Trends in job quality in Europe

A report based on the fifth European Working Conditions Survey

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Eurofound Working Conditions Survey

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When citing this report, please use the following wording:

Eurofound (2012), *Trends in job quality in Europe,* Publications Office of the European Union, Luxembourg.

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Eurofound project: Fifth European Working Conditions Survey

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The authors would like to thank participating experts at the peer review seminar held in Brussels, 14 and 15 December 2011, for their many helpful and constructive comments on an earlier draft of this report.

More information on the European Union is available on the Internet (http://europa.eu).

Cataloguing data can be found at the end of this publication.

Luxembourg: Publications Office of the European Union, 2012

ISBN 978-92-897-1071-8
doi:10.2806/35164

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Printed in Belgium

PRINTED ON ELEMENTAL CHLORINE-FREE BLEACHED PAPER (ECF)

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Executive summary

Introduction

This study measures job quality in the 27 countries of the European Union, as well as the seven additional countries in Europe that participated in the European Working Conditions Survey (EWCS). Four indices were constructed for the study: earnings, prospects, intrinsic job quality and working time quality. The four indices cannot be reduced into a single index of job quality because associations between them are weak, and none can increase over time nor move in similar directions. They are, however, theoretically and conceptually coherent.

The intention was to find an objective means of assessing the principle established in a number of EU directives that work should adapt to the workers. The indices constructed for this study do not rely on subjective measurement such as preferences and attitudes, but are built on the self-reported features of jobs that are associated with workers' well-being.

Policy context

Following the introduction of the European Employment Strategy in 1997 through the Treaty of Amsterdam, and the subsequent launch of the Lisbon Growth and Jobs strategy in 2000, the idea of 'more and better jobs' came to the fore among European Union policy objectives. This development was paralleled by similar concerns from transnational bodies such as the OECD, and from individual national governments that wished to complement their targets for the numbers of people in employment with objectives for the quality of work and employment.

Subsequent years saw also the development at the European level of the concept of 'flexicurity', a strategy to foster the introduction of policies to improve both flexibility and security. While flexicurity policies focused more on the labour market rather than individual jobs, flexicurity was seen as consistent with the aim of raising the quality of work and employment.

The issues with which policymakers were concerned included productivity, the welfare of working people, raising job quality through initiatives such the use of available skills and acquisition of new skills, rising stress levels associated with 'job strain' and other environmental and psychosocial risks, and the growing prevalence of 'precarious' work.

Job insecurity became a particularly salient issue with the onset of the global economic crisis in the latter half of 2008, especially among young people. Policies to encourage sustainable employment have still been widely seen as important in the drive to improve job quality. Europe 2020, which is a strategy for sustainable growth and jobs, includes as one of its core guidelines 'developing a skilled workforce responding to labour market needs, promoting job quality and lifelong learning'. Increased understanding of the social costs of poor job quality has focused attention on physical and social environments at work. Prolonged life expectancy and the ageing of the population suggest jobs will have to be of good quality if more workers are to be persuaded to work longer.

There are, therefore, many reasons for wishing to clarify the concept and measurement of the quality of paid work for the purposes of policy analyses, and this study seeks to deepen the analysis based on the data from the EWCS series.

Key findings

Using the four indices specifically constructed for this study, it was concluded that 14% of jobs in Europe are high-paid good jobs; 37% are well-balanced good jobs; 29% are poorly balanced jobs; and 20% are poor quality jobs.

Workers in poor quality jobs had, on average, the lowest levels of health and well-being, showing more health problems, lower subjective well-being, and found less meaning in their work. These poor quality jobs, where workers could be said to be most at risk, were especially concentrated in

establishments with fewer than five employees, and in the private sector. They were also more prevalent in countries with lower levels of GDP per capita, though the association with national income is far from perfect.

Overall levels of average job quality in the 15 Member States that have participated in every wave of the EWCS since 1995 show relative stability in three of the indices – skills and discretion, good physical environment and work intensity – although the latter has increased over time slightly. However, this apparent stability hides important differences by country.

In contrast, there was a rise of more than five points over time in the working time quality index. This rise largely reflects reductions in working time and less work during non-standard hours.

On average men have higher monthly earnings than women. In terms of the working time quality index, women do better; indeed, they work on average shorter hours, and less frequently do shift work during non-standard hours. Women also enjoy a slightly higher level of intrinsic job quality, which comes from working on average in somewhat better physical environments. Finally, the measurement of the prospects index is almost the same for men and women.

Levels of the four job quality indices vary across industries in Europe. Those working in the information and communication sectors or in finance and insurance are highest ranked on most indices.

The self-employed who have employees have the highest level of earnings. In contrast, the self-employed without employees have lower earnings, yet a higher working time quality index. This latter advantage is due to flexibility in the management of their work, not to their having fewer work hours or less shift work.

Those employed on indefinite contracts have relatively high values on most of the indicators, while those employees with fixed-term or temporary contracts have lower job quality on all dimensions.

Policy pointers

The lack of aggregate change in the physical environment suggests that efforts be redoubled to bring about improvements. Policy could usefully be focused on the increasing prevalence of posture-related risks in the workplace.

Similarly, rising levels of work intensity in the majority of countries contribute to a rising risk of high stress levels and their consequent ill effects on health and well-being. Policies to reduce the presence of stressors are indicated, as well as programmes to ameliorate the effects of high levels of stress.

Some positive signs are found in the increases in the growth of the skills and discretion index in the majority of countries. This index goes to the heart of the intrinsic character of work, and is at the same time associated on average with higher levels of productivity. In some countries where there is, however, evidence of a decline in this index, policy attention needs to be directed at the source of this fall.

The largest aggregate change, however, took place for the working time quality index, and here the picture is positive, showing rises both overall and in most countries. However, working time flexibility still needs to be monitored.

Policy towards ameliorating the detrimental effects of work on health and well-being needs to be conducted on a fairly broad front.

Introduction

Following the introduction of the European Employment Strategy in 1997 through the Treaty of Amsterdam, and the subsequent launch of the Lisbon Growth and Jobs strategy in 2000, the idea of 'more and better jobs' came to the fore among European Union policy objectives. This development was paralleled by similar concerns from transnational bodies such as the OECD, and from individual national governments who wished to complement their targets for the numbers of people in employment with objectives for the quality of work and employment. Subsequent years saw also the development at the European level of the concept of 'flexicurity', a strategy to foster the introduction of policies to improve both flexibility and security. While flexicurity policies focused more on the labour market rather than individual jobs, flexicurity was seen as consistent with the aim of raising the quality of work and employment (European Commission, 2007; Eurofound, 2008).

The issues with which policymakers were concerned surrounded both productivity and the welfare of working people, and involved a mix of factors relevant to both employers and employees. From the perspective of employers, raising individual and organisational productivity is essential in an era of increasing competition in the global marketplace. Alongside investment and innovation, raising job quality through initiatives such as the use of available skills and acquisition of new skills, can help to meet these objectives. From the perspective of employees, there have also been concerns about rising stress levels associated with 'job strain' (a combination of highly-intensive work effort and low workplace autonomy) and other environmental and psychosocial risks, and about the apparently growing prevalence of 'precarious' work.

Job insecurity became a particularly salient issue with the onset of the global economic crisis in the latter half of 2008. Rising unemployment, especially among young people, elevated the importance of policies to keep young people in work where possible, and to offer decent training and education opportunities for those out of work. Nevertheless, policies to encourage sustainable employment have still been widely seen as important in the drive to improve job quality. Europe 2020, which is a strategy for sustainable growth and jobs, includes as one of its core guidelines 'developing a skilled workforce responding to labour market needs, promoting job quality and lifelong learning' (European Commission, 2010). Increased understanding of the social costs (including costs to government) of poor job quality has focused attention on physical and social environments at work. Demographic issues, including prolonged life expectancy and the ageing of the population, have also led to the assumption that jobs will have to be of good quality if more workers are to be attracted to stay longer in the workforce.[1]

The concern with employee welfare has run with the grain of the desire to acknowledge more features of modern life than are contained in estimates of GDP per capita when calculating a nation's wealth. Many observers have commented that other aspects of life contribute to the well-being of nations, and job quality is a significant element of that well-being. As declared in the influential Report by the Commission on the Measurement of Economic and Social Progress:

> *Paid work matters for quality of life partly because it provides identity to people and opportunities to socialise with others. However, not all jobs are equally valuable in this respect. This underscores the importance of collecting more systematic information on the quality of paid work. (Stiglitz et al, 2009: 49.)*

The desire arose, therefore, to clarify the concept and measurement of the quality of paid work for the purposes of policy analyses. A number of studies had already identified important aspects of job quality, other than wages, on which analyses and policy should focus, drawing on a long tradition of studies in sociology, economics and psychology (for instance, Gallie et al, 1998; Green, 2006, Lehto and Sutela, 2005). In the first years of the new millennium a number of attempts were made to define internationally comparable indices of job quality (for instance, Eurofound, 2002; European Commission, 2001; 2002; 2008), with considerable progress being made. However, these attempts were constrained by the need for indicators that could be available for all Member States. For example, the primary source of regular labour market information across Europe, the Labour Force Survey, carried relatively little data about

[1] See *Working longer through better working conditions, new modes of work and career organisation*, EU Conference, Brussels, 16-17 November.

the nature of jobs. Other, later, studies built on periodic modules covering work orientations in the International Social Survey Programme (such as Olsen et al, 2011), although this also carried only limited coverage of work features needed for the study of job quality. The most comprehensive coverage, which supported analyses by Leschke et al (2008), Holman and McClellan (2011), and by Muñoz de Bustillo et al (2011), was provided by successive waves of the EWCS, which had been carried out in 1990, 1995, 2000/2001 and 2005.

This survey has evolved and improved over time, as more countries joined in, some from outside the European Union; and the selection of questions to asked changed with experience and the use of developing scientific knowledge about the workplace. With the completion of the fifth survey (EWCS5) in 2010 in 34 countries,[2] the time is now right, therefore, for a new clarification of the concept of job quality, and of how it can be operationalised in support of policy analyses.

The first and most important objective for this report is to use the data of EWCS5, and preceding surveys in the series, to design and operationalise indices of job quality. Throughout this report the term 'job quality' is used as a synonym for 'quality of work and employment'. Thus, the character of the 'job' is taken to be broader than the work itself, and to encompass also the nature of the physical location of the employment; but not to cover the nature of the labour market or beyond. Once the indices of job quality are operationalised, the second objective is to use them to construct a descriptive picture of the variation in job quality across countries and between certain socioeconomic groups and work situations.

The report begins with its central tasks in Chapters 1 and 2, which set out the conceptual framework for job quality, and the way in which job quality indices are constructed from the data. Chapter 3 then shows how the indices vary according to the gender, age, education level, occupation and sector of the workers in these jobs, and according to size of establishment, contract status of employment, and country.

Chapter 4 shows the relationships between job quality indices and the health and well-being of workers. In Chapter 5 the report places some emphasis on identifying jobs which are more likely to put employees 'at risk' of detrimental effects on health and well-being. In Chapter 6 the report examines how, for those countries that have been participants in the survey since 1995, job quality has been changing over time. Finally, the report considers the implications of these descriptive findings for policy development, and makes recommendations for further incremental improvements in the survey to place more emphasis on skill and skill development.

[2] Parent-Thirion et al (2012).

5th
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CHAPTER 1

Conceptual framework

Conceptual framework

The aim in this chapter is to clarify the concept of job quality that will be used to motivate the construction of indicators and all subsequent analyses. It is to be noted, first, that this concept is not only about work itself, but also about its context, that is, employment in a job. The concept of job quality has its roots deep in the social sciences, having been discussed from various angles by sociologists, economists and psychologists for a very long time.

Previous studies and general principles

Objective versus subjective concepts

A distinction can be made between two quite different concepts of work and employment quality. On one hand there is the subjective tradition, in which job quality is the 'utility' that a worker derives from his or her job. That utility depends on job features, such as the wage, hours, and type of work, but it is subjective in that each worker has preferences over the different job features. Whether the utility of a job is directly measurable is a matter of debate and disagreement within economics. Some argue that utility can only be revealed through actions and behaviours around work. Some studies have argued that measures of well-being, including feelings and emotions, or job satisfaction, can be used as measures of subjective job quality.

On the other hand, in the objective tradition job quality is constituted by the features of jobs that meet workers' needs from work. As such, any objective concept stems ultimately from a theory of what human needs are and proceeds to investigate how far jobs meet those needs. For example, Maslow's hierarchy of needs can be applied to the world of work, leading to a focus on a limited 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.[3] The capability to achieve well-being depends on how far jobs enable workers to exercise influence over work and to pursue their personal work-related goals. The needs that workers choose to prioritise will vary, but a high quality job is one that allows for a full range of needs to be met. The ILO's concept of 'decent work' is another objective concept, similar in spirit but broader in the scope of needs that it addresses.

This research follows Green (2006), Muñoz de Bustillo et al (2011) and others in maintaining that only an objective concept of job quality can be defended. Though emotions are very important and play a contributory role in validating indicators of job quality, measures of job satisfaction or of well-being at work are not constitutive of job quality. Well-being measures do not necessarily correspond to the satisfaction of needs, so they are not acceptable as proxies for job quality. Other factors, moreover, affect well-being and job satisfaction, such as people's expectations and their personalities.

The meaning of 'objective' in the context of this report is that characteristics of the job are the constituent elements. Of course, in a survey of individuals such as the EWCS it is job-holders who are the informants about the job's working conditions. Self-reported variables are sometimes referred to as 'subjective', but this is a potential source of confusion when such reports are about objective job features. Rather, 'subjective' is a term that should be reserved for reports of feelings, perceptions, attitudes or values. Most data arises from the reports of individual workers, even that which is entered into ledgers and read off automatically. It can be argued that self-reported data about job features is open to certain random errors or biases, perhaps arising from the

[3] Green, F. (2006) *Demanding work. The paradox of job quality in the affluent economy*. Woodstock, Princeton University Press.

social esteem of the features being described; and, if so, those biases can be subjective. Yet such biases may be part of all data reporting, whether self-reported or not, and the differences in degrees of potential bias have to be set against the knowledge of the person reporting. In the case of jobs, the individuals doing them are arguably the people who know most about them. Moreover, the argument about reporting accuracy should not detract from the conceptual distinction between objective and subjective variables about work.

Using an objective approach does not mean assuming that job quality captures the extent to which each and every worker's needs are being met. On the contrary, job quality is constituted by generic elements that meet universal needs, but the extent of those needs will differ according to a person's circumstances, including the social and physical environment in which a person lives. Work-life balance, for example, is a property of the relationship between the job and the worker who performs it. Whether a job meets the need for a good work-life balance depends both on job features, such as flexible working hours, and on features of a worker's personal life, such as responsibilities as a carer for family members.

There arises, therefore, a dilemma of principle. In one approach, the aim could be to derive measures of the extent to which the job meets a worker's needs, given that worker's circumstances including the labour market environment (such as the unemployment rate). In a second approach, the aim could be to obtain a measure of job quality independent of workers' personal circumstances and the external labour market; in other words, features of work and employment which on average or overall meet workers' needs. The difference between these approaches matters in certain instances.

The first approach is exemplified in the work of the United Nations Economic Commission for Europe (UNECE), which has recently settled on seven dimensions, each with multiple indicators, to capture the 'quality of employment', as part of its work designed to help support improved employment policies.[4] For instance, UNECE's approach incorporates measures of inappropriate child labour as a negative indicator for employment quality, thus taking into account the age of the worker rather than just the job itself. 'Quality of employment' is a broader concept than job quality, and deploys indicators (such as the unemployment rate) of items at the macro and meso levels as well as those related to jobs. Also wide-ranging is the International Labour Organization's concept of 'decent work', for which multiple indicators have been proposed, extending to indicators of union density, social protection, child labour and old-age pensions (Ghai, 2003; Bescond et al, 2003).

Again following both Green (2006) and Muñoz de Bustillo et al (2011), this report follows the second approach that draws solely on the characteristics of jobs. This means that it is possible to derive indices by concentrating solely on job features as reported in the survey data. However, this decision does not preclude other analyses using EWCS, where analysts would use additional data, for example pertaining to the welfare state, or to personal circumstances, or to the local labour market. Moreover, the job quality indices to be derived could be expected to have a varying importance across countries and cultures, depending on the institutions and norms of any given society. To take an example, job insecurity is likely to matter more where social insurance is weaker. Thus, objective job quality indices should be seen as a central part of a wider framework of indices covering a nation's employment quality, where the latter includes labour market and welfare state variables.

Intermediary categories of variables that refer to the relationship between the individual and the job also need noting. One example is whether the individual's education or skills are at a higher or lower level than those required for the job. It is known that skills match is an important determinant of job satisfaction. Another example concerns working time, that is, whether the hours of the job match the worker's desired hours. Where desired hours exceed actual hours, this is a form of under-employment, a close relative of unemployment. A third example refers to variables that capture an individual's response to working conditions, such as whether they use supplied personal protective equipment. Although the survey contains measures of some intermediary variables, this report does not include them in the job quality indices, again on the basis that this would involve personal preferences and characteristics. Nevertheless, their role could be analysed using the survey data.

To summarise, the report derives indices using only objective items, using only items about jobs, and excluding items about personal circumstances and qualities.

Positive and negative indicators

Job features can usually be categorised according to whether they contribute positively or negatively to meeting workers' needs. Pay, for example, would be regarded positively. Features that are known to pose broad physical or psychosocial risks to health and well-being are regarded negatively. It is in effect the absence or low prevalence of such negative items that are incorporated into the indices of job quality used in this research. There are, in addition, certain job features covered in the survey, important in their own right, about whom

[4] These dimensions are: safety and ethics of employment, income and benefits from employment, working hours and work-life balance, security of employment and social protection, social dialogue, skills development and training, workplace relationships and work motivation. For an example of the application of these dimensions to Germany, see Körner et al (2011).

there are no unambiguous prior views about whether they are positive or negative in meeting needs. These features have not been used in constructing the indices.

Job quality, health and well-being

While job quality is defined by objective features of jobs, it is expected that there will be relationships between job quality features and the health and well-being of workers. This can occur for two reasons. Some job features can have causal positive or detrimental effects on well-being, such as when a worker is exposed to harmful substances in the workplace. Alternatively, there could be a selection process whereby people's states of health and well-being channel them into certain kinds of jobs; for example, health limitations might prevent someone taking up employment that requires intensive physical effort.

The impact of job quality features on health and well-being has been studied in many micro-social contexts for a long time, leading to a substantive body of knowledge about occupational health and well-being. Warr (2007) provides an overview of a large number of studies. The design of jobs is of course in the most immediate domain of employers. But it should be remembered that companies are operating in competitive environments, and in deciding on their employment policies must take account of developments in technology and forms of work organisation if they are to remain competitive. Moreover the impact of jobs on health and well-being should be seen alongside the effects of government policies and welfare states, the state of the labour market, the needs of families and of the persons themselves. The determination of people's health is therefore a complex process involving several actors, in which job quality (for those in work) is important but only one element in the equation.

In EWCS5 measures of health and well-being are entirely self-reported. While self-reported indicators are commonly shown to be related to objective measures of health, this subjectivity needs to be borne in mind when comparing health and well-being outcomes when, as is the case here, the job quality features are reported by the same individuals who are reporting about their health. Personality traits and dispositions can give rise to associations between job quality features and health or well-being which may not reflect the predicted causal chains. Nevertheless, the expected associations with well-being provide a useful means for helping to validate the job quality indices derived using the data.

Job quality and productivity

This project is focusing on the perspective of the worker. It is not considering directly any effects of job quality on the quality of productive activity, which is the variable upon which most employers are likely to be focused. Nevertheless, there are connections between job quality and the quality of productive activity. For several aspects of jobs there is evidence of a link between job quality and productivity at various levels.

Certain aspects of job quality are known to have direct effects on the productivity of individuals and organisations. The skill level of work is perhaps the area where the association between job quality and productivity is clearest and most direct. As will be discussed below, the skill level of the work will be taken as one item making up the index of intrinsic job quality. At the same time, there is evidence showing the positive impact that more-skilled workers can have on both their own individual performances and that of the organisation they work for. Consider the example of a recent study of the effect of communication skills on the job performance of gynaecologists which showed that differences in job performance between male and female physicians were fully accounted for by the differences in their communication skills (Christen et al, (2008). Taking a dynamic perspective on skill, there is also good evidence that training which enhances skill is also associated with higher productivity (Dearden et al, 2006).

Another important aspect of job quality with implications for productivity is the wage rate. According to 'efficiency wage' theory in economics, higher wages may not simply reflect higher productivity, they may also generate higher productivity (Akerlof and Yellen, 1986). This can happen through various channels. One way is if a higher wage rate increases the cost of job loss from doing sub-standard work; the implicit or explicit threat of losing the higher wage increases the pressure on workers to be productive. Another channel is less direct; by making a 'gift' of a wage rate above the going rate, an employer receives in return the hard and productive work of the committed worker. A third channel, higher wages, can reduce labour turnover and reduce the cost of recruitment and initial training

Other aspects of job quality are also associated with indicators of productivity. The importance of a physically safe and healthy working environment, for example, has a self-evident link with productivity. Accidents lead to losses of productivity as well as grief for employees. Other studies have examined direct links between other aspects of working conditions. In one recent example, negative social relations in the workplace (termed 'workplace incivility') are found to have detrimental effects on the productivity of nurses (Lewis and Malecha, 2011).

Indirect effects have also been investigated, in that working conditions affect well-being which in turn impacts on productivity. Good working conditions are found to affect workers' health, subjective well-being or job satisfaction in a number of studies. To take one recent example, Cottini and Lucifora (2011) show, using data from earlier waves of the

EWCS and from external sources, that high psychological job demands and a poor physical environment are detrimental to the mental health of workers. To take another, Green (2011) establishes the role that job insecurity combined with lack of employability plays in poor mental health and low life satisfaction. And this report demonstrates, in Chapter 3, that all the positive job quality indices derived from the survey are associated positively with health and well-being outcomes. Several earlier studies also show positive effects of workers' health or well-being on staff turnover, sickness absence, 'presenteeism', or other measures of job performance (Warr, 2007). Thus, connecting these two sets of findings, it seems that good working conditions can have an indirect impact on job performance and on proxies for productivity, via their effect on workers' well-being.

This study of the connections between job quality and firm performance remains, however, at a relatively early stage. There have been few studies that, through the use of longitudinal data and other quasi-experimental methods, have established that high job quality is *causing* high productivity. Many of the studies still rest on the interpretation of cross-sectional data, often with quite small samples. These factors typically make it difficult to rule out the possibility of reverse causation and other conflating factors; for example, it might be that highly productive firms choose to use some of their extra resources to introduce better working conditions than less productive firms are able to afford. Second, there are even fewer studies which address whether any productivity increases are sufficiently great to generate increases in profitability, once the extra costs of providing better working conditions are taken into account. A recent, rare, exception is the large-scale study of manufacturing firms in Germany, France, the UK and the US, which shows that the use of family-friendly management practices has no significant effect on company performance (Bloom et al, 2011). Since they were also beneficial for workers' well-being, the authors conclude that this may be an indication that the managers who instituted family-friendly practices were promoting workers' well-being, and that the shareholders did not have to bear a cost for this in terms of lower profits. The study found that family-friendly practices were more likely to be adopted when there was a high proportion of skilled employees, and a high proportion of females among managers.

In conclusion, although this report focuses on the perspective of the worker, this being a continuation and organic development of the approach taken by Eurofound (2002), in important aspects of job quality there is likely to be a congruence of interest, or at least no adverse trade-off, between the perspectives of the worker and of the employer. The extent to which this is the case depends on the costs of provision of good working conditions, which vary considerably among different practices, and are beyond the scope of this report. The strength of this conclusion, however, awaits further evidence that can establish the direction of causation with still more confidence.

Core elements of job quality

In 2002 the European Foundation for Living and Working Conditions developed an influential conceptual framework, in which job quality was built upon four blocks: 'career and employment security', 'health and well-being', 'reconciliation of working and non-working life' and 'skills development' (Eurofound, 2002). Since that time the EWCS has evolved further, as has scientific study of the workplace, facilitating improved indicators for some concepts. Here, this research builds on the 2002 framework, and it puts into practice the general principles set out above (Chapter 1).

The objective concept of job quality focuses on the essential characteristics of jobs that meet workers' needs for good work. This research again uses four building blocks, but sets them up in a somewhat different way. Two sets of extrinsic job features are examined, '*Earnings*' and '*Prospects*', alongside a somewhat larger set of intrinsic features of the work itself which are termed '*Intrinsic Job Quality*', and '*Working Time Quality*'. Each set contains elements, and the different disciplines, especially economics, sociology, and occupational psychology, often make different assumptions about which are most important. For example, economists tend to put a good deal of weight upon wages, because of their relationship to income and then to living standards, while others sometimes focus their discussions on certain intrinsic aspects of the job. An approach is adopted here that incorporates these multi-disciplinary insights, while looking to obtain indices that are not unduly sensitive to alterations in the assumptions.

Earnings

Both the level and fairness of wages are positive indicators. The indicator of the level is 'net hourly earnings' and the equivalent for self-employed workers. Unlike the Eurofound framework, this concept is now treated as a separate building block both because of its evident importance for living standards and because of improved questions allowing a more satisfactory measurement. The fairness of wages could not, however, be adequately captured with this data, and forms one of the potential challenges for future development.

Prospects

Prospects refers to the aspects of the job that contribute to a person's need for employment. This need is, in turn, related both to the material need for income (now and in the future), and to the psychological need for employment continuity and enhancement that is associated with a person's self-esteem and identity. Job security is one of the key features, meaning the probability that the job will continue in future years. Subject to that, another important feature is whether the job

offers the prospect of advancement, this being especially relevant for younger workers.

The concept of prospects needs to be distinguished from 'employment security'. The latter depends, not only on features of the current job, but on a person's own qualities and on the labour market environment. 'Employability' is the term given to the potential for gaining another job (Green, 2011). Both employment security and employability could be studied using the survey data, but are not included among the job quality indicators used in this research. This is because of the principle established above, that only features of the job itself are to be included in the concept of job quality.

Intrinsic Job Quality

'Intrinsic Job Quality' refers to the aspects of the job that concern the work and its environment. Four core sets of features of work are associated with meeting people's needs: the quality of the work itself, the social environment in which workers are situated, the physical environment, and the intensity or pace of the work.

Skill use and discretion

Two separate but correlated concepts underpin the idea of quality of the work itself; the skill required in the job, and the level of autonomy afforded in the job to the worker (Attewell, 1990). These two are connected, not least because workers must have the capability to understand the labour process if they are to make decisions about their own work tasks. In some sociological accounts, autonomy is itself regarded as an aspect of skill. For the purpose of this research, both the skill level and autonomy capture something of the extent to which the work fulfils a need for doing good work.

Social environment

Research has shown the importance of the social environment in a job for meeting people's needs and for generating well-being (Parkes et al, 1994). On the positive side the level of social support that a worker receives is widely found to correlate positively with health and well-being (Warr, 2007, pp. 128–133). While the majority of this research focused on the quality of line management, also important is the support available from colleagues or friends at work. Social support is known to be especially important in otherwise stressful work situations. On the negative side, social relationships with other employees can themselves be detrimental, especially on the relatively rare occasions when they become abusive or exploitative. Thus, both the positive and the negative aspects of the social environment are essential features of job quality.

Physical environment

It almost goes without saying that another essential feature of job quality is the absence of physical or posture-related hazards that are known to pose risks for health and well-being. Eliminating such hazards is at the core of the occupational health and safety profession, and is furthered by widespread regulation of workplaces. The progress of health and safety knowledge, and evolving regulation, has improved workplaces in Europe substantially in the last 50 years, but further progress is needed and requires monitoring. An index capturing environmental security is therefore an essential feature of job quality.

Work intensity

High 'work intensity', which constitutes overall a negative contribution to intrinsic job quality, refers to the intensity of labour effort during work time. A broad conception of labour effort is adopted for this project, incorporating both physical and mental aspects. These are typically expressed in terms of a range of 'demands' placed upon workers, whether physical, cognitive or emotional. At low levels of work intensity there is some theoretical and empirical ambiguity as to the relationship between work intensity and job quality. It could be argued that a job where workers were not challenged, and that entailed a lot of idling and a low pace of work, would become dull and fail to satisfy a need for activity. Whether or not that is accepted, increasing effort during work time – termed 'work intensification' – has been widely recognised in the last two decades as a potential cause for concern (Wichert, 2002). Highly-intensive labour effort is known to be a major stressor, especially if it is required in combination with low levels of personal discretion and control in the job (Karasek, 1979). Emotional dissonance, when workers are expected to show false emotions or hide their own, is also known to be a source of stress, especially in service occupations (Zapf et al, 2001).

Working Time Quality

'Work-life balance' encapsulates the extent to which a job meets the needs for a good balance between the demands of work and of life outside paid employment. Both paid work and other activities require time and resources. As such it is a concept that applies to the relationship between the job and the worker, not exclusively to the job. Work-life balance is not, therefore, *per se* an aspect of job quality; it is something that may or may not be achieved by individuals. In this project the aim is to capture features of the job that contribute to needs, so the relevant concept is that of a set of job features that are generally conducive to a good work-life balance. These features consist primarily of aspects of the timing of the job, but could also in principle include the provision of services such as child care. The

survey contains extensive data on the timing aspects. The report aims to derive an indicator of the quality of working time, where 'quality' here is viewed in relation to the expected extent to which the working time meets workers' needs for work-life balance.

The number of dimensions

The four building blocks and concepts outlined above suggest that it would be appropriate to construct four corresponding indices. The raw material, however, for the indices is a very much larger number of items in the survey, each describing detailed aspects of jobs. Combining them into a small number of indices involves looking for statistical correlations among similar items and for a theoretical coherence.

Deciding the number of dimensions requires an evaluation of the balance of opposing arguments. With fewer dimensions, the analysis of the distribution of job quality among groups becomes more tractable and easier to present. This advantage is to be set against the loss of detail, the necessity of relying on more assumptions about the weight to be attached to each element for which there may be less than full agreement, and the greater difficulty of interpretation when using very highly aggregated indices. The latter disadvantage has implications for how indices can be used for policy analyses.

Seven dimensions are included above, and a case might be made for working with indices for all seven. However, there is a good case for reducing these still further. In particular, it made sense to combine the constituents of intrinsic job quality into one index. The idea of intrinsic job quality would seem to be readily understandable. This aggregation requires weighting assumptions, since the correlations between elements are far from perfect – individual jobs and country averages that rank highly on one sub-index need not do so on another. Weights were used guided by the findings about how each domain is related to various health and well-being measures, and conducted sensitivity analyses in support.

In some previous studies, analysts have gone much further in reducing the number of dimensions. They have aimed to reduce the number of dimensions to one, in other words to produce a single index of job quality. This might be justified from a rather pure theoretical perspective in economics, whereby there is assumed to be a utility associated with each job, and a single job quality index would then be seen as measuring that utility. However, to compute that index would require heroic assumptions about how individuals can trade off job quality features against each other in a 'perfectly competitive' labour market, and find a job that closely matches their preferences given their skills. This 'compensating differential' approach has been criticised elsewhere (Green, 2006).

It might nevertheless be argued that there is a case for reducing the number of dimensions to one, on the grounds of providing a greater ease of presentation – this is the reasoning behind the decision of Muñoz de Bustillo et al (2011) to opt for a single index.[5] It was decided that this argument was not persuasive. The term 'job quality' is evidently a multi-faceted concept, and it was judged that when people use the term they are implicitly thinking of a set of dimensions. The problem in using a single job quality measure in scientific analysis is that it can be interpreted differently by different listeners. Not least, there is a well-known tendency for economists to think of job quality largely in terms of wages, and occasionally for other social scientists to think of job quality as anything else other than wages. Even among non-wage aspects, users of a single index would be confused as to which aspects are being measured and discussed. With a single index of job quality, the danger is that an artificial league table is encouraged that may serve as a somewhat blunt or even misleading guide for policymakers.

In contrast, each index used in analysis should be readily interpretable and as transparent as possible. The proposal made by this report for an *Earnings* index, a *Working Time Quality* index, a *Prospects* index, and an *Intrinsic Job Quality* index, better satisfies these criteria than a single 'job quality' index. Four indices is not so many that they cannot be readily presented and appear meaningful in a range of settings. In addition, having four indices allows analysis of how the different aspects may rank differently across countries and socioeconomic groups; and analysis of the different ranks is likely to be of more value for policy purposes than analysis of an overall index of 'job quality' whose meaning is unclear.

[5] Leschke et al (2008) also opt for a single index, possibly for the same reason, but they do not present an argument for doing so. They call for a comprehensive index, with which this research team agrees, but this need not have a single dimension.

5th
European
Working
Conditions
Survey

CHAPTER 2

Construction of the job quality indices

Construction of the job quality indices

Any development of job quality indices must confront an inherent problem; namely that only the element of wages has an obvious universal unit or metric. The presence of other features in a job can typically only be gauged through a short ordinal ranking of intensity, often as simple as a yes/no answer to the question: 'is the feature present or not?' This lack of a universal metric combines with the fact that job features are reported by fallible individuals. Researchers rarely have the opportunity to check the accuracy of responses to their surveys. However, these difficulties of measurement are not unusual and can be overcome if care is taken. To compensate, one must construct items and indices that are transparent in their design and meaning, so that they can plausibly be compared between individuals, and in the case of a harmonised survey, between peoples of different cultures and languages. While great care has been taken to adhere to this principle as far as possible in the design of items for the survey, it is equally important that indices built with these items must be transparent.[6]

In this chapter the method of constructing the four indices of job quality is examined, based on the conceptual discussion above, and in each case there is a brief initial presentation of the distribution of the indices across the entire sample of 34 countries, starting with some general considerations pertaining to index construction, as they apply in this case.

Some general considerations

Weights

The indices of intrinsic job quality, working time quality and prospects are generated from multiple survey items, and from aggregation of sub-indices. To do this requires weights to be attached to each sub-index, and the issue arises as to how these should be determined. There are no universal rules for determining weights, and the practices used in previous studies vary. For example, Leschke et al (2008) assign their own normative weights, including an equal weighting to the six sub-indices that go to make up their overall index of job quality. Muñoz de Bustillo et al (2011) impose weights on their sub-indices, and test for the sensitivity of their overall indices to the weights chosen.

In this study, the following principles were followed.

- Where appropriate, similar items are first normalised so that they have a 0–1 range, and then grouped in a summative index. The extent to which items in a group capture a unified concept is shown by 'Cronbach's alpha' statistic. Items whose inclusion would lower alpha significantly, or which had a low correlation with the index formed by remaining items, were excluded. Where relevant, alpha is reported on the base of the full sample of 34 countries. Whether consistency differed substantially between separate samples of men and women was also checked. In no case was

[6] For an overview of some recent attempts to define job quality indices, see Muñoz de Bustillo et al (2011).

this found to be so and these separate alpha statistics are not reported.

- When multiple indices are aggregated together they were accorded equal weights, except where it is found that the indices have considerably different associations with subjective well-being and other 'outcomes'. The idea behind this principle is that the weights used in this research are guided by – but not determined by – the relationships with well-being.

An alternative strategy followed in some previous studies (e.g. Holman and McClellan, 2011) is to allow weights of all items to be determined statistically by their relationships with job satisfaction and health outcomes. That approach was not followed here for three reasons.

- The estimated conditional relationships between job quality and health/job satisfaction outcomes cannot be taken as unbiased estimates of causal effects, because of the risk that, in cross-sectional studies, there will be other factors affecting well-being that are also associated with job quality features.

- The subjective well-being measures are inevitably imperfect and incomplete indicators of the emotions being felt.

- Well-being indicators, however perfect, may be related to, but do not necessarily express the satisfaction of needs, at least according to some theories of need.

Hence, it was not thought that the precision accorded to such a weighting procedure could be justified here. Rather, the relationship of an index with well-being is used as a guideline, and by extension as one of the means through which its validity can be checked. Other criteria, including theoretical relevance, are also used.

A further consideration, however, is conformity and compatibility with indices derived using earlier surveys in previous studies. Subject to the first two criteria, the aim has been to conform to some of the weighting decisions taken, in particular, by Muñoz de Bustillo et al (2011).

Non-linearity and combinations?

For the most part, it is reasonable to input items linearly into indices. Arguments could, however, be made for including some form of non-linear inputs or combinations of inputs. One example is the proposition that a greater amount of any particular job feature may be beneficial up to a point, but that beyond that point there is less benefit to be had – this is the 'vitamin' metaphor developed by Warr (2007). Another example is the demand-control model of Karasek (1979), whereby the detrimental effects of high-effort jobs can be reduced by granting high levels of worker autonomy. A third illustration is the effort-reward model, whereby high work intensity is viewed as especially detrimental if combined with low levels of remuneration or other poor working conditions (Siegrist, 1996).

In practice, however, it is difficult to identify precise thresholds to capture non-linear effects, especially in large nationally representative and heterogeneous samples; and it would be equally hard to construct harmonised and consensual combinations of sub-indices that would both incorporate the richness of the survey data and some of the more specialised models of the determinants of well-being. Such models could still be analysed, using combinations of the few relevant items in each case, but for the most part this report eschews the use of non-linear assumptions and combinations of indices for the construction of job quality indices.

Missing values

Many items have missing values. In most cases these are few, and this is a good indication of data quality. Yet, when items are aggregated into indices, if cases with any missing values on any of the constituent items are discarded, the result can be the loss of many cases and much information, potentially creating a non-representative sample of the national working population. Hence, where appropriate, the method for generating indices makes use of the available non-missing items. This is possible for summative indices of items that are found to capture a unified concept; the resulting index is the average of the available items. Similarly, in cases where the index is the sum of job characteristics where present – for example, the number of sources of work pressure – the number ticked as present is counted and any missing items set to zero. However, in other cases this is impossible, and in the case of monthly earnings there are an especially large number of missing values. Any index or combination of indices derived from this item will therefore have many missing values. This gap could technically be filled by imputing the missing values from the non-missing data on other items, but this would require some quite strong statistical assumptions. The decision has been made not to do this for this report.

Validation

A complete assessment of validity would entail independent methods of checking whether the indices are positively related to meeting needs, which is beyond the scope of this report. To partially assess the validity of the indices, certain principles have been followed. In their construction, the aim has been to establish internal 'reliability' where summative indices from multiple items are presented as capturing unified concepts. Some criterion validity has then been sought in the constructed indices in two ways:

- Where appropriate, sub-indices have been compared to expected antecedents and outcomes. This is possible in a few instances. For example, there are prior expectations about how skill use and discretion are associated with the occupational hierarchy, and of how job insecurity in a country is connected to the unemployment rate.

- Overall, it is expected that the four job quality indices will be associated with indicators of well-being. In Chapter 4 an analysis is conducted of the association of the indicators with subjective well-being, the presence of health problems and other outcomes.

The indices

The overall structure and a brief description of the four job quality indices, and a list of the items that together are used to construct the indices, are shown in Table 1. What follows here is a description of how each index is assembled. The question numbers used in this chapter refer to the survey questionnaire (see the annex).

Earnings

Two aspects of earnings were considered in relation to job quality: level and fairness.

Level of earnings

The level of monetary reward is a core element of job quality, and the main element of rewards is pay (or earnings for the self-employed). The survey captures net earnings, after deductions of taxes and social insurance contributions. Since these contributions vary considerably between countries, this indicator will differ from the labour costs borne by employers. There is a choice of target indicators between monthly earnings and hourly earnings. The second of these captures the price of labour, and thus the extent to which each hour contributes to needs, while the first captures the overall extent to which the job meets the needs for income to support a standard of living. It is this first indicator, monthly earnings, whether as employee or self-employed, which most closely corresponds to the objectives for the job quality indices in detecting the extent to which the job is meeting people's needs. Hence a harmonised monthly earnings variable is computed.

The survey contains four variables measuring income. EF10 is net monthly earnings from the main job in national currency. EF10_eu is net monthly earnings from the main job in Euro (obtained by converting EF10 into euro). EF11 is income-coded in bands. Note that respondents were asked to answer only one of the two questions. EF10 and EF10_eu have 29,617 observations and EF11 has 7,627. The data from EF10_eu and from EF11 were combined. For the individuals who responded on EF11, the banded responses were replaced with average income obtained from the continuous variable EF10_eu for the same bands.

Table 1: Structure of the indices of job quality

Index	Brief description of content	Items used in construction *
Earnings	Hourly earnings	EF10, EF11, Q18
Prospects	Job security, career progression, contract quality	Q77A, Q77C, Q6, Q7
Intrinsic Job Quality	*Skills and Discretion (0.25)* • skills and autonomy	Q61A, Q61C, Q49C, Q49E, Q49F, Q50A, Q50B, Q50C, Q51C, Q51E, Q51I, Q51O, Q24H, ef1_isced, isco_08_2
	Good Social Environment (0.25) • social support, absence of abuse	Q51A, Q51B, Q58A, Q58B, Q58C, Q58D, Q58E, Q77E, Q70A, Q70B, Q70C, Q71A, Q71B, Q71C
	Good Physical Environment (0.25) • low level of physical and posture-related hazards	Q23A to Q23I, Q24A to Q24E
	Work Intensity (0.25) • pace of work, work pressures, and emotional/value conflict demands	Q45A, Q45B, Q46A to Q46E, Q51G, Q51L, Q51P, Q24G
Working Time Quality	Duration, scheduling, discretion, and short-term flexibility over working time	Q18, Q32, Q33, Q34, Q35, Q39, Q40, Q43

* Question numbers refer to the questionnaire, in the annex to this report. The programmes used to construct the indices can be obtained on request from the authors.

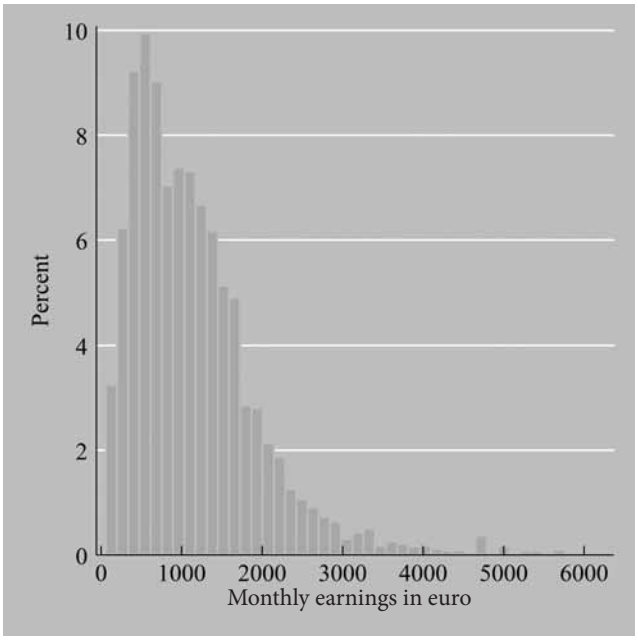
Obviously prices vary between countries, so the same monetary wage is worth less where prices are high. To account for this, monthly earnings were divided by the Purchasing Power Parity (PPP) index obtained from Eurostat, in order to make the figures comparable between countries in real terms.

Finally, a small number of outliers were removed by coding the top and bottom 0.25% of the income observations as missing. These were removed because they had an unusually high or low level of hourly income, possibly caused by mistakes in data-entry. Unsurprisingly, monthly earnings is the variable for which most data are missing; about one-sixth of respondents do not give information about their monthly earnings in either way.

Note also that the survey does not cover subsidiary elements of the reward package, such as employers' contributions to occupational pension schemes. Since rights to future pensions – sometimes referred to as a 'deferred wage' – is becoming more salient with the extension of expected retirement periods, it would be useful to consider including such items to capture these rights in future surveys.

The distribution of hourly earnings across Europe is shown in Figure 1. With median and mean values at, respectively €984 and €1,160, the figure shows a monthly earnings distribution with a strong positive skew created by a small fraction of earners who have very high earnings, which raises the average earnings above the median (the middle point of the distribution).

Figure 1: The distribution of monthly earnings



Fairness of wages

Also relevant for job quality is the extent to which monetary rewards are fairly determined. The latter may seem somewhat subjective, since perceptions of fairness vary among individuals; however, the need to be treated fairly is widespread, and most would sign up to the principle that persistent rewards above or below a normal return to effort, skill and risk-taking may indicate unfairness. Illegal pay discrimination, for example, would be a manifestation of such unfairness. In addition, perceptions of fairness may reflect the transparency and openness of processes of pay determination.

Designing indicators for fair determination of wages is, however, complex. The survey investigates discrimination (Q65) but this variable cannot be used because it does not just apply to pay. Rather, it will be suitable for any analyst wanting to focus generally on discrimination. Q77b attempts to capture people's perceptions that they are 'well paid' for the work, but it was not thought that this was sufficiently tightly worded to capture the concept of fairness. The alternative might have been to estimate normal returns to effort, skill and risk-taking and obtain an indicator of unfairness from the residuals – the pay above or below what would be predicted for each individual. While in principle this might work, this method requires very good measures of the determinants of pay, to be sure that the residuals capture unfairness, rather than the returns to some hidden but acceptable factor such as an individual's exceptional talent.

In short, it was not possible to robustly capture the fairness of wages from the data. It is felt that it could be possible in future surveys to ask questions that would validly tap some aspects of unfairness.

Prospects

The concept of *Prospects* is captured through workers' reports about the future continuity and enhancement of the current job, comprising job security and career progression prospects. The first variable for capturing job security is Q77A, the probability of job loss. Second, Q77C captures career prospects. There is evidence that self-reports of the probability of job loss have validity, in that they predict subsequent job loss frequencies (Dickerson and Green, 2012).

As noted above, the prospects of a job are not the same as employment security. Thus Q77E (the ease of getting another similar job) is a crucial variable if the aim is to measure employment security, since it captures the extent to which a person is employable. But it does not capture a positive aspect of the job currently held, except perhaps indirectly in so far as that job might afford opportunities for the worker to gain certain skills and become more employable. Indeed Q77E might even be thought to have a negative connota-

tion for job quality, in that lower-paid jobs might be easier to replace than higher-paid jobs.

Also commonly used as an indicator of the prospects of a job is the nature of the job contract, since this has potential implications for job continuity. An advantage of contract status is that it is relatively easy for workers to report it. The disadvantage for present purposes is that contract status is only a proxy for the concept that the survey was attempting to measure, namely the likelihood of job continuity. Indefinite contracts can be ended more easily in some countries than others. Fixed-term contract jobs are frequently renewed, as are temporary agency jobs. Both the meaning and the legal connotations of contract status can vary between countries. Compared with Q77A, therefore, contract status (Q7) is less satisfactory. Both Q77A and Q7 are workers' reports about job continuity, but Q77A matches the target concept more closely. The salience of contract status extends also to the question of whether the job falls in the informal economy, beyond the reach of national regulation, sometimes leading to a 'vulnerable' state for workers. It is likely that the survey will not have reached some small sectors of highly vulnerable workers. In a significant minority of cases employees reported that they had no contract of employment at all.[7]

There then arises the question of whether to augment the *Prospects* index by contract status, perhaps because that status is *per se* something that contributes to job quality, over and above any implications for job continuity. This was the approach that was taken. An index of contract quality for employees was defined as 1 for an indefinite contract, 0.5 for any form of temporary contract, and 0 for employees with no contract.

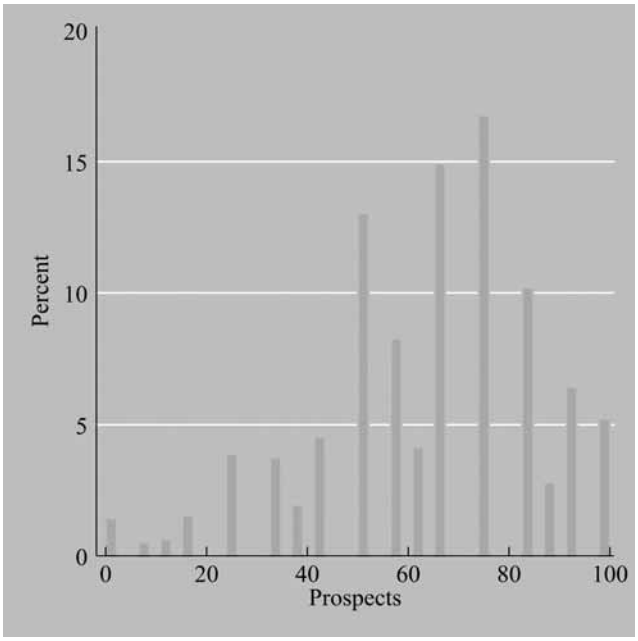
The index used in assessing job prospects averages the multiple ranked responses to job security, career prospects and contract quality. In the case of self-employed workers, the average is formed only from the other two variables.

The distribution of *Prospects* is shown in Figure 2. Unlike the other indices, this one has relatively few data points, but it is quite evenly distributed across the range. More items covering aspects of prospects for jobs in any future survey would help to generate a more finely tuned index.

Intrinsic Job Quality

The research has sought unified indices to capture each of the four aspects of intrinsic job quality identified in Chapter 1,

Figure 2: The distribution of Prospects of jobs



and then aggregated these to generate the *Intrinsic Job Quality* index. Each of the constituent indices is identified, and then the ways in which they were combined is described.

Skills and Discretion

The survey contains some items covering skills use, including task complexity, problem-solving, computer use frequency, employer-provided training, on-the-job training, and learning participation. Computer use indicates the skill of being able to use a ubiquitous new technology in the modern era, and is found in formal studies to be strongly related to other indicators of skill (Green et al., 2003). These items are of considerable value, but do not constitute a full coverage of skill requirements. The items are supplemented, first, by an index of the average education level found in the two-digit occupation into which the job is classified ('AvEd'), normalised to the 0–1 range. This indicator, while not ideal, serves as a proxy for the education level required in the occupation, and is distinct from the person's own education. Second, the classification of the occupation is also used; a dummy variable, equal to 1 if the job is classified in groups 1 to 3 of ISCO_08, and zero otherwise, is included in the index. These two additional indicators help, but they are only proxies for the concepts of interest. Some recommendations are

[7] The category of 'no contract' in the survey is heterogeneous, mixing the informal economy and legal situations where no written contract is requested. Individuals with no contract represent about 8.8% of the data and they have relatively low levels on the four job quality indicators. Three-fifths (60%) of these are men. Also, the majority (61%) work in small establishments of less than 10 workers.

[8] A further item, reporting whether the job involved 'monotonous' tasks, was omitted from the index, even though it might be construed as a rough negative proxy for skill. If included it would have lowered the alpha statistic, and it had by some margin the lowest item-rest correlation (the correlation coefficient between the item and the scale formed by all other items); these suggested exclusion from the index.

made below (Chapter 7) for additional or substitute items that might, in future surveys, help to capture skills-use. The current survey also includes several variables that capture aspects of the worker's discretion, over both the work itself and its timing, which are to be incorporated, given the theoretical association between discretion and skills use. The survey does not include any direct indicators of the level of prior education, training and experience required for each job.

These, then, are the variables, the sum of which are used for the *Skills and Discretion (SD)* index, normalised to the 0–1 range: Q61A, Q61C, Q49C, Q49E, Q49F, AvEd, Q24H, isco_08_1, Q50A, Q50B, Q50C, Q51C, Q51E, Q51I, Q51O.[8] They have a Cronbach's alpha of 0.80, which is considered adequate if the items are thought to capture a unified concept. The resulting index was then normalised to the range 0–100.

Other potential item concerned team autonomy and job rotation. In each of these cases it was found that, if the item was included, the relevant reliability statistic was reduced, and that there was a low correlation with the index formed by the remaining items. It was decided not to include either of them in the *Skills and Discretion* index.

Good Social Environment

This index is comprised of two elements covering social relationships in the workplace, one essentially positive, the other negative, in their contribution to job quality.

The *Social Support* index reflects the need for good social relations with line managers and fellow workers, and draws on the literature that finds the presence of other supportive people in the workplace has direct beneficial effects for welfare; moreover, it moderates the negative impact of stressors. It is built from the following variables: Q51A and Q77E, capturing supportive colleagues and friends; and, for employees only, Q51B, capturing supportive management, and items Q58A to Q58E, which are summed to give a measure of the quality of management provided by a worker's immediate manager or supervisor.

On the negative side, social relations in the workplace can be sour. The survey has several items designed to capture abusive experiences, including verbal abuse, threats and humiliating behaviour, physical violence, bullying and sexual harassment over defined recent periods. Although each of these experiences are thankfully uncommon, it was reasoned that any such detrimental elements detract significantly from the extent to which the job meets needs, and so a non-linear measure was opted for. A 0–1 dummy variable '*No Abuse*' was computed to indicate if any of these items are replied to in the affirmative (0, if all items negative, then 1 if one or more abusive experience had taken place). An alternative approach would be to design a summative index, normalised to 0–1. In practice, this decision makes no great difference to the intrinsic job quality index.

The *Social Support* and *No Abuse* indices are summed to generate the *Good Social Environment* index, which was then normalised to the 0–100 range. This means assigning equal weight to the positive and negative aspects of the social environment. There seemed to be no reason to disproportionately weight either. (Referring to the well-being outcomes to be described below, in Chapter 4, it was found that subjective well-being was slightly more strongly associated with the *Social Support* index, while health problems were slightly more strongly associated with the *No Abuse* index).

Good Physical Environment

The survey contains several items capturing environmental hazards (all of Q23), and several more capturing posture-related risks (Q24 A, B, C, D, E, G). Some other items in Q24 were excluded (interactions with people and use of the internet) which have no unambiguous relationship with needs and welfare; while computer use is included elsewhere. For the rest, the direction of the relationship with environmental hazard, and hence need, is clear.

There is in principle a choice between whether to focus on whether there is any exposure at all to each hazard; alternatively, one could give weight in the index to hazards which are experienced with a high frequency, perhaps more than half, or all of the time. In generating this index, a simple and transparent approach was chosen which more heavily weights exposures which were more frequent. The *Good Physical Environment* index was computed by allocating numbers to the frequency response scale from 0 (all of the time) to 6 (never), and summing the scores from all the posture-related and environmental risk features. The resulting index was then normalised to the 0–100 range.

Work Intensity

A summative index was constructed, labelled the *Work Intensity* index, from Q45A ('working at very high speed'), Q45B ('working to tight deadlines'), Q51G ('You have enough time to get things done'), a count of the number of sources of work pressure (Q46) (normalised to the 0–1 range), and an average of three items reflecting the pressure from hiding emotional/value conflict (Q51L, Q51P and Q24G). The index was normalised to the 0–100 range.

The case of *Work Intensity* illustrates a general point. It was noted in Chapter 1 that effort may have a non-linear relationship with well-being. On the whole, it is regarded as a negative indicator of job quality, but at low levels of work intensity the relationship could be small or even positive. Indeed, some evidence was found of a quadratic

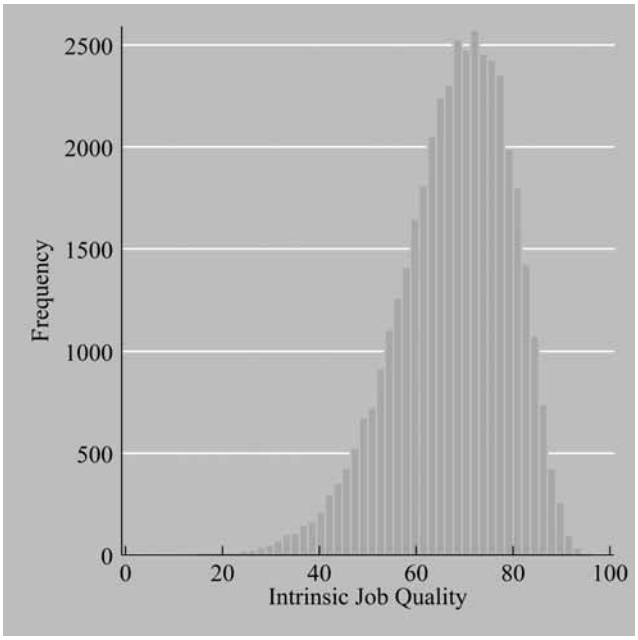
association for some of the indicators used with subjective well-being, consistent with Green (2008). However, feeding asymmetry into the index, for example by taking a threshold for effort, above which it is deemed a negative contribution to work, adds an element of arbitrariness in the choice of the threshold level. It is not practical to generate a transparent and simple quadratic index. A simple 'high-effort' index that captured being in the upper quartile would miss the significant differences between middle and lower quartiles. It is therefore better in this instance to leave analysts the option to conduct their analyses with non-linear combinations of the indices generated from the data, according to the particular problem in hand, while utilising the linear *Work Intensity* index within the overall index of intrinsic job quality.

Overall index of Intrinsic Job Quality

To generate the overall *Intrinsic Job Quality* (IJQ) index, the *Work Intensity* index was first subtracted from 100 to create a positively-contributing index, and this was then aggregated with the other three indices of *Skills and Discretion, Good Social Environment* and *Good Physical Environment*.

Each of the four components were weighted equally in the aggregate index. An alternative approach was investigated which would have involved giving less weight to *Work Intensity*, since it might be argued that most workers' needs are more closely related to the other three aspects than to the pace of work. To do this, an alternative index was first computed that allotted a weight of only 0.1 to *Work Intensity,* and gave a weight of 0.3 to the other indices. This was then compared the levels of *Intrinsic Job Quality* across two-digit industries and across countries. The correlation coefficient was very high: 0.97 in the case of industry, 0.95 in the case of countries. Hence, the impact of the alternative weighting assumption would have been relatively small.

Figure 3: The distribution of Intrinsic Job Quality



The distribution of IJQ is shown in Figure 3. As can be seen, this distribution is somewhat negatively skewed. Most jobs fall within the range of approximately 60 to 85 in the 100-point scale. There are a few very good jobs with scores up in the 90s, and at the other end quite a long tail of jobs with poor intrinsic job quality.

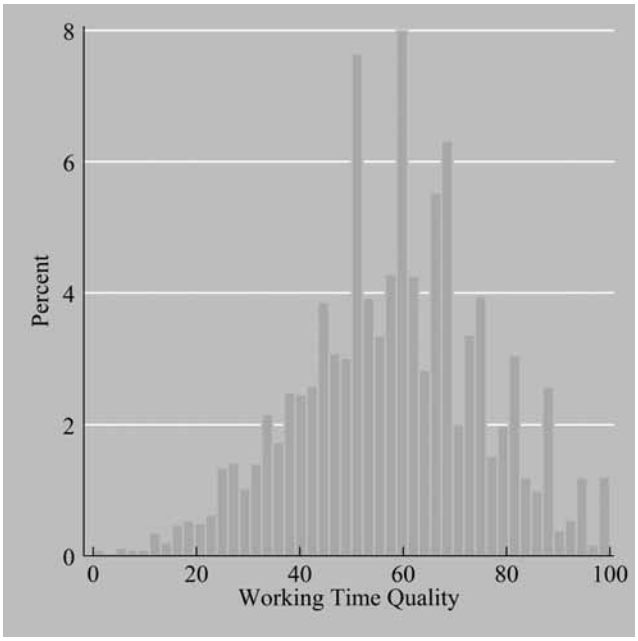
Working Time Quality

As with the other indices of job quality, the focus of work–life balance is on job features, not on the characteristics of individuals doing the jobs. Primarily, the balance to be struck involves time, even though a more complete index might also pick up the provision of other resources such as on-site child care. In practice the relevant available indicators all concern aspects related to time, rather than the availability of services. Hence a *Working Time Quality* index has been constructed comprised of four sub-indices.

The approach taken in Muñoz de Bustillo et al (2011) has been followed for three out of the four sub-indices. This means that sub-indices have been constructed for the duration, conducive scheduling and discretion over working-time arrangements using exactly the same items. The first sub-index is usual weekly hours which is classified as: 0 (48 hours or more), 25 (42 to 47 hours), 50 (38 to 41 hours), 75 (20 to 37 hours) and 100 (under 20 hours).[9] The second sub-index is derived from several items: the number of times a month the worker works more than two hours between 10.00 pm and 05:00 am, classified as 100 (0 hours), 75 (1 to 5 hours), 50 (6 to 10 hours), 25 (11 to 20 hours), 0 (more than 20 hours); the number of times a month the worker works more than two hours between 06.00 pm and 10:00 pm, coded exactly as the second; the number of Saturdays and Sundays worked by the respondent, again both coded in the same manner, 100 (0 days), 75 (1 day), 50 (2 days), 25 (3 days), 0 more than (4 days). Discretion over working time arrangements is coded as follows: 0 (if changes occur regularly and they are set by the company), 25 (if changes don't occur regularly but they are set by the company), 50 (if the worker can choose between several working schedules), 75 (if the worker can

[9] It might be argued that a simple dummy variable for whether the working week exceeds 48 hours would be preferable, given that 48 hours is the threshold for the European Directive on Working Time. However, throughout the range of hours a negative association was found between working hours and well-being indicators, including subjective work-life balance (Q41), supporting the decision of Muñoz de Bustillo et al (2011).

Figure 4: The distribution of the Working Time Quality index



adapt his working hours within certain limit), 100 (if the working hours are determined by the worker).

For the fourth sub-index, this research departs from the practice of Muñoz de Bustillo et al (2011), who input an index of work intensity. In the view of this research team, there is insufficient evidence and justification for including work intensity at this juncture, rather than as an aspect of intrinsic job quality (see above). Rather, the fourth element comes from an important new item in the 2010 survey that captures short-term flexibility (Q43): how easy it is for the worker to take an hour or two off during working hours to take care of personal or family matters. A short-term flexibility sub-index was generated of 0 ('very difficult'), 33.33 ('somewhat difficult'), 66.66 ('not too difficult') and 100 ('not difficult at all'). This and the other three sub-indices are summed with equal weight to give the *Working Time Quality* index.

The distribution of the *Working Time Quality* index is given in Figure 4. It shows a wide variation among jobs according to their ability to afford a good work-life balance.

Additional job features

It is not claimed that the *Job Quality* indices derived in this report are all-inclusive. They do not, and could not practicably, cover every relevant job feature. A judgement has been made, initially at the stage of questionnaire design, on the inclusion of the most important variables. A second stage of judgement is required, however, at the analysis stage. There are some relevant aspects of jobs that do not fit neatly into any of the four indices of this research, and may require to be analysed separately as required. Some other items are not included because they refer, at least in part, to the individual rather than the job.

Discrimination

Discrimination is arguably a significant negative aspect of job quality, even if only a small minority experience it. Q65 refers to perceived discrimination on the basis of seven characteristics. Only a few reported discrimination for each characteristic. A *Discrimination* index was created, being the count of reported experiences of discrimination. Overall, 6.2% of the overall sample said that they had been discriminated against in some form in the last year, with age discrimination the most prevalent.

However, since the items do not specify over what aspects of job quality the discrimination takes place (pay, conditions, or what), it is not possible to use these items to enrich any one of the job quality indices. The discrimination index correlated negatively with all indices, but generally only at a low level, except with the *No Abuse* indicator (at -0.24), and through that with the *Good Social Environment* index at -0.24. One possibility could have been to include discrimination in the *Good Social Environment* index. However, discrimination can just as easily refer to other job quality domains, including pay. It was decided, therefore, to omit these items from this research's indices since it is unclear where to place them. However, the *Discrimination* index could readily be used by those studying this aspect of employment relations alongside the other indices.

Participation and representation

There is a distinction between workers' involvement in decisions that directly concern their own jobs and 'participation' in organisation-level decision-making. The latter can, in turn, entail anything along a spectrum from being informed about organisation-level issues (such as through newsletters) to genuine involvement, perhaps through representation, in organisation-level decisions, through membership of boards.

The questionnaire includes a trio of items about forms of organisation-level participation (Q62, appraisal; Q63, unions; and Q64, meetings), and two more that are unclear about the level of involvement (Q51D and Q51O). The latter two have already been included in the *Skills and Discretion* index. Should the former three be included as part of job quality?

There are two possible approaches to organisation-level participation and job quality. One is to view participation *per se* as something that meets peoples' needs from a job, in which case there should be an indicator for this, which might

be embedded in one of the indices, or indeed regarded as an index in itself. Yet, with only three items (Q62, Q63 and Q64), it is questionable how reliably the nature and extent of organisation-level participation in an index could be captured. Moreover, it is less evident that organisation-level participation is something that is a significant part of many peoples' needs from a job – except in so far as it could be important for securing favourable pay and working conditions. In other words, there will be many for whom involvement in their organisation is important, but for many others this would be at most a secondary concern.

Alternatively one could view organisation-level participation as a means by which people may gain better job quality. One would therefore use the available variables as potential antecedents of job quality. More opportunities to express one's views would thus be expected to be associated with higher job quality.

It has been decided not to develop a separate participation index on two grounds:

- the balance of the arguments is that participation *per se* is not near the top of the hierarchy of most people's needs from work;
- there are in any case too few items for a satisfactory self-contained index.

Subject to other factors, this topic might be a potential area for further development of the survey. It is also noted that more detailed social dialogue indicators encompassing this domain of participation are being developed for the 2013 European Company Survey. It is recommended that consideration be given to deriving a participation index from this more detailed data source when it becomes available.

Other psychosocial risk items

The fifth European Working Conditions Survey contains other questions that have a bearing on the psychosocial risks of work. Already noted are the items covering the demands on one's emotions in the workplace; Q51M: 'You get emotionally involved in your work', and Q51P: 'Your job requires that you hide your feelings'. Researchers could separately analyse these items, but it made no statistical sense to incorporate them into the indices.

Respondents are also asked to say whether they experience stress in their work (Q51N). As would be predicted, this variable is strongly associated with work effort. For those who replied that they 'never' experienced stress, the *Work Effort* index was 30.0, while at the other end of the scale, where they 'always' experienced stress, the index was 57.0. The research takes this as contributing criterion validity to the index. However, 'stress' itself should not be included in the index because it is a variable describing something about the worker's reaction, rather than a feature of the job itself. It is also an ill-defined term whose meaning is thought to be influenced by media attention and by different cultural milieu.

On the positive side, there are items covering the subjective feeling that work is meaningful and fulfilling (Q51H and Q51J). These items are, similarly, reports of subjective feelings arising from work, rather than specific job features that could be included in the indices. As predicted, however, both items show a strong correlation with the *Intrinsic Job Quality* index. Thus the *Intrinsic Job Quality* index ranges from 54.1 ('never gives you the feeling of a job well done') to 72.6 ('always gives you the feeling of a job well done'); and from 55.9 ('never') to 72.3 ('always'), in respect of the feeling of doing useful work.

Criterion validity of the indices

Relationship to well-being

The job quality indices, if they are valid, would be expected to be associated individually and collectively with well-being in the workplace. This is quite different from conceptually equating job quality with well-being. Rather, the concepts and indices for job quality were arrived at through a consideration of needs. However, it is a reasonable presumption that the satisfaction of needs will in most cases and on average be experienced as increased well-being. If an index is not related to well-being in the direction expected, one would not necessarily reject the index, but it would warrant further investigation and alternative sources of validation. Hence, one way of evaluating validity is to test the hypothesis that the job quality indices are related positively, as expected, to health and subjective well-being. While the details of this relationship are considered below in Chapter 4, it can be summarised in advance that all four indices have the expected relationships with well-being.

Relationships to socioeconomic variables

For some categories of socio-economic variable, most notably occupational class, there are clear prior expectations about how they are related to job quality. It would be expected, for example, that job quality is higher in managerial and professional occupations than in manual occupations. This finding is confirmed in the descriptive analyses which are presented below, in Chapter 3.

Other routes to assessing criterion validity of specific indices

Some of the indices can be given further validity tests within the data. Consider the case of *Prospects*, for example, which contains job insecurity. The latter is expected, from previous studies, to be broadly related to aggregate unemployment rates at the national or regional level (Green, 2009). It would therefore be expected that job security and hence *Prospects,* is rather lower where the unemployment rate in the local environment is higher. It was found that the correlation coefficient across countries between average job security and the unemployment rate was -0.41; the correlation coefficient across countries between average job security and the unemployment rate was -0.34, also statistically significant. It appears that, in this dataset as in others, self-reports of high insecurity reflect the reality of insecurity in conditions of high unemployment.

Potential external routes to criterion validity

The indices and some constituent items could also be validity tested using external sources, by matching against these sources at country or industry level. For example, the earnings index could be validated against other sources of wage data aggregated to country level; or within countries at industry level. For this purpose it would be necessary to exclude self-employment.

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CHAPTER 3

Job quality and well-being

Job quality and well-being

If job quality is a measure of the extent to which the features of jobs meet people's multiple needs from their work, and if the satisfaction of needs results in subjective feelings of well-being, one could expect to see some relationship between job quality and the subjective well-being of workers. To fully understand this relationship, it would be necessary to go beyond the scope of this report, and to take into account other sources of well-being from outside the workplace, as noted in Chapter 1. If possible, any study should also take consideration the possibility of a reverse causation mechanism whereby people with certain dispositions or who experience high well-being gravitate to jobs with distinct features. Nevertheless, it is of interest to investigate the associations between job quality and well-being. Is there a positive relationship between well-being and each of this study's four distinct domains of job quality when considered together, even after controlling also for basic demographic variables?

Table 2 presents the results on the regressions of the four well-being indices on the job quality indices and other controls of this research. The dependent variables are as follows.

- Number of Health Problems: this index of subjective well-being is an additive variable that was constructed using question Q69 (over the last 12 months, did you suffer from any of the following health problems?). The question accounts for 14 different health problems; and the mean number of health problems in the sample was 2.9.

- Health Issues Caused by Work: this variable was constructed using question 67 (Does your work affect your health or not?). It has three categories (Yes positively, Yes negatively, and no). This variable was recoded into a binary variable, 'yes negatively' was given the value of 1 and 'yes positively' and 'no' were given the value of 0, with 25.3% reporting a negative effect.

- Subjective Well-being: this index was created using question E4, the WHO-5 index (Please indicate for each of the five statements which is the closest to how you have been feeling over the last two weeks: A- I have felt cheerful and in good spirits, B- I have felt calm and relaxed, C- I have felt active and vigorous, D- I woke up feeling fresh and rested, E- My daily life has been filled with things that interest me). For each of the statements, the respondents had 6 choices starting from 'at no time' through to 'all of the time'. The index was created by averaging all the variables, and normalised to the 0–100 range, with a mean of 65.4 and a standard deviation of 20.8.

- Subjective Work-Life Balance: this index was created using question Q41 (In general, do your working hours fit in with your family or social commitments outside work very well, well, not very well or not at all well?). This variable was recoded into a binary variable with 'very well', and 'well' forming one group (value 1) and 'not very well' or 'not at all well' forming the other (value 0). The proportion in the latter group was about one in five (19.5%).

- Meaningfulness of Work: this is a summative index that was created by adding two questions Q51H (Your job gives you the feeling of work well done) and Q51J (you have the feeling of doing useful work). Each of the questions had a scale of four points going from never to always. The additive variable is on a scale of eight points, with 36.1% reporting the top level of most meaningful work.

The independent variables are *Earnings, Working Time Quality, Intrinsic Job Quality, and Job Prospects.* It should be noted that these four indices were divided by 100 to reduce their scale and make interpretation easier. The controls are gender, age and the square of age.

The regression methods vary according to the nature of the dependent variables. For subjective well-being and meaningfulness of work, ordinary least squares regression was used because both are approximately continuous variables. For the number of health problems, a Poisson regression was used because it is a count variable (it has a Poisson distribution). For health issues caused by work and subjective work-life balance, a probit regression was used because the two outcome variables are binary. Before interpreting the results it is worth noting that all controls have a significant effect on the outcome variables. Furthermore, the inclusion of these controls does not cause any loss of significance on the coefficients on the job quality indices.

The main finding to note is that, in almost all case, each index has a significant association with the health or well-being outcomes. The only case where there is no association at all is the effect of earnings on health issues caused by work; besides this, the effect of *Working Time Quality* on the number of health problems is only significant at the 10% level, which means that it is possible that there is no relationship. Otherwise, all coefficients are significant at a high level. Taken together, this expected finding provides some 'criterion validity' for the indices.

The magnitudes of the relationships with well-being vary a lot, and in many cases are quite small. Nevertheless, the effects are greatest where expected. For example, *Working Time Quality* has the greatest effect on Subjective Work-Life Balance, while *Intrinsic Job Quality* has the greatest effect on Subjective Well-Being. To illustrate the latter case, suppose that there were a rise of 10 points in *Intrinsic Job Quality*; this would, other things being equal, raise Subjective Well-Being by 3.5 points. The higher importance of *Intrinsic Job quality* is also shown for the Meaningfulness of Work and for the Number of Health Problems.

Table 2: Regressions of the well-being indicators on the four job quality indices

	Number of Health Problems	Health Issues Caused by Work	Subjective Well-being	Subjective Work-Life Balance	Meaningfulness of Work
Earnings/100	-0.00338	-0.000252	0.113	-0.0106	-0.00844
	(0.000)	(0.805)	(0.000)	(0.000)	(0.000)
Working Time Quality/100	-0.0709	-0.614	6.483	2.615	0.317
	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)
Intrinsic Job Quality/100	-2.101	-3.403	35.32	1.777	4.307
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Job Prospects/100	-0.207	-0.257	15.684	0.558	1.038
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Male	-0.161	0.0647	3.288	-0.0483	0.0646
	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)
Age	0.0267	0.0643	-0.975	-0.0342	0.0231
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age^2 *	-0.000181	-0.000627	0.00945	0.000437	-0.000144
	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
Constant	1.993	0.673	47.096	-1.286	2.120
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	34924	33788	34849	34726	34391

** Age^2 is a quadratic term that reflects nonlinearities in the effect of age on the different well-being indicators.*
Note: p-values are in parentheses

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CHAPTER 4

Gender and **socioeconomic** characteristics

Gender and socioeconomic characteristics

In this chapter descriptive statistics are used to show how the four indices – *Earnings*, *Working Time Quality* (*WTQ*), *Intrinsic Job Quality* (*IJQ*), and *Prospects* (*PR*) – vary across socio-economic groups. The aim is to present a picture of which groups experience better or worse job quality, according to each of the four indices.

Gender

Gender differences in aspects of job quality, not only in respect of wages, but also concerning various other aspects of jobs, are especially relevant to an evaluation of progress towards the principle of gender equality (Smith et al, 2008). Figure 5 presents the means for each index, across all 34 countries in the sample, according to the sex of the worker. The means are weighted to take account of sampling probabilities, and of the relative size of the populations of the different countries. It shows that, consistent with many other studies, on average men have higher monthly earnings than women. The gender monthly pay gap is approximately 23.8% of men's monthly pay. In terms of the *Working Time Quality* index, women have a greater value. Interestingly, on closer examination this is a reflection of the fact that women on average work shorter hours, and less frequently on shift work during non-standard hours; it does not come from having more flexible working hours arrangements than men. Women also enjoy a slightly higher level of *Intrinsic Job Quality*, which on closer inspection comes from working on average in somewhat better physical environments. Finally, *Prospects* is almost the same for men and women. Underlying this finding is a balance. As might be predicted, the jobs that men hold score more highly in terms of prospects for career progression. However, they score somewhat less well in terms of job security and of the quality of their contract status.

The detailed tables on which Figure 5 and subsequent charts are based are given in the annex. In order to facilitate more detailed comparisons of job quality by gender, the annex presents tables both for all workers combined (as reflected in the charts) and for men and women separately.

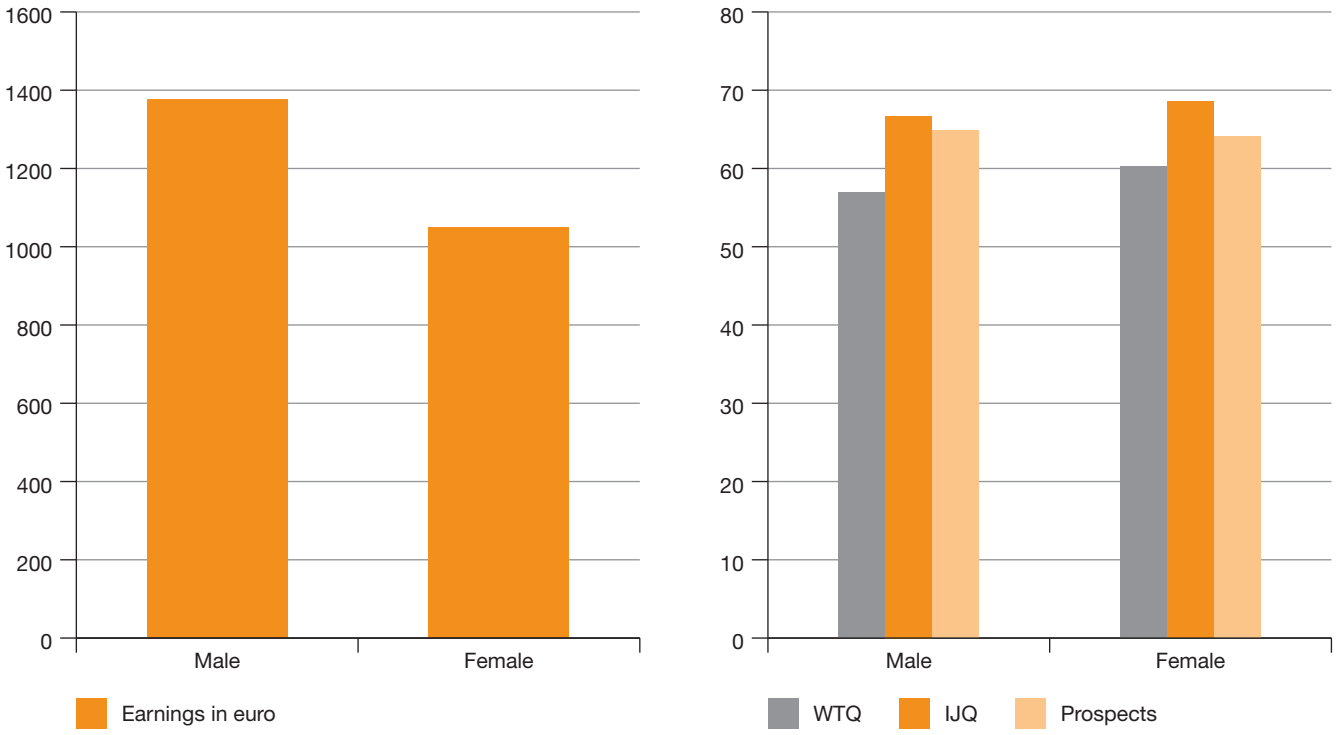
Education

Figure 6 shows that both *Earnings* and *Prospects* are increasing with the level of education. This is to be expected since education is very important in opening up access to better jobs. The relationship of *Working Time Quality* with education, however, is less steep, being flat at the middle-to-lower end of the spectrum, and even negative for those few (0.5%) with only pre-primary education. Note that *Intrinsic Job Quality* was not included in this chart since this index contains a measure of education; nevertheless, a key ingredient of *Intrinsic Job Quality* is *Good Physical Environment*, and this is also positively strongly correlated with education.

Age

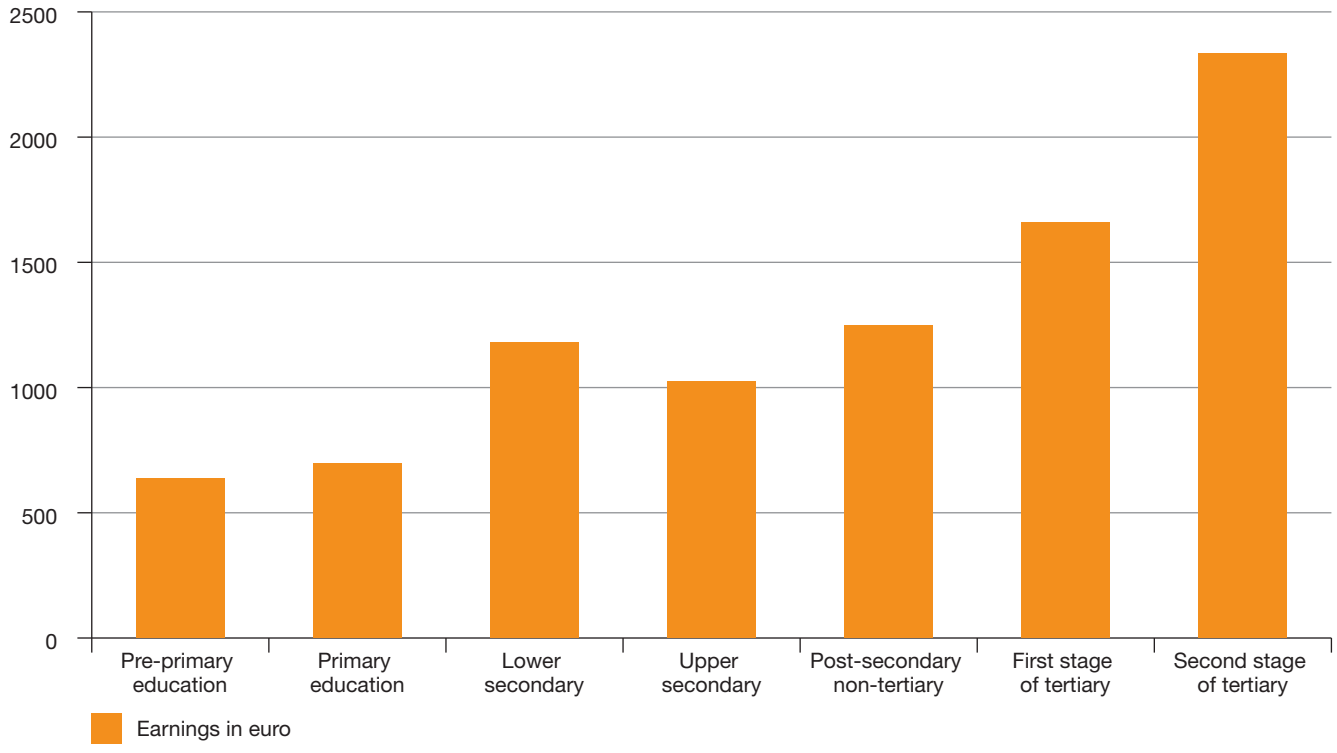
Figure 7 shows that, as expected, earnings increase with age faster in the first part of a working life than in the second. This is a very common finding from very many studies of varied samples of workers from around the world. Second, the *Working Time Quality* index also increases with age. This may be an indication that job features are adjusted to meet varying needs during an individual's working life. Third, the *Intrinsic Job Quality* index increases with age, but not by a great deal. Finally, *Prospects* have no clear relationship to age.

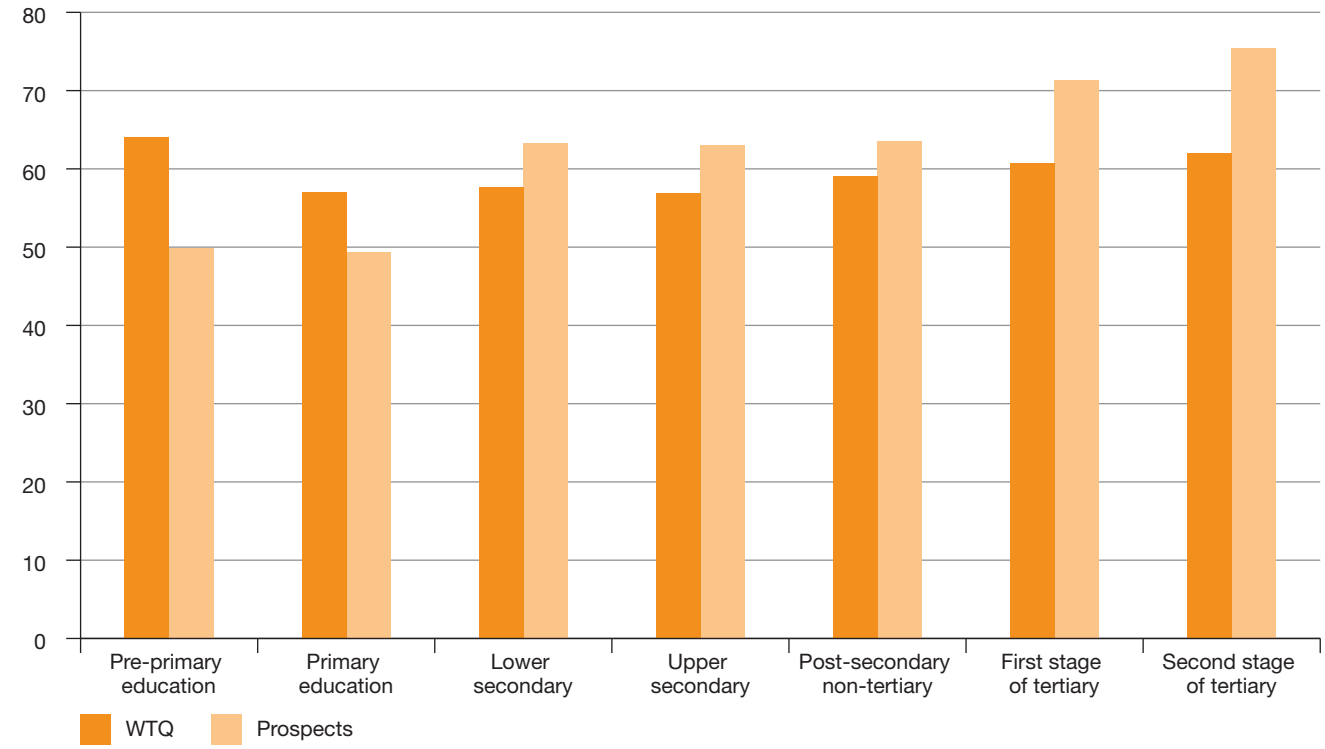
Figure 5: Average job quality indices by gender



Source: Table A1.

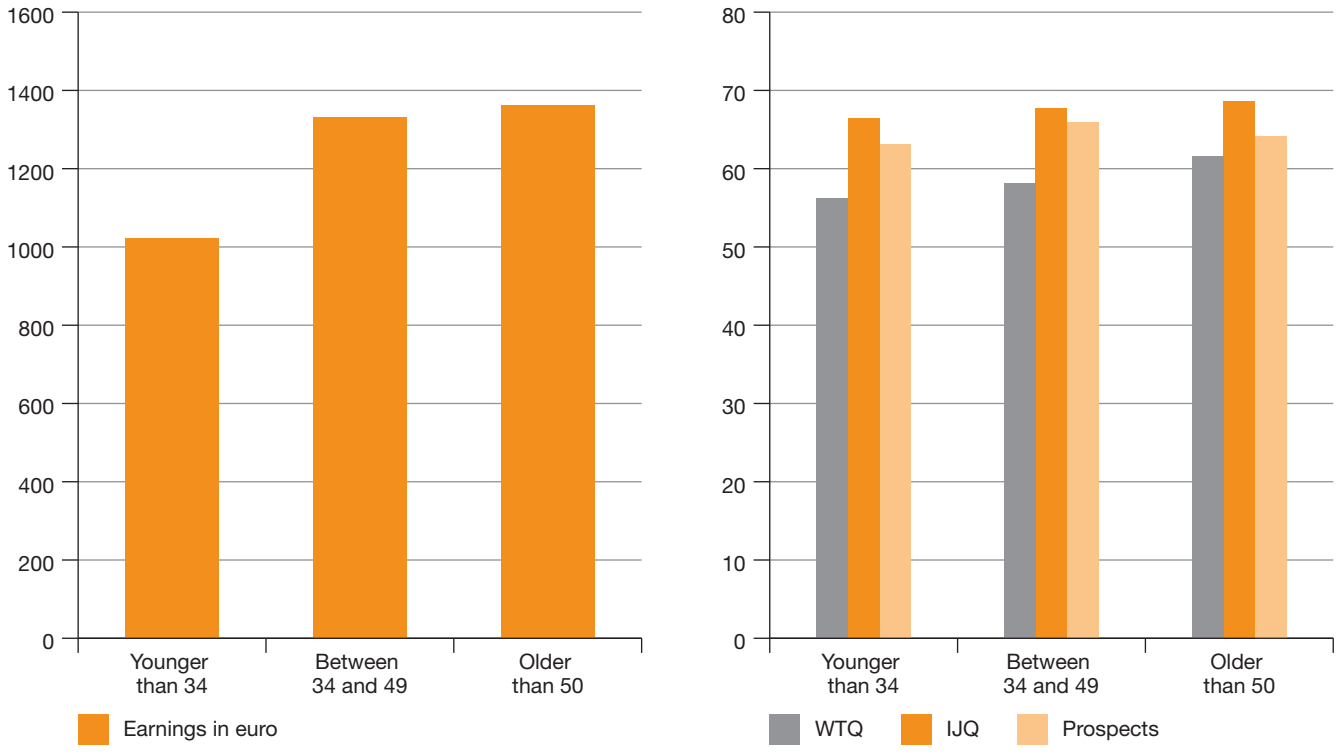
Figure 6: Average job quality by level of education





Source: Table A2.

Figure 7: Average job quality by age



Source: Table A3.

Occupation

When the averages are computed by occupation, as shown in Figure 8, professionals and managers have higher earnings than clerical, agricultural, and craft workers, as would be expected. Professionals and managers also have higher *Prospects* than workers and machine operators. However, the ranking of occupations according to *Working Time Quality* is very different. For example, the highest ranking occupational group according to this index is skilled agricultural, forestry and fishery workers.[11] It remains the case that, apart from sales and service workers, as a whole the non-manual occupations score better for *Working Time Quality*. However, across the occupations there is a low rank correlation coefficient between *Working Time Quality* and either *Earnings* (0.13) or *Prospects* (0.08).

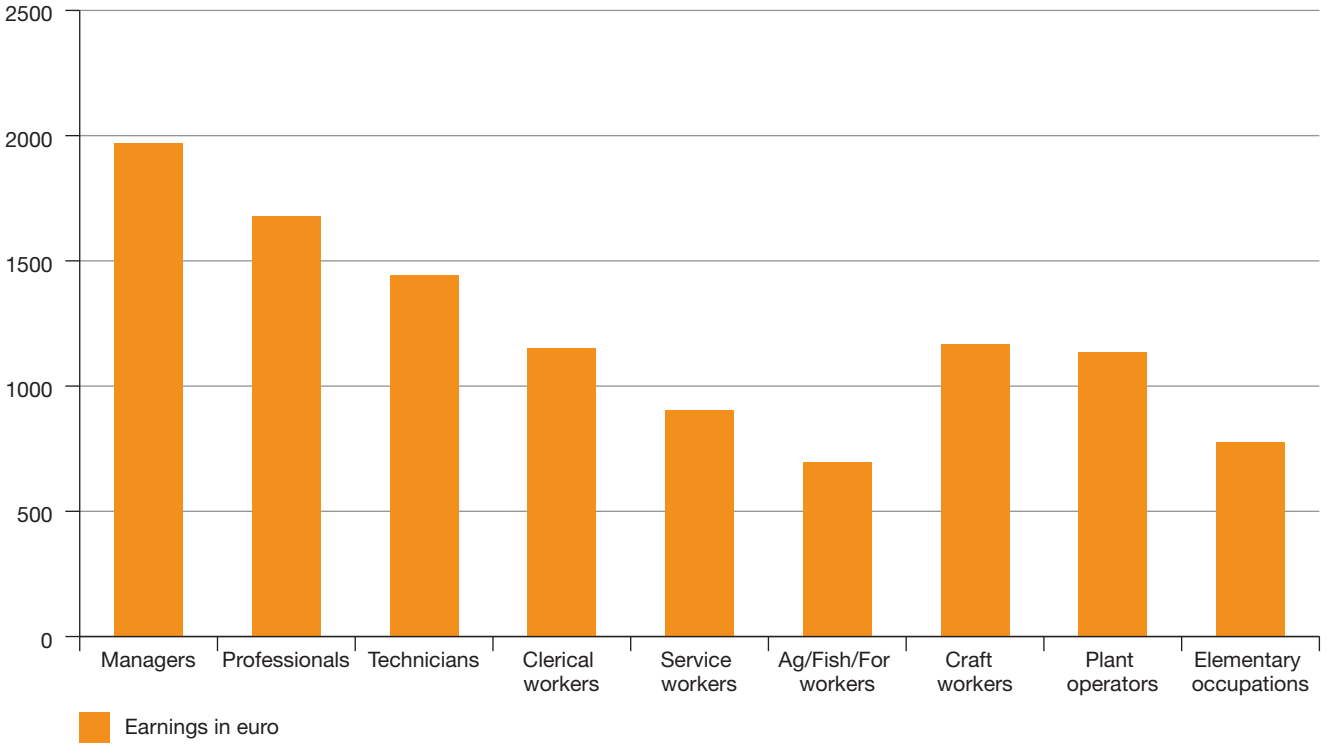
Industry

It has been widely found that wages in Europe vary across industries, and that the differences exist even among otherwise similar groups of workers (Magda et al, 2011). Figure 9 shows how the four job quality indices vary across industries in Europe. Those working in the sectors of information and communication, or in finance and insurance are highest ranked on most indices, while those in public administration are among the ones with the highest job *Prospects*. In contrast, those working in agriculture, forestry and fishing have the lowest values on two of the indicators. Yet the ranking across industry by *Intrinsic Job Quality* is only moderately correlated with the *Earnings* ranking (a coefficient of 0.43). *Working Time Quality* is not highly correlated with the rankings of either *Earnings* (0.17) or *Prospects* (0.03).

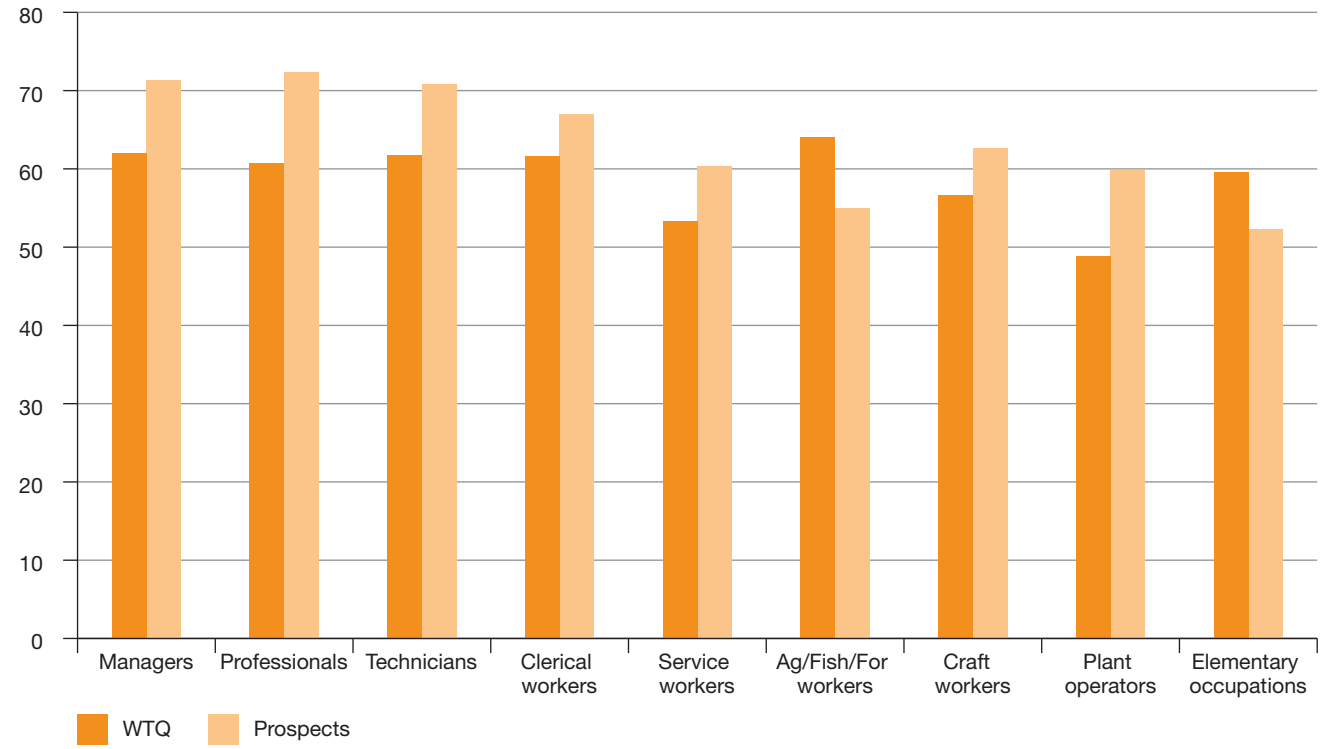
Sector

When the averages are computed by ownership type, the findings are varied (Figure 10). The public sector offers the highest *Prospects* while it comes second in terms of *Earnings* and *Intrinsic Job Quality*, and third in terms of *Working Time Quality*. In contrast, the private sector offers the lowest values in all domains, though in terms of *Earnings* it is equal lowest with the not-for-profit sector. It should be recalled, however, that these averages do not reveal the large variation within each category; there are of course very many private sector jobs with high levels of job quality, and also many poor-quality jobs in the other sectors.

Figure 8: Average job quality by occupation

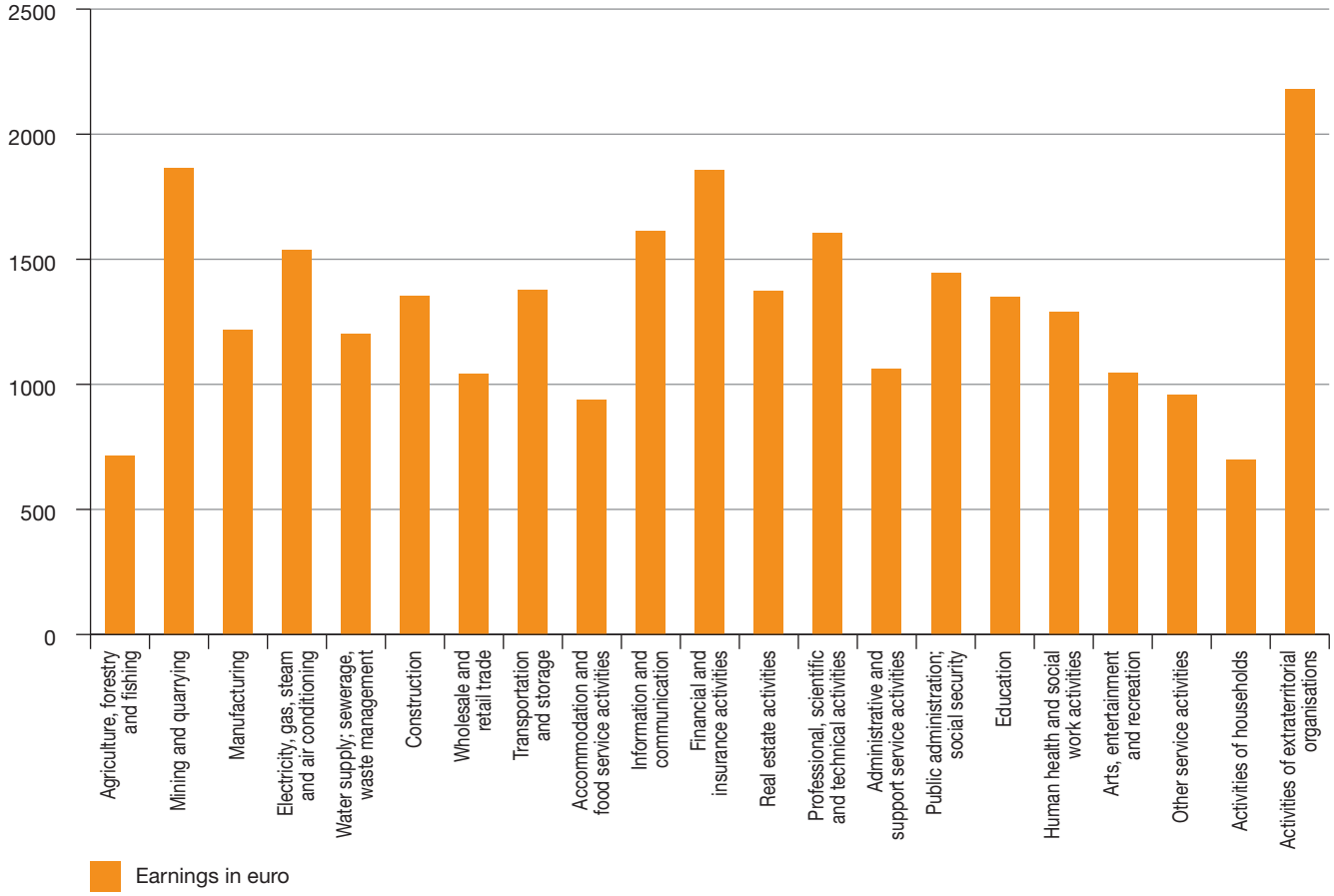


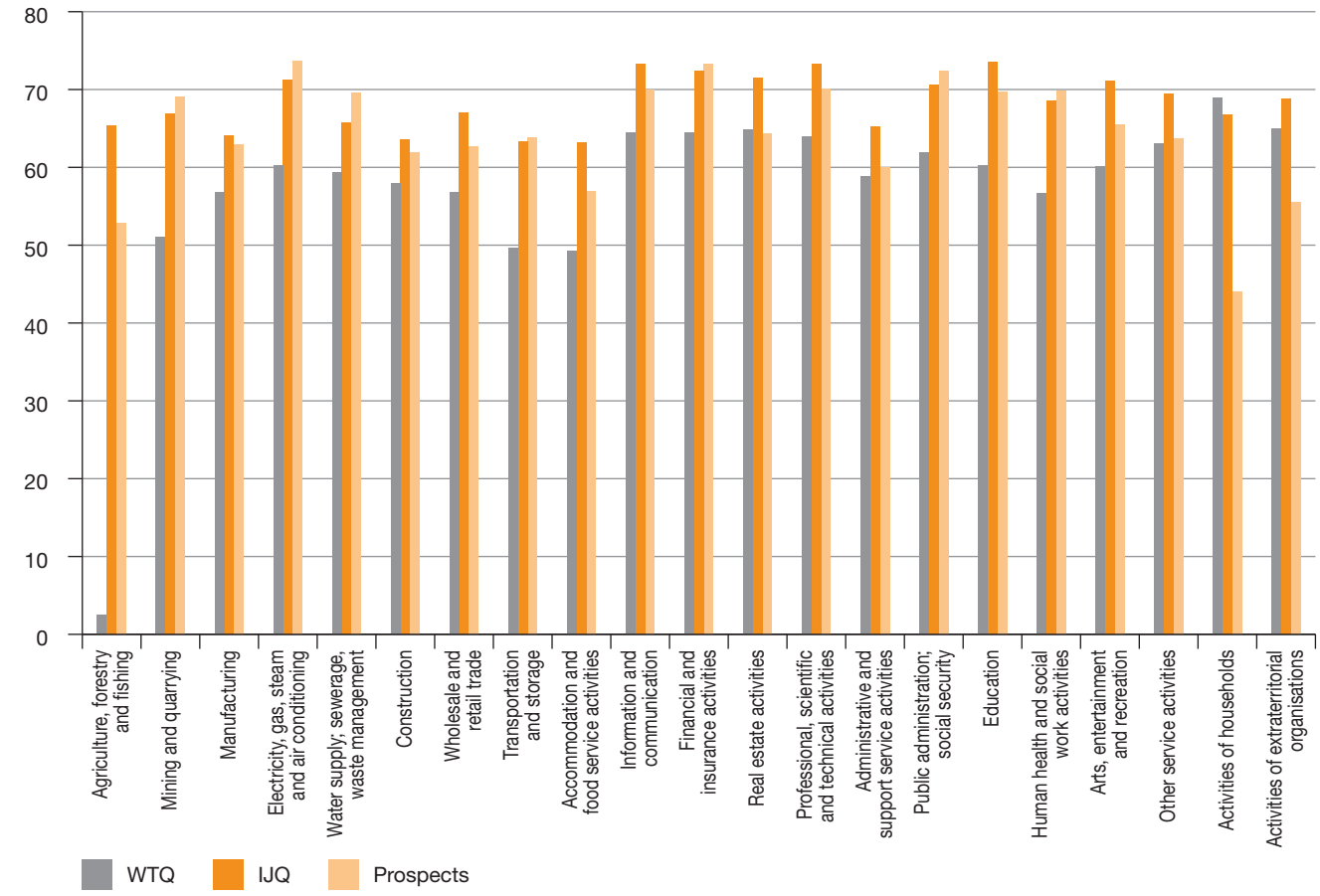
[10] Note that *Intrinsic Job Quality* was not included since there is a measure of occupation within the index.



Source: Table A4

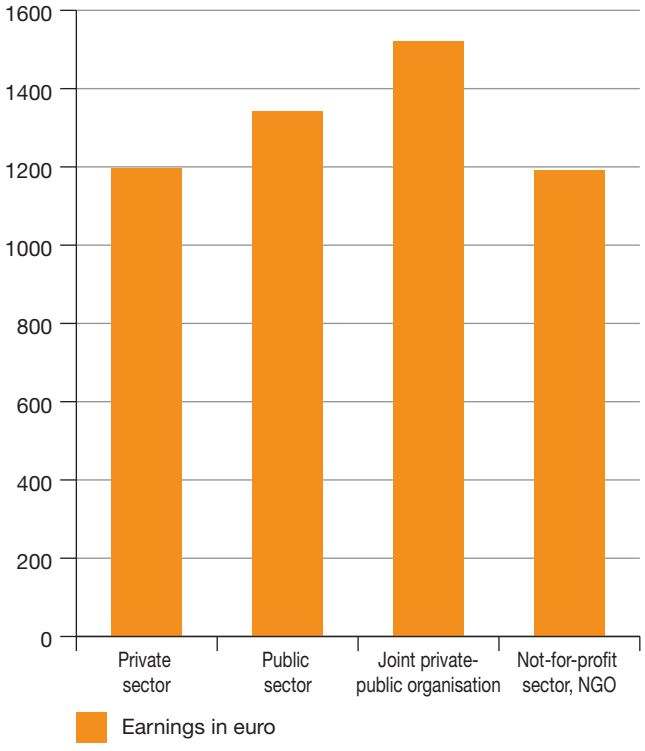
Figure 9: Average job quality by industry

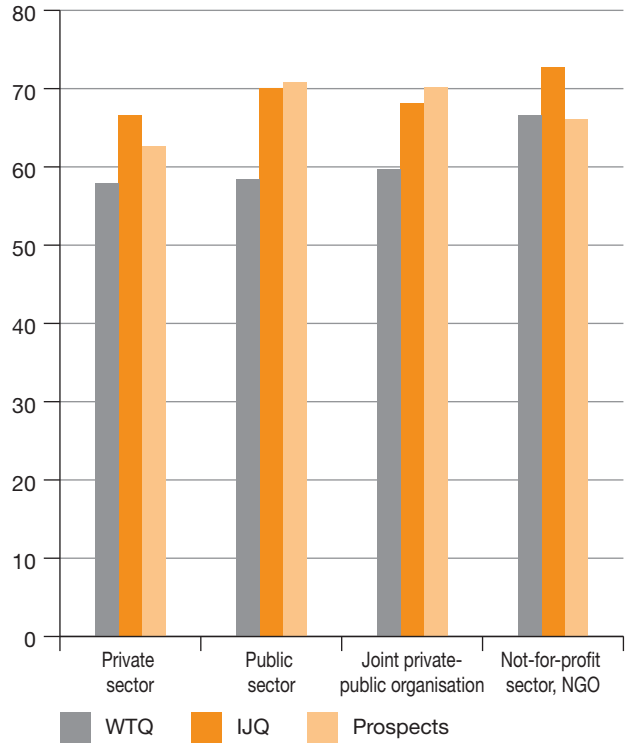




Source: Table A5

Figure 10: Average job quality by ownership type





Source: Table A6

Establishment size

Figure 11 examines how the job quality domains vary across establishments of different sizes, as measured by the numbers of employees. It is commonly found that wages increase with firm size and with establishment size, and there are several explanations for why this happens (Green et al, 1996). One possible explanation is that low earnings in smaller establishments are compensated by other job features that might be better than in larger establishments. As can be seen in the EWCS5 data, *Earnings* in establishments with more than 49 employees are substantially higher than those in smaller establishments. However, the *Prospects* index also increases with the size of the establishment in which one works, while the *Intrinsic Job Quality* index has very little relationship with size. It is only with the *Working Time Quality* index that the relationship with establishment size is reversed, this being highest for firms with under five employees.

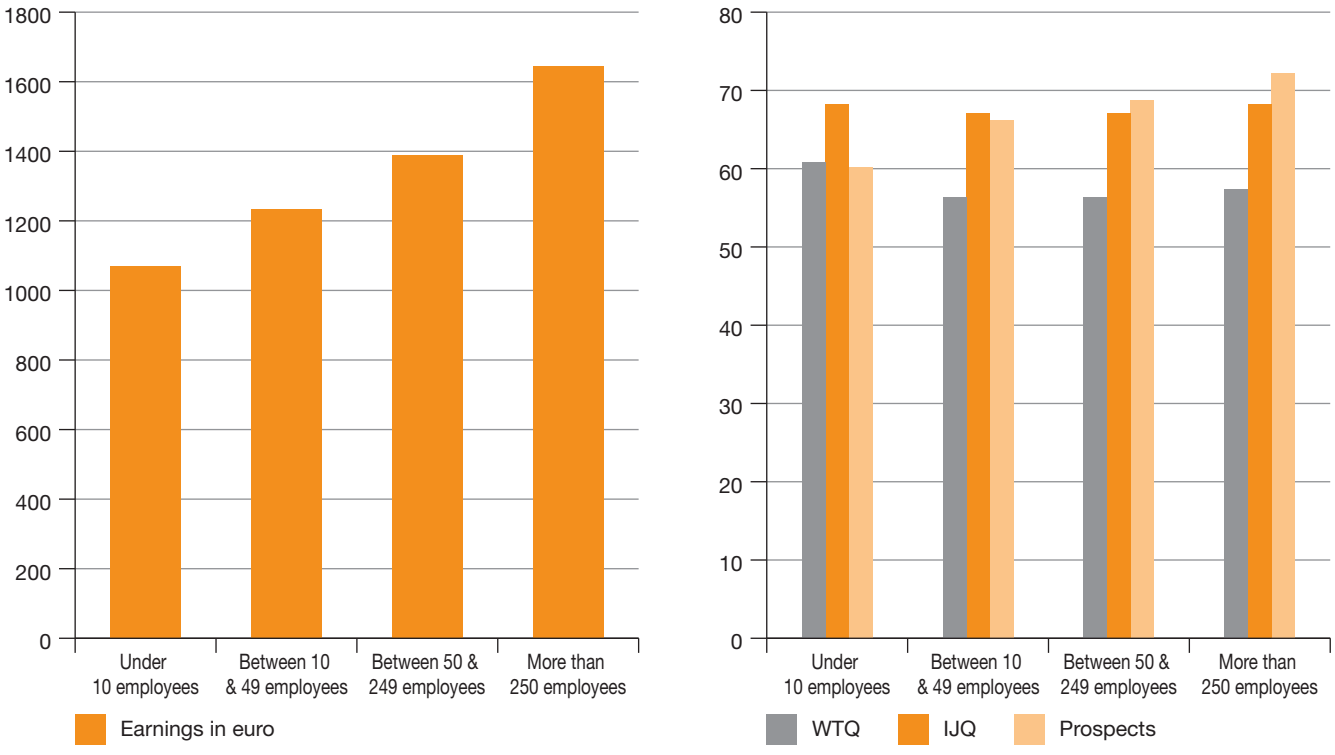
Type of employment

When it comes to the type of employment, the self-employed with employees have the highest level of earnings (Figure 12). This happens because they are more likely to be the managers of a small or medium-sized company. In contrast, the self-employed without employees have lower earnings yet a higher *Working Time Quality* index. On closer inspection, this latter advantage is due to flexibility in the management of their work, not to their having fewer work hours or less shift work. A substantial body of research in individual countries in Europe has found that various dimensions of job quality are lower in jobs with 'atypical' and 'non-standard' job contracts (for example, Olsen, 2006), and this finding is echoed here. Those employed on an indefinite contract have relatively high values on most of the indicators, while those employees with fixed term or temporary contracts have lower job quality on all dimensions.

Cross-country differences

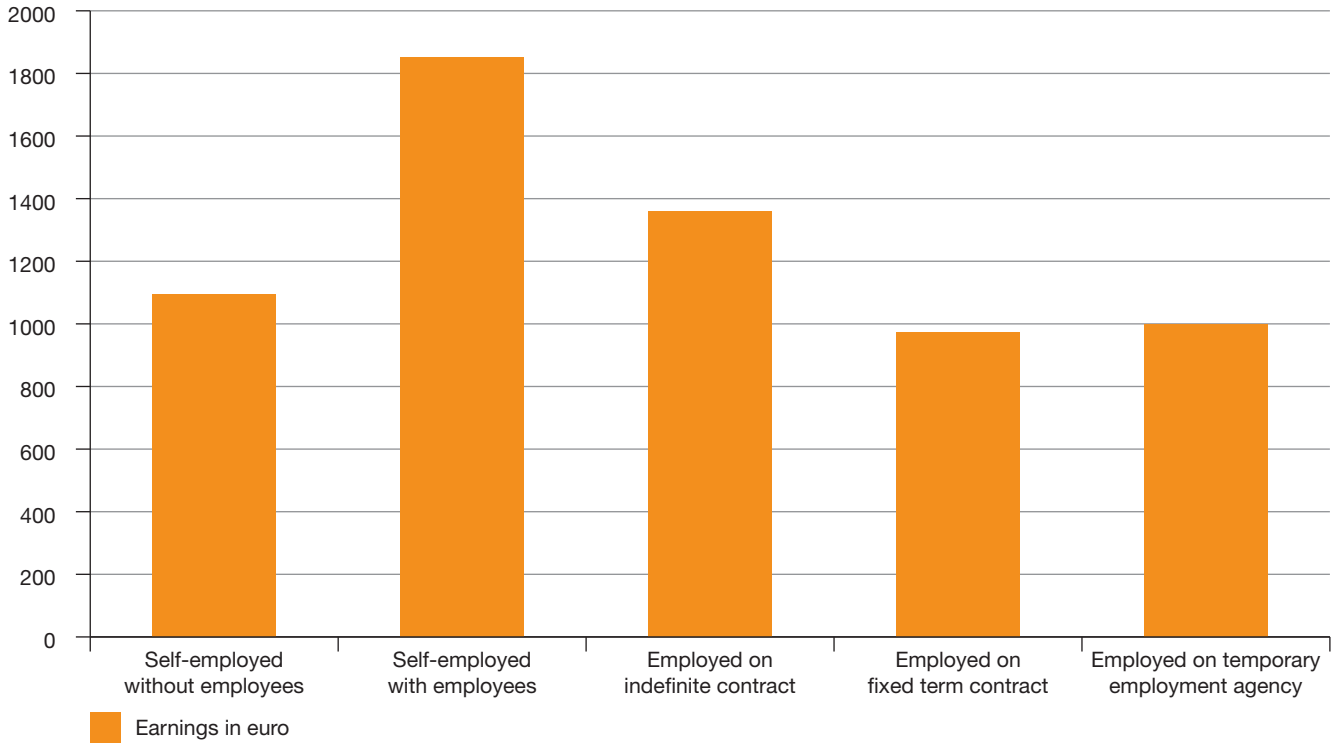
In all the above analyses, the job quality indices were described for the whole sample of 34 countries. Some previous research on aspects of job quality in Europe has found considerable variation across countries (European Commission, 2008; Gallie, 2007), and now this research examines differences between countries in the 2010 survey. Such differences are of interest in themselves, but it needs to be recalled that countries are at different stages of development, and have varying industrial structures. Since, as seen in Chapter 4, the job quality indices vary considerably across industries, differences between countries might emerge as

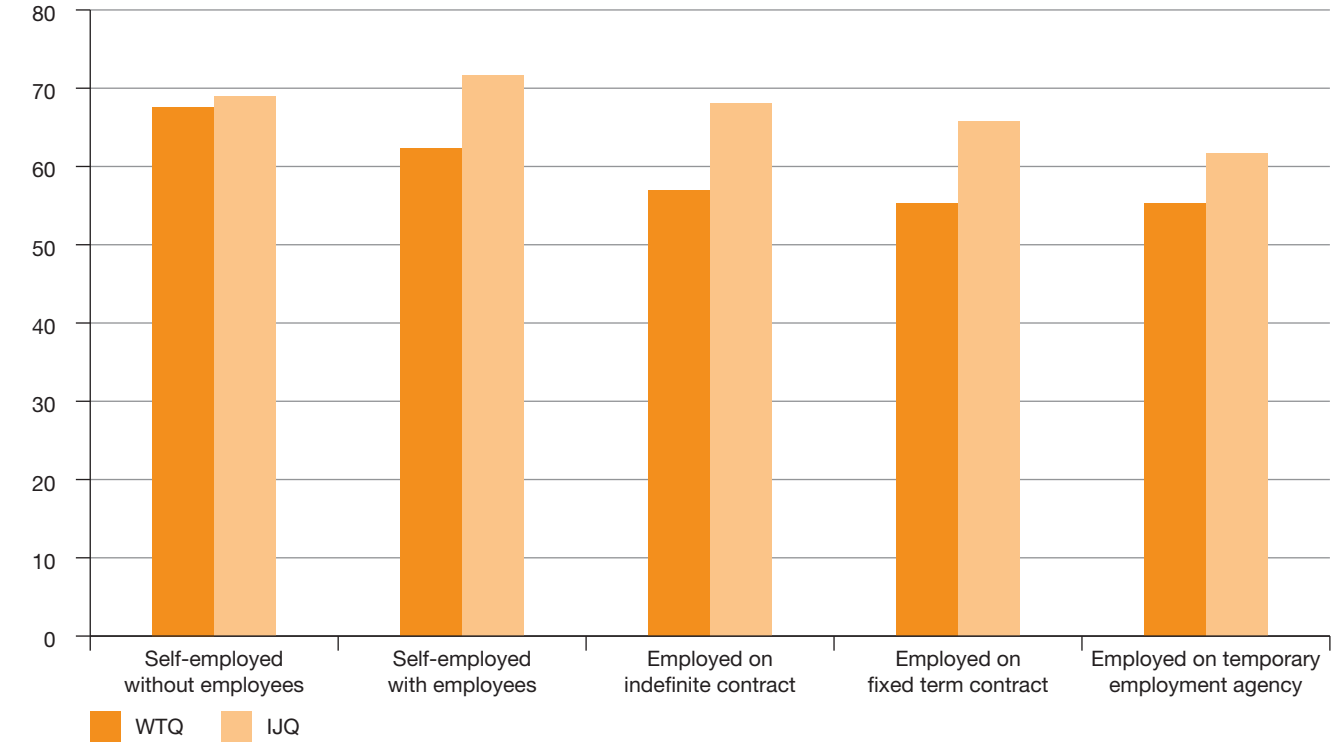
Figure 11: Average job quality by establishment size



Source: Table A7

Figure 12: Average job quality by type of employment





Source: Table A8

a result of this varying industrial composition, rather than because of differences within the same industries.

Figure 13 therefore presents, for each job quality index, the differences between countries, both 'in the raw' – that is, without making any allowance for the varying industrial structures – and after controlling for the industrial composition. For each index, the first bar (labelled 'Without Controls' presents the raw differences of every country compared to the lowest-ranking country (which differs according to the index). The second bar (labelled 'With Industry Controls') gives the differences compared to the same country, after controlling for industrial composition.

The estimates were obtained from regressions of the job quality indices on country and industry dummy variables. Two regressions were carried out for each index. In the first, only country dummies were included, and the coefficients are the raw differences between every country and the lowest-ranking country, presented in the diagram. In the second regression both country and industry dummies were included; the country differences after controlling for industrial composition are then revealed by the regression coefficient on the country dummies in this second regression.

The initial point to note about Figure 13 is that the raw cross-country differences are close to the differences after controlling for industrial composition, for all four indices. This indicates that the industrial structure of each country does *not* account for much of the difference in the four indices.

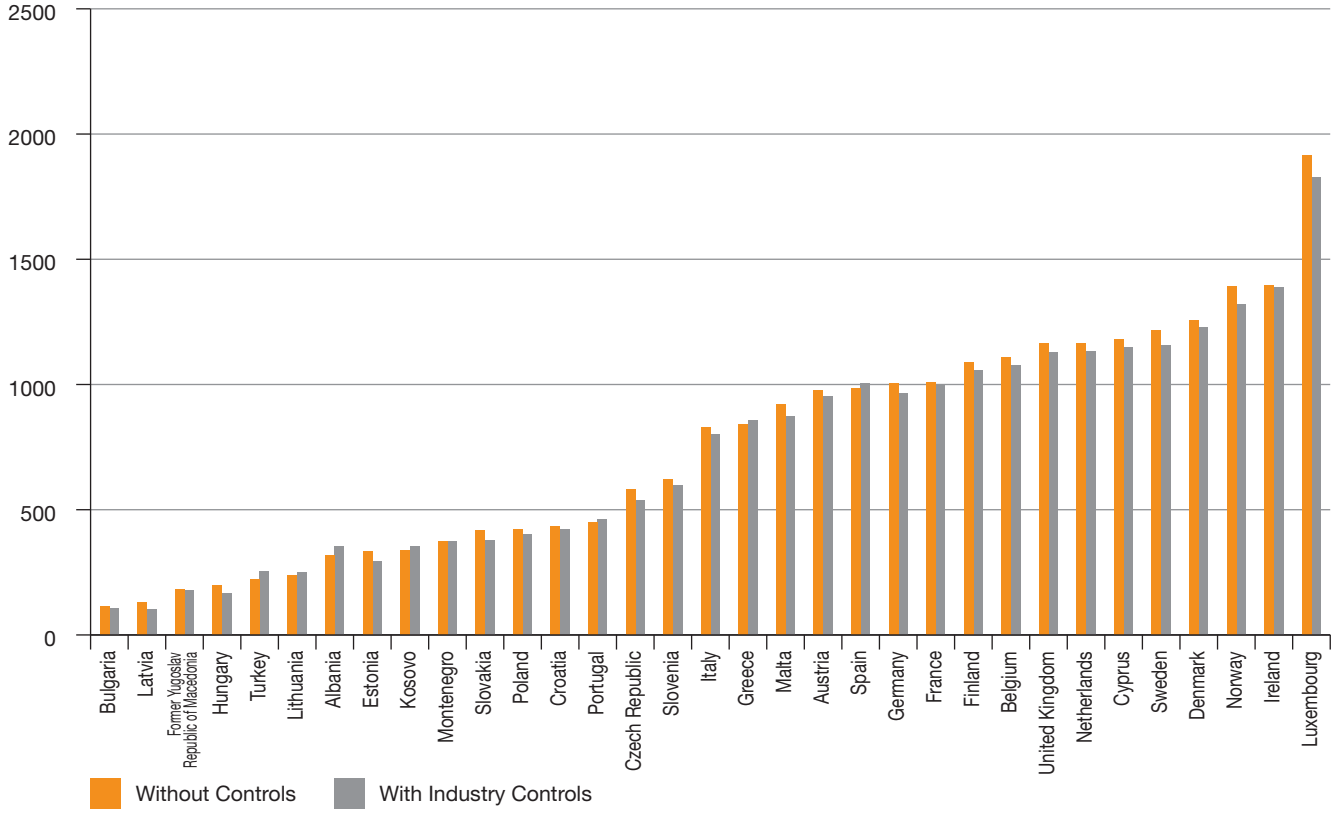
One general pattern that can be observed is that the job quality in most cases is lowest for east European countries and highest for the Nordic countries. Western European economies are middle ranking. Note that France and Germany have a very low ranking on *Intrinsic Job Quality*.

Looking, then, at the raw differences of job quality across countries, some general patterns can be observed. As has been found in previous cross-national comparisons of particular aspects of job quality, the Nordic countries are in general highly ranked according to all the indices, as are the United Kingdom and the Netherlands. Denmark, for example, is ranked highest in terms of *Intrinsic Job Quality* and *Prospects*, third for *Earnings,* and second for *Working Time Quality*.

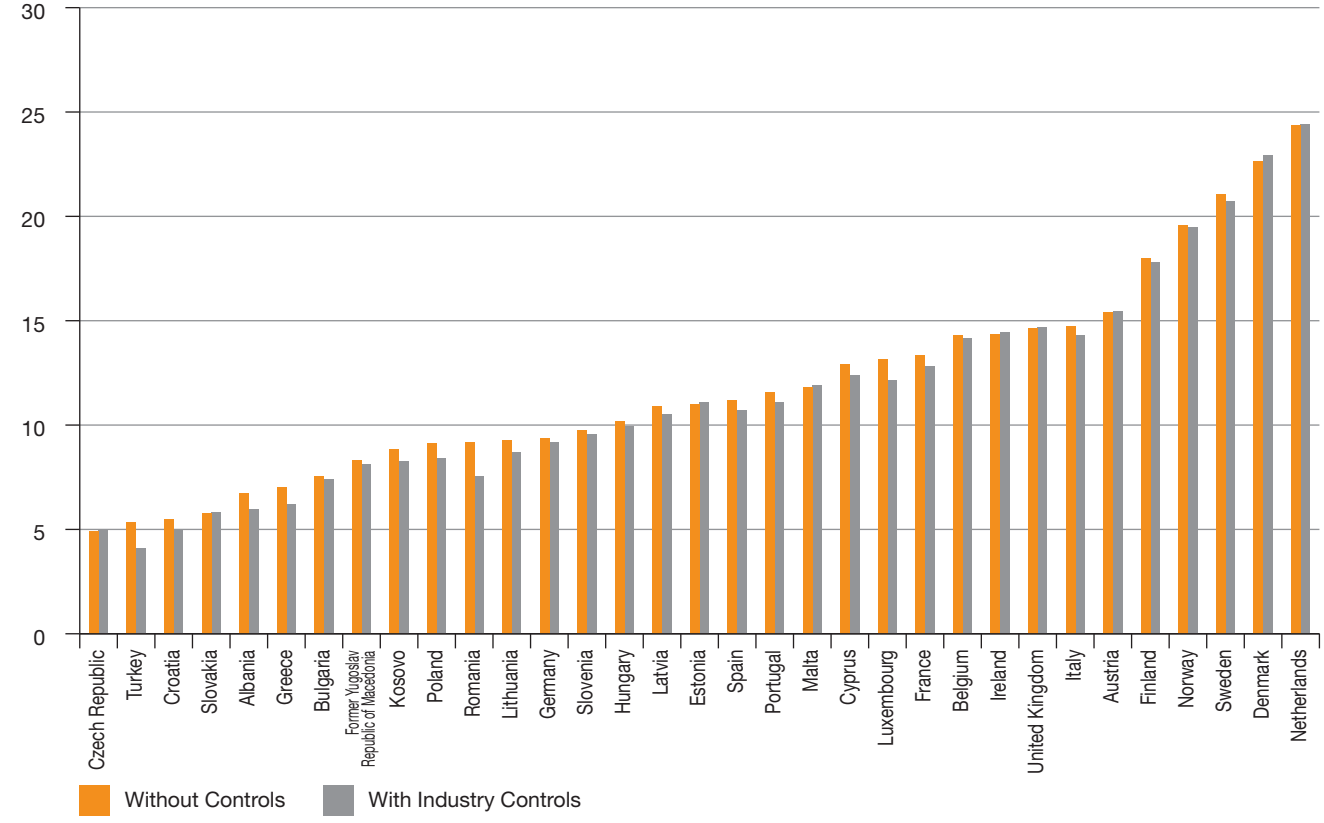
In part these high rankings can be seen as a reflection of a high standard of living, as measured by GDP per capita,

Figure 13: Cross-country differences in average job quality

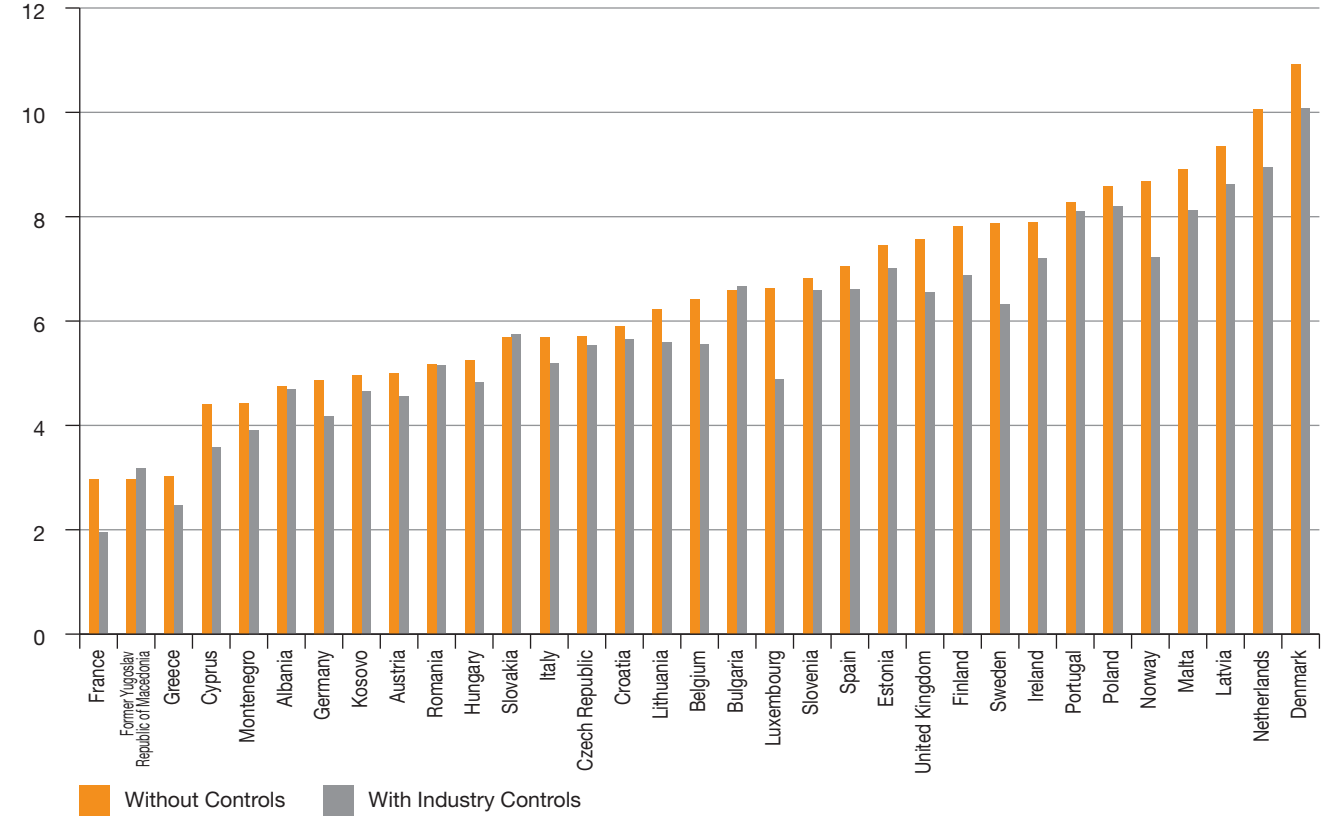
a) Earnings (relative to Romania)



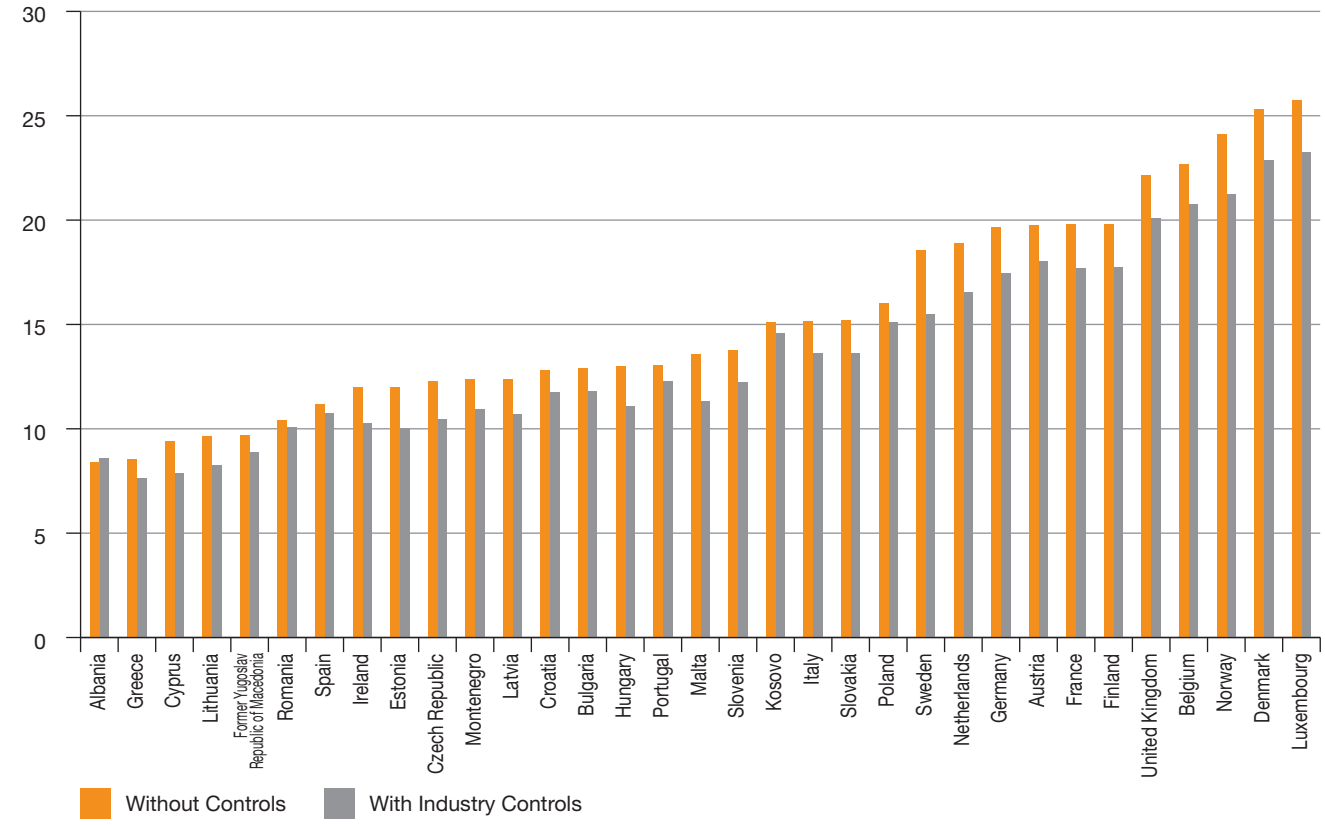
b) Working Time Quality (relative to Montenegro)



c) Intrinsic Job Quality (relative to Turkey)



d) Prospects (relative to Turkey)



Source: Table A10

and on the whole the converse is true of the less affluent countries, where average job quality indices are at the lower ends of the scales.[12] Nevertheless, none of the indices have a strict relationship with GDP per capita, and in some cases there are substantive exceptions. Poland, for example, is in the lower half in terms of *Earnings*, but ranks eighth in terms of *Intrinsic Job Quality*. In France, job quality is ranked in the top half of countries for three of the indices, but is near the bottom in terms of *Intrinsic Job Quality*. Closer inspection reveals that behind the low level of *Intrinsic Job Quality* in France is a low ranking in terms of both the *Good Physical Environment* and the *Good Social Environment* indices.

The above example also highlights the fact that there is considerable variation between the indices in their country rankings. For another case that illustrates this same point, jobs in Luxembourg come top in terms of both *Earnings* and *Prospects*, but only in twelfth and fourteenth places in terms, respectively, of *Working Time Quality* and of *Intrinsic Job Quality*. Similarly, jobs in Germany are in the upper half in terms of *Earnings* and *Prospects*, but in the lower half in terms of *Working Time Quality* and of *Intrinsic Job Quality*. Formally, there is some considerable variation between the indices' ranking across countries. There are relatively low inter-index correlation coefficients (see Table A11 in the annex). For example, the rank correlation coefficient across countries between the *Prospects* index and the *Intrinsic Job Quality* index is only 0.44. This diversity in the pattern shows again the potentially misleading loss of detail that could result if the indices were to be combined in a single index.

[11] In a similar vein Fields (2003) overviews some limited evidence of the positive relationship between economic growth and rises in 'decent work'.

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CHAPTER 5

Workers with at-risk jobs

Workers with at-risk jobs

Particular policy concerns surround workers who are in jobs associated with low levels of well-being. In addition to the personal costs for those workers, there are likely to be additional externalities facing societies when individuals experience physical health problems or mental health problems manifested in low levels of subjective well-being. While the analysis of Chapter 3 was not designed to establish causal links between job quality and well-being, many such links have been established in the literature cited, for example, by Warr (2007), and all the job quality indices are strongly associated with several well-being indices in the EWCS data. Where all of the indices are relatively low, therefore, there is reason to fear that job-holders may experience especially low well-being, and are in that sense more 'at risk' of experiencing physical or mental health problems compared to most other workers.

The aim of this chapter, therefore, is to study which groups of workers may be at risk. To do so, 'cluster analysis' is used to identify clusters of jobs, the aim being to investigate whether there are one or more clusters of jobs where job quality is low on multiple dimensions.

Identification of job clusters in the EWCS

The main objective of cluster analyses is to identify groups of individuals or objects that bear some similarities according to a number of dimensions. Hence, individuals in the same group must be sufficiently different from those in other groups.

In a nutshell, cluster analyses consist of three steps. First, one has to choose the variables according to which the observations are clustered. Secondly, the variables have to be standardised so they contribute equally to the distance or similarity between cases. Finally, one chooses which clustering procedure to use.

In the analysis carried out for this report, the aim is to cluster the individuals included in the EWCS 2010 database according to the research's four indices: *Earnings, Intrinsic Job Quality, Working Time Quality and Prospects*. These were standardised into variables with an average of 0 and a standard deviation of 1. Finally, after some experimentation it was decided to use K-Means clustering to construct this analysis and the number of clusters that retained is four. Note that the other possibility was hierarchical clustering, but this technique is not suitable for large datasets such as EWCS 2010.

The algorithm used in K-Means clustering starts with an initial set of means (selected arbitrarily) and classifies cases based on their distances to these means. Next, it computes the cluster means again, using the cases that are assigned to the clusters. Then, it reclassifies all cases based on the new set of means. The process is repeated until cluster means do not change much between successive steps. Finally, the means of the clusters are computed once again and cases are assigned to their permanent clusters. K-Means clustering is very sensitive to outliers, since these will form their own cluster with a very limited number of cases. Out of the four indices being used, only *Earnings* contain outliers. The other three indices are on a scale of 0 to 100. For *Earnings,* the top and bottom were dropped 0.25%. Note that because of missing values on *Earnings* and the other indices, the cluster analysis is performed with 80% of all available cases.

Tables 3 and 4 present the results of this analysis. Table 3 shows the average values of the job quality indices in each of the four identified clusters, while Table 4 shows the proportions of jobs in each cluster.

Table 3: Average indices for each of the clusters

Clusters	Earnings	WTQ	IJQ	Prospects
Cluster 1: High-Paid Good Jobs	2786.5	63.7	74.6	78.9
Cluster 2: Well-Balanced Good Jobs	1029.7	68.4	74.3	71.0
Cluster 3: Poorly Balanced Jobs	1160.1	42.9	61.4	70.5
Cluster 4: Low Quality Jobs	726.9	52.7	57.3	34.4
Total	1245.7	57.2	67.2	64.5

Table 4: Percentage of individuals in each cluster

Clusters	Frequency	Percentage
Cluster 1: High-Paid Good Jobs	4780	13.6
Cluster 2: Well-Balanced Good Jobs	13040	37.2
Cluster 3: Poorly Balanced Jobs	10137	28.9
Cluster 4: Low Quality Jobs	7093	20.2
Total	35050	100.0

Cluster 1 ('High-Paid Good Jobs') contains the best jobs. Individuals in this cluster receive by far the highest *Earnings.* They have the highest level of *Prospects* and *Intrinsic Job Quality*. However, individuals in this cluster have the second highest value on *Working Time Quality,* following Cluster 2. This cluster accounts for 13.6% of all individuals.

Cluster 2 ('Well-Balanced Good Jobs') contains the second best category of jobs. Individuals in this cluster have the second highest levels of *Intrinsic Job Quality* and *Prospects.* They have the highest value on *Working Time Quality* and they rank third in terms of *Earnings* with slightly lower earnings than individuals in Cluster 3. This cluster accounts for 37.2% of all individuals.

Cluster 3 ('Poorly Balanced Jobs') contains jobs which rank third in terms of *Intrinsic Job Quality* and *Prospects* while having the lowest value on *Working Time Quality*. Individuals in this cluster have the second highest level of *Earnings* which probably results from the fact that these individuals work more and have the lowest WTQ. This cluster accounts for 28.9% of all individuals.

Cluster 4 ('Low Quality Jobs') contains jobs that are worst on three counts: it ranks in fourth position on *Earnings, Intrinsic Job Quality* and *Prospects*. One should note that *Prospects* for this cluster is by far lower than the value in the other clusters. However, this cluster, which accounts for 20.2% of all individuals, has better *Working Time Quality* than Cluster 3.

Table 5 presents the percentage in each cluster by country.

Table 5: Percentage of individuals in each cluster by country

Country	Cluster 1: High-Paid Good Jobs	Cluster 2: Well-Balanced Good Jobs	Cluster 3: Poorly Balanced Jobs	Cluster 4: Low Quality Jobs
Albania	2.5	32.0	32.1	33.4
Austria	15.4	42.3	26.4	16.0
Belgium	15.8	45.2	27.4	11.7
Bulgaria	1.0	45.4	27.4	26.2
Croatia	2.4	38.6	37.2	21.8
Cyprus	21.7	28.4	19.9	30.0
Czech Republic	2.8	35.7	39.3	22.2
Denmark	29.4	49.1	14.1	7.4
Estonia	3.3	48.6	23.6	24.6
Finland	16.9	48.0	25.2	9.8
France	15.3	35.3	32.8	16.6
Former Yugoslav Republic of Macedonia	2.9	34.2	29.0	33.9
Germany	17.8	31.3	37.1	13.8
Greece	10.6	27.9	29.9	31.7
Hungary	1.8	43.9	27.2	27.2
Ireland	32.2	28.8	16.4	22.6
Italy	7.9	45.9	27.9	18.3
Kosovo	3.6	39.7	34.7	22.0
Latvia	1.4	49.1	23.4	26.0
Lithuania	0.9	41.8	26.3	31.0
Luxembourg	48.7	21.7	21.1	8.5
Malta	14.1	43.1	22.0	20.8
Montenegro	4.2	24.4	46.1	25.3
Netherlands	28.7	51.0	10.7	9.6
Norway	38.1	37.8	16.3	7.8
Poland	3.8	46.7	31.9	17.6
Portugal	4.9	42.3	28.3	24.5
Romania	0.6	35.9	33.9	29.6
Slovakia	2.8	36.0	42.7	18.5
Slovenia	6.4	43.1	30.1	20.4
Spain	16.2	31.6	28.6	23.6
Sweden	26.5	47.7	14.2	11.6
Turkey	1.6	22.4	23.7	52.3
United Kingdom	24.3	40.7	24.8	10.3
All countries	13.6	37.2	28.9	20.2

It is possible to see that countries in eastern Europe are mainly dominated by jobs in Cluster 3 and Cluster 4. Hence, jobs in these countries are mainly lower quality jobs while the percentage of good jobs is very limited. The opposite is true for the Nordic countries, which are dominated by jobs with generally better job quality (Clusters 1 and 2), having relatively few jobs in Clusters 3 and 4. Other west European countries are middle ranking.

Jobs where workers are at risk

With no unambiguous ranking of clusters on all indices, one cannot *a priori* identify which cluster contains the 'worst' jobs, meaning the jobs that could be considered most subject to psycho social risk. To resolve this issue, therefore, the clusters are next compared according to the well-being measures identified and analysed in the last chapter.

In Figure 14 the percentage of individuals with low quality jobs is shown (that is, those in Cluster 4) by gender for all countries. As can be seen, consistent with the broad association noted above in Chapter 4 between job quality indices and economic development, there is a generally negative relationship observed here between economic development and the proportions of jobs with workers at risk.

There are also some differences between the experiences of men and women. In some countries – the Czech Republic, Germany, Italy, Portugal, Slovakia and Spain there is a distinct imbalance, with substantially more women than men in the low quality jobs. The balance is in favour of women in the Former Yugoslav Republic of Macedonia (FYROM), Kosovo, Latvia and Malta.

When the percentage of jobs at risk is computed by establishment size, as shown in Figure 15, it can be seen that – irrespective of gender – the smaller the establishment, the higher the proportion of jobs at risk.

The percentage of jobs at risk was also computed by the sector type (Figure 16). The findings indicate that the private sector has the largest proportion of jobs at risk which almost attains 25%. The private sector is followed by the non-for-profit sector, the joint private-public sector and finally the public sector. These findings hold for both gender groups.

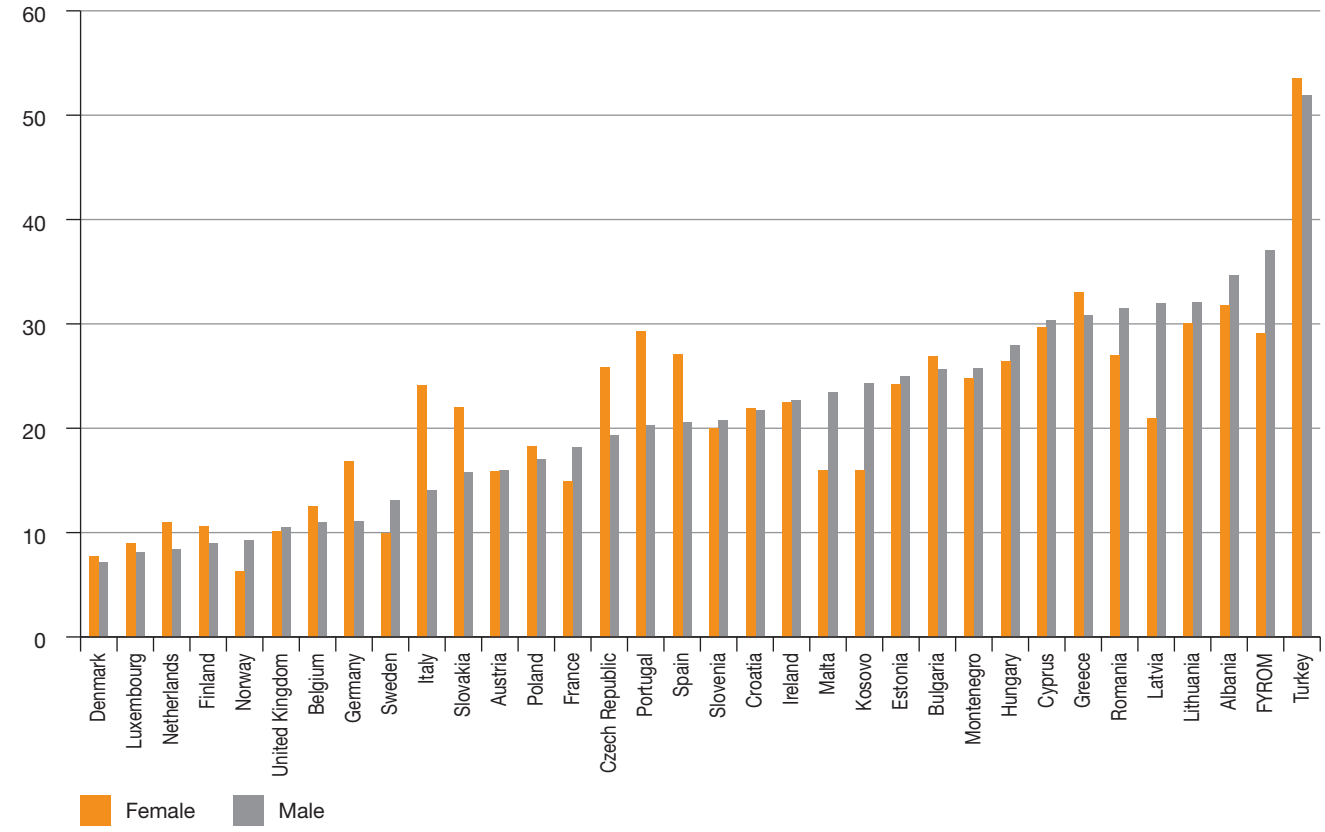
Table 6: Average well-being indicators for each cluster

Clusters	Number of Health Problems	Health Issues Caused by Work	Subjective Well-Being	Subjective Work-Life Balance	Meaningfulness of Work
Cluster 1: High Paid Good Jobs	2.24	17.77	70.11	83.18	6.70
Cluster 2: Well-Balanced Good Jobs	2.39	15.46	68.83	91.95	6.84
Cluster 3: Poorly Balanced Jobs	3.03	34.96	64.25	70.48	6.25
Cluster 4: Low Quality Jobs	3.67	36.54	57.69	71.64	5.53
Total	2.81	25.63	65.43	80.45	6.39

The average well-being in each cluster is given in Table 6, for each type of well-being outcome, as described in Chapter 3. Cluster 1, which has the best job quality indices, has the lowest number of health problems, and the second lowest prevalence of health issues caused by work, the highest subjective well-being and the second highest subjective work-life balance. Cluster 2 is also well-positioned, having the best subjective work-life balance and scoring highest on 'meaningfulness of work'. Cluster 3 (Poorly Balanced Jobs) is a clear third on three measures, and is marginally even lower than Cluster 4 (Low Quality Jobs) in terms of subjective work-life balance.

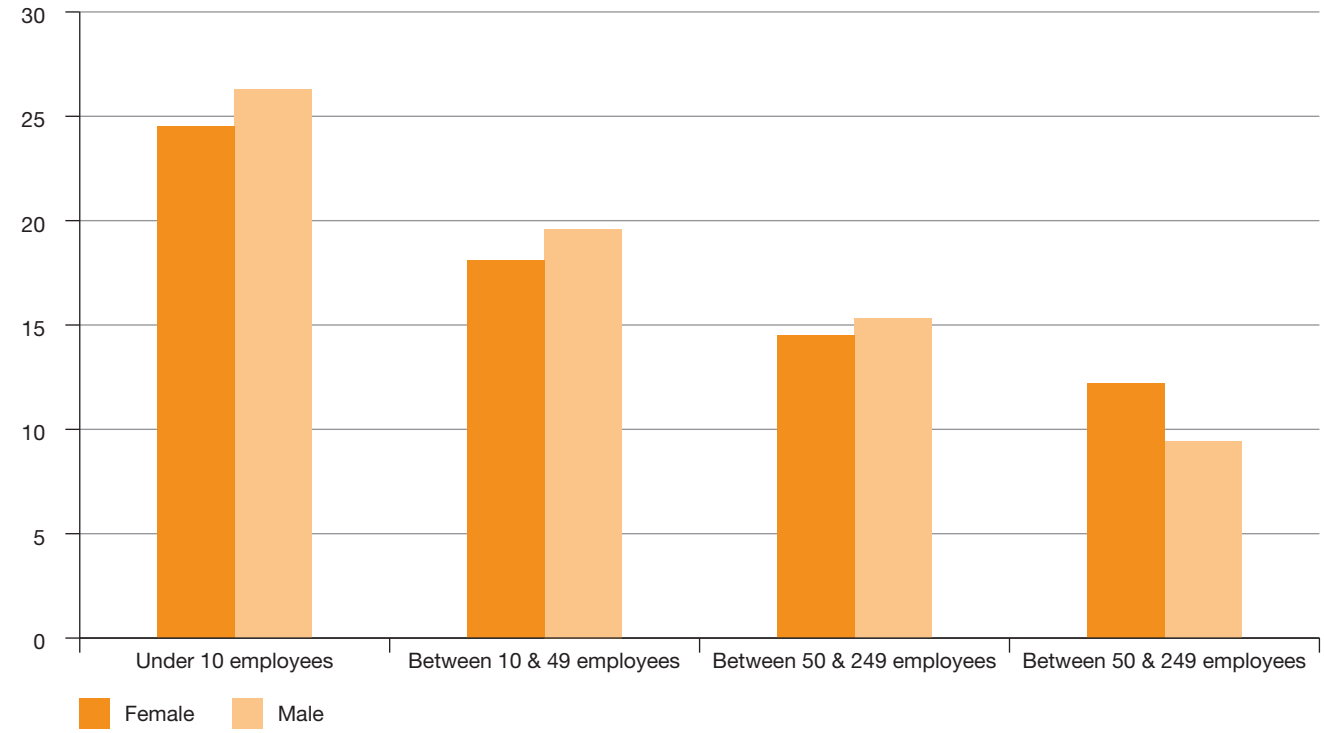
With that exception, Cluster 4 looks to be generally the worst group; it has the highest number of health problems and health issues caused by work, while having the lowest subjective well-being, the second lowest subjective work-life balance, and the least meaningful work. Cluster 4, therefore, identifies the jobs where workers are most at risk. Hence the subsequent analysis identifies the localities and groups which deploy the highest proportion of workers in this cluster.

Figure 14: Percentage of individuals with low quality jobs, by gender



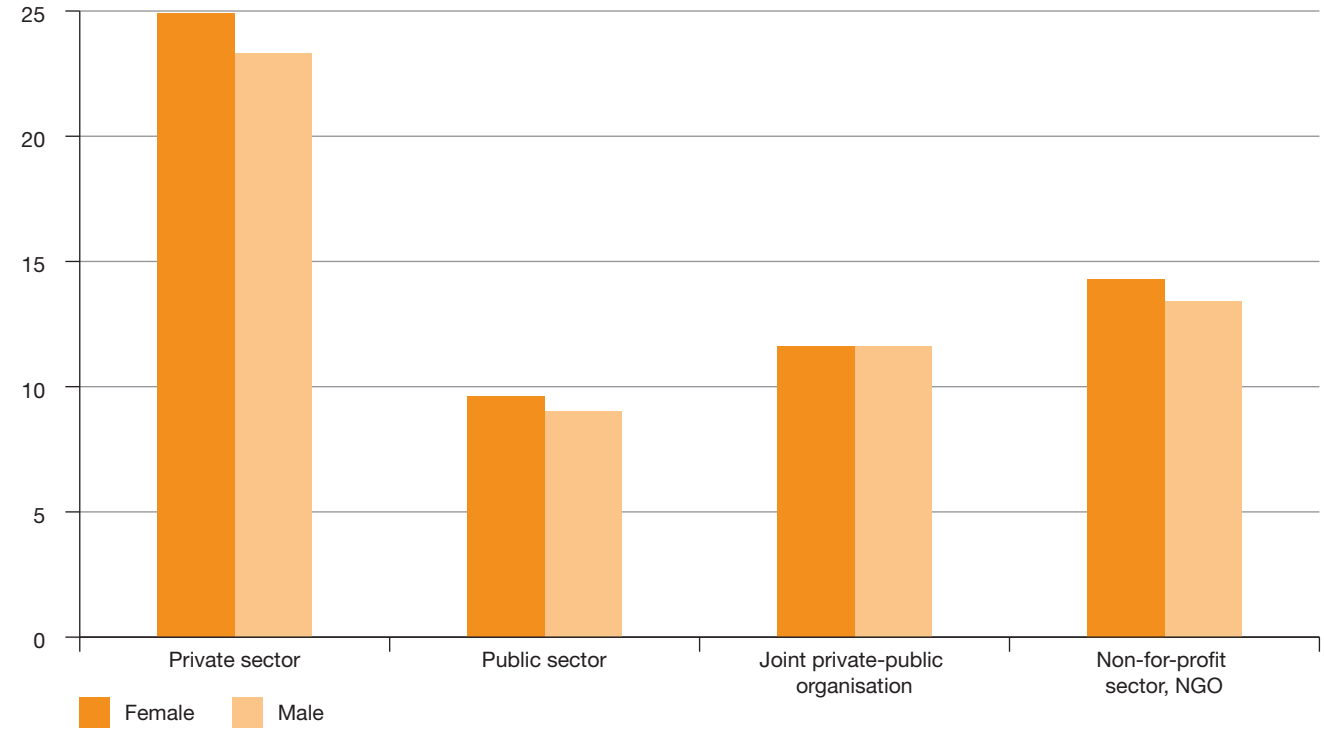
Source: Table A13

Figure 15: Percentage of individuals with low quality jobs by establishment size



Source: Table A14

Figure 16: Percentage of individuals with low quality jobs by ownership type



Source: Table A15

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CHAPTER 6

Trends in job quality

Trends in job quality

How has job quality been changing over time in the European Union? This question is of considerable interest for analysts and policymakers concerned with the effects of the macroeconomic crisis of late 2008 and the subsequent low growth rates of many EU countries. The better the quality of the jobs that emerge after a period of economic crisis, the more likely is it that the ensuing growth can be sustainable.

The effects of the economic crisis cannot, however, simply be observed by examining the picture of job quality in the two recent surveys in 2005 and 2010. This is because any observed changes over this period could be part of a longer-term trend. Job quality is expected to change over time as a result of a combination of economic and social pressures, including technological and organisational change and greater global economic competitiveness. Policies stemming from European Union directives, and the open method of coordination applied to employment policies, could also be expected to address the problem of low quality jobs with high psychosocial risks, potentially bringing about a movement towards convergence between countries for some elements of job quality. It is therefore important to track job quality over a substantial period of time.

The European Working Conditions Surveys permit such an analysis, but there are two sources of limitation on the scope of what is feasible.

First, it is essential to make comparisons over time using the same group of countries, but the number of participating countries increased in later waves. In the very first survey there were only 12 members. This expanded to 15 in 1995 and 2000/2001, 31 in 2005 and 34 in 2010.

Second, the questionnaire evolved over time as items were added, dropped and improved. Comparisons are only valid when the wording and response scales remain unchanged. The principle of continuity in questionnaire design has been followed for just this purpose in many cases, and there are consequently many items in the 2010 survey that can be validly analysed alongside the same items in previous surveys. Nevertheless, it needs to be noted that, even when items in the English version of the questionnaire are unchanged, there could be alteration in the translations used in some countries. There can also be changes in the questionnaire structure and sequences which can alter the context in which questions are responded to.

Many of the items needed for the job quality indices were introduced for the first time in 1995, while only a minority date from the very first survey. Hence, to provide a long-term picture while keeping a reasonably large number of countries and usable items to form indices, this report examines the 1995 to 2010 period for 15 countries ('the EU15'). In this chapter the report describes how the indices are adapted for this purpose, presents findings about changes in job quality in the EU15, and investigates whether there has been convergence between the EU15 countries.

Construction of indices for trend analyses

The above considerations mean that *Working Time Quality* and three sub-indices of *Intrinsic Job Quality* can be analysed over time since 1995, namely *Skills and Discretion*, *Good Physical Environment*, and *Work Intensity*. For the purposes of this report these sub-indices will be treated separately, giving four indices by which the trends can be analysed.

Nevertheless, in each case the computed index is somewhat more limited, by reductions in the numbers of items, compared to what was available for the 2010 analysis above. When comparing countries and groups in 2010, one should use the more comprehensive indices described above, rather than the trend indices.[13] To distinguish each trend index for-

mally from those calculated for 2010, the suffix (T) is used. The restrictions are as follows:

Skills and Discretion (T)

The index is comprised of the same variables as for 2010: minus Q61Cp (on-the-job training) and four of the discretion items; Q51Cp (consulted over targets), Q51Ep (choice of working partners), Q51I (can apply own ideas) and Q51O (can influence decisions). Also omitted is the average educational level of the occupational group, mainly because there may have been credentialism over time (employers raising their educational requirements in line with the rising stocks of education labour rather than with rising skill requirements), but also because the available consistent education variable is quite crude, referring to the age left school which is classified in only three bands.

Good Physical Environment (T)

The index is comprised of the same variables as for 2010, minus Q24B (lifting or moving people), Q24D (standing), Q23F (harmful vapours), Q23G (contact with chemical products), Q23H (secondary smoking) and Q23I (contact with infectious materials).

Work Intensity (T)

The index is comprised of the same variables as for 2010, minus Q51G (time pressure), and value conflict (items Q24G, Q51L and Q51P). *Work Intensity* is a negative indicator of job quality.

Working Time Quality (T)

The index is comprised of the same variables as for 2010, minus Q39 and Q40 (work time arrangements) and Q43 (flexible emergency time).

Average job quality over time in Europe

Universal pressures from the developing global economy, from technological change, or from European policy initiatives, might be expected to have common effects across Member States. Thus, although the pace at which such effects might happen could be expected to vary across Member States, it is first of interest to examine changes in job quality over all countries in the sample taken together.

Looking at the overall levels of average job quality in the 15 Member States that have participated at every wave since 1995, a pattern of comparative stability was observed in three of the indices; *Skills and Discretion (T)*, *Work Intensity (T)* and *Good Physical Environment (T)*. Only a slow pattern of change is discernible. Thus, the mean level of the *Work Intensity (T)* index rose by 2.2 points – a statistically significant rise, but less than a tenth of the standard deviation of the distribution. The *Skills and Discretion (T)* and *Good Physical Environment (T)* indices remained largely unchanged.[14]

In contrast, there was a substantive rise of 5.4 points over time in the *Working Time Quality (T)* index. This rise reflects both declining work hours and the falling use of shift work at weekends and night time. The magnitude of this change compares with a standard deviation of 20.9 for the whole distribution. To gain an idea of what this means in practice, one could note one of the ingredients of this change: the proportion of workers in the EU15 countries who never worked on Saturdays rose from 44% to 50% over the period.

This change, along with other improvements that collectively add up to the rise in this index, suggests that workplaces have become somewhat better at meeting employees' needs for a good work-life balance. A word of caution is required, however, owing to the restrictions on this index that were necessary to make it consistent from 1995 onwards. When the flexibility of working time arrangements is considered, which is possible from 2005 onwards, a less optimistic picture is found. The proportion of jobs where the job-holder had some possibility of choosing or adapting their working time arrangements fell from 46% to 42%.

To set against this aggregate picture of all 15 countries, however, it should be recalled that national institutions, policies and cultures could be expected to have differential effects on how job quality evolves over time, with the possibility of job quality moving in opposite directions across countries. Moreover, the aggregate picture tends to be more strongly influenced by changes that take place in the larger countries, since population size more heavily weights the observations from these countries. This means that some changes in small countries might not be reflected in the aggregate. It is therefore important to study both the overall change in job quality in Europe and the changes in individual countries.

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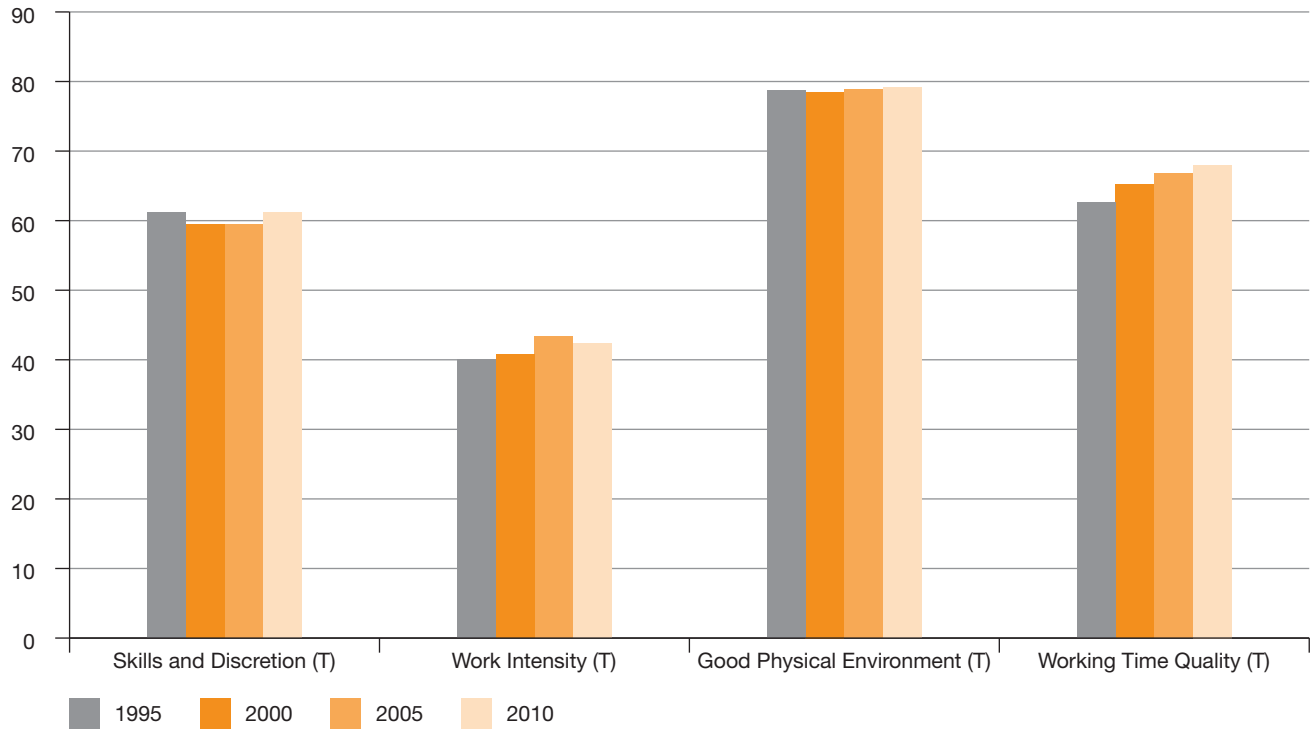
[12] Because of the restrictions on the trend indices, any findings about the differences and rankings across groups and countries can occasionally deviate from findings based on the 2010 indices. The trend indices should only be used for comparisons over time.

[13] In the case of the *Good Physical Environment* index, further analyses reveals that there were small improvements through the reduction of environmental hazards, but these were counter-balanced by increases in the prevalence of posture-related risks.

Figure 17: Job quality indices in EU15 countries, 1995–2010



Source: Table A16

Figure 17 depicts the changes in *Skills and Discretion (T)* in each country from the start to the end of the observation period. The figure is derived from tables in the annex which present the findings in more detail, covering every intervening wave of the survey. In order to focus on substantive changes, it is useful to delineate a clear, if slightly arbitrary, change threshold, namely at three points (within the 100 point range). Thus, wherever an index rises or falls by at least this amount the change can be regarded as 'substantive', while a change of anything less than three over a 15 year period is unlikely to have been noticed much.

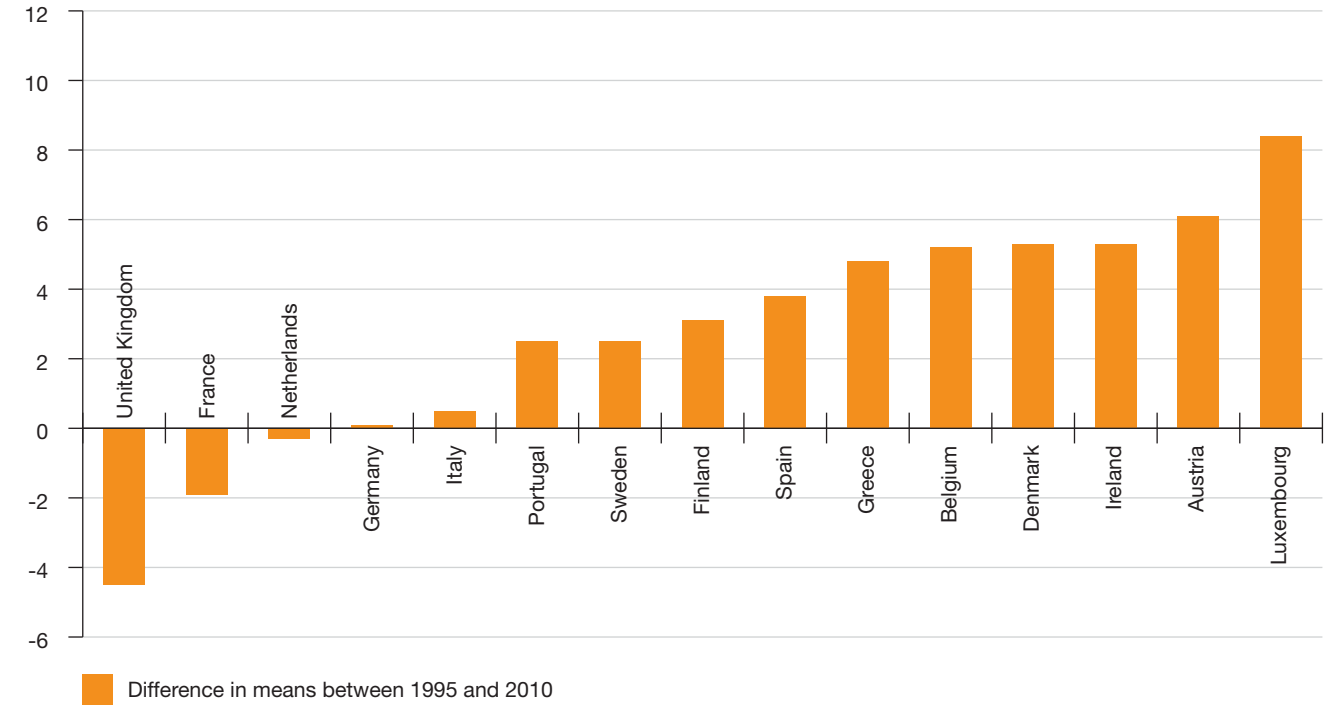
Using this guideline, one can observe that the *Skills and Discretion (T)* index rose in eight countries, while falling in just one, the UK (Figure 18). Part of the latter fall, which was more substantial for males than for females (see the annex, Table A18), reflects in particular a decline in task discretion that has been found from data in the UK Skills Surveys (Gallie et al, 2004). By contrast, the *Skills and Discretion (T)* index rose by the most (9.5 points) in Luxembourg. The more general experience of rising *Skills and Discretion (T)* is consistent with predictions of rising skill demands.

Turning to *Work Intensity (T)*, the one negative index of job quality in this research, most countries in the EU15 experienced a substantive intensification of work over the (1995–2010) period (Figure 19). These countries are: Belgium, France, Germany, Greece, Ireland, Italy, Luxembourg and Spain. There are, however, four contrasting countries: Austria, Portugal, the UK and the Netherlands, where work intensity fell over this period.[15] The direction of change was the same for men and women in every country.

With the *Good Physical Environment (T)* index, the stability in the aggregate picture is also reflected in there being only small amounts of change in most countries, as shown in Figure 20. In three countries there was a substantive rise in job quality (using, still, the same threshold for 'substantive') – these are Greece, the United Kingdom and the Netherlands. In these countries, the index rose for both men and women, but the increase for women was twice as fast (see the annex,

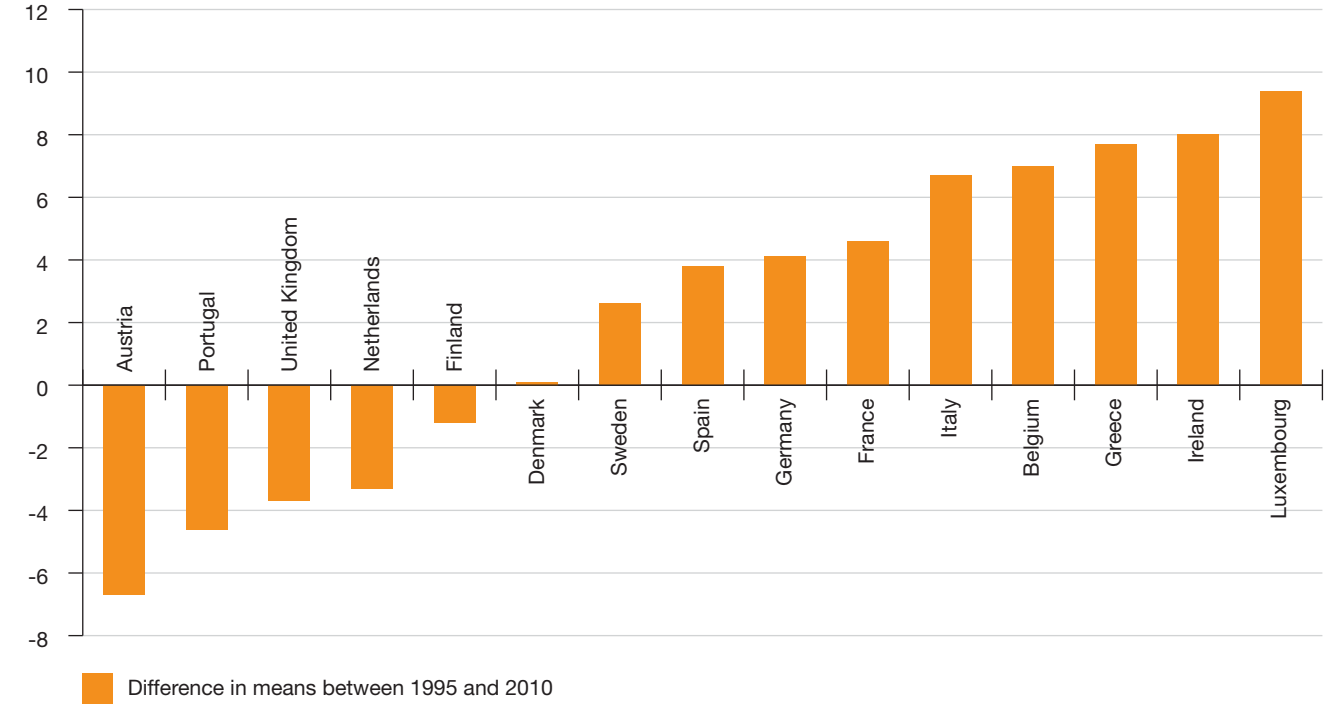
[14] In Austria and Portugal *Work Intensity (T)* was volatile, and arrived at a relatively low level in 2010while being high in 2005. In the UK work intensity was at an exceptionally high level in 1995, and subsequently declined somewhat; the early 1990s was, according to both the EWCS and other sources, a period of exceptional substantial intensification. Comparing the 2000s with the start of the 1990s, work intensity in the UK rose according to multiple sources (Green, 2006).

Figure 18: Change in Skills and Discretion (T) by country in the EU15, 1995–2010



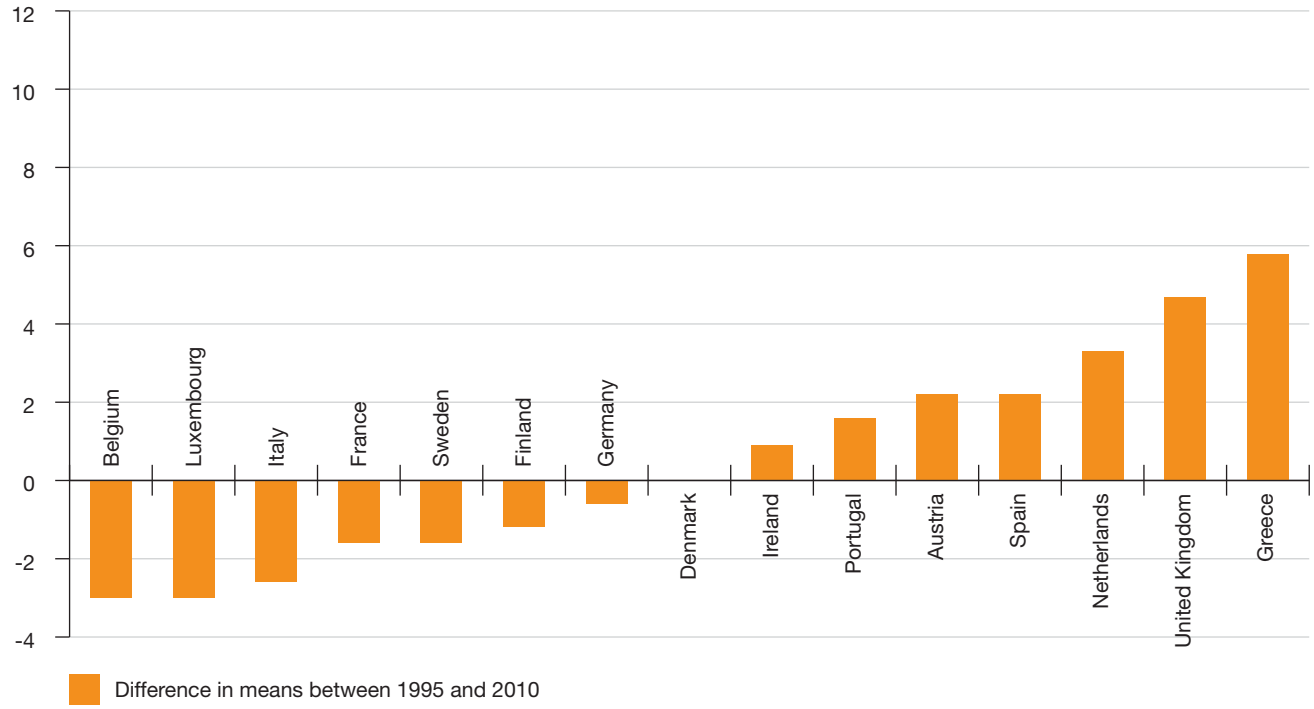
Source: Table A18

Figure 19: Change in Work Intensity (T) by country in the EU15, 1995–2010



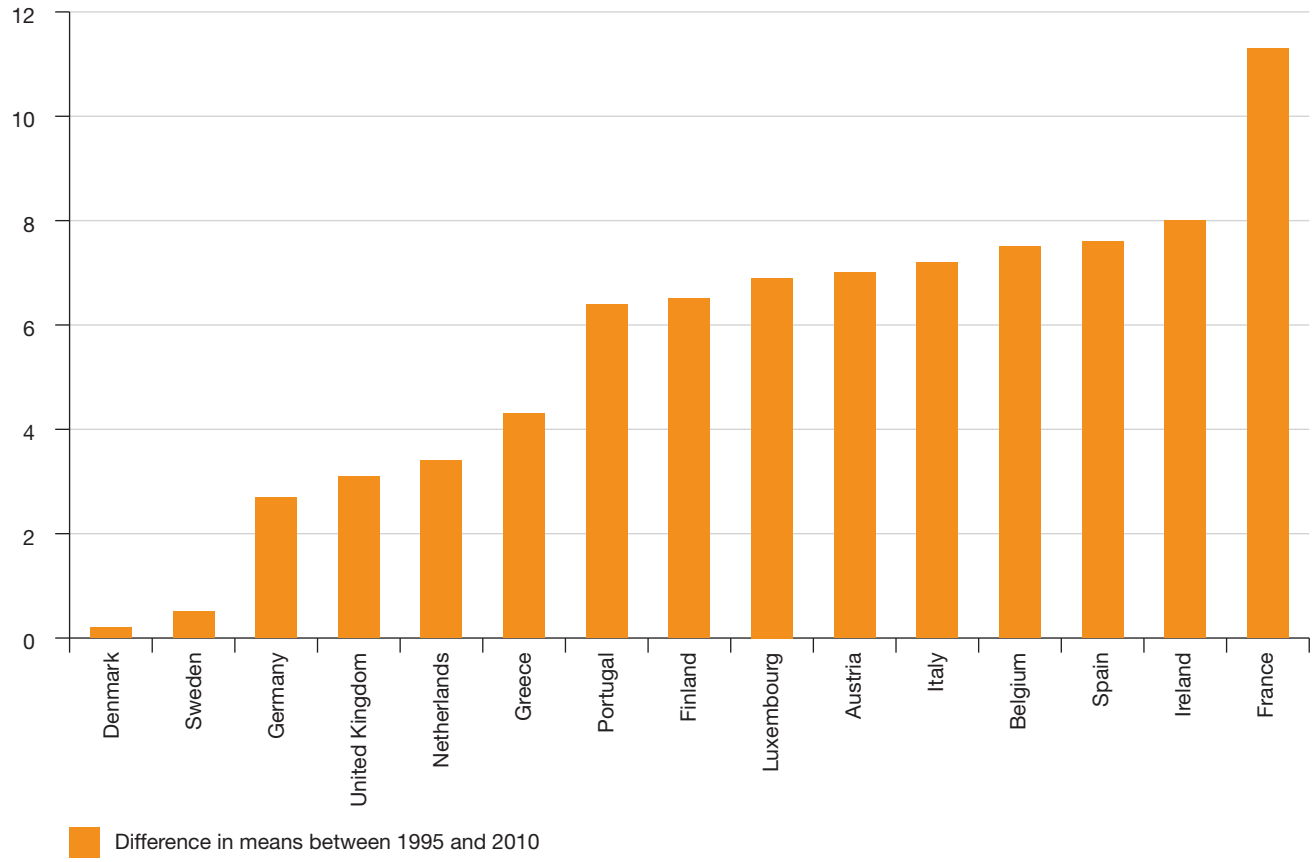
Source: Table A19

Figure 20: Change in Good Physical Environment (T) by country in the EU15, 1995–2010



Source: Table A20

Figure 21: Change in Working Time Quality (T) by country in the EU15, 1995–2010



Source: Table A21

Table A20). Meanwhile, in Belgium and Luxembourg there were falls of exactly three points.

The overall rise in *Working Time Quality (T)* seen in Figure 21 is reflected in rises in the large majority of individual countries. Only in Denmark, Sweden and Germany were there no substantial increases. The largest rise was in France where, over the course of the 15 year period, this index increased by 11.3 points. There, most of the rise is associated with the fall in work hours over the period, though there was also a reduction in the prevalence of night-time and weekend working.

Convergence or divergence?

To what extent do these changes imply that there has been some convergence in job quality among Member States over this period, as suggested in previous analyses using earlier EWCS data, and alternative data sources (Olsen et al, 2010; Eurofound, 2009)? Some convergence can be seen in individual cases. For example, the substantive rise in the *Good Physical Environment (T)* in Greece represents a convergence of that country towards the typical levels found elsewhere, starting from a low level in 1995; similarly, the large rise in *Working Time Quality* in Ireland was from an initial level lower than most other countries.

To examine formally whether there was convergence or divergence, it was investigated whether the initial value of each index was statistically associated with its subsequent change, using regression analysis. A negative association would imply convergence, and a positive association would imply divergence. Also computed was the coefficient of variation across countries of the average levels of the job quality indices. The coefficient of variation is one measure of the extent to which country averages are unequal. Convergence – a narrowing of the differences between countries – should then be reflected in a fall in the coefficient of variation.

It was found that the coefficient of variation across country averages fell from 0.63 to 0.61 for the *Work Intensity* index, from 0.24 to 0.23 for the *Good Physical Environment* index. Thus, for each of these aspects of job quality there appears to have been a slight convergence. In the case of the *Working Time Quality* index, the convergence is more notable, the coefficient of variation having fallen rather more substantially, from 0.35 to 0.30.

In the case of *Skills and Discretion*, however, no evidence of statistically significant cross-national convergence or divergence was evident. See Table A22 in the annex.

5th
European
Working
Conditions
Survey

CHAPTER 7

Conclusions and implications

Conclusions and implications

Overview and implications for policy analysis

The main aim of this report was to construct indices that would provide a fair and accurate summary of job quality in the 27 countries of the European Union, and in the seven additional countries in Europe that participated in the European Working Conditions Survey. In the light of these new indices, the further aim has been to provide a descriptive account of job quality and how it varies across Europe, and over time.

At the outset, the report adopted an objective concept of job quality, thus excluding indicators of workers' values, preferences, subjective well-being or attitudes. This meant building the indices on the self-reported features of jobs that are associated, in one way or another, with meeting peoples' needs through their work. It was also noted, however, that the concept did not incorporate individual and contextual variables, even though these affect the well-being of workers. Indicators of the external labour market environment such as unemployment and social protection were not included in the job quality indices.

The report recommends the adoption of four indices, namely *Earnings*, *Prospects*, *Intrinsic Job Quality* and *Working Time Quality*. Each of these indices is theoretically and conceptually coherent, and it can be expected that they will be well understood; yet they are related only to some extent with each other, and the differences are so substantive that it would be misleading for policy analysts or researchers to try to reduce them to a single index of job quality. Over time their associations with each other show no signs of increasing, while the indices in many cases move in opposing directions.

These four indices are suitable for analyses, both in themselves, and as inputs into a broader set of indices covering the quality of employment that can be used for policy analyses. Wider measures of labour markets tend to change more from year to year, especially with the progress of the economic cycle, and therefore such broader indices need to be computed frequently, typically on an annual basis. Job quality, however, is likely to be more resistant to large alterations over short periods. Hence it is quite suitable that it is monitored less frequently for policy purposes, and the periodicity of the EWCS (five years) is about right. Nevertheless, the job quality indices could still be fed as ingredients into more frequently changing and broader indices of the quality of employment.

While this chapter is not intended as a comprehensive summary, several features of the indices stand out from the descriptive analyses of job quality across Europe. The indices all showed a positive correlation with the education level of job-holders. Even *Working Time Quality*, which might not necessarily be expected to be associated with education, shows a weak positive correlation, except at the sparsely populated lowest end of the education spectrum.

Another notable finding is that the gap between men's and women's earnings, found in countless other sources, is not mirrored by similar gaps in respect of the other elements of job quality. With respect to *Prospects*, *Intrinsic Job Quality* and *Working Time Quality,* the gaps were much smaller in relation to their overall variation, and in the case of the latter two the index is somewhat higher for women than for men. This finding appears to imply that redoubled policy efforts to reach gender equality should be focused primarily at pay gaps, but more detailed analyses would reveal the cases where the gender differences in non-wage aspects of job quality also become acute.[16]

[15] The tables in the annex are presented separately for men and women.

The report also pointed a searchlight at jobs which exhibited a multitude of poor job quality features. A cluster analysis was used to identify groups of jobs that were similar in respect of the four indices, and one group, numbering around one in five of all jobs, fitted the description of all-round bad jobs. As expected, the workers who were in these jobs also had, on average, the lowest levels of health and well-being, showing more health problems, lower subjective well-being, and were finding less meaning in their work. The analysis was not intended to prove that certain jobs caused low levels of health and well-being; but the strong association suggested that an analysis of the cluster of poor quality jobs could be helpful for identifying where policymakers should direct their attention.

The fact that as many as one in five jobs fall into this category suggests that policies to ameliorate the detrimental effects of work on health and well-being need to address a fairly broad front. It was found that poor quality jobs, where workers could be said to be most at risk, were particularly concentrated in establishments with under five employees, and in the private sector. They were also more prevalent in countries with lower levels of GDP per capita, although the association with national income is far from perfect. In a few countries there was a distinct gender imbalance in the prevalence of low quality jobs, which suggests a need for policymakers in these countries to promote greater equality.

The trend findings showed a considerable degree of continuity in respect of those aspects of intrinsic job quality that could be tracked over a long period, that is, from 1995 to 2010. Three of the indices showed only small changes across the 15 EU countries that participated in all waves over this period, with virtually no aggregate change in the *Good Physical Environment (T)* index. While findings elsewhere are more positive about some specific aspects of the physical environment – for instance in respect of having to work in a smoky environment, which improved between 2005 and 2010 – the lack of aggregate change in the physical environment suggests that efforts be redoubled to bring about improvements. Policy could usefully be focused on the increasing prevalence of posture-related risks in the workplace. Similarly, rising levels of work intensity in the majority of countries contribute to a rising risk of high stress levels and their consequent ill effects on health and well-being. Policies to reduce the presence of stressors are indicated, as well as programmes to ameliorate the effects of high levels of stress.

Some positive signs are found in the increases in the growth of the *Skills and Discretion (T)* index in the majority of countries. This index goes to the heart of the intrinsic character of work, and is at the same time associated on average with higher levels of productivity. In some countries where there is, however, evidence of a decline in this index, policy attention needs to be directed at the source of this fall. In the case of the UK, for example, the index declined because of reductions in the average levels of discretion afforded to employees, confirming what has been found in other data from the UK.

The largest aggregate change, however, took place for the *Working Time Quality (T)* index, and here the picture is positive, showing rises both overall and in most countries. These changes arise largely from reductions in working time and less work during non-standard hours. However, it is recommended that the flexibility of working time for workers is closely monitored in future by policymakers, as there is as no evidence of improvement on this front over the 2005–2010 period.

Implications for the development of the EWCS

In deriving the job quality indices, it has been suggested at various points that there is room for potential improvement in the indices that could be introduced with future European Working Conditions Surveys. In bringing these recommendations together, it is worth prefacing them with the remark that the continuity of items is of the greatest value for understanding the processes of change in European workplaces. Ideally, the large majority of questions should be framed in identical ways with identical translations and response scales, and the questions should be posed using the same mode of delivery and in the same sequence as in previous surveys so as to minimise possible distortions from order effects. However, with a few items it is sometimes found that the value of improvements outweighs those of continuity, especially where the primary objective is to know as accurately as possible the prevalence of a particular job feature and its comparison across socioeconomic groups, or where new issues come to prominence in policy discourse. It is within this spirit that the recommendations are offered.

a) Considered, in Chapter 2, was the possible inclusion of an indicator for the fairness of wages. ‘Fairness’ would be conceived as being paid according to one’s skill and effort, and unfairness arises if wages are significantly above or below this amount. However, objective measures of fairness are hard to construct, since it proves impossible to capture in a survey all the potential elements of skill and effort, and any potential compensating factors, that might account for the level of pay. Any measure of fairness of wages, then, would have to be based on subjective perceptions. Such an indicator would have no place in the job quality indices as conceived here, but nevertheless could be of interest in itself. One subjective but vague item in the current survey (Q77B: scale of agreement with ‘I am well paid for the work I do’) might be developed further for this purpose.

   More promising would be to develop the reports of discrimination covered in Q65A to Q65G. In the current survey, 6% of workers report being subjected to discrimination, with the most prevalent single criterion of discrimi-

nation being age (3%). While not covering the idea of unfair treatment comprehensively, discrimination is one of the most important specific manifestations of unfairness. This report would recommend considering a follow-up question to establish the focus of the discrimination, whether on wages, working time quality, job prospects or aspects of intrinsic job quality.

b) It was noted, in Chapter 2, that the measures of skills use might be improved. While respecting the continuity principle, the literature in this field suggests that future surveys should cover the qualification requirements of jobs as an additional indicator of skills use. Potential indicators have been developed elsewhere, both for national surveys and for harmonised internationally comparable surveys. In some cases these have been extended to capture the required prior work experience for job applicants. Together, such measures would give an improved index for the skill level of the job, which should be an integral element of job quality. Other variables of less value could be dropped if space was a problem, but the large majority of items could remain so as to preserve a continuous index of skills use for trend analyses.

c) The *Prospects* index is strongly related to well-being, and is closely linked to developments in the labour market and in policy. It is also the 'thinnest' of the four indices developed here, in the sense that it has the smallest number of discrete data points, just 17. There would be value, therefore, in considering ways in which the three ingredients of this index – job security, career prospects and contract status – could be supplemented with additional items that would generate a somewhat more finely tuned measure. More information could be obtained about promotion prospects in the job, and/or about the security of intrinsic aspects of jobs.

d) *Working Time Quality* is the area that shows the most promising trends between waves. However, the trend index dating back from 1995 is less than comprehensive, since it does not include measures of the extent to which employees can choose their working hours, or of their ability to take time off in emergencies to deal with caring responsibilities. These are now included in the index for 2010, and this report would suggest that it is important that these be continued in future surveys. Moreover, it is recommended that consideration be given to adding an item to capture the provision of child-care facilities at workplaces.

e) In Chapter 2, the arguments were rehearsed for incorporating items covering organisation-level participation and representation. It was noted that this concept would be included in the 2013 European Company Survey, from which country-level indices could be derived, but that it has not been included among the job quality indices generated in this report. Yet it remains possible that organisation-level participation and representation are reported differently by, and have a different significance for, employees. Communication and influence channels for ordinary employees, for example, could be considered an important aspect of job quality. An option, therefore, for future surveys could be to develop additional items to supplement those already present, in order to be able to generate an index of organisation-level participation.

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Annex

This annex contains a list of the variables that were used for the construction of the indices of job quality and all the detailed tables from which the charts in the main text were drawn. The tables also show breakdowns of the indices by gender for all tabulations.

Variables used in the construction of the job quality indices

1. Earnings

- EF10: Please can you tell us how much are your net monthly earnings from your main paid job?
- EF11: Perhaps you can provide the approximate range instead. What letter best matches your total net earnings from your main job?
- Q18: How many hours do you usually work per week in your main paid job?

2. Prospects

- Q77: How much do you agree or disagree with the following statements describing some aspects of your job?
  - Q77A: I might lose my job in the next 6 months.
  - Q77C: My job offers good prospects for career advancement.
- Q6: Are you mainly ... ?
  - Self-employed without employees
  - Self-employed with employees
  - Employed
  - Other
- Q7: What kind of employment contract do you have?

3. Intrinsic Job Quality

Skills and Discretion

- Q61: Over the past 12 months, have you undergone any of the following types of training to improve your skills or not?
  - Q61A: Training paid for or provided by your employer or by yourself if self-employed
  - Q61C: On-the-job training
- Q49: Generally, does your main paid job involve ... ?
  - Q49C: Solving unforeseen problems on your own
  - Q49E: Complex tasks
  - Q49F: Learning new things
- Q50: Are you able to choose or change ... ?
  - Q50A: Your order of tasks
  - Q50B: Your methods of work
  - Q50C: Your speed or rate of work
- Q51: For each of the following statements, please select the response which best describes your work situation.
  - Q51C: You are consulted before targets for your work are set.
  - Q51E: You have a say in the choice of your working partners.
  - Q51I: You are able to apply your own ideas in your work.
  - Q51O: You can influence decisions that are important for your work.
- Q24: Please tell me, using the same scale, does your main paid job involve ...?
  - Q51H – Working with computers: PCs, network, mainframe
- EF1: What is the highest level of education or training that you have successfully completed?
- ISCO_08_2: Occupational variable

Good Social Environment

- Q51: For each of the following statements, please select the response which best describes your work situation.
  - Q51A: Your colleagues help and support you.
  - Q51B: Your manager helps and supports you.
- Q58: In general, your immediate manager / supervisor…
  - Q58A: Provides you with feedback on your work
  - Q58B: Respects you as a person
  - Q58C: Is good at resolving conflicts
  - Q58D: Is good at planning and organising the work
  - Q58E: Encourages you to participate in important decisions

- Q77: How much do you agree or disagree with the following statements describing some aspects of your job?
  - Q77E: I have very good friends at work.
- Q70: Over the last month, during the course of your work have you been subjected to …
  - Q70A: Verbal abuse?
  - Q70B: Unwanted sexual attention?
  - Q70C: Threats and humiliating behaviour?
- Q71: And over the past 12 months, during the course of your work have you been subjected to …
  - Q71A: Physical violence?
  - Q71B: Bullying/harassment?
  - Q71C: Sexual harassment?

Good Physical Environment

- Q23: Please tell me, using the following scale, are you exposed at work to ... ?
  - Q23A: Vibrations from hand tools, machinery, etc.
  - Q23B: Noise so loud that you would have to raise your voice to talk to people
  - Q23C: High temperatures which make you perspire even when not working
  - Q23D: Low temperatures whether indoors or outdoors
  - Q23E: Breathing in smoke, fumes (such as welding or exhaust fumes), powder or dust (such as wood dust or mineral dust), etc.
  - Q23F: Breathing in vapours such as solvents and thinners
  - Q23G: Handling or being in skin contact with chemical products or substances
  - Q23H: Tobacco smoke from other people
  - Q23I: Handling or being in direct contact with materials which can be infectious, such as waste, bodily fluids, laboratory materials, etc.
- Q24: Please tell me, using the same scale, does your main paid job involve ... ?
  - Q24A: Tiring or painful positions
  - Q24B: Lifting or moving people
  - Q24C: Carrying or moving heavy loads
  - Q24D: Standing
  - Q24E: Repetitive hand or arm movements

Work Intensity

- Q45: And, does your job involve ... ?
  - Q45A: Working at very high speed
  - Q45B: Working to tight deadlines
- Q46: On the whole, is your pace of work dependent, or not, on ... ?
  - Q46A: The work done by colleagues
  - Q46B: Direct demands from people such as customers, passengers, pupils, patients, etc.
  - Q46C: Numerical production targets or performance targets
  - Q46D: Automatic speed of a machine or movement of a product
  - Q46E: The direct control of your boss
- Q51: For each of the following statements, please select the response which best describes your work situation.
  - Q51G: You have enough time to get the job done.
  - Q51L: Your job involves tasks that are in conflict with your personal values.
  - Q51P: Your job requires that you hide your feelings.
- Q24: Please tell me, using the same scale, does your main paid job involve ...?
  - Q24G: Handling angry clients

4. Working Time Quality

- Q18: How many hours do you usually work per week in your main paid job?
- Q32: Normally, how many times a month do you work at night, for at least 2 hours between 10.00 pm and 05.00 am?
- Q33: And how many times a month do you work in the evening, for at least 2 hours between 6.00 pm and 10.00 pm?
- Q34: And how many times a month do you work on Sundays?
- Q35: And how many times a month do you work on Saturdays?
- Q39: How are your working time arrangements set?
- Q40: Do changes to your work schedule occur regularly? (IF YES) How long before are you informed about these changes?
- Q43: Would you say that for you arranging to take an hour or two off during working hours to take care of personal or family matters is ... ?

Descriptive statistics

Table A1: Average job quality by sex

Sex	Earnings		WTQ		IJQ		Prospects	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Male	1376	930.1	56.9	17.6	66.7	11.8	64.8	21.9
Female	1048	696.2	60.3	17.4	68.6	11.2	64.1	21.5
All	1230	850.2	58.4	17.6	67.5	11.6	64.5	21.7

Table A2: Average job quality by level of education

Level of education	Earnings	WTQ	Prospects
Pre-primary education	639	64.1	49.9
Primary education	698	57.1	49.4
Lower secondary	1180	57.7	63.3
(Upper) secondary education	1026	56.9	63.0
Post-secondary non-tertiary education	1248	59.1	63.5
First stage of tertiary education	1659	60.8	71.3
Second stage of tertiary education	2335	62.0	75.5

Female

Level of education	Earnings	WTQ	Prospects
Pre-primary education	541	65.6	43.9
Primary education	568	59.9	48.2
Lower secondary	961	61.4	62.7
(Upper) secondary education	870	58.6	61.9
Post-secondary non-tertiary education	998	60.3	62.8
First stage of tertiary education	1390	61.1	70.6
Second stage of tertiary education	2081	61.4	73.9

Male

Level of education	Earnings	WTQ	Prospects
Pre-primary education	711	62.9	54.6
Primary education	762	55.7	50.0
Lower secondary	1350	54.9	63.6
(Upper) secondary education	1140	55.7	63.7
Post-secondary non-tertiary education	1492	58.0	64.1
First stage of tertiary education	1930	60.5	72.0
Second stage of tertiary education	2509	62.4	76.5

Table A3: Average job quality by age groups

Age group	Earnings	WTQ	IJQ	Prospects
Younger than 34	1023	56.2	66.5	63.1
Between 34 and 49	1332	58.2	67.7	65.9
Older than 50	1362	61.6	68.6	64.2

Female

Age group	Earnings	WTQ	IJQ	Prospects
Younger than 34	925	58.0	67.8	62.8
Between 34 and 49	1113	60.4	68.6	65.6
Older than 50	1110	63.2	69.5	63.4

Male

Age group	Earnings	WTQ	IJQ	Prospects
Younger than 34	1097	54.9	65.6	63.3
Between 34 and 49	1523	56.3	66.9	66.1
Older than 50	1548	60.5	68.0	64.8

Table A4: Average job quality by occupation

Occupation ISCO 08	Earnings	WTQ	Prospects
Managers	1970	62.0	71.3
Professionals	1677	60.7	72.4
Technicians and associate professionals	1444	61.8	70.9
Clerical support workers	1153	61.6	67.0
Service and sales workers	903	53.3	60.3
Skilled agricultural, forestry and fishery workers	696	64.1	55.0
Craft and related trades workers	1167	56.7	62.7
Plant and machine operators, and assemblers	1137	48.8	59.9
Elementary occupations	775	59.6	52.3

Female

Occupation ISCO 08	Earnings	WTQ	Prospects
Managers	1639	63.5	71.6
Professionals	1440	60.2	71.8
Technicians and associate professionals	1235	62.5	69.7
Clerical support workers	1064	63.3	66.8
Service and sales workers	822	55.2	59.8
Skilled agricultural, forestry and fishery workers	527	65.8	51.7
Craft and related trades workers	785	61.3	58.4
Plant and machine operators, and assemblers	770	51.7	56.6
Elementary occupations	657	63.1	52.0

	Male		
Occupation ISCO 08	Earnings	WTQ	Prospects
Managers	2106	61.3	71.2
Professionals	1960	61.4	73.0
Technicians and associate professionals	1663	61.1	72.0
Clerical support workers	1337	58.4	67.4
Service and sales workers	1052	49.9	61.3
Skilled agricultural, forestry and fishery workers	773	63.2	56.4
Craft and related trades workers	1223	56.0	63.3
Plant and machine operators, and assemblers	1207	48.3	60.5
Elementary occupations	877	56.5	52.5

Table A5: Average job quality by industry

Industry (NACE Rev. 2)	Earnings	WTQ	IJQ	Prospects
A Agriculture, forestry and fishing	713	62.5	65.4	52.8
B Mining and quarrying	1866	51.1	66.9	69.0
C Manufacturing	1220	56.8	64.1	62.9
D Electricity, gas, steam and air conditioning	1536	60.2	71.2	73.6
E Water supply; sewerage, waste management	1203	59.4	65.7	69.6
F Construction	1353	57.9	63.6	61.9
G Wholesale and retail trade	1041	56.8	67.0	62.7
H Transportation and storage	1379	49.6	63.3	63.8
I Accommodation and food service activities	939	49.2	63.2	56.9
J Information and communication	1613	64.5	73.3	70.0
K Financial and insurance activities	1856	64.4	72.4	73.3
L Real estate activities	1375	64.9	71.5	64.3
M Professional, scientific and technical activities	1606	63.9	73.3	70.1
N Administrative and support service activities	1063	58.8	65.2	60.0
O Public administration; social security	1446	61.9	70.6	72.4
P Education	1351	60.2	73.5	69.7
Q Human health and social work activities	1291	56.7	68.6	69.8
R Arts, entertainment and recreation	1045	60.1	71.1	65.5
S Other service activities	960	63.1	69.4	63.7
T Activities of households	699	68.9	66.8	44.0
U Activities of extraterritorial organisations	2181	65.0	68.8	55.5

Female

Industry (NACE Rev. 2)	Earnings	WTQ	IJQ	Prospects
A Agriculture, forestry and fishing	586	63.5	65.0	49.4
B Mining and quarrying	1436	66.8	72.5	74.3
C Manufacturing	916	59.1	64.3	59.6
D Electricity, gas, steam and air conditioning	1252	65.6	73.8	72.7
E Water supply; sewerage, waste management	1061	64.1	68.1	67.8
F Construction	1159	66.8	72.7	64.0
G Wholesale and retail trade	885	57.1	67.4	61.4
H Transportation and storage	1189	56.6	66.2	68.5
I Accommodation and food service activities	840	52.0	62.8	58.4
J Information and communication	1233	64.0	71.2	66.7
K Financial and insurance activities	1431	64.0	71.4	72.0
L Real estate activities	1260	66.1	70.4	61.6
M Professional, scientific and technical activities	1344	64.3	72.2	67.2
N Administrative and support service activities	857	63.8	65.6	58.5
O Public administration; social security	1289	66.1	71.4	71.0
P Education	1224	60.4	73.7	69.3
Q Human health and social work activities	1199	57.2	68.6	70.0
R Arts, entertainment and recreation	932	62.4	70.7	65.2
S Other service activities	907	63.6	68.5	63.5
T Activities of households	642	69.0	66.8	42.8
U Activities of extraterritorial organisations	1126	76.3	69.0	45.2

Male

Industry (NACE Rev. 2)	Earnings	WTQ	IJQ	Prospects
A Agriculture, forestry and fishing	776	62.0	65.5	54.4
B Mining and quarrying	1931	48.9	66.1	68.3
C Manufacturing	1365	55.7	64.1	64.4
D Electricity, gas, steam and air conditioning	1615	58.6	70.4	73.8
E Water supply; sewerage, waste management	1249	58.0	65.0	70.1
F Construction	1373	57.0	62.6	61.7
G Wholesale and retail trade	1184	56.5	66.6	63.9
H Transportation and storage	1424	48.0	62.6	62.7
I Accommodation and food service activities	1043	46.4	63.6	55.3
J Information and communication	1732	64.6	74.0	71.0
K Financial and insurance activities	2274	64.7	73.3	74.6
L Real estate activities	1482	63.7	72.7	66.9
M Professional, scientific and technical activities	1898	63.6	74.4	72.9
N Administrative and support service activities	1280	53.6	64.9	61.6
O Public administration; social security	1565	58.9	70.0	73.5
P Education	1589	59.7	73.3	70.4
Q Human health and social work activities	1614	55.2	68.7	69.0
R Arts, entertainment and recreation	1163	57.8	71.6	65.8
S Other service activities	1073	62.1	71.4	64.0
T Activities of households	1155	68.3	66.7	53.2
U Activities of extraterritorial organisations	2526	57.0	68.6	63.1

Table A6: Average job quality by ownership type

Ownership type	Earnings	WTQ	IJQ	Prospects
Private sector	1197	57.9	66.6	62.7
Public sector	1342	58.5	70.1	70.8
Joint private–public organisation	1521	59.7	68.2	70.2
Non-for-profit sector, NGO	1191	66.6	72.8	66.1

Female

Ownership type	Earnings	WLBF	IJQ	Prospects
Private sector	984	59.9	67.5	61.7
Public sector	1216	59.8	70.6	70.4
Joint private-public organisation	1220	61.9	69.9	69.7
Non-for-profit sector, NGO	1079	67.3	72.6	66.2

Male

Ownership type	Earnings	WTQ	IJQ	Prospects
Private sector	1340	56.5	66.0	63.3
Public sector	1498	56.9	69.4	71.2
Joint private-public organisation	1746	57.9	66.9	70.6
Non-for-profit sector, NGO	1407	65.6	73.2	65.9

Table A7: Average job quality by establishment size

Establishment size	Earnings	WTQ	IJQ	Prospects
Under 10 employees	1068.4	60.8	68.2	60.2
Between 10 and 49 employees	1232.5	56.4	67.1	66.2
Between 50 and 249 employees	1388.3	56.4	67.1	68.7
More than 250 employees	1643.5	57.4	68.2	72.2

Female

Establishment size	Earnings	WTQ	IJQ	Prospects
Under 10 employees	914	62.0	69.3	59.7
Between 10 and 49 employees	1071	59.0	68.5	66.7
Between 50 and 249 employees	1214	58.6	68.3	68.6
More than 250 employees	1349	58.9	67.8	71.6

Male

Establishment size	Earnings	WTQ	IJQ	Prospects
Under 10 employees	1199	59.7	67.2	60.6
Between 10 and 49 employees	1365	54.3	66.0	65.9
Between 50 and 249 employees	1517	54.7	66.3	68.8
More than 250 employees	1837	56.4	68.4	72.5

Table A8: Average job quality by type of employment

Type of employment	Earnings	WTQ	IJQ
Self-employed without employees	1094	67.6	68.9
Self-employed with employees	1852	62.3	71.6
Employed on indefinite contract	1359	56.9	68.1
Employed on fixed term contract	971	55.3	65.7
Employed on temporary employment agency	998	55.3	61.7

Female

Type of employment	Earnings	WTQ	IJQ
Self-employed without employees	966	70.0	70.4
Self-employed with employees	1639	63.2	72.7
Employed on indefinite contract	1142	58.9	69.1
Employed on fixed term contract	862	57.8	66.5
Employed on temporary employment agency	885	58.4	64.1

Male

Type of employment	Earnings	WTQ	IJQ
Self-employed without employees	1164	66.3	68.2
Self-employed with employees	1940	62.0	71.1
Employed on indefinite contract	1542	55.2	67.2
Employed on fixed term contract	1090	52.7	64.8
Employed on temporary employment agency	1084	52.7	59.8

Table A9: Average job quality by country

Country	Earnings	WTQ	IJQ	Prospects
Albania	745	53.3	66.6	57.2
Austria	1403	62.0	66.8	68.5
Belgium	1536	60.9	68.3	71.5
Bulgaria	541	54.1	68.4	61.7
Croatia	861	52.1	67.7	61.6
Cyprus	1609	59.5	66.3	58.2
Czech Republic	1009	51.5	67.6	61.0
Denmark	1684	69.2	72.8	74.1
Estonia	762	57.6	69.3	60.8
Finland	1518	64.6	69.7	68.6
France	1438	59.9	64.8	68.6
Former Yugoslav Republic of Macedonia	609	54.9	64.8	58.5
Germany	1431	56.0	66.7	68.4
Greece	1270	53.6	64.9	57.3
Hungary	626	56.8	67.1	61.8
Ireland	1823	61.0	69.7	60.8
Italy	1257	61.3	67.5	64.0
Kosovo	767	55.4	66.8	63.9
Latvia	557	57.5	71.2	61.2
Lithuania	666	55.9	68.1	58.4
Luxembourg	2344	59.7	68.5	74.5
Malta	1350	58.4	70.8	62.4
Montenegro	802	46.6	66.3	61.2
Netherlands	1591	70.9	71.9	67.7
Norway	1818	66.2	70.5	72.9
Poland	850	55.7	70.4	64.8
Portugal	877	58.2	70.1	61.9
Romania	428	55.8	67.0	59.2
Slovakia	844	52.4	67.5	64.0
Slovenia	1047	56.3	68.7	62.6
Spain	1414	57.8	68.9	60.0
Sweden	1645	67.6	69.7	67.4
Turkey	648	51.9	61.9	48.8
United Kingdom	1591	61.3	69.4	70.9
All countries	1230	58.4	67.5	64.5

	Female			
Country	Earnings	WTQ	IJQ	Prospects
Albania	703	55.3	67.7	58.6
Austria	1139	64.0	68.5	67.6
Belgium	1337	62.8	69.2	71.0
Bulgaria	463	54.8	69.3	61.3
Croatia	735	51.9	67.7	61.3
Cyprus	1372	59.3	66.5	59.9
Czech Republic	823	51.3	68.7	59.0
Denmark	1477	68.7	71.9	74.1
Estonia	618	57.8	69.9	61.4
Finland	1346	63.6	68.6	68.0
France	1250	60.7	66.2	68.1
Former Yugoslav Republic of Macedonia	535	55.1	65.6	59.1
Germany	1143	58.6	67.7	65.9
Greece	1115	54.2	67.0	55.0
Hungary	563	57.3	68.1	62.6
Ireland	1493	63.6	70.2	60.1
Italy	1056	62.7	68.3	61.4
Kosovo	712	57.1	69.8	65.1
Latvia	517	57.7	72.0	63.9
Lithuania	581	55.7	69.4	58.1
Luxembourg	2126	61.2	68.9	73.7
Malta	1140	61.2	72.1	64.1
Montenegro	651	47.4	67.8	59.9
Netherlands	1180	74.6	71.3	66.7
Norway	1532	66.5	70.5	73.0
Poland	726	56.1	71.6	64.8
Portugal	780	59.6	71.0	59.8
Romania	399	55.3	67.4	61.0
Slovakia	694	54.8	69.1	64.7
Slovenia	975	55.8	69.2	62.5
Spain	1232	58.3	69.9	57.3
Sweden	1496	68.7	69.4	66.2
Turkey	566	54.2	62.6	47.3
United Kingdom	1209	65.0	70.3	71.4
All countries	1048	60.3	68.6	64.1

	Male			
Country	Earnings	WTQ	IJQ	Prospects
Albania	780	51.7	65.7	56.1
Austria	1643	60.3	65.4	69.3
Belgium	1707	59.3	67.5	71.9
Bulgaria	611	53.5	67.7	62.1
Croatia	967	52.3	67.8	61.8
Cyprus	1801	59.7	66.0	56.8
Czech Republic	1155	51.7	66.7	62.6
Denmark	1878	69.7	73.6	74.1
Estonia	922	57.4	68.7	60.1
Finland	1688	65.5	70.8	69.2
France	1609	59.2	63.6	69.1
Former Yugoslav Republic of Macedonia	658	54.8	64.3	58.1
Germany	1678	53.7	65.9	70.6
Greece	1373	53.2	63.5	58.9
Hungary	682	56.4	66.3	61.1
Ireland	2114	58.7	69.3	61.4
Italy	1406	60.4	67.1	65.7
Kosovo	786	54.8	65.6	63.4
Latvia	604	57.4	70.4	58.3
Lithuania	757	56.1	66.7	58.8
Luxembourg	2527	58.6	68.2	75.2
Malta	1457	57.0	70.1	61.5
Montenegro	922	46.0	65.1	62.1
Netherlands	1951	67.8	72.4	68.5
Norway	2082	65.9	70.6	72.8
Poland	958	55.4	69.5	64.8
Portugal	961	56.9	69.3	63.7
Romania	451	56.1	66.8	57.8
Slovakia	963	50.5	66.3	63.4
Slovenia	1111	56.8	68.2	62.6
Spain	1571	57.4	68.1	62.1
Sweden	1777	66.7	70.0	68.4
Turkey	678	51.0	61.6	49.3
United Kingdom	1956	57.9	68.7	70.6
All countries	1376	56.9	66.7	64.8

Table A10: Cross-country differences

Earnings

Country	Without Controls	With Industry Controls
Bulgaria	112.89	104.53
Latvia	129.36	101.34
Former Yugoslav Republic of Macedonia	181.28	177.29
Hungary	198.24	165.30
Turkey	220.01	252.03
Lithuania	237.53	249.15
Albania	317.09	353.10
Estonia	334.01	292.17
Kosovo	338.75	354.80
Montenegro	373.76	374.78
Slovakia	415.88	375.85
Poland	421.68	402.85
Croatia	432.67	423.22
Portugal	448.73	459.48
Czech Republic	580.61	538.25
Slovenia	619.26	596.21
Italy	828.84	802.06
Greece	842.32	854.54
Malta	921.53	871.15
Austria	975.13	951.45
Spain	985.88	1004.34
Germany	1002.69	965.28
France	1009.70	995.59
Finland	1089.44	1054.16
Belgium	1108.17	1077.71
United Kingdom	1162.75	1129.94
Netherlands	1163.22	1132.47
Cyprus	1181.01	1149.37
Sweden	1216.66	1157.16
Denmark	1255.70	1229.20
Norway	1389.63	1321.33
Ireland	1395.02	1386.15
Luxembourg	1916.02	1826.84

Working Time Quality

Country	Without Controls	With Industry Controls
Czech Republic	4.92	5.01
Turkey	5.32	4.11
Croatia	5.50	4.99
Slovakia	5.77	5.84
Albania	6.71	5.96
Greece	7.04	6.21
Bulgaria	7.53	7.40
Former Yugoslav Republic of Macedonia	8.30	8.13
Kosovo	8.84	8.28
Poland	9.13	8.43
Romania	9.17	7.57
Lithuania	9.26	8.68
Germany	9.38	9.19
Slovenia	9.73	9.54
Hungary	10.18	9.95
Latvia	10.92	10.50
Estonia	11.01	11.10
Spain	11.17	10.73
Portugal	11.57	11.09
Malta	11.82	11.92
Cyprus	12.93	12.37
Luxembourg	13.13	12.14
France	13.33	12.84
Belgium	14.29	14.15
Ireland	14.37	14.46
United Kingdom	14.66	14.68
Italy	14.72	14.31
Austria	15.41	15.45
Finland	17.99	17.81
Norway	19.56	19.50
Sweden	21.05	20.71
Denmark	22.62	22.93
Netherlands	24.35	24.40

Intrinsic Job Quality

Country	Without Controls	With Industry Controls
France	2.96	1.95
Former Yugoslav Republic of Macedonia	2.97	3.17
Greece	3.02	2.46
Cyprus	4.40	3.57
Montenegro	4.42	3.91
Albania	4.74	4.69
Germany	4.87	4.18
Kosovo	4.96	4.66
Austria	4.99	4.55
Romania	5.17	5.15
Hungary	5.25	4.82
Slovakia	5.68	5.74
Italy	5.69	5.18
Czech Republic	5.71	5.53
Croatia	5.89	5.64
Lithuania	6.23	5.60
Belgium	6.41	5.55
Bulgaria	6.59	6.66
Luxembourg	6.63	4.88
Slovenia	6.81	6.59
Spain	7.04	6.61
Estonia	7.45	7.00
United Kingdom	7.56	6.54
Finland	7.82	6.88
Sweden	7.88	6.31
Ireland	7.89	7.21
Portugal	8.28	8.11
Poland	8.58	8.19
Norway	8.67	7.22
Malta	8.90	8.12
Latvia	9.35	8.62
Netherlands	10.05	8.95
Denmark	10.91	10.07

Prospects

Country	Without Controls	With Industry Controls
Albania	8.39	8.60
Greece	8.57	7.65
Cyprus	9.42	7.87
Lithuania	9.64	8.28
Former Yugoslav Republic of Macedonia	9.70	8.89
Romania	10.44	10.10
Spain	11.21	10.78
Ireland	11.99	10.27
Estonia	12.02	10.05
Czech Republic	12.27	10.49
Montenegro	12.38	10.96
Latvia	12.39	10.69
Croatia	12.82	11.76
Bulgaria	12.92	11.80
Hungary	13.02	11.11
Portugal	13.07	12.29
Malta	13.58	11.33
Slovenia	13.78	12.22
Kosovo	15.11	14.59
Italy	15.18	13.65
Slovakia	15.23	13.64
Poland	16.03	15.12
Sweden	18.58	15.48
Netherlands	18.92	16.54
Germany	19.65	17.47
Austria	19.75	18.02
France	19.81	17.69
Finland	19.83	17.73
United Kingdom	22.17	20.12
Belgium	22.71	20.75
Norway	24.11	21.24
Denmark	25.30	22.90
Luxembourg	25.75	23.26

Table A11: Rank correlation coefficients by country

	Earnings	WTQ	IJQ	Prospects
Earnings	1.00			
WTQ	0.73	1.00		
IJQ	0.36	0.56	1.00	
Prospects	0.59	0.63	0.44	1.00

Table A12: Percentage of individuals in each job quality cluster by gender

Female

Country	Cluster 1: High-Paid Good Jobs	Cluster 2: Well-Balanced Good Jobs	Cluster 3: Poorly Balanced Jobs	Cluster 4: Low Quality Jobs
Albania	2.9	32.7	32.6	31.8
Austria	7.7	52.9	23.5	15.9
Belgium	9.3	54.0	24.3	12.5
Bulgaria	1.0	49.4	22.7	26.9
Croatia	0.8	41.2	36.1	21.9
Cyprus	16.4	32.9	21.0	29.7
Czech Republic	1.2	38.4	34.7	25.8
Denmark	19.6	55.2	17.5	7.7
Estonia	1.2	52.8	21.9	24.2
Finland	11.5	50.2	27.6	10.6
France	9.0	43.1	33.1	14.9
Former Yugoslav Republic of Macedonia	2.3	39.7	28.9	29.1
Germany	9.0	42.8	31.4	16.8
Greece	6.3	33.4	27.3	33.0
Hungary	1.2	49.8	22.7	26.4
Ireland	22.6	41.5	13.4	22.5
Italy	4.4	48.1	23.4	24.1
Kosovo	1.4	53.2	29.5	16.0
Latvia	1.1	56.0	22.0	20.9
Lithuania	0.5	47.3	22.2	30.0
Luxembourg	45.3	24.9	20.8	9.0
Malta	10.0	56.3	17.8	16.0
Montenegro	1.9	28.7	44.7	24.8
Netherlands	12.0	68.1	8.9	11.0
Norway	22.0	50.1	21.7	6.3
Poland	2.7	51.6	27.4	18.3
Portugal	4.4	42.2	24.1	29.3
Romania	0.7	39.9	32.4	27.0
Slovakia	1.3	43.8	32.9	22.0
Slovenia	4.6	46.3	29.2	20.0
Spain	13.4	37.0	22.5	27.1
Sweden	18.2	55.8	16.2	9.9
Turkey	0.9	25.8	19.8	53.5
United Kingdom	14.8	54.3	20.8	10.1
All countries	8.5	45.8	25.7	20.1

Male

Country	Cluster 1: High-Paid Good Jobs	Cluster 2: Well-Balanced Good Jobs	Cluster 3: Poorly Balanced Jobs	Cluster 4: Low Quality Jobs
Albania	2.2	31.5	31.7	34.6
Austria	22.3	32.6	29.1	16.0
Belgium	21.3	37.7	30.1	11.0
Bulgaria	0.9	41.8	31.6	25.6
Croatia	3.8	36.3	38.2	21.7
Cyprus	26.0	24.7	19.1	30.3
Czech Republic	4.0	33.6	43.1	19.4
Denmark	38.6	43.3	11.0	7.1
Estonia	5.7	43.6	25.7	25.0
Finland	22.4	45.8	22.8	9.0
France	21.1	28.1	32.6	18.2
Former Yugoslav Republic of Macedonia	3.3	30.6	29.1	37.0
Germany	25.4	21.4	42.0	11.1
Greece	13.5	24.1	31.7	30.8
Hungary	2.4	38.5	31.3	27.9
Ireland	40.7	17.5	19.0	22.7
Italy	10.6	44.1	31.3	14.0
Kosovo	4.4	34.6	36.7	24.3
Latvia	1.8	41.2	25.1	32.0
Lithuania	1.4	35.8	30.7	32.1
Luxembourg	51.4	19.0	21.5	8.2
Malta	16.2	36.2	24.2	23.4
Montenegro	6.2	20.9	47.3	25.7
Netherlands	43.5	35.8	12.3	8.4
Norway	53.1	26.4	11.4	9.2
Poland	4.8	42.3	35.9	17.0
Portugal	5.4	42.4	31.9	20.3
Romania	0.6	32.9	35.0	31.5
Slovakia	3.9	30.0	50.4	15.8
Slovenia	8.1	40.3	30.9	20.7
Spain	18.7	26.9	33.9	20.6
Sweden	34.0	40.5	12.4	13.1
Turkey	1.9	21.1	25.1	51.9
United Kingdom	33.4	27.5	28.6	10.5
All countries	17.8	30.3	31.5	20.4

Table A13: Percentage of jobs with at-risk workers by country

Country	Female	Male	Total
Denmark	7.7	7.1	7.4
Luxembourg	9.0	8.1	8.5
Netherlands	11.0	8.4	9.6
Finland	10.6	9.0	9.8
Norway	6.3	9.2	7.8
United Kingdom	10.1	10.5	10.3
Belgium	12.5	11.0	11.7
Germany	16.8	11.1	13.7
Sweden	9.9	13.1	11.6
Italy	24.1	14.0	18.3
Slovakia	22.0	15.8	18.5
Austria	15.9	16.0	15.9
Poland	18.3	17.0	17.6
France	14.9	18.2	16.6
Czech Republic	25.8	19.3	22.2
Portugal	29.3	20.3	24.5
Spain	27.1	20.6	23.6
Slovenia	20.0	20.7	20.3
Croatia	21.9	21.7	21.8
Ireland	22.5	22.7	22.6
Malta	16.0	23.4	20.8
Kosovo	16.0	24.3	22.0
Estonia	24.2	25.0	24.5
Bulgaria	26.9	25.6	26.2
Montenegro	24.8	25.7	25.3
Hungary	26.4	27.9	27.2
Cyprus	29.7	30.3	30.0
Greece	33.0	30.8	31.6
Romania	27.0	31.5	29.6
Latvia	20.9	32.0	26.0
Lithuania	30.0	32.1	31.0
Albania	31.8	34.6	33.4
Former Yugoslav Republic of Macedonia	29.1	37.0	33.9
Turkey	53.5	51.9	52.3

Table A14: Percentage of jobs with at-risk workers by establishment size

Establishment size	Female	Male	Total
Under 10 employees	24.5	26.3	25.5
Between 10 and 49 employees	18.1	19.6	18.9
Between 50 and 249 employees	14.5	15.3	14.9
More than 250 employees	12.2	9.4	10.5

Table A15: Percentage of jobs with at-risk workers by type of sector

Type of sector	Female	Male	Total
Private sector	24.9	23.3	23.9
Public sector	9.6	9.0	9.4
Joint private-public organisation	11.6	11.6	11.6
Non-for-profit sector, NGO	14.3	13.4	14.0

Results for the trend analyses

Table A16: Average indices over time

	1995	2000	2005	2010
Skills and Discretion (T)	61.2	59.4	59.5	61.2
Work Intensity (T)	40.1	40.8	43.4	42.3
Good Physical Environment (T)	78.7	78.5	78.9	79.2
Working Time Quality (T)	62.6	65.2	66.8	68

Female

	1995	2000	2005	2010
Skills and Discretion (T)	59.6	58.4	58.8	60.2
Work Intensity (T)	37.3	38.0	39.7	39.2
Good Physical Environment (T)	82.0	82.9	83.6	83.7
Working Time Quality (T)	69.3	71.0	72.4	73.2

Male

	1995	2000	2005	2010
Skills and Discretion (T)	62.4	60.2	60.1	62
Work Intensity (T)	42.2	42.8	46.2	44.8
Good Physical Environment (T)	76.4	75.2	75.1	75.5
Working Time Quality (T)	57.7	60.8	62.3	63.7

Table A17: Correlation coefficients between the four indices

Year	Index	Skills and Discretion (T)	Work Intensity (T)	Good Physical Environment (T)
1995	*Work Intensity (T)*	0.0461	1	
	Good Physical Environment (T)	0.2616	-0.3661	1
	Working Time Quality (T)	-0.0144	-0.1134	0.1403
2000	*Work Intensity (T)*	0.0368	1	
	Good Physical Environment (T)	0.1962	-0.3789	1
	Working Time Quality (T)	-0.0451	-0.0994	0.14
2005	*Work Intensity (T)*	0.0114	1	
	Good Physical Environment (T)	0.2276	-0.3784	1
	Working Time Quality (T)	-0.0369	-0.164	0.1445
2010	*Work Intensity (T)*	0.0346	1	
	Good Physical Environment (T)	0.1674	-0.3654	1
	Working Time Quality (T)	-0.0504	-0.1442	0.1234

Table A18: Distribution of *Skills and Discretion (T)* by country in the EU15, 1995–2010

Country	1995	2000	2005	2010	Change
Austria	58.1	61.9	64.9	64.2	↑
Belgium	59.0	59.8	64.7	64.2	↑
Denmark	69.7	70.7	72.8	75	↑
Finland	70.1	68.4	71.0	73.2	↑
France	60.1	58.4	61.6	58.2	
Germany	60.5	59.5	57.9	60.6	
Greece	48.2	46.8	52.6	53	↑
Ireland	57.4	57.4	62.7	62.7	↑
Italy	57.5	55.3	58	58	
Luxembourg	58.4	57.5	66.1	66.8	↑
Netherlands	70	71.6	69.5	69.7	
Portugal	53.5	46.3	54.4	56	
Spain	52.7	51.9	50.5	56.5	↑
Sweden	69	67.5	73.8	71.5	
United Kingdom	69.4	64.9	59.9	64.9	↓

Note: Directional arrows show ‘substantial’ and significant change, at least 3 points in the average level.

Female

Country	1995	2000	2005	2010	Change
Austria	55.3	59.6	65.9	64	↑
Belgium	56.8	58.7	65.3	64.4	↑
Denmark	68.3	69.2	72.5	73.3	↑
Finland	69.2	66.7	70.4	71.5	
France	57.9	57	61.3	56.7	
Germany	59.3	59.1	56.8	60.4	
Greece	47.5	44.7	48.1	53.3	↑
Ireland	56	56.1	61.6	61.6	↑
Italy	55.1	52.6	54.9	55.6	
Luxembourg	57.7	57	64.5	66.8	↑
Netherlands	65.7	67.1	65.8	67	
Portugal	51.6	44.5	52.7	54.8	↑
Spain	51	51.3	51.3	54.3	↑
Sweden	67.6	66.5	72.7	71.5	↑
United Kingdom	66.9	63.7	60.1	64.3	

Male

Country	1995	2000	2005	2010	Change
Austria	60.5	63.6	64	64.4	↑
Belgium	60.5	60.7	64.2	64	↑
Denmark	70.9	72	73	76.4	↑
Finland	70.8	70	71.5	74.9	↑
France	61.8	59.6	61.9	59.5	
Germany	61.3	59.8	58.7	60.8	
Greece	48.5	48	55.4	52.8	↑
Ireland	58.3	58.3	63.5	63.7	↑
Italy	58.9	56.9	60.1	59.6	
Luxembourg	58.7	57.8	67.3	66.8	↑
Netherlands	73	75	72.5	72	
Portugal	55.1	47.8	55.7	57	
Spain	53.6	52.2	50	58.2	↑
Sweden	70.2	68.5	74.7	71.5	
United Kingdom	71.4	66	59.7	65.5	↓

Table A19: Distribution of *Work Intensity (T)* by country in the EU15, 1995–2010

Country	1995	2000	2005	2010	Change
Austria	48.8	42.9	47.6	42.1	↓
Belgium	33.2	37.3	42.8	40.2	↑
Denmark	39	37.6	47.9	39.1	
Finland	47.1	46.7	49.6	45.9	
France	38.4	39.5	40.5	43	↑
Germany	40.8	40.9	46.9	44.9	↑
Greece	40.9	43.5	50.5	48.6	↑
Ireland	39	42.2	36.9	47	↑
Italy	34.1	39.7	41.9	40.8	↑
Luxembourg	31.4	37.6	40.6	40.8	↑
Netherlands	41.8	41.3	40.3	38.5	↓
Portugal	36.2	31.8	40.1	31.6	↓
Spain	34.2	36.2	41.2	38	↑
Sweden	43.3	47.9	48.1	45.9	
United Kingdom	47.3	45	42.5	43.6	↓

Note: Directional arrows show 'substantial' change, at least 3 points in the average level.

Female

Country	1995	2000	2005	2010	Change
Austria	42.9	36.9	44.5	37.9	↓
Belgium	28.0	36.5	40.8	36.6	↑
Denmark	40.4	37.1	46.1	39.5	
Finland	47.8	46.5	51.2	47.0	
France	32.5	35.5	37.7	38.4	↑
Germany	36.1	37.1	41.8	41.9	↑
Greece	40.3	42.6	47.1	46.0	↑
Ireland	39.2	42.2	34.5	45.4	↑
Italy	34.3	38.3	37.6	37.2	↑
Luxembourg	26.3	36.2	36.8	39.5	↑
Netherlands	37.7	40.3	38.2	37.6	
Portugal	36.3	28.8	36.7	27.0	↓
Spain	32.1	33.7	34.6	33.9	
Sweden	41.9	47.3	47.0	45.5	↑
United Kingdom	45.1	41.6	40.0	41.2	↓

Male

Country	1995	2000	2005	2010	Change
Austria	53.7	47.4	50.3	45.7	↓
Belgium	36.7	37.8	44.4	43.1	↑
Denmark	37.8	38.1	49.5	38.8	
Finland	46.5	47.0	48.2	44.8	
France	43.2	42.9	43.1	47.2	↑
Germany	44.3	43.8	51.1	47.4	↑
Greece	41.3	44.0	52.6	50.3	↑
Ireland	38.9	42.2	38.7	48.2	↑
Italy	34.1	40.4	44.7	43.3	↑
Luxembourg	34.2	38.6	43.2	41.8	↑
Netherlands	44.7	42.1	42.0	39.4	↓
Portugal	36.1	34.3	43.1	35.6	
Spain	35.4	37.7	45.4	41.2	↑
Sweden	44.5	48.5	49.2	46.3	
United Kingdom	49.1	47.9	44.6	45.6	↓

Table A20: Distribution of *Good Physical Environment (T)* by country in the EU15, 1995–2010

Country	1995	2000	2005	2010	Change
Austria	77.8	80.8	78.8	80	
Belgium	82.1	81.3	80.8	79.1	↓
Denmark	83.1	83.3	81.1	83.1	
Finland	77.2	74.4	74.7	76	
France	75.9	75.3	75.9	74.3	
Germany	81.3	81.5	79.5	80.7	
Greece	66.3	68.9	67.1	72.1	↑
Ireland	80.5	78.9	82.6	81.4	
Italy	82.3	80.5	80	79.7	
Luxembourg	80.2	80.3	80.4	77.2	↓
Netherlands	81.1	81.2	83.3	84.4	↑
Portugal	75.2	77.5	74	76.8	
Spain	75.3	72.5	75.3	77.5	
Sweden	79.6	78	78.5	78	
United Kingdom	77.4	79.2	83.2	82.1	↑

Note: Directional arrows show ‘substantial’, at least 3 points in the average level.

Female

Country	1995	2000	2005	2010	Change
Austria	84.2	86.1	83.4	84.6	
Belgium	85.3	85.3	84.5	82.7	
Denmark	82.9	84.0	82.1	84.4	
Finland	79.5	77.2	77.1	77.9	
France	80.1	79.9	79.6	79.7	
Germany	84.3	85.8	85.9	85.3	
Greece	72.9	76.4	73.1	80.7	↑
Ireland	84.5	84.3	88.2	85.8	
Italy	84.1	84.6	84.4	85.6	
Luxembourg	86.5	85.8	82.7	80.1	↓
Netherlands	82.9	82.9	85.7	87.2	↑
Portugal	77.1	82.1	79.3	80.7	↑
Spain	82.3	77.6	82.7	81.9	
Sweden	82.0	80.4	80.5	80.8	
United Kingdom	80.2	84.1	86.6	85.9	↑

Male

Country	1995	2000	2005	2010	Change
Austria	72.5	76.7	75.0	76.0	↑
Belgium	79.9	78.4	78.0	76.1	↓
Denmark	83.2	82.7	80.1	81.9	
Finland	75.1	71.9	72.5	74.2	
France	72.6	71.6	72.5	69.4	↓
Germany	79.0	78.2	74.2	76.8	
Greece	62.5	64.5	63.3	66.5	↑
Ireland	77.9	75.2	78.5	77.7	
Italy	81.3	78.1	77.1	75.8	↓
Luxembourg	76.7	76.8	78.8	75.0	
Netherlands	79.9	79.8	81.4	82.1	
Portugal	73.7	73.8	69.5	73.5	
Spain	71.5	69.5	70.6	74.0	
Sweden	77.4	75.8	76.6	75.4	
United Kingdom	75.2	75.0	80.2	78.8	↑

Table A21: Trend in *Working Time Quality (T)* by country in the EU15, 1995–2010

Country	1995	2000	2005	2010	Change
Austria	61.7	64	63.4	68.7	↑
Belgium	61.2	67.1	67.1	68.7	↑
Denmark	73.2	74.9	73.9	73.4	
Finland	63.1	63.6	66.7	69.6	↑
France	61	65.1	73	72.3	↑
Germany	65.3	67.9	66.8	68	
Greece	48.7	56.7	52.1	53	↑
Ireland	58.8	61.4	65	66.8	↑
Italy	58.9	61.1	62.9	66.1	↑
Luxembourg	60.5	64.6	67.8	67.4	↑
Netherlands	70.3	73.9	73.1	73.7	↑
Portugal	57.7	63.1	62.7	64.1	↑
Spain	59.4	60.6	62.4	67	↑
Sweden	68.2	68.1	67.7	68.7	
United Kingdom	63.8	65.3	68.3	66.9	↑

Note: Directional arrows show 'substantial', at least 3 points in the average level.

Female

Country	1995	2000	2005	2010	Change
Austria	66.6	69.2	67.0	73.5	↑
Belgium	65.6	72.4	73.6	73.9	↑
Denmark	76.3	78.2	79.1	76.9	
Finland	68.2	66.1	71.3	71.8	↑
France	66.4	69.1	76.0	75.2	↑
Germany	70.1	74.0	71.5	73.1	
Greece	55.0	62.3	58.7	57.3	
Ireland	70.1	70.6	73.5	73.7	↑
Italy	64.5	65.3	69.0	70.7	↑
Luxembourg	65.8	68.9	72.5	70.7	↑
Netherlands	78.9	81.2	80.9	82.9	↑
Portugal	62.3	67.6	65.6	67.3	↑
Spain	64.6	63.5	67.4	70.1	↑
Sweden	72.1	72.2	71.6	71.7	
United Kingdom	75.8	74.3	76.0	75.0	

	Male				
Country	1995	2000	2005	2010	Change
Austria	57.7	60.0	60.3	64.5	↑
Belgium	58.3	63.3	62.0	64.4	↑
Denmark	70.6	72.1	69.5	70.3	
Finland	58.5	61.3	62.4	67.5	↑
France	56.7	61.8	70.4	69.6	↑
Germany	61.7	63.1	62.8	63.6	
Greece	45.0	53.4	48.0	50.2	↑
Ireland	51.7	55.0	58.7	61.1	↑
Italy	55.8	58.7	58.9	63.0	↑
Luxembourg	57.7	61.8	64.5	65.0	↑
Netherlands	64.3	68.4	66.8	65.9	
Portugal	54.1	59.3	60.3	61.3	↑
Spain	56.6	59.0	59.1	64.5	↑
Sweden	64.7	64.3	64.1	65.9	
United Kingdom	53.9	57.7	61.4	59.7	↑

Table A22: Convergence tests

	Skills and Discretion (T)	Work Intensity (T)	Good Physical Environment (T)	Working Time Quality (T)
Regression coefficient	-0.174	-0.643	-0.407	-0.290
p value	0.103	0.007	0.014	0.032

	Skills and Discretion 1995	Skills and Discretion 2010	Work Intensity 1995	Work Intensity 2010
Coefficient of variation on the means	0.41	0.42	0.63	0.61

	Good Physical Environment 1995	Good Physical Environment 2010	Working Time Quality 1995	Working Time Quality 2010
Coefficient of variation on the means	0.24	0.23	0.35	0.30

European Foundation for the Improvement of Living and Working Conditions

Trends in job quality in Europe

Luxembourg: Publications Office of the European Union

2012 — 94 pp. — 21 x 29.7 cm

ISBN 978-92-897-1071-8
doi:10.2806/35164

EF/12/28/EN

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Using data from the fifth European Working Conditions Survey (EWCS), this study measures job quality in the 27 countries of the European Union, as well as seven additional countries in Europe that participated in the survey. The intention was to find an objective means of assessing the principle established in a number of EU directives that work should adapt to the workers. Increased understanding of the social costs of poor job quality has focused attention on physical and social environments at work. Prolonged life expectancy and the ageing of the population suggest that jobs will have to be of good quality if more workers are to be persuaded to work longer.
The indices constructed for this study do not rely on subjective measurement such as preferences and attitudes, but are built on the self-reported features of jobs that are associated with workers' well-being.

TJ-31-12-695-EN-C

Publications Office

Eurofound

ISBN 978-92-897-1071-8

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