches the question using administrative data from the Continuous Wage and Benefit History Project (CWBH) about unemployment spells in five US states from the late 1970s to 1984. He takes advantage of the wide variation in labour market conditions across states and over time in the

CWBH data to investigate how estimates of the elasticity of unemployment duration with respect to the unemployment benefit vary with indicators of state labour market conditions. The results suggest that increases in the state unemployment rate are associated with a slight decrease in this estimated elasticity. According to the specification adopted by Landais, the estimated elasticity varies between 0.38 when the state unemployment rate is at 4.5% (the minimum in the CWBH data) and 0.25 when the unemployment rate is at 11.8% (the maximum in the CWBH data). Landais (2014) thus concludes that the labour supply response to unemployment benefits is (weakly) pro-cyclical. This result is in line with that of Kroft and Notowidigdo (2014), although the cyclicality of the estimates is somewhat larger for the latter. This alignment reinforces the view that that the optimal unemployment benefit should be counter-cyclical (see also Landais et al., 2014).

131. The analyses of Kroft and Notowidigdo (2014) and Landais (2014) are analyses in partial equilibrium, inasmuch as they do not take into account the reaction of wages to variations in the amount of unemployment benefit. Jung and Kuester (2014) have integrated this dimension into a search and matching model with risk-averse workers, endogenous hirings and separations, and unobservable search effort. They show that the social optimum may be decentralised through a production tax, a vacancy subsidy, a lay-off tax, or unemployment benefits. Using a calibration targeted to the US economy, Jung and Kuester conclude that hiring subsidies, lay-off taxes, and the replacement rate at which unemployment insurance is paid should all rise in recessions. In a similar model, but in which the amount of unemployment benefit is taken as the sole variable of economic policy, Mitman and Rabinovich (2014) arrive at a more nuanced conclusion. They find that the response of benefits to a negative shock should be non-monotonic: unemployment benefit should be raised in the short term (four to six weeks after the shock) in order to provide short-run relief to the unemployed and stabilise wages, but subsequently it should be brought back down to below its pre-recession level in order to speed up the subsequent recovery. Their conclusion rests on the hypothesis of rapid wage adjustment.

132. This literature suggests that it can be desirable to implement reforms which provide more generous insurance during periods of high unemployment, and that reduce benefit generosity during periods of low unemployment. Such reforms may be implemented in downturns, when it is desirable to increase the generosity of unemployment insurance. However, governments and social partners should take care to commit to a rule-based system, with an automatic clause that ensures a balanced budget over the business cycle (Andersen, 2014).

Interactions with other policies

133. Unemployment insurance should be coordinated with other income support programmes. The contribution of Inderbitzin et al. (2013) provides a good illustration of this issue. Between June 1988 and July 1993, Austria experimented the "regional extended benefit programme" that guaranteed four years of unemployment insurance benefits to workers aged 50 and over and living in well-defined regions. Under the normal legislation in place since the late 1980s, these workers were eligible for only one year of unemployment insurance benefits and when they reached 55 they could claim relatively easily disability insurance benefits. Using a difference-in-differences approach, Inderbitzin et al. (2013) exploit the variations in the duration of unemployment insurance benefits across regions and age groups to isolate the causal impact of the augmented unemployment insurance benefits on the exit from the labour market.

134. They found that the regional extended benefit programme increased the probability that an unemployed aged 50-54 leaves the labour market to (early) retirement by 17% (10.8% for workers aged 55-57). The magnitude of the effects is thus quite large. They also note there has been an increase of 12.6% in the take-up rate of disability insurance benefits following the increase of 17% of unemployment insurance benefits for the unemployed aged 50-54. Inversely, for the unemployed aged 55-57, the increase of 10.8% in early retirement through unemployment insurance benefits is associated with a reduction of

12.7% of disability insurance benefits. These results show that, according to the age of the unemployed and the existing possibilities to exit from the labour market, there can be substitution or complementarity between UI benefits, disability insurance benefits and retirement benefits.

135. These findings are consistent with those of other papers that focus on the interactions between unemployment insurance and other income support programmes. For instance, Petrongolo (2009) finds that stricter job search requirements for unemployment insurance benefit claimants was associated with higher take-up of disability insurance benefits and a decrease in the outflow to employment in the 1990s in the United Kingdom. Kyyria and Ollikainen (2008) show that increasing the eligibility age for extended unemployment insurance benefits from 53 to 55 year old induced a strong increase in early retirement in Finland. Lammers et al. (2013) show that a reform that increased search requirements for older unemployed in the Netherlands increased disability insurance take-up rates.

136. Finally, other schemes may be more effective than unemployment benefits to deal with temporary shocks, such as subsidised short-time work (STW) that proved rather effective, for instance, during the Great Recession. Boeri and Bruecker (2011) and Cahuc and Carcillo (2011) found that during severe recessions, STW contributed to save jobs. However, the number of jobs saved is generally smaller than the number of persons involved in the schemes, and deadweight costs are likely to rise substantially at milder recessions. Thus, it is very important that STW is contingent on changes in macroeconomic conditions. Experience-rating and co-financing by the employers of a significant share of the costs of the instrument are very important in this respect.

137. All in all, job search assistance exerts a positive effect on the return to employment and seems more effective in helping disadvantaged populations. Mandatory participation to job search assistance programmes increases significantly the impact of such assistance. Threats and sanctions are efficient, especially in the short term as they provide strong incentives for the unemployed to take the available jobs. In the longer run, there could be a problem because of a lower quality of the job matches, even if there is scant evidence of such a phenomenon.

138. Stricter job search requirements are associated with higher take-up rates for early retirement and disability benefits. This link underlines the benefits of coordinating reforms of unemployment insurance with reviews of other income support programmes.

139. Theory suggests that unemployment benefits should be counter-cyclical. Empirical work on this topic is however too scarce for drawing a definitive conclusion.

7. Retirement

140. If work sharing could be a cure to unemployment, one should provide incentives for the withdrawal of older workers from the labour force in order to leave the jobs to younger workers (for instance, by reducing the retirement age). No serious empirical study supports this vision. In general, a high rate of employment of older workers is associated with a high rate of employment of younger workers. On the other hand, increasing the retirement age may also increase the unemployment rate of workers close to retirement. These workers could migrate to other income support programme such as disability insurance or remain unemployed without actively looking for work.

Short run

Decreasing the retirement age

141. During the 1980s, some countries introduced programmes that intended to withdraw older workers from the labour force. These programmes were based upon the “lump of labour theory” according

to which the number of jobs in an economy is given so that, when a worker retires, his or her job goes to a younger individual looking for work.

142. A good example is the Post Employment Wage (PEW) programme that Denmark implemented in 1979 to lower the retirement age. Workers having enough tenure in an unemployment insurance fund could retire with no loss on their pension benefits when they reached the age of sixty (instead of sixty four). The programme was explicitly intended to favour the hiring of younger workers. Bingley et al. (2010) examined the results of this programme. They noticed that after its introduction, the participation rate for men aged 60 to 64 immediately declined from 80% to 60% while the participation rate of men aged 20 to 24 did not change until 1989. They examined then the link between these two participation rates in a regression setting with various control variables and found no confirmation of the lump of labour theory.

143. Duval (2003) used an unbalanced panel dataset of 22 OECD countries over the period 1967–1999 containing information for three age groups, 55-59, 60-64, and 65+ looking at the effects of the implicit tax rates embedded in old-age pension and early retirement programmes. Changes in implicit tax rates and standard retirement ages were found to explain a major part of the trend decline of older males' labour force participation.

144. Börsch-Supan and Schnabel (2010) reached the same conclusion with the reform of the pension system that was enacted in Germany in 1972. This reform consisted in introducing "flexible" retirement. In practice, it led to a reduction of about two years of the normal retirement age (from 65 to 63 for men). The reform was followed by an immediate and dramatic decline in the participation rate of the labour force aged 63 to 65, and during the following four years, the employment rate of individuals aged 55 to 64 decreased by 7 percentage points. All these movements were not followed by an increase in the employment of younger workers. On the contrary, the participation rate of the latter also fell. Using a regression discontinuity design, Börsch-Supan and Schnabel show that these results are not related to the business cycle or to other exogenous factors.

145. Gruber et al. (2010) used data from 12 countries covering more than 20 years to estimate the link between the employment rate of workers aged 55 to 64 and the employment or unemployment rate of younger workers (20 to 24 in general). Their regressions take into account country-specific effects and add control variables such as the growth of GDP or the share of manufacturing in the economy. They also incorporate year effects to capture common factors affecting all countries. The estimates of Gruber et al. do not provide any support to the "lump of labour theory": in the short run (but also in the long run) there is no statistical evidence that the increase in the employment of older individuals has a negative impact on the employment of younger individuals. These estimates rather suggest an inverse relationship where an increase in youth employment happens in parallel with an increase in older workers' employment.

Increasing the retirement age

146. The preceding studies examined the consequences of declines in the retirement age. Other contributions looked at reforms moving in the opposite direction by studying the consequences of increases in the retirement age. These studies mainly focus on the employment rate and the unemployment rate of older workers.

147. Cribb et al. (2014) adopted a difference-in-difference methodology to analyse a reform that took place in the United Kingdom. In 1995, the government decided that the state pension age for women would rise progressively from 60 to 65 over the 2010 to 2020 decade. Thus, between 2010 and 2012, the retirement age rose from 60 to 61. Cribb et al. exploited the data resulting from this one year increase in the retirement age of women. Comparing evolutions for women affected by the reform with those of women aged 61 in 2010 (not concerned by the reform and which constitute the control group), they found

that the employment rate of women aged 60 in 2010 had increased by 10.1 percentage points by mid-2012, but they also found that the unemployment rate of these women had increased by 1.3 percentage points. Moreover, at the same time, the employment rate of the male partners had risen by 4.2 percentage points, in contradiction with the lump of labour theory.

148. Lalive and Staubli (2014) looked at a similar reform in Switzerland where, starting from 1997, the retirement age for women born between 1939 and 1941 was increased by one year and that for women born after 1942 by two years. The reform introduced also sanctions for the persons leaving employment before the retirement age. Lalive and Staubli took as control group women born in 1938 for which the retirement age remained at 62 and, as treatment group, the women born in 1939 for which the retirement age jumped to 63. This discontinuity allowed Lalive and Staubli to estimate the causal effect of this one year increase in the retirement age. They found that it postponed the exit rate from the labour market by around half a year, but, contrary to Cribb et al. (2014), they did not find any effect on the labour supply of the women's spouse.

Heterogeneous effects across population groups

149. Increasing the retirement age has strong distributional effects. Older workers lose since they need to work longer to qualify for a full retirement pension. This effect can explain why senior workers and trade unions often strongly oppose reforms aiming at increasing the retirement age. On the other hand, these reforms benefit younger workers, whose tax and social-contribution burden diminishes when the retirement age is raised. Therefore, increasing the retirement age gradually for young and prime age workers without changing it much for senior workers is likely to have more neutral effects across generations and thus easier to implement.

Long run

150. The long-run effects of postponing retirement can hardly be analysed with the help of natural experiments, as they materialise after a very long period during which too many factors may modify the economic environment. Theoretically, increases in the retirement age may reduce saving and boost consumption during working life. They also lower pension payments and thus reduce the budget deficit if the spillover effects described above disappear in the long run (i.e. mainly if unemployment of older workers is reduced in the long run).

151. Most of the studies reviewed above focus on the supply side. Less is known about the effects on labour demand of changes in retirement rules, which may be particularly relevant in the long run. One exception is the study by Dorn and Sousa-Poza (2005), which performed a cross-country analysis to study voluntary and involuntary early retirement. They conclude that generous early retirement provisions not only make it more attractive for workers to retire early but also provide an incentive to firms to encourage more workers to retire early. In particular, firms have an incentive to use early retirement programmes to lay off workers during recessions and circumvent employment protection legislation.

152. Simulations of dynamic general equilibrium models provide some insights on the effects of such reforms. The IMF's Global Integrated Monetary and Fiscal model (GIMF) divides the world into five regions and takes into account the economic relations between these regions. Karam et al. (2014) compared three types of reforms with this model: a reduction in pension benefits, an increase in the contribution rate and an increase in the retirement age. They found that the increase in the retirement age has the strongest effects on growth because it is the measure that has the greatest effect on labour supply. Reduction in benefits could increase savings during the working life, while an increase in contribution rates can weaken the supply of labour. They calculate that a two-year increase in the retirement age in 2014 could raise GDP by more than 4% by 2050 and could reduce the public debt to GDP ratio by some 30 percentages points.

These numbers should be interpreted cautiously; one should rather retain from the contribution of Karam et al. that, in the long run, the lengthening of the working life has stronger positive effects on growth and employment than reductions of pension benefits or increases in contribution rates.

Timing

Interactions with other policies

153. Changes in retirement pension schemes can have spillover effects on other income support schemes. In their study of the experiment in Switzerland that increased the retirement age for women born between 1939 and 1941 (see above), Lalive and Staubli (2014) found a modest substitution effect between retirement and other social institutions, such as unemployment benefits or disability programmes.

154. Staubli and Zweimüller (2013) studied two analogous reforms that took place in Austria in 2000 and 2003. These reforms rose the early retirement age gradually from 60 to 65 for men and from 55 to 60 for women. Their identification strategy exploits the progressivity of the process that creates discontinuities between groups of workers according to their age. Estimations were made with data covering the period 1997-2010. Staubli and Zweimüller found that an increase in the early retirement age by one year increases the employment rate during that year by 9.75 percentage points for men and 11 percentage points for women. These numbers encapsulate the short-run impact of the increase of the early retirement age. The long-run impact could not be estimated given that the reform was fairly recent. Staubli and Zweimüller also found that the unemployment rate rose by 12.5 percentage points for men and by 11.8 percentage points for women. Thus, there are large spillover effects of the pension reforms on unemployment insurance programmes. Interestingly, the spillover effects on disability insurance programmes were negligible, which means that less healthy workers did not change their retirement decisions or went into unemployment. Staubli and Zweimüller also explored the fiscal consequences of the pension reforms. An increase in the early retirement age should reduce the budget deficit: such an increase raises the revenue from income and payroll taxes and reduces pension expenditure. But the reduction of the deficit can be offset by the increase in unemployment and disability benefits, due to the spillover effects. Staubli and Zweimüller did not find evidence of this offsetting mechanism: they estimated that a one year increase in the early retirement age reduces the budget deficit by EUR 228.9 million per year which represents roughly 1.1% of social expenditure.

155. These links suggest benefits of coordinating reforms of retirement systems with adjustments of other income support programmes or taxes. For instance, Stiglitz and Yun (2005) propose that unemployed workers should be able to borrow against future pensions. Hairault et al. (2012) show that it can be optimal to introduce a tax on pensions dependent on the length of the unemployment spell of older workers.

Political economy of reforms

156. Running regressions over a sample of 21 OECD countries between 1985 and 2003, and controlling for a variety of political or economic factors, Buti et al. (2010) examined the relationship between economic reforms, and the re-election probability of reforming governments. They found that the impact strongly depends on the type of reforms that were implemented. In accordance with standard predictions from political economics, they show that reforms that could cause important damages on well organised groups of "insiders" – such as reforms modifying the conditions of retirement or employment protection measures – have the largest negative impact on the re-election probability. Hence, there is a risk of a "rigidity trap" whereby reformist governments are not re-elected and are replaced by more accommodating successors that strengthen the power of the insiders.

157. All in all, increasing the retirement age has a positive impact on the participation rate and on the employment rate of older workers that materialises rather quickly, and it does not hurt the employment of younger workers. In general, in the short run, the unemployment rate of older workers increases because their employment rate increases less than their participation rate. This rise in unemployment is detrimental to older workers if their unemployment benefits are lower than their retirement pensions. From this perspective, it is important to coordinate the unemployment insurance of older workers with the retirement pension schemes to ensure that older workers get sufficient income when they are unemployed, but also sufficient incentives to remain employed.

APPENDIX 1. SUMMARY INFORMATION ON THE MAIN STUDIES

Product market reforms

Authors	Characteristics	Results
Effects on prices and quantities		
Brown and Goolsbee (2002)	Sample of individual life insurance in the United States covering the period 1992-97.	The growth of the internet, which reduced the cost of price comparisons, has reduced the prices of term life insurances by 8-15% in the 1990s.
Goolsbee and Syverson (2008)	Sample from the US Department of Transportation's files from the first quarter of 1993 through the final quarter of 2004.	Incumbents cut fares significantly when threatened by the entry of new companies.
Bertrand and Kramarz (2002)	Database on boards approval decisions on the creation of stores in France.	Increase in the approval entry rate from 30% to 50% would imply about a 7% increase in retail employment.
Skuterud (2005)	Variations in deregulation dates between provinces identify how retail employers adjust employment and hours of work when deciding to open on Sundays in Canada in the 1980s.	The opening of shops in the retail trade sector on Sunday increased employment by 3.1% in this sector.
Alesina et al. (2005)	OECD International Regulation Database is used to construct time-series indicators of overall regulation, barriers to entry and public ownership from 1975 to 1996 in 21 OECD countries.	Various measures of regulation in the product market, in particular entry barriers, are negatively related to investment.
Schiantarelli (2010)	Meta-analysis.	Product market regulation that raises barriers to entry contributes to higher mark-ups, has a negative effect on firm entry or turnover and is likely to slow the process of reallocation of resources.
Bouis et al. (2012)	Impact of structural reforms on GDP growth and labour market performance in a dynamic cross-country regression framework.	In the short run, product market reforms may have an uncertain impact on employment.
Alvarez and Hernando (2006)	Surveys on pricing behaviour in nine euro area countries between 1997 and 2002.	Firms operating in more competitive environments carry out price revisions more frequently.
Effects on productivity		
Barone and Cingano (2011)	Cross-country industry database on OECD countries over the period 1996-2002.	Lower service regulation increases value added, productivity and export growth in downstream service intensive industries.
Andrews and Cingano (2014)	Harmonised firm-level data set covering a cross-section of non-farm business industries in 21 OECD countries in the mid-2000s.	There is a robust negative relationship between policy-induced frictions and productivity.

Product market reforms *(cont.)*

Authors	Characteristics	Results
Effects on productivity		
Schmitz (2005)	Various databases on the metal mining industry in the United States in the 1970s and 1980s.	Increase in international competition raised production of tons of iron ore per hour by 50% in two years in the United States in the 1980s.
Knittel (2002)	Data on coal and natural gas generation units in the United States in the 1990s.	The most effective regulatory programmes in electricity increase output by 10% to 15% for a given level of input.
Olley and Packes (1996)	Longitudinal Research database from the Census Bureau over the period 1963-87 in the United States.	Aggregate productivity increased sharply after liberalisation of the regulatory environment in the provision of telecommunication services and in the use of telecommunication equipment from 1974 to 1987.
Disney et al. (2003)	Panel of establishments drawn from the Census of Production in the UK manufacturing industry over the period 1980-92.	External restructuring accounts for 50% of labour productivity growth and 80-90% of TFP growth in the UK manufacturing industry between 1980 and 1990.
Ng and Seabright (2001)	Panel of twelve European and seven major US airlines between 1990 and 1995.	European airline costs between 1990 and 1995 were approximately 25% above the level they could attain if the European companies had been privately owned and had been operating in the same competitive environment as in the United States.
Jean and Nicoletti (2002)	Cross-country data on industry-specific product market regulations in the OECD in the 1990s.	Product market regulation restricting competition has a significant positive impact on wage premia in both manufacturing and non-manufacturing industries.
Innovation		
Aghion et al. (2009)	Comprehensive establishment-level panel data in the United Kingdom from 1987 to 1993.	The threat of technologically advanced entry spurs innovation incentives in sectors close to the technology frontier, where successful innovation allows incumbents to survive the threat, but discourages innovation in laggard sectors, where the threat reduces incumbents' expected rents from innovating.
Schivardi and Viviano (2011)	Data on the Italian retail trade sector in the 1990s and the 2000s.	Liberalising entry is associated with a stronger investment in information and telecommunication technologies while entry barriers are associated with substantially larger profit margins and substantially lower productivity of incumbent firms.

Product market reforms *(cont.)*

Authors	Characteristics	Results
The quality of products		
Matsa (2011)	US Consumer Price Index micro-data from 1988 to 2004.	Stock-outs at supermarkets facing competition from Wal-Mart decrease on average by about 10%.
Bloom et al. (2010)	Data on the health care sector in the United Kingdom in the 2000s.	Adding a rival hospital increases survival rates from emergency heart attacks by 9.7%.
Cooper et al. (2011)	Data on the health care sector in the United Kingdom in the 2000s.	Mortality rates for patients diagnosed with an acute myocardial infarction has fallen approximately by 0.31 percentage points per year faster in places that were one standard deviation higher on their market structure index.
Political economy		
Giuliano et al. (2013)	Database that covers almost 106 countries over the period 1960-2003.	Better democratic institutions are significantly correlated with the adoption of product market reforms in electricity and telecommunication industries.

Collective bargaining and minimum wages

Studies by topic	Characteristics	Results
Average employment effects of the minimum wage		
Neumark et al. (2004)	Regression of changes in wages, hours, employment and income on changes in the minimum wage using US data on individuals in matched monthly CPS outgoing rotation group files over the period 1979-97.	Workers who initially earn near the minimum wage experience wage gains. Nevertheless, their hours and employment decline, and the combined effects of these changes on earned income suggest adverse consequences, on net, for low-wage workers.
Dolado et al. (1996)	This comparative study collects empirical analysis on the minimum wage from several European countries to study the effect of a minimum wage introduction.	The effect of a minimum wage on employment varies according to specific features of the labour market, nevertheless the effect is never found to be large. The minimum wage is not the main reason behind the rise in European unemployment, as it has remained quite stable during the period. The minimum wage in Europe compared with the minimum wage in the United States is higher for adult but lower for young workers.
Brown (1999)	Meta-analysis.	The short-term effect of the minimum wage on employment is close to zero.

Collective bargaining and minimum wages *(cont.)*

Studies by topic	Characteristics	Results
Average employment effects of the minimum wage		
Card and Krueger (1994)	Difference-in-differences estimate of the effect of an 18% rise in the minimum wage in New Jersey in 1992 using Pennsylvania, where the minimum wage didn't change, as a control group. The study relies on employment data collected by telephone surveys.	The increase in the minimum wage in New Jersey had a positive effect on employment (between 11% and 16.8%). This finding is consistent with the theory of monopsony power.
Neumark and Wascher (2000)	The study replicates the analysis by Card and Krueger (1994) using payroll data instead of data collected through telephone interviews.	Contrary to Card and Krueger (1994), the estimated effect of the increase in the minimum wage in New Jersey is negative (-4%).
Dube et al. (2010)	The study exploits policy discontinuities at state borders to identify the effects of minimum wages on earnings and employment in low-wage sectors in the United States between 1990 and 2006. Their study matches treated and control groups belonging to areas with similar employment conditions, accounting for spatial heterogeneity in employment trends.	No adverse employment effects are found. Findings are robust to allowing for long-term effects of minimum wage changes.
Allegretto et al. (2011)	The study estimates the effect of the minimum wage on US employment exploiting CPS data on teens for the period 1990-2009. The estimates allow for state and time fixed effects.	The impact on employment is found to be negative, but when state-specific employment trends are included, it becomes indistinguishable from zero. This suggests that spatial heterogeneity in employment trends may bias the results.
Neumark et al. (2013)	The study replicates the analysis by Dube et al. (2010) and Allegretto et al. (2011) choosing a more reliable synthetic control group instead of questionable control groups based on geographical proximity.	The study points out that existing studies about the minimum wage effect on unemployment rely on questionable choices of control groups.
Card and Krueger (2000)	To reply to the criticism of their previous work by Neumark and Wascher (2000), Card and Krueger replicate their previous work with payroll data, using a larger and more representative dataset than the one of Neumark and Wascher.	The study confirms the original finding of the authors as it finds that the introduction of a minimum wage in New Jersey resulted in an increase in employment relative to Pennsylvania. It explains the opposite finding in Neumark and Wascher (2000) by casting doubt on the representativeness of their sample.
Deere et al. (1995)	The study exploits two consecutive rises in the minimum wage to estimate the effect on employment. After dividing the population into subgroups (by age, race and sex), the study took groups with higher wages, that should not be affected by the minimum wage, as a control group.	They found that the groups with the highest shares of minimum wage earners are those that experienced the largest drops in employment. This suggests that the minimum wage had a negative impact on employment.

Collective bargaining and minimum wages *(cont.)*

Studies by topic	Characteristics	Results
Employment effects of the minimum wage on youngsters		
Shannon (2011)	Between 1986 and 1998, six of the ten Canadian provinces abolished their lower minimum wage rates for 15- and 16-year-old workers. The study used these province-specific changes to establish the relationship between the minimum wage and employment.	The findings are mixed. For some provinces a significant negative effect is found, while for others no employment effect is observed.
Anton and Muñoz de Bustillo (2011)	Their difference-in-differences approach uses the fact that the minimum wage for people aged 16 and 17 years, which was approximately two-thirds the level of the standard minimum wage, was raised to reach full convergence with the latter in a period of three years (from 1995 to 1998).	The relative increase in the youth minimum wage depressed youth employment levels, increased unemployment among the young and decreased the probability of remaining in formal education.
Hyslop and Stillman (2007)	Changes in the structure of the youth minimum wage in New Zealand are used to establish its effects on employment rates and working hours.	No significant effect on employment rates is found, but a significant positive effect on working hours.
Pereira (2003)	The study compares the employment growth of 18- and 19-year-old workers with the employment growth of older workers.	The increase in the minimum wage significantly reduced employment of 18- and 19-year-olds, but, thanks to a substitution effect, it increased employment of 20- to 25-year-olds.
Zavodny (2000)	Using both state- and individual-level panel data in the United States, the study examines the effect of minimum wage increases on teen hours of work and employment.	The study concludes that an increase in the minimum wage reduced the probability that an affected worker remained employed, but for those who kept their jobs there was a positive effect on hours.
Kennan (1995)	Meta-analysis.	The study critically analyses the existing empirical literature on the effect of changes in the minimum wage on employment, in particular the studies of Card and Krueger, and concludes that most of them are fragile and there is no final answer to such empirical questions. Furthermore, it suggests that more sophisticated methods won't help to solve the problem as long as more accurate data are not available.

Collective bargaining and minimum wages *(cont.)*

Studies by topic	Characteristics	Results
Employment effects of the minimum wage on youngsters		
Stewart (2004)	The study estimates the employment effects of the introduction of a minimum wage in 1999 and subsequent up-ratings in the United Kingdom comparing workers with wages close to the minimum wage with those receiving higher wages through a difference-in-differences approach. The analysis is then repeated on different population subgroups.	No significant adverse employment effects are found for neither the introduction nor the rise in the minimum wage for any of the considered demographic groups.
Abowd et al. (1999)	Using longitudinal data on employment status and earnings, the study exploits the fact that during the 1980s the minimum wage advanced in real terms in France, while it receded in the United States.	In France, an increase of 1% in the minimum wage reduces the probability that men receiving the minimum wage keep their previous jobs by 1.3%, while for women this figure is 1%. In the United States, a reduction by 1% in the minimum wage increases the probability that workers paid at this level will keep their jobs by 0.4% for men and by 1.6% for women.
Kramarz and Philippon (2001)	The study replaces the analysis by Abowd et al. (1999) for France, but it takes the cost of labour as the relevant variable.	It is estimated that an increase of 1% in the cost of labour at the minimum wage entails a rise of 3% in the probability of job loss for workers who are being paid the minimum wage.
Portugal and Cardoso (2006)	The study exploited changes made in 1987 to Portuguese legislation regarding the minimum wage of young people aged 19 years and less. The minimum wage was raised by 50% for youths aged 17 and 33% for youths aged 18 and 19.	The study finds that these minimum wage hikes reduced hiring of this category of workers. But they also highlight a "supply effect": after the reform of 1987, young people aged 19 years and less had a greater tendency to keep their jobs. The drop in separations counteracted the fall in hires.

Collective bargaining and minimum wages *(cont.)*

Studies by topic	Characteristics	Results
Effects of collective bargaining coverage		
Card (1992)	Estimate of the union wage gap over the wage distribution in the United States during the period 1973-87.	The union wage gap is higher for lower paid workers. The change in unionisation explains one fifth of the increase in wage inequality among adults during the period.
Card et al. (2004)	The study presents a comparative analysis of the link between unionisation and wage inequality in the United States, the United Kingdom and Canada using comparable micro-data since 1980.	Unions reduce inequality for men but not for women in the United States, the United Kingdom and Canada.
Card and de la Rica (2006)	Exploiting a large matched employer-employee data set from a 1995 survey in Spain, the authors estimate a series of wage determination models, including workers' characteristics, the bargaining status of the workplace and the probability that the workplace was covered by a firm-level contract.	They find that employees covered by firm-specific contracts earn about 10% more than those covered by industry-level contracts. The estimated premium is about the same for men in different skill groups but higher for more highly skilled women.
Martins (2014)	The study analyses the impact of extensions of collective bargaining drawing on firm-level monthly data for Portugal during the period 2007-11. The study also performs several robustness checks, including a falsification exercise based on extensions that were announced but not implemented.	Extensions of collective bargaining beyond unionised firms are found to negatively affect employment and the total wage bill of the firms involved. The effect is sizeable, notably among small firms and tends to increase the size of the informal sector vis-à-vis the formal sector.
Blanchflower and Freeman (1994)	The study compares wages and employment in the unionised sectors with those of non-unionised ones.	The reforms do not appear to have had an impact on unemployment or on the chances of exiting from unemployment.
Maloney (1994)	The study looks at reforms introduced in New Zealand in 1991 that substantially reduced union power.	The strong reduction in the rate of unionisation had a positive impact on employment.
Gnocchi et al. (2015)	Using panel data of 19 OECD countries over 40 years and data on specific labour market reform episodes, the study analyses how bargaining institutional setting affects the relation between wages and productivity.	Reforms of collective bargaining inducing more decentralisation in wage setting appear to increase the correlation of wages with labour productivity over the business cycle.
Effects on labour productivity		
Draca et al. (2011)	Through a difference-in-differences approach, the study exploits the introduction of a minimum wage in 1999 and subsequent up-ratings in the United Kingdom to estimate the effect on firms' profitability, productivity and employment by comparing firms paying wages close to the minimum wage and firms paying higher wages that shouldn't be affected by the minimum wage.	A rise in the minimum wage positively affects average wages and, consequently, negatively affects profits. Nevertheless, no significant effect is found on employment and firms' productivity.

Collective bargaining and minimum wages *(cont.)*

Studies by topic	Characteristics	Results
Distributional issues		
DiNardo et al. (1996)	With data from the CPS, the paper uses a semi-parametric procedure to analyse the evolution of the distribution of men's and women's wages between 1973 and 1992 in the United States.	The fall in the minimum wage in real terms explains one quarter of the rise in the standard deviation of the distribution of men's wages, and 30% of that for women.
Lee (1999)	This study uses regional variation in the relative level of the federal minimum wage to identify the impact of the minimum wage on wage inequality in the United States during the 1980s.	The shrinking minimum wage over this period explains 70% of the increase in the ratio of average fifth-decile wages to average first-decile wages.
Addison and Blackburn (1999)	Their regression analysis studies the effect of the increases in the minimum wage that occurred in the United States in the period 1983-96 on the poverty rate of age subgroups.	The increases in the minimum wage contributed to reducing the poverty rate among youth aged 24 years and less and workers older than 24, but only among school dropouts.
Neumark et al. (2005)	Nonparametric estimates of the effects of minimum wages on the distribution of family income relative to needs in the United States.	Although minimum wages increase the incomes of some poor families, the evidence indicates that their overall net effect is, if anything, to increase the proportions of families with incomes below or near the poverty line.
Sabia and Burkhauser (2010)	Regression analysis and simulations using data between 2003 and 2007 from the March CPS.	The increase in the US minimum wage had no effect on state poverty rates.
Institutional interactions		
Boeri (2012)	Theoretical model comparing minimum wages imposed by central government to those bargained by unions. The model is followed by a regression analysis that exploits a data set on minimum wages in 66 countries that had introduced a minimum wage in the period 1981-2005.	A government-legislated minimum wage is lower than a wage floor set within collective agreements. After controlling for possible sources of endogeneity by restricting the sample to OECD countries only and by separating countries into homogeneous groups in terms of unemployment, the study concludes that such a difference is caused by the institutional framework.

Employment protection legislation

Studies by topic	Characteristics	Results
Effects on layoffs		
Boeri and Jimeno (2005)	Data from the Italian Labour Force Survey in 1993-95. Difference-in-differences analysis exploiting the fact that the most restrictive EPL provisions concern permanent workers in firms with more than 15 employees.	EPL reduces the likelihood of layoffs.
Ichino et al. (2003)	Analysis of the judgements applied to a large Italian bank covering all the territory that issues 2043 notifications for misconduct between 1979 and 1995.	Judges tend to be more protective of workers in bad times, as they feel that under severe labour market slack in a region or during a cyclical downturn workers should be more heavily protected against dismissals than in a buoyant labour market.
Von Below and Thoursie (2010)	Discontinuities in EPL rules at firm size thresholds in Sweden; data on all firms with two to twenty employees from 1985 to 2005.	Separations increased in small firms relative to large firms by 5% when job protection was relaxed in small firms.
Effects on hiring		
Behagel et al. (2008)	Study of the relaxation of the Delalande tax in France in 1992. Before this date, French firms laying off workers aged 50 and above had to pay this tax to the unemployment insurance system. After July 1992, firms were exempted from the tax for workers who were hired after age 50. A difference-in-differences approach analyses how the 1992 policy change affected the age-specific outflow from unemployment to employment. Data: Labour force survey.	In the short run, reducing EPL has a small effect on the hiring side, notably on experienced workers.
Boeri and Garibaldi (2006)	Predictions of a dynamic model of labour demand under uncertainty illustrated by a variety of firm-level data for Italy in the period 1995-2000.	Reforms increasing flexibility at the margin by liberalising labour contracts only for new hires tend to have initially a positive "honeymoon effect" on employment, as firms still face very high costs of dismissals for the stock of employees with open-ended contracts while they can almost fire at will new hires. But the transient "honeymoon effect" fades away as the stock of permanent workers is gradually replaced with flexible contracts.

Employment protection legislation *(cont.)*

Studies by topic	Characteristics	Results
Employment effects		
Boeri and Garibaldi (2006)	Theoretical model.	Reforms increasing flexibility at the margin by liberalising labour contracts only for new hires tend to have initially a positive effect on employment but fade away as the stock of permanent workers is gradually replaced with flexible contracts.
Besley and Burgess (2004)	Reform of EPL in India. Various databases on employment and firms in India over the period 1958-92.	Labour regulations have important adverse effects on output and employment, particularly in the registered manufacturing sector.
Nickell et al. (2005)	Cross-country panel data, OECD, 1960-2000.	More stringent employment protection legislations increase unemployment.
Autor et al. (2006)	Study of the wrongful discharge protections adopted by US state courts during the 1980s and 1990s. The data come from the CPS monthly files concerning approximately 100 000 adults over that period. Difference-in-differences approach using the fact that state courts adopted the common-law wrongful discharge doctrines in different months and years.	Wrongful discharge protections reduced state employment rates by 0.8-1.7%. While the initial impact of protection was found to be largest for female and less-educated workers, the longer-run effect was found to be greater for older and more-educated workers. This may suggest that the benefits from the relaxation of EPL on hiring of skilled and experienced workers unfold as employers gradually adjust the input mix and the organisation of production.
Kugler et al. (2005)	Study of the Spanish reforms of 1997, which reduced the payroll taxes and the dismissal costs of permanent jobs for workers under 30 years old, and for those over 45 years old, but not for those of ages 30-44. This enables to set up a natural experiment design. The data come from the Spanish Labour Force Survey.	The reduction of payroll taxes and dismissal costs increased the employment of young and older men on permanent contracts. There is also evidence of large positive effects on the transitions from unemployment and temporary employment into permanent employment.
Gnocchi et al. (2014)	Correlation exercises using panel data of 19 OECD countries observed over 40 years and data on specific labour market reform episodes.	Reforms reducing EPL involve an increase in the volatility of employment and a decrease in the correlation of the real wage with labour productivity.

Employment protection legislation *(cont.)*

Studies by topic	Characteristics	Results
Effects on productivity		
Bartelsman et al. (2014)	Calibrated matching model on US data followed by reduced-form regressions of employment and productivity on exit costs and riskiness using data from OECD countries and various industries since the 1970s.	Stringent employment protection legislation discourages firms from experimenting with new technologies that may exhibit higher mean returns but also higher variance.
Ichino and Riphahn (2005)	Natural experiment based on weekly observations for the 858 white collar workers hired by a large Italian bank between January 1993 and February 1995. These workers begin to be protected against firing only after the twelfth week of tenure and the study observes them for one year.	The hike in job security at the end of the probation period induces a significant increase in absenteeism for white-collar workers suggesting that job protection can lower the effort of workers because there is less threat of a layoff.
Bassanini et al. (2009)	Annual cross-country aggregate data from OECD countries on the degree of regulation and industry-level data on productivity. Difference-in-differences framework based on the identifying assumption that stricter employment protection influences worker or firm behaviour, and thereby productivity, more in industries where the policy is likely to be binding than in other industries.	Mandatory dismissal regulations have a depressing impact on productivity growth in industries where layoff restrictions are more likely to be binding.
Martins (2009)	Quasi-natural experiment generated by a law introduced in Portugal in 1989 in which some clauses for dismissals for cause did not apply to firms employing 20 or fewer workers. The study uses detailed matched employer-employee longitudinal data and difference-in-differences matching methods.	Firing costs resulting from strengthening the legislation on dismissal for cause hurt firm performance, decrease workers' effort and increase their bargaining power.
Effects on labour market segmentation		
Kahn (2007)	Regression analyses based on 1994-98 International Adult Literacy Survey micro-data covering Canada, Finland, Italy, the Netherlands, Switzerland, the United Kingdom and the United States.	More stringent employment protection for permanent jobs (as measured by the OECD) increases the relative incidence of temporary employment for less experienced and less skilled workers, and for young workers, native women, immigrant women and those with low cognitive ability.
Clark and Postel-Vinay (2009)	The study constructs indicators of the perception of job security for various types of jobs in 12 European countries using individual data from the European Community Household Panel. Then it analyses in a regression framework the relation between these indicators and employment protection strictness and unemployment insurance benefit generosity.	Workers feel most secure in permanent public-sector jobs, least secure in temporary jobs, with permanent private-sector jobs occupying an intermediate position. Perceived job security in both permanent and temporary jobs is positively correlated with unemployment insurance generosity, and negatively correlated with employment regulation strictness: workers feel less secure in countries where jobs are more protected.

Housing

Studies by topic	Characteristics	Results
Home ownership rate		
Blanchflower and Oswald (2013b)	Annual data from all US states covering the period 1985-2011.	In the long term, doubling the home ownership rate can lead to more than a doubling of the unemployment rate.
Laamanen (2013)	Natural experiment with the deregulation of the rental housing market in Finland in the 1990s (7 counties of northern and central Finland serve as the treated group).	Home ownership has a significant positive and immediate short-term effect on unemployment.

Unemployment insurance

Studies by topic	Characteristics	Results
Generosity		
Tatsiramos and van Ours (2014)	Meta-analysis.	In the short run, the elasticity of the duration of unemployment with respect to the replacement ratio varies between 0.4 and 1.6. An increase of a week in the potential duration of benefit payments leads to an increase in the duration of unemployment ranging between 0.1 and 0.4 of a week.
Card et al. (2007)	This study analyses the effect of benefit expiration on labour market transitions using data from the Austrian social security registry between 1981 and 2001. The sample is composed of job losers who are eligible either for 20 or 30 weeks of benefits, depending on whether they worked a little more or a little less than 36 months in the past five years (regression-discontinuity analysis).	The rate of exit from unemployment is multiplied by 2.4 around the maximum duration of benefit, compared to the rate observed at the onset of an unemployment spell. The rate of return to employment, in contrast, is multiplied by only 1.15.
Kroft and Notowidigdo (2014)	Data set on the unemployment rates in different states of the United States between 1985 and 2000.	The elasticity of unemployment duration with respect to the level of unemployment benefit is weaker when the local unemployment rate is high. The effect is of considerable magnitude: an increase of 1.3 percentage points of the local unemployment rate (from a base of 6.2%) entails a decline in the magnitude of this elasticity of 46%. Hence, the optimal unemployment benefit should be countercyclical: it should increase when the unemployment rate increases.

Unemployment insurance *(cont.)*

Studies by topic	Characteristics	Results
Generosity		
Landais (2014)	Administrative data from the Continuous Wage and Benefit History Project (CWBH) about unemployment spells in five US states from the late 1970s to 1984.	The labour supply response to unemployment benefits is (weakly) pro-cyclical: the estimated elasticity of unemployment duration with respect to the unemployment benefit varies between 0.38 when the state unemployment rate is at 4.5% (the minimum in the CWBH data) and 0.25 when the unemployment rate is at 11.8% (the maximum in the CWBH data). These results reinforce the view that the optimal unemployment benefit ought to be counter-cyclical.
Job search assistance		
Dolton and O'Neill (1996)	Experimental design analysing the "Restart" placement programme in the United Kingdom in 1989 that improved the job search strategy of the long-term unemployed with more interviews with a counsellor.	The exit rate from unemployment of the control group is from 20% to 30% lower than that of the treatment group during the six months subsequent to the missed interview. After one year, the beneficiaries had an average employment rate 4% higher than that of the non-beneficiaries.
Dolton and O'Neill (2002)	Same experimental design as Dolton and O'Neill (1996).	Five years after the programme began, the unemployment rate for men in the treated group was 6 percentage points lower than it was for men in the control group. In contrast, there is no significant long-term improvement for women.
Black et al. (2003)	Natural experiment study of the effects of mandatory participation in a program of job search help which the state of Kentucky set up in 1993. Participation is in principle compulsory for all unemployed persons, but because of the limited capacities of the employment agencies only a portion of the unemployed are actually enrolled.	On average the treatment group receives unemployment benefits for a period shorter than the control group does. The rate at which the treatment group returns to work rises sharply during the interval between notification of (compulsory) participation in the programme and the date at which it actually begins.
Van den Berg and van der Klaauw (2006)	Randomised experiment that tests the Dutch unemployment insurance system at the end of the 1990s.	Disadvantaged individuals seem to benefit more than well qualified ones from job search assistance.
Martins and Pessoa e Costa (2014)	Regression discontinuity design that estimates the impact of a programme of augmented job search assistance (called *Convotorias*) implemented in Portugal in 2012 (a downturn period).	The probability of being reemployed during the next month doubled for the beneficiaries of the program. Moreover, there is no substitution between the beneficiaries of the programme and the other unemployed.

Unemployment insurance *(cont.)*

Studies by topic	Characteristics	Results
Threats and sanctions		
Van den Berg et al. (2004)	Duration model that estimates the impact of the sanctions for not complying with job search requirements in the city of Rotterdam in the 1990s.	A reduction of 20% in the benefit paid to job seekers over a two week period, imposed as a sanction for not adhering to job search rules, doubles the exit rates from unemployment of the individuals thus sanctioned. The earlier the sanctions kick in over the course of the welfare spell, the lower the probability of becoming long-term dependent.
Lalive et al. (2005)	Swiss data covering persons who entered unemployment between September 1997 and March 1998. Job seekers are observed up until May 1999.	The threat of being sanctioned – the ex-ante effect – and the effective sanction – the ex-post effect – exert similar pressure on search efforts. Both contribute to reducing the duration of unemployment.
Interactions with other policies		
Inderbitzin et al. (2013)	Natural experiment of the "regional extended benefits program" implemented in Austria between June 1988 and July 1993 that guaranteed four years of unemployment insurance benefits to workers aged 50 and over and living in well-defined regions (instead of one year under the normal legislation in place since the late 1980s).	This programme increased the probability that an unemployed aged 50-54 definitely leaves the labour market to (early) retirement by 17 percentage points (10.8 percentage points for workers aged 55-57). There has also been an increase of 12.6 percentage points in the take-up rate of disability insurance benefits for the unemployed aged 50-54 and a reduction of 12.7 percentage points of this take-up rate for the unemployed aged 55-57. These results show that according to the age of the unemployed and the existing possibilities to exit from the labour market, there can be substitution or complementarity between unemployment benefits, disability insurance benefits and retirement benefits.

Retirement

Studies by topic	Characteristics	Results
Decreasing the retirement age		
Börsch-Supan and Schnabel (2010)	A regression discontinuity design is used to study the reform enacted in Germany in 1972 and that consisted in introducing "flexible" retirement. In practice, it reduced the normal retirement age by about two years (from 65 to 63 for men).	The reform was followed by an immediate and dramatic decline in the participation rate of the labour force aged 65 to 63, and during the following four years, the employment rate of individuals aged 55 to 64 decreased by 7 percentage points. All these movements were followed by a decrease in the employment of younger workers.

Retirement *(cont.)*

Studies by topic	Characteristics	Results
Decreasing the retirement age		
Gruber et al. (2010)	Regression analysis, panel data, cross-country (12 countries) over the period1980-2003.	In the short run and in the long run, there is no statistical evidence that the increase in the employment of older individuals has a negative impact on the employment of younger individuals. The estimates rather suggest an inverse relationship where the growth of youth employment happens in parallel with the growth of older workers' employment.
Increasing the retirement age		
Cribb et al. (2014)	Difference-in-differences methodology to analyse a reform that took place in the United Kingdom in 1995 and where the state pension age for women rose from 60 to 61 between 2010 and 2012.	Comparing evolutions for women affected by the reforms with those of women aged 61 in 2010 (not concerned by the reform), it appears that the employment rate of women aged 60 in 2010 had increased by 10.1 percentage points by mid-2012 and their unemployment rate had increased by 1.3 percentage points.
Karam et al. (2014)	Simulations of various reforms using the IMF's Global Integrated Monetary and Fiscal model (GIMF) which is a dynamic general equilibrium model taking into account international interactions.	An increase in the retirement age has a stronger impact on growth than a reduction in benefits paid to the pensioners or an increase in the contribution rates because it is the measure that has the greatest effects on labour supply.
Interactions with other policies		
Staubli and Zweimüller (2013)	Study of two reforms that took place in Austria in 2000 and 2003. They raised the early retirement age gradually from 60 to 65 for men and from 55 to 60 for women. The identification strategy exploits the progressivity of the process that creates discontinuities between groups of workers according to their age. Estimations used data covering the period 1997-2010.	An increase in the early retirement age by one year increases employment during that year by 9.75 percentage points among men and 11 percentage points among women. But the unemployment rate rose by 12.5 percentage points among men and by 11.8 points among women. Thus, there are large spillover effects of the pension reforms on unemployment insurance programmes.
Political economy of reforms		
Buti et al. (2010)	Regressions from a sample of 21 OECD countries between 1985 and 2003.	Reforms that could cause important damages on well organised groups of "insiders" – such as reforms modifying the conditions of retirement or employment protection measures – have the largest negative impact on a government's re-election probability.

BIBLIOGRAPHY

Abowd, J., Kramarz, F., Lemieux, T. and Margolis, D. (1999), "Minimum wage and youth employment, in France and the United States", In Blanchflower, D. and Freeman, R. (eds) *Youth employment and the labour market*, Chicago: University of Chicago Press.

Acemoglu, D. (2001), "Good jobs versus bad jobs", *Journal of Labour Economics*, 19(1), pp. 1–21.

Addison, J. and Grosso, J.-L. (1996), "Job security provisions and employment: Revised estimates", *Industrial Relations*, 35(4), pp. 585–603.

Addison, J. and Blackburn, M. (1999), "Minimum wages and poverty", *Industrial and Labour Relations Review*, 52 (3), pp. 393–409.

Aghion, P., Blundell, R., Griffith, R., Howitt, P. and Prantl, S. (2009), "The Effects of Entry on Incumbent Innovation and Productivity", *The Review of Economics and Statistics,* 91(1), pp. 20-32.

Ahsan, A. and Pagés, C. (2009), "Are all labour regulations equal? Evidence from Indian manufacturing", *Journal of Comparative Economics*, 37, pp. 62–75.

Alesina, A., Ardagna, S., Nicoletti, G. and Schiantarelli, F. (2005), "Regulation and Investment," *Journal of the European Economic Association*, 3, pp. 791-825.

Allegretto, S., Dube, A. and Reich, M. (2011), "Do minimum wages really reduce teen employment? Accounting for heterogeneity and selectivity in state panel data", *Industrial Relations*, 50(2), pp. 205–240.

Almeida, R. and Carneiro, P. (2009), "Enforcement of regulation, informal employment, firm size and firm performance", *Journal of Comparative Economics*, 37(1), pp. 28–46.

Álvarez, L. and Hernando, I. (2006), "Competition and price adjustment in the Euro Area", Banco de España Documentos de Trabajo n° 0629.

Andersen, T. (2014), "Tuning unemployment insurance to the business cycle", *IZA World of Labour 2014*: 54.

Andrews, D. and Caldera-Sanchez, A. (2011), "Residential Mobility and Public Policy in OECD Countries", *OECD Journal: Economic Studies*, 7(1), pp. 185-206.

Andrews, D. and Cingano, F. (2014), "Public policy and resource allocation: evidence from firms in OECD countries," *Economic Policy*, 29(78), pp.253-296.

Anton, J. and Muñoz de Bustillo, R. (2011), "The impact of the minimum wage on Spanish youth: Evidence from a natural experiment", Technical report, Munich Personal RePEc Archive Paper 33488.

Arnold, J., Nicoletti, G. and Scarpetta, S. (2011), "Regulation, resource reallocation and productivity growth", *Nordic Economic Policy Review*, 2, pp. 61-94.

Autor, D., Donohue, J. and Schwab, S. (2006), "The costs of wrongful discharge laws", *Review of Economics and Statistics*, 88(2), pp. 211–231.

Autor, D., Kerr, W. and Kugler, A. (2007), "Do employment protections reduce productivity? Evidence from US states", *Economic Journal*, 117, F189–F217.

Barone, G. and Cingano, F. (2011), "Service Regulation and Growth: Evidence from OECD Countries," *Economic Journal*, 121(555), pp. 931-957.

Bartelsman, E., Gautier, P. and de Wind, J. (2014), "Employment protection, technology choice and worker allocation", VU University Amsterdam working paper.

Bartelsman, E., Haltiwanger, J. and Scarpetta, S. (2013), "Cross-country differences in productivity: The role of allocation and selection", *American Economic Review,* 103(1), pp. 305–334.

Bassanini, A., Nunziata L. and Venn, D. (2009), "Job protection legislation and productivity growth in OECD countries", *Economic Policy*, 24, pp. 349–402.

Behagel, L., Crépon, B. and Sédillot, B. (2008), "The Perverse Effects of Partial Employment Protection Reform: The Case of French Older Workers", *Journal of Public Economics*, 92(3-4), pp. 696-721.

Belot, M. and van Ours, J. (2001), "Unemployment and labour market institutions: An empirical analysis", *Journal of the Japanese and International Economies*, 15, pp. 403–418.

Belot, M. and van Ours, J. (2004), "Does the recent success of some OECD countries in lowering their unemployment rates lie in the clever design of their labour market reforms?", *Oxford Economic Papers*, 56, pp. 621–642.

Belot, M., Boone, J. and van Ours, J. (2007), "Welfare effects of employment protection", *Economica*, 74, pp. 381–396.

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

Bentolila, S. and Dolado, J. (1994), "Labour flexibility and wages: Lessons from Spain", *Economic Policy*, 18, pp. 55–99.

Bertola, G. (1990), "Job security, employment, and wages", *European Economic Review*, 34(4), pp. 851–79.

Bertola, G. and Boeri, T. (2002), "EMU Labour Markets Two Years On: Microeconomics Tensions and Institutional Evolution", in Buti, M. and Sapir, A. (eds.), *EMU and Economic Policy in Europe*, Edward Elgar.

Bertola, G. and Rogerson, R. (1997), "Institutions and labour reallocation", *European Economic Review*, 41, pp. 1147–1171.

Bertola, G., Jimeno, J., Marimon, R. and Pissarides, C. (1999), "EU welfare systems and labour markets: Diverse in the past, integrated in the future?", in Bertola, G., Boeri, T. and Nicoletti, G. (eds), *Welfare and employment in Europe*, Cambridge, MA: MIT Press.

Bertrand, M. and Kramarz, F. (2002), "Does entry regulation hinder job creation? Evidence from the French retail industry", *Quarterly Journal of Economics,* 117(4), pp. 1369-1413.

Besley, T. and Burgess, R. (2004), "Can labour regulation hinder economic performance? Evidence from India", *Quarterly Journal of Economics*, 119, pp. 91–134.

Bingley, P., Datta Gupta, N. and Pedersen, P. (2010), "Social Security, Retirement and Employment of the Young in Denmark", in Jonathan Gruber and David A. Wise (eds), *Social Security Programs and Retirement around the World: The Relationship to Youth Employment*, pp. 99-117; University of Chicago Press.

Björklund, A. and Regnér, H. (1996), "Experimental evaluation of European labour market policy", in Schmid, G., O'Reilly, J. and Schömann, K. (eds), *International Handbook of Labour Market and Evaluation*, Edward Elgar, Adelshot, UK, pp. 89-114.

Black, D., Smith, J., Berger, M. and Noel, B. (2003), "Is the threat of reemployment services more effective than the services themselves? Evidence from random assignment in the UI system", *American Economic Review*, 93, pp. 1313-1327.

Blanchard, O. and Landier, A. (2002), "The perverse effects of partial labour market reform: Fixed-term contracts in France", *Economic Journal*, 112, F214–F244.

Blanchard, O. and Giavazzi, F. (2003), "Macroeconomic effects of regulation and deregulation in goods and labour markets", *Quarterly Journal of Economics*, 118, pp. 879-907.

Blanchflower, D. and Freeman, R. (1994), "Did the Thatcher reforms change British labour performance?", in Barel, R. (ed), *The UK labour market: Comparative aspects and institutional developments*, Cambridge, U.K.: Cambridge University Press, pp. 51–72.

Blanchflower, D. and Oswald, A. (2013a), "The Danger of High Home Ownership: Greater Unemployment", *The CAGE-Chatham House Series*, 10, October 2013.

Blanchflower, D. and Oswald, A. (2013b), "Does High Home-Ownership Impair the Labour Market?", NBER Working Paper n° 19079.

Bloom, N., Proper, C., Seiler, S. and Van Reenen, J. (2010), "The impact of competition on management practices in public hospital", CEP Discussion Paper No 983 (Revised November 2014), forthcoming, *Review of Economic Studies*.

Bloom, N., Draca, M. and Van Reenen, J. (2011), "Trade Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity", NBER Working Paper 16717.

Boeri, T. (1999), "Enforcement of employment security regulations, on-the-job search and unemployment duration", *European Economic Review*, 43, pp. 65–89.

Boeri, T. (2012), "Setting the minimum wage", *Labour Economics*, 19, pp. 281–290.

Boeri, T. and Bruecker, H. (2011), “Short-time work benefits revisited: Some lessons from the Great Recession”, *Economic Policy*, 26(68), pp. 697-765.

Boeri, T., Castanheira, M., Faini, R. and Galasso, V. (2006) (eds.), *Structural reforms without prejudices*, Oxford University Press.

Boeri, T. and Garibaldi, P. (2006), “Two tier reforms of employment protection: A honeymoon effect?”, *Economic Journal*, 17, pp. 357–385.

Boeri, T. and Jimeno, J. (2005), “The effects of employment protection: Learning from variable enforcement”, *European Economic Review*, 49, pp. 2057–2077.

Boeri, T. (2010*)* “Institutional Reforms and Dualism in European Labour Markets”, in Ashenfelter, O. and Card, D. (eds.), *Handbook of Labour Economics*, 2010, Elsevier, pp. 1173-1236.

Boeri, T., Garibaldi, P. and Moen, E. (2014), “Severance Pay”, CEPR DP n° 10182.

Boone, J., Sadrieh, A. and van Ours, J. (2009), "Experiments on unemployment benefit sanctions and job search behaviour," *European Economic Review*, 53(8), pp 937-951.

Booth, A., Francesconi, M. and Frank, J. (2002), “Temporary jobs: Stepping stones or dead ends”, *Economic Journal*, 112(480), F189–F213.

Borenstein, S. (1989), “Hubs and high fares: dominance and market power in the U.S. airline industry”, *RAND Journal of Economics,* 20(3), pp. 344-365.

Börsch-Supan, A. and Schnabel, R. (2010), « Early Retirement and Employment of the Young in Germany”, in Jonathan Gruber and David A. Wise (eds), *Social Security Programs and Retirement around the World: The Relationship to Youth Employment*, pp. 147-166; University of Chicago Press.

Bouis, R., Causa, O., Demmou, L., Duval, R. and Zdzienicka, A. (2012), "The Short-Term Effects of Structural Reforms: An Empirical Analysis", *OECD Economics Department Working Papers*, No. 949, OECD Publishing, Paris.

Bourlès, R., Cette, G., Lopez, J., Mairesse, J. and Nicoletti, G. (2013), "Do Product Market Regulations In Upstream Sectors Curb Productivity Growth? Panel Data Evidence for OECD Countries," *The Review of Economics and Statistics*, 95(5), pp.1750-1768.

Boylaud, O. and Nicoletti, G. (2001), “Regulation, market structure and performance in telecommunications”, *OECD Economic Studies*, n°. 32, pp. 99-142.

Brown, C. (1999), “Minimum wages, employment, and the distribution of income”, in Ashenfelter, O. and Card, D. (eds), *Handbook of labour economics*, Amsterdam: Elsevier.

Brown, J. and Goolsbee, A. (2002), “Does the Internet make markets more competitive? Evidence from the life Insurance industry”, *Journal of Political Economy*, 110(3), pp. 481-507.

Burda, M. and Weil, P. (2005), “Blue Laws”, Working Paper, European Center for Advanced Research in Economics and Statistics (ECARES), Université Libre de Bruxelles.

Buti, M., Turrini, A., Van den Noord, P. and Biroli, P. (2010), "Reforms and re-elections in OECD countries", *Economic Policy,* 25(61), pp. 61-116.

Cacciatore, M., Duval, R. and Fiori, G. (2012), "Short-term gain or pain? A DSGE model-based analysis of the short-term effects of structural reforms in labour product markets", OECD WP, ECO/WKP/25. Paris: OECD.

Cahuc, P. and Carcillo, S. (2006), "The shortcomings of a partial release of employment protection laws: The case of the 2005 French reform", IMF Working Paper No. 06/301.

Cahuc, P. and Carcillo, S. (2011), "Is Short-Time Work a Good Method to Keep Unemployment Down?", *Nordic Economic Policy Review*, 1(1), pp. 133-165.

Cahuc, P., Charlot, O. and Malherbet, F. (2015) "Explaining the Spread of Temporary Jobs and its Impact on Labor Turnover", forthcoming, *International Economic Review.*

Cahuc, P. and Laroque, G. (2014), "Optimal taxation and monopsonistic labour market: Does monopsony justify the minimum wage?", *Journal of Public Economic Theory*, 16(2), pp. 259-273.

Cahuc, P. and Michel, P. (1996), "Minimum wage, unemployment and growth", *European Economic Review*, 40, pp. 1463–1482.

Cahuc, P. and Postel-Vinay, F. (2002), "Temporary jobs, employment protection and labour market performance", *Labour Economics*, 9, pp. 63–91.

Cahuc, P., Carcillo, S. and Zylberberg, A. (2014), *Labor Economics*, 2nd edition, MIT Press.

Cahuc, P., Saint-Martin, A. and Zylberberg, A. (2001), "The consequences of the minimum wage when other wages are bargained over", *European Economic Review*, 45, pp. 337–352.

Card, D. (1992), "The effects of unions on the distribution of wages: Redistribution or relabeling", NBER Working Paper 4195, Cambridge, MA: National Bureau of Economic Research.

Card, D. (1995), "Using geographic variation in college proximity to estimate the return to schooling", in Christofides, L., Grant, E. and Swidinsky, R. (eds), *Aspects of labour market behaviour: Essays in honour of John Vanderkamp*, Toronto: University of Toronto Press.

Card, D. and De la Rica, S. (2006), "Firm-level Contracting and the Structure of Wages", *Industrial and Labour Relations Review*, 59(4), pp. 573-593.

Card, D. and Krueger, A. (1994), "Minimum wage and employment: A case study of the fast food industry in New Jersey and Pennsylvania", *American Economic Review*, 84, pp. 772–793.

Card, D. and Krueger, A. (1995), *Myth and measurement: The new economics of the minimum wage,* Princeton, NJ: Princeton University Press.

Card, D. and Krueger, A. (2000), "Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania: Reply", *American Economic Review*, 90, pp. 1397–1420.

Card, D., Chetty, R. and Weber, A. (2007), "The Spike at Benefit Exhaustion: Leaving the Unemployment System or Starting a New Job?", *American Economic Review*, 97, pp. 113-118.

Card D., Kluve, J. and Weber, A. (2010), "Active Labour Market Policies: A Meta-Analysis", *Economic Journal*, 120, F452–F477.

Card, D., Lemieux, T. and Craig Riddell, W. (2004), "Unions and Wage Inequality", *Journal of Labour Research*, 25(4), pp.519-559.

Cingano, F., Leonardi, M., Messina, J. and Pica, G. (2013), "Employment protection legislation, capital investment and access to credit: Evidence from Italy", mimeo.

Clark, A. and Postel-Vinay, F. (2009), "Job security and job protection", *Oxford Economic Papers*, 61, pp. 207–239.

Cooper, Z., Gibbons, Jones, S. and McGuire, A. (2011), "Does Hospital Competition Save Lives? Evidence from the English Patient Choice Reforms", *Economic Journal*, 121(554), F228-F260.

Coulson, N. and Fisher, L. (2009). "Housing Tenure and Labour Market Impacts: The Search Goes on", *Journal of Urban Economics*, 65, pp. 252-264.

Crépon, B., Dejemeppe, M. and Gurgand, M. (2005), "Counseling the Unemployed: Does It Lower Unemployment Duration and Recurrence?", IZA DP n° 1796.

Cribb, J., Emmerson, C. and Tetlow, G. (2014), "Incentives, shocks or signals: labour supply effects of increasing the female state pension age in the UK", IFS Working Paper W13/03.

Davis, S., Haltiwanger, J., Jarmin, R. and Miranda, J. (2006), "Volatility and dispersion in business growth rates: Publicly traded versus privately held firms", in Acemoglu, D., Rogoff, K. and Woodford, M. (eds), *NBER Macroeconomics Annual 2006*, 21, pp. 107–180.

Deere, D., Murphy, K. and Finis, W. (1995), "Employment and the 19901-1991 minimum-wage hike", *American Economic Review*, 85(2), pp. 232-237.

DeFreitas, G. and Marshall, A. (1998), "Labour surplus, worker rights and productivity growth: A comparative analysis of Asia and Latin America", *Labour*, 12(3), pp. 515–539.

DiNardo, J., Fortin, N. and Lemieux, T. (1996), "Labour market institutions and the distribution of wages, 1973–1992: A semi-parametric approach", *Econometrica*, 64, pp. 1001–1044.

Disney, R., Haskel, J. and Heden, Y. (2003), "Restructuring and Productivity Growth in UK Manufacturing." *Economic Journal*, 113(489), pp. 666–694.

Di Tella, R. and MacCulloch, R. (2005), "The consequences of labour market flexibility: Panel evidence based on survey data", *European Economic Review*, 49, pp. 1225–1259.

Dolado, J., Kramarz, F., Machin, S., Manning, A., Margolis, D. and Teulings, C. (1996), "The economic impact of minimum wages in Europe", *Economic Policy*, 23, pp. 317–372.

Dolton, P. and O'Neill, D. (1996), "Unemployment Duration and the Restart Effect: Some Experimental Evidence", *Economic Journal*, vol 106, pp. 387-400.

Dolton, P. and O'Neill, D. (2002), "The Long-Run Effects of Unemployment Monitoring and Work-Search Programs: Experimental Evidence from the United Kingdom", *Journal of Labour Economics*, 20, pp. 381-403.

Dormont, B., Fougère, D. and Prieto, A. (2001), "The Effect of the Time Profile of Unemployment Insurance Benefits on Exit from Unemployment", CREST working Paper, Paris.

Dorn, D. and A. Sousa-Poza (2005). Early retirement: Free choice or forced decision? Working Paper 1542, CESifo, Munich.

Doucouliagos, H. and Stanley, T. (2009), "Publication selection bias in minimum-wage research? A meta-regression analysis", *British Journal of Industrial Relations*, 47, pp. 406–428.

Draca, M., Machin, S. and van Reenen, J. (2011), "Minimum wages and firm profitability", *American Economic Journal: Applied Economics*, 3, pp. 129–151.

Drazen, A. (1986), "Optimal minimum wage legislation", *Economic Journal*, 96, pp. 774–784.

Dube, A., Lester, S. and Reich, M. (2010), "Minimum wage effects across state borders: Estimates using contiguous counties", *Review of Economics and Statistics*, 92(4), pp. 945–964.

Duval, R. (2003), "The retirement effects of old-age pension and early retirement schemes in OECD countries", Working Paper 370, OECD Economics Department, Paris.

Duval, R., Elmeskov, J. and Vogel, L. (2007), "Structural policies and economic resilience to shocks", OECD Economics Department Working Papers n° 567.

Emerson, M. (1998), "Regulation or de-regulation of the labour market: Policy regimes for the recruitment and dismissal of employees in industralised countries", *European Economic Review*, 32, pp. 775–817.

Fabrizio, K., Rose, N. and Wolfram, C. (2007), "Do Markets Reduce Costs? Assessing the Impact of Regulatory Restructuring on US Electric Generation Efficiency", *American Economic Review*, 97(4), pp. 1250–1277.

Falch, T. (2010), "The Elasticity of Labour Supply at the Establishment Level", *Journal of Labour Economics*, 28(2), pp. 237-266.

Flinn, C. (2002), "Interpreting Minimum Wage Effects on Wage Distributions : A Cautionary Tale", *Annales d'Economie et de Statistique*, 67-68, pp. 309-355.

Fougère, D., Pradel, J. and Roger, M. (1999), "The Influence of the State Employment Service on the Search Effort and on the Probability of Leaving Unemployment", Working Paper 9904, CREST-INSEE.

Garibaldi, P., Borgarello, A. and Pacelli, L. (2003), "Employment protection legislation and the size of firms: A close look at the Italian case", *Giornale degli Economisti e Annali di Economia*, 63(1), pp.33–68.

Garibaldi, P., Konings, J. and Pissarides, C. (1997), "Gross job reallocation and labour market policy", in Snower, D. and de la Dehesa, G. (eds), *Unemployment policy: Government options for the labour market*, Cambridge: Cambridge University Press.

Giuliano, P., Mishra, P. and Spilimbergo, A. (2013), "Democracy and Reforms: Evidence from a New Dataset", *American Economic Journal: Macroeconomics*, 5(4), pp. 179–204.

Gnocchi, S., Lagerborg, A. and Pappa, E. (2015), “Do labour market institutions matter for business cycles?”, *Journal of Economic Dynamics and Control*, 51, pp. 299–317.

Gönenç, R. and Nicoletti, G. (2001), “Regulation, market structure and performance in air passenger transportation”, *OECD Economic Studies*, n° 32, pp. 183-227.

Goolsbee, A. and Syverson, C. (2008), “How do incumbents respond to the threat of entry? Evidence from the major airlines”, *Quarterly Journal of Economics,* 123(4), pp. 1611- 1633.

Geerdsen, L. (2006), "Is there a Threat Effect of Labour Market Programmes? A Study of ALMP in the Danish UI System", *Economic Journal*, 116, pp. 738–750.

Graversen, B. and van Ours, J. (2008), “How to help unemployed find jobs quickly: Experimental evidence from a mandatory activation program”, *Journal of Public Economic*, 92, pp. 2020-2035.

Gregg, P. and Manning, A. (1997), “Skill-biased change, unemployment and inequality”, *European Economic Review*, 41, pp. 1173-1200.

Griffith, R., Harrison, R. and Macartney, G. (2007), “Product market reforms, labour market institutions and unemployment”, *Economic Journal*, 117(519), pp. 142–166.

Gruber, J., Milligan, K. and Wise, D. (2010), “Introduction and summary”, in Gruber, J. and Wise, D. (eds), *Social Security Programs and Retirement around the World: The Relationship to Youth Employment*, pp. 1-45; University of Chicago Press.

Grubb, D. and Wells, W. (1997), “Employment regulations and patterns of work in EC countries”, *OECD Economic Studies*, 21, pp. 7–58.

Hairault, J.-O., Langot, F., Ménard, S. and Sopraseuth, T. (2012), “Optimal Unemployment Insurance for Older Workers”, *Journal of Public Economics*, 96(5–6), pp. 509–519.

Hausman, J. and Liebtag, E. (2007), “Consumer benefits from increased competition in shopping outlets: measuring the effect of Wal-Mart”, *Journal of Applied Econometrics*, 22(7), pp. 1157-1177.

Head, A. and Lloyd-Ellis, H. (2012), “Housing Liquidity, Mobility and the Labour Market”; *Review of Economic Studies*, 20, pp. 1–31.

Henrekeson, M. (2010), “How labour market institutions affect job creation and productivity growth”, *IZA World of Labour*, May, pp. 1–10.

Hijzen, A. and Venn, D. (2011), "The Role of Short-Time Work Schemes during the 2008-09 Recession," OECD Social, Employment and Migration Working Papers 115, OECD Publishing.

Hijzen, A., and Venn, D. (2013), “The Role of Short-Time Work Schemes during the Global Financial Crisis and Early Recovery: A Cross-Country Analysis”, IZA Discussion Paper n° 7291.

Hijzen, A., Mondauto, L. and Scarpetta, S. (2013), “The perverse effects of job-security provisions on job security in Italy: Results from a regression discontinuity design”, IZA Discussion Paper n° 7594.

Hopenhayn, H. and Rogerson, R. (1993), “Job turnover and policy evaluation: A general equilibrium analysis”, *Journal of Political Economy*, 101(5), pp. 915–938.

Hufbauer, G. and Goodrich, B. (2003), *Steel Protection and Job Dislocation*, Washington: Institute for International Economics.

Hunt, J. (1995), "The Effect of Unemployment Compensation on Unemployment Duration in Germany", *Journal of Labour Economics*, 13, pp. 88-120.

Hyslop, D. and Stillman, S. (2007), "Youth minimum wage reform and the labour market in New Zealand", *Labour Economics*, 14, pp.201–230.

Ichino, A., Polo, M. and Rettore, E. (2003), "Are judges biased by labour market conditions?", *European Economic Review*, 47(5), pp. 913-944.

Ichino, A. and Riphahn, R. (2005), "The effect of employment protection on worker effort: Absenteeism during and after probation", *Journal of the European Economic Association*, 3, pp. 120–143.

IMF (2010), *World Economic Outlook*, Chapter 3, Washington, IMF.

Inderbitzin, L., Staubli, S. and Zweimüller, J. (2013), "Extended Unemployment Benefits and Early Retirement: Program Complementarity and Program Substitution", IZA Discussion Paper n° 7330.

Jackman, R., Layard, R. and Nickell, S. (1996), "Combating unemployment: Is flexibility enough?", CEP Discussion Paper 0293.

Jean, S. and Nicoletti, G. (2002), "Product Market Regulation and Wage Premia in Europe and North America: An Empirical Investigation," OECD Economics Department Working Papers 318, OECD Publishing.

Jones, S. (1987), "Minimum wage legislation in a dual labour market", *European Economic Review*, 33, pp. 1229–1246.

Jung, P. and Kuester, K. (2014), "Optimal labour market policy in recessions," *American Economic Journal,* Forthcoming.

Kahn, L. (2007), "The impact of employment protection mandates on demographic temporary employment patterns: International microeconomic evidence", *Economic Journal*, 117(521), F333–F356.

Karam, P., Muir, D., Pereira, J. and Tuladhar, A. (2014), "Macroeconomic Effects of Public Pension Reforms", IMF Working Paper WP/10/297.

Kennan, J. (1995), "The elusive effects of minimum wage", *Journal of Economic Literature*, 33, pp. 1949–1965.

Kluve J. (2010), "The effectiveness of European active labour market programs", *Labour Economics*, 17, pp. 904–918.

Knittel, C. (2002), "Alternative Regulatory Methods and Firm Efficiency: Stochastic Frontier Evidence from the U.S. Electricity Industry", *Review of Economics and Statistics*, 84(3), pp. 530–540.

Koeniger, W. (2005), "Dismissal costs and innovation", *Economics Letters*, 88(1), pp. 79–85.

Kramarz, F. and Philippon, T. (2001), "The impact of differential payroll tax subsidies on minimum wage employment", *Journal of Public Economics*, 82, pp. 115–146.

Kroft, K. and Notowidigdo, M. (2014), "Should unemployment insurance vary with the unemployment rate? Theory and evidence," Working Paper, University of Chicago.

Kugler, A. (1999), "The impact of firing costs on turnover and unemployment: Evidence from the Colombian labour market reform", *International Tax and Public Finance Journal*, 6, pp. 389–410.

Kugler, A. and Pica, G. (2008), "Effects of employment protection on worker and job flows: Evidence from the 1990 Italian reform", *Labour Economics*, 15, pp. 78–95.

Kugler, A. and Saint-Paul, G. (2000), "Hiring and firing costs, adverse selection and long term unemployment", Working Paper 447. Barcelona: Universitat Pompeu Fabra

Kugler, A., Jimeno, J. and Hernanz, V. (2005), "Employment consequences of restrictive permanent contracts: Evidence from Spanish labour market reforms", Working Paper, University of Houston.

Laamanen, J.-P. (2013), "Home-ownership and the Labour Market: Evidence from Rental Housing Market Deregulation", Working Paper 89, School of management FI-33014 university of Tampere, Finland.

Lalive, R. and Staubli, S. (2014), "How Does Raising Women's Full Retirement Age effect Labour Supply, Income, and Mortality? Evidence from Switzerland", Working Paper.

Lalive, R., van Ours, J. and Zweimüller J. (2005), "The Effect Of Benefit Sanctions On The Duration Of Unemployment," *Journal of the European Economic Association*, 3(6), pp. 1386-1417.

Lammers, M., Bloemen, H. and Hochguertel, S. (2013), "Job Search Requirements for Older Unemployed: Transitions to Employment, Early Retirement and Disability Benefits", *European Economic Review*, 58 (2), pp. 31–57.

Landais, C. (2014), "Assessing the welfare effects of unemployment benefits using the regression kink design," *American Economic Journal: Economic Policy*, Forthcoming.

Landais, C., Michaillat, P. and Saez, E. (2014), "A Macroeconomic Theory of Optimal Unemployment Insurance," Working Paper, London School of Economics.

Lazear, E. (1990), "Job security provisions and unemployment", *Quarterly Journal of Economics,* 105(3), pp. 699–726.

Lee, D. (1999), "Wage inequality in the United States during the 1980s: Rising dispersion or falling minimum wage?", *Quarterly Journal of Economics*, 114, pp. 977–1023.

Lee, D. and Saez, E. (2012), "Optimal minimum wage policy in competitive labour markets", *Journal of Public Economics*, 96, pp. 739–749.

Maloney, T. (1994), "Estimating the effects of the employment contracts act on employment and wages in New Zealand", *Australian Bulletin of Labour*, 20, pp. 320–343.

Marinescu, I. (2009), "Job security legislation and job duration: Evidence from the UK", *Journal of Labor Economics*, 27(3), pp. 465-485.

Martins, P. (2009), "Dismissals for cause: The difference that just eight paragraphs can make", *Journal of Labour Economics*, 27(2), pp. 257–279.

Martins, P. (2014), “30,000 minimum wages: The economic effects of collective bargaining extensions”, IZA Discussion Paper n° 8540.

Martins, P. and Pessoa e Costa, S. (2014), “Reemployment and Substitution Effects from Increased Activation: Evidence from Times of Crisis”, IZA Discussion Paper n° 8600.

Matsa, D. (2011), “Competition and product quality in the supermarket industry”, *Quarterly Journal of Economics,* 126(3), pp. 1539-1591.

Mazzeo, M. (2003), “Competition and service quality in the U.S. airline industry “, *Review of Industrial Organization*, 22(4), pp. 275-296.

Mc Vicar, D., (2014), “The impact of monitoring and sanctioning on unemployment exit and job-finding rates”, *IZA World of Labour 2014*: 49.

Meyer, B. (1990), "Unemployment insurance and unemployment spells", *Econometrica*, 58(4), pp. 757-782.

Meyer, B. (1995), "Lessons from the U.S. Unemployment Insurance Experiments", *Journal of Economic Literature*, vol 33, pp. 91-131.

Micco, A. and Pagés, C. (2006), “The economic effects of employment protection: Evidence from international industry-level data”, IZA Discussion Paper n° 2433.

Miles, T. (2000), “Common law exceptions to employment at will and US labour markets”, *Journal of Law, Economics and Organization*, 16, pp. 74–101.

Mitman, K. and Rabinovich, S. (2014), “Optimal Unemployment Insurance in an Equilibrium Business-Cycle Model,” *Journal of Monetary Economics*, forthcoming.

Neumark, D. and Wascher, W. (2000), “Minimum wages: A case study of the fast food industry in New Jersey and Pennsylvania—Comment”, *American Economic Review*, 90, pp. 1362–1396.

Neumark, D. and Wascher, W. (2007), “Minimum wages and employment”, IZA Discussion Paper n° 2570.

Neumark, D., Salas, I. and Wascher, W. (2013), “Revisiting the minimum wage-employment debate: Throwing out the baby with the bathwater?” NBER Working Paper n° 18681, forthcoming in *Industrial and Labour Relations Review*.

Neumark, D., Schweitzer, M. and Wascher, W. (2004), “Minimum wage effects throughout the wage distribution”, *Journal of Human Resources*, 39, pp.425–450.

Neumark, D., Schweitzer, M. and Wascher, W. (2005), “The effects of minimum wages on the distribution of family incomes: A non-parametric analysis”, *Journal of Human Resources*, 40(4), pp. 867–917.

Neumark, D., Zhang, J. and Ciccarella, S. (2008), “The effects of Wal-Mart on local labor markets”, *Journal of Urban Economics,* 63, pp. 405-430.

Ng, C. and Seabright, P. (2001), “Competition, Privatisation and Productive efficiency: Evidence from the Airline Industry”, *Economic Journal*, 111(473), pp. 591–619.

Nickell, S. and Layard, R. (1999), "Labour market institutions and economic performance", in O. Ashenfelter, and D. Card, (Eds.), *Handbook of labour economics*, vol. 3C, pp. 3029–3084, Amsterdam: Elsevier.

Nickell, S., Nunziata, L. and Ochel, W. (2005), "Unemployment in the OECD since the 1960s: What do we know?", *Economic Journal*, 115, pp. 1–27.

OECD (2004), *OECD Employment Outlook 2004*, OECD Publishing, Paris.

OECD, (2006), *OECD Employment Outlook 2006*, OECD Publishing, Paris.

OCDE (2007), *OECD Employment Outlook 2007*, OECD Publishing, Paris.

OECD (2010), *OECD Employment Outlook 2010*, OECD Publishing, Paris.

OECD (2011), "Housing and the Economy: Policies for Renovation", in *Economic Policy Reforms 2011: Going for Growth*, Chapter 4, OECD Publishing, Paris.

OECD (2014), *OECD Employment Outlook 2014*, OECD Publishing, Paris.

Olley, S. and Pakes, A. (1996), "The Dynamics of Productivity in the Telecommunications Equipment Industry", *Econometrica*, 64(6), pp. 263–297.

Olsson, M. (2009), "Employment protection and sickness absence", *Labour Economics*, 16(2), pp. 208-214.

Oswald, A. (1996), "A Conjecture on the Explanation for High Unemployment in the Industrialized Nations: Part I", University of Warwick Working Paper n° 475.

Oswald, A. (1997), "Thoughts on NAIRU", *Journal of Economic Perspectives*, 11, pp. 227–228.

Pacheco, G. (2011), "Estimating employment impacts with binding minimum wage constraints", *Economic Record*, 87, pp. 587–602.

Pellizzari, M. (2006), "Unemployment duration and the interactions between unemployment insurance and social assistance", *Labour Economics*, 13(6), pp. 773–798.

Pereira, S. (2003), "The impact of minimum wages on youth employment in Portugal", *European Economic Review*, 47, pp. 229–244.

Petrin A. and Sivadasan, J. (2013), "Estimating lost output from allocative inefficiency, with an application to Chile and firiring costs", *Review of Economics and Statistics,* 95(1), pp. 286-301.

Petrongolo, B. (2009), "The Long-Term Effects of Job Search Requirements: Evidence from the UK JSA Reform", *Journal of Public Economics*, 93 (11-12), pp. 1234–1253.

Pierre, G. and Scarpetta, S. (2005), "Employment protection: Do firms' perceptions match with legislation?", *Economics Letters*, 90, pp. 328–334.

Portugal, P. and Cardoso, A. (2006) "Disentangling the minimum wage puzzle: An analysis of job accession and separation", *Journal of the European Economic Association*, 4(5), pp. 988–1013.

Rajan, R. and Zingales, L. (2004), *Saving capitalism from the capitalists*, Princeton University Press, pp. 228-232.

Ransom, M. and Sims, D. (2010), "Estimating the firm's labour supply curve in a 'new monopsony' framework: School teachers in Missouri", *Journal of Labour Economics*, 28, pp.331–355.

Riphahn, R. (2004), "Employment protection and effort among German employees", *Economics Letters*, 85, pp. 353–357.

Rosholm, M. and Svarer, M. (2008), "The Threat Effect of Active Labour Market Programmes", *Scandinavian Journal of Economics*, 110(2), pp. 385-401.

Rupert, P. and Wasmer, E. (2009), "Housing Markets and Labour Markets: Time to move and aggregate unemployment", IZA Discussion Paper n° 4172.

Sabia, J. and Burkhauser, R. (2010), "Minimum wages and poverty: Will a $9.50 federal minimum wage really help the working poor?", *Southern Economic Journal*, 76(3), pp. 592–623.

Saint-Paul, G. (2002), "The political economy of employment protection", *Journal of Political Economy*, 110, pp. 672–704.

Schiantarelli, F. (2010), "Product Market Regulation and Macroeconomic Performance: A Review of Cross-Country Evidence", in Loayza, N. and Serven, L. (eds), *The Microeconomic Underpinning of Growth*, The World Bank.

Schivardi, F. and Torrini, R. (2008), "Identifying the effects of firing restrictions through size contingent differences in regulation", *Labour Economics*, 15, pp. 482–511.

Schivardi, F. and Viviano, E. (2011), "Entry Barriers and Retail Trade", *Economic Journal*, 121(551), pp. 145-170.

Schmitz, J. (2005), "What Determines Productivity? Lessons from the Dramatic Recovery of the U.S. and Canadian Iron Ore Industries Following Their Early 1980s Crisis", *Journal of Political Economy,* 113(1), pp. 582-625.

Serafinelli, M. (2013), "Good Firms, Worker Flows, and Productivity", Munich Personal RePEc Archive Paper No. 47508.

Shannon, M. (2011), "The employment effect of lower minimum wage rates for young workers: Canadian evidence", *Industrial Relations*, 50, pp. 629–655.

Skuterud, M. (2005), "The impact of Sunday Shopping on Employment and Hours of Work in the Retail Industry: Evidence from Canada", *European Economic Review*, 49(8), pp. 1953-1978.

Staiger, D., Spetz, J. and Phibbs, C. (2010), "Is there monopsony in the labour market? Evidence from a natural experiment", *Journal of Labour Economics*, 28, pp. 211–236.

Staubli, S. and Zweimüller, J. (2013), "Does Raising the Retirement Age Increase Employment of Older Workers?" *Journal of Public Economics*, 108, pp. 17–32.

Steiner, F. (2001), "Regulation, market structure and performance in the electricity supply industry", *OECD Economic Studies*, n° 32, pp. 143-182.

Stewart, M. (2004), “The employment effects of the national minimum wage”, *Economic Journal*, 114, pp. 110-116.

Stiglitz, J. and Yun, J. (2005), “Integration of unemployment insurance with retirement insurance”, *Journal of Public Economics,* 89(11-12), pp. 2037–2067.

Syverson, C. (2004), “Market Structure and Productivity: A Concrete Example”, *Journal of Political Economy*, 112(6), pp. 1181–1222.

Syverson, C. (2011), “What Determines Productivity?”, *Journal of Economic Literature*, 49(2), pp. 326–365.

Tatsiramos, K. (2014), "Unemployment benefits and job match quality”, *IZA World of Labour 2014*: 44.

Tatsiramos, K. and van Ours, J. (2014), "Labour Market Effects of Unemployment Insurance design", *Journal of Economic Surveys*, 28(2), pp. 284–311.

Van den Berg G. and van der Klaauw, B. (2006), "Counseling and Monitoring of Unemployed Workers: Theory and Evidence from a Controlled Social Experiment," *International Economic Review*, 47(3), pp. 895-936.

Van den Berg G., van der Klaauw, B. and van Ours, J. (2004), "Punitive Sanctions and the Transition Rate from Welfare to Work", *Journal of Labour Economics*, 22(1), pp. 211-241.

Van der Klaauw B. and van Ours J. (2013), "Carrot and Stick: How Reemployment Bonuses and Benefit Sanctions Affect Job Finding Rates", *Journal of Applied Econometrics*, 28(2), pp. 275-296.

Van der Wiel, K. (2010), “Better protected, better paid: Evidence on how employment protection affects wages”, *Labour Economics*, 17, pp. 16–26.

Von Below, D. and Thoursie, P. (2010), “Last in, first out? Estimating the effect of seniority rules in Sweden”, *Labour Economics*, 17, pp. 987–997.

Wasmer, E. (2006), “General versus specific skills in labour markets with search frictions and firing costs”, *American Economic Review*, 96(3), pp. 811–831.

Zavodny, M. (2000), “The effect of the minimum wage on employment and hours”, *Labour Economics*, 7, pp. 729-750.