

Eichhorst, Werner

**Working Paper**

## Do we have to be afraid of the future world of work?

IZA Policy Paper, No. 102

**Provided in Cooperation with:**

IZA – Institute of Labor Economics

*Suggested Citation:* Eichhorst, Werner (2015) : Do we have to be afraid of the future world of work?, IZA Policy Paper, No. 102, Institute for the Study of Labor (IZA), Bonn

This Version is available at:

<https://hdl.handle.net/10419/121337>

**Standard-Nutzungsbedingungen:**

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

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

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

**Terms of use:**

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

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

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

IZA Policy Paper No. 102

## Do We Have to Be Afraid of the Future World of Work?

Werner Eichhorst

June 2015

# Do We Have to Be Afraid of the Future World of Work?

**Werner Eichhorst**  
*IZA*

Policy Paper No. 102  
June 2015

IZA

P.O. Box 7240  
53072 Bonn  
Germany

Phone: +49-228-3894-0  
Fax: +49-228-3894-180  
E-mail: [iza@iza.org](mailto:iza@iza.org)

The IZA Policy Paper Series publishes work by IZA staff and network members with immediate relevance for policymakers. Any opinions and views on policy expressed are those of the author(s). IZA takes no institutional policy positions. The IZA research network is committed to the IZA Guiding Principles of Research Integrity.

The Institute for the Study of Labor (IZA) in Bonn is a local and virtual international research center and a place of communication between science, politics and business. IZA is an independent nonprofit organization supported by Deutsche Post Foundation.

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

## **ABSTRACT**

### **Do We Have to Be Afraid of the Future World of Work?**

There is considerable concern regarding the prospective development of employment levels and job types in the future. The paper tries to highlight major trends shaping the world of work in developed economies with the aim of giving a realistic account of probable developments and the contributions of different driving forces, importantly focusing on the role of actors such as policy makers, firms and individuals. While it is true that the future of work poses considerable challenges to actors at different levels, there is no need to be particularly worried.

JEL Classification: J11, J18, J21, J58

Keywords: future of work, globalization, innovation, structural change

Corresponding author:

Werner Eichhorst  
IZA  
P.O. Box 7240  
53072 Bonn  
Germany  
E-mail: [Eichhorst@iza.org](mailto:Eichhorst@iza.org)

## **1 Introduction**

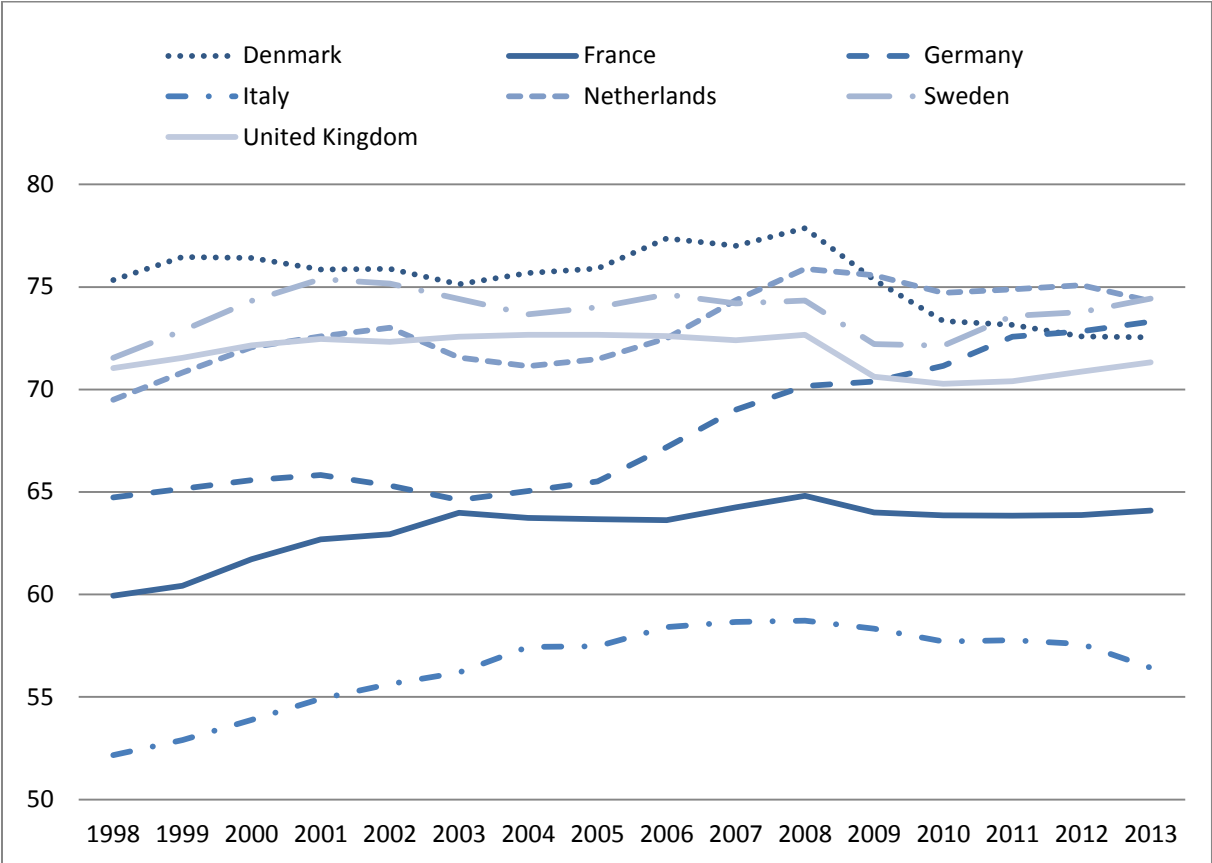
One important topic of the current public debate in many developed countries is the renewed uncertainty regarding the future of paid employment. Studies emphasizing the deep and severe potential impact of globalization and technological change have nourished fears of significant job destruction in the future (see, most prominently, Frey and Osborne 2013; Brynjolfsson and McAfee 2011, 2014). Furthermore, in labor markets that have become increasingly flexible, at least in certain areas of employment issues such as precarity, i.e. unstable employment or low pay, have gained public attention in the aftermath of the recent global economic crisis as an outcome of deteriorating economic conditions (e.g. Goos, Manning and Salomons 2014; Eurofound 2014, 2015). At the same time, many of those in jobs increasingly perceive work as increasingly stressful and demanding or psychologically overburdening due to ever growing pressure on performance and work intensification (OECD 2014; European Commission 2014). In light of this, what can we expect from the future world of work? The present study aims to provide an answer to this question based on an assessment of past experiences, the current situation and a discussion of the most plausible future developments.

## **2 Obviously, there is no crisis of paid work**

The world of work is in turmoil. But contrary to some widely shared concerns, if we take a more long-term perspective, paid work is at a historically high or at an increasing level in most developed countries (Figures 1 and 2), and more countries and people have joined the global model of paid employment, both in Europe and elsewhere. Even in the aftermath of the 2008/09 global economic crisis, we have not witnessed general and persistent, structural declines in paid employment in developed market economies. Hence, it seems fair to say that the model of paid work is not failing as a mode to allocate income and organize economic production or, to a larger extent, societal integration in general. Diversity in

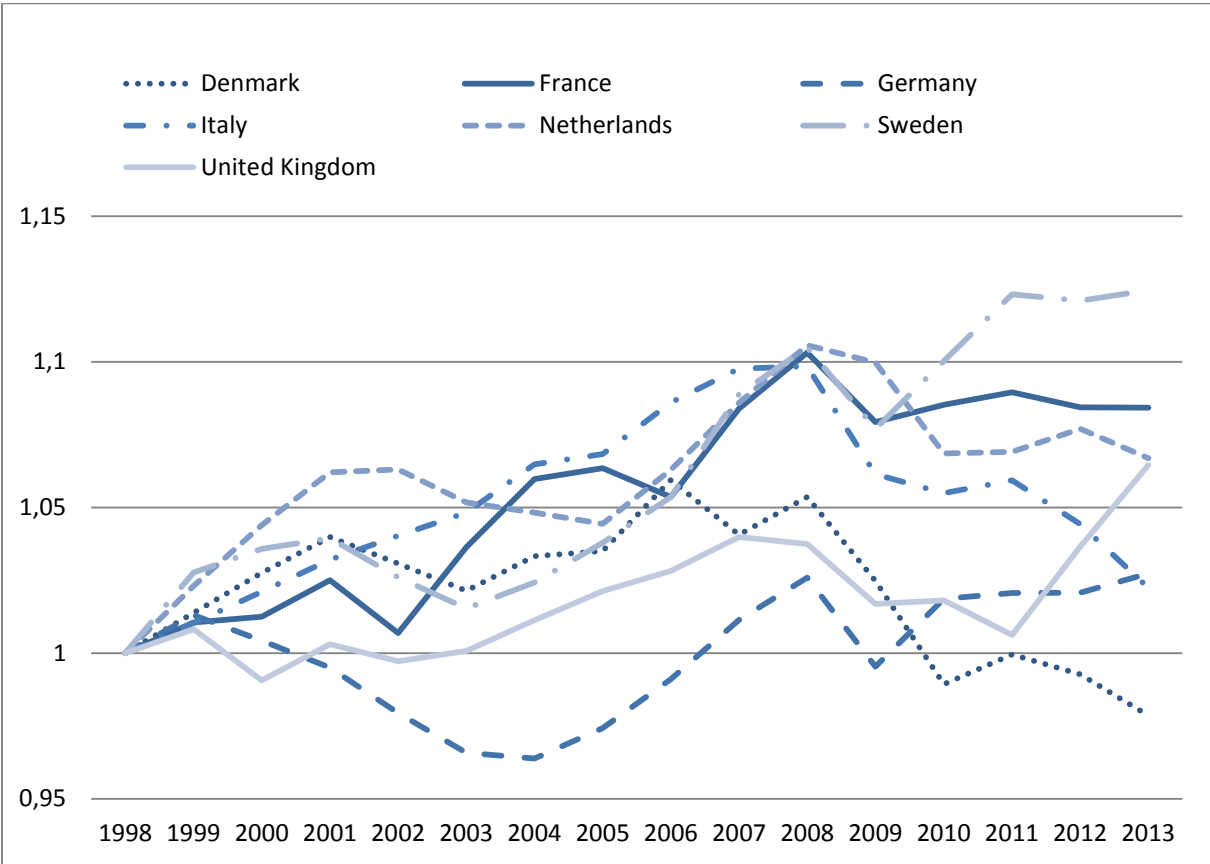
employment levels across countries, however, can be seen as persistent and largely due to institutional and cultural differences.

**Figure 1: Employment/population ratios of selected European countries, 1998-2013**



Source: OECD

**Figure 2: Total hours worked in major developed countries, 1998-2013**



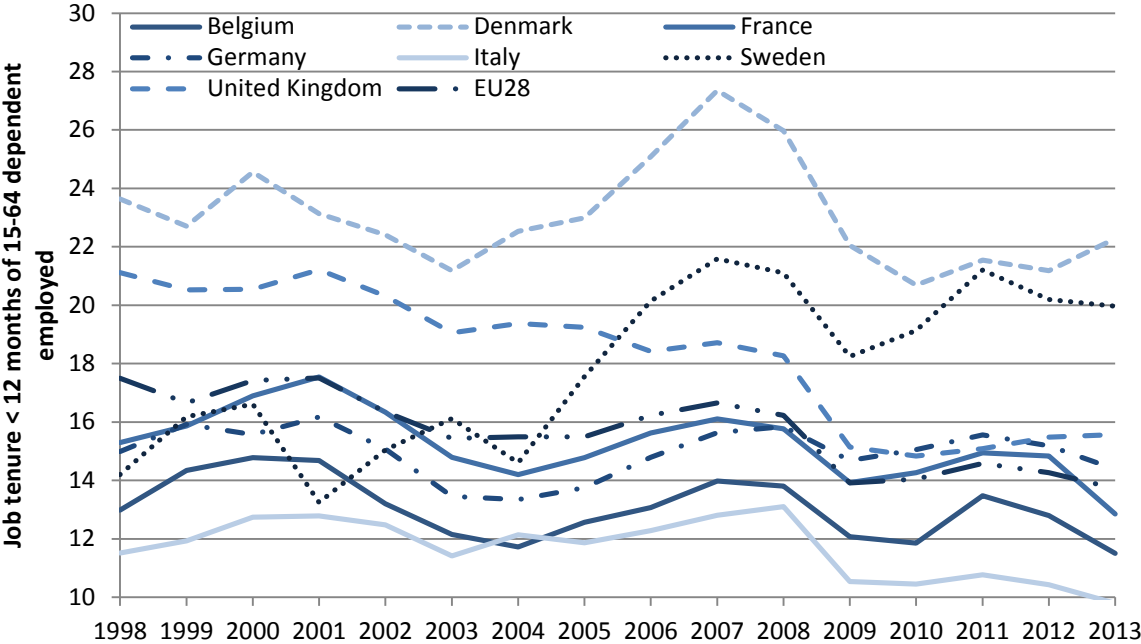
Source: OECD, base year 1998 = 1

**3 Creative destruction is everywhere**

We can never know for sure what will happen in the future. But from past and current experience, we know that jobs with unspecific skill requirements and easily replaceable workers are threatened either by offshoring to foreign locations with lower labor costs, by automatization or by a deterioration of working conditions such as pay or employment stability. Some occupations, companies and sectors shrink or disappear. This is already a well-known phenomenon of the recent decades when Europe lost many jobs in traditional industries such as mining, ship building, agriculture, textiles or simple mass production. However, this process might seem to be becoming faster and more radical, especially in the age of information and communication technology where opportunities of digitalization and offshoring are constantly increasing, sometimes at an unexpected speed. Thus, many see an

expanding threat on a fundamental level to existing jobs and firms in developed economies (e.g. Frey and Osborne 2013, Brynjolfsson and McAfee 2011) and a massive imminent disruption of employment trends through the digital revolution. Yet, available empirical evidence is not so conclusive (yet). Comparative data on job tenure, however, do not show a general increase in the share of employees with low tenure, i.e. less than twelve months (figure 3). Differences across countries appear to be rather persistent, with some temporal variation in the share of low-tenure employees following a cyclical pattern. The same is true for the share of workers with more than five years of tenure. Here, we also do neither see a general decline nor an increase (figure 4). Hence, it seems reasonable to say that there has not been a convergence to lower levels of tenure during the period of observation.

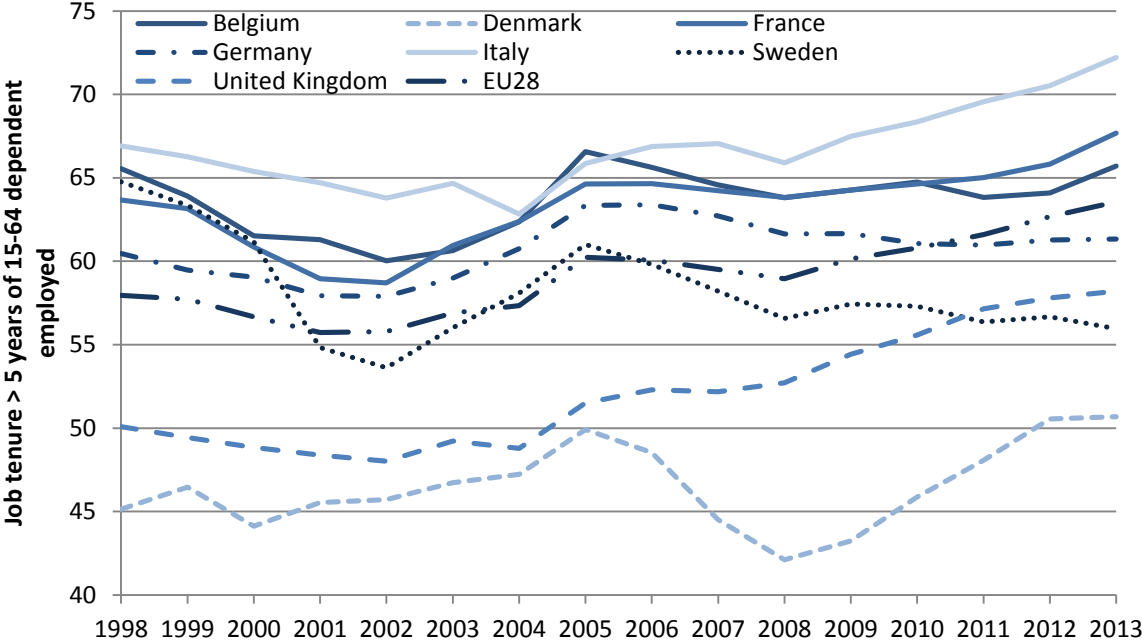
**Figure 3: Job tenure < 12months, 1998-2013**



Source: OECD



**Figure 4: Job tenure > 5years, 1998-2013**



Source: OECD

This process of the elimination of jobs on the one hand with the creation of innovative new ones on the other has long been understood as *creative destruction* in a Schumpeterian framing. It is not a new phenomenon, but it may become more radical in the near future.

Creative destruction is characterized by the fact that all market actors contribute to it -- not only employers, innovators and business start-ups, but also individuals as consumers, employees or job-seekers. Hence, as a general principle, there is no guarantee for the secure continued existence of certain jobs and occupations. Time series data show that while some occupations have shrunk in the past, others have expanded significantly.

The broad picture shows that while some jobs are disappearing, occupations dealing with knowledge and/or people have been growing in importance over the last decades, however, not all of them with privileged working conditions. Structural growth has occurred and is most likely to continue in areas where cognitive, analytical and interactive abilities are crucial such as research and education, health care and old-age care, hospitality and leisure, but also in different business services, consulting, management and marketing jobs. These

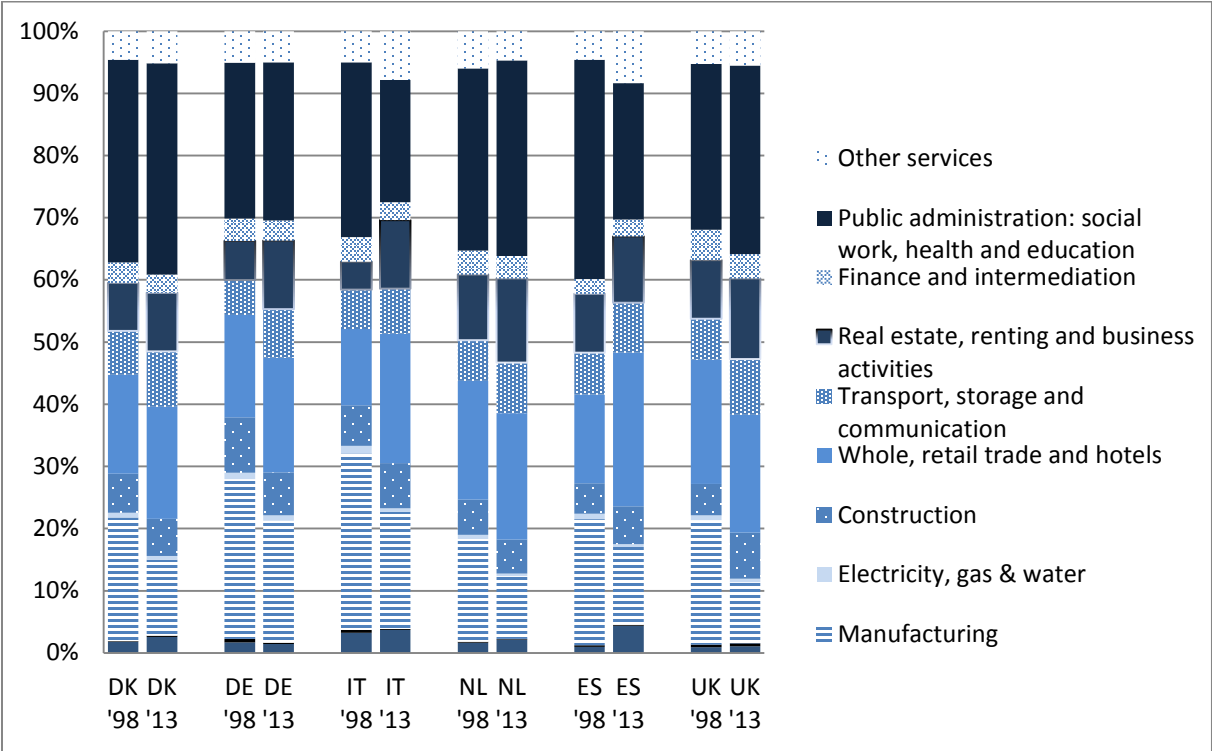
are also areas where the risk of offshoring and/or automatization appears limited for the foreseeable future. Although this structural change is continuing, there is still need for labor-intensive work such as some (but not all) crafts, hospitality, care, research and education, management, media and IT, but also specific types of knowledge-based manufacturing with a strong human element as regards customer care, incremental innovation and local networks of production (see also Beblavý, Maselli and Veselková 2014).

Within the context of fast technological progress, the rapid spreading of technology throughout the world and worldwide global production chains, there are hardly any niches left that are stable and unchallenged. Even occupations and business models that seemed to be on the safe side, due to the specific tasks performed there or because of the local character of production and consumption, might be challenged. As can be seen in recent debates, global integration and technology can also potentially impact areas usually seen as virtually invulnerable such as health care, journalists and financial analysts, crafts, taxi drivers, logistics or education. Technical assistance in care and educational occupations, but also in manufacturing, may in fact help deal with a shortage of skilled workers due to demographic change as it may contribute to higher productivity, but these types of innovation will most likely not replace human work completely but can be rather seen as complementary.

As in the past, job losses are constantly being offset by new, innovative areas of economic activities, and there is no reason to expect this process to stop. In fact, earlier forecasts on massive net job losses due to technological advances have proven to be wrong (see, e.g. Rifkin 1995). What we do not know, however, is the concrete structure of tasks and occupations in the future. It would be a daring and probably futile task to make detailed predictions here as the change of the labor market is an ongoing process with many possibilities and alternatives that we do not even see today. Despite technological progress and in particular digitalization also affecting skill labor-intensive areas such as health care, old-age care or research and education, we do not have to expect that the structural growth in these areas will come to a halt over the coming years. Looking into empirical data, even at the most recent period, the long-standing trends of structural or occupational change are still robust (Figure 5). Furthermore, not all existing jobs will disappear or change at the same

pace. For the time being, we will most likely not see a fully automatized economy, and we probably never will.

**Figure 5: Employment shares of different sectors in selected countries, 1998 and 2013**



Source: OECD.

**4 Technology and globalization are major drivers – but national institutions matter**

The stability of paid work is striking, but change within the employment system is pervasive. In line with research, it is clear that major driving forces exposing employment systems to constant change are technological progress (including prominently automatization), globalization and offshoring as well as societal and demographic shifts.

Technological progress challenges all routine activities that can be replaced by machines, including computer software, robotics and more and more sophisticated appliances (Brynjolfsson and McAfee 2011, 2014, also Graetz and Michaels 2015). These changes will

likely also affect routine work at the medium knowledge level to the extent that the processes can be increasingly programmed via intelligent software and ‘smart machines’, although this will not happen overnight. New technology, especially in information and communication, also makes the global availability of big data, any kind of digitalized information and mobile working easier and cheaper.

Globalization based on the less restricted flows of capital, goods, services and people allows for the flexible relocation of production and value added steps to places where this is most profitable – in combination with technological progress, this implies a tendency to longer and more strictly cost-sensitive supply chains. In general, globalization does not have negative effects on total employment, but puts pressure on low-skilled jobs in developed countries exposed to offshoring and shifts work to more complex tasks and better skilled workers (Becker, Ekholm and Muendler 2013; Geishecker and Görg 2008).

Even within occupations that continue to exist in spite of these changes, the character of employment might change in principle from lifelong employment to the newer, more flexible modes such as freelance, (dependent) self-employment and project-based temporary jobs at different levels of complexity and remuneration, also using digital technology where appropriate (see Eurofound 2015). This will likely not occur for all occupations, but at least this is a real option. Last, but not least, demographic change continues to shift the structure of the labor force and demand for goods and services throughout this process.

Polarization or dualization of employment is a likely outcome of these developments. The major trends in the world of work do privilege some occupations and certain categories of workers, especially where technology is rather complementary than a substitute, while others face job losses or deteriorating working conditions (Goos, Manning and Salomons 2009, 2014; Autor and Dorn 2013). However, there is a role for institutions and broader sectoral or national production models in mitigating the tendency towards more polarization. This has also to do with education and training systems, regional technology clusters, but also collective bargaining, wage setting and regulatory public policies, as comparative studies show (e.g. Eurofound 2014). While there is no inevitable linear relationship between job quality and job quantity in general, the broad economic and societal trends push towards more heterogeneity in the labor market, still, national

institutions shape the way heterogeneous job profiles are translated into diverse employment conditions. Wage inequality is one dimension, the distinction between permanent and temporary or non-standard forms of employment is another dimension. Both types of disparities are influenced by wage bargaining and employment regulation on the one hand and by skill demand and supply patterns on the other hand (Eichhorst and Marx 2015; Eichhorst and Tobsch 2013).

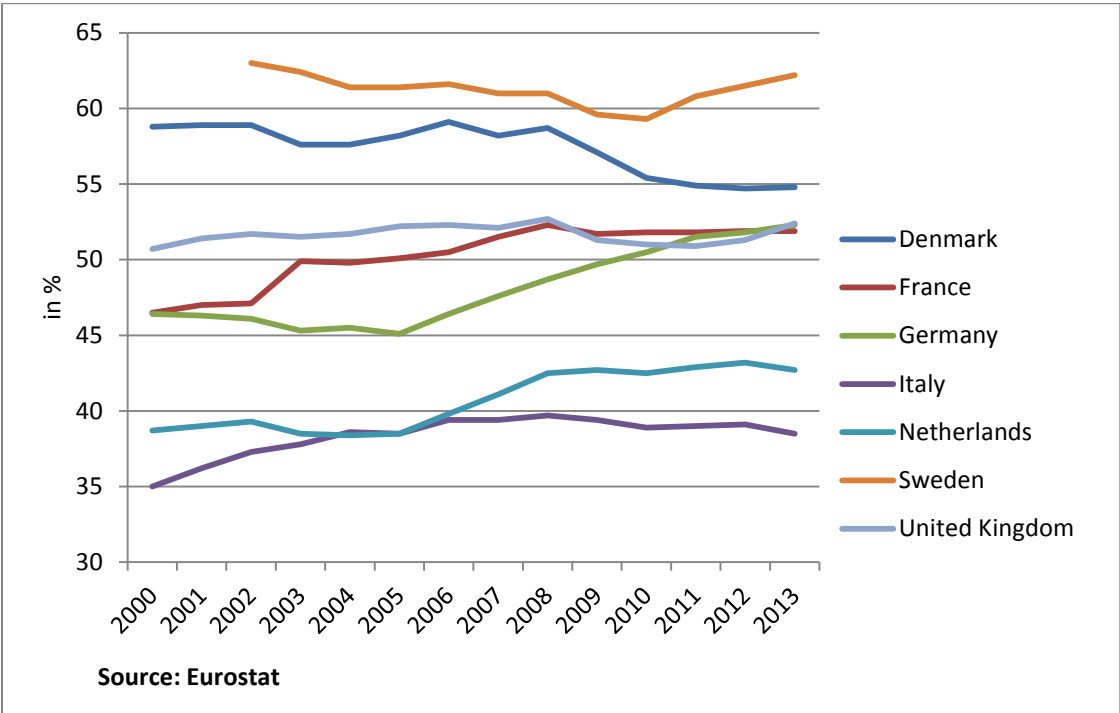
## **5 Human touch is ever more crucial**

Occupations that will be most relevant in the future are those where non-routine cognitive, interactive or manual work performed by human beings is important, i.e. dealing with complexity, supervising, assessing, deciding, teaching, but also care and personal interaction. In these areas, human beings are crucial and will likely remain indispensable, not only the most highly skilled, but also in lower and medium skill segments. And, humans shape these jobs based on qualification, experience, motivation and collaboration. Many jobs of the future will rely on this human factor, creating the huge potential of making these jobs 'richer' and more intrinsically interesting or rewarding than the jobs in the past which were often characterized by more routine and repetitive tasks. While new technologies enable mobile working and technologically assisted interaction, we can see that communication between humans is still elementary in many respects, in particular in services tailored to individuals. Given market pressures and competitiveness considerations, there is an increasing tendency to address human creativity and motivation more systematically via organizational and human resource practices. However, on the downside, this can be more invasive to individuals and bring about more external control, not least via contract-based work and stricter monitoring. Hence, as human capital will matter crucially, one can see the future of paid work as a sort of "human capitalism", which, however, does not automatically imply particularly "human(e)" working conditions – at least, the decline of routine jobs opens up new room for genuinely human activities that can be organized in more or less "human(e)" ways.

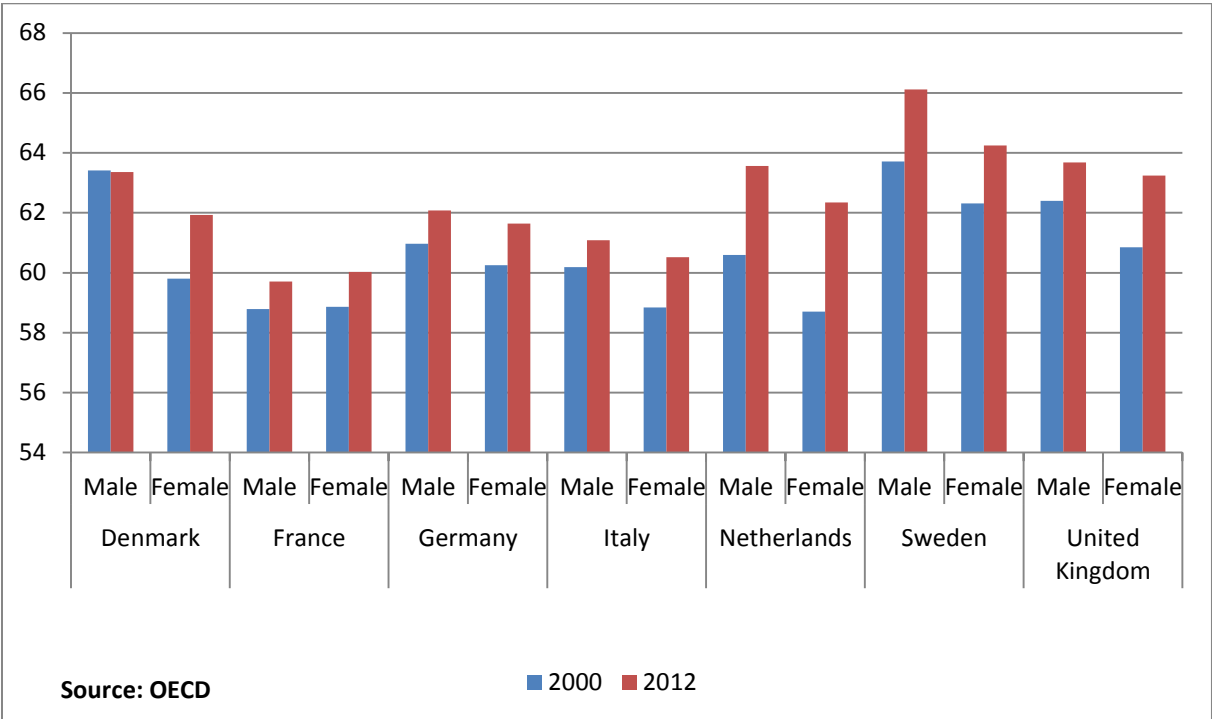
### 6 The workforce will be more diverse

Labor markets will also be fundamentally different from the male-dominated manufacturing age that is still often taken as a reference point, in particular in Continental Europe. This has already changed significantly over the last decades. We have seen a historical increase in female employment (Figure 7), and in the future in virtually all developed countries, we will also see ageing workforces and much more employment above current legal or actual retirement ages (Figure 8). Furthermore, migration, either circular or permanent, will make the labor market more international, depending, of course, on qualifications and types of jobs. In some areas, both high skilled, but also medium and low skilled work, we have already seen more or less fully integrated European and global labor markets. A more diverse workforce has an impact on the way communication and collaboration is organized in and between firms. Diversity can be seen as an asset not only in terms of quantity of labor available to fill emerging skill shortages but also with respect to the capacity to be innovative and to address diverse needs in markets.

**Figure 7: Female full-time equivalent employment rates**



**Figure 8: Effective retirement age**



**7 Employment relationships will be diverse as well**

Today’s labor markets are heterogeneous. They offer a multitude of employment options along a broad continuum ranging from permanent full-time employment to part-time work, fixed-term contracts, temporary agency work, freelance, zero-hour contracts, on-call work and many others, including sometimes combinations of different forms or multiple jobs. We see from the current picture that the type of employment relationship varies greatly between occupations (Eichhorst and Marx 2015). This has direct implications for the working conditions that employees and self-employed or freelance workers face. Working conditions in terms of employment type, contract stability and remuneration depend on skill demand and skill supply with contracts resulting from negotiations between actors always searching for the best deal. Clearly, firms or contractors tend to externalize economic risks and shift the burden of adaptation on those in a weaker position. Job quality and flexibility is a question of negotiation and bargaining power within given institutional arrangements. Certainly, not all will be self-employed as there is still an advantage to have permanent

employees in the firm that make up a stable core work force which can develop specific skills and knowledge that cannot be bought on the spot.

However, even within firms, flexible employment practices flourish, sometimes blurring the boundaries between internal and external project partners. Flexible, performance-oriented practices are also spreading within firms, affecting the work done in formally stable employment relationships. But, all in all, there is no general tendency towards more precariousness for all workers, but large and increasing heterogeneity in the labor market is likely to occur.

It would be wrong to overestimate problematic and rapid changes in some limited pockets of the labor market such as IT professions, creative occupations or the 'sharing economy' by assuming the extension of these challenges throughout the entire labor market (Rifkin 2014). Hence, there will not only be self-employed or freelancers in the future. But in some areas, this type of employment may become more and more prominent, in particular where the skills needed are quite general and found easily on the local or world-wide labor market. We can also expect that more people will combine different types of economic activity, i.e. dependent and self-employed work or different freelance jobs, probably including also activities in the sharing economy beyond the limited scope observed up to now.

Variety will also prevail with respect to working time arrangements and the flexibility of work location. The future of work will see many different solutions leaving a great deal of space for negotiations at the micro scale as actors try to reconcile different interests and preferences. We will probably not see new and strict general rules, such as a large-scale shortening of working time, but rather many diverse arrangements taking into account special preferences and situations over the life course, to be negotiated between employers and employees or within project teams and networks, within the specific national context (Chung and Tijdens 2013). Of course, negotiated solutions will also reflect bargaining power and point at the role of general rules for all.

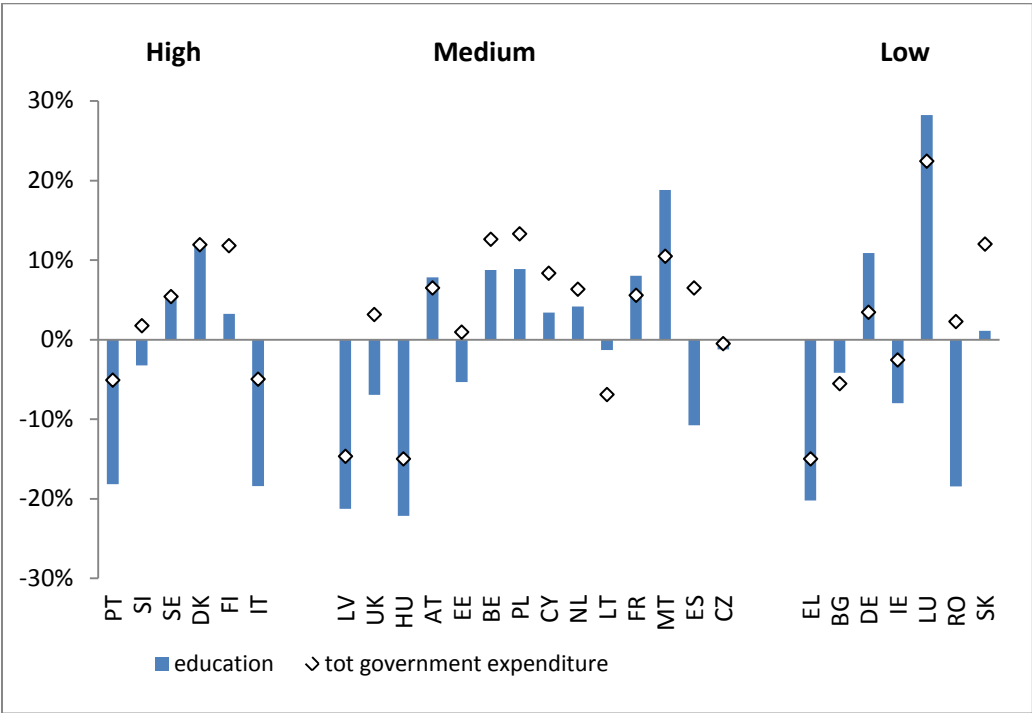


## **8 Public policies as investments**

The new world of work reshapes the agenda for policy making. Some questions are old, some are new, but some of the basic, old questions need to be answered in a way that is compatible with the situation we will likely face. While many aspects of the future of work will need to be dealt with at the company level or, even further down, at the personal level, public policies can make a difference. Given the openness and diversity of future options it would be highly problematic to select core sectors or occupations that need to be developed, protected or trained for specifically. Rather, investing into people's employability, adaptability and entrepreneurial potential is more promising as this can facilitate future innovations and gainful activities more easily.

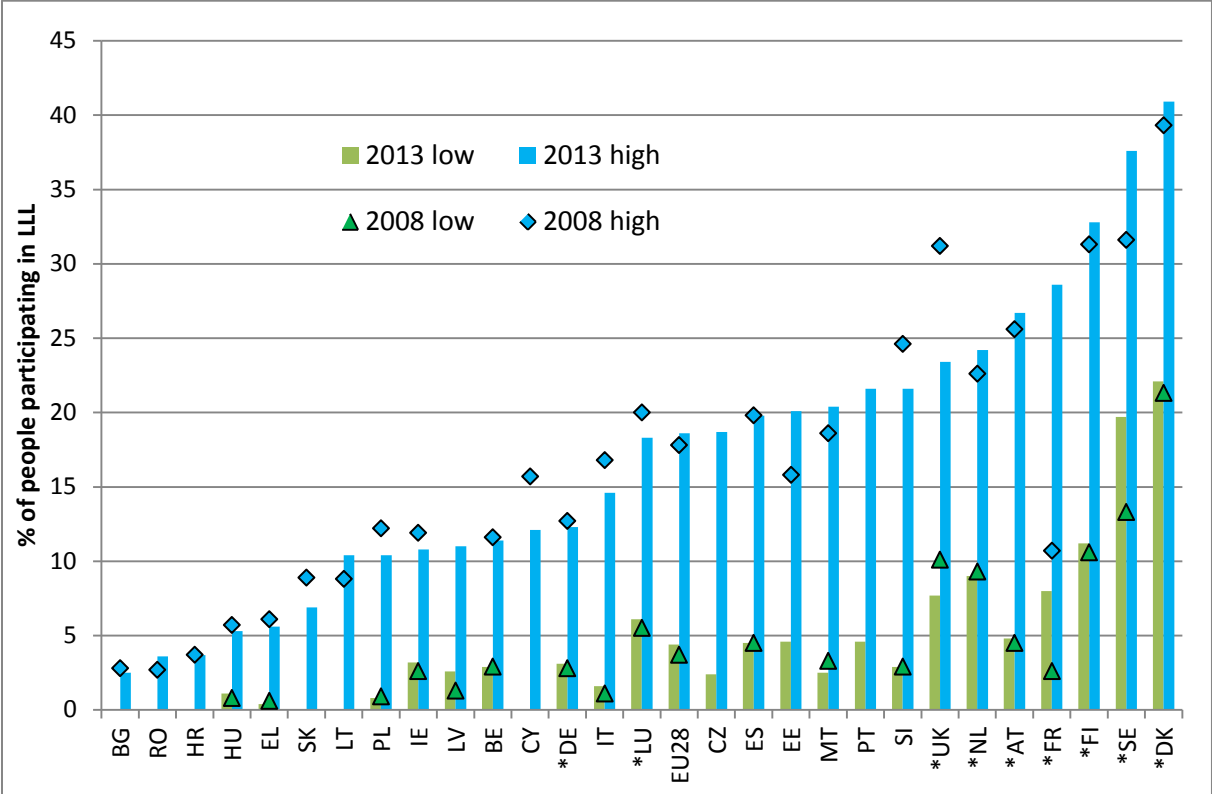
Hence, public policies can be seen as productive investments for the economic and societal future. The main elements have already been on the agenda, but what is needed is more coherent action. This is particularly true for the area of policies to facilitate and stimulate innovation especially at the interface of research, education and business. Education and training have been top priorities over the last decade or so in many developed economies, and they need to be developed further, leaving no one behind, making vocational training and further training over the life course more systematic and universal, i.e. affordable and accessible, to enable working-age people to participate in the labor market. Social investment, in particular via education starting at early childhood, is one of the core elements of a policy to ensure substantial participation in employment for all, avoiding exclusion stemming from a lack of skills and limiting inequality. This will require the mobilizing of social partners, employers, and individuals. Cross-country differences in terms of social investment and human capital formation are striking and persistent – and they require systematic policy action to strengthen future-oriented education and training. Some countries, in particular Scandinavian ones, have made more progress than others in this respect (as Figures 9 and 10 show), and this helps make the economy and the society more resilient (European Commission 2014).

**Figure 9: Educational spending per young and total government expenditure, 2007 - 2012**



Source: European Commission 2014.

**Figure 10: Participation in Lifelong learning at different skill levels, 2008 and 2013**

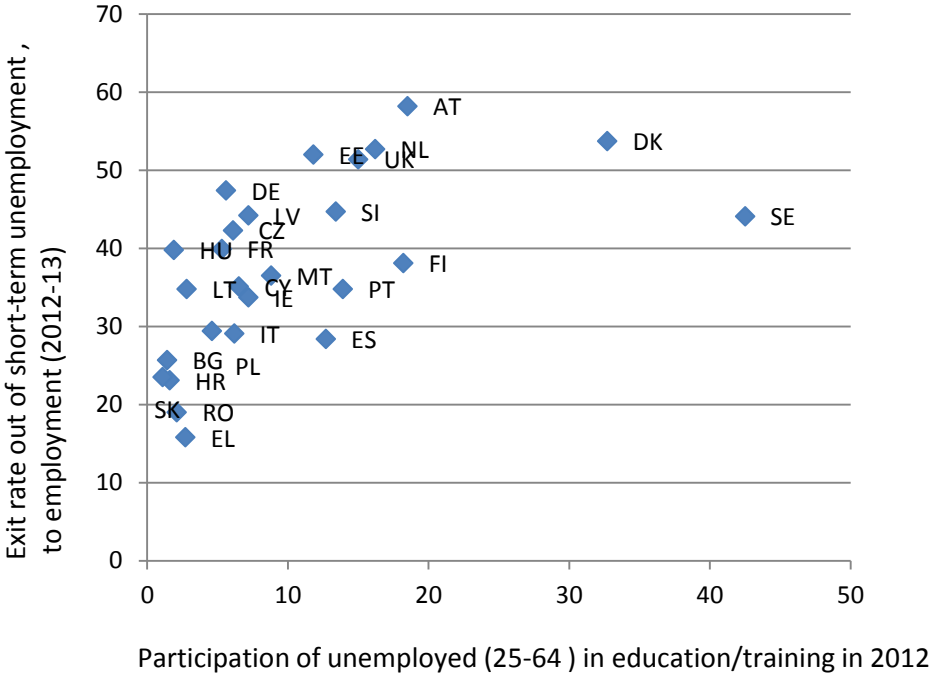


Source: European Commission 2014, based on ELFS.

Policies can either encourage or discourage labor market participation for all. With demographic ageing, better and more substantial labor market participation becomes ever more important, in particular with respect to women, older workers – requiring a broader definition of the working age –, migrants and the unemployed, the long-term unemployed or inactive people. This requires supportive services and investment in occupational skills on the one hand, but also a quite flexible and accessible labor market on the other. Labor markets of the future should be open to facilitate entry and to encourage mobility between jobs, firms and activities as well as longer working lives and a flexible choice of working time over the life course.

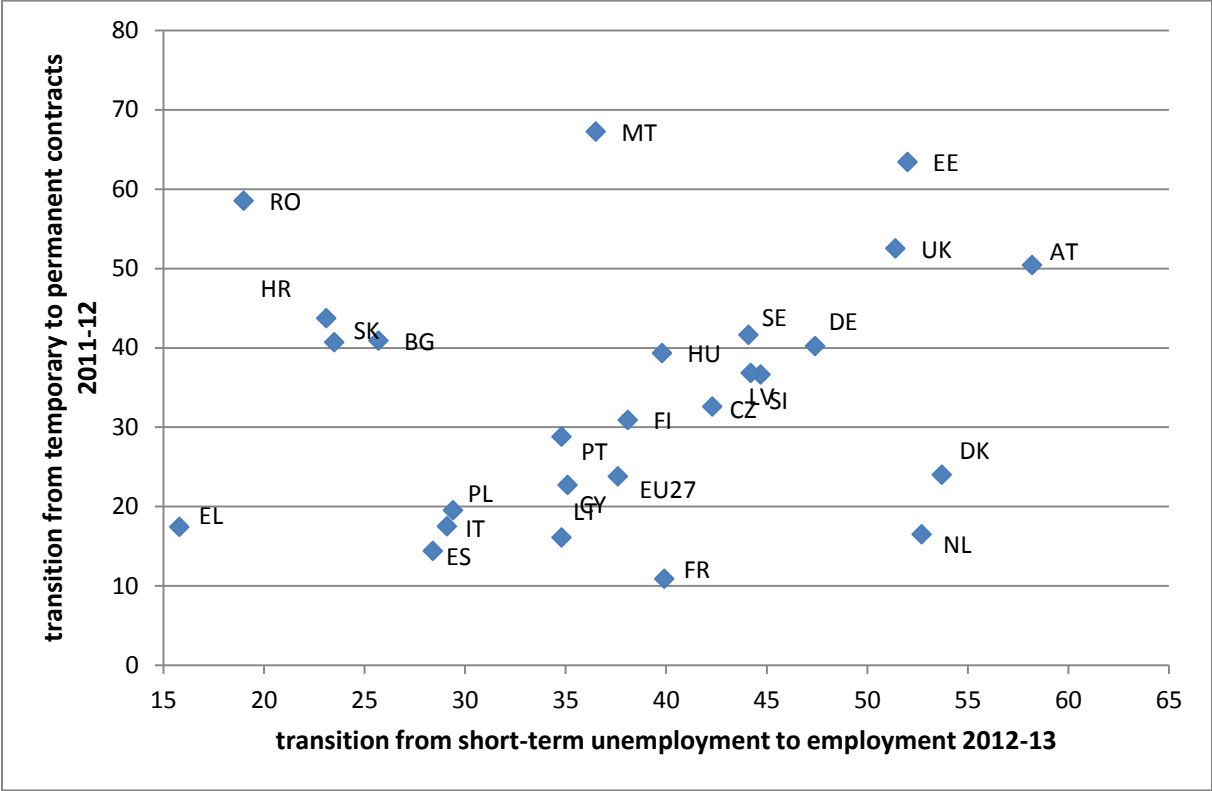
Given that the future of work will be characterized by diverse job options, a certain amount of heterogeneity in terms of working conditions is inevitable and should not be suppressed by heavy regulation. This would actually encourage exclusion of some groups or the circumvention of regulation and other negative side effects. In particular if skills in the workforce are diverse, entry positions and low pay is necessary. This calls for a rather open and flexible regulatory framework setting fairly wide boundaries, but also some outer limits as regards acceptable forms of employment so as to avoid deep inequality within the labor market. Clearly, this has implications for the design of minimum wages, for employment protection and the social protection of different types of employment. Ideally, disparities in the legal status and social protection of different types of employment should be minimized, following the ‘flexicurity’ principle. Such a flexible regime will help avoid a dualized labor market to a larger extent. Activation strategies and tailored active labor market policies are needed to avoid phases of unemployment or to keep them as short as possible (Figures 11 and 12). Adequate income protection is an essential part of such an arrangement, and it should be as universal as possible, avoiding deep segmentation by type of prior employment.

**Figure 11: Participation in training measures and exit from short-term unemployment**



Source: European Commission 2014.

**Figure 12: Transitions from unemployment to employment and from temporary to permanent contracts**



Source: European Commission 2014.

Many aspects of cooperation and conflicts at the intermediate (sectoral) or at the micro level cannot be regulated centrally, but require negotiations between actors within the general policy framework. This implies an important role for social partners, works councils and management. This holds for questions such as working time and mobile working arrangements. In that respect, operative social dialogue and collective bargaining are helpful mechanisms as they can lead to broadly applicable rules tailored to diverse sectoral needs.

Finally, we will most likely see no need for a fundamentally different societal and/or economic model (see, e.g. Giarini and Liedtke 1997; Rifkin 1995). Along the lines of the development discussed above, earnings from work will most probably continue to be a major source of income for the largest part of the population. Policy making will rather require a step-by-step adaption over time. We do not have to expect that the segment of paid work or the number of total hours worked will shrink substantially, eventually leading to higher structural unemployment driven by 'digital unemployment'. Hence there is neither a need nor a realistic potential to redistribute work through general working time reduction. As paid employment will continue to be a core element of social integration, moving to a fundamentally different model of income distribution such as an unconditional basic income system, a large publicly funded substitute employment segment or voluntary work as a major category is not a feasible option as they would create major economic, societal and fiscal risks. At least there is no economic reason that would make such a reform necessary or inevitable. Rather, public revenues from (progressive) taxation of income from work and capital should be used in favor of productive social investment.

## **9 Employers have to choose between business models**

Competition is everywhere in the economy. This puts all firms under pressure to ensure competitiveness in terms of the relation between price and quality of goods and services offered to other businesses or consumers. There are different models of competitiveness based either on quality or on cost advantages. Which way to choose depends on the market environment and on the capacities that can be built. One might distinguish between a 'high road' and a 'low road'; the first one mainly competing on quality, the second on the

cheapest price. This has massive implications for the types of workers needed, their qualification and working conditions. A more demanding model favoring quality and innovation, probably fitting better with the European high wage/strong human capital arrangement, requires specific skills and potentially also a more long-term employment relationship with workers, allowing for flexibility, but also ensuring a fair balance between effort and reward. Such more ambitious models can only be sustained if higher prices can be set on global markets for quality goods and services. This model must also place these firms in competition with firms choosing the low road with corresponding models of employment as regards skill formation, employment stability and pay. Hence, when firms adopt a more demanding business model, they will have to invest more heavily in the qualification, long-term employability and health of their workforce. This is a core requirement for the feasibility of such types of production and a more 'hard' driver compared to corporate social responsibility activities that are oftentimes more superficial. But the sustainability of such a model basically depends on the client or consumer acceptance of a certain price for a certain quality.

## **10 Work needs to be and can be both productive and attractive at the same time**

The reconciliation between employer and individual objectives is probably one of the core issues regarding the future of work as skilled workers and their ability and willingness to be productive, creative and responsible are core assets of future economic activity, and these workers tend to become a more and more scarce resource in Europe. In fact, the future of work will mostly be shaped by company practices aiming at productivity, innovation and speed for the sake of competitiveness. But at the same time, demands on workers cannot be increased indefinitely without creating stress and severe health problems in the long run. Physical and mental health issues have gained importance as has the search for solutions to ensure a proper work-life balance under new economic circumstances. We know from research that job strain due to excessive demands and limited control eventually leads to severe problems regarding employee well-being, motivation and health (Karasek 1990; Theorell and Karasek 1996; Liu, Spector and Jex 2005).

Hence, human resources policies and organizational innovations that help reconcile productivity and attractiveness of the workplace will contribute substantially to the success of firms when competition on markets, including the market for talent, is strong. To attract qualified people, work needs to be attractive regarding the fairness of effort and reward as well as the willingness of employers to negotiate flexibly with potential and incumbent workers on their working conditions, including working time patterns, mobile working, individualized career paths, targets to be achieved, building upon existing experiences and general trends observed (see also Beblavý, Maselli and Veselková 2014). This gives considerable scope for flexible, negotiated solutions at the company, department or individual level. However, as of yet, this tends to be a privileged situation for those whose skills are scarce. Finally, while allowing for differences and diversity, firms also need to observe overall fairness in the treatment of all of their workers. Apart from general rules on employment conditions, it may also make sense to set incentives to internalize external effects of non-sustainable human resource policies through a bonus/malus system in sickness and disability insurance, e.g. by encouraging responsible behavior of firms through lower contributions if fewer workers go on leave due to sickness or disability.

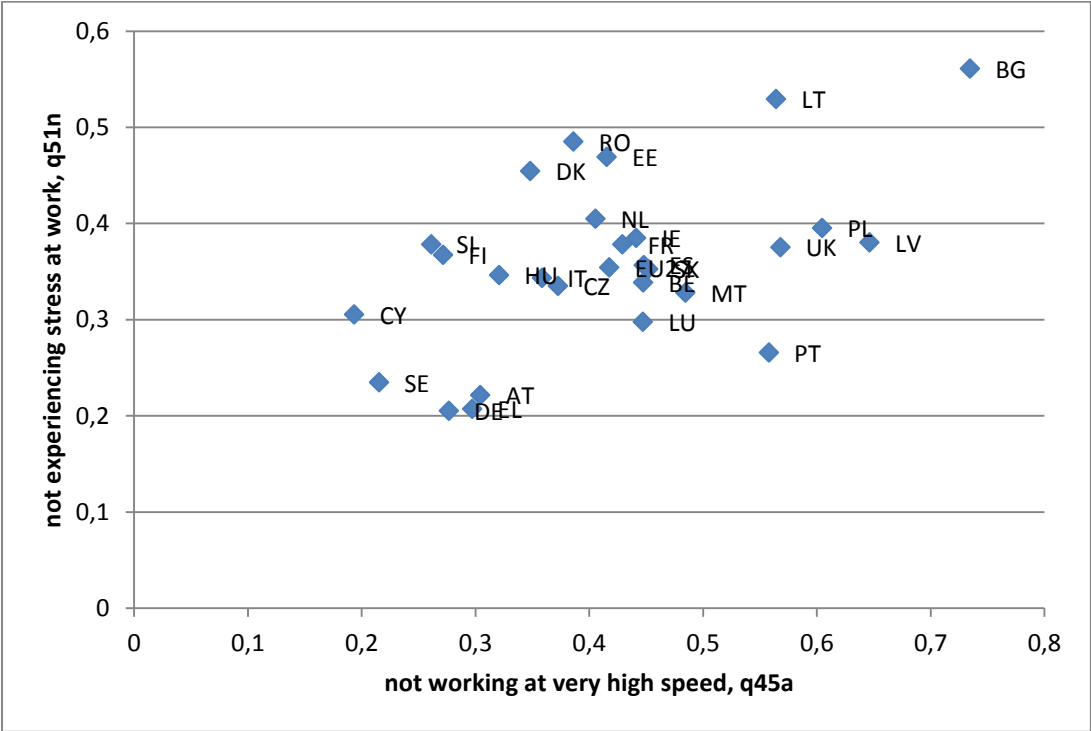
## **11 Management, hierarchy and governance**

Creativity and cooperation are crucial in many occupations. In a rapidly changing environment, there is a premium for quick and efficient delivery. Strict monitoring and control, often using data continuously being collected and monitored, may raise productivity in terms of reaching certain targets in the short run but will probably not work in the long run when it comes to stimulation and support innovation. At the same time we see tendencies towards the outsourcing of creativity and innovation, and attempts at a more industrialized model of the creation of ideas. This is a quite logical development in a market-driven economy but implies potentially an even heavier hand on individual workers. However, research has shown consistently that autonomy and intrinsic motivation within work tasks is a core element of job satisfaction, in particular in skilled, non-routine work. Employees need appropriate control over work processes and resources to cope with job



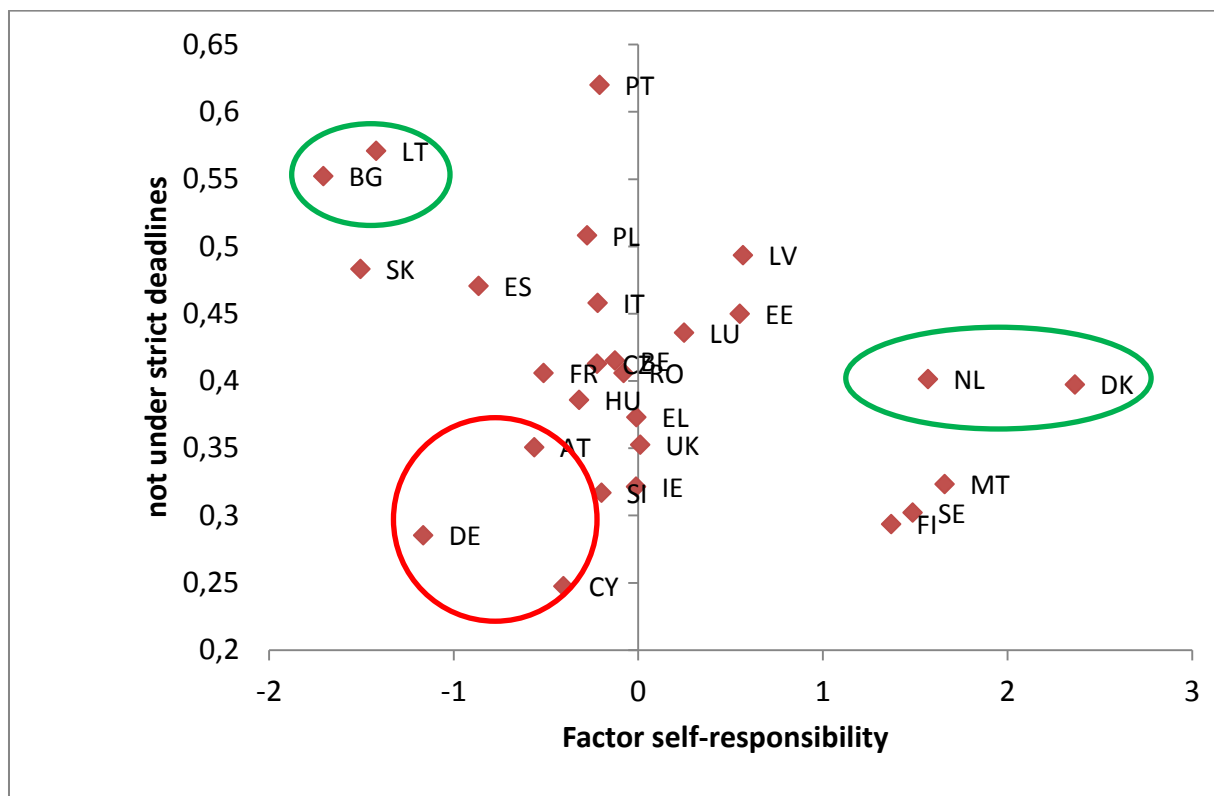
demands, deal with high work intensity and avoid negative stress, job strain and eventual health problems leading to sickness absence or disability. Research shows that work intensity and productivity are clearly related with autonomy if stress is to be avoided (Bauer 2004; Combs et al. 2006; Gellatly and Irving 2001; Gagné and Bhavesh 2011; Chirkov, Ryan and Sheldon 2011; OECD 2014, see also figures 13 and 14).

**Figure 13: High speed and stress at work**



Source: European Commission (2014) based on Eurofound.

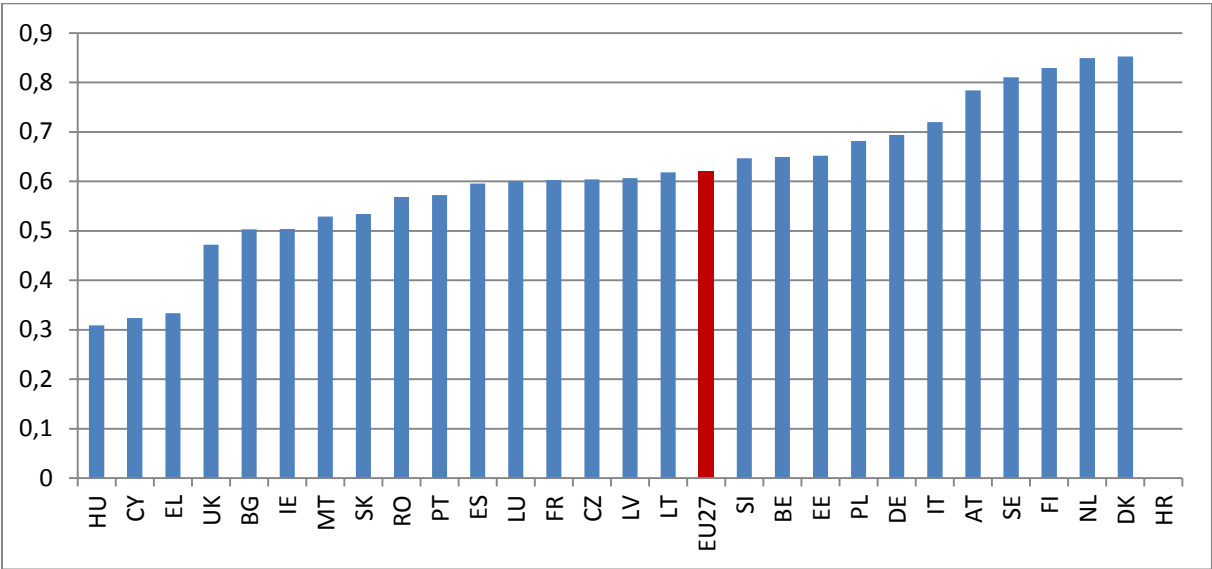
**Figure 14: Autonomy and stress**



Source: European Commission (2014) based on Eurofound. Note: high stress marked in red, low stress in green.

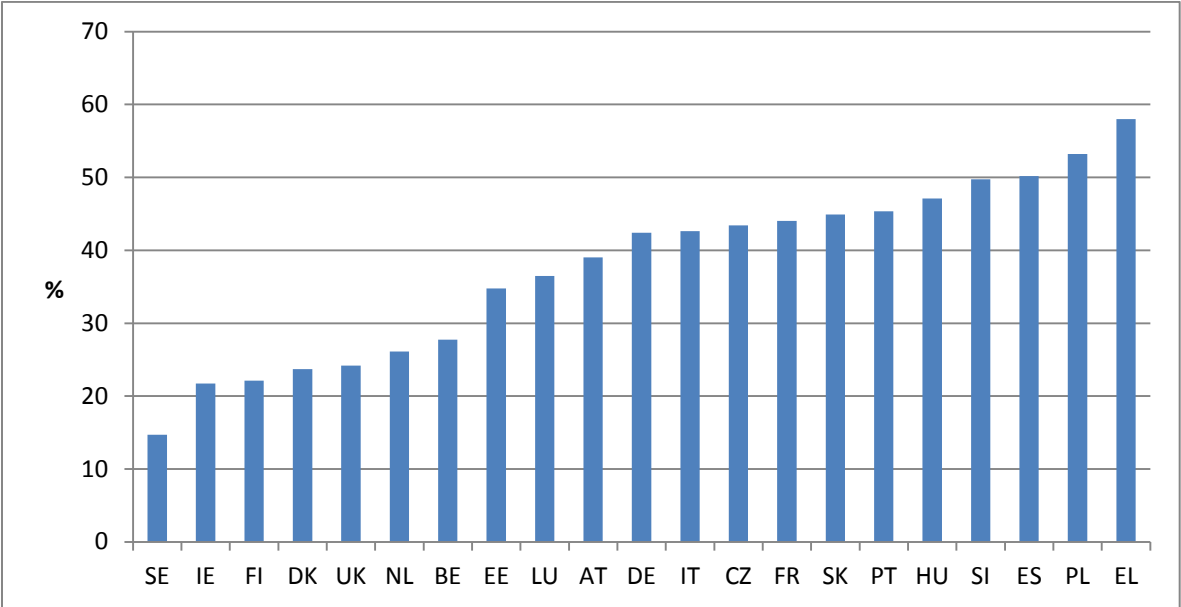
In a more general sense, richer jobs in terms of the characteristics tend to be perceived as more rewarding than classical hierarchical progression. If skills, motivation and experience at the individual level matter most, individuals have to be respected regarding their individuality, particular strengths, but also weaknesses. Autonomy, trust and professionalism based on skills and experience is therefore important and more productive than rigid hierarchical control and close permanent monitoring. Regarding the relevance of autonomy-friendly work environments on the one hand and employee wellbeing or the avoidance of job strain on the other one, we can observe major differences across sectors and across occupations, but notably also between European countries (see figures 15 and 16, Cottini and Lucifora 2013).

**Figure 15: Workplace not directly under control of boss**



Source: European Commission (2014) based on Eurofound.

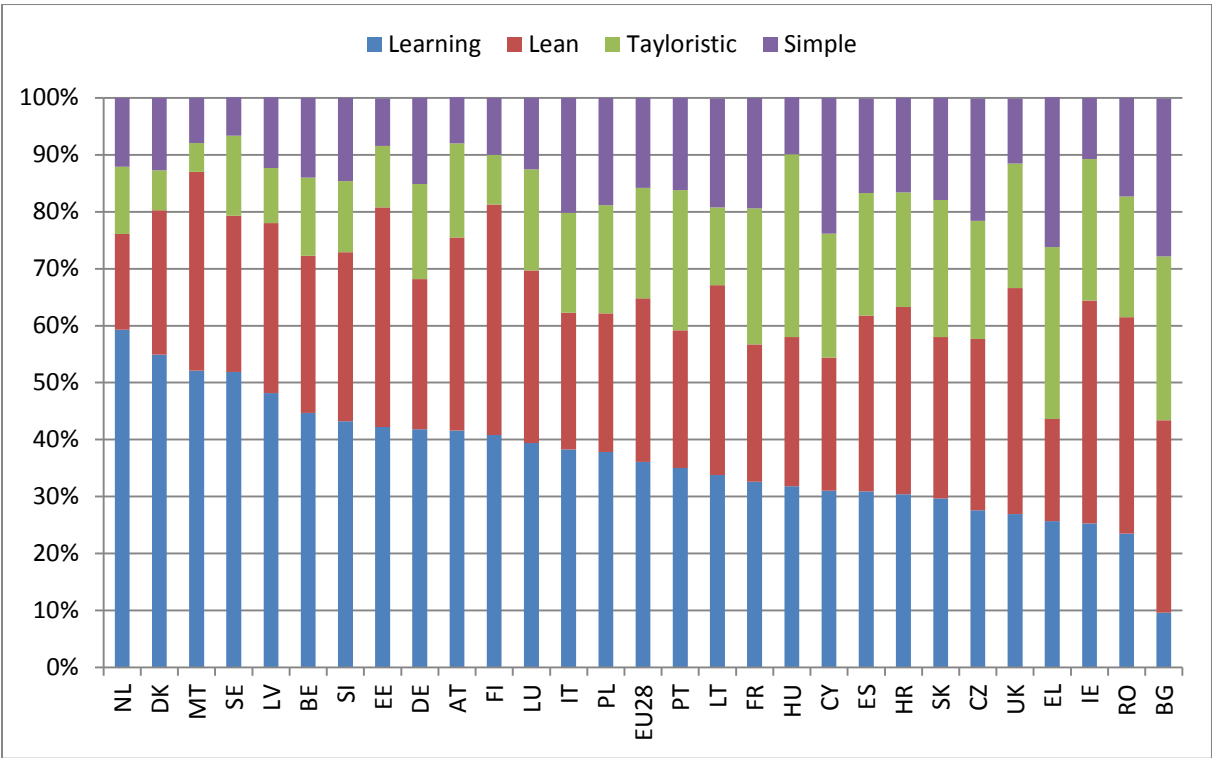
**Figure 16: Summary Index on Job Strain**



Source: OECD 2014.

Working conditions seem to be most employee-friendly, autonomy-oriented in Scandinavian countries – Finland, Sweden and Denmark – as well as in the Netherlands as regards working time, autonomy and the avoidance of stress and job strain. These countries also have not only the most autonomy-friendly, but also the most learning-oriented work environments as a typology of work organization presented by the European Commission (2014) shows (see figure 17). Of course, there are notable differences by sector, occupations and the skills structure of workers in different types of work organization, but there is also a strong national influence on the way work is organized (Gallie and Zhou 2013). All in all, these countries tend to have models of work that are, on average, better prepared for the future than elsewhere. Other countries have notable untapped potentials in ‘modernizing’ work arrangements to meet future requirements.

**Figure 17: Working environments in Europe**



Source: European Commission (2014) based on Eurofound.

## **12 The new world of work will be quite demanding, but also rewarding for many**

The future world of work will certainly be demanding, maybe more than in the past, for individuals, but it will also offer many opportunities. All jobs are potentially subject to change and can become obsolete. Hence, there is no absolute security of employment, but rather a permanent situation of trial, probation and assessment. Future jobs can be long-term and permanent, of course, but there is no guarantee for that. Furthermore, in many cases current and future work will be fluid and unlimited in many cases, in its interaction or integration with the rest of life, with a stronger emphasis on subjective involvement, requiring self-organization, professionalism, articulation and communication. This is particularly relevant for knowledge- and project-based work. To be able to cope with these demands, education and life-long training matter, not only formally, but also informally based on practical experience in similar non-routine work. These jobs are potentially rewarding as they allow for a personal shaping of tasks according to talent, taste or style. However, while full engagement and identification are seen as desirable and competitive assets, this raises psychological issues in terms of stress, potential exhaustion and mental health (see, e.g. Sennett 1998). The demands of the new world of work lead to a more in-depth discussion of these issues.

## **13 Individuals as optimizing investors in themselves?**

The position on the labor market depends on the match between job and profile, or supply and demand of certain skills and professional experience. This is directly related to the quality of working conditions, both with respect to employment stability but also remuneration, depending on individual bargaining power. Hence, employability remains the most important issue from the perspective of the individual workers. This employability comprises the capability of realizing the opportunities emerging in the labor market. Throughout the process, individuals are assessed by internal and external labor markets more or less continuously, which increases the subjective need to be and stay competitive

relative to others. The present and potentially future world of work rewards the psychological disposition to work and achieve under demanding conditions for a long period of time. Heavy subjective involvement and deep identification with the job can be characteristics of a high performer, but this may also lead to psychological problems, stress and burnout in the long run. Furthermore, of course, there are differences across workers in terms of preferences regarding work and life boundaries, working conditions and employment types; but there are also marked differences in talents and mental as well as psychological capacities to cope with the demands of the labor market. Preferences for work-life balance, expectations regarding job satisfaction, and mental health issues are of core importance regarding the possibility and willingness of individuals to cope and adapt to the modern world of work. Against this backdrop, individuals need to learn to perceive and articulate their needs, to see risks and also to set limits for themselves and co-workers. Individuals also shape the way they and their co-workers work and share some responsibility for themselves and others.

#### **14 There is no need to be afraid of the future**

The changes we have discussed are more incremental than disruptive. This means that we can expect that actors have some time and capacity to adapt and negotiate solutions. Clearly, we will not really face a situation of massive joblessness in developed market economies beyond the cyclical and partially structural unemployment observed currently. But again the future world of work will certainly be different from what we know today. However, this is not a reason to be afraid; as history has shown, human creativity and inventiveness are strong and will always find ways to cope with new situations, including creating new job profiles in the future. We have been living with technological progress, globalization and structural change for decades and will continue to do so in the future. There is no big master plan, but actually a great deal of micro-level action, with public policies setting a more or less favorable framework for market actors.

## References

- Autor DH and D Dorn, 2013. "The Growth of Low-Skill Service Jobs and the Polarization of the US Labor Market," *American Economic Review*, American Economic Association, vol. 103(5), 1553-97, August.
- Bauer TK, 2004. High performance workplace practices and job satisfaction: evidence from Europe. *RWI Mitteilungen 2003/04*, 54/55(1), 57-85.
- Beblavý M, I Maselli and M Veselková (eds), 2014. Let's get to work. The Future of Labour in Europe Volume 1. Brussels.
- Becker SO, K Ekholm and M-A Muendler, 2013. Offshoring and the onshore composition of tasks and skills. *Journal of International Economics*, 90(1), 91-106.
- Brynjolfsson E and A McAfee, 2011. Race against the machine: How the digital revolution is accelerating innovation, driving productivity, and irreversibly transforming employment and the economy.
- Brynjolfsson E and A McAfee, 2014. The second machine age: Work, progress and prosperity in a time of brilliant technologies.
- Chirkov VI, R Ryan and KM Sheldon, eds., 2011. Human Autonomy in Cross-Cultural Context. Heidelberg.
- Chung H and K Tijdens, 2013. Working time flexibility components and working time regimes in Europe: using company-level data across 21 countries. *The International Journal of Human Resource Management* 24(7), 1418-1434.
- Combs J, Y Liu, A Hall and D Ketchen, 2006. How much do high-performance work places matter? A meta-analysis of their effects on organizational performance. *Personnel Psychology* 59(3), 501-28.
- Cottini, E and C Lucifora, 2013. Mental Health and Working Conditions in Europe. *Industrial and Labor Relations Review* 66(9), 958-988.
- Eichhorst W and V Tobsch, 2013. Has atypical work become typical in Germany? IZA Discussion Paper 7609. (forthcoming in *Journal for Labour Market Research*)
- Eichhorst W and P Marx, eds., 2015. Non-standard Employment in Post-industrial Labour Markets: An Occupational Perspective. Cheltenham.
- European Commission, 2014. Employment and social developments in Europe.
- Eurofound, 2014. Drivers of recent job polarization and upgrading in Europe. Luxembourg.
- Eurofound, 2015. New Forms of Employment. Luxembourg.

- Frey CB and MA Osborne, 2013. The future of employment: how susceptible are jobs to computerisation? Retrieved September, 7, 2013.
- Gagné M and D Bhaveh, 2011. Autonomy in the Workplace: An Essential Ingredient to Employee Engagement and Well-Being in Every Culture. Vol. 1, 163-187
- Gallie D and Y Zhou, 2013. Job control, work intensity and work stress. In: D Gallie (ed.), Economic Crisis, Quality of Work and Social Integration: The European Experience, Oxford.
- Geishecker I and H Görg, 2008. Winners and losers: A micro-level analysis of international outsourcing and wages. *Canadian Journal of Economics*, 41, 243-270.
- Gellatly, IR and G Irving, 2001: Personality, Autonomy and Contextual Performance for Managers, *Human Performance* 43 (39), 231-245.
- Giarini O and PM Liedtke, 1997. The Employment Dilemma and the Future of Work.
- Goos M, A Manning, and A Salomons, 2009. Job Polarization in Europe. *American Economic Review*, 99(2): 58-63.
- Goos M, A Manning and A Salomons, 2014. Explaining Job Polarization: Routine-Biased Technological Change and Offshoring. *American Economic Review* 104(8), 2509-2526-
- Graetz G and G Michaels, 2015. Robots at work. IZA Discussion Paper 8938.
- Karasek R, 1990. Lower Health Risk with Increased Job Control Among White Collar Workers, *Journal of Organizational Behavior* 11 (3), 171-185.
- Liu C, PE Spector and S Jex, 2005. The relation of job control with job strain. *Journal of Occupational and Organizational Psychology* 78, 325-336.
- OECD, 2014. OECD Employment Outlook 2014. Paris.
- Rifkin J, 1995. *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-Market Era*. New York.
- Rifkin J, 2014. *The Zero Marginal Cost Society*. New York.
- Sennett R, 1998. *The Corrosion of Character. The Personal Consequences of work in the New Capitalism*. New York.
- Theorell T and R Karasek, 1996. Current issues relating to psychosocial job strain and cardiovascular disease research, *Journal of Occupational Health and Psychology* 1 (1), 9-26.