Chapter 3

The future of work in Europe: job quality and work organisation for a smart, sustainable and inclusive growth [1]

1. Better jobs and work organisation yield a more productive workforce

This chapter assesses the future EU labour market challenges and opportunities in terms of job quality and work organisation and their likely impact on labour market developments over the next 10 years. It presents recent developments in job quality and work organisation (and their interactions) and highlights their impact on productivity, labour market participation and social cohesion as indicated by recent research. It then explores how technological progress and innovation, globalisation, demographic change and the greening of the economy may affect the workforce's potential via their impact on job quality and work organisation. It ends by discussing how labour market policies can help prevent, cushion or correct adverse developments in job quality and work organisation associated with those structural changes, including issues such as polarisation and inequality, while reinforcing positive developments. The chapter builds on the analysis presented in the 2014 ESDE review [2].

Since the onset of the crisis, job creation has been high on the agenda of policy makers across the EU. As the signs of an economic recovery (albeit weak and unevenly spread across Member States) are growing, attention is turning to other emerging challenges such as those associated to globalisation or technological progress. These may exacerbate some of the negative developments ensuing from the economic crisis. Such forces may render some jobs obsolete, increase the health and accident risks associated with certain types of jobs or increase the pressure to ensure employees' availability around the clock. They may also bring new opportunities. In this context, forward-looking policies need to address the impact of such forces on jobs, job quality, work organisation and human capital formation. Policy makers will need to monitor, prevent and correct adverse developments, while strengthening positive ones.

The chapter is structured as follows. **Section 2** introduces the general and EU concepts of job quality. It also identifies different forms of work organisation across the EU [3]. **Section 3** presents patterns and trends in job quality across EU Member States and highlights the link between some dimensions of job quality and labour productivity and labour market participation. **Section 4** identifies future challenges to job quality associated with globalisation, technological progress and innovation, demographic change and the greening of the economy. Challenges include rising job insecurity, increased polarisation, accelerating skill erosion, gender inequality and a stronger emphasis on knowledge and creativity. **Section 5** describes different types of work organisation, distinguishing those that offer greater autonomy to employees. It explores how work organisation can foster productivity and longer working lives and reduce both absences and health-related costs. It discusses how workplaces can stimulate creativity and foster exchanges between workers, prevent stress, help maintain good physical and mental health and accommodate older workers or those with disabilities or certain diseases. It identifies modern management strategies that can facilitate employees' empowerment and are key to facing future challenges. **Section 6** concludes on how to strengthen productivity growth and labour market resilience via improved job quality and increased work organisation innovation, while ensuring that costs and benefits are distributed equitably.

2. Job quality and work organisation: multi-dimensional concepts

This section reviews the concepts of job quality and work organisation. It describes the EU concept of job quality, based on the EU Quality of Work system of indicators, as agreed within the Employment Committee (EMCO). In this system, indicators are grouped in four main dimensions: socioeconomic security; education and training; working conditions; and work-life and gender balance (Annex 1, Table A1.1). The section then focuses on the EU's four main different forms of work organisation that relate to employees' performance and labour market participation. These are:

[1] By Eric Meyermans, Teodora Tchipeva and Bartek Lessaer, with a contribution on work organisation by Agnès Parent-Thiron (Eurofound) and Milos Kankaras (Eurofound).

[2] Employment and Social Developments in Europe 2013 Review. Chapter 1, European Commission (2014f).

[3] Note that while the analytical framework of this chapter makes a distinction between job quality and working conditions, due regard is given to the possible reinforcing interactions between the two.

Discretionary Learning forms; Lean Production forms; Tayloristic forms; and Traditional Simple forms. See Annex 2 for a brief discussion of the methodology used to classify different types of work organisation.

2.1. Job quality dimensions

Job quality is a complex and multidimensional concept that has been extensively analysed and debated by economists, sociologists, and psychologists. Several factors make its definition and measurement a challenge.

There are a variety of perspectives on work and jobs depending on each individual's work role, and the perspectives of workers and their employers may not necessarily always coincide. Nevertheless, from an employer's perspective there are several factors that should encourage employers to increase the quality of jobs. For example, there is a direct link between a higher level of skills and a firm's productivity, which may encourage employers to provide continuous training. Furthermore, a physically safe and healthy working environment reduces accidents and absences from work and improves productivity and output. Hence, increased job quality can result in better quality goods and services together with a positive impact on companies' income and welfare as a whole.

2.1.1. Job quality: 'subjective' and 'objective' concepts

It is commonplace in analytical research to distinguish between the subjective and objective concepts of job quality. The subjective approach assumes that job quality is the 'utility' a worker derives from the job. That utility depends on job features over which each worker has personal preferences. Each worker values one feature against another in a different way. Some academics argue that measures of well-being or job satisfaction can be used as subjective indicators of job quality ([4]). Such measures take the individual differences into account as it is workers who evaluate the positive and negative aspects of a job and rank them ([5]).

However, the use of job satisfaction as a one-dimensional measure of job quality has limitations. For instance, it may be sensitive to each individual's aspirations and expectations. Indeed, workers with low aspirations or expectations often express high job satisfaction, even when— on the basis of measurable variables such as earnings — they are in low-quality jobs. Moreover, factors like one's cultural environment and traditions or personality (e.g. disposition to pessimism/optimism) can affect subjective job satisfaction. Therefore, subjective job satisfaction is prone to bias and can be misleading in measuring and monitoring job quality.

Objective approaches assume that job quality encompasses job features that meet workers' needs. Objective measures of job quality are derived from a given theory of human needs and measure how far jobs meet those needs ([6]). Thus, the objective concept of job quality is not assessed by a one-dimensional measure (e.g. job satisfaction) but by a set of indicators measuring various dimensions associated with the job ([7]).

Different disciplines tend to focus on different dimensions. Economists tend to focus on monetary aspects such as wage levels or working hours ([8]). Sociologists tend to focus more on such factors as occupational status and the extent to which workers have autonomy and control over their jobs (e.g. Jencks et al., 1988; Goldthorpe and Hope, 1974; Prandy, 1990; Stewart et al., 1980). Psychologists often emphasise how intrinsically meaningful and challenging work is, and thus analyse a variety of psychological measures of job satisfaction such as workers' discretion and trust in their jobs (Guillen and Dahl, 2009; Kalleberg and Vaisey, 2005).

Even though different academic fields conceptualise and measure job quality in different ways, there is some convergence in terms of the work features that are seen to be crucial. Integrated insights from psychology, sociology, applied economics and other fields are enriched by considering the workers' point of view, notably through the development of surveys on job satisfaction and workers' well-being (e.g. Layard, 2005).

Therefore, objective approaches to job quality are based on a *selected* set of indicators depending on the researcher's objectives (see Annex 1 for examples of objective definitions of job quality). Some researchers tend to focus on the characteristics of the job (e.g. Eurofound, European Parliament); others include broader indicators of the economic and labour market environment as well as indicators relating to the personal characteristics of the worker (e.g. ILO 'decent work concept', with indicators on child labour, social protection; UNECE concept).

Most approaches either group the multitude of individual indicators into a system of indicators, or aggregate those indicators into a composite index. Both approaches have advantages and disadvantages. An aggregate index typically trades off the ease of presentation for strong assumptions on the weighting attributed to each indicator, i.e. assumptions about people's preferences for one job feature over another ([9]). Several examples of such aggregation and the use of composite indices are available (Annex 1).

2.1.2. A set of job quality indicators for policy-making at EU level

Job quality issues were first explicitly introduced into the European policy agenda at the Lisbon Council in March 2000, which

([4]) For a discussion, see Eurofound (2012b).

([5]) Some questions in the semi-structured interviews of the NEUJOBS project reflect this focus on preferences by asking 'Which of the following features (attributes) of your job are more/less important to you?'.

([6]) E.g. Maslow's hierarchy of needs applied to the world of work leads to a number of key job characteristics. Similarly, Green (2006) adapts Sen's capability approach and develops the idea that a 'good job' is one that offers workers a high capability to do and be things that they value.

([7]) Some confusion may arise regarding self-reported variables in surveys (e.g. in the EWCS), which sometimes are referred to as 'subjective'. It should be stressed that the variables included in the EWCS refer to 'objective' job features; the term 'subjective' is reserved for reports of feelings, perceptions, attitudes or values. See Eurofound (2012b).

([8]) In the standard neo-classical model, for example, work is disutility and wages are the sole motivation of workers. At market equilibrium the wage level fully reflects the job quality, and it equals the level of productivity and compensates for the disutility of work. In the framework of compensating wage differentials some displeasures that arise from work are explicitly taken into account in the utility function (e.g. injury and occupational diseases, commuting costs, working hours); they are fully compensated by a wage premium because (by assumption) workers trade off working conditions and benefits for pay (see e.g. Rosen, 1986). In other words, ceteris paribus, workers with similar qualifications who work under bad working conditions are paid more by employers to compensate for the unpleasantness of the job. In a perfectly competitive labour market with perfect information, as assumed in the framework, the wage level reflects job quality. Bustillo et al. (2012), part 5, provide an overview of the empirical literature testing the link between working conditions and differences in pay. By contrast, dual labour market theorists (e.g. Piore, 1971; Edwards, 1979) have contended that bad job characteristics tend to cluster so that a job that is bad in one dimension tends to be bad in others.

([9]) The pros and cons of composite indices against a system of indicators are discussed in more detail in Annex 1.

established the objective of 'more and better jobs for all'. In 2001, the Laeken European Council agreed to a comprehensive framework on job quality. The resulting concept of job quality included 10 dimensions, categorised into two themes: 1) characteristics of the job/worker and 2) the wider socioeconomic and labour market context (Annex 1). In 2013, the EU's Employment Committee (EMCO) Indicators Group agreed upon a four-dimensional concept of job quality, subdivided into 10 further sub-dimensions, each with several indicators (Annex 1, Table A1.1). The indicators are drawn predominantly from the EU Labour Force Survey (EU-LFS), the Statistics on Income and Living Conditions (EU-SILC) and Eurofound's latest European Working Conditions Survey (EWCS). The four dimensions are:

1. Socioeconomic security, including adequate earnings and job and career security;

2. Education and training, including skills development through life-long learning and employability;

3. Working conditions, including health and safety at work, work intensity, autonomy and working practices, as well as collective interest representation;

4. Work-life and gender balance.

Operationalising the multitude of indicators to facilitate monitoring, assessment and policy-making remains a challenging work in progress. Through factor analysis, their number has recently been compressed but the list still remains long([10]).

2.2. Work organisation can take different forms

In the ever-changing world of work, employees' well-being, performance and labour market participation depend on the organisation of work by firms. Based on the findings of the three most recent EWCS waves (2000, 2005 and 2010), four broad forms of work organisation can be identified. Table 1 describes the main characteristics of these forms of work organisation among private non-agricultural establishments employing 10 or more workers (see Annex 2 for the methodology used to underpin the classification).

([10]) In the table in Annex 1 these indicators are marked 'FACTOR indicating…(the particular aspect of work)'.

The 'Discretionary Learning form' (hereafter Learning) is the first and most prevalent type of organisation, covering some 36% of employees in private companies with 10 or more employees. They are characterised by the highest level of task autonomy (methods of work, speed of work), a very high cognitive dimension (problem solving, learning new things, complexity of tasks), a high level of self-assessment of quality and some autonomous teamwork. There is a low level of monotonous and repetitive tasks and a low incidence of various forms of work pace constraints. These characteristics are similar to models of learning organisations or the 'adhocracy' model of Mintzberg (1979), and coincide with many features of the Scandinavian sociotechnical model, notably its emphasis on self-autonomous teams.

The 'Lean Production form' (hereafter Lean) covers nearly 29% of employees. It is characterised by a strong presence of team work, including self-managed teams, the highest reported use of quality norms and self-assessment of quality, the highest level of task rotation and horizontal and norm-based constraints, a very high level of cognitive demands and higher levels of task autonomy. This type of organisation displays strong learning dynamics and relies on employees' abilities to solve problems themselves. Work is embedded in numerous quantitative and organisational pace constraints and requires the respect of strict quality standards, granting employees a rather 'controlled' autonomy in their work.

The 'Tayloristic form' covers about 20% of employees. This type of work organisation displays a high level of non-autonomous team work, the lowest level of task autonomy, limited cognitive demands at work, very high levels of use of pre-defined quality standards (and lower levels of self-assessed quality standards) and a very high level of pace constraints, especially those created by limitations in the speed of machines or production flow.

The 'Traditional or Simple form' of organisation covers nearly 16% of employees. It is characterised by the lowest incidence of work pace constraints and the use of pre-defined or self-assessed quality standards. Workers belonging to this organisational form have less work pace autonomy and generally face the least cognitively demanding tasks, with only a few instances of teamwork and work rotation. In such establishments, work organisation methods are not (strictly) codified and are largely informal, probably as a consequence of the lower complexity of the work tasks involved.

2.3. Work organisation impacts on job quality and performance

As can be seen in Table 1, nearly two thirds of employees in private establishments with 10 or more employees (excluding agriculture) work in forms of work organisation characterised by strong learning dynamics and high problem-solving activity: the Learning and the Lean production forms. These are often labelled together under the heading of High Performance Work Places — HPWS (Appelbaum and Batt, 1993).

Though similar, Learning and Lean organisations differ in a number of dimensions. Learning organisations place additional importance on the wholeness of tasks, a higher level of personal autonomy and initiative, less emphasis on strict adherence to standards and more open access to decision-making process. In contrast, Lean organisations are more hierarchical, and task autonomy and pace of work are more limited and controlled. Also, Learn organisations do not appear to compensate workers fully for their increased level of responsibility and the need to address ongoing problem-solving activities in an increasingly complex environment. This may result in problems relating to personal well-being, health or work-life balance similar to those experienced in Tayloristic organisations.

Employees working in Tayloristic and more Traditional or Simple forms of work organisation, which account for around a third of all employees, have much less task autonomy, rarely deal with cognitively demanding tasks and have fewer opportunities to learn new things. Furthermore, while workers in more Traditional and Simple forms of work organisation face fewer quality norms or work pace constraints, Tayloristic forms of organisation are marked by much stricter controls in both respects.

Finally, a meta-analysis of 92 studies (Combs et al., 2006) found evidence that HPWS enhance organisational performance. These organisations are better suited for more volatile and complex environments, including more competitive and globalised markets.

Table 1: **Work organisation variables across the classes (% of employees) — 2010**

		Work organisation classes			
		Discretionary learning	**Lean production**	**Tayloristic**	**Traditional or simple**
Autonomy in work	Methods of work*	85.90%	64.20%	7.70%	33.70%
	Speed or rate of work*	88.80%	66.20%	13.80%	46.20%
	Order of tasks	80.80%	62.20%	14.60%	35.70%
Cognitive dimensions of work	Learning new things*	83.40%	90.80%	37.60%	22.50%
	Problem solving activities*	98.00%	91.50%	58.10%	46.00%
	Complexity of tasks*	74.60%	86.00%	32.20%	12.70%
Quality	Self-assessment*	83.20%	91.30%	63.40%	23.00%
	Quality norms*	77.80%	97.70%	94.50%	35.40%
Monotony of tasks*		29.60%	60.60%	75.90%	52.40%
Repetitiveness of tasks*		16.50%	38.20%	51.60%	24.00%
Task rotation*		40.20%	76.30%	46.30%	31.20%
Work pace constraints	Automatic*	8.00%	43.20%	64.00%	13.40%
	Norm-based*	41.80%	77.20%	73.00%	17.70%
	Hierarchical*	28.50%	68.40%	65.90%	27.20%
	Horizontal*	29.50%	86.40%	66.60%	27.00%
	Direct demands from other people	62.80%	65.00%	53.10%	55.10%
Teamwork*	With autonomy	32.46%	46.28%	16.78%	16.18%
	Without autonomy	24.94%	46.86%	43.72%	25.99%
Assistance	From colleagues	70.49%	82.61%	65.54%	62.70%
	From hierarchy	61.06%	62.29%	47.66%	46.35%
Overall proportion of workers in the four forms of work organisation		36.00%	28.70%	19.50%	15.80%

Source: Eurofound based on EWCS (2010).

Note: Variables with an asterisk (*) have been used to identify the four main different organisation forms. Further variables are used to provide additional information.

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3. The effects of job quality on productivity, labour market participation and social cohesion

This section presents patterns and trends in job quality based on the EU job quality concept and *selected*([11]) EU Quality of Work Indicators agreed by the EMCO Indicators group. The structure of this section follows the breakdown of the EMCO job quality indicators into its four dimensions (here subsections): 1) socioeconomic security, 2) education and training, 3) working conditions and 4) work-life and gender balance (EMCO Indicators table in Annex 1). For each subsection, the transmission mechanism between job quality and productivity, labour market participation or inequality is presented.

3.1. Socioeconomic security: synergy of interests

3.1.1. Earnings affect workers' motivation and effort

Earnings from work are an important dimension of job quality: they are the main source of income for workers, and affect many dimensions of workers' well-being, including better access to goods and services or better health. An adequate level of pay helps avoid in-work poverty and social exclusion([12]).

The literature suggests that the level and distribution of earnings can have a direct impact on productivity and output. A higher wage (above the free market level) increases the cost of job loss for workers and creates incentives to be productive and not to shirk (e.g. Akerlof and Yellen, 1986). Alternatively, the amount above the market level rate may be seen by the worker as a 'gift', inducing higher motivation, commitment and effort. For employers, a wage above the market level can reduce labour turnover and thus reduce the cost of recruitment and initial training, especially of highly qualified workers.

([11]) The aim of the chapter is not to review all indicators in the EMCO list. Rather, it reviews a selected number to illustrate main trends and the links between job quality and outcomes such as productivity, labour market participation and existing inequalities among groups. Furthermore, the high levels of correlation between indicators within each sub-dimension make it unnecessary to provide a detailed analysis of all the indicators on the EMCO list. Additional information is presented in footnotes or in Annex 3.

([12]) More details on brochure on in-work poverty available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-10-015/EN/KS-RA-10-015-EN.PDF

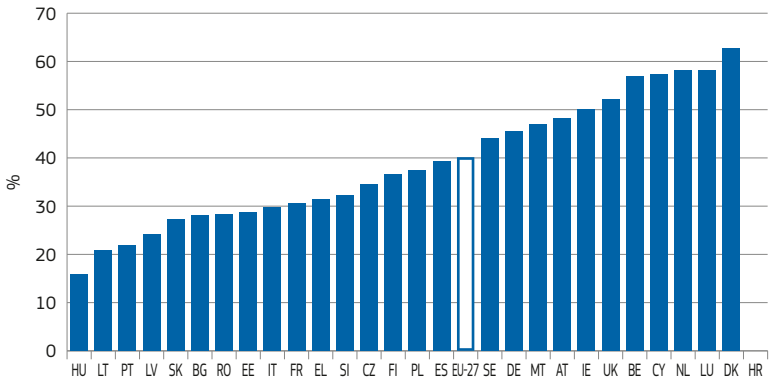
Workers derive job satisfaction not only from the level of their earnings but also from their earnings relative to those of other workers, i.e. the distribution of earnings (e.g. OECD 2014), though the effect may be ambiguous([13]). On one hand, a wider wage dispersion may induce workers to make a stronger effort to get into the upper wage scale, increasing individual and overall productivity (e.g. Lazear and Rosen, 1981). However, it may undermine cooperation among workers, decreasing the overall productivity level (e.g. Akerlof and Yellen, 1990). Moreover, it may limit the ability to pay for education and training of those in the lower brackets and result in an under-investment in human capital with a negative impact on the individual's own productivity (e.g. Galor and Zeira, 1993) and potentially that of their co-workers (e.g. Lucas, 1988; Lloyd-Ellis, 2003). Finally, to the extent that workers perceive they are not receiving their fair share of the wealth they create, the call for redistribution via taxes may increase, with an effect on innovation and productivity growth (e.g. Alesina and Rodrik, 1994; Alesina and Perotti, 1994; Ostry et al., 2014; Piketty 2014).

Based on the EWCS 2010, Chart 1 shows that satisfaction with pay in 2010 was lowest in Hungary, Lithuania, Portugal and Latvia, and highest in Denmark, Luxembourg and the Netherlands([14]).

Chart 2 shows that in-work poverty was highest in Poland, Luxembourg, Greece and Romania in 2013, while it was among the lowest in Finland, the Czech Republic, the Netherlands and Denmark. The in-work at-risk-of-poverty rate measures the share of persons who are at work and have an equivalised disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers).

Chart 3 shows the distribution of earnings, as measured by the Gini earnings index, in 2000 and 2010 for the Member States for which the data are

Chart 1: Am I well paid for the work I do?



Source: Eurofound, EWCS 2010, question 77b.

Note: No observation available for HR.

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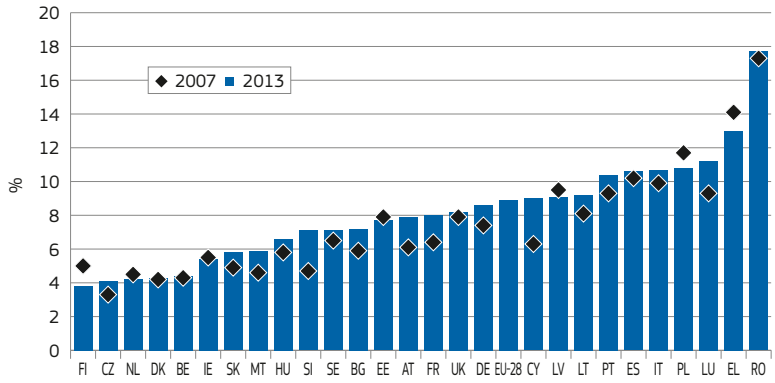
Chart 2: In-work poverty, 2007 and 2013



Source: Eurostat SILC, 2012, table: ilc_iw01.

Notes: The in-work at-risk-of-poverty rate measures the share of persons who are at work and have an equivalised disposable income below the risk-of-poverty threshold, which is set at 60% of the national median equivalised disposable income (after social transfers). For more details see http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-10-015/EN/KS-RA-10-015-EN.PDF; 2012 observation for IE.

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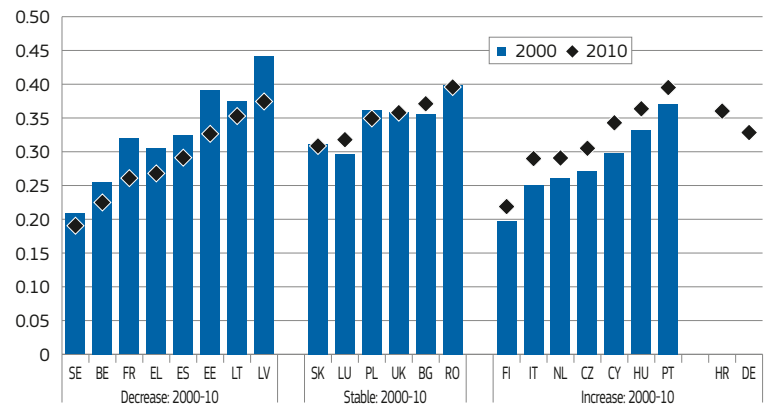
Chart 3: Inequality as measured by the Gini earnings coefficient



Source: WiiW (2014) using EU Structure of Earnings Survey.

Notes: Gini coefficient calculated on basis of earnings of employed persons, not income.
The Gini coefficient is an indicator with a value between 0 and 1. Lower values indicate higher equality.
No observation available for HR and DE for 2000.

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([13]) The literature on the determinants of subjective well-being has focused on the relative importance of absolute and relative earnings, without however providing for a conclusive answer so far. Easterlin (1974), who sparked the debate, argued that once basic needs have been met it is only the relative income that matters for increasing one's well-being. Recent studies challenged this proposition by arguing that the relationship between income and life satisfaction is log-linear (Deaton and Kahneman, 2010; Sacks et al., 2012; Stevenson and Wolfers, 2008 and 2013), or that there are declining marginal returns to income in terms of subjective well-being, from which follows that overall welfare is a function of both absolute income and its distribution. Most studies that have analysed the role of relative wage comparisons for well-being found negative effects (Clark and Oswald, 1996; Luttmer, 2005; Card et al., 2012) that have been typically interpreted as status effects: the higher the earnings of the reference group relative to one's personal earnings, the lower one's social status and well-being.

([14]) See also Annex 3, Charts A3.1 and A3.2 for real wages adjusted for productivity and mean monthly earnings.

available ([15]). On average, this indicator remained fairly constant over the period at around 0.3, but ranging from about 0.2 (e.g. Sweden, Finland) to more than 0.4 (e.g. Romania, Portugal) — with a higher value indicating higher inequality. Since the beginning of the decade, inequality has decreased substantially in the Baltic countries and France, while it has increased in Cyprus and Italy.

3.1.2. Job and career security effects on commitment, enhanced firm-specific skills and productivity

Job security strengthens workers' commitment and the opportunities to acquire firm-specific skills, which in turn may enhance individual and team performance, with a positive impact on productivity (e.g. Auer et al., 2005; Brown et al., 2011) ([16]). In contrast, involuntary part-time work or long spells of inactivity/unemployment between temporary jobs) may erode human capital and lead to poor mental health and low life satisfaction (e.g. Green, 2011; Sverke et. al, 2006), negatively affecting personal performance and overall productivity. Moreover, involuntary part-time work or long spells of inactivity/unemployment between temporary jobs decrease the household work intensity and increase the risk of in-work poverty and social exclusion. Job security may, nevertheless, induce shirking in some circumstances if not counteracted by specific measures (e.g. Yellen, 1984; Shapiro and Stiglitz, 1984; IchoNo and Riphahn, 2005) ([17]).

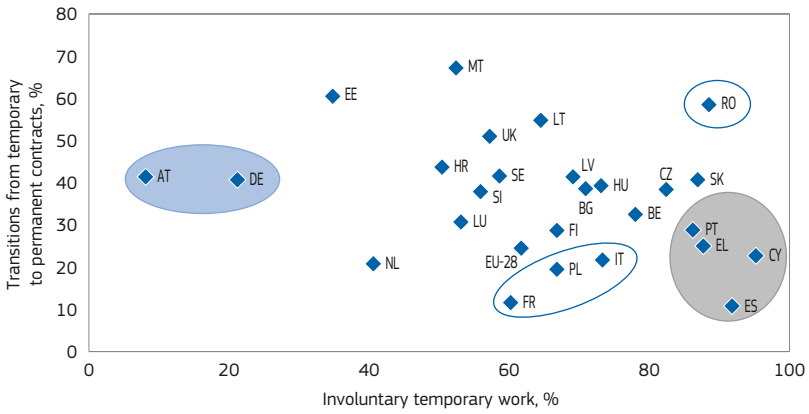
A high proportion of workers in Spain, Greece, Portugal, Cyprus, Romania and Slovakia are on involuntary temporary contracts (Chart 4) ([18]). Moreover, the transition from temporary to permanent contracts is particularly difficult in Spain, Greece, Cyprus and Portugal. In contrast, Austria, Germany, the Netherlands and Estonia have low rates of involuntary temporary employment and high transition rates to permanent employment ([19]).

Temporary work needs not necessarily be a negative job feature. If, for example, the reason for temporary employment of young people is that they are in education or training (as in Germany, Austria and Denmark) ([20]) or on a probation period, then a temporary job can be seen as a stepping stone to more stable forms of employment. However, if upward transitions in pay level and/or contract type are impeded and the labour market is highly polarised, the prospects for career advancement and perceptions about the quality of their jobs will be poorer. This may reduce motivation, and thus productivity and growth (see for instance OECD, 2014).

Chart 5 shows the unfavourable changes observed in the majority of the Member States during the recent crisis ([21]). Involuntary temporary work increased while the transition to more stable employment contracts fell. The situation appears to have deteriorated further in the Southern countries (Greece, Spain, Cyprus) and Slovakia, followed by Bulgaria, the Czech Republic, Hungary and Latvia. Noticeable changes are also seen in Luxembourg and Italy ([22]) ([23]).

Chart 6 shows a positive change in at least one of the indicators for a limited number of Member States ([24]). In Austria,

Chart 4: Involuntary temporary work and transitions from temporary to permanent contracts



Sources: Eurostat LFS, table lfsa_etgar and ilc_lvhl32. Data for involuntary temporary employment is for 2013 ([1]); data for transitions if for 2011. Transitions data for Denmark and Ireland is missing.

Note: 15 to 64 years age group; % of total temporary workers.

([1]) Involuntary temporary work used in this subsection is based on the Eurostat concept. In particular, employees with temporary contracts are those who declare themselves as having a fixed-term employment contract (see below) or a job which will terminate if certain objective criteria are met, such as completion of an assignment or return of the employee who was temporarily replaced (for more details check the Eurostat metadata available at http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/EN/lfsa_esms.htm. Employees with fixed-term contracts: Following Eurostat, the concept of fixed-term contract is only applicable to employees, not to the self-employed. In some countries, contracts of this type are settled only in specific cases, e.g. for public-sector jobs, apprentices or other trainees within an enterprise. Given wide institutional discrepancies, the concepts of 'temporary employment' and 'work contract of limited duration' (or 'permanent employment' and 'work contract of unlimited duration') describe situations which, in different institutional contexts, may be considered similar. For the reference definitions, please consult the EU-LFS explanatory notes at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/EU_labour_force_survey_-_methodology#LFS_explanatory_notes

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([15]) Earnings distribution is not to be confused with distribution of income, wealth or opportunities. For a comprehensive study on the latter, see, for example, the GINI project available at http://www.gini-research.org/articles/home

([16]) Using macro-data covering 13 European countries between 1992 and 2002, Auer et al. (2005) report a positive (though eventually decreasing) relationship between job tenure and productivity. Using micro-data from 2004, Brown et al. (2011) show strong employee commitment decreases the probability that labour productivity is below the sample mean by about 10 pps.

([17]) Note that job security need not exclude internal job flexibility. For example, it is possible that short-time working arrangements adopted during an economic downturn can have a positive impact on long-run labour productivity to the extent that the free time is used for skill formation.

([18]) Note that this chart draws from different surveys covering data for 2013 and 2011.

([19]) However, there is a high gender imbalance in transition rates to permanent contract in Estonia (see Annex 3, Chart A3.5).

([20]) In 2013, the share of employees aged 15–24 in temporary contracts due to education or training in all temporary employees aged 15–24 was 85% (though this figure is flagged as unreliable by Eurostat), 80% and 54% in Germany, Austria and Denmark. This percentage remained stable between 2007 and 2013.

([21]) Note that this chart draws from different surveys covering data for 2013 and 2011.

([22]) The share of employees aged 15–24 in temporary contracts due to education or training in all temporary employees aged 15–24 decreased substantially in Italy (from 54% to 40%) and Luxembourg (from 52% to 44%) between 2007 and 2013.

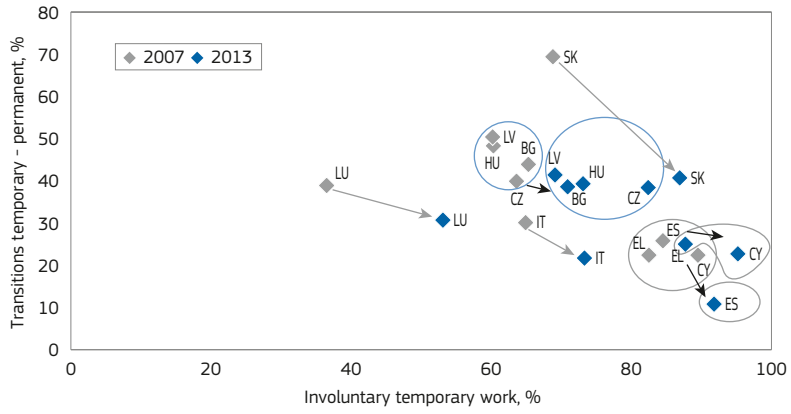
([23]) These trends may reflect an increased tendency of firms to use temporary contracts to absorb more easily shocks in product (and hence also in labour) demand during the crisis, especially in countries where employment protection legislation is much stricter for permanent than for temporary contracts.

([24]) Note that this chart draws from different surveys covering data for 2013 and 2011.

involuntary temporary work declined. In Finland and Portugal it increased slightly, but transitions improved. In Germany and Lithuania, involuntary temporary work declined and transitions to more stable employment contracts became easier. Annex 3 gives more detail about the evolution of involuntary temporary work and transitions by country (Annex 3, Charts A3.3–A3.8).

There are significant gender inequalities in the transition from temporary to permanent contracts. In many Member States, men have higher transition rates to permanent contracts than women. Gender differences in transition rates stand out in Lithuania (30 pps), Estonia (15 pps) and Cyprus (18 pps) (Annex 3, Charts A3.5). Women show better transition rates than men in Romania and Latvia. Annex 3 also shows how transition rates evolved during the recent crisis by gender (Annex 3, Charts A3.5–A3.7). *Involuntary* temporary work is also more widespread among workers on temporary contracts who are aged 55–64 than among younger workers (aged 15–24), especially in Germany (where the gap is the highest at 60 pps), Luxembourg, Denmark and Ireland([25]) (Annex 3, Chart A3.8).

Chart 5: Involuntary temporary work and transitions during crisis deteriorated in some Member States



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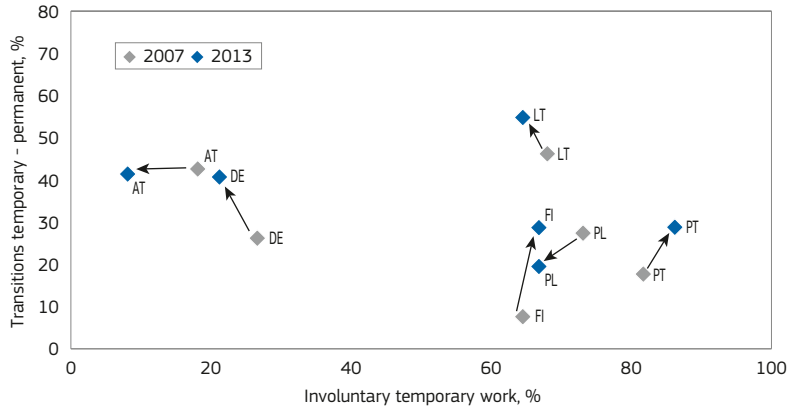
Source: Eurostat LFS, table lfsa_etgar and ilc_lvhl32.

Note: 15 to 64 years age group; % of total temporary workers.

Chart 6: Involuntary temporary work and/or transitions during crisis improved in some Member States



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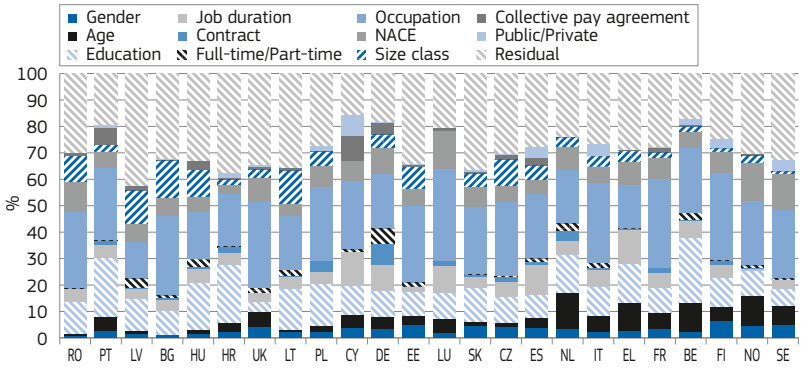
Source: Eurostat LFS, table lfsa_etgar and ilc_lvhl32.

Note: 15 to 64 years age group; % of total temporary workers.

Chart 7: Contribution to GINI earnings index (2010)



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Source: WiiW (2014) using EU Structure of Earnings Survey.

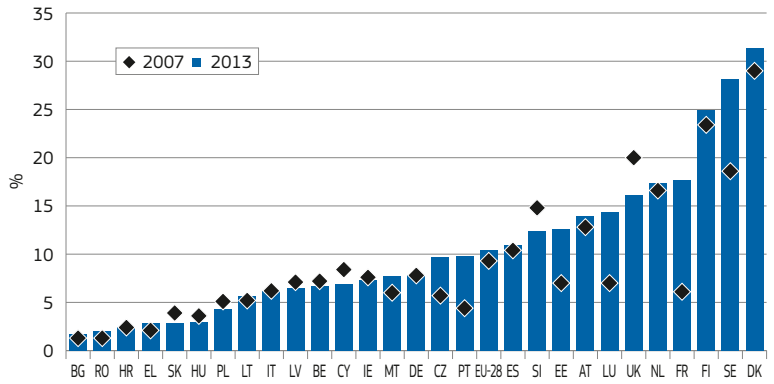
Note: Gini coefficient calculated on basis of earnings of employed persons, not income.

Box 1: How much does job security (duration) contribute to earnings dispersion?

The extent to which individual (i.e. gender, age, educational level), job (i.e. occupation, job duration, employment contract type) and firm (i.e. economic activity, size of the enterprise, existence and type of pay agreement, ownership) characteristics affect the earnings distribution differs within Member States. (See Chart 7 for those for which data are available). On average, occupation is estimated to contribute about 25 % to earnings dispersion, followed by education (12 %), industry (10 %), enterprise size (6 %), job duration (6 %), age (5 %) and gender (3.5 %), leaving some 30 % of earnings dispersion unexplained by these factors. Job duration appears relatively strong in explaining earnings dispersion in Southern European countries, and also in Germany and Luxembourg. Whether a contract is permanent or of fixed duration contributes strongly in Germany, Poland and the Netherlands, while part-time versus full-time work is estimated to contribute strongly to earnings dispersion in Germany, Latvia, Hungary, the Netherlands, Belgium and Lithuania (WiiW, 2014).

([25]) The low share of involuntary temporary young workers in Germany, Austria, Luxembourg and Denmark may be due to the fact that many young people on temporary contracts in these countries are in education or training (see footnotes 20 and 22).

Chart 8: **Participation rates in life-long learning (LLL), 2007–13**



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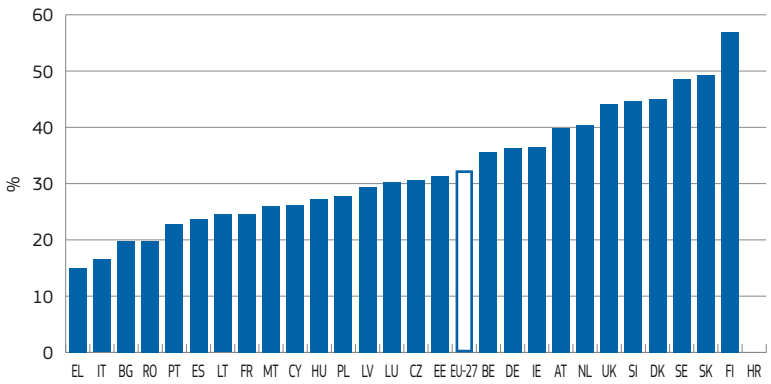
Source: Eurostat table trng_lfse_02

Note: Break in series for CZ, FR, LU, LV, NL, PT and SE.

Chart 9: **On-the-job training, 2010**



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Source: Eurofound, EWCS 2010, question 61c.

Note: No observation available for HR.

3.2. Education and training may enhance employability and productivity

The literature (e.g. Lucas, 1988; Rebelo, 1991; Dearden et al., 2006; Christen et al., 2008) suggests that human capital formation is directly and positively linked to productivity and labour market participation. Investment in education and training leads to individual increasing returns and generates positive spill-over effects increasing the productivity of co-workers([26]). Strengthening human capital and its formation may be crucial to strengthen European firms' comparative advantage on international markets in the face of increased global competition and the knowledge economy, as developed in section 4. However, investing in human capital formation through education alone is not enough. Appropriate skill-development and skill-anticipation policies and working conditions (i.e. ensuring good skills matching and the best use of the accumulated human capital) are crucial.

There is a wide variation between Member States in terms of their efforts to strengthen skill development. Denmark, Sweden and Finland perform the best across all the selected indicators (See participation in life-long learning (Chart 8), on-the-job training (Chart 9) and new learning opportunities on the job (Eurofound, EWCS 2010, question 49f)). The lowest participation rates on life-long learning are found in Bulgaria, Romania, Croatia and Greece. Spain and Italy perform poorly in terms of on-the-job training. These countries also show the poorest outcomes in other indicators of skills development([27]). Bulgaria, Romania, Cyprus, and Greece also rank the lowest of all EU Member States of the OECD in the latest PISA test (2012)([28]). Note that less effective training systems and an inappropriate skill mix due to weak training and skill-anticipation policies can lead to lower productivity and output and result in persistent labour market structural problems (fragmentation, polarisation).

The recent crisis has affected participation in life-long learning in around one third of the Member States, but in different ways (Chart 8). Sweden, France, Luxembourg and Portugal saw an increase, while the United Kingdom and Slovenia saw the highest declines([29]). Employers may tend to increase training during a recession because training costs, including opportunity costs (lost productivity is less problematic when demand is slack), are lower (e.g. Caponi et al., 2010; Felstead et al., 2011). In addition, difficult conditions may encourage employers to compete on quality or to diversify their products, both of which require increased training efforts (e.g. Felstead et al., 2011). In contrast, a crisis can make employers reluctant to provide training if this is seen as a financial strain with an uncertain return on

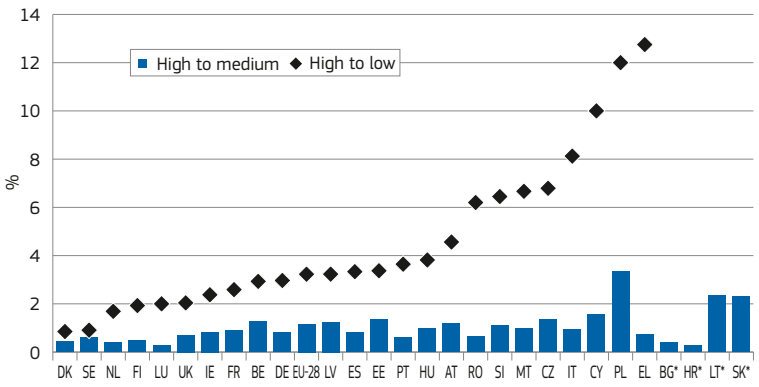
([26]) Endogenous growth models illustrate how human capital accumulation increases the growth rate (Lucas, 1988; Rebelo, 1991). Christen et al. (2008) show that differences in job performance between male and female physicians were fully accounted for by differences in their communication skills. Dearden et al. (2006), using a dynamic perspective on skills, show that training which enhances skills is also associated with higher productivity.

([27]) Percentage of early school leavers (highest shares are in Spain (23.5%), Malta (21%), Portugal (19%), Romania and Italy (17%), Bulgaria (13%); percentage of population with at least medium computer skills (lowest shares are in Romania (21%), Bulgaria (29%), Greece (41%), and Italy (44%). Data source: Eurostat, tables [edat_lfse_14], [edat_lfse_08] and under the link http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdsc460. The data on early school leavers refers to 2013, while data on level of computer skills is from 2012, the latest available at the time of drafting.

([28]) The Member States performing best on the PISA test in 2012 are the Netherlands, Finland, Belgium, Germany and two new Member States (Estonia and Poland). More information about the PISA results is available at http://www.oecd.org/pisa/keyfindings/pisa-2012-results-overview.pdf

([29]) Based on data from the European Social Survey of 19 countries over the period 2004–10, Dieckhoff (2010) found that the odds of training in 2010 were 20% lower than in 2004, even after controlling for a range of employee and workplace characteristics. However, there were country differences: there was no significant change in the volume of training in any of the Nordic countries, there was an increase in two Continental countries, and there was a decrease in the UK and Ireland and in some of the Eastern European countries.

Chart 10: **Participation in LLL by educational attainment, aged 25–64, 2013 — relative difference**



Source: Eurostat LFS, table [trng_lfs_10].

Notes: Lifelong learning (LLL) measures participation rate in education and training (last 4 weeks). The Chart shows the relative difference in the life-long learning participation rates between those with high education and those with medium, respectively low, education. It reflects the situation of the population (aged 25–64) engaged in formal or non-formal education and training. 'Low' stands for pre-primary, primary and lower secondary education corresponding to levels 0–2 (ISCED 1997); 'medium' stands for upper secondary non-tertiary education corresponding to levels 3–4; and 'high' corresponds to levels 5–6. *No data for 'low' education for 2013.

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their investment (e.g. Dieckhoff, 2013; Felstead et al., 2011; Majumdar, 2007).

The low-skilled, who are already disadvantaged in terms of obtaining a job, also receive less life-long learning, see Chart 10. The difference in participation rates between highly and lowly educated people is the highest in Poland, the Czech Republic, Greece, Cyprus and Italy. It is the lowest in Denmark, Sweden, Finland and the Netherlands.

3.3. Good working conditions can attract and develop human capital and improve performance and output

Good working conditions create the environment to attract and develop human capital and improve the performance of workers. A physically safe and healthy working environment leads to fewer accidents and absences from work and, hence, to lower costs (European Commission, 2014; OECD, 2014; Cottini and Lucifora, 2011; Lewis and Malecha, 2011). Furthermore, work-related stress or negative social relations in the workplace may lead to employees working below their full potential, higher distraction levels or neglect of responsibilities, and may affect career-related decisions (Lewis and Malecha, 2011; Mather and Lighthall, 2012). A working environment too focussed on competition may also generate unethical behaviour (Shleifer, 2004; Schwieren and Weichselbaumer, 2010; Gill et al., 2013; Charness et al., 2013)([30]).

The EMCO framework distinguishes four sub-dimensions of working conditions and organisation: health and safety at work; work intensity; work autonomy; and collective interest representation([31]).

([30]) Work-related psychological disorders and mental health problems were behind 42 % of all early retirements of white-collar workers in Austria in 2009 and the main reason for long-term sick leaves in the Netherlands (55 days on average) in 2010 (European Commission 2014 — Social Agenda 02/2014, p. 9). High psychological job demands, long working hours and poor physical environment are detrimental to the mental and physical health of workers (e.g. increasing obesity) and can influence the health status of the worker's family (Morrissey et al., 2011; Cottini and Lucifora, 2011). Lewis and Malecha (2011) find that negative social relations in the workplace have detrimental effects on the productivity of nurses. Mather and Lighthall (2012), reviewing the literature on mental stress and reward processing, find that overly stressed employees are more likely to be distracted and may neglect to adjust their working habits after negative feedback from their hierarchy. Halko et al. (2014), Shleifer (2004), Schwieren and Weichselbaumer (2010), and Gill et al. (2013) suggest that competitive pressures at the workplace, notably compensation-related, can lead to greater risk-taking by men and lower risk-taking by women (shyness to compete for promotion and under-representation in leading positions), and can increase cheating, sabotage, corruption, excessive executive pay and corporate earnings manipulations with no or a negative effect on productivity.

([31]) For the 'working conditions' dimension the EMCO set of indicators relies mostly on the EWCS questions. One should note that while they relate to objective outcomes, the indicators reflect people's feelings and perceptions about their working environment. However, this adds valuable information to the comprehensive picture about the general labour market conditions.

3.3.1. Reducing health and safety risks may increase overall productivity

Health and safety at work can have a direct impact on employers' costs and employees' productivity, absenteeism and job satisfaction. While the incidence of work accidents has declined in recent years, significant differences across different groups of workers can be observed. Chart 11 shows the relative accident rate of those with medium (alternatively high) education to those with low education. It can be seen that the lower the education level, the higher the accident rate. More generally, those with lower levels of education are more often in jobs that present greater risks in terms of health and safety conditions at work([32]).

Note that important structural changes will likely bring along new products and production processes with potentially unknown health and safety risks which may need to be borne in mind, as discussed in section 4.

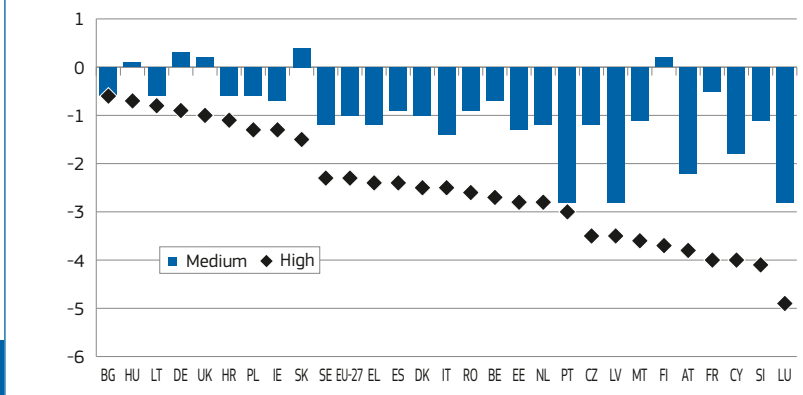
3.3.2. Combining work autonomy with work intensity can increase productivity

Work intensity([33]) and work autonomy are two important characteristics of work organisation that can affect workers' performance through their impact on the level of motivation, stress and physical and mental health. They can also impact the labour market participation decisions of particular groups such as older workers, second earners with children and/or people with disabilities. By reinforcing positive interactions between work intensity and work autonomy, an organisation can achieve greater effort from its employees, thus increasing productivity and output.

([32]) The Chart refers only to accidents rate, while in many jobs work-related health and safety risks are much broader, including respiratory diseases, skin conditions, musculoskeletal disorders, etc.

([33]) Note that in this subsection 'work intensity' is used in line with the sociological literature in the sense of a characteristic of work organisation, rather than in the most narrow sense used by Eurostat (the indicator persons living in households with low work intensity is defined as the number of persons living in a household having a work intensity below a threshold set at 0.20). The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period. More details at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Glossary:Persons_living_in_households_with_low_work_intensity.

Chart 11: Relative rate of accidents at work by skill level (relative to the low-skilled), in pps



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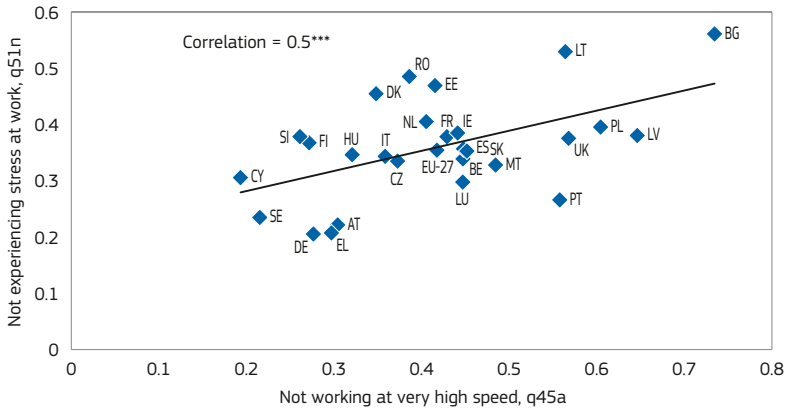
Source: Eurostat ESAW 2009, table [hsw_ac1]. 'Low' stands for pre-primary, primary and lower secondary education corresponding to levels 0–2 (ISCED 1997); 'medium' stands for upper secondary non-tertiary education corresponding to levels 3–4; and 'high' for levels 5–6.

Chart 12: High speed at work and stress based on Eurofound data



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Source: Eurofound, EWCS 2010, question 45a and 51n.

In general, work intensity does not need to have a negative connotation. Arguments emphasising the negative effects of work intensity on employees' well-being focus on "constrained" work intensity, where employees have little choice about the effort they put into their work. Higher work intensity may be a result of organisational policies, such as management strategies, supervisory pressures or machine pacing, but may also reflect individuals' choice (e.g. Gallie and Zhou, 2013). Some degree of work intensity is an inherent part of creative effort, providing a challenge that enables people to develop their skills (Gallie and Zhou, 2013).

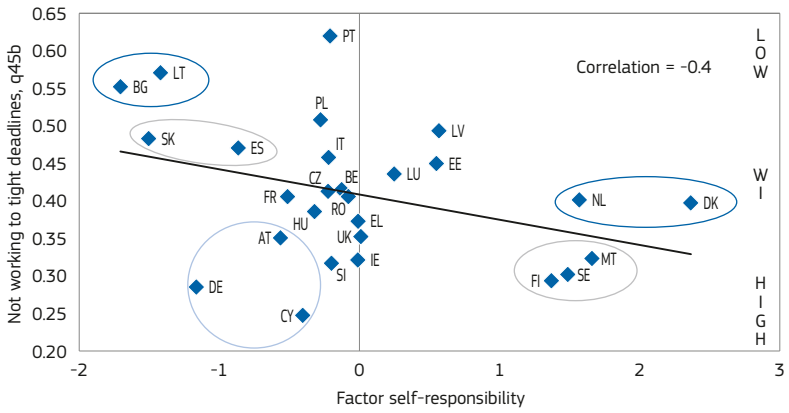
Empirical research indicates that the combination of high work intensity and low job autonomy increases work stress and can severely impact employees' physical and mental health. Excessive workloads and unclear or conflicting demands on the job-holder, combined with the lack of role clarity, lack of involvement in decision-making, lack of influence over the job design, poorly managed organisational change and job insecurity, lead to psychosocial risks and physical and mental ill health, in particular depression, burnout and cardiovascular diseases, and therefore lower productivity and output (Karasek and Theorell, 1990; Theorell and Karasek, 1996; Marmot, 2004; Theorell, 2007; European Commission, 2014d; OECD, 2014).

As Chart 12 shows, according to the Eurofound EWCS (2010), in some Member States (Bulgaria, Poland, Latvia and Lithuania) people appear not to experience stress and do not work at high speed nor to tight deadlines. In contrast, in Sweden, Germany, Austria, Greece and Cyprus people work at very high speed, to tight deadlines and under stress. However, the level of self-responsibility is also much higher in the Nordic countries. Note, though, that measuring exposure to stress across the EU is not straightforward, since workers' perception of stress may be affected by cultural differences, their understanding of the notion of stress or their propensity towards admitting to stress.

Chart 13 links the three dimensions of working conditions: work intensity, work autonomy and the level of job stress. The Chart shows that there are two groups of countries that are characterised by a low level of stress: one where job control and work intensity are low (e.g. Bulgaria and Lithuania); and one where the 'demands' of the job are high but are compensated by a high level of self-responsibility (e.g. the Netherlands and Denmark). High levels of stress are experienced in Germany, Cyprus and Austria, where the 'demands' are among the highest but levels of self-responsibility are relatively low ([34]). Unsurprisingly, there are no countries with high autonomy and low 'demands'.

([34]) Sweden represents an exception: even though it is in the yellow circle, stress is perceived to be high in Sweden regardless of the high level of job autonomy. However, if one looks at the separate indicators behind the composite factor of self-responsibility, one can see that the control over the speed of own work (EWCS question 50c) is remarkably low, the third lowest in the Union. This may convey the impression of time pressure and explain the registered high levels of stress in the country.

Chart 13: Work intensity, autonomy and stress



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Source: DG EMPL calculations based on the Eurofound EWCS 2010, question 45b. For explanation of the factor "self-responsibility" and the underlying questions from the EWCS, see the source , see the source of Chart 16. The colours of the circles show the degree of work stress (based on question 51n): dark blue — low; light blue — high; and gray— about the average.

Box 2: Stress, happiness and productivity

In 2014, stress was the second most-reported work-related health problem in the EU. A 2013 European opinion poll conducted by EU-OSHA([35]) found that more than half of all workers considered work-related stress to be common in their workplace. The most common causes of work-related stress are job reorganisation or job insecurity (72%), hours worked or workload (66%), being subject to unacceptable behaviour such as bullying or harassment (59%), lack of support from colleagues or superiors (57%), lack of clarity on roles or responsibilities (52%), and limited possibility of managing one's work patterns (46%) (European Commission, 2014d). In the Enterprise Survey on New and Emerging Risks (2010)([36]), around 8 in 10 European managers expressed concern about work-related stress in their workplaces, though less than 30% admitted having implemented policies to deal with its risks. Between 50% and 60% of all lost working days are related to stress and psychosocial risks.

The question of whether happiness makes people more productive occupies economists, behavioural scientists and policy makers. The well-being of employees concerns many company managers. For example, "At Google, we know that health, family and wellbeing are an important aspect of Googlers' lives. We have also noticed that employees who are happy demonstrate increased motivation ...[We] ...work to ensure that Google is ...an emotionally healthy place to work" (Lara Harding, People Programs Manager, Google). Several studies show the link between positive mood and productivity (Oswald et al., 2014)([37]), between well-being and motivation and higher capacity to solve anagrams (Erez and Isen, 2002), and between job satisfaction and value added per hours worked in manufacturing (Boeckerman and Ilmakunnas, 2012).

([35]) See reports in figures at https://osha.europa.eu/en/safety-health-in-figures.

([36]) Results and publications available at https://osha.europa.eu/en/esener-enterprise-survey.

([37]) Oswald et al. (2014) set up three short (five-minute) GMAT-style maths experiments on more than 700 individuals whose mood was measured and then manipulated with video clips, snacks and drinks. The measurements took into account negative real-life events in the previous five years (e.g. bereavement and family illness). The study concluded that those made happier had productivity gains of 12%, while individuals who suffered a major real-life shock in the preceding five years showed lower productivity.

3.3.3. Job autonomy can boost productivity

Job control or autonomy([38]) is a core factor in determining the quality of work. Several studies report that workers who are free to make choices in the workplace and are accountable for their decisions are happier, more committed, put more effort into their work, and are therefore more productive and show a lower tendency to quit their job (Chirkov et al., 2011 for a review; Mahdi et al., 2012; Gellatly and Irving, 2001; Langfred and Moye, 2004). This is especially the case when the work is complex or requires more creativity, though in a very routine job, autonomy can still increase satisfaction and reduce turnover (DeCarlo and Agarwal, 1999; Finn, 2001; Liu et al., 2005; Nguyen et al., 2003; Thompson and Prottas, 2005). Job autonomy has also been seen as an important factor in moderating the impact of work intensity (Liu et al., 2005).

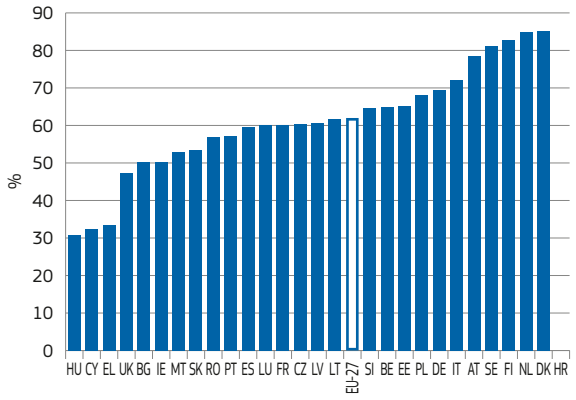
Chart 14, Chart 15 and Chart 16, based on the Eurofound EWCS (2010), show that job autonomy is the highest in Sweden, Denmark, Finland and the Netherlands. It is the lowest in Cyprus, Greece, Portugal and Bulgaria. Germany and Austria score among the lowest on the perceptions of the level of self-responsibility (Chart 16)([39]). Gallie and Zhou (2013), using European Social Survey data([40]), report similar country patterns that are stable over time. The authors explain this stability over time with the fact that job autonomy is embedded in wider institutional structures. In some countries, job autonomy and control have been embedded for many years at company as well as national level institutions.

([38]) Job autonomy can take different forms depending on the country context and the organisational culture. Organisations may let employees set their own schedules or choose how and where to do their work.

([39]) Germany scores low in terms of control over the speed of own work (EWCS question 50c), order of tasks (50a), employee consultation on targets (51c), ability to apply own ideas (51i) and employee involvement in improving work organisation (51d). Austria scores low in terms of control over speed of work, ability to apply own ideas and involvement in improvements of work processes.

([40]) There are three items in the ESS that provide a measure of job control: how much 'the management at your work allows you (a) to decide how your own daily work is organised; (b) to influence policy decisions about the activities of the organisation; and (c) to choose or change your pace of work'. The items then cover not only immediate control over the work task (task discretion), but also people's perceptions of wider influence over organisational decisions.

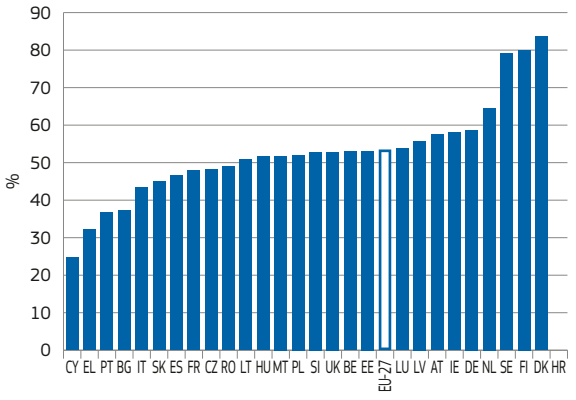
Chart 14: **Workplace NOT dependent on the direct control of your boss**



Source: Eurofound, EWCS 2010, question q46e.

Note: No observation available for HR.

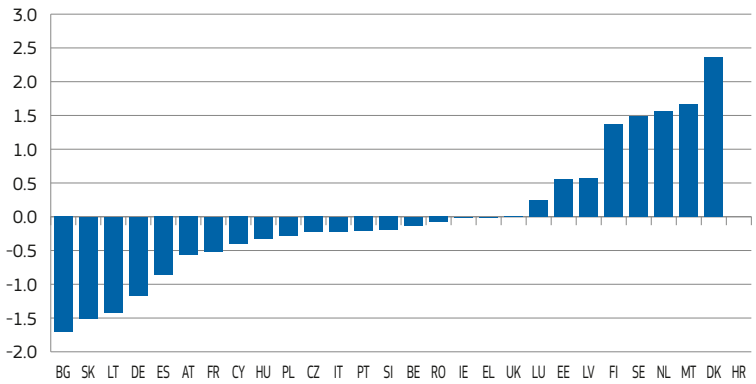
Chart 15: **Team members decide by themselves on the division of tasks**



Source: Eurofound, EWCS 2010, question 57a.

Note: No observation available for HR.

Chart 16: **Self-responsibility**



Source: DG EMPL calculations based on Eurofound EWCS 2010, compressing questions q49b — main job involves assessing the quality of own work; q49c — solving unforeseen problems on your own; q50a — able to choose or change your order of tasks; q50b — able to choose your methods of work; q50c — able to choose/change your speed of work; q51c — you are consulted before targets are set for your work; q51d — involved in improving the work organisation; q51e — you have a say in the choice of your working partners; q51f — can take a break when you wish; q51i — able to apply your own ideas in your work; q51o — can influence decisions that are important for your work.

Note: No observation available for HR.

3.3.4. Social dialogue

By promoting win-win solutions for employers and workers, social dialogue([41]) plays an important role in the improvement of working conditions. Throughout Europe employers' and workers' representatives combine their expertise on work-related matters to promote job quality([42]).

Workers' and employers' representatives are uniquely well-placed to identify skill needs and promote lifelong learning. Social partners play a key role in European Sector Skills Councils, which are designed to anticipate the need for skills in specific sectors more effectively and achieve a better match between skills and labour market needs([43]). European social partners have concluded a number of skills-related autonomous agreements, which national social partners implement in accordance with procedures and practices specific to management and labour in the Member States([44]).

Employers and workers have a joint interest in promoting safe and healthy workplaces. EU cross-industry social dialogue led to agreements on stress and violence at work, while EU sectoral social dialogue led to sectors-specific agreements or campaigns([45]). With the support of the European Agency for Health and Safety at Work, social partners at European and national level cooperate to develop 'Online Interactive Risk Assessment' (OiRA) tools([46]).

Europe has a rich tradition of social dialogue on working time, contractual arrangements and the reconciliation of work and family life. Framework agreements cover a large number of areas from parental leave([47]) and working time, to equal treatment between part-time workers and full-time workers and between fixed-term contract workers and those on open-ended contracts([48]).

A number of EU Directives establish minimum requirements regarding information and consultation of workers at

([41]) Social dialogue refers to discussions, consultations, negotiations and joint actions involving organisations representing the two sides of industry (employers and workers).

([42]) This section cannot exhaustively cover all social partners' activities at company, sectoral, national and European level. Rather, it focuses on a number of key initiatives at European level. Interested readers will find additional information in the 'Industrial Relations in Europe' series published by the European Commission (e.g. European Commission 2010b and 2013d), and in publications by the European Foundation for the Improvement of Living and Working Conditions (e.g. Eurofound 2014a).

([43]) See http://ec.europa.eu/social/main.jsp?catId=784

([44]) Examples include a European licence for drivers on interoperable services (railway sector), training standards and European certificates (hairdressing), or core competences for process operators and first-line supervisors (chemical sector).

([45]) For instance in the hospital sector http://ec.europa.eu/social/main.jsp?catId=521&langId=en&agreementId=5136

([46]) These tools can help micro and small organisations to put in place a step-by-step risk assessment process — starting with the identification and evaluation of workplace risks, through to the decision-making and implementation of preventative actions, to monitoring and reporting.

([47]) Established at cross-industry level, giving all employees an individual non-transferable right to parental leave was first signed by European social partners in 1995, revised in 2009.

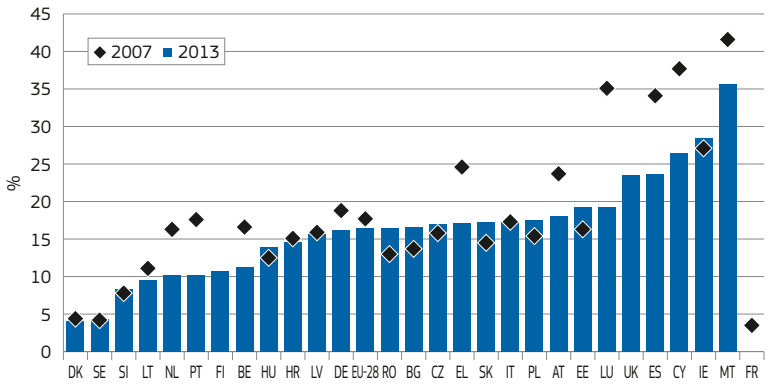
([48]) Each of these cross-industry agreements has been made legally binding through Council Directives. The same applies to a number of sectoral agreements on working time of mobile workers, including sea farers, mobile civil aviation staff and mobile workers assigned to interoperable cross-border rail services. A recent agreement between social partners of the inland waterways sector has been forwarded to the Council for implementation by directive.

company level([49]). A recent fitness check of these directives([50]) found that information and consultation of workers at company level can contribute to solving problems at work, engage workers in changes in work organisation and work conditions, appease conflicts, promote trust and partnership, increase job satisfaction and commitment, reduce the rate at which workers leave the company, and improve the physical health and well-being of workers. It was also found that information and consultation has a positive impact on staff performance and on the company's competitiveness and reputation.

Finally, setting wages is one of the key functions of industrial relations systems in the EU. Despite a tendency for the company level and individual bargaining to gain importance, multi-employer bargaining remains important in many European countries. Beyond the main level of bargaining, it is important to consider coordination of different processes, both vertically (between different levels) and horizontally (between units at a given level, e.g. between companies).

While the promotion of dialogue between management and labour is an objective of the European Union (Article 151 TFEU), there is no single model of social dialogue in the EU. Across Europe, there exists a large diversity of national industrial relations systems, which the Union has to take into account when promoting social dialogue at its level (Article 152 TFEU). Industrial relations should be considered as complex systems whose institutions interlock, which cannot be measured along a single dimension or in a single statistic. There are different qualities, each with different effects on the regulation of the economy and the labour market. In whichever form, social dialogue makes an important contribution to job quality, both directly as a key dimension of a 'good job' and through its positive impact on working conditions.

Chart 17: Inactivity due to family responsibilities, 2007–13 (% of total inactive population)



Source: Eurostat LFS, table [lfsa_igar].

Note: No observation available for FR in 2013.

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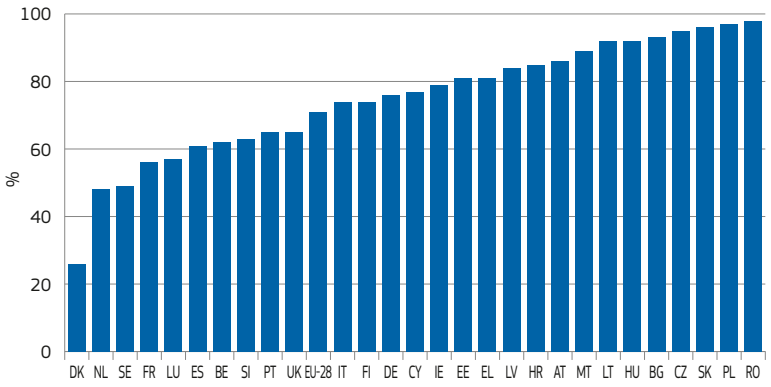
Chart 18: The proportion of children who are not in formal childcare < 3 years old, 2012 (% of the population under 3 years old)



Source: Eurostat SILC, table [ilc_caindformal].

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3.4. Work-life and gender balance to strengthen participation, efficiency and equity

3.4.1. Work-life balance

Insufficient opportunities([51]) for combining work with other private and social responsibilities may lead to higher inactivity rates among certain groups of the population (e.g. older people, persons with family responsibilities), with potential consequences in terms of social exclusion and greater dependence on social protection systems.

The inactivity rate due to family responsibilities is the highest in Malta, Cyprus, Spain and Ireland (Chart 17), followed by Luxembourg and the United Kingdom. It has decreased over time in Spain, Cyprus, and Greece though. In the United Kingdom, supply of childcare facilities is around the EU average (Chart 18) but childcare costs are high([52]). In contrast, Denmark, Sweden, France, Estonia, the Netherlands and Portugal have some of the lowest inactivity rates due to family responsibilities (Chart 17), as well as more readily available childcare facilities (Chart 18) and at an affordable cost.

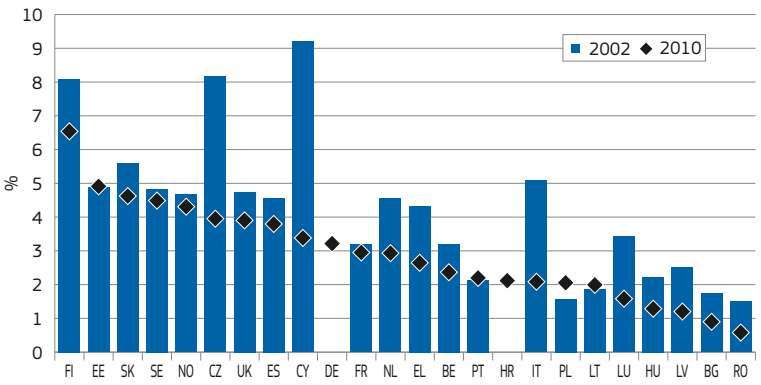
([49]) In particular, Directives 98/59/EC on collective redundancies, 2001/23/EC on transfers of undertakings and 2002/14/EC on a general framework relating to information and consultation of workers.

([50]) The results of the fitness check were published on 26 July 2013 in a Commission Staff Working Document available at http://ec.europa.eu/social/main.jsp?langId=en&catId=707&newsId=1942&furtherNews=yes

([51]) For example, availability of easily accessible and affordable childcare facilities, voluntary part-time work patterns, parental leave, adaptations for older workers or workers with disabilities, etc.

([52]) The 2013 Northern Ireland Childcare Cost survey (Dennison, 2013) shows that a full-time childcare place (50 hours) costs GBP 213 per week in Britain. In Northern Ireland, childcare costs are also high, and increased to GBP 158 per week in 2013. Moreover, 35 % of the nurseries in Ireland charge the same price or even higher for a part-time place than for a full-time one.

Chart 19: **Contribution of wage differences between men and women to Gini index (in %)**



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Source: WiiW (2014).

Notes: Using the Shapley approach, i.e. a decomposition that calculates the contribution of each of thexplanatory variables to the Gini index — for more details see WiiW (2014). No observation available for DE and HR in 2002.

3.4.2. Gender balance

Gender stereotypes can lead to lower labour market participation of women, fewer job opportunities for women and lower pay which, in turn, may lead to a higher risk of social exclusion. The gender pay gap is an important indicator of persistent discrimination in the labour market. The unadjusted gender pay gap stood at 16.4% in 2012 in the EU as a whole. For example, WiiW (2014), using EU-SES data, estimates ([53]) that in 2010 the adjusted gender pay gap ranged from around 5% in Romania and Bulgaria to more than 15% in Estonia (Annex 3, Chart A3.11). The median adjusted gender pay gap decreased from 13.2% in 2002 to 10.4% in 2010. The adjusted gender wage gap has declined over time in all except four Member States (Lithuania, Poland, Portugal and Slovakia).

Chart 19 shows the extent to which gender pay gaps contribute to overall wage inequality. On average, gender differences contribute about 3% to overall inequality, though there are important cross-country differences ranging from more than 6% in Finland to less than 1% in Bulgaria and Romania. The contribution of gender differences to inequality fell between 2002 and 2010 in all countries except Lithuania, Poland and Portugal. The declines were particularly large in Cyprus (from initially around 9% in 2002 to only 3% in 2010), the Czech Republic (from initially 8% to 4% in 2010) and Italy (from 5% in 2002 to 2% in 2010).

3.5. Summary of findings

The literature review suggests that higher productivity can be attained through adequate levels of earnings; higher job security; higher education and life-long training, including on-the-job training; good working conditions — a safe and healthy working environment, an appropriate balance between work intensity and job autonomy and greater employee participation and empowerment, including social dialogue; and better work-life and gender balance. These can strengthen human capital formation, including firm-specific human capital, and increase motivation, commitment and effort. They can reduce accidents, absenteeism and stress, induce creative effort, foster cooperation and generate positive externalities on co-workers. They may also contribute to fostering higher labour market participation and longer working lives, particularly of certain population groups (e.g. older workers, those with family responsibilities or disabilities), reducing dependency on social security systems and ensuring greater social cohesion.

EMCO indicators show that job quality varies across EU Member States and may have deteriorated during the crisis in several dimensions.

- In-work poverty increased in most countries during the crisis. In-work poverty is high in Romania (due to low earnings), Italy, Spain and Greece (due to a high proportion of people in low work-intensity households).
- The crisis increased the share of involuntary temporary work and impeded the transition rates to permanent contracts in many Member States. There is a high share of people on involuntarily temporary contracts in Italy, Spain, Greece, Portugal, Cyprus, Romania and Slovakia. Transitions from temporary to permanent contracts are difficult in Italy, Spain, Greece, Portugal and Cyprus, and in most Member States are more impeded for women than for men. Austria, Germany, the Netherlands and Estonia have the lowest rates of involuntary temporary work and high transitions rates to permanent employment.
- The lowest participation rates in life-long learning are found in Bulgaria, Romania, Croatia and Greece, while Denmark, Sweden and Finland have the highest participation rates. Spain and Italy perform rather low on on-the-job training.
- Low work intensity and low autonomy lead to low levels of perceived stress in Bulgaria and Lithuania; high work intensity and job autonomy generate average stress in Netherlands and Denmark; high intensity with low autonomy lead to high levels of stress in Germany, Austria and Cyprus.
- The unadjusted gender pay gap stood at 16.4% in 2012 in the EU as a whole. Inactivity rates due to family responsibilities are the highest in Malta, Cyprus, Spain, Ireland and UK, and the lowest in Denmark and Sweden. They decreased in most Member States during the crisis due to increased strain on family budgets.

4. STRUCTURAL CHANGES CAN IMPACT ON JOB QUALITY AND PRODUCTIVITY GROWTH

Job quality can have a direct impact on labour productivity and labour market participation and both are crucial to the success of the European social market economy. This section identifies future challenges to job quality and labour market outcomes (labour market participation, productivity) brought about by a range of structural changes such as further technological progress and innovation, further globalisation, demographic

([53]) Correcting for differences in age, education, contract type, occupation, enterprise type (private, public), firm size, industry and country.

change and the general greening of the economy. The section assesses to what extent labour market polices can reinforce positive developments and prevent or correct adverse outcomes associated with those changes and which are to a large extent conditioned by labour market institutions (e.g. social dialogue mechanisms, wage bargaining systems, minimum wages schemes, employment protection legislation, unemployment insurance, active labour market policies and life-long learning) and the business cycle ([54]).

This section starts by assessing the extent to which further innovation in information and communications technologies (ICT) and key enabling technologies (KETs)([55]) may affect job quality. It focus on the job quality potential of an industrial renaissance, the role of small and medium enterprises (SMEs) and the risk that skill and talent biased technological progress may involve an unequal distribution of the costs and benefits between low and medium-skilled workers and high-skilled workers. In other words, technological progress has strong potential to improve productivity but may have a polarising effect in terms of job quality, impeding further technological progress and productivity growth and generating inequalities.

Next, the section looks at globalisation (associated with changes in international trade, foreign direct investment and labour mobility) and its potential to increase productivity and hence earnings. Again, costs may be incurred primarily by the most vulnerable workers, such as the low-skilled and employees on temporary contracts. They may experience stronger job insecurity (e.g. due to offshoring or relocation) and lower wages (e.g. to compete with countries with an abundant supply of low-skilled workers). Such adverse outcomes may, in turn, have negative feedback on productivity and labour market participation if they reduce workers' commitment, motivation, abilities and upward job mobility.

The section then focuses on the opportunities and challenges for job quality brought about by an ageing population and high youth unemployment. These developments pose some important labour market policy challenges related to active ageing, gender equality, work-private life balance and discrimination, which may have a negative impact on employment and productivity if they hinder the optimal allocation of resources.

Finally, the section explores the policy challenges and opportunities related to job quality in the transition to a greener economy. The shift to a green and resource-efficient economy is above all an opportunity to support sustainable and high-quality employment, while contributing to the recovery from the recent economic crisis. However, better targeting and coordination of labour market measures and tools are essential in order to create the necessary conditions to bridge skill gaps and overcome labour shortages, manage restructuring, anticipate change and emerging health and safety risks (especially for low-skilled manual workers), and ensure gender balance. These may have an important impact on workers' performance and participation in the production of new green goods and services.

4.1. The two sides of knowledge and technology-intensive growth

This subsection focuses on challenges posed by technological progress on job quality. It starts by assessing the increasing importance of knowledge and creativity in the future labour market and the risks associated with the automation of tasks, such as jobs losses and labour market polarisation. It investigates the extent to which an industrial renaissance associated with the potential for further innovations in ICT and KETs has the ability to generate more and better jobs. It looks at the role of SMEs and the challenges they face in improving job quality in the context of technology innovation. It then discusses the role of labour market policies in tempering labour market polarisation driven by technological progress.

4.1.1. Technology change and innovation will change the job landscape of the future and can render jobs obsolete

Technological progress is a key defining factor in how goods and services are produced and delivered to consumers. The fact that production processes are changing is by no means new, but the speed of that change may be. It can take decades for a new invention to be applied, but when it is applied, changes accelerate. The typewriter was invented in the 1860s but was not introduced into the office until the early 20th century, when it joined a wave of mechanisation, with Dictaphones, calculators, mimeo machines, address machines, and the predecessor of the computer — the keypunch (Frey and Osborne, 2013, after Beniger, 1986; Cortada, 2000). There are many signs that the cumulative effect of advancements in information sharing, computing power, machine learning, machine vision and data mining will soon accelerate the changes in terms of the types of jobs that are needed, how rewarding these jobs are and the requisite organisational arrangements.

In the not-so-distant past the switchboard operator became obsolete due to direct number dialling, the copy typist gave way to personal word processing, the bank teller was replaced by cash machines, the travel agent fell prey to online booking systems and many car assembly line workers were replaced by industrial robots. Deindustrialisation and relocation to low-cost countries have been shaping the economic landscape and labour markets of the high-income countries over the past forty or so years. A long-term decline of heavy industries such as mining or steel production has been observed, while specialised high-tech industries have been holding ground even if employing fewer workers per output (automotive manufacturing being one of many examples).

However, current changes are expected to have a stronger and polarising impact on labour markets (e.g. Acemoglu and Autor, 2010; Eurofound, 2013). Currently, technology is changing the face of education through online lectures classes

([54]) A macroeconomic downturn may reduce job quality through: lower job security, lower skill formation, stronger health and safety risks, more involuntary temporary/part-time labour contracts, distorted work-private life and gender balances (e.g. Eurofound, 2012a; RWI, 2014; Tahlin, 2013; Dieckhoff, 2014; Johnson, 2012; McGinnity and Russel, 2013; Ravn and Sterk, 2013; Gallie, 2014).

([55]) Key enabling technologies (KETs) enable the development of new goods and services and the restructuring of industrial processes needed to modernise EU industry and make the transition to a knowledge-based and low-carbon resource-efficient economy. They play an important role in the R&D, innovation and cluster strategies of many industries. More particularly, KETs cover micro-/nano-electronics, nanotechnology, photonics, advanced materials, industrial biotechnology and advanced manufacturing technologies. See European Commission (2012b) and HLGKET (2010).

and learning resources that are available globally and often at a fraction of the cost. Digital applications have shown the ability to compete with and potentially undermine various traditional service providers such as taxis or hotels (e.g. ride-sharing app 'Uber' or 'AirBnb' flat rental and sharing). Computerisation, typically confined to manual and cognitive routine tasks, is now spreading to activities that were commonly defined as non-routine (e.g. Autor and Dorn, 2013; Goos et al., 2009). Tasks regarded as non-routine only a decade ago have since been computerised at a rapid pace (Autor, et al., 2003; Markoff, 2011; Frey and Osbourne, 2013). Recent examples of how the boundary between routine and non-routine tasks and between automatable and non-automatable routines will be pushed further by technology include handwriting recognition, machine translation and the use of language analysis to identify general concepts in documents ([56]).

Authors speculate about the scale of the challenge ahead if new technologies mature and spread beyond prototypical and experimental applications: self-driving vehicles, health diagnostics, automated call centres and robot-assisted remote surgery are some examples. The impact may spread to related sectors. For example, self-driving vehicles can reduce drivers' jobs and, if safer, reduce business opportunities in the insurance sector.

In some sectors, there are already palpable signs of rising automation in work spaces such as container ports, logistics warehouses or even hospitals (e.g. robots pulling trolleys with meals, medicines and blood samples in hospitals (Bloss, 2011) or climbing wind turbines much faster than a human and inspecting the blades 100 metres above ground (Robotics-VO, 2013)).

While intellectual and knowledge work (e.g. computer programming) is flourishing and craftsmanship-based manual trades remain in high demand, many middle-class occupations, typical of the industrialised societies of the latter half of the 20th century, are being eroded. Programmable machines are expected to take over many routine and less routine tasks, many of which are performed by unskilled and semiskilled industrial and clerical service workers who typically occupy the middle layers of employment. Some studies strike an alarmist tone and argue that the process has only just begun. Frey and Osborne (2013) predict that 47% of current jobs in advanced economies like the United States are at risk of being automated over the next 20 years.

Further technological change is therefore expected to have a strong and polarising effect, affecting jobs and skill levels in a different manner (see below). In this context, managing the transition into a new labour market where many jobs succumb to automation must become a key priority for policymakers.

4.1.2. Occupations resilient to automation: the importance of knowledge and creativity (human capital) in view of technology change

The non-routine jobs that are likely to resist automation in the foreseeable future are located at either the lower or higher end of the wage and skill spectrum. At the lower end, there are services such as hospitality, care, beauty, cleaning, customer service, construction, decorating and installation. These may be subjected to some vocational training and licensing in particular legal settings but require soft skills such as empathy, improvisation and complex decision making. Further, they feature complex manual tasks which in turn rely on specific skills and experience. These jobs are not suited to outsourcing since they have to be performed on-site.

Despite their undisputed social utility, such non-routine, manual, low- to medium-skilled jobs often offer modest remuneration with precarious job arrangements and physically demanding working conditions. Likely reasons for this are the abundant labour supply, the possibility of using underpaid migrant workers and, in some cases, the threat to relocate some part of these tasks to low-wage countries (Standing, 2011). In this context, there is clearly a need to step up efforts to improve the working conditions in these jobs and to ensure the application of existing worker protection laws.

At the high end of non-routine and non-automatable jobs are those consisting of complex cognitive tasks and a high level of professional competence, usually combined with a long and versatile formal education (e.g. computer programmers, creative industries, engineers, managers, investment bankers, lawyers, doctors, teachers and scientists). Europe has great stakes in developing the knowledge-based economy, investing in high-end skills and assuring optimum job conditions for knowledge workers. Compared with low-skilled workers, knowledge workers already enjoy a more privileged position on the labour market, with more favourable working conditions and a higher pay. Yet, the knowledge sector is where the highest potential for productivity growth is likely to lie. Hence, a focus on more efficient working arrangements will be key to securing Europe's position as a hotspot of high productivity.

4.1.3. Technology change can lead to a possible industrial renaissance in the EU

In the recent past, increasing job losses and the rise in job uncertainty have affected job quality, particularly in industry. For example, the employment share of the industry sector in the EU as a whole dropped from 22.1% in 2000 to 17.7% in 2013. At the same time, jobs in industry typically offer a high wage level (compared with the national average wage): average gross wages in industry were 10.6% above the national average gross wage in the EU. The drop in industry shares and high wages are a combined effect of: a) strong productivity growth in industry; b) the opening of world markets and changing business models, whereby manufacturers outsource certain tasks (such as logistics, marketing or legal advice); and c) a shortage of skilled human capital in engineering and science which may have been aggravated by the recent crisis that stifled access to funds for innovation (e.g. European Commission, 2013).

A variety of policy measures have been implemented to temper the adverse socioeconomic impact of delocalisation and offshoring (e.g. Eurofound s.a.) ([57]). These initiatives have primarily been used to accommodate the ongoing job shift from industrial activities to other

([56]) For instance, Symantec's Clearwell system proved to be capable of analysing (conceptual contents, not just words) and sorting more than 570 000 documents in two days.

([57]) At http://www.eurofound.europa.eu/areas/industrialrelations/dictionary/definitions/restructuring.htm http://www.eurofound.europa.eu/areas/industrialrelations/dictionary/definitions/restructuring.htm

activities notably in the services sector (though not necessarily associated with higher job quality).

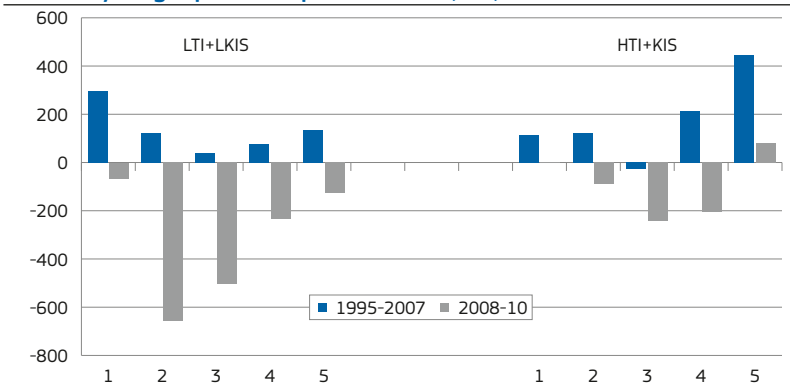
An important policy challenge will be to exploit the future job growth potential of emerging innovations in ICT and KETs, such as bio-based products, smart vehicles, sustainable construction and smart grids. Where future developments are characterised by a shift from mass-produced goods and services to more customised high-quality goods, there is strong potential for the resource-poor, skills-rich EU to create high quality and value added jobs.

SMEs will have an important role to play in this industrial renaissance since they are a major source of job creation and innovation. Workers' performance is largely determined by the scope with which educational systems are complemented by in-work training (see Chapter 2). Therefore, job training in SMEs will be important to ensure their workers' productivity and their international competitiveness. In this context, SMEs face very specific challenges that may reduce their efforts to reinforce their workers' educational attainment. Indeed, compared to larger firms, SMEs have fewer internal human and financial resources for skill development both at managerial and lower personnel level. Therefore, improved regulation of credit markets and lending conditions for SMEs is crucial to ensuring sufficient access to credit for skill formation. Where financial markets may fail to provide such finance, public funding should be considered.

4.1.4. Technology change can produce unbalanced outcomes in the population: stronger labour market polarisation

As discussed, there is a risk that the skill and talent-biased industrial renaissance brought about by strong technological changes will sharpen the ongoing labour market polarisation. It is expected that further digitalisation of economic activity, in combination with globalisation (see below), will increase the demand for highly skilled workers, increasing their job security and earnings, while the opposite may be observed for low- to medium-skilled groups and the long-term unemployed. The coming technology change is expected to benefit the strongest talents disproportionately, i.e. the 'superstars' that create services such as Facebook, for which there is a very strong demand (e.g. Brynjolfsson and McAfee, 2014).

Chart 20: Annual average change in absolute employment by wage quintile in private sector, EU, 1998–2010 (1 000)



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Source: DG EMPL calculations based on Eurofound (2013) available at http://www.eurofound.europa.eu/emcc/ejm/summary.htm

Notes: LTI: low-tech industry, LKIS: low knowledge intensive services, HTI: high-tech industry, KIS: knowledge intensive services. No data for BG, MT, PL or RO.

Such developments will reinforce ongoing labour market polarisation in the private sector in the EU economy (Chart 20). The left pane of Chart 20 shows changes in the earnings quintiles in low-tech industries and basic knowledge services, while the right pane of Chart 20 shows changes in the earnings quintiles in the high-tech and knowledge intensive services. Blue bars show the pre-crisis period (i.e. 1995–2007), while the red bars show the period since the onset of the crisis (i.e. 2008–2010).

In the run-up to the crisis, the lowest quintile within the low-tech and basic knowledge services showed the strongest increase, while the highest quintile within the high-tech and knowledge intensive services showed the strongest increase. In both sectors, the other quintiles showed more modest increases. During the crisis, the same pattern can be observed but in the context of employment reduction: the lowest quintile within the low-tech and basic knowledge services showed the weakest decrease, while the highest quintile within the high-tech and knowledge intensive services showed an increase.

Uncertainties about projecting future developments in employment and earnings distribution remain. For example, some analysts, e.g. Gordon (2014), claim that today we are facing the first phase of a secular stagnation as future innovation will not carry the same productivity growth potential as past innovations related to the use of power generation, chemistry, etc., and that the observed changes in employment distribution generated by information technology will be short-lived. This view is in sharp contrast with, for example, Brynjolfsson and McAfee (2014) who argue that the ongoing 'digital revolution' (characterised by exponential growth in computing power, digital information and supply of relatively cheap devices which leads to new business opportunities) carries an even stronger potential for sustainable innovations and growth than the past 'industrial revolution' — though its benefits will not automatically be distributed in an equitable way.

At the same time, others, e.g. Autor (2014), emphasise that employment polarisation does not automatically lead to wage polarisation since the latter is also determined by 1) degree of complementarity (e.g. performances of workers may improve significantly to the extent they can be complemented with the computing power of machines), 2) the price- and income-elasticity of demand for services (e.g. low price elasticity for intensive manual work allows for stronger wage increases for these service providers) and 3) elasticity of labour supply (e.g. it usually takes more time to form highly-skilled workers than to train intensive manual workers).

This uncertainty requires permanent monitoring and assessment of developments in the field of technological progress.

4.1.5. The role of adequate labour market policies

In this context, the potential for technology change to improve job quality will require proactive labour market

policies developed in synergy with other policies([58]) to support the reallocation of labour towards these new activities in a secure way and in a way that benefits all employees, especially the low-skilled. For these workers, adequate earnings could be provided in the short to medium run by measures that have a direct impact on wages (such as the minimum wage paid by the employer), hiring subsidies (paid by the taxpayer to employer) or by social transfers or fiscal benefits (paid by the taxpayer to the employee).

However, since differences in gross earnings are largely driven by differences in productivity([59]), closing the earnings gap through nominal unit labour cost increases([60]) may be unsustainable for companies. In other words, to keep workers with excessive labour costs (relative to productivity) may be financially unsustainable to companies, especially in the face of increased international competition. Therefore, it is crucial immediately to reinforce the incentives and opportunities for skills formation and life-long learning directed at the low skilled and both inside and outside the job (European Commission, 2010a). These productivity-enhancing measures should complement the wage/income and other targeted measures towards workers at the lowest end of the earnings distribution (e.g. access to support services, such as child and elderly care).

Anticipating future changes in jobs and associated skill needs will remain a challenge, requiring a stronger collaboration between stakeholders (including employers, employees, education providers and skills forecasters) and better support for job mobility including through better information flows on job availability and the portability of social security benefits (health, pensions).

4.2. Globalisation creates opportunities but also challenges for job quality and productivity

This subsection looks at the potential impact of further globalisation brought about by the removal of barriers to free and fair trade, foreign direct investment (FDI) and migration. These are expected to create upward and downward impacts on job quality which have a direct impact on labour market participation and productivity, as the following analysis shows.

4.2.1. International trade may enhance productivity and job quality

Further opening to world markets strengthens countries' ability to exploit their comparative advantages, thereby reinforcing their overall productivity growth. For example, it is estimated that a 1 % increase in the openness of the economy generates an increase of 0.6 % in labour productivity the following year, based on an analysis of EU trade flows between 1996 and 2005 (e.g. European Commission, 2007c). These increases in productivity create the potential to raise real wages, which is an important determinant of job quality. In turn, these increases in earnings may strengthen workers' commitment, with further positive impacts on productivity.

Production patterns will change as globalisation, in combination with technological progress, will allow (large) firms to specialise in core activities and delegate much of their non-core activities to global suppliers so as to reduce production costs. For the resource-poor, skill-rich EU this may imply a shift from traditional manufacturing (e.g. agro-food, steel, textiles) to more knowledge- and technology-intensive activities (e.g. high-tech business services, haute couture and design, as well as industrial activities such as computing, biotechnology and nanotechnology)([61]). These developments will strengthen workers' opportunities to move to jobs of higher quality and value added (e.g. in terms of earnings or autonomy).

However, not all workers (especially the low-skilled) will have the opportunity to benefit from the opportunities created by globalisation (in combination with technological progress). Moreover, increased international competition from firms located in countries with lower job quality standards and low wages may also result in increased job insecurity (e.g. due to offshoring, restructuring), poorer worker conditions (e.g. in terms of maintenance of hygiene, occupational health and safety norms) and cuts in wage and non-wage labour costs (e.g. severance pay, individual and collective dismissal procedures), especially for workers performing routine tasks in the production of tradable goods and services. Globalisation may then have a persistent adverse impact on job quality in these types of activities.

Nevertheless, several policy instruments can be used to strengthen upward job mobility, including job-searching assistance, skill formation and portability of social security benefits([62]). Job-searching assistance is a relatively effective, low-cost tool for smoothing the reallocation of labour. However, as the transition to new knowledge- and technology-intensive activities poses new challenges, awareness of job opportunities and skills requirements by workers, employers and employment services can be low.

Hence, European and National platforms that facilitate the exchange of information between all stakeholders should be strengthened to improve the effectiveness of job-searching structures. Another policy is to strengthen the expertise and capacity of employment services to be more proactive and to increase their offer of re-training programmes and other relevant services.

In addition to modernising education and training systems to meet the emerging demand for new skills, equal access to skills formation should be ensured to avoid any further polarisation. Despite a strong political commitment to life-long learning, only half of all European workers underwent training in 2010 (Eurofound, 2010). The figures are particularly low among women, older workers, lower-skilled workers, workers in small companies and workers on temporary contracts.

([58]) Such as investments in innovation, improvements in the functioning of the Internal Market and opening up international markets, mobilising public resources and unlocking private funds, equipping labour force for industrial transformations. See, for example, 'Industrial revolution brings industry back to Europe' at http://ec.europa.eu/enterprise/initiatives/mission-growth/index_en.htm#h2-4

([59]) At least if competition and information flows are not distorted too much. Notable exceptions are, for example, in 'winner-takes-it-all' games where it is relative (not absolute) productivity which determines earnings, as is the case, for example, for Olympic athletes or employees in the financial sector.

([60]) I.e. nominal compensation per employee adjusted for productivity, whereby gross wages are an important part of compensation per employee.

([61]) For example, from 1970–2003, the textile workforce dropped by 60 % in the G7 countries (Huwart and Verdier, 2013).

([62]) Apart from guidelines for Multinational Enterprises that establish responsible business conduct wherever they operate, as is outlined in, for example, OECD (2011a).

Improving the cross-border portability of social security benefits and pensions, together with better information about rights and assistance and their enforcement, can further reduce institutional barriers to labour mobility and increase the opportunities to exploit job quality to the fullest extent across the EU.

Finally, particular attention will need to be placed on the low- to medium-skilled workers who are in a disadvantageous position in their ability to upgrade their skills to meet the requirements of the new knowledge- and technology-intensive activities and are employed in jobs subject to international competition from countries with lower job quality standards. In such cases, just as with technology, a combination of targeted measures in terms of adequate earnings, support services, targeted skill-formation programmes and appropriate health and safety standards is necessary.

At the same time, a level playing field with trading partners could be assured via, for example, the inclusion in Free Trade Agreements of provisions covering minimum working conditions and the enforcement of national labour laws, with monitoring and enforcement of labour standards, in line with existing good practices. The ILO (2013a) reports a substantial growth in the number of trade agreements featuring labour-related measures since the mid-1990s as a result of a growing awareness of social and employment effects of trade liberalisation([63]). In this context, implementing health and safety at work legislation in the EU but also more globally may be important (Box 3).

Box 3: Promoting Health and safety at work

The EU([64]) has a strong interest in health and safety at work and develops, implements and monitors EU legislation to improve occupational health and safety in all activity sectors. EU legislation seeks to reduce the risk element associated with particular jobs (e.g. magnetic fields), therefore protecting the health of those workers([65]). Part of the EU awareness-raising and legal process is also to promote workers' rights to make proposals to improve their health and safety and to appeal to competent authorities and stop their work in the event of serious danger. The European Commission Strategic Framework on Health and Safety at Work 2014–20([66]) identifies the following key challenges:

- to improve the implementation of existing health and safety rules, in particular by enhancing the capacity of micro and small enterprises to put in place effective and efficient risk prevention strategies;
- to improve the prevention of work-related diseases by tackling new and emerging risks without neglecting existing risks;
- to take account of the ageing of the EU's workforce.

Actions to address these challenges include:

- Consolidating national health and safety strategies through, for example, policy coordination and mutual learning;
- Practical support (technical assistance and practical tools, such as the Online Interactive Risk Assessment tool (OiRA) that assesses sector-specific risks) to micro and small enterprises to help them comply with health and safety rules;
- Evaluating and improving the enforcement ability of national labour inspectorates;
- Eliminating unnecessary administrative burdens associated with existing legislation;
- Addressing the ageing of the European workforce and improving prevention of work-related diseases associated with new risks such as nanomaterials, green technology and biotechnologies;
- Improving data collection and developing monitoring tools;
- Reinforcing coordination with international organisations (e.g. ILO, WHO and OECD) and partners to contribute to improving working conditions and reducing work accidents and occupational diseases worldwide.

([64]) Supported by Committees of national experts such as the Advisory Committee on Safety and Health at Work (ACSH), the Scientific Committee on Occupational Exposure Limits (SCOEL) or the Senior Labour Inspectors Committee (SLIC).

([65]) For more details see Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work, available at http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:31989L0391. See also IRE (2014 — Chapter 7).

([66]) For more details, see http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=2053&furtherNews=yes

([63]) In total, there were 58 agreements with labour provisions in June 2013 — almost a quarter of the total 248 trade agreements currently in force.

4.2.2. Labour mobility and free movement of services within the EU may affect job quality

Strengthening labour mobility and free movement of services (such as posted workers) within the single market can have an important impact on job quality and productivity.

Labour mobility can have a positive impact on job quality as it can reduce the risk of unemployment and increase employment opportunities in more productive activities, thus yielding higher earnings for the workers involved. This is especially true for workers in sectors that are vulnerable to ongoing structural changes (e.g. energy-intensive industries). Nevertheless, labour mobility within the EU is still only taking place on a small scale despite the considerable opportunities offered by the EU single market([67]). This is the combined outcome of factors such as language barriers or family constraints, as well as skill mismatches (such as in the case of coal miners — ILO and OECD, 2012). In such cases, workers tend to remain in their countries despite poor prospects for high quality jobs.

The free movement of services may also have a positive impact on job quality. The free movement of services is one of the founding principles of the European Union (Article 56 TFEU). The principle of the freedom to provide services enables a business providing services in one Member State to offer services on a temporary basis in another Member State, without having to be established. The exercise of this right entails that companies, when providing services in another Member State, may need to post employees to work temporarily in an EU country other than the one where they are habitually employed. Posting workers([68]) allows companies to exploit their competitive advantages across borders and to meet temporary shortfalls in labour supply (such as in construction and transport)([69]), while it may offer workers an opportunity to increase their job quality. At the same time, it may benefit European consumers by increasing competition in the single market([70]).

Nevertheless, the job quality of posted workers is a policy concern. Posted workers may suffer abuses such as not being appropriately or fully paid. In addition, one study found that only a very small minority of foreign workers were unionised compared to native workers([71]). In turn, abuses may affect the job quality of residential workers by placing downward pressure on their wages and working conditions, with a potential negative impact on their motivation and productivity. All in all, the empirical evidence on the impact of posted work on the job quality of resident workers is scant and not clear-cut, partly due to lack of adequate data.

To counteract such adverse outcomes, important EU measures have been put in place to ensure that posted workers are not deprived of the protection of basic employment rights in the host country and that enterprises face a level playing field of competition (Box 4). Nevertheless, the

Box 4: Job quality of posted workers

The 1996 Posting of Workers Directive([1]) requires Member States to ensure that posted workers are subject to the host country's laws, regulations or administrative provisions, and generally applicable collective agreements in the construction sector as regards a core of employment conditions, such as: applicable minimum wages, maximum work and minimum rest periods, minimum paid annual leave, health, safety and hygiene at work, employment terms for pregnant women and young people, rules prohibiting child labour, and equality of treatment between men and women. However, the Commission's close monitoring of the implementation of the 1996 Directive found that the rules laid down by the Directive were not always correctly applied in practice by Member States.

This led the Commission in 2012 to table a proposal for an Enforcement Directive, aimed at providing clearer rules on posted workers and practical safeguards. A new Enforcement Directive([2]) on the posting of workers based on the Commission's proposal was subsequently adopted by the co-legislator in May 2014. Some of the measures in the new Directive are: a clearer definition of posting to inhibit the growth of letter-box companies; a list of national control measures that the Member States may impose on posting companies; the possibility for Member States to require the designation of a contact person within the posting company to liaise with enforcement authorities; the option of applying an obligation to declare the identity of the company, the number of workers, their period of posting and the nature of services, and to keep basic documents such as employment contracts and payslips available at the workplace. Moreover, the new Directive includes the provision that penalties imposed on service providers in one Member State can be enforced and recovered in another. In addition, it also introduces a limited subcontracting liability in the construction sector. This means that posted workers in this sector can hold the contractor in a direct subcontractor relationship liable for any outstanding net remuneration corresponding to the minimum rates of pay, in addition to or in place of the employer.

([1]) Directive 96/71/EC of 16 December 1996, available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:1997:018:0001:0006:EN:PDF

([2]) Directive 2014/67/EU of 15 May 2014, available at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0067&rid=1

([67]) At the end of 2012, 14 million EU citizens resided in another Member State, i.e. 2.8% of the total EU population, up from 1.6% at the end of 2004, but lower than the share of non-EU nationals (4%) (European Commission, 2013b). On average the employment rate of mobile EU citizens was 67.7% in 2012; mobile EU citizens not in employment represent only a limited share (European Commission, 2013b).

([68]) A 'posted worker' is a worker who, for a limited period, carries out their work in the territory of a Member State other than the Member State in which they normally work. Posted work relates to the free movement of services and is legally distinct from individual migration, which relates to the free movement of labour. For a summary on EU legislation on posting of workers, see, for instance, http://europa.eu/legislation_summaries/employment_and_social_policy/employment_rights_and_work_organisation/c10508_en.htm

([69]) Comparable estimates of the number of posted workers across sectors, occupations and countries are not readily available but some studies provide ad-hoc estimates. For example, Idea and ECORYS (2011), European Commission (2011) and European Commission (2014) (June 2014 supplement to EU Employment and Social Situation, available at http://ec.europa.eu/social/BlobServlet?docId=11945&langId=en) estimate that there are about 1 million posted in the EU, employed in the construction, transport, telecommunications, entertainment, repairs, maintenance and servicing sectors, but also in specialised, high-skilled activities such as in the IT sector.

([70]) Nevertheless, the impact of current regulations on competition is not unambiguous. For example, Mustilli and Pelkmans (2013) identify the imposition of, for example, a minimum wage for posted workers as a barrier to freedom of services in that it pre-empts Eastern European EU workers from exploiting their lower wages as a competitive advantage in the internal market.

([71]) See, for example, Hansen and Andersen (2008) for the case of Eastern European workers working in the Danish construction sector.

monitoring of the employment conditions of posted workers — where relevant in cooperation with the social partners in the 'posting' as well as 'hosting' countries — needs to be intensified, while maintaining a balance between the protection of workers' job quality and the cost of administrative requirements imposed on service providers operating across borders.

4.3. Demographic change calls for an innovative approach to job quality

This subsection looks at the workplace challenges faced by older workers, and briefly discusses how structural changes are expected to affect their job quality and how policies can address present and future challenges and improve job quality of older workers. The section then looks at young workers, who have seen their unemployment rate soar to historical levels in recent times, the challenges they face and the policies needed to improve young workers' employment and avoid human capital erosion.

An ageing population and changing family structures (including a rising number of one-parent families) are important future demographic developments that pose important challenges to EU job quality, with a direct impact on labour market participation, productivity and growth. Job quality (e.g. straining working conditions) and specific characteristics of tax and benefit systems (including pensions) have an important impact on older workers' decisions regarding labour market participation and retirement (e.g. European Commission, 2011a; Lindström, 2006). In addition, the crisis has shown that young workers' job quality can be especially vulnerable, potentially reducing future opportunities for employment in high-quality jobs and thus productivity and growth. In order to preserve the European social model, a set of policies is needed to help older people stay active longer, retire later and become more productive, while ensuring that young workers find and keep a suitable job and use and reinforce their human capital.

4.3.1. More flexible work arrangements and skill-updating for older workers while addressing age discrimination

About six out of ten EU citizens perceive that workplaces are not adapted to the needs of people aged 54 and over, although there are large differences across Member States: from about 80% in Hungary to below 40% in Sweden (e.g. Eurobarometer, 2012). Work psychosocial[72] and physical strain is a strong push factor to early retirement for older workers (e.g. Bonsdorff et al., 2010; Park, 2010; Pollack, 2012). Such strains are often rooted in a loss of control over working conditions and a (perceived) lack of recognition of their performance (e.g. Siegrist et al., 2007; Oorschot and Jensen, 2009; Siegret and Wahrendorf, 2011).

Older workers have the lowest probability to transit to unemployment (if compared with the other age groups), but their probability to transit from unemployment to employment is also the lowest and their probability to transit to inactivity is the highest (e.g. RWI 2014). In addition to skewed financial incentives (e.g. expected pension income that exceeds contributions), poor career prospects may contribute to such an outcome. Poor career prospects for older workers often reflect a lack of recognition of their experience and expertise, which in turn discourages the search for a better or more adequate job. This calls for measures that strengthen the recognition of older workers' informally acquired qualifications, in combination with an enhancement of their job search intensity (in close collaboration with public employment services).

Furthermore, skills, especially ICT skills, are an important driver of job opportunities for older workers. For instance, Biagi et al. (2011) estimate that being skilled and using a PC at work reduced the probability of exiting employment by 12 percentage points in Italy in the early 2000s. This example illustrates that barriers to learning and training for older workers should be lowered.

Age discrimination in the workplace is still prevalent. For example, in 2011 one in five people surveyed experienced or witnessed age discrimination in the workplace or when looking for work (Special Eurobarometer, 2012). Strong differences exist between Member States, from almost 40% in Hungary compared to about 15% in Ireland. Nevertheless, employees aged 54 and over are thought to be more experienced and more reliable than younger employees (i.e., respectively 87% and 67% 'more likely').

Age discrimination and stereotyping may push older workers to early retirement (e.g. Gringart et al., 2011). They may be rooted in the perception that older workers are more reluctant to accept organisational change or new types of work (e.g. Taylor and Walker, 2003). Institutional reforms can address these forms of discrimination. Note though that 'age discrimination' laws that counteract these trends by reinforcing the employment protection of older workers may in fact reduce their hiring opportunities by increasing firing costs (e.g. Heywood and Siebert, 2009).

Measures to strengthen older workers' control over their working conditions could include the promotion of technologies that create more flexible and safer and healthier working conditions such as flexible working time and teleworking. The provision of elder-care facilities for partners may also ensure a better balance between family and working lives. Barriers to learning and training for older workers should be lowered. Special programmes (including training subsidies) focused on updating the skills of older workers, especially the low-skilled, may play an important role. Finally, ensuring an appropriate balance between efforts spent and earnings may improve their motivation, career prospects and recognition.

4.3.2. Investing in young workers' job quality

Occupational together with geographical mobility will be key to improving job quality in the future. In an ever-changing economy, workers will have to become receptive to more frequent job change if they want to improve their job quality. Young people have a stronger potential in this regard. They are on average more willing and able to move geographically since they often face fewer family commitments and are more likely to speak foreign languages and therefore adapt more quickly to new settings.

However, young people often lack the initial experience in professional life to kick-start their career along a path of high-quality jobs. Well-targeted labour market policies that invest in young people and improve the job quality of present and future cohorts of young workers are crucial. Such policies include modern apprenticeship systems, skill development that matches better the (short- and long-term) needs of the labour market, and guidance. From this perspective, it is imperative to ensure that all young people, whether registered with

[72] Such as working in a post that does not correspond with the level of qualification.

employment services or not, receive an offer of employment, an apprenticeship, a traineeship or the chance to continue their education or training within four months of becoming unemployed or leaving formal education — as has been stipulated in the Youth Guarantee([73]).

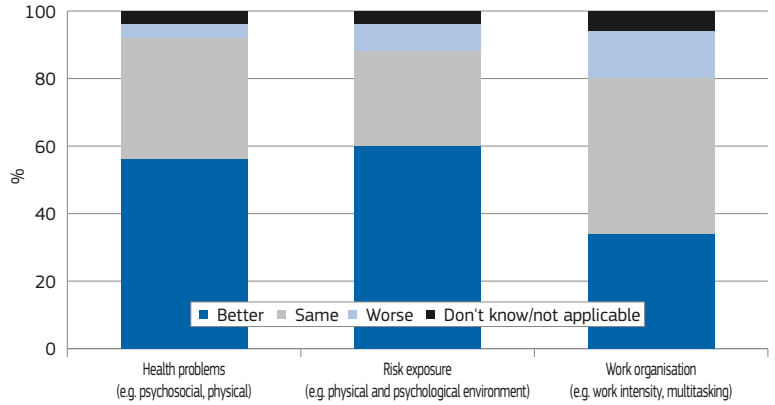
In support of this, there is a need to strengthen the capacity of the public employment services, reform education and training systems, and strengthen partnerships to reach out to inactive young people who are not registered with the employment services. In addition, the first experiences should offer quality learning content and satisfactory working conditions — as will be promoted by the European Alliance for Apprenticeships([74]). Furthermore, the European social partners' Framework of Actions on Youth Employment is addressing several of the challenges related to bringing more youth into employment. Also, as the single market becomes more open and integrated, there will be an increasing need for a regular, low-cost and real-time flow of information on jobs across the EU, for young (as well as all) workers, as is envisaged under the European Jobs Network (EURES)([75]).

Finally, persistent scarring effects affecting the current cohort of young workers will require attention to improve their job quality in coming years.

4.3.3. Tackling persistent gender discrimination

Women's job quality continues to be adversely affected by persistent forms of discrimination. In addition to lower participation and employment rates and shorter careers, Section 3 shows significant gender differences in earnings in the EU: on average women earn 16% less than men per hour of work. They also participate less in decision-making: women account for an average of 18% of the members of the board of directors in the largest publicly-listed companies (far from the 40% target for 2020) and 3% of CEOs([76]).

Chart 21: **Effects of greening on health and well-being of employees**



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Source: Gaušas et al. (2012).

Note: Survey with a total of 145 responses from companies (12% of respondents), employer organisations (21%), trade unions (41%), national, regional and local authorities (5%), European and international organisations (5.5%), other EU and national-level stakeholders (10%) and others (7%).

As labour market participation, employment and retirement age are positively linked to education levels, an increasing share of women receiving a higher education is expected to result in better labour market outcomes. Nevertheless, along with appropriate legislation and social policies (e.g. European Commission, 2014c), addressing discrimination in general also calls for labour market policies that focus on the further strengthening of occupational and geographical mobility at the European level, through strengthening job search facilities, improving the portability of social security rights (such as pensions, medical care, unemployment benefits, etc.), and the recognition of skills and education certificates. Increased labour mobility decreases the bargaining power of employers and as a consequence also their scope to discriminate([77]).

4.4. The jobs potential of the green economy

The greening of the economy can be a source of employment growth, as by increasing the efficiency of production processes, adopting innovative solutions to save resources and reduce pollution, developing new business models, or offering more sustainable products and services, companies can expand their markets and create new jobs, while transforming existing ones. In a knowledge economy, higher resource productivity can augment employment and allow wage increases without reducing the profit rate on the reduced capital stock([78]). It is estimated that reducing the total material requirement of the EU economy by 24% could boost GDP by up to 3.3%, while creating 2.8 million jobs([79]).

There has been considerable job creation in the environmental goods and services sector (EGSS) even during the economic crisis. Employment in the EU increased from 3 to 4.2 million between 2002 and 2011, including by 20% during the recession years (Eurostat). This trend is expected to continue as the EGSS sector supports the overall greening of the economy. Take the example of recycling. Many everyday goods are made out of materials that can be recycled. Recycling has introduced new production processes to treat used materials and to make new products out of old ones. This can generate new jobs of different levels of skills. ILO and OECD (2012) in turn provide a review of studies pointing to a significant job-creation potential in renewable energy sectors and associated with energy-efficient buildings.

Workers expect that further greening will have a positive impact on job quality, especially on their health (Gaušas et al., 2012) (Chart 21). Nevertheless, in a successful transition towards a greener economy, several downward risks for job quality in all its dimensions may have to be considered, as highlighted below.

([73]) For more details, see Council Recommendation of 22 April 2013 on establishing a Youth Guarantee, available at http://eur-lex.europa.eu/legal-content/EN/ALL/;ELX_SESSIONID=lNQSTntdhQbGNl1z7P6hZ0YHvy8dS2lKN2wkn8lfRx9RnXTFLmTL!-60128961?uri=CELEX:32013H0426(01)

([74]) More details available at http://ec.europa.eu/education/policy/vocational-policy/alliance_en.htm

([75]) For more details, see https://ec.europa.eu/eures/page/homepage?lang=en

([76]) See for instance http://ec.europa.eu/justice/gender-equality/files/documents/140303_factsheet_progress_en.pdf

([77]) In perfect competition and perfect information, wage differences reflect differences in productivity and job quality, and lower job quality should give rise to a positive wage premium and discrimination cannot persist (e.g. Becker, 1957; Rosen, 1986). However, once perfect labour mobility does not hold and employers have an inclination to discriminate or stigmatise, then lower wages may be paid to the victims of discrimination (e.g. Black, 1995). The stronger the barriers to all forms of job mobility, the more likely low job quality will be associated with low pay, as employers can use their bargaining position.

([78]) http://www.unido.org/fileadmin/user_media_upgrade/Media_center/2013/GREENBOOK.pdf

([79]) http://ec.europa.eu/environment/enveco/studies_modelling/pdf/report_macroeconomic.pdf

4.4.1. Skills and training needs in the green economy

The introduction of new products and processes associated with greening (e.g. improving resource efficiency, recycling waste or preserving biodiversity) are due to entail changes in skills requirements and occupational profiles. Traditional skills remain important but new tasks are required, with increased demand for a skilled workforce in growing eco-industries, up-skilling of workers across all sectors, and re-skilling of workers in sectors vulnerable to restructuring. Workers may not be fully prepared for such tasks, or they may pose new safety and health risks (see below). For example, electricians are not trained to work at extreme heights and construction workers may not know how to deal with new material or electrical hazards.

Opportunities to move to green jobs of better quality will depend largely on workers' ability to upgrade their skills. This, in turn, will require enough flexibility in educational and training schemes to keep pace with green products and process innovations.

Education and training systems (vocational training, life-long learning programmes, on-the-job training) can be effective tools for coping with the demand for new skills and preventing skill bottlenecks. Targeted bridging programmes which put low-skilled workers on a sustainable long-term career path (e.g. pre-vocational training schemes providing basic skills to enter technical training) could temper emerging inequalities in job quality. E-learning throughout the career supported by instruments such as online libraries and interactive tools also constitute interesting options (e.g. Cedefop, 2010; EU-OSHA, 2013). Anticipating future skill needs and supporting the dissemination of new training opportunities, as outlined in the New Skills for New Jobs agenda and the European Quality Framework for anticipation of change and restructuring([80]), in close cooperation with public employment services (European Commission, 2010a and European Commission, 2014e), are another policy priority.

([80]) See, for example, http://ec.europa.eu/social/main.jsp?langId=en&catId=89&newsId=2012&furtherNews=yes

4.4.2. Anticipating change, securing transitions and considering new health and safety risks

As stated, the greening of the economy can bring along many occupational risks. Some new tasks (e.g. accessing the exterior peak of windmills (AEE, 2012)) or products (e.g. the use of microorganisms in the production of biofuels (Driscoll et al., 2005)), the use of nanomaterials) may involve risks in terms of workers' health and safety (e.g. falls or respiratory illnesses). These uncertain risks are often without monetary compensation: for example, intensive manual workers in waste management face strong health and safety risks and often receive low pay (e.g. Antonsson, 2014; EU-OSHA, 2013).

Monitoring the impact of new technologies on job quality may pose challenges, in particular to SMEs, which may not have the necessary resources to make adequate assessments of new processes and products vis-à-vis larger firms. These have better access to financial resources and technologies, better access to information, internal human resources and access to skills programmes.

These developments raise several important challenges (which go beyond labour market policies), including: filling the gaps in our knowledge to make more reliable risk assessments; promoting technologies that reduce health and safety hazards of intensive manual work such as in waste management and recycling (including collection, transport, and disposal and processing); promoting product designs that cover the whole life cycle of products, including their recycling at the end of their use; and integrating in the production process an independent assessment of the health and safety risks associated with the introduction of new green products or processes (e.g. EU-OHSA, 2013).

Awareness-raising activities informing workers of their employment rights and obligations and upgrading their skills to include the new "greener" forms of materials and production methods can substantially improve working conditions and decrease safety and health hazards. Promoting social dialogue at industry and sector levels will be key in this respect (e.g. European Commission, 2014e). Further strengthening international cooperation and health and safety more generally, via for instance, the Green Growth Knowledge Forum([81]), can also provide innovative solutions.

4.4.3. Addressing gender stereotyping

Women are more often employed in occupations that are seen as less closely related to the greening of the economy (e.g. health and social work, education and retail), while men are more likely to be employed in research, engineering, manufacturing and construction of energy- and resource-saving technologies([82]), requiring STEM skills. Such activities are also often characterised by a lack of managerial positions held by women. While the greening of the economy is likely to affect all sectors (for instance via the integration of environmental considerations in education and training, or adding skill sets in retail to advise customers on the environmental performance), there is a risk that it may be perceived as primarily creating more and better jobs for men.

4.5. Strengthening job quality to foster future productivity growth in the face of significant structural changes

Ongoing structural changes are expected to have a significant impact on job quality and workers' performance. They can bring along a host of opportunities for job creation and improving job quality. This may happen through: widening the opportunities to exploit countries' comparative advantages through new production processes, new products and new markets; mitigating physical or psychosocial barriers to labour market participation, notably of more vulnerable workers (e.g. older and disabled workers); and generating greater (occupational and geographical) labour mobility and thus a larger choice of jobs and the opportunity to perform tasks that best fit workers' abilities and preferences. This may reinforce overall productivity growth and earnings potential.

([81]) See the Green Growth Knowledge Forum launched by the Green Growth Institute, the OECD, the United Nations Environment Programme and the World Bank, see http://www.greengrowthknowledge.org

([82]) For example, Blanco and Rodrigues (2011) report that 78% of the workforce in wind energy is male.

However, technological change, globalisation, demographic ageing and the greening of the economy can have significant negative implications for job quality, including: rendering jobs obsolete (just below 50% according to some authors), skill erosion, stronger job insecurity, longer or uncertain (e.g. zero hour jobs) working hours, lower wages, new and unknown health and safety risks, and polarisation (i.e. non-equitable distribution of the gains in job quality with low to middle skills losing out and larger gender imbalances). These may in turn have adverse feedback on productivity and labour market participation.

Therefore, to realise the full potential of the ongoing structural changes, allow workers to benefit from the opportunities generated and correct any adverse challenges will require relevant labour market reforms. These should allow workers to transit to jobs of better quality in a flexible but secure way, increasing workers' receptivity to innovations and changes in work organisation. Given the polarisation effects of skill-biased technological progress in combination with globalisation, ageing and greening, well-targeted policies will need to ensure that costs and benefits are more equitably distributed.

These policies include([83]): implementing active labour market policies such as better profiling, job searching assistance and connection between employment services; improving access to life-long learning and on-the-job training; strengthening labour laws and social security provisions (including portability of benefits); eliminating gender and age stereotyping, discrimination and stigmatisation and reducing the informal economy; strengthening the capacity to anticipate and assess risks to job quality structural changes and strengthening health and safety at work legislation; promoting effective social dialogue at all levels and with non-EU partners and increasing employees' empowerment to identify improvements to job quality. These will strengthen labour allocation efficiency with a positive impact on productivity and labour market participation.

5. Modernising work organisation to foster productivity growth

This section looks at the distribution of different types of work organisations across sectors, occupations and Member States, and its evolution in recent years. It describes differences in job quality associated with different forms of work organisation in the EU. It then explores how work organisation([84]) can be shaped to increase productivity and labour market participation under the continuous pressure of ongoing structural changes (technological progress, globalisation, demographic change and the greening of the economy). It looks at how stimulating creativity and fostering exchanges between workers can prevent stress and help maintain good physical and mental health, while at the same time improving productivity and innovation capacity. It sees how special arrangements can be implemented to accommodate older workers, workers with disabilities or certain diseases, and workers with family responsibilities. The section then discusses future challenges with respect to workplace learning. It ends by examining how expanding global values chains will affect work organisation, focusing on risks related to the global restructuring of value chains, the virtual collaboration across time zones and the absence of multi-layered social dialogue.

5.1. Work organisations differ across sectors, occupations and Member States

Analysis of EWCS 2010 data shows that work organisation varies across economic sectors and occupational categories, more than by company size or its age and gender composition. Chart 22 shows large differences in work organisation across sectors in 2010 ([85]). The Learning form is more prevalent in the financial intermediation and public utility sectors and the Lean form is less common in the wholesale and retail, transport and communication and hospitality sectors. Chart 23 shows large differences in work organisation across occupations in 2010. Learning forms are especially characteristic of the work of professionals, technicians and senior managers, but also of 31% of craft workers, 20% of plant and machine operators and 18% of elementary occupations. The Lean form is more frequent for senior managers (41%) and skilled blue-collar workers (38%). A high proportion of blue-collar workers are employed in Tayloristic forms of work organisation. Service and sale workers, clerks and unskilled workers mainly work in Traditional or Simple work organisations.

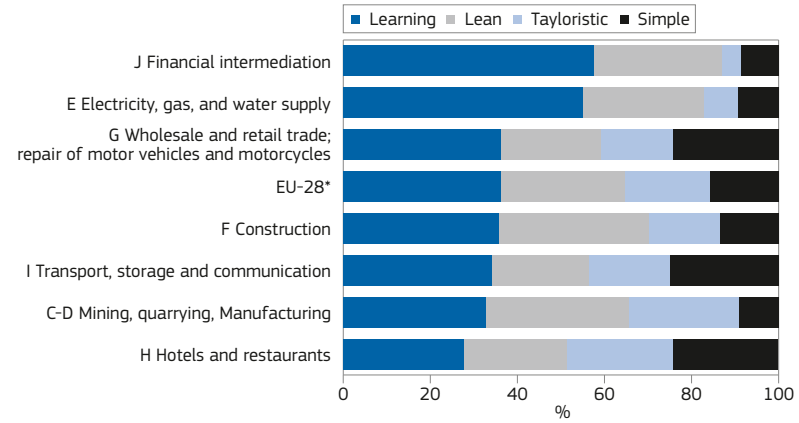
([83]) Apart from other structural measures that are not directly related to labour markets, such as fragmentation of credit markets and access of SMEs, strengthening of single market and trans-European networks.

([84]) In this chapter, work organisation refers to processes and relationships, including worker-worker as well as worker-management interactions and workplace learning.

([85]) See section 2.2 for more details on different forms of work organisation.

Work organisation varies across Member States. Chart 24 shows that in the Netherlands, Denmark, Sweden and Malta, half or more of the workers in private companies with 10 or more employees are employed in Learning organisations. In contrast, Bulgaria, Romania, Greece, Ireland, the United Kingdom and the Czech Republic show a very low share of workers in this type of organisation. More than a third of workers work in Lean organisations in Finland, the United Kingdom, Ireland, Estonia, Romania, Malta and Austria. In contrast, Lean organisations are least common in the Netherlands and Greece. Tayloristic organisations account for at least 30 % of employees in Hungary and Greece, and less than 10 % of workers in Denmark, Finland and Malta. Simple organisations are most common in Bulgaria, Greece and Cyprus, where they involve more than a quarter of workers, and are least common in Sweden, Estonia, Austria and Hungary.

Chart 22: **Differences in work organisation across sectors**



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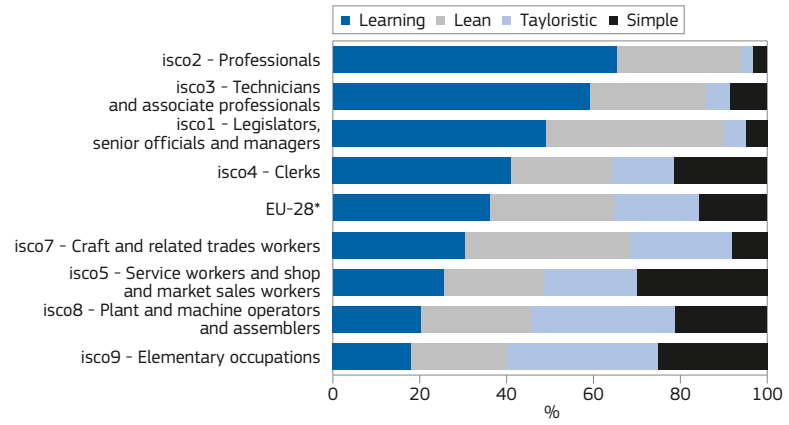
Source: Eurofound estimates based on EWCS 2010 data.

Chart 23: **Differences in work organisation across occupations**



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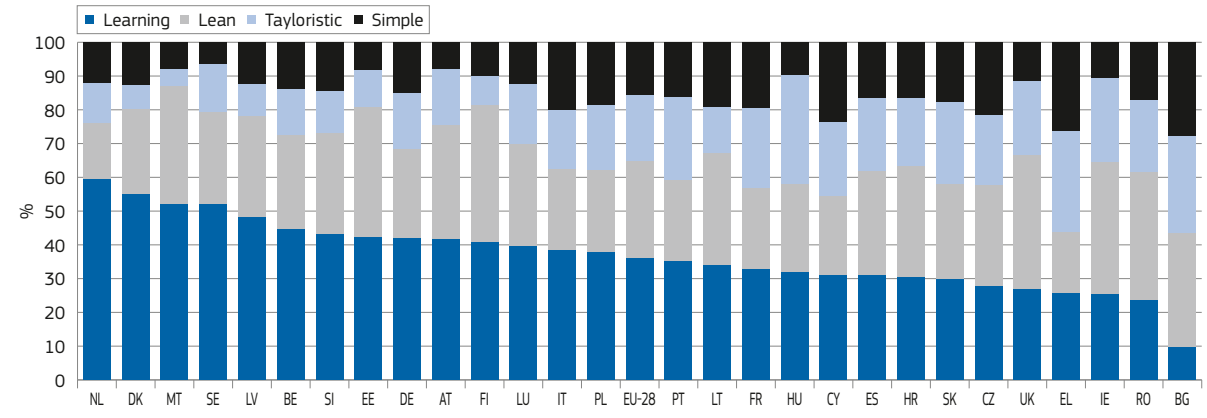
Source: Eurofound estimates based on EWCS.

5.2. The interaction between work organisation and job quality: the importance of Learning and Lean Organisations

This subsection describes the interaction between job quality and work organisation as two important drivers of productivity growth (see Table 2).

Learning and Lean organisations are associated with relatively high job security ([86]) compared to Tayloristic organisations, which show the lowest levels of job security both in terms of higher chances of losing the current job and in terms of higher anticipated difficulties in finding another similar job. Learning organisations are associated with a higher level of employability compared to Lean organisations, probably due to the fact that training is less firm-specific and more general. The number of employees in Learning and Lean organisations with good career prospects is almost two times larger than those in Tayloristic and Simple organisations.

Chart 24: **Differences in work organisation across Member States**



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Source: Eurofound estimates based on EWCS 2010 data.

([86]) Longest seniority is also reported in Learning organisations.

Table 2: **Job quality and work organisation: interactions**

			Discretionary Learning	Lean production	Tayloristic	Simple
1. Socio-economic security	Earnings	I am well paid for the work I do	50.6%	44.1%	31.9%	36.0%
	Job/career security					
	Employment contract	Permanent	88.4%	85.2%	79.7%	77.9%
		Fixed term or TAW	8.3%	11.0%	16.2%	15.1%
	Career prospects	Strong career prospects	37.6%	38.7%	19.9%	22.3%
	- Job security	I might lose my job in the next 6 months	14.1%	19.8%	26.0%	21.4%
	- Transitions	It's easy for me to find an other job with a similar salary	33.0%	29.1%	24.4%	31.7%
2. Education	On the job training	On the job training	40.4%	48.6%	31.4%	23.9%
3. Working conditions	Health and safety					
	• Posture related risks	Repetitive hand or arm movements	44.8%	62.3%	74.3%	55.3%
		Tiring or painful positions	23.6%	39.7%	48.8%	28.9%
	• Ambient risks	Noise	16.9%	34.5%	43.0%	16.7%
		High temperature	9.0%	23.4%	26.6%	11.1%
	• Chemical risks	Breathing in smokes, dust	16.9%	33.1%	33.2%	14.6%
	• Stress	Direct reporting	25.5%	33.9%	30.4%	22.0%
	Work intensity	High speed work all or almost all of the time	20.7%	36.4%	45.0%	21.3%
		Tight deadlines	26.5%	45.6%	39.2%	21.2%
	Work authonomy	A say in choice of working partners	23.8%	25.5%	8.6%	8.2%
		Able to apply your own ideas at work	57.8%	45.9%	16.1%	24.4%
	Employee consultation	You are involved in improving the work organization or work processes of your department / organisation	48.9%	44.5%	19.0%	16.8%
		You can influence decisions that are important for your work	40.6%	33.0%	10.9%	11.3%
4. Work-life balance	Work-life balance					
	• Asocial working hours	Night work	5.9%	11.3%	18.6%	12.0%
		Shift work	13.7%	28.0%	40.4%	23.0%
	• Flexible work hours	Not fixed starting and finishing times	33.5%	30.5%	23.5%	25.0%
		Easy to take time off to during working hours to take care of personal or family matters	72.8%	63.5%	48.9%	52.5%
	Discrimination	Nationality	0.8%	2.2%	2.8%	0.9%
		Gender	1.0%	1.2%	2.3%	1.4%

Source: Eurofound estimates based on EWCS 2010 data.

The long-term investment in employees of Learning organisations is supported by compensation systems based on the overall performance of the company (26% of workers versus 22% in Lean and 12% and 10% in Tayloristic and Simple forms) and profit-sharing schemes (6.4% of workers in Learning organisations). Payments for bad or dangerous working conditions are highest in Lean organisations (around 13% of workers). Piece rate and productivity payments are most frequent for employees in Lean and Tayloristic organisations (around 19% of workers).

Learning and Lean organisations both report relatively high levels of training (49% in Lean and 40% in Learning organisations) ([87]). Nevertheless, employees in Learning and Lean organisations also report more frequently that the skills demands put on them are too high.

([87]) They also report most that the training has helped them to improve the way they work.

Employees in Tayloristic but also in Lean organisations report the highest exposure to physical risk factors (environmental, posture-related risks, chemical risks, ambient risks, dangerous substances). Employees in Tayloristic organisations also report the highest levels of exposure to psychosocial risks factors (violence, fear, discrimination, stress, emotional demands, poor leadership ([88])). Interestingly, about 90% of employees report being 'very well' or 'well' informed about the health and safety risks associated with their work with only small differences between organisations.

Work intensity is highest in Tayloristic and Lean organisations and lowest in Learning organisations. Workers in Learning and Lean organisations report the highest level of autonomy in terms of choosing partners and in terms of applying their own ideas. Learning organisations are more likely to offer more sustainable jobs in that workers are able and willing to keep and successfully manage their jobs until the age of 60.

There are few differences in exposure to long working hours across organisations. Workers in Learning and Lean organisations most often report having to work in their free time (around 11%), but they also report the highest level of employee-led short-term working time flexibility (56% of workers in Learning and 40% in Lean organisations). **Workers in Learning organisations report the highest level of work-life balance and satisfaction with working conditions** (85% and 90% respectively).

The data show a decrease in the number of workers undergoing employer-paid training in Learning organisations, and a slight increase in employer-paid training among Lean, Tayloristic and Simple organisations compared to 2000 (Annex 4, Table A4.9). Nevertheless, in 2010 workers in both Learning and Lean organisations were making greater use of self-paid training than in 2000. **Workers in Simple and Tayloristic work organisations were less likely to have any form of training in 2010 than in 2000.**

([88]) Supportive leadership is most frequently reported by employees in Learning and Lean organisations, contrasting lightly the rather negative picture of exposure to physical and psychosocial risks in both Tayloristic organisations.

Table 3: **Organisational forms across EWCS waves (2000–10)**

	EWCS survey wave			Total
	2000	2005	2010	
Learning	39.1%a	40.1%a	36.8%b	38.6%
Lean	25.7%a	27.2%b	28.6%c	27.2%
Tayloristic	18.6%a	18.8%a	18.3%a	18.5%
Simple	16.6%a	13.9%b	16.3%a	15.8%

Source: Eurofound estimates based on EWCS 2010 dataset.

Note: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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5.3. Declining Learning organisations and the move towards Leaner forms

Table 3 shows that the proportion of employees involved in Learning organisations has been decreasing between 2005 and 2010 (down from 40.1% in 2005 to 36.8% in 2010). At the same time, and probably as a consequence of the decline of the number of Learning organisations, the proportion of employees in Lean production forms of work organisation has been increasing significantly first between 2000 and 2005, and then also between 2005 and 2010. Tayloristic organisations remain stable over time: 1 in 5 organisations in Europe are structured in Tayloristic forms of work organisation. The proportion of Simple organisations has been decreasing between 2000 and 2005, then increasing back to 2000 levels. Such trend developments carry downward risks in terms of job quality and human capital resilience — as discussed in the previous subsection.

5.3.1. Different trends across Member States between 2000 and 2010

Perhaps surprisingly, the overall proportion of workers in Learning organisations appears to have decreased significantly between 2005 and 2010 (from 40.1% to 36.8%), replaced by an increasing number of Lean organisations, while the number of Tayloristic organisations was stable (1 in 5 EU organisations). However, this general trend does not apply to each individual Member State (Annex 4, Tables A4.1–A4.4). Countries can be grouped in four groups according to the developments in work organisation observed between 2000 and 2010.

In the first group (Annex 4, Table A4.1), Learning organisations increased either constantly between 2000 and 2010 or since 2005. In Latvia, Portugal and Malta this type of organisation increased between 12% and almost 20% over the 10-year period. Somewhat smaller increases are seen in Romania, Lithuania and Poland. In the Netherlands, Denmark, Cyprus and Estonia an initial decrease in the number of Learning organisations between 2000 and 2005 was followed by an increase in the following five years, bringing most of these countries back to the levels of 2000. In the case of the Netherlands and Denmark, these are among the highest in Europe: 60% of employees in private companies with 10 and more employees work in Learning organisations.

In the second group (Annex 4, Table A4.2), Learning organisations are decreasing while Lean organisations are increasing, and these two trends are likely to be related. This development is most prominent in Germany, Luxembourg, Belgium and Austria. In Germany, for example, the difference in the proportion of Learning and Lean organisations was 31.5 percentage points in 2000, dropping to 15.8 percentage points in 2010. A somewhat smaller drop in the proportion of workers employed in Learning organisations occurred in Slovenia, Italy and Finland. A more complex trend is present in Sweden and Ireland: they saw a steep increase in Learning organisations from 2000 to 2005, then followed by a decrease in the later five years. Yet, Sweden is still the EU country with the highest proportion of employees working in Learning organisations — two out of three private organisations with more than 10 employees.

In the third group (Annex 4, Table A4.3), the general decrease in the number of

Learning organisations is mostly coupled with an increase in Tayloristic organisations. In France and the Czech Republic Learning organisations decreased, replaced by an increasing proportion of Tayloristic and Simple organisations. On the other hand, Learning and Simple forms of work organisation are replaced by Lean and Tayloristic in Hungary and Bulgaria. In Greece, Simple types of organisations are replaced by Tayloristic.

Finally, in Slovakia, Spain and the United Kingdom there were no substantial changes in the proportion of the four types of organisations between 2000 and 2010 (Annex 4, Table A4.4).

5.3.2. Different trends across economic sectors between 2000 and 2010

Trends are also different across sectors (Annex 4, Table A4.5). In the public utilities, financial intermediation, transport and communication and hospitality sectors there was a marked increase in the number of Learning organisations and a decrease of Lean organisations between 2000 and 2005, followed by the exact opposite trend over the next five years. For example, from 2000 to 2005, the share of Learning organisations in public utilities increased by more than 5 pps and the share of Lean organisations decreased by almost 10 pps. In the following five years, the share of Learning organisations decreased by over 7 pps, compensated by a 5 pps increase in the proportion of Lean organisations. The retail industry changed work organisation from Learning to mostly Lean and Tayloristic organisations, with the share of the latter increasing by almost 5 pps. In the construction sector there was a shift towards Lean and Tayloristic work organisations, especially in the first five years, though this trend appears to have halted now. In mining and manufacturing, a slight shift towards Lean organisations forms can be seen.

5.3.3. Different trends across occupations between 2000 and 2010

Trend developments in work organisation across occupations are also different (Annex 4, Table A4.6). Among high-skilled clerical workers such as legislators, managers, senior officials and professionals, the relatively high share of Learning organisations decreased substantially between 2000 and 2005, with some reverse trend in the case of professionals between 2005 and 2010. In contrast, Lean organisations have become more prominent. From 2000 to 2005, an increasing share of clerks and service and sale workers worked in Learning organisations, but this trend was reversed in 2005 and the share of Lean and Tayloristic work organisations increased. This is not the case for technicians and associate professionals, for whom nothing much changed over the period, except perhaps for some decrease in the proportion of Tayloristic organisations. By 2010, a higher share of low-skilled manual workers, those working in plants, assemblers, machine operators and those in elementary occupations were working in Simple organisations than in 2000. High-skilled manual workers, such as craft and related trade workers are primarily in Lean organisations (38 % in 2010). The share has consistently increased since 2000.

5.3.4. A decrease in Learning organisations in smaller establishments

The biggest decrease (3 pps) in the share of workers in of Learning organisations between 2000 and 2010 occurred in smaller establishments, which switched to Lean organisations and to a certain extent also to Tayloristic organisations (Annex 4, Table A4.7). The strongest increase in the share of Lean organisations (6 pps) occurs in the biggest companies, though in this case the increase in the number of Lean organisations is due to a shift from Simple (down by 5 pps) rather than from Learning organisations.

5.3.5. Trends across different levels of seniority

In 2010, new workers (one year or less in a company) were less likely to find employment in Learning organisations and more likely to find employment in Lean organisations, and to a smaller extent Tayloristic organisations, compared to 2005 and 2000 (Annex 4, Table A4.8), although Learning organisations still represent the highest share. In contrast, the shares across the four different types of organisations did not change over the period for workers with two or more years of experience.

5.4. Complementing technological innovation with workplace innovation

Section 4 indicated how the ongoing technology change can create new opportunities for jobs and growth. The interaction between knowledge, innovation and education is seen to be a key driver of productivity growth in a knowledge-based economy ([89]). However, for the knowledge-based potential to materialise, the knowledge triangle has to be complemented by forms of work organisation that use workers' human capital to their fullest (e.g. Totterdill, 2014).

Section 4 also indicated how structural changes can pose challenges since the nature of knowledge work differs markedly from routine work. In modern knowledge-based tasks, existing working arrangements that were functional in the manufacturing industry or clerical organisation such as vertical decision structures, Tayloristic division of tasks, repetition of work items, low level of autonomy, strict time management and high levels of intrusive control, may no longer result in higher productivity. Success in modern knowledge-based tasks is likely to rely more on the possibility of choosing to do what one is best at, a lack of interruptions and strong personal motivation.

Future developments in ICT and KETs are likely to affect work organisation internally (e.g. generating virtual worker-worker interactions) and externally (e.g. greater outsourcing of tasks), while the production of new KETs-based products and services may pose new occupational hazards (e.g. through the use of microorganisms), all with a potential impact on productivity and labour market participation (e.g. EU-OHSA, 2013).

Finally, the impact of changes in work organisation on earnings distribution will also be affected by firms' human resource policies. Indeed, if firms encourage training they could promote their workers at the bottom end of the occupational or skill structure up to higher levels, rather than hiring new already-trained workers (e.g. Aghion et al., 1999).

([89]) I.e. the so-called 'knowledge triangle' (see also http://ec.europa.eu/education/policy/higher-education/knowledge-innovation-triangle_en.htm).

Box 5: Work organisation and earnings distribution

Work organisation, including worker-worker and worker-employer interactions as well as workplace learning, is also an important driver of enterprises' productivity and distribution of factor income (e.g. Aghion et al., 1999). As further technological progress strengthens communication and information flows, a less hierarchical (more organic) structure of work organisation will likely emerge. This may give rise to fewer specialised tasks supervised by middle management, and to more multitasking within teams. Such team work may then give rise to knowledge and learning externalities that give an extra boost to productivity from which all team players may benefit via higher earnings (if profits are not extracted by 'team leaders').

However, as transaction costs decrease facilitating outsourcing, a stronger skill-segregation between enterprises may emerge (e.g., low-skilled employment in McDonald's Inc. versus high-skilled employment in Google Inc.), leading to stronger earnings parity among workers within enterprises but to stronger earnings dispersion between workers of different enterprises.

5.4.1. More autonomy and responsibility for workers may strengthen the EU's innovation capacity but also increase polarisation

Technology change will provide opportunities to strengthen firms' innovation capacity. Future developments in ICT (e.g. an expansion of cloud computing) will increase the potential for virtual workplaces with workers who are physically located in different places (including their own home) interacting in real time. Such developments may give workers more autonomy and responsibility and allow for better reconciliation of work and family life. As such, these changes in work organisation may strengthen the opportunities to make full use of existing knowledge, with the potential to generate new knowledge with new products and processes, or new applications of existing knowledge. Such developments may also strengthen labour market participation, notably of older workers and workers with disabilities or family responsibilities, and may become the primary driver of productivity growth for the resource-poor, skills-rich EU.

Appelbaum et al. (2011) estimate that a positive workplace environment and practices that develop employees' knowledge and ability to create value may increase productivity by 15% to 30% (taking account of specific characteristics of industries and occupations). Therefore, it will be important actively to engage employees in identifying and developing solutions, while allowing them to participate in the implementation of work innovations so that they become more receptive to change (e.g. Totterdill, 2014; Dhondt and Totterdill, 2014).

In this context, an important policy would be to facilitate the creation of EU-wide platforms that allow employees and employers to exchange experiences in developing and implementing solutions related to production and work organisation. The specific characteristics of such platforms will vary between production entities and may take place at European or national level. They can promote the exchange of experiences, help identify best practices, monitor their implementation, assess their impact on productivity and identify social implications.

Continuous change in work organisation may discourage individuals from staying in employment, especially older workers and workers with disabilities notably if low-skilled, and may adversely affect the commitment of the other workers. Moreover, greater flexibility may lead to further polarisation in the labour market with core workers remaining/being employed under attractive contractual arrangements (albeit with increased work intensity ([90]), and with other workers (such as temporary contract workers, hired self-employed or other forms of flexible contracts) acting as a buffer to accommodate the increased flexibility.

As stated, innovation may render tasks obsolete and skills obsolescence may accelerate to the extent that access to learning opportunities is not equitably distributed, thus reinforcing ongoing polarisation. Technology may also make task outsourcing easier, reducing job security, especially for low-skilled workers. In addition, virtual workplaces are expected to lead to more fragmented task organisation, which may have an adverse impact on the team spirit of the workforce. The impact of this on productivity is unclear.

While future technological developments will create important opportunities to improve the EU's innovation capacity, realising and benefiting from this potential calls for workplace innovations that depend on the consensual effort of employees and employers. In this context, future workplace change should foster workers' engagement, promote social dialogue helping to align employers' and employees' objectives and motivation, address new challenges in office and workflow design such as information overload and distractions, and give workers more responsibilities and autonomy. As knowledge and autonomy become more important, more attention should be paid to the challenges faced by Learning organisation (as described in Section 5.3).

5.5. Fostering workers' engagement

It is often said that 'an organisation's greatest asset is its people'. But this is only likely to be true if and when they are committed to their job. Studies on the current shape of modern workplaces, such as Gallup's 'Q12' survey([91]) (which, it should be noted, covers only United States workers), suggest that as little as one third of workers show high engagement at work and a further third of workers are 'not engaged', while another third are 'actively disengaged'.

Gallup's employee engagement index is based on worker responses to 12 policy-relevant workplace elements with proven linkages to performance outcomes, including: productivity; customer service; quality; retention; safety; and profit (Gallup 2013). Workplaces where workers score low in that survey suffer from lower productivity, are

([90]) Which is not necessarily related to a decrease of job quality, as discussed in section 3.

([91]) The questions are:
1. Do you know what is expected of you at work?
2. Do you have the materials and equipment you need to do your work right?
3. At work, do you have the opportunity to do what you do best every day?
4. In the last seven days, have you received recognition or praise for doing good work?
5. Does your supervisor, or someone at work, seem to care about you as a person?
6. Is there someone at work who encourages your development?
7. At work, do your opinions seem to count?
8. Does the purpose of your organisation make you feel your job is important?
9. Are your colleagues committed to doing quality work?
10. Do you have a best friend at work?
11. In the last six months, has someone at work talked to you about your progress?
12. In the last year, have you had opportunities at work to learn and grow?

less likely to create new jobs, are more likely to be reducing their workforce and are more likely to see employees leave.

The 'not engaged' are passive and less productive; they are, in Gallup's words, 'sleepwalking through their workday, putting time but not energy or passion in their work'. Actively disengaged employees 'are not just unhappy at work; they are busy acting out their unhappiness. Every day, actively disengaged workers undermine what their engaged co-workers accomplish' (Gallup 2013) and are a liability to the company. They spread frustration and demotivate colleagues. Gallup argues that management typically responds to low engagement with extrinsic motivation, e.g. by offering fringe benefits. However, these cannot address the fundamental needs of workers such as: sense of purpose; perceived relevance of their work; opportunity to use one's skills and learn new skills.

Similarly, engagement tends to diminish with educational attainment, with a 6 percentage point difference found between those with less than a high school diploma (34% feel engaged at work) and college graduates (28% engaged). This may reflect graduates having higher expectations that are harder to meet following their investment in education.

Workers' engagement seems to be sensitive to the organisation's size, with Gallup's research suggesting that there is something unique and beneficial about working in a small, tightly-knit environment.

Their research suggests that workers of all generations are most engaged when they have the opportunity to do what they do best every day. While those born between 1981 and 2000 are particularly prone to job-hopping compared to previous generations, this characteristic is clearly dependent on engagement levels. Nearly half of those who actively disengage want to change jobs, while only 17% of engaged ones do.

Findings by experimental psychologists (Pink, 2010) offer surprising insights into the mechanisms of motivation. Laboratory experiments highlight the limitations of external rewards (such as gifts or money) as incentives for creative problem-solving([92]). However, studies also show that such extrinsic motivators work when it comes to routine tasks. In other words it appears that it is the worker's intrinsic motivation, curiosity and emotional engagement that drive performance when it comes to solving problems and carrying out non-routine tasks. The consequences for future work organisation are potentially very significant. If success in the future economy relies on innovation and solving complex problems, then employers will need to foster genuine personal interest in the work of their employees. Annex 5 provides examples that illustrate the positive link between the mental state of knowledge workers and productivity.

5.6. Management strategies for organisational efficiency: supervision and control versus common values

In the traditional bureaucratic industrial model, management has typically focused on designing and supervising work processes to minimise the (intellectual) effort and skill necessary for workers to carry out their work. Taylorism summarises this managerial ethos as the focus on constructing work procedures constrained to the point where workers can only do the correct thing in an economic way (McIntyre, 1984; Jackall, 1988). It features vertical division of labour, hierarchy, and formalised and standardised work processes (Mintzberg, 1983; Wright, 1996). Traditional management theorises that work can be divided between those who work and those who: plan; organise; coordinate; and control work.

However, management methods have evolved since changing patterns of work organisation require other forms of managerial intervention. Many modern professional organisations operate in conditions where it would anyway be difficult or even counterproductive to organise and control behaviour. Management in modern organisations turn to targeting behaviour indirectly, through norms and values (e.g. Etzioni, 1964). This is accomplished through managerial practices such as normative control: 'the attempt to elicit and direct the required efforts of members by controlling the underlying experience, thoughts, and feelings that guide their actions' (Kunda, 1992). Employees then accept and adopt as their own a corporate culture: the norms of behaviour preferred by the corporate organisation.

5.7. Office and workflow design for optimum efficiency

Efficiency in a typical modern office is prone to the risk of distraction, information overload and lack of control over one's personal space. Companies may overlook these risks as they strive to encourage team work through faster work pace via heavy IT use, multitasking and office design, as well as greater control over employees.

5.7.1. The strain of multitasking in intellectual work

Many contemporary employers require staff to engage in multitasking. Yet studies have demonstrated that this may be counterproductive. Clifford Nass, who carried out seminal studies on how people interact with communication technology, concluded that modern life is overloaded with information and that this is not conducive to remaining focused and analytical thinking (Ophir et al., 2009). His studies have shown that people who frequently engaged in multitasking actually score worse in performing parallel tasks.

Since the brain has very specialised modules for different tasks, like language processing and spatial recognition, it stands to reason that it is much harder to perform two similar tasks simultaneously. Driving and talking do not use the same bits of brain but answering an e-mail while talking on the phone does — creating information bottlenecks. Studies by Gloria Mark, professor of informatics at the University of California, have found that when people are continually distracted from one task, they work faster but produce (Mark et al. 2008) less. New computer and media 'advances' can thus be seen as placing new demands on cognitive processing and particularly on attention allocation. Experiments have demonstrated

([92]) A classic psychological experiment from 1969 by Edward Deci (echoing pioneering experiments on rhesus macaques by Harry F. Harrow from 1949) showed that extrinsic motivators (gifts) are counter-productive in puzzle-solving tasks. The gifts distract the subject from the task and undermine the intrinsic motivation and the pleasure of performing the task itself.

that students solving a maths puzzle took 40% longer — and suffered more stress — when they were made to multitask (Ophir et al., 2009).

Such a working environment saturated with media and the resulting information and task overload is a recent phenomenon. Multitasking is still perceived as a target that is often actively encouraged in the corporate environment, but there is a case for serious analysis into how progressive employers could shape communication policies in order to minimise the psychological burden and productivity losses stemming from multitasking.

5.7.2. The pace of work and efficient time use in knowledge occupations

Ergonomics of work reflect the cyclical balance of intense effort and focus with recovery and rest. Sensible time management should take a long time perspective. Like a long-distance runner, cognitive workers tend to pace themselves in order to achieve optimum results. Productivity should then be assessed not over a day or week but over years or even a worker's entire productive life. What may appear to be high productivity, from the employer's point of view, can mask hidden costs. If a worker achieves high output in the short term but, as a result, suffers burnout or illness and exits early from the labour market, many of the costs are ultimately borne by society at large through the welfare system.

Knowledge work that requires intense mental focus has been found (Hobson and Pace-Schott., 2002) to follow a particular cycle of 90 minutes with corresponding performance benefiting from short breaks. In cognitive activities such as assembly-line production, the break or rest does not follow the same pattern. Adding variety, changing the subject of work, off-time, freedom from meetings and rapid reaction to external demands, being given time to reflect and think are all factors that can help achieve a balanced working day.

The need for the body and mind to recover is clearly recognised in legislation covering occupations such as pilots and truck drivers, since the consequences of human error due to overwork in such areas are obvious. A Directive also sets for all EU workers minimum standards in terms of rest periods and limits to working time([93]). Numerous studies have linked excessive working hours with health risks, including mental illnesses. Common mental disorders, such as depression, are an important public health concern (Mathers, 2006; Eaton, 2008). According to projections by the World Health Organisation, depressive disorders will be the leading cause of disease burden in high-income countries by 2030 (Mathers, (2006). In addition to human misery, mental disorders often result in substantial work impairment and lost work days (Eaton, 2008; Adler, 2006; Wang, 2004; Demyttenaere et al., 2004).

As mentioned above, the unrestrained and ever-increasing use of information technology can be seen as a mixed blessing. Solutions to avoid productivity-killing interruptions could include reducing the number of alerts to a manageable level and creating periods of a digital down-time, devoted to deep thinking and concentration.

Finally, productivity assessment needs to be seen in relation to the type of job. Jackson (2012) argues that seeking higher productivity in a conventional way may be counterproductive in occupations that rely on allocating one's time to the service recipient. For example, chasing productivity growth in caring professions, social work, medicine and education according to the manufacturing paradigm leads to degradation of the service provided.

Finally, looking at successful companies at the forefront of workplace innovation suggests that taking a holistic approach to office design can be an important driver of productivity growth, as in the example, albeit somewhat exceptional, described in Box 7 in the annex.

5.8. Addressing future challenges in the Learning organisation

Section 5.3 suggests that Lean organisations are increasing mostly at the expense of Learning organisations, and that these two forms of work organisation are becoming increasingly divergent. The shift to Lean forms of work organisation may risk eroding the performance and job quality of European workers. Indeed, such a move is happening when technology and globalisation emphasise the importance of knowledge and the speed at which knowledge and skills may become obsolete. Learning rather than Lean organisations appear better placed to exploit the opportunities brought about by structural changes..

As a consequence, there is a need for firms to engage in organisational learning and for workers to engage in acquiring new competencies to strengthen the EU's comparative advantages in world markets. In this context, policies should develop the framework conditions to increase the number of Learning organisations and support the change process. Box 6 provides some considerations on how to revert the shift from Learning to Lean forms of work organisation.

A coherent and holistic policy approach, integrating policy objectives from various policy domains such as employment, social policy and enterprises' competitiveness policies may be necessary. In addition, these processes would have to be implemented across different levels — EU, national, local, individual companies — and will involve a number of actors — various governmental bodies, social partners, management, workers of private and public companies acting in Europe. The number of actors and fields of actions will require an organised effort to create a comprehensive and consistent framework of policy recommendations and initiatives at the EU and national levels. These would then be used for guiding and supporting the process of change of local workplaces by ensuring coherence of actions between different actors and different levels to find the optimal form of work organisation for each (locally specific) circumstances.

([93]) Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time.

Box 6: Promoting Learning forms of work organisation

Labour market policies aimed at reducing, halting and reversing the decline in Learning organisations should:

- Promote mutual learning and exchange of good practices in the design of programmes: e.g. Denmark, the Netherlands and Sweden have been developing national initiatives and research programmes to support innovations in organisations.
- Provide staff training and development, with emphasis on learning a broader skill set that enables workers to engage with a wider range of problems, to be more able to respond to unforeseen events and to support processes of workplace innovation.
- Involve social partners (when social partners are involved in work organisation) in the initiation and streamlining of the process of organisational change, thereby adding to its legitimacy and increasing acceptance.
- Provide innovative policy instruments that help to initiate, streamline and guide the process of change and the introduction of new, more innovative work practices. Aside from various forms of direct or indirect financial support, this could include consultancy helpdesks or information databases with (locally relevant) good and bad examples. These would be especially relevant to SMEs that may lack the resources for such activities compared to bigger companies.
- Emphasise the synergies between workers' well-being and companies' performance, which may increase workers' involvement and intrinsic motivation, improving their learning and problem-solving abilities and benefiting their physical and psychosocial state.
- Assist individual workers in developing their abilities throughout their working life, via, inter alia, the provision of necessary information and facilities, certain types of training or (subsidised) access to various forms of education and life-long learning, and encouraging workers to take a more active approach to the development of their skills and abilities.

5.9. Further globalisation brings changes to work organisation with job quality implications

5.9.1. Global restructuring of value chains

Globalisation and the expansion of global value chains is expected to have a deep impact on work organisation, giving rise to a stronger division of tasks (including conception, design, production, advertising and marketing) spread across the world (Newhouse, 2007; Dedrick et al., 2008). For workers, this means increasing the need for specialisation in specific tasks at the local level and the acquisition of skills (e.g. foreign languages and ICT skills) related to global collaboration. As global value chains expand, workers have the opportunity to specialise in those activities in which they have a comparative advantage while gaining more international experience and interacting in multicultural environments. Further specialisation and participation in networks may lead to increased overall productivity which in turn may increase job quality, including earnings and learning ability (e.g. Grossman and Rossi-Hansberg, 2006).

As global value chains expand and European enterprises want to remain at the cutting-edge of innovation, employees and their representatives may get more involved in participative and empowering forms of work to use their knowledge and experience to the fullest extent. Nevertheless, further opening to international markets creates stronger opportunities to off-shore activities and may increase pressures to deregulate, which can weaken the bargaining power of employees (as employers can use, for example, the threat of offshoring) ([94]).

5.9.2. The risk of further polarisation

Such changes in work organisation associated with the expansion of global value chains will also pose risks to workers, adding to polarisation and inequality among workers just as seen with technology. The restructuring of global value chains may place stronger emphasis on unit labour costs competition. This may lead to either lower wages or job losses due to firm relocation to exploit differences in unit labour costs, notably in areas with fewer job alternatives. While this may be (partly) off-set by taking up new activities, the risk exists that the patterns of specialisation built up in the past will no longer meet the requirements of the new tasks. This may be of especial concern in the case of older workers and workers with limited learning capabilities.

Furthermore, in anticipation of a further restructuring of the global value chain, local employers may be inclined to hire temporary contract workers to act as a buffer against unexpected developments further down or up the chain (e.g. Lehndorff and Voss-Dahm, 2005). Consequently, while workers in core activities may gain favourable working conditions, workers in non-core activities may see their job insecurity increase. This may in turn affect adversely the motivation and effort of workers who are most affected and perpetuate their unfavourable position.

In other words, future developments in global value chains may imply job losses or lower job quality (lower wages, job insecurity), affecting primarily the 'weakest' workers including the low-skilled or those on temporary contracts (e.g. OECD, 2006).

In addition, the resilience of a global chain is largely determined by the resilience of all of its components. In that sense, job security may be adversely affected by events beyond the control of local management and employees, such as geopolitical tensions or natural disasters.

5.9.3. Working across time zones

Expanding global value chains will also intensify real-time collaboration across different time zones (e.g. Stanoevska-Slabeva, 2009). Alongside the gains in productivity and earnings mentioned,

([94]) See, for instance, ILO at http://www.ilo.org/global/research/topics/labour-standards-and-socially-inclusive-globalisation/lang--en/index.htm

such international workplaces pose work organisational challenges. Local working time will have to be aligned with working time in other time zones (i.e. 24-hour reachability), resulting in more flexible and longer working times to participate in digital teamwork spread across different time zones. They can also increase stress from differences in work cultures, mediated communication and language barriers and the fragmentation of work organisation, which may generate faltering team dynamics and erode trust between workers, potentially reducing workers' motivation and effort. Nevertheless, at the same time, they can also reduce longer work hours or shift work, as workers in another time zone can take over the task.

5.10. Conclusion: stronger employee empowerment matters for productivity growth

The restructuring of global supply chains combined with technology may benefit the resource-poor, skills-rich European Union as its skills structure may have a comparative advantage in world markets. Ongoing structural changes may bring changes to work organisation that can improve job opportunities, through greater mobility and skill matching. These can in turn improve job quality (e.g. greater autonomy, responsibility and flexibility in the workplace, more flexible working arrangements, which may entice/maintain older workers, workers with disabilities and those with family responsibilities in the workplace; higher earnings).

However, changes in organisation due to technology and globalisation can render skills, tasks and jobs obsolete at a high speed (through automation and relocation) and reduce job quality (more flexitime and longer working hours to fit diverse time zones). They will also require specific skills to act in international environments (e.g. languages and ICT). In addition, the gains and losses may be unequally distributed between employees and employers (as it changes the bargaining position) and between different groups of workers (low- versus high-skilled workers) resulting in further polarisation and inequity.

Unless such challenges are addressed, changes in work organisation due to technology and globalisation may carry a severe and persistent socioeconomic cost for individual workers and for society as a whole (e.g. lower production capacity, dependence on social assistance). Such adverse outcomes can be counteracted by adequate labour market policies and improvements in work organisation that benefit both employees and employers and facilitate labour reallocation in a flexible but secure way.

Active labour market policies, life-long learning (including investing in the skills relevant to knowledge occupations and new tasks more generally) and modern labour laws, complemented by an increased forecasting capacity to anticipate, 'locate' the challenges and adapt to change are important. Improving the link between education and the needs of enterprises that operate in different time zones, through linguistic education and enhanced cultural awareness, may prove useful. The links between labour market policies and other policies will need to be strengthened, including in areas such as the trans-European and international networks for communication and collaboration, and international cooperation on security (including internet transactions).

Given the ambiguous impact of expanding global value chains on industrial relations, promoting productivity and inclusive growth may require the promotion of a global social dialogue and through it the negotiation of topics that are of direct interest for employees' working conditions, such as training, health and safety and restructuring([95]). This will contribute to ensuring a greater acceptance of changes and that due attention is paid to the most vulnerable workers (the low-skilled, older workers and workers with family responsibilities).

Under the ongoing structural changes, strengthening the EU's productivity growth and labour market resilience calls for work organisations that make full use of workers' knowledge potential and that increase the quality of their jobs. In this context, work organisations, and notably managerial structures, should be reformed to promote higher well-being and engagement of workers. Greater focus should be placed on intrinsic motivation of workers that feeds on the ability of using one's skills on the job, sense of purpose, autonomy in managing one's time and control over the substance and methods of work tasks.

More participative and empowering forms of work organisation should be developed to strengthen employees' involvement in innovation implementation (and therefore understanding and acceptance of tasks changes) and enable workers (especially the low-skilled) to gain the abilities that enhance their employability through life-long learning (e.g. Totterdill, 2014). Loyalty and incentives to acquire firm-specific skills should not be adversely affected as workers will have to show more flexibility within and between enterprises. Otherwise, workplace innovations may have a negative impact on productivity, labour market participation and job quality. Workplace innovations should also avoid perpetuating or sharpening the existing gender segregation in the workplace([96]).

Learning organisations have the potential to foster intrinsic motivation, support workers' involvement and skill use/development, and therefore improve companies' performance. Worryingly, recent years have seen a reduction in the number of Learning organisations and a move towards Lean organisations. A coherent and comprehensive policy response to support changes in work organisation towards more effective and beneficial forms of work organisation would be in the mutual interest of EU companies and their workers.

6. Conclusions

Job quality and work organisation are high on the EU policy agenda

Since the Lisbon Growth and Jobs Strategy launched in 2000, the European Employment Strategy's overarching objectives have encompassed not only full employment, but also the promotion of quality and productivity at work. In 2001, the Laeken European Summit agreed to a comprehensive framework on job quality, and appropriate quality indicators were included in the 2002 Employment Guidelines. With the Europe 2020 Strategy, launched in 2010, it also became a priority to

([95]) See, for instance the case of GDF Suez launching an international social dialogue in 2011 at http://www.eurofound.europa.eu/eiro/2011/01/articles/eu1101011i.htm

([96]) See, for instance, http://www.genderportal.eu/ and http://www.eurofound.europa.eu/areas/industrialrelations/dictionary/definitions/horizontalsegregation.htm

support workplace innovation aimed at improving staff motivation and working conditions with a view to enhancing the EU's innovation capability, labour productivity and organisational performance. In 2013, the Employment Committee Indicators Group agreed upon a four-dimensional concept of job quality reflecting the complexity of the concept of job quality (1. socioeconomic security, 2. education and training, 3. working conditions, and 4. work-life and gender balance).

The level of earnings, job security, the level of education and access to life-long training, a safe and healthy workplace, an appropriate balance between work intensity and job autonomy, employee participation and empowerment and an adequate balance between work and private and social responsibilities, are all job quality dimensions that can foster commitment, motivation and higher effort and reduce absenteeism with a direct impact on labour productivity and labour market resilience.

Some Member States, such as Italy, Spain, Greece, Cyprus or Portugal have a higher share of involuntary temporary contracts and lower transition rates to permanent employment compared to Austria, Germany or the Netherlands. Denmark, Sweden and Finland have high participation rates in life-long learning of more than 50 % or 60 %, while Greece, Spain, Italy, Romania and Bulgaria have participation rates that are half or less than half of the Nordic ones. High work intensity and low autonomy leads to high levels of stress in Germany and Austria, for example. Inactivity rates due to family responsibilities are higher in Ireland and the United Kingdom where the availability of child care facilities is low and/or costs are high.

In addition, strong differences in job quality across population groups persist, especially across skills level, gender and age. Such heterogeneity in job quality may not only have an adverse impact on social cohesion, but it may also have a negative feedback on the overall performance of the labour force. For example, persistent gender stereotyping in certain types of work continues to prevent an optimal labour allocation while at the same time reducing job and earnings opportunities of a significant part of the labour force.

The crisis has seen the deterioration of some dimensions of job quality and in work organisation

The crisis may have led to the deterioration of some of the job quality dimensions in several or most EU Member States. For example, participation in life-long learning went down in recent years in about one third of the Member States. In recent years, there has been a downward trend from Learning to Lean forms of work organisation. Learning work organisations represent the newer type of work organisation that have the potential to foster intrinsic motivation, support job quality including workers' involvement and skill development and use, and therefore improve companies' performance.

... while ongoing structural changes bring along opportunities for job creation and productivity growth ...

Further innovations in ICT and KETs broaden the scope for job creation in industrial activities which are often associated with jobs of high quality and value added and therefore earnings. Technology change allows for more flexible working arrangements and has the potential to mitigate some physical or psychosocial barriers which reduce the labour market participation of certain groups such as older workers, workers with disabilities and those with family responsibilities and entice them to remain in the workplace. Technology is also likely to change the job landscape of the future by putting a premium on creative and knowledge occupations and allowing for greater autonomy, responsibility and flexibility in the workplace.

Globalisation also has the potential to create new quality jobs reinforcing overall productivity growth and earnings potential. Expanding global value chains can allow further task specialisation and higher mobility, giving workers a larger choice of jobs and the opportunity to perform those tasks that best fit their abilities and preferences. The restructuring of global chains combined with technology may benefit the resource-poor, skills-rich European Union, as its skills structure may have a comparative advantage in world markets.

The greening of the economy through recycling and reusing, together with the call for energy efficiency and biotechnology, is generating new production processes, new products and new markets. This has the potential to generate new jobs at all levels of skills. As such, structural changes can generate jobs, increase motivation and effort and therefore productivity growth.

... but also pose important challenges such as polarisation ...

Technology change, globalisation, demographic ageing and the greening of economy can have significant negative implications. Technology change may render an important share of tasks and jobs obsolete at a high speed. Globalisation requires specific skills to act in international environments (e.g. languages and ICT) which some workers lack. It may also lead to task relocation, notably of low-skilled routine tasks (or lower wages as a result of the threat of relocation). Green jobs may bring along new and unknown health and safety risks. The combination of technology change and globalisation emphasises the importance of knowledge and creativity and the need to adjust quickly to new and complex tasks, skills that some groups of workers lack. Therefore, low to middle skills may see stronger job insecurity or a worsening of their job quality: longer working hours and higher occupational risks but lower wages.

Therefore, in the absence of policy action, the gains in job quality from ongoing structural changes may be distributed in a non-equitable way, generating polarisation and in turn adverse feedback on productivity and labour market participation.

...calling for adequate policy responses to improve job quality and ensure a more equal distribution of the benefit potential associated with structural changes...

The analysis suggests that in addition to correcting the current unfavourable developments, policy makers will have to gear up to the opportunities and face up to the challenges posed by ongoing structural changes in technology, international trade and foreign direct investment, demographic change and

the greening of the economy. To reap the full potential of ongoing structural changes, priorities for labour market policies include:

- **strengthen the tools to anticipate and assess risks** to job quality from ongoing structural changes (via stronger partnerships between governments, social partners and academic researchers with a special focus on SMEs);
- **promote health and safety in the workplace** in general and notably in relation to new technologies and products (through legislation, awareness-raising activities and monitoring);
- **remove institutional barriers to labour mobility** (e.g. by strengthening cross-border portability of social security benefits);
- **combat gender and age stereotyping, discrimination and stigmatisation** (via among others, legislation and awareness-raising activities and an adequate provision of enabling and support services);
- **green mainstream** education policies, training and skill formation (e.g. by promoting STEM careers ([97]) for women and to increase the number of women in the green economy);
- **reduce the informal sector**;
- **increase participation in life-long learning and on-the-job training**, potentially considering stronger and dedicated public support to SMEs;
- **improve job profiling, job search assistance and the connection between employment services**, together with removing fiscal incentives that hinder further labour market participation;
- **target the most vulnerable** (e.g. by focusing on the low-skilled trapped in poor working conditions);
- **promote social dialogue** at all relevant levels (company, sector, national and EU).

...to promote work organisation innovation that supports the knowledge-based economy of the future

For the resource-poor, skills-rich European Union, the strengthening of its innovation capacity will be crucial in order to be able to exploit its comparative advantages in world markets to the fullest extent. The analysis underlines the need to:

- promote **employee empowerment** (e.g. employees creating their own team structure, employees involved in the identification of problems and solutions in production);
- promote the **exchange of experiences** in work organisation innovation to help identify best practices;
- **monitor** the implementation and support the assessment of the impact of the changes in work organisation on productivity and social cohesion;
- strengthen employee's **capacity to learn including through education and life-long learning** (e.g. meeting the needs of knowledge-intensive work process with rapid technical change);
- strengthen **social skills** for digital workplaces spread around the world (e.g. languages and cultural awareness);
- develop benchmarks with a view to promoting the full exploitation of the complementarity of educational systems and employee in-work training to the fullest extent, especially in SMEs;
- promote **social dialogue** adapted to expanding global value chains (e.g. involving counterparts in other countries to discuss minimum standards and conditions);
- target the most **vulnerable workers** (e.g. strengthening skill formation of workers with limited learning capacity).

Finally, it is important to recognise that the impact of job quality and work organisation on productivity and social cohesion is conditioned by worker, firm and country specific conditions. Therefore, designing and implementing measures to correct adverse developments and to promote positive developments will be a complex task taking account of country, sector and firm specificities.

([97]) STEM: Science, Technology, Engineering and Mathematics.

Annex 1: Definitions of job quality

EMCO indicators

Table A1.1: **EMCO indicators for job quality**

Dimension	Sub-dimension	Indicators and source	Source
1. Socio-economic security	1.1 Adequate earnings	Mean monthly earnings in PPS, companies with 10 employees or more	SES 2010
		In-work at-risk-of-poverty rate	SILC
		Transitions by pay level - Fraction of individuals with at least the same pay level as in the previous year	SILC
		Am well paid for the work I do	EWCS 2010, Q77b
	1.2 Job and career security	Involuntary temporary employment	LFS
		Labour transition - employment security	SILC
		Labour transition temporary to permanent	SILC
		Job offers good prospects for career advancement	EWCS Q77c
2. Education and training	2.1 Skills development	CVT-hours per participating person	CVTS 2005
		CVT participation	CVTS 2005
		Main paid job involves learning new things	EWCS Q49f.
		Tasks do require different skills	EWCS Q54.
		On-the-job training over last 12 months	EWCS Q61c.
		Present skills correspond well with my duties	EWCS Q60.
	2.2 Employability	Participation LLL, employed	LFS
		Participation LLL, unemployed	LFS
		Early leavers from education and training (% of population)	LFS
		Percentage of the population aged 25–64 having completed at least upper secondary education	LFS
		E-skills of adults - Computer skills. Persons at least medium computer skills	Questionnaire on ICT

Dimension	Sub-dimension	Indicators and source	Source
3. Working conditions	3.1 Health and safety at work	Serious accidents at work per 100 000 persons in employment	ESAW
		FACTOR indicating non-exposure to unhealty environment	Questions 23a - 23 i EWCS
		FACTOR indicating healthy physical conditions	Questions 24a - 24e EWCS
		Well infomed on health and safety risks	Q30 EWCS
		Think that health or safety is NOT at risk because of your work	Q66 EWCS
		Work does NOT affect health	Q67 EWCS
		FACTOR indicating non-exposure to harassment, humiliation etc.	Questions 70 and 71 EWCS
	3.2 Work intensity	No work when sick over last 12 months/not sick	Q74a EWCS
		NOT working at very high speed	Q45a EWCS
		NOT working to tight deadlines	Q45b EWCS
		Enough time to get the job done	Q51g EWCS
		No experiencing of stress in your work	Q51n EWCS
	3.3 Autonomy	Workpace NOT dependent on automatic speed of a machine or movement of a product	Q46d EWCS
		Workpace NOT dependent on the direct control of your boss	Q46e EWCS
		"Occasionally/never" interrupt a task in order to take on an unforeseen task	Q47 EWCS
		FACTOR indicating self-responsibility	Questions 49–51 EWCS
		"Team members decide by themselves on the division of tasks"	Q57a EWCS
		"Team members decide by themselves the timetable of the work"	Q57c EWCS
	3.4 Collective Interest Representation	Union density	ICTWSS database
		Collective pay agreement, share any	SES 2010
		"Have raised work-related problems with an employee representative over last 12 months"	Q62b EWCS
		"Employee is acting as an employee representative"	Q63 EWCS
		"Management holds meetings in which you can express your views about what is happening in the organisation"	Q64 EWCS
4. Work-life and gender balance	4.1 Work-life balance	Inactivity due to family or personal responsibilities	LFS
		Part-time work due to family or personal responsibilities	LFS
		Lacking formal care for small children: % of children <3 years not formally cared for	SILC
		Employment impact of parenthood - men	LFS
		Employment impact of parenthood - women	LFS
		Certain possibilities to adapt working time	Q39 EWCS
		Taking hour or two off to take care of personal or family matters is NOT (too) difficult ... ?	Q43 EWCS
		FACTOR indicating no long working hours	Questions 32–36 EWCS
		Working hours fit with family or social commitments outside work very well or well	Q41 EWCS
		"Less often/never" worked in free time in order to meet work demands	Q42 EWCS
	4.2 Gender balance	Gender pay gap	SES 2010
		Gender employment gap	LFS
		"Immediate boss a woman"	Q59 EWCS

Laeken Indicators of Job Quality

The Laeken indicators of job quality include 10 dimensions, categorised into two themes: characteristics of the job/worker (e.g. skills, working conditions, reconciliation between working and non-working life, health and safety at work, job satisfaction) and the wider socioeconomic and labour market context (e.g. employment rates, growth in aggregate labour demand)([98]).

The Laeken indicators constitute the biggest attempt at that time to construct an EU system of job quality indicators. Nevertheless, there have been some critiques. For example, both the European Commission (2008) and the European Parliament (2009) recognise that this set of indicators covers economy-wide areas not directly related to job quality while lacking very relevant indicators such as wages, work intensity and some more qualitative aspects of human capital formation([99]).

Another issue is the inclusion of gaps (gender and age gaps). The European Parliament (2009) considers that in order to reflect differences in job quality for specific groups, the way to do this is to compute the variables of job quality for each of the subgroups and then compare the overall results between them([100]).

The Laeken indicators represent a system of indicators with no aggregation between the different dimensions. While this does not require any pre-judgement on the relative importance of the different attributes, each observer may use their own subjective system of weighing, emphasising the features they consider most important.

Several other organisations, such as Eurofound, OECD, ILO and UNECE, have also made efforts to assess and quantify the quality of work as reviewed in the following paragraphs.

Eurofound: Quality of Work and Employment

The European Foundation for the Improvement of Living and Working Conditions, Eurofound, has been working on the measurement of the concept since 1991 in the European Working Conditions Surveys (EWCS). The questionnaire covers all major areas of job quality identified in the social sciences literature.

The survey is carried out every five years (1991, 1995, 2000, 2005, 2010). The scope of the questionnaire as well as the country coverage has widened substantially since the first edition([101]).

The Eurofound's concept of work and employment quality (see Eurofound, 2002) has four main dimensions: career and employment security, health and well-being, skills development, reconciliation of working and non-working life.

Historically, the EWCS has not come up with an index of job quality, but rather with a 'system' of indicators on job quality. In a study based on the 5th EWCS([102]), Eurofound presented, however, four composite indices of job quality: an Earnings index, a Working Time Index, a Career Prospects Index, and an Intrinsic Job Quality Index([103])([104]). To illustrate the complexity, the index of intrinsic job quality, for example, is composed of a whole set of indicators measuring skills and discretion; good social environment; good physical environment; and work intensity([105]).

An advantage of the EWCS is that it is well documented and harmonised. The same questionnaire is used in all countries, which allows cross-country comparisons. However, because of important changes in the questionnaire, comparisons over time are possible only for a core of key questions which were retained unchanged since 1991.

One issue with the EWCS is its periodicity: it is conducted every five years. Also worth mentioning is the sample size, which does not allow for too many levels of breakdowns. Nevertheless, gender mainstreaming has been an important concern for recent reviews of the questionnaire, and the most recent addition allows for breakdowns by age, gender and occupation.

The EWCS has also been used as a basis for development of other job quality indices/systems of indicators by other organisations, for example, the EMCO indicators list or the European Trade Union Institute Job quality index (see below).

([98]) The EU defined several specific indicators for evaluating each dimension, except in the case of social dialogue where no agreement was reached. The 10 dimensions of job quality are: intrinsic job quality; skills, life-long learning and career development; gender equality; health and safety at work; flexibility and security; work organisation and the work-life balance; inclusion and access to the labour market; social dialogue and worker involvement; diversity and non-discrimination; overall work performance. All available sources at EU level were used (e.g. LFS, ECHS, etc.). For more details, see http://ec.europa.eu/social/BlobServlet?docId=2134&langId=en and European Commission (2008).

([99]) According to the EP, a good job quality index should not include any information that does not relate directly to the well-being of workers because it tends to skew the results. The European Parliament refers to several such dimensions in the Laeken Indicators such as access to the labour market, overall performance and productivity and variables measuring the quantity of jobs. While important because it gives the general context, according to the EP this type of information can form part of another index on the socioeconomic context, for example.

([100]) In fact, this problem stems from the fact that the indicators are measured only at the aggregate level, and to deal with distributional aspects some indicators are measured as gaps. This problem is overcome in the EWCS, which will be reviewed next, which allows to compute the various dimensions separately for men and women (alternatively allows for breakdowns by age, occupation).

([101]) The latest, 5th EWCS is available at: http://www.eurofound.europa.eu/surveys/ewcs/2010/. For more details about the different extensions by waves, see Eurofound (2010), p. 141.

([102]) Eurofound (2012b)

([103]) Regarding the methodology of composing the indices, based on statistical correlations similar items were identified and normalised, and then grouped in a summative index. When multiple indices are aggregated together they were accorded equal weights, except where it was found that the indices had considerably different associations with subjective well-being. The weighting assumptions are accompanied by a sensitivity analysis. More methodological details are available in Chapter 2 of Eurofound (2012b).

([104]) Eurofound discusses the pros and cons of producing a single job quality index. This might be justified from a rather pure theoretical perspective, whereby it is assumed to be a utility associated with each job, i.e. the index is seen as measuring that utility. One feature that makes a single index very appealing is its tractability, ease of presentation, and ease of cross-country comparisons. However, this argument is firstly not very persuasive since job quality, as discussed above, is a multi-faceted concept. Secondly, it risks being interpreted differently by different users. For example, economists will tend to think about wages, social scientists about non-wage aspects, etc. Last but not least, to compute such an index would require very strong assumptions about how individuals trade off job quality features against each other. The choice of four indices presented by Eurofound is something of a middle solution: they are smaller in number and allow country rankings in a meaningful way; yet, they sufficiently well portray the different aspects of job quality without mixing them up.

([105]) Table 1 in Eurofound (2012b), p. 20, gives a brief description of the content of each index and survey questions on which it is based.

OECD Job quality indicator

A recent ongoing project, 'Defining, measuring and assessing job quality and its links to labour market performance and well-being' within the OECD, co-funded by the European Union, started in September 2013 and will run for two years. It starts from the insights provided by the EU flagship initiative *New Skills and Jobs in Europe,* the OECD *Re-assessed Jobs Strategy* and the OECD *Better Life Initiative*([106]).

The new OECD framework for measuring and assessing job quality considers three dimensions of job quality that are both important for worker well-being and relevant for policy, and together allow for a comprehensive assessment of job quality.

- Earnings quality refers to the extent to which employment contributes to the material living standards of workers and their families. While the average level of earnings provides a key benchmark for assessing the degree to which having a job ensures good living conditions, the way earnings are distributed across the workforce also matters for well-being. Therefore, the OECD measures earnings quality by a synthetic index that accounts for both the level of earnings and their distribution across the workforce.

- Labour market security captures those aspects of economic security that are related to the risk of job loss and its consequences for workers and their families. For OECD countries, labour market insecurity is defined in terms of the risk of becoming unemployed and its expected cost. The latter depends both on the expected duration of unemployment and the degree of public unemployment insurance. Labour market security is therefore defined in terms of the risk of unemployment, which encompasses both the risk of becoming unemployed and the expected duration of unemployment, and unemployment insurance, which takes into account both benefit coverage among the unemployed and benefit generosity.

- Quality of the working environment captures non-economic aspects of job quality and includes factors that relate to the nature and content of work performed, working-time arrangements and workplace relationships. Jobs that are characterised by a high level of job demands such as time pressure or physical health risk factors, combined with insufficient job resources to accomplish job duties, such as work autonomy and good workplace relationships, constitute a major health risk factor for workers. Therefore, the OECD measures the quality of the working environment by incidence of job strain, which is a combination of high job demands and few job resources.

While the three dimensions of job quality are key elements of the new framework, their actual measurement is flexible and can be adapted according to the purpose for which they are being used, data availability and different choices for weighting together the different sub-components. In order to ensure that indicators of job quality are conceptually sound and relevant for policy, the framework provides three guiding principles. These are to: i) focus on outcomes experienced by workers as opposed to drivers of job quality; ii) emphasise the objective features of job quality; and iii) derive indicators from data on individuals to allow going beyond average tendencies.

Chart A1.1, Chart A1.2 and Chart A1.3 report the values of the three job quality measures (earnings quality, labour market insecurity and job strain) for each country in the dataset.

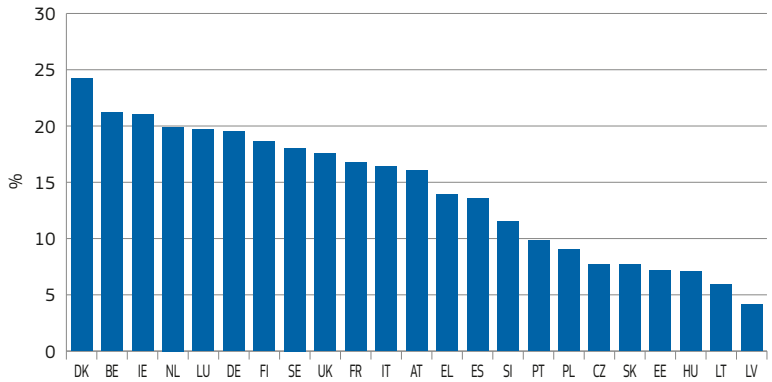
Chart A1.4 plots the cross-country averages of different measures of job quality for different worker characteristics. For more details, see OECD 2014.

Overall, job quality outcomes vary substantially across OECD countries across each of the three dimensions:

- Denmark, Finland, Germany, Luxembourg, the Netherlands, New Zealand, Norway, Sweden and Switzerland are among the best performers. These countries do relatively well along at least two of the three main dimensions of job quality, without any outcomes in the bottom-10 of the ranking across OECD countries.

- Australia, Austria, Belgium, Canada, the Czech Republic, France, Ireland, Israel, Italy, Japan, Korea, Mexico, Slovenia, the United Kingdom and the United States display average performance. Over the three main dimensions of job quality, these countries display no more than one outcome in either the top-10 or the bottom-10 of the ranking across OECD countries, except for Ireland and Korea where the picture is more mixed.

Chart A1.1: Earnings quality([1])
(PPP-adjusted gross hourly earnings in USD, 2010)



Source: OECD, Employment Outlook 2014.

Note: Moderate inequality aversion; see OECD 2014.

([1]) Earnings Quality is measured as the Harmonic Mean of the earnings distribution in each country. Like other types of 'general means', the harmonic mean can be expressed as a function of the simple arithmetic mean and of a measure of earnings inequality. As such, it lends itself to being an encompassing measure of earnings quality, since it captures both the average of earnings and their distribution. See Section 2.1 in Chapter 3 of Employment Outlook 2014 for a detailed discussion.

excel file
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([106]) The project is structured into seven work packages: 1. Job quality: what does it mean and how can it be measured? 2. Measuring work-related economic security and its determinants. 3. Measuring quality of working life and its determinants. 4. Reassessing labour market performance when accounting for job quality. 5. Maintenance of a permanent database on job quality. 6. The role of policies and institutions for job quality and employment performance. 7. Job quality in emerging economies.

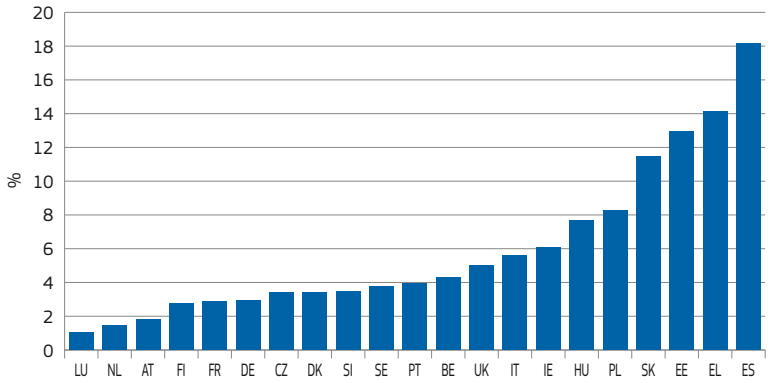
- Estonia, Greece, Hungary, Poland, Portugal, the Slovak Republic, Spain and Turkey do relatively badly in two or all of the three main dimensions of job quality. In addition, none of these countries perform very well along at least one of these dimensions.

Looking at job quality outcomes across socio-economic groups provides new insights into labour market inequalities by shedding further light on the nature and depth of the disadvantages faced by some population groups.

- Youth and the unskilled face the worst outcomes with respect to job quality. By contrast, high-skilled workers perform well in all dimensions. For women, the picture is mixed. While men tend to enjoy higher earnings, women tend to enjoy a better quality working environment. The degree of labour market security is similar between men and women.

- Temporary work is strongly associated with poor job quality in all three dimensions. Part-time work, on the other hand, is associated with weaker outcomes in terms of earnings and labour market security, however, the risk of job strain tends to be lower among workers on part-time contracts compared to the full-time workers.

Chart A1.2: **Labour market insecurity(1) (Share of previous earnings, 2010)**



Source: OECD, Employment Outlook 2014.

Note: Labour market insecurity: unemployment risk times one minus unemployment insurance which may be interpreted as the expected earnings loss associated with unemployment as a share of previous earnings.

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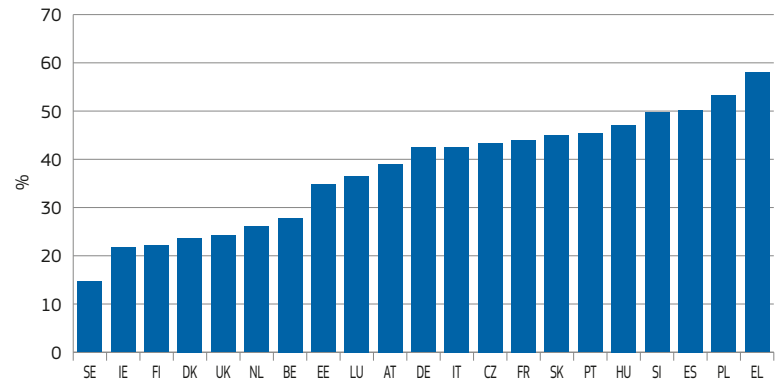
(1) Labour market insecurity is defined as uninsured labour market risk. More specifically, it is calculated as the ratio of the probability of becoming unemployed over the probability of finding employment, times one minus the effective rate of risk-absorption through the tax and benefits system. The latter can be viewed as the rate at which the tax and benefits system is able to 'replace' workers' earnings when they lose their job. See Section 2.2 in Chapter 3 of Employment Outlook 2014 for details.

Chart A1.3: **Job strain(1) (percentage of employees in strained jobs)**



Source: OECD, Employment Outlook 2014.

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(1) Job strain is produced by the interaction of high job demands and limited job resources. Job demands require sustained physical, cognitive and emotional effort. Resources include work autonomy, appropriate feedback, opportunities to learn and support from colleagues and managers. In the OECD Employment Outlook 2014, job strain is characterised by a set of combinations of job demands and resources that are most likely to have detrimental effects on workers' health (see Section 2.3 for exact definition of such combinations).

ILO Decent Work Agenda

The ILO Declaration on Social Justice for a Fair Globalization, adopted in 2008, endorses the Agenda for Decent Work, which includes four equally important strategic objectives: creating jobs, guaranteeing rights at work, extending social protection and promoting social dialogue, with gender equality as a cross-cutting objective.

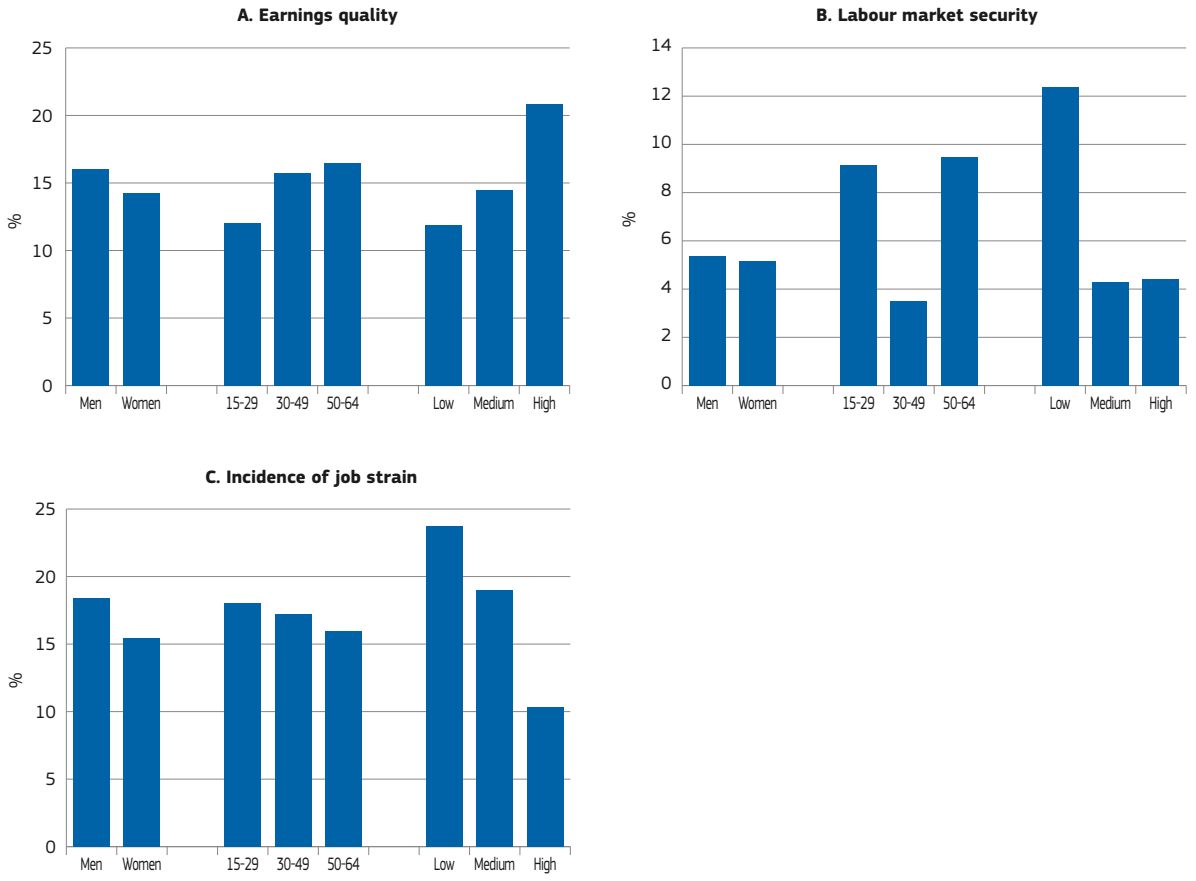
The same year, the ILO adopted a comprehensive framework of Decent Work Indicators to monitor progress. The framework contains no country rankings and no composite index, and covers all four dimensions of Decent Work. The information is derived from various sources: household and establishment surveys, administrative records, qualitative legal framework information, among others.

The framework is based on both *statistical indicators* and qualitative information on the rights at work and the legal framework([107]) to take cognisance of the contextual environment in which the progress occurs. Progress of countries is recorded in the Decent Work Country Profiles. The ILO Manual on Decent Work Indicators: concepts and definitions was launched in 2012 ([108]).

([107]) The statistical indicators cover the broader economic and social context as well as 10 thematic areas (employment opportunities, adequate earnings, working time, combining work and family life, child and forced labour, stability and security of work, equal opportunities, safe work environment, social security, social dialogue). The legal framework indicators are divided into 21 groups, some of which are labour administration, minimum wage, unemployment insurance, leave (paid annual leave, maternity and parental leave), child and forced labour, termination of employment, employment injury benefits, pension, incapacity due to sickness/invalidity, freedom of association, collective bargaining, tripartite consultation. More information is available at http://www.ilo.org/integration/themes/mdw/lang--en/index.htm, which gives access also to the specific Decent Work Factsheets and Country Profiles as well as the Manual on Decent Work Indicators, see next footnote.

([108]) The link to the manual is: http://www.ilo.org/wcmsp5/groups/public/---dgreports/---integration/documents/publication/wcms_229374.pdf. It presents a description of the statistical indicators and legal framework indicators related to the 10 substantive elements of decent work.

Chart A1.4: Measures of job quality by works characteristics([1])



Source: European Union Survey on Income and Living Conditions (EU-SILC), European Working Conditions Survey (Eurofound, 2010), OECD Employment Database.

Note: Country coverage: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovenia, Slovak Republic, Spain, Sweden, Turkey and United Kingdom (24 countries, 23 countries excluding Iceland in Panel C).

([1]) Earnings quality and labour market insecurity data show an average for 2005–10, while job strain refers to 2010.

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The ILO provides support through integrated Decent Work Country Programmes developed in coordination with its constituencies. These programmes define the priorities and the targets within national development frameworks and aim to tackle major Decent Work deficits towards each of the strategic objectives. The country profiles provide an input for the Country Programmes and help spell out the targets.

There emerged synergies between the EU and the ILO's job quality strategies. Implemented by the ILO with funding from the European Union, the project 'Monitoring and Assessing Progress on Decent Work (MAP)' (2009 to 2013) involves joint work with government agencies, Statistical Offices, workers' and employers' organisations and research institutions to strengthen national capacity, particularly of developing and transition countries, to self-monitor and self-assess progress towards decent work. The project further facilitates the identification of decent work indicators that are relevant at the national level, supports data collection, and uses the collected data for an integrated policy analysis of decent work.

The ILO Key Indicators of the Labour Market (KILM)

Published every two years since 1999, the KILM is a collection of 20 key indicators of the labour market, ranging from employment and variables relating to employment (status, sector, hours, etc.) to education, wages and compensation costs, labour productivity and working poverty. These indicators are relatively broad, capturing the economic and labour market situation in a country, but provide less insight into the quality of employment/jobs.

UNECE Task Force on measuring quality of employment

Since 2000, UNECE, Eurostat, the OECD and ILO organise joint seminars on quality of employment to share information between international experts and to develop a quality of employment framework. The new framework does not seek to reconcile the existing frameworks used in the different policy contexts: the ILO's Decent Work Indicators Measurement Framework, the EU Quality of Work Indicators, and the Eurofound's quality of work and employment framework. Rather, it aims to provide a 'toolbox' of indicators to be used for international and national initiatives to study quality of employment.

In 2007, under the auspices of the Conference of European Statisticians, a Task Force([109]) was set up to develop a concept for statistical measurement of quality of employment unifying the elements in the existing approaches.

([109]) The Task Force was composed of representatives from national statistical offices of Canada, France, Finland, Hungary, Israel, Italy, Poland, ESTAT, Eurofound, ILO, UNECE and the NGO Women in Informal Employment (WIEGO).

The 2007 Task Force created an initial framework for measuring quality of employment with seven dimensions and over 50 indicators([110]). The framework was implemented by nine countries by the end of the Task Force's term, leading to nine pilot country reports([111]).

The ILO decent work concept and the UNECE Task Force-proposed set of indicators are designed to capture aspects of labour markets in both developing and developed countries, and thus they put more emphasis on labour rights (including no child and forced labour) and social protection aspects in their definitions than the European Commission's and Eurofound frameworks.

In 2012, with a time frame of 2012–15, an Expert Group on Measuring the Quality of Employment was established within the framework of the Conference of European Statisticians, with the main objective to revise the conceptual structure and the set of indicators of the quality of employment.

European Trade Union Institute's (ETUI) Job Quality index([112])

The ETUI started work on this issue in 2008. The job quality index (JQI) comprises six dimensions based on 16 indicators, which in turn are drawn from individual variables taken from different sources([113]). The six dimensions are: wages, non-standard forms of employment, working conditions, working time and work-life balance, access to training and career advancement, and collective interest representation and participation.

This index is focused on job quality from the perspective of workers; it captures most of the areas of job quality from the social sciences literature.

Although the variables refer to information measured at the level of individual workers, job quality is computed and reported only at national level based on averages([114]). Apart from a readily available gender breakdown, it is not possible to break it down in order to analyse specific groups of workers (e.g. by occupation, type of contract).

The results are consistent with most of the results from other indices: best performers are the Northern countries, and lowest values are found for Eastern and Southern European countries. The JQI also allows comparisons over time for the EU-15 countries. However, caution needs to be taken as the index is based on various data sources, not all of which are updated with the same periodicity.

European Job Quality Indicator: European Parliament

The European Parliament (2009) came up with an outline for the development of a European Job Quality Index. The authors suggest that the new indicator should be based only on variables that directly affect the quality of work and employment. Ideally, it should be constructed from individual data. They suggest as a leading source the EWCS. The future indicator should include the following dimensions: work, employment, and a joint dimension for work and employment (see European Parliament 2009).

EU Seventh Framework Programme

Working conditions and job quality have been a prominent feature under the socio-economic research programmes of the EU's Research Framework Programmes. Below, the two most recent and relevant European research projects on this theme are briefly presented. For a more exhaustive overview of recent comparative research in Europe, see Chapter 4 'Toward better job quality and working conditions: increasing productivity and work-related well-being' in the European Commission Policy Review, 'New skills and jobs in Europe: Pathways towards full employment' ([115]).

NEUJOBS project

NEUJOBS is a research project financed by the European Commission under the Seventh Framework Programme (FP7-SSH). Its objective is to analyse likely future developments in the European labour market(s), in view of four major transitions that are expected to impact employment and European societies in general([116]).

The WP 2 (work package) called 'Good jobs-bad jobs, cultural attributes of decent work in Europe' looks at issues of job quality. The package considers the conceptualisation of job quality from both the labour law perspective and the perspective of employees through case studies and in-depth face-to-face interviews([117]). In contrast to previous approaches, the NEUJOBS project does not seek to measure job quality nor come up with particular

([110]) 1) safety and ethics of employment (safety at work, child and forced labour, fair treatment in employment); 2) income and benefits from employment, including also non-wage pecuniary benefits; 3) working hours and balancing work and non-working life (working hours, working time arrangements); 4) security of employment and social protection; 5) social dialogue; 6) skills development and training; 7) workplace relationships and work motivation. For more information see UNECE (2009).

([111]) Canada, Mexico, Finland, France, Germany, Israel, Italy, Republic of Moldova, Ukraine. See UNECE (2010).

([112]) ETUI is the research arm of the European Trade Union Confederation (ETUC), the most important representative body of workers at EU level and a major player as a social partner in the EU policy area of work and employment.

([113]) The index is based on five sources: LFS, SILC, AMECO, EWCS and ICTWSS (the latter stands for Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts).

([114]) It is constructed by first normalising the indicators for each dimension, then weighting the normalised indicators within each dimension, and then summing up the dimensions (i.e. each dimension is equally weighted or equally important for the overall result of the index). As for each composite index this method involves some discretion in choosing the weights. The sensitivity analysis shows however that the results are quite stable to changing the weights (Leschke, Watt and Finn, 2008). The indicators are normalised by rescaling each value to the proportion they represent with respect to the difference between the maximum and minimum values for the base year, which is set to 2000 for EU-15 and 2007 for EU-27. This system of normalization is a widely used method for comparing countries' performance (for example, in the construction of the Human Development Index) and has the advantage of putting each value in relation to the best and worst cases. For more methodological details see Leschke, Watt and Finn, and 2012.

([115]) Publications Office of the European Union, Luxembourg, 2012. http://ec.europa.eu/research/social-sciences/pdf/new-skils-and-jobs-in-europe_en.pdf

([116]) These transitions are: 1. socio-ecological transition (a change in the patterns of social organisation and culture, production and consumption beyond the current industrial model towards a more sustainable future); 2. societal transition produced by a combination of factors like population ageing, low fertility rates, changing family structures, urbanisation and growing female employment; 3. new territorial dynamics and the balance between agglomeration and dispersion forces; and, 4. skills (upgrading) transition and its likely consequences for employment and (in)equality.

([117]) The interviews are semi-structured qualitative interviews, with many open questions. However, they give additional valuable information and allow taking into account cultural aspects. There are five groups of actors interviewed: social partners, governments and parties, civil society organisations, research communities, and separately, employees.

indicators/dimensions thereof. On one hand, it concentrates on what is found in the labour codes, employment laws/guidelines, government plans, trade union strategies, NGO agendas and academic works with regard to job quality. Additionally, it tries to understand the attitudes of employees towards work and explain cleavages between 'collective' views expressed in the employment programmes/labour law and those expressed by the employees themselves.

The project has already published a state-of-the-art report on job quality ([118]). The countries covered are Spain, Hungary, Slovakia and the United Kingdom (two 'old' and two 'new' Member States). More recently, the project finished its comparative qualitative ('quasi-anthropological') research ([119]), in which it finds the mainstream 'postmaterialist' academic discourses on good jobs (mainly obtained from quantitative surveys) quite distant from the preoccupations of the workers interviewed in these four countries. Researchers appeared to observe a 'retraditionalisation' of employment preferences (security-oriented: full-time work with permanent contracts and appropriate wages) and found sectoral and company type features to be more defining for job quality than the national contexts.

WALQING project: Work and Life Quality in New and Growing Jobs([120])

Funded by the European Union's Seventh Framework Programme (FP7-SSH) from 2009–2012 and involving 11 European partners, the Walqing project investigated the linkages between new and expanding jobs, the conditions of work and employment in these jobs, and the outcomes for employees' quality of work and life. It did so by integrating several analytical levels and research paradigms. In particular, research in Walqing is divided into three pillars: 1. Data analysis — Employment growth, quality of work and quality of life in Europe; 2. Stakeholder involvement — Comparative institutional analysis and action research; and 3. Qualitative research — Organisational strategies, vulnerability and individual agency.

Under the first pillar, in-depth analyses of the most important European data sources, such as EU-LFS, EWCS, EU-SILC and ESQL were used to identify 'new and growing' jobs and to assess the quality of jobs and life in these growth areas, particularly with regard to jobs with problematic working conditions in the service and manufacturing industries ([121]). Pillar 2 performed institutional analysis and action research to disseminate good-practice examples aimed at improving working conditions beyond their national, company-specific or sectoral contexts. In particular, the approach involves interviews with representatives of key stakeholders about the emergence of low-quality jobs and vulnerable groups in the selected sectors and policy documents reviewed. It developed and disseminated strategies for improving unhealthy or dysfunctional working conditions to foster mutual learning and dialogue among stakeholders ([122]). Pillar 3 explored the practices of work organisation, HRM strategies, contractual relations and working conditions, by means of 53 in-depth case studies in companies.

The research focused on five sectors with substantial growth potential in quantity & quality of jobs: Commercial Cleaning, Contract Catering, Green Construction, Mobile Elderly Care and Waste Management. Moreover, these sectors address basic human needs and are difficult to delocalise. The main findings and recommendations were summarised in five sectoral brochures on good working practices and social dialogue issues ([123]). This included an analysis of particularly vulnerable groups, such as young workers, older workers, migrants and some groups of women ([124]).

([118]) Kovacs with Hilbert, Veselkova and Virag (2012)

([119]) 'Travelling back in time? Job Quality in Europe as seen from below', Kovacs with Hilbert, Veselkova and Virag (2014) — http://www.neujobs.eu/

([120]) http://www.walqing.eu/index.php?id=2

([121]) Key final reports include: 'Comparative analysis of employment expansion and of job characteristics in selected business functions', 'Comparative analyses of job quality in new growth jobs', and 'Secondary analysis on working conditions and quality of life' (all available at http://www.walqing.eu/index.php?id=29).

([122]) See for example 'Synthesis report on sector specifics in stakeholder policies and quality of work and life', available at http://www.walqing.eu/index.php?id=32

([123]) Available at: http://ww.walqing.eu/webresource

([124]) See for example 'Integrated report on organisational case studies', available at: http://www.walqing.eu/index.php?id=34

Annex 2: Organisation of work — Technical details

Criteria for classification

Classification of work organisation is established on the basis of 15 dimensions that describe relevant and discriminating aspects of work organisation:

- Two binary variables measuring autonomy in work:
  - Autonomy in choosing methods of work;
  - Autonomy in pace or rate at which work is carried out.
- Two binary variables measuring the way quality is controlled:
  - Use of precise quality standards;
  - Self-assessment of the quality of work.
- Three binary variables measuring the cognitive dimensions of work:
  - Complexity of tasks;
  - Learning new things in work;
  - Work requires problem-solving.
- Four binary variables measuring constraints of the pace or rate of work:
  - Constraints linked to the equipment speed or movement of a product in production flow;
  - Constraints relating to numerical production or performance targets;
  - Constraints due to direct control by worker's immediate supervisors;
  - Constraints resulting from dependency on the work done by worker's colleagues.
- Three binary variables measuring degree of novelty in job tasks:
  - Perceived monotony of tasks;
  - Repetitiveness of tasks of less than one minute.
  - Task rotation between colleagues
- A three-level variable measuring of the use of teamwork, with categories of autonomous teamwork (team members decide the division of tasks), non-autonomous teamwork (managers/supervisors decide the division of tasks) and no teamwork ([125]).

([125]) In the analyses of trend data a binary variable measuring presence of teamwork was used, since a three-level variable was not available in the 2000 EWCS dataset.

Different models of work organisation

The typology initially developed by Lorenz and Valeyre builds on a review of the literature on work organisation covering High Performance Work systems (HPWS) (Appelbaum and Batt, 1993, 1994; Pfeffer, 1998; Osterman, 1994), the lean production model (MacDuffie and Pil, 1997), the socio-technical system (Emery and Trist, 1960), learning organisations (Zarifian, 2003), Tayloristic organisations and adhocracies (Mintzberg, 1979). This review led to the identification of 15 dimensions that describe relevant and discriminating aspects of work organisation covering autonomy in work, quality control, cognitive dimensions of work, constraints of the pace or rate of work, novelty in job tasks and teamwork, and can be measured by the EWCS. In the 2010 survey, the same 15 dimensions to determine the presence and size of the four types of work organisations is used.

Traditional forms of work organisation are based on the principles of labour division, hierarchical and centralised authority and control. They are designed as static structures, optimised for a fixed set of external economic, social and cultural conditions. However, the emergence of new and uncertain environments has put these traditional work structures under increasing pressure. As a response, new forms of work organisation have emerged that are more flexible and more responsive to changing internal or external circumstances. Many of these 'new' forms are often grouped together under the label 'High Performance workplaces' (HPWP), but this group is far from being homogeneous and covers some of the defining characteristics of different organisational forms such as the socio-technical systems (STS), the learning organisations, lean production, high performance work systems and the adhocracy (Mintzberg).

Combs et al (2006), in a meta-analysis of 92 recent studies on HPWS and performance, found evidence that HPWS enhance organisational performance. An increase in one standard deviation in the use of HPWS is associated with a 4.6% increase in gross return on assets and a 4.4 percentage-point decrease in turnover from 18.4 to 14.0%. The effect is stronger when bundles of measures are considered together rather than individual practices. Effects sizes are larger in manufacturing industries than in service industries. Common to these HPWP forms are attention to knowledge as a competitive factor, decentralisation of decision-making and self-managed teams, performance-based compensation structures and rather extensive training and strong problem-solving opportunities. However, lean and learning forms of work organisation differ on a number of points such as:

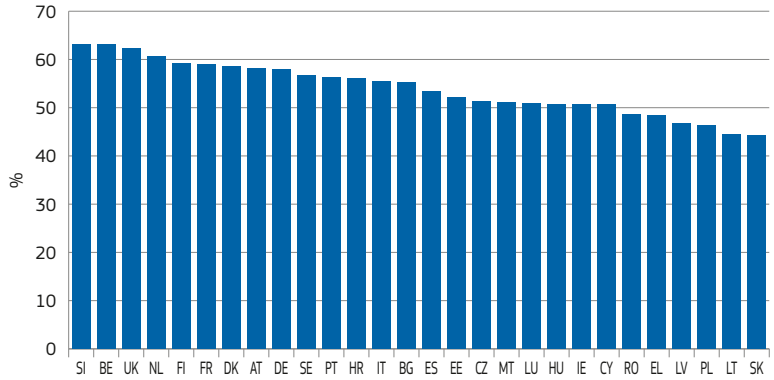
- A higher level of individual autonomy granted to workers (higher in learning organisations as well as in the socio-technical models but lower in lean production models);
- A higher level of standardisation in lean forms of work organisation (tasks, quality standards, etc.);
- A higher interdependent work structure as well as higher dependence on technologies to set the pace of workers and reliance on team work in lean production forms;
- An emphasis on workers' autonomy in organising and controlling the products of their work, decreased interdependency of work process in learning organisations;
- Attention to quality of working life is a key driver for example in the case of STS;
- While learning in lean production forms of organisation is mostly used to improve the work processes and increase productivity, learning activities in the case of learning organisations are seen as a critical activity for responding to unforeseen events and for the introduction of important innovations.

In contrast to Tayloristic organisations, which have been abundantly criticised for their physically demanding work, repetitive tasks and low learning opportunities, because conception is distinct from execution, lean production is designed to improve the overall performance of the organisation by assigning more autonomy to workers and their immediate managers, but with continued emphasis on the strict quality standards, standardisation of work and procedures and with reliance on individual performance-based pay structures. Lean forms of work organisation differ in a number of ways from the STS in that they promote development of more specialised, contextualised skills, organise work into wider production systems (greater interdependency) and provide feedback and support that are based on the degree to which strict performance criteria are satisfied.

Annex 3: Additional indicators relating to job quality

Socioeconomic security

Chart A3.1: Real wage level adjusted for productivity, 2013



Source: AMECO database.

Note: Real compensation per employee adjusted for productivity.

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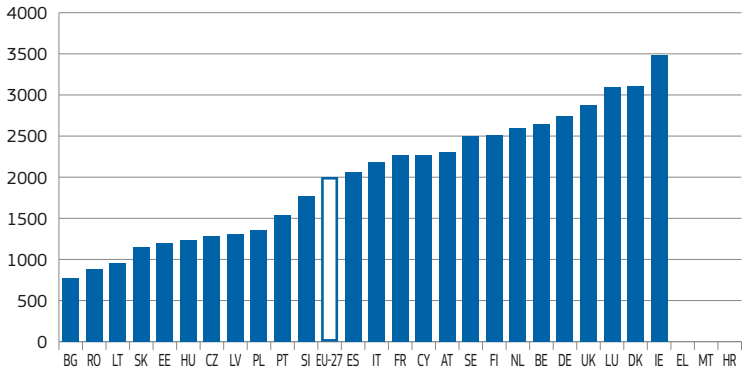
Chart A3.2: Mean monthly earnings, PPS([1]), 2010



Source: SES, 2010.

Note: No observation available for EL, MT and HR.

([1]) The indicator of adequate earnings that has been chosen by the EMCO Indicators Group was mean monthly earnings in purchasing power standard. It should be noted however that there are ongoing discussions, for example within the OECD, as to whether gross or net earnings are relevant for measuring job quality, or whether earnings should be taken on an hourly or monthly basis (see chapter 3 in the 2014 OECD Employment Outlook). Furthermore, the EMCO indicator does not consider 'increments' to job earnings such as health insurance, employer's contribution to the pension scheme, etc. which increase the socio-economic security of job holders and improve the quality of jobs.

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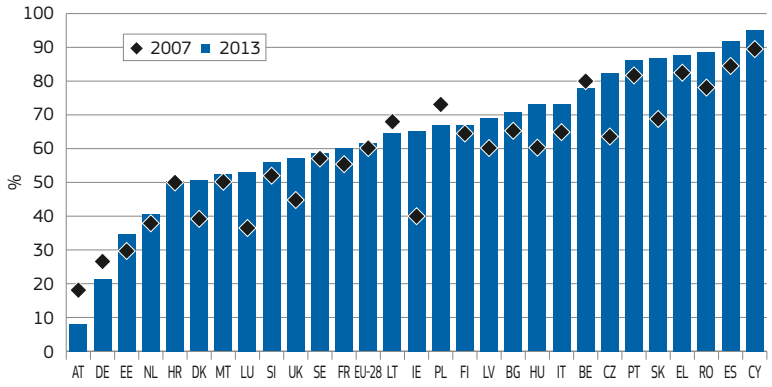
Job insecurity

During the crisis involuntary temporary work increased in a number of Member States, more significantly in Ireland, the United Kingdom, Luxembourg, Denmark and some New Member States (Slovakia, the Czech Republic, Hungary) (Chart A3.3), while transitions to permanent contracts worsened (Chart A3.4), most significantly in Slovakia (29 pps) and Spain (15 pps)([126]).

([126]) Transitions improved notably in Finland (21 pps), Germany (14 pps) and Portugal (11 pps).

Chart A3.3: Involuntary temporary employment, 2007–13



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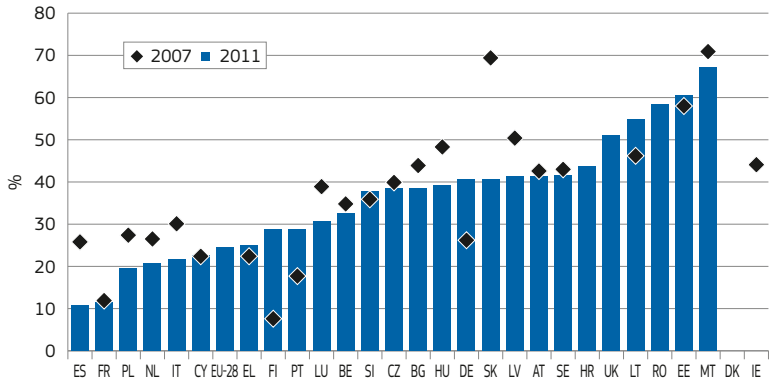
Source: Eurostat LFS, table lfsa_etgar.

Chart A3.4: Transitions from temporary to permanent contract, 2007–13



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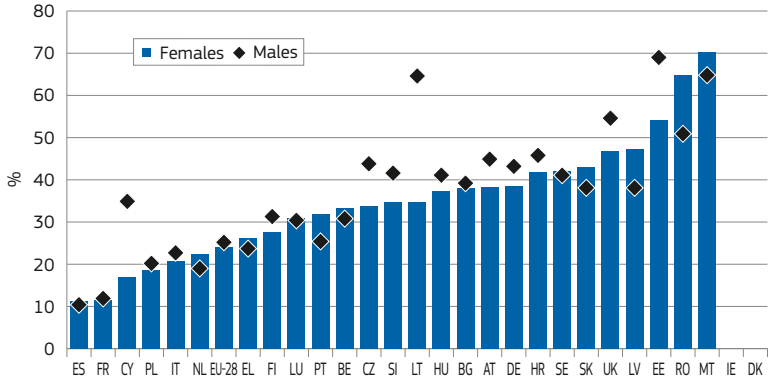
Source: Eurostat, ilc_lvhl32.

Chart A3.5: Labour transitions temporary to permanent, by gender, 2011



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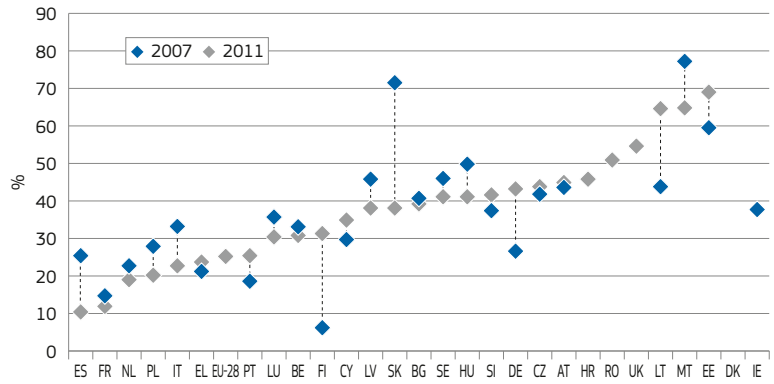
Source: Eurostat, ilc_lvhl32

Note: No observation available for IE and DK.

Chart A3.6: Labour transitions temporary to permanent, males, 2007–11



Source: Eurostat, ilc_lvhl32.

Notes: 2011 observation not available for IE and DK. 2007 observation not available for EU-28, HR, RO, UK and DK.

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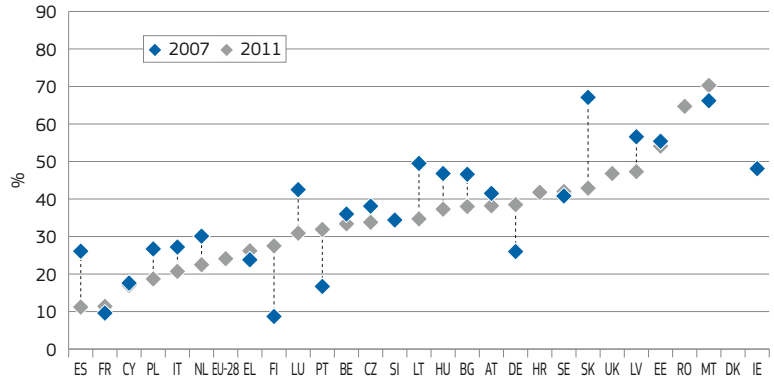
Chart A3.7: Labour transitions temporary to permanent, females, 2007–11



Source: Eurostat, ilc_lvhl32.

Notes: 2011 observation not available for IE and DK. 2007 observation not available for EU-28, HR, RO, UK and DK.

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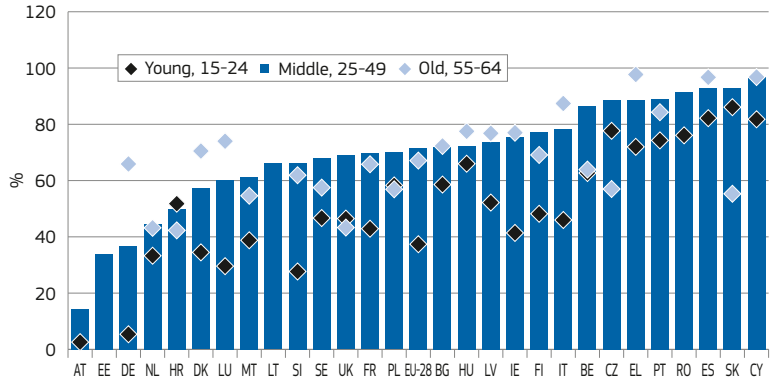
Chart A3.8: Involuntary temporary employment, by age, 2013



Source: Eurostat, lfsa_etgar.

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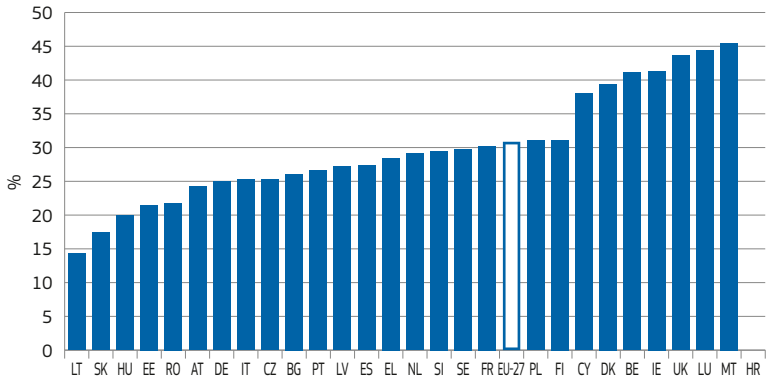
Prospects for career advancement

In some Member States job insecurity goes together with lower perceptions for career advancement, e.g. Romania, Slovakia, Italy, but the relationship is far from clear (Chart A3.9). The perceptions are also low in Member States like Germany and Austria where involuntary temporary work is the lowest([127]). In fact, career advancement prospects seem to be higher in countries where jobs involve more training and learning new things([128]).

([127]) In fact the correlation between job security and perceptions about career advancement (as measured by EWCS question 77c) is negative but close to zero.

([128]) The correlation coefficient between the two Eurofound indicators ('Job offers good prospects for career advancement', on one hand, and 'Job involves learning new things', on the other) is 0.5 significant at the 1% level.

Chart A3.9: Job offers good prospects for career advancement?



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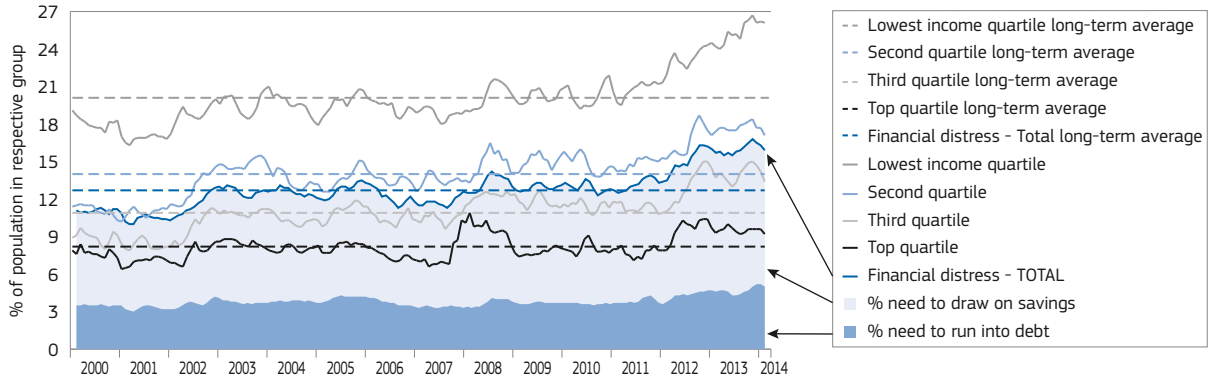
Source: Eurofound, EWCS 2010, question 77c.

Work-life balance

Chart A3.10: Financial distress in the EU, total and by income quartiles



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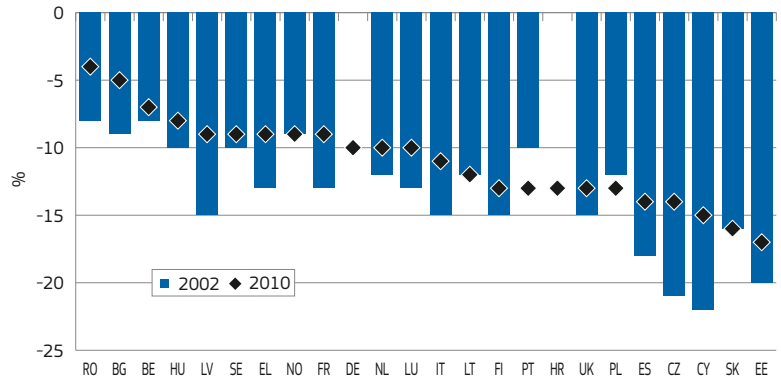
Source: European Commission DG ECFIN, Business and Consumer Surveys (DG EMPL estimation), data non-seasonally adjusted.

Notes: Three-months moving averages. Horizontal lines reflect long-term averages of financial distress for total and four income quartile households. For total households, the share of adults reporting needing to draw on savings and needing to run into debt are stacked in the grey Chart area which adds to total financial distress.

Gender balance

Chart A3.11: Adjusted gender earnings differences



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Sources: WiiW (2014, Tables A1 to A3) based on EU Structure of Earnings Survey data, release 2002, 2006 and 2010.

Notes: The coefficients are taken from the full Mincer regressions estimated separately for each country. Countries are ranked according to gender wage gap in 2010. No information on career breaks available in the dataset. Since women are more likely to take career breaks, which may negatively impact upon their wages, a failure to control for career breaks will bias the estimates of the wage gap slightly upwards.

Annex 4: Trend developments in Learning organisation

Table A4.1: **Trend developments across Member States — increased learning**

Country		EWCS survey wave			Total
		2000	2005	2010	
Malta	Learning	38.2%$_{a}$	48.6%$_{a, b}$	57.6%$_{b}$	51.1%
	Lean	40.9%$_{a}$	35.6%$_{a, b}$	29.7%$_{b}$	33.6%
	Taylorist	7.3%$_{a, b}$	8.2%$_{b}$	3.6%$_{a}$	5.6%
	Simple	13.6%$_{a}$	7.5%$_{a}$	9.1%$_{a}$	9.6%
Latvia	Learning	29.8%$_{a}$	28.5%$_{a}$	44.0%$_{b}$	34.4%
	Lean	27.1%$_{a}$	38.3%$_{b}$	32.4%$_{a, b}$	33.2%
	Taylorist	14.9%$_{a}$	15.6%$_{a}$	10.0%$_{a}$	13.4%
	Simple	28.2%$_{a}$	17.6%$_{b}$	13.7%$_{b}$	19.0%
Portugal	Learning	23.8%$_{a}$	26.7%$_{a}$	35.2%$_{b}$	27.7%
	Lean	21.7%$_{a}$	33.3%$_{b}$	22.9%$_{a}$	25.4%
	Taylorist	30.7%$_{a}$	26.0%$_{a}$	26.7%$_{a}$	28.3%
	Simple	23.8%$_{a}$	14.0%$_{b}$	15.3%$_{b}$	18.6%
Romania	Learning	17.3%$_{a}$	23.6%$_{a}$	25.2%$_{a}$	22.5%
	Lean	39.1%$_{a}$	40.1%$_{a}$	38.8%$_{a}$	39.3%
	Taylorist	30.2%$_{a}$	25.7%$_{a, b}$	19.6%$_{b}$	24.6%
	Simple	13.4%$_{a}$	10.5%$_{a}$	16.4%$_{a}$	13.5%
Netherlands	Learning	59.6%$_{a, b}$	54.3%$_{b}$	63.5%$_{a}$	59.3%
	Lean	20.5%$_{a}$	22.9%$_{a}$	13.8%$_{b}$	19.4%
	Taylorist	8.3%$_{a}$	11.4%$_{a}$	9.6%$_{a}$	9.4%
	Simple	11.6%$_{a}$	11.4%$_{a}$	13.1%$_{a}$	11.9%
Denmark	Learning	64.7%$_{a}$	58.4%$_{a}$	61.1%$_{a}$	62.1%
	Lean	18.9%$_{a}$	29.8%$_{b}$	23.2%$_{a, b}$	22.9%
	Taylorist	10.7%$_{a}$	5.0%$_{b}$	6.1%$_{b}$	8.0%
	Simple	5.7%$_{a}$	6.9%$_{a, b}$	9.6%$_{b}$	7.1%
Cyprus	Learning	40.5%$_{a}$	25.6%$_{b}$	33.3%$_{a, b}$	32.7%
	Lean	20.6%$_{a, b}$	30.1%$_{b}$	20.6%$_{a}$	23.5%
	Taylorist	15.9%$_{a}$	14.7%$_{a}$	22.4%$_{a}$	18.4%
	Simple	23.0%$_{a}$	29.5%$_{a}$	23.7%$_{a}$	25.3%
Estonia	Learning	40.5%$_{a}$	36.0%$_{a}$	38.4%$_{a}$	38.6%
	Lean	38.6%$_{a}$	40.9%$_{a}$	39.6%$_{a}$	39.6%
	Taylorist	9.8%$_{a}$	9.7%$_{a}$	11.0%$_{a}$	10.2%
	Simple	11.0%$_{a}$	13.4%$_{a}$	11.0%$_{a}$	11.6%
Poland	Learning	36.7%$_{a}$	36.2%$_{a}$	39.1%$_{a}$	37.6%
	Lean	25.4%$_{a, b}$	33.3%$_{b}$	20.9%$_{a}$	25.8%
	Taylorist	14.2%$_{a}$	15.0%$_{a}$	19.6%$_{a}$	16.7%
	Simple	23.8%$_{a}$	15.4%$_{b}$	20.4%$_{a, b}$	19.9%
Lithuania	Learning	24.2%$_{a}$	27.0%$_{a}$	28.1%$_{a}$	26.6%
	Lean	19.6%$_{a}$	29.6%$_{b}$	30.9%$_{b}$	27.1%
	Taylorist	19.6%$_{a}$	19.4%$_{a}$	18.5%$_{a}$	19.2%
	Simple	36.6%$_{a}$	24.0%$_{b}$	22.5%$_{b}$	27.1%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

Table A4.2: Trend developments across Member States — decreasing learning, but increasing lean forms

Country		EWCS survey wave			Total
		2000	2005	2010	
Germany	Learning	47.6%$_{a}$	45.2%$_{a, b}$	41.6%$_{b}$	44.4%
	Lean	16.1%$_{a}$	19.1%$_{a}$	25.8%$_{b}$	21.2%
	Taylorist	16.6%$_{a}$	16.2%$_{a}$	15.5%$_{a}$	16.0%
	Simple	19.7%$_{a}$	19.4%$_{a}$	17.0%$_{a}$	18.4%
Luxembourg	Learning	41.6%$_{a, b}$	49.3%$_{b}$	34.7%$_{a}$	41.2%
	Lean	22.9%$_{a}$	28.4%$_{a, b}$	33.6%$_{b}$	29.1%
	Taylorist	12.7%$_{a, b}$	10.9%$_{b}$	19.1%$_{a}$	14.8%
	Simple	22.9%$_{a}$	11.4%$_{b}$	12.6%$_{b}$	14.9%
Belgium	Learning	44.9%$_{a}$	48.4%$_{a}$	42.6%$_{a}$	44.0%
	Lean	18.4%$_{a}$	25.1%$_{b}$	29.2%$_{b}$	25.7%
	Taylorist	17.0%$_{a}$	11.2%$_{b}$	13.3%$_{a, b}$	14.0%
	Simple	19.7%$_{a}$	15.2%$_{a, b}$	14.9%$_{b}$	16.3%
Austria	Learning	51.8%$_{a}$	44.7%$_{a}$	44.5%$_{a}$	47.6%
	Lean	24.7%$_{a}$	25.3%$_{a}$	30.4%$_{a}$	26.7%
	Taylorist	13.5%$_{a}$	20.3%$_{b}$	14.7%$_{a, b}$	15.6%
	Simple	9.9%$_{a}$	9.7%$_{a}$	10.4%$_{a}$	10.0%
Slovenia	Learning	45.0%$_{a}$	42.7%$_{a}$	42.2%$_{a}$	43.1%
	Lean	21.2%$_{a}$	31.8%$_{b}$	30.5%$_{b}$	28.1%
	Taylorist	17.3%$_{a}$	12.8%$_{a}$	13.0%$_{a}$	14.2%
	Simple	16.5%$_{a}$	12.8%$_{a}$	14.3%$_{a}$	14.6%
Italy	Learning	41.7%$_{a}$	42.5%$_{a}$	40.4%$_{a}$	41.4%
	Lean	17.8%$_{a}$	20.4%$_{a}$	23.7%$_{a}$	20.5%
	Taylorist	20.1%$_{a}$	21.0%$_{a}$	14.8%$_{a}$	18.4%
	Simple	20.4%$_{a}$	16.1%$_{a}$	21.1%$_{a}$	19.6%
Finland	Learning	44.1%$_{a}$	40.9%$_{a}$	43.8%$_{a}$	43.0%
	Lean	30.2%$_{a}$	32.7%$_{a, b}$	38.6%$_{b}$	33.3%
	Taylorist	15.5%$_{a}$	13.9%$_{a, b}$	8.8%$_{b}$	13.2%
	Simple	10.1%$_{a}$	12.5%$_{a}$	8.8%$_{a}$	10.5%
Ireland	Learning	22.7%$_{a}$	41.2%$_{b}$	22.6%$_{a}$	27.7%
	Lean	32.9%$_{a, b}$	27.7%$_{b}$	37.4%$_{a}$	32.7%
	Taylorist	23.0%$_{a}$	12.4%$_{b}$	24.4%$_{a}$	20.5%
	Simple	21.4%$_{a}$	18.7%$_{a}$	15.6%$_{a}$	19.1%
Sweden	Learning	57.0%$_{a}$	73.2%$_{b}$	66.5%$_{b}$	64.1%
	Lean	18.9%$_{a}$	14.5%$_{a}$	19.7%$_{a}$	17.8%
	Taylorist	9.3%$_{a}$	6.2%$_{a}$	7.3%$_{a}$	7.9%
	Simple	14.7%$_{a}$	6.2%$_{b}$	6.4%$_{b}$	10.2%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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Table A4.3: Trend developments across Member States — decreasing learning, but increasing Taylorist organisation

Country		EWCS survey wave			Total
		2000	2005	2010	
France	Learning	38.0%$_{a}$	43.4%$_{a}$	30.6%$_{b}$	35.7%
	Lean	31.4%$_{a}$	26.0%$_{a, b}$	24.8%$_{b}$	27.2%
	Taylorist	16.8%$_{a}$	20.9%$_{a, b}$	23.5%$_{b}$	20.8%
	Simple	13.8%$_{a}$	9.6%$_{a}$	21.1%$_{b}$	16.3%
Greece	Learning	23.3%$_{a}$	25.7%$_{a}$	23.4%$_{a}$	24.1%
	Lean	20.7%$_{a}$	30.1%$_{b}$	21.1%$_{a, b}$	23.7%
	Taylorist	20.7%$_{a}$	21.9%$_{a}$	28.6%$_{a}$	23.4%
	Simple	35.3%$_{a}$	22.4%$_{b}$	26.9%$_{a, b}$	28.8%
Hungary	Learning	41.4%$_{a}$	44.2%$_{a}$	32.8%$_{b}$	39.4%
	Lean	13.3%$_{a}$	17.2%$_{a, b}$	22.0%$_{b}$	17.5%
	Taylorist	23.3%$_{a}$	18.5%$_{a}$	31.8%$_{b}$	24.6%
	Simple	22.0%$_{a}$	20.1%$_{a}$	13.4%$_{b}$	18.5%
Bulgaria	Learning	23.2%$_{a}$	25.5%$_{a}$	11.9%$_{b}$	20.6%
	Lean	25.6%$_{a}$	28.7%$_{a}$	31.0%$_{a}$	28.5%
	Taylorist	22.3%$_{a}$	25.9%$_{a}$	27.4%$_{a}$	25.3%
	Simple	28.9%$_{a}$	19.9%$_{b}$	29.6%$_{a}$	25.6%
Czech Republic	Learning	39.3%$_{a}$	30.4%$_{b}$	28.6%$_{b}$	33.1%
	Lean	26.2%$_{a}$	28.3%$_{a}$	27.8%$_{a}$	27.4%
	Taylorist	19.9%$_{a}$	23.5%$_{a}$	23.1%$_{a}$	22.0%
	Simple	14.6%$_{a}$	17.8%$_{a}$	20.5%$_{a}$	17.5%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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Table A4.4: Trend developments across Member States — No substantial changes between 2000 and 2010

Country		EWCS survey wave			Total
		2000	2005	2010	
Slovakia	Learning	24.2%$_{a}$	32.8%$_{b}$	28.7%$_{a, b}$	28.8%
	Lean	31.2%$_{a}$	25.4%$_{a}$	26.9%$_{a}$	27.7%
	Taylorist	28.1%$_{a}$	25.8%$_{a}$	25.1%$_{a}$	26.3%
	Simple	16.5%$_{a}$	16.1%$_{a}$	19.3%$_{a}$	17.3%
Spain	Learning	25.6%$_{a}$	26.9%$_{a}$	27.2%$_{a}$	26.4%
	Lean	28.6%$_{a}$	24.6%$_{a}$	31.9%$_{a}$	28.6%
	Taylorist	28.3%$_{a}$	22.9%$_{a}$	21.1%$_{a}$	24.7%
	Simple	17.5%$_{a}$	25.7%$_{b}$	19.7%$_{a, b}$	20.3%
United Kingdom	Learning	25.9%$_{a}$	29.7%$_{a}$	27.3%$_{a}$	27.4%
	Lean	40.9%$_{a}$	34.1%$_{a}$	37.8%$_{a}$	38.0%
	Taylorist	19.0%$_{a}$	19.4%$_{a}$	20.5%$_{a}$	19.6%
	Simple	14.2%$_{a}$	16.9%$_{a}$	14.5%$_{a}$	15.0%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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Table A4.5: Trend developments across sectors

		EWCS survey wave			Total
		2000	2005	2010	
Electricity, gas, and water supply	Learning	47.8%$_{a}$	62.4%$_{b}$	55.0%$_{a, b}$	55.9%
	Lean	32.7%$_{a}$	23.5%$_{b}$	28.7%$_{a, b}$	27.8%
	Taylorist	3.4%$_{a}$	5.7%$_{a}$	5.9%$_{a}$	5.2%
	Simple	16.1%$_{a}$	8.4%$_{b}$	10.4%$_{a, b}$	11.1%
Financial intermediation	Learning	54.9%$_{a}$	66.4%$_{b}$	59.1%$_{a}$	60.0%
	Lean	21.5%$_{a}$	18.8%$_{a}$	28.0%$_{b}$	23.1%
	Taylorist	6.6%$_{a}$	3.1%$_{b}$	3.9%$_{b}$	4.5%
	Simple	16.9%$_{a}$	11.8%$_{b}$	9.0%$_{b}$	12.3%
Transport, storage and communication	Learning	36.9%$_{a}$	42.1%$_{b}$	33.8%$_{a}$	37.1%
	Lean	21.7%$_{a}$	19.9%$_{a}$	23.1%$_{a}$	21.8%
	Taylorist	13.7%$_{a}$	17.1%$_{b}$	16.2%$_{a, b}$	15.6%
	Simple	27.7%$_{a}$	20.9%$_{b}$	26.8%$_{a}$	25.5%
Hotels and restaurants	Learning	34.4%$_{a}$	37.4%$_{a}$	30.9%$_{a}$	33.7%
	Lean	25.6%$_{a}$	17.9%$_{b}$	21.9%$_{a, b}$	21.9%
	Taylorist	12.8%$_{a}$	24.0%$_{b}$	22.1%$_{b}$	19.8%
	Simple	27.3%$_{a}$	20.8%$_{a}$	25.0%$_{a}$	24.5%
Wholesale and retail trade; repair of motor vehicles and motorcycles	Learning	47.9%$_{a}$	45.5%$_{a}$	37.8%$_{b}$	43.3%
	Lean	17.2%$_{a}$	21.3%$_{b}$	22.4%$_{b}$	20.4%
	Taylorist	10.1%$_{a}$	10.1%$_{a}$	14.7%$_{b}$	11.9%
	Simple	24.8%$_{a}$	23.0%$_{a}$	25.1%$_{a}$	24.4%
Construction	Learning	43.0%$_{a}$	32.6%$_{b}$	36.6%$_{b}$	37.7%
	Lean	31.3%$_{a}$	37.2%$_{b}$	33.3%$_{a, b}$	33.7%
	Taylorist	13.0%$_{a}$	19.9%$_{b}$	16.2%$_{c}$	16.1%
	Simple	12.7%$_{a, b}$	10.4%$_{b}$	13.9%$_{a}$	12.5%
Mining, quarrying, Manufacturing	Learning	33.7%$_{a}$	32.8%$_{a}$	32.9%$_{a}$	33.2%
	Lean	28.6%$_{a}$	32.1%$_{b}$	33.5%$_{b}$	31.1%
	Taylorist	26.8%$_{a}$	26.4%$_{a, b}$	24.7%$_{b}$	26.0%
	Simple	10.9%$_{a}$	8.7%$_{b}$	8.9%$_{b}$	9.7%

Source: Eurofound estimates based on EWCS, Nace rev1.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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Table A4.6: Trend developments across occupations

Occupation: 1st-level ISCO codes			EWCS survey wave			Total
			2000	2005	2010	
Legislators, senior officials and managers	High-skilled clerical	Learning	68.5%$_{a}$	55.6%$_{b}$	54.3%$_{b}$	59.1%
		Lean	26.5%$_{a}$	36.3%$_{b}$	36.0%$_{b}$	33.1%
		Taylorist	2.3%$_{a}$	3.4%$_{a, b}$	4.4%$_{b}$	3.5%
		Simple	2.7%$_{a}$	4.7%$_{a, b}$	5.4%$_{b}$	4.3%
Professionals	High-skilled clerical	Learning	72.5%$_{a}$	61.8%$_{b}$	68.4%$_{a}$	66.7%
		Lean	17.0%$_{a}$	32.1%$_{b}$	26.0%$_{c}$	26.0%
		Taylorist	7.1%$_{a}$	2.9%$_{b}$	2.2%$_{b}$	3.9%
		Simple	3.4%$_{a}$	3.2%$_{a}$	3.4%$_{a}$	3.3%
Technicians and associate professionals	Low-skilled clerical	Learning	58.9%$_{a}$	57.1%$_{a}$	60.8%$_{a}$	59.3%
		Lean	23.9%$_{a}$	26.5%$_{a}$	26.1%$_{a}$	25.4%
		Taylorist	8.0%$_{a}$	10.0%$_{a}$	3.9%$_{b}$	6.8%
		Simple	9.2%$_{a}$	6.4%$_{b}$	9.2%$_{a}$	8.5%
Clerks	Low-skilled clerical	Learning	46.5%$_{a}$	50.3%$_{a}$	41.9%$_{b}$	46.0%
		Lean	19.5%$_{a}$	18.3%$_{a}$	22.8%$_{b}$	20.3%
		Taylorist	8.6%$_{a}$	9.6%$_{a}$	13.3%$_{b}$	10.6%
		Simple	25.4%$_{a}$	21.8%$_{b}$	22.0%$_{b}$	23.1%
Service workers and shop and market sales workers	Low-skilled clerical	Learning	35.7%$_{a}$	43.5%$_{b}$	26.4%$_{c}$	34.6%
		Lean	18.1%$_{a}$	14.7%$_{a}$	23.9%$_{b}$	19.2%
		Taylorist	12.0%$_{a}$	10.4%$_{a}$	19.0%$_{b}$	14.1%
		Simple	34.3%$_{a}$	31.4%$_{a}$	30.7%$_{a}$	32.1%
Craft and related trades workers	High-skilled manual	Learning	33.1%$_{a}$	31.2%$_{a, b}$	30.2%$_{b}$	31.6%
		Lean	34.1%$_{a}$	36.3%$_{a, b}$	38.1%$_{b}$	36.0%
		Taylorist	22.4%$_{a}$	25.6%$_{b}$	23.0%$_{a, b}$	23.5%
		Simple	10.4%$_{a}$	6.8%$_{b}$	8.7%$_{a}$	8.9%
Plant and machine operators and assemblers	Low-skilled manual	Learning	21.3%$_{a}$	17.3%$_{b}$	18.9%$_{a, b}$	19.4%
		Lean	29.2%$_{a}$	25.8%$_{b}$	27.2%$_{a, b}$	27.7%
		Taylorist	32.7%$_{a}$	39.8%$_{b}$	31.2%$_{a}$	33.9%
		Simple	16.8%$_{a}$	17.0%$_{a}$	22.7%$_{b}$	19.0%
Elementary occupations	Low-skilled manual	Learning	19.6%$_{a}$	26.4%$_{b}$	18.2%$_{a}$	21.4%
		Lean	18.9%$_{a}$	23.3%$_{b}$	23.5%$_{b}$	21.9%
		Taylorist	31.7%$_{a}$	29.4%$_{a}$	33.9%$_{a}$	31.6%
		Simple	29.8%$_{a}$	21.0%$_{b}$	24.4%$_{b}$	25.1%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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Table A4.7: Trend developments across firm size

Number of paid workers in local establishment		EWCS survey wave			Total
		2000	2005	2010	
10–49	Learning	41.5%$_{a}$	39.5%$_{a, b}$	38.3%$_{b}$	39.8%
	Lean	23.0%$_{a}$	24.1%$_{a, b}$	25.8%$_{b}$	24.4%
	Taylorist	15.3%$_{a}$	17.7%$_{b}$	16.1%$_{a, b}$	16.3%
	Simple	20.2%$_{a}$	18.6%$_{a}$	19.8%$_{a}$	19.6%
50–499	Learning	36.8%$_{a}$	40.1%$_{b}$	34.6%$_{c}$	37.0%
	Lean	27.1%$_{a}$	28.7%$_{a, b}$	29.9%$_{b}$	28.6%
	Taylorist	21.0%$_{a}$	19.8%$_{a}$	20.4%$_{a}$	20.4%
	Simple	15.1%$_{a}$	11.3%$_{b}$	15.2%$_{a}$	14.0%
500 or over	Learning	38.4%$_{a}$	41.3%$_{a}$	39.1%$_{a}$	39.4%
	Lean	28.6%$_{a}$	31.2%$_{a, b}$	34.7%$_{b}$	31.1%
	Taylorist	20.8%$_{a}$	19.0%$_{a}$	19.1%$_{a}$	19.8%
	Simple	12.2%$_{a}$	8.5%$_{b}$	7.1%$_{b}$	9.7%

Source: Eurofound estimates based on EWCS.

Note: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

Table A4.8: Trend developments across different levels of seniority

Number of years working at the company		EWCS survey wave			Total
		2000	2005	2010	
1 year or less	Learning	35.0%$_{a}$	35.3%$_{a}$	27.8%$_{b}$	32.9%
	Lean	23.0%$_{a}$	24.9%$_{a, b}$	26.5%$_{b}$	24.6%
	Taylorist	21.7%$_{a}$	23.0%$_{a}$	24.4%$_{a}$	22.9%
	Simple	20.3%$_{a}$	16.7%$_{b}$	21.3%$_{a}$	19.6%
2–10 years	Learning	38.6%$_{a}$	37.5%$_{a}$	36.6%$_{a}$	37.5%
	Lean	25.9%$_{a}$	28.4%$_{b}$	28.4%$_{b}$	27.6%
	Taylorist	17.8%$_{a}$	18.9%$_{a}$	17.8%$_{a}$	18.1%
	Simple	17.7%$_{a}$	15.2%$_{b}$	17.2%$_{a}$	16.8%
More than 10 years	Learning	41.6%$_{a}$	46.3%$_{b}$	40.8%$_{a}$	42.6%
	Lean	26.8%$_{a}$	26.9%$_{a}$	29.9%$_{b}$	27.9%
	Taylorist	17.9%$_{a}$	16.4%$_{a}$	16.6%$_{a}$	17.1%
	Simple	13.6%$_{a}$	10.4%$_{b}$	12.7%$_{a}$	12.4%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

Table A4.9: Trend developments across type of training

Training		EWCS survey wave			Total
		2000	2005	2010	
Training paid for or provided by your employer	Learning	50.4%$_{a}$	49.7%$_{a}$	44.2%$_{b}$	47.7%
	Lean	30.9%$_{a}$	33.1%$_{a, b}$	34.6%$_{b}$	32.9%
	Taylorist	9.6%$_{a}$	10.3%$_{a, b}$	11.6%$_{b}$	10.6%
	Simple	9.1%$_{a}$	6.8%$_{b}$	9.6%$_{a}$	8.8%
Training paid for by yourself	Learning	33.0%$_{a}$	44.6%$_{b}$	49.7%$_{b}$	45.7%
	Lean	18.0%$_{a}$	30.8%$_{b}$	32.9%$_{b}$	30.2%
	Taylorist	25.0%$_{a}$	14.2%$_{b}$	9.4%$_{b}$	13.2%
	Simple	24.0%$_{a}$	10.4%$_{b}$	7.9%$_{b}$	10.9%
On-the-job training	Learning	38.8%$_{a}$	45.2%$_{b}$	39.1%$_{a}$	41.3%
	Lean	26.7%$_{a}$	32.4%$_{b}$	35.8%$_{c}$	34.0%
	Taylorist	16.0%$_{a}$	14.9%$_{a}$	14.8%$_{a}$	14.9%
	Simple	18.5%$_{a}$	7.5%$_{b}$	10.3%$_{c}$	9.8%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different.

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Table A4.10: Second job profiles

Second job		EWCS survey wave			Total
		2000	2005	2010	
Yes	Learning	43.2%$_{a}$	33.7%$_{b}$	36.5%$_{b}$	38.0%
	Lean	29.1%$_{a}$	28.1%$_{a}$	23.7%$_{a}$	26.7%
	Taylorist	15.4%$_{a}$	22.8%$_{b}$	22.6%$_{b}$	20.2%
	Simple	12.3%$_{a}$	15.4%$_{a, b}$	17.3%$_{b}$	15.1%

Source: Eurofound estimates based on EWCS.

Notes: Subscripts denote whether difference between values across columns (from different EWCS waves) are statistically significant at the 0.05 level. In particular, values having the same subscripts do not differ significantly while values with different subscripts are significantly different

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Annex 5: Companies' well-being policies — case studies

Many companies have recognised the link between positive mental states of workers and productivity on the job and have implemented specific well-being policies. The motivation of the these policies assumes that the benefits of having happier workers range from fewer interpersonal conflicts and less sick leave to stronger identification with the organisation or team and therefore more prevalent ethical behaviours, a better use of workers' skills for creative ideas and efficient problem-solving. Moreover, employers who have a reputation for caring for their people manage to attract and keep talent. These companies also manage to protect their quality workers from unnecessary stress, fatigue and frustration, assuring greater loyalty of workers and greater internalisation of corporate norms of behaviours.

AstraZeneca

AstraZeneca plc is a British-Swedish multinational pharmaceutical and biologics company headquartered in London.

The company launched a whole package of health and well-being initiatives ranging from a counselling and life-management programme, health promotion activities and ergonomic workspace design to fitness opportunities, healthy eating options and flexibility arrangements for a better work-life balance. The company reported savings in the range of GBP 500000–700000 through improved productivity after counselling. GBP 80000 was saved on health insurance costs for psychological illness. Global accident and occupational illness rates went down by 61%. The programme has also served company's image among its staff well. 84% of employees are proud to work for AstraZeneca and 82% would recommend the company as a good place to work, 80% of employees said they had enough flexibility in their job to be able to balance work and personal life, and 88% said AstraZeneca demonstrated commitment to the health and well-being of its employees.

British Gas Services

British Gas Services, Britain's largest energy and home services provider, needed to reduce the level of musculoskeletal disorders (MSDs), which accounted for one third of staff absences, to improve attendance and performance capability at work. To that effect, back-care workshops were introduced in 2005. 120 workshops were delivered over a two-year period with over 1200 participants. Back-related absence was reduced by 43% in the 2005 cohort one year after the seminar participation. 73% of the staff in the intervention group had no absence up to one year after participation. The company reported a solid return on investment: GBP 1660 per participating employee and GBP 31 on every pound invested.

The British Library

The British Library, a renowned research library based in London, developed a corporate well-being vision including personal development, diversity and a platform for dialogue and opinion survey to promote holistic health of employees. The employer guarantees free access to an employee assistance programme. This confidential service, run by an external contractor, offers support and advice on financial, legal and psychological issues for staff and their spouses, live-in partners and dependent children aged 16 to 23. Further, employees benefit from subsidised membership in gyms and discounted Tai Chi and yoga classes, osteopathy treatments and Shiatsu massages. The employees benefit from healthy on-site catering and nutritional guidance. The employer organises annual health events where employees can receive on-site lifestyle and health guidance and assessments, such as blood pressure and cholesterol tests, bone density scans and liver function tests. The Library tries to help staff and their families with health care costs. It facilitates access to medical diagnostic, surgical and medical support services via cheap flat-rate membership in the Beneden Healthcare Society and offers discounts with the HealthShield healthcare scheme. Staff also receive a 45% discount for travel healthcare insurance from BUPA.

The Library reported numerous business benefits of the well-being scheme and reports that over a two-year period absence dropped from 10.2 to 7.5 days per year, cost of absence dropped 11% (GBP 160000 per year), staff turnover was halved from 12% to 6% and performance management results increased from 86% to 98%.

Digital Outlook Communications

Digital Outlook Communications is a London-based digital marketing and creative agency specialising in the entertainment and media sectors. The company sought to address the challenge of ensuring the intense, long hours culture of its industry did not become a barrier to building the business on a foundation of sound health and well-being principles.

The company conducted a Best Companies survey to obtain employees' feedback on their well-being and the perceived quality of leadership and management. A Well-being Team, supported by senior management, was established to gather suggestions for, and implement, initiatives which included:

Introduction of flexible working; Revamping the agency's charging system to ensure clients paid for work actually done, optimise profitability and enable employees to reduce working hours while still meeting financial targets; Improved promotion of the employee benefits system; Introduction of a mentoring and development scheme; Improving the ergonomic working environment; Establishing health and well-being as a KPI for all senior managers.

Health and well-being survey scores improved 11% to a score of 4.9, better than all other small media companies surveyed in 2008. Sickness absence rates improved 95% from 4 days per person in 2006 to 0.22 days per person in 2008. Staff turnover was reduced from 34% in 2007 to 9% in 2008, resulting in savings in recruitment, training and induction costs.

Google

Inspired by the Framingham Heart Study, Google developed a long-term study called gDNA. The aim of the study is to learn how to improve well-being, cultivate great leaders, better understand how happiness affects work, and how work affects happiness (Bock, 2014). One issue that became a matter of corporate policy at Google pertains to managing the work-life balance and protecting the privacy of employees after work. Google's Dublin office, for example, ran a programme called 'Dublin Goes Dark' which asked people to drop off their devices at the front desk before going home for the night. Googlers reported blissful, stress-less evenings.

Box 7: Office design integrating work, team space, privacy, entertainment and relaxation

The following is an example of how a contemporary multinational may try to recreate the informal start-up working environment that, in the opinion of its proponents, unleashes creativity and, according to its adversaries, blurs the line between working and private lives. Google's Zurich office is a very special case that became famous for its innovative design ([129]) taking a radical step away from the norm. The design combines teamwork, privacy and individual work, entertainment, meditation and relaxation.

The (partially) open-plan office space is dotted with egg-shaped wigwams or arctic domes that serve as small meeting rooms. Some meeting rooms feature reclining chairs and sofas. Some people work with laptops while sitting in hammock-like facilities in tropical island-themed rooms. Some offices have a beach theme with sand, pebbles and lifebuoys. Some conference call rooms have a thematic design, e.g. ottoman-style sofas with a baldachin and other accessories. Some are styled as ski lifts or taxis, feature alpine designs or urban graffiti. The library is styled as a Victorian English parlour.

There is a quiet room where people go to relax or take a nap that features reclining chairs and a bathtub filled with foam in front of a fish tank. There are massage rooms. Google offers free breakfast, lunch and dinner all cooked by an in-house chef. There is a slide that drops employees into the eating area (a fun way to get to lunch). There are also poles allowing workers to drop down a floor. There are work-out spaces in the offices, as well as games: billiards, table football, ping pong, a basketball corner and a music stage.

How far this is replicated across the company or encouraged among its associates and suppliers is less clear, however. Also, time will show if this concept, in its current innovative yet very unusual form, will set a new trend in office design or remain an amusing yet unsuccessful path of corporate culture evolution.

([129]) See http://www.businessinsider.com/googles-zurich-office-2013-2?op=1

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