IS JOB QUALITY BECOMING MORE UNEQUAL?

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The authors examine trends in nonwage aspects of job quality in Europe. They focus on both the level and the dispersion of job quality. Theories differ in their predictions for these trends and for whether national patterns will converge. Data from the Fifth European Working Conditions Survey are used, in conjunction with earlier waves, to construct four indices of nonwage job quality: *Work Quality*, *Work Intensity*, *Good Physical Environment*, and *Working Time Quality*. Jobs are tracked from 1995 to 2010, across and within 15 European Union countries. The social corporatist countries had the highest Work Quality and lowest dispersion for all four indices. Work Quality and Work Intensity each rose in several countries, and Working Time Quality rose in most. The dispersion of Working Time Quality, Work Intensity, and Good Physical Environment each fell in many countries, and there was little sign of national divergence.

Much is known about how wages have grown or stagnated, have become more unequal across a range of countries though to differing extents, and about how these trends may be linked to changing technologies, work organization, labor market institutions, and intensified global competition. Observing how job quality trends for areas other than wages vary across countries and between varieties of capitalism should also be illuminating. Since the inception of the European Employment Strategy in the late 1990s there has been some emphasis in European policy discourse on the quality, as well as the quantity, of employment; and the link between job quality and well-being at work has become an ingredient of the advocated broader approach to the measurement of national well-being (Stiglitz, Sen, and Fitoussi 2009: 49).

Yet changes in nonwage aspects of job quality across countries have been less well documented than the evolution of wages. Studies of particular features, such as insecurity or intensification, usually in single countries, have

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occurred, but few take a perspective over a range of countries and multiple domains of job quality, and none are able to present an up-to-date picture following the great recession of 2008–09. In this article, we examine trends in several nonwage aspects of job quality in Europe. We examine these trends in the light of existing theories and expectations about the evolution of job quality, taking the analysis up to 2010 and covering 15 countries across Europe.[1]

In line with developing practice we utilize an objective concept of job quality, which defines it as a set of features that help to meet jobholders' needs from work. This approach means that we include only variables characterizing jobs, leaving out those applying to individuals' lives or their preferences.[2] Also omitted are variables capturing the labor market environment of jobs, such as the unemployment rate and the level of social protection. Thus our analysis is more focused than others using wider classes of variables, such as the International Labour Organisation's "decent work" index (Bescond, Chataignier, and Mehran 2003; Ghai 2003), or the "quality of employment" indices being developed by the United Nations Economic Commission for Europe (Körner, Puch, and Wingerter 2011). In addition to wages, job quality comprises the job's prospects (career prospects and job security), features conducive to a good work–life balance, and several intrinsic aspects of jobs—including the quality of the work itself, its physical environment, its pace or intensity, and the social relations at work (which can be supportive or abusive).[3]

While all of these features are captured to some degree in our data for 2010, not all are available over a sufficient time interval to permit an analysis of trends. Nevertheless, basing our analyses on successive waves at five-year intervals of the European Working Conditions Surveys (EWCS), we are able to report for the first time on trends in multiple domains for which there has been little previous information.

Theory and earlier literature generate contrasting predictions as to how the level and dispersion of job quality is thought to have evolved. Optimistic predictions that job quality will improve with economic growth, and that regulatory forces and workers' demands will reduce differences in working conditions, are contested by those who emphasize the persistence of neo-Fordist labor processes. Such predictions are set against expectations that the inequality will have increased, derived from extrapolation of the theory and evidence on rising wage inequality. Perspectives also differ as to whether

[1]Among these countries, from 1994 to 2005 wage inequality rose to various extents in the UK, Netherlands, Germany, Finland, France, and Sweden while falling in Spain and Ireland (OECD Observer, June 2007). See also Atkinson (2008).

[2]Individual reports of well-being have been used to investigate criterion validity for the constructed indices of job quality.

[3]This framework is an adaptation of that set out in European Foundation (2002). Note that unlike the "Laaken indicators" developed by the European Commission to support the European Employment Strategy, this framework demarcates job quality as conceptually separate from, even if related to, productivity (Green 2006; Peña-Casas 2009).

job quality trends are similar in many countries, or whether national differences in regulations and in labor market institutions have induced varying paths of development. Both "varieties of capitalism" and "power resources" theories of how institutions affect the functioning of labor markets expect to find job quality differences between nations, and some evidence of better job quality in Nordic countries has been observed (e.g., Gallie 2003). Discovering whether paths of change diverge provides a useful test of the importance of national-level institutions (Olsen, Kalleberg, and Nesheim 2010).

We therefore focus on the dispersion as well as the level of nonwage job quality, and on the extent to which there may be divergent or convergent trends between countries. We first report on the construction of four job quality indices, covering work quality, work intensity, the physical environment of work, and features of working time conducive to a good work–life balance. We expect to find considerable continuity but are also interested in the directions of change. To study dispersion we examine the gaps between socioeconomic groups and the differences among individuals within countries. To study the levels we investigate mean values and how they evolve overall and within countries. For both the levels and the dispersion, the issue of convergence and divergence is studied by examining whether the variation across countries is narrowing or widening.

Theories of Change in the Level and Dispersion of Job Quality

Theories about how job quality has changed in the modern era may be broadly divided into those that take a universal perspective and those that emphasize differentiation across countries or across groups of countries with similar institutional regimes.

In the universal approach, it could be held that more affluent countries will have jobs of better quality, and that increasing affluence in the long term, signaled by rising GDP per capita, will be reflected in rising job quality. With jobs having multiple characteristics, an assumption of homothetic preferences would be enough to ensure that, as wealth rises, workers would choose to "buy" improvements in all features that they value.[4] If, however, production relations evolve as neo-Fordist, it remains possible that job quality could stagnate or decline, even while wages increased. *Per contra*, in a post-Fordist world, nonwage job quality features, such as autonomy and challenge, would be expected to rise as well as wages. Insofar as one might expect to see the technologies behind these evolutions as ubiquitous, the trends in job quality could be expected to be common across countries.

When the relative demand for skilled labor, bolstered by skill-biased technical change, outstrips the growth of supply, a further expectation is that

[4]The substitution effect of rising hourly wages generates theoretical ambiguity; yet the long term has seen reductions in work hours in Europe, which is generally interpreted as the income effect exceeding the substitution effect.

just as there have been increasing wage returns to skill, so other aspects of job quality would become more unequal. This prediction is counterbalanced, however, when the predominant new technology leads to the automation of programmable manual and nonmanual tasks previously important in middle-paid jobs, while complementing nonroutine aspects of high-skill jobs. In this nuanced theory of skill-biased technical change, the expectation is for an asymmetric polarization of jobs: a relative growth in the number of jobs with low pay, relative to the number of jobs with middle-range pay, and the largest growth in high-pay jobs (Autor, Levy, and Murnane 2003; Goos and Manning 2007; Goos, Manning, and Salomons 2010). Increased subcontracting and outsourcing of jobs reinforce this tendency, because overlap in the jobs allows them to be automated or outsourced. If the nonroutine content of jobs is associated to some extent with higher levels of task discretion, the relative growth of nonroutine tasks at the lower end of the occupational spectrum would imply reductions in the inequality of this aspect of job quality; but the simultaneous growth of nonroutine task content at the top end, where autonomy is already high, means that the prediction about the overall effect of technological change on the inequality of task discretion is ambivalent.

Organizational changes, such as the growth of teamwork and the rise of "high-performance" management practices, also have substantive implications for job quality (examples are Osterman 2000; Danford et al. 2008; Gallie et al. 2012). To some extent these organizational changes are complements to technical change and could be expected to affect jobs in all countries. Organizational changes also reflect heterogeneous management cultures and choices, however, with the implication that job quality could change in dissimilar ways across countries and regimes (Rubery and Grimshaw 2001).

Technical and organizational changes may be biased, not only in terms of skill requirements but also in their implications for other aspects of jobs that are important for job quality. For example, it has been argued that new technology is also effort-biased, in that the increments to productivity arising from innovation are disproportionately greater for those workers who put in greater levels of intensive effort (more effort in a given work time) (Green 2004). As new technology diffuses, this theory predicts that work intensification is likely to be widespread. Technology's effect on effort would also be predicted to be greater for those workers who were previously working below their physical and mental limits; hence, we would expect a reduction in its dispersion.

Finally, one might anticipate some generalized changes in job quality in response to changing demands from workers and consumers. One pertinent example is the growing demand, following steadily increased female participation in the labor force in all countries, for jobs with characteristics that contribute to work–life balance. Other examples include the impact of aging and of rising education on the structure of services demanded.

In contrast to universal theories, other writers stress the influence of national-level institutions in affecting jobs, whether in respect to pay or to

other aspects of job quality. The broad consequence is the expectation that there will be persistent differentiation across countries in distributions of job quality. In the varieties of capitalism framework (Hall and Soskice 2001) the hypothesis is that job quality will vary across production regimes, and in particular, be greater in coordinated market economies (CME) than in liberal market economies (LME), since in the former, employers' strategy is to commit to long-term employment relations. The implication is not only better job security but also better job quality in all dimensions in the CMEs.

Coupled with this prediction from the perspective of the system of production, however, is the uneasy link with social reproduction systems: the greater probability of career interruptions for women leads, in CMEs, to gender gaps in job quality reflecting the segregation and segmentation that follows from employers' investment in firm-specific skills (Estevez-Abe 2005). In production regime theories these ideas should apply to all CMEs, but in contrast, the employment regime framework (sometimes referred to as the Power resources model) differentiates within the CMEs between social corporatist (also termed "inclusive") and dualist regimes (Gallie 2007a, 2007b; Olsen et al. 2010). The distinctiveness of these regimes is driven by the nature and strength of trade unions, and the balance of power between labor and capital. With social corporatist regimes, the state supports employment policies that promote good work opportunities across the population; whereas in dualist regimes the historical strength of the core male workforce of skilled long-term employees persists. In short, these institutional theories predict not only that job quality is higher in CMEs than in LMEs, but (in the employment regime version) that job quality is more equally distributed in the social corporatist regimes found among the Nordic countries.

Production regime and employment regime models are less decisive about the pattern of change in job quality that is to be expected.[5] If employment regimes persist, because they constitute an institutional equilibrium with self-reinforcing financial and employment systems, one might also expect a pattern of job quality change, with coordinated economies more resistant than liberal market economies to global competition. Other universal pressures for change, such as new technology, would also be differentially resolved. However, the stability of institutional regimes may be in question.[6] In addition, across countries the assorted paces of institutional change or continuity could be expected to give rise to a varied pattern of change in job quality. As employment institutions evolve, reflecting in part a changing balance of power, one can expect to see differential change in job quality. Where trade unions have been most weakened, as for example in the United

[5]Another limitation is that regime theories are focused on archetypal examples. The large majority of countries are different, not least the many southern European countries that resemble none of the three models.

[6]Thelen (2004), for example, poses a model of punctuated political equilibrium to account for the evolution of the skill formation institutions in Germany and Britain.

States or the United Kingdom, one would expect to see the greatest changes in both the levels and the inequality of job quality.

Reinforcing this point, job quality in key domains reflects national regulations about working conditions, working time, wages, equal treatment, and health and safety. As a general rule, regulations can be expected to lower inequalities in job quality, in that it is primarily in the lower quality jobs where controls bite. Regulations develop at their own pace, toward either deregulation or re-regulation, varying across countries.

Yet, to some extent, regulation patterns spread across countries through processes of demonstration and policy learning. An example is the case of smoking constraints in workplaces. Moreover, several labor market regulations in Europe stem from supranational government: The European Union's Directives have had widespread implications for job quality across member states, as national governments are required to bring their own laws into line. In the last 15 years, such directives have driven the adoption, or confirmation, of national regulations on working time (and associated paid holidays), rights to workplace representation, and fair treatment of part-time workers, workers on fixed-term contracts, and most recently temporary agency workers. These supranational regulatory influences imply both some equalizing forces within countries and some convergence between countries.

The extent of convergence or divergence between countries has been seen as something of a litmus test for the growing or declining importance of the universal pressures on job quality (Olsen et al. 2010). If the relative impact of institutions has been diminishing over time, scholars argue that countries would converge. By contrast, if institutions' role is becoming more important, then it is possible that countries' job qualities could diverge. We examine the evidence below; however, this test is asymmetric. A finding of divergence suggests an increasing role for institutions, relative to universal pressures, but the opposite finding of convergence leaves the case open. If institutional changes are in the same direction across countries, or if supranational regulation is important, one could still expect to witness some degree of convergence.

Finally, theories of the overall level and distribution of aspects of job quality also have implications for job quality gaps between socioeconomic groups. Universal technology pressures and supranational regulatory forces (for example, those that proscribe forms of discrimination) could be expected to narrow gender gaps, but national institutional differences, for example in the strength and policies of unions, could be expected to maintain and even widen patterns of differentiation.

In light of this brief overview of existing theories of workplace change, we can summarize the context for our examination of trends in the distribution of job quality as follows: that a positive relationship between job quality and per capita GDP is expected, that the CMEs would tend to have higher job quality, and that in particular the inclusive CMEs would have the lowest levels of inequality in multiple dimensions. Insofar as a generalized increased

affluence in the economy, a diffusion of post-Fordist workplace regimes, and a widespread regulation of working conditions occur, rising job quality is expected; even so, technological change may also stimulate a widespread intensification of work effort. Rising returns to skill and/or universal deregulation suggest that job quality will become more unequal in multiple dimensions, not just in wages; but this prediction is also modified by the "nuanced" theory of technical change, which emphasizes the survival of nonroutine tasks in low-paid jobs, by increased demand for a better work–life balance, and by evolving regulation of important job features such as environmental hazard and working time. Above these generalized themes we also expect differentiation across regimes and countries, with the CMEs showing the greatest resistance to upward pressures on inequality. Evidence of divergence among countries would then be indicative of the maintained or increased importance of an institutional determination of job quality.

Previous Quantitative Evidence about Changing Job Quality

Common to these theories is the expectation that *some* substantive change in the distribution of job quality is expected. Yet a further possibility is that theorists have overestimated the effect of transformations in the workplace on job quality. Institutional resilience and cultural persistence may limit the speed at which working conditions are altered, and perspectives of change could be based on a distorted perception of the past, which gives a false impression of radical change. Past analyses and projections, for example, of an "end to work" or of a "Brazilianisation" of European labor markets, have proved very wide of the mark (Green 2009; Fevre 2007). Handel (2005), using General Social Survey evidence, finds substantive continuity in perceptions of job quality over almost a decade and concludes that both optimistic and pessimistic schools may have overstated their case.

Whether this finding is generalized deserves investigation on a broader scale. Hitherto, most evidence about change in job quality has focused on wages. Since 1980, wages have become much more unequal, but more so in some countries than others. Within Europe, Sweden, Germany, the Netherlands, and the UK are countries with widening differentials, but much more stability is observed in France and Finland (OECD 2008). For nonwage job quality features, some evidence is available for certain individual countries. Examples are Finland (Lehto and Sutela 2005), the United States (Schmitt 2001; Kalleberg 2011), Britain (Gallie, Felstead, and Green 2004; Kim and Park 2006), and France (Givord and Maurin 2004). While a number of these broad trends are brought together in Green (2006), the comparatively rare cross-national studies of change in job quality have relied primarily on the International Social Survey Programme (ISSP) surveys, which include periodic work orientation modules, and the European Working Conditions Surveys (EWCS). Using the former, Olsen et al. (2010) find evidence of convergence in job security and work intensity between four countries (Norway, West Germany, the United States, and Britain); while across a

very wide range of countries, Green (2009) found that job insecurity approximately tracked the unemployment rate. Both of these studies found that job quality was highest in the Nordic countries, but no higher in the other CMEs than in liberal market economies (Britain and Ireland), similar to Gallie (2003) who also finds with different data that jobs in Nordic countries afford relatively high levels of personal discretion.

The first three EWCS were drawn on by the OECD's analysis of "more and better jobs" (OECD 2003) to show that Work Intensity was increasing across many European countries, while the trend in Good Physical Environment was mixed. These trends were confirmed by the Fourth EWCS in 2005, while a pattern of stable or slowly declining autonomy and of convergence among the older member states was revealed (Eurofound 2006; European Foundation 2009). In none of these studies could the observed changes be termed radical, and in many cases rather little change is observed, similar to Handel's observation on the U.S. data. None carry their analyses forward to the period following the onset of the Great Recession.[7]

Regarding trends in the dispersion of job quality, Kalleberg (2011) reports rising inequality in worker autonomy and workplace participation, but stability in the dispersion of intrinsic rewards over a quarter-century interval in the United States. No other study appears to have investigated how job quality dispersion has changed in other countries. Nor is it known whether traditional gaps in job quality between socioeconomic groups are persisting, diminishing, or even expanding in the face of the heterogeneous trends outlined in the previous section. We ask, therefore, the following questions about trends in job quality in recent years:

1. Has there been a substantive generally upward trend in the nonwage aspects of job quality, as suggested by an increasingly affluent economy and the post-Fordist perspective; or, has there been a downward trend, more consistent with a neo-Fordist perspective? Alternatively, is the change characterized mainly by continuity in existing patterns?
2. Has there been a trend toward greater inequality in the nonwage aspects of jobs?
3. Is there a pattern of divergence or convergence between countries, in their average job quality levels and in the degrees of inequality; and, are the changes consistent with institutional determinations implied by employment regime and production regime models?
4. Are trends in inequality mirrored in changing gaps between the sexes, between young and older workers, across education levels, among occupations, and according to job contract status?

[7]Mention should also be made of another attempt to plot job quality trends (European Commission 2008: Chapter 4), in which a synthetic index is constructed primarily from elements in Labour Force Survey. While the latter has the advantage of providing annual data for all EC members, it lacks information on intrinsic job quality features and is therefore less informative.

The European Working Conditions Surveys

To address these questions, we draw on successive waves of the European Working Conditions Survey. The Fifth and latest wave (EWCS5) comprises a sample of 44,000 people over the age of 15 and in employment, drawn from 34 countries in 2010. This wave is a harmonized survey series, comprising representative samples ranging from 1,000 to 4,000 per country. Earlier waves took place in 1991, 1995, 2000/01, 2005, and 2010. The surveys have evolved, both as new members joined the EU and as items were improved, added, or subtracted in successive waves. Analyzing trends in the distribution of job quality over time is possible, but only for countries that have been members in multiple surveys and by using items that have been asked in identical ways in multiple waves. We therefore restrict our analyses to the 15 EU countries that have subscribed since the 1995 wave. While many items of continuous entry are available since then, refinements in 2005 facilitate extensions and modifications to the indices, and a small part of our analysis centers on the period from 2005 to 2010.[8]

Constructing Indices of Job Quality

In this section, we present how the indices of job quality were constructed from multiple response items available in the waves of 1995 onward in the EWCS. We follow some general principles for index construction, as outlined for example in Muñoz de Bustillo, Fernández-Macías, Antón, and Esteve (2011b). After being normalized to the 0–1 range, the selected items were grouped into summative indices of four key aspects of job quality: *Work Quality*, *Work Intensity* (a negative indicator), *Good Physical Environment*, and *Working Time Quality*. Some items had missing values, but in most cases these were few, which is a good indication of data quality. To avoid loss of information, when items were aggregated into indices we averaged over the items with non-missing values. Once constructed, each index was transformed to range from 0 to 100.

The Work Quality index was constructed using items covering aspects of skills use or activities known from the literature to be proxies for skills use—specifically complexity, problem-solving, use of technology (computers), training and learning participation—and task discretion (with respect to the order methods and pace of tasks). None of these items on its own is ideal, but collectively they formed an index with an alpha statistic of 0.74, suggesting that it may be just acceptable to regard them as capturing a single latent construct. The included items (each 0/1 dummy variables) are:

Generally, does your main paid job involve

a. solving unforeseen problems on your own?
b. complex tasks?

[8]An overview and more details can be found at http://www.eurofound.europa.eu/surveys/ewcs/index.htm.

c. learning new things?
d. working with computers, PCs, network, or mainframe?

Over the past 12 months, have you undergone any training paid for or provided by your employer, or by yourself if self-employed?

Are you able to choose or change
a. your order of tasks?
b. your methods of work?
c. your speed or rate of work?

The Work Intensity index was constructed using two items that capture features of a job that require intensive work, and five items capturing sources of work pressure. The items are conceived as heterogeneous manifestations of work intensity in various situations, rather than as variables reflecting an underlying single construct. The included items are

Does your job involve
a. working at very high speed?
b. working to tight deadlines?

Each item has a 7-point proportion-of-time scale, which was normalized to the 0/1 range; then the index was constructed as an average of these items and the normalized number of sources of work pressure, where the latter was obtained from the following items:

On the whole, is your pace of work dependent, or not, on
a. the work done by colleagues?
b. direct demands from people such as customers, passengers, pupils, patients, etc.?
c. numerical production targets or performance targets?
d. automatic speed of a machine or movement of a product?
e. the direct control of your boss?

These items are conceived as heterogeneous manifestations of work intensity in various situations, rather than as variables reflecting an underlying single construct present in all.

The Good Physical Environment index was constructed using items that capture exposure to environmental hazards and posture-related risks. For each item below, there is a 7-point scale running from "never" to "all of the time," to which we ascribe values 0 to 6.

Please tell me, using the following scale, are you exposed at work to
a. vibrations from hand tools, machinery?
b. noise so loud that you would have to raise your voice to talk to people?
c. high temperatures that make you perspire even when not working?
d. low temperatures whether indoors or outdoors?
e. breathing in smoke, fumes, powder or dust?
f. handling or being in skin contact with chemical products or substances?

Please tell me, using the same scale, does your main paid job involve:
a. tiring or painful positions?
b. carrying or moving heavy loads?
c. repetitive hand or arm movements?

The index is constructed by averaging the responses across items, with the small number of missing values being recorded as 0 ("never"). One may hypothesize that an underlying construct in all workplaces is capturing the absence of exposure to health risks: in support, the alpha statistic for the items in the index is 0.82.

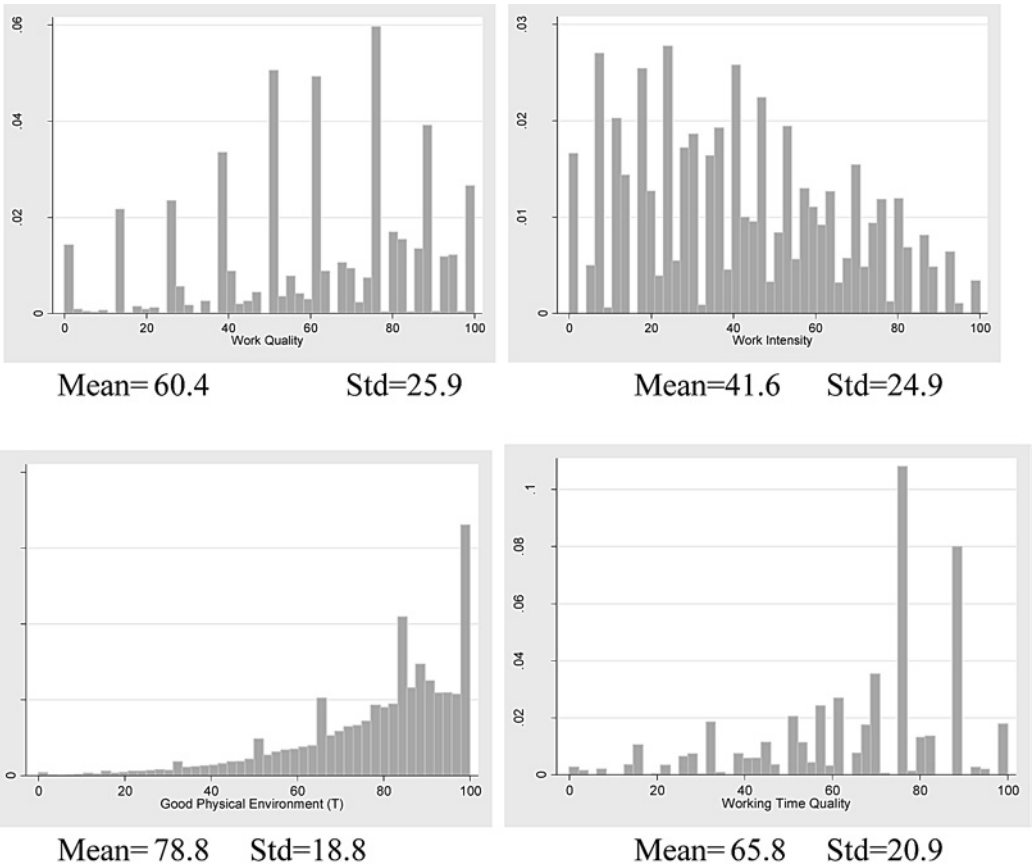
The Working Time Quality (WTQ) index aims to capture job features that affect work–life balance. The extent to which a person achieves work–life balance depends on personal circumstances, which, as noted in our introduction, are not included in the index. The focus is on the characteristics of the jobs and not on those of the individual doing the job. Ideally, these would include facilities connected with the job, such as child care, but the most important aspects of the job that affect work–life balance involve working time—its extent, conducive scheduling, and flexibility. These, anyway, are the features that are consistently available in the survey. The items combined in the index available from 1995 are the following.

How many hours do you usually work per week in your main paid job?
How many times a month do you work at night, for at least 2 hours between 10:00 pm and 05:00 am?
How many times a month do you work in the evening, for at least 2 hours between 6:00 pm and 10:00 pm?
How many times a month do you work on Saturdays?
How many times a month do you work on Sundays?

In addition, an expanded variant for 2005 and 2010 of this index (*WTQ_E)* is available, including an item that captures the worker's discretion over working time arrangements, and a subsequent item capturing how much notice is given when those arrangements are changed by employers. We combine these to derive a 5-point scale capturing these aspects of control over working time, identically as in Muñoz de Bustillo et al. 2011a: 186). The exact items are:

How are your working time arrangements set?
a. They are set by the company.
b. You can choose between several fixed working schedules determined by the company.
c. You can adapt your working hours within certain limits.
d. Your working hours are entirely determined by yourself.
Do changes in your work schedules occur regularly? (If YES) How long before are you informed about these changes?

Figure 1. Histograms of the Distribution of the Indices, with Their Averages and Standard Deviations



To what extent are these indices valid indicators of job quality? One aspect of their criterion validity is whether they are associated as expected with outcomes, and in this case we have suitable items within the survey capturing workers' perceptions of the impact of the job on their health and their work–life balance. We present this analysis in the appendix.[9]

Findings

Figure 1 gives the basic descriptives for each of the four indices available since 1995, together with a histogram of their distributions. Each index occupies more or less the whole range, while Good Physical Environment is bunched toward the top end, reflecting that only a minority of jobs have a preponderance of environmental or posture-related hazards. The indices are all "lumpy," reflecting that they are constructed from limited numbers of items each with categorical scales.

[9]Further details about index construction can be found in Green and Mostafa (2012).

Table 1a. The Distribution of Job Quality Indices in EU15 Countries, 1995–2010

Indices	*Statistic*	*1995*	*2000*	*2005*	*2010*	*Change*	*Significance*
Work Quality	Mean	61.2	59.4	59.5	61.2		*
Work Intensity	Mean	40.1	40.8	43.4	42.3		*
Good Physical Environment	Mean	78.7	78.5	78.9	79.2		*
Working Time Quality	Mean	62.6	65.2	66.8	68.0	↑	*
Working Time Quality (Expanded)	Mean	n/a	n/a	59.5	59.3		
Work Quality	Gini	0.208	0.219	0.209	0.217		
Work Intensity	Gini	0.334	0.32	0.31	0.319		
Good Physical Environment	Gini	0.130	0.131	0.126	0.120		
Working Time Quality	Gini	0.184	0.171	0.165	0.159	↓	
Working Time Quality (Expanded)	Gini	n/a	n/a	0.153	0.152		

Notes: * indicates that the trend of the means is statistically significant at the 5% level. A directional arrow records that the change is "substantive," that is, at least 3 points in the average level, and for the Gini index at least 0.02. n/a = not available.

To gain an idea of the variation that lies behind these indices, one can compare some illustrative features of jobs for which the indices are notably below or above their mean values. In the case of Work Quality, contrasting the set of jobs falling in the (inclusive) range 41 to 50 with those in the range 71 to 80, in the former set the proportions of jobs that involve solving problems, learning new things, and leeway to choose the methods of work are 83%, 50%, and 65%, respectively; while in the latter set the same proportions were 97%, 95%, and 92%.

In the case of Work Intensity, one can compare the set of jobs in the 21 to 30 range with those in the 51 to 60 range. In the former set only 3% of the jobs involve working at very high speed all or almost all of the time, and the workers are subject to an average of 1.5 sources of work pressure; this compares with 22% and 2.4 for the latter set with higher work intensity.

For Good Physical Environment, in jobs in the 65 to 74 range, 18% of jobs entail breathing in smoke, fumes, powder, or dust at least half the time, and 51% involved tiring or painful positions at least half the time; while for the jobs in the 85 to 94 range the same proportions are 0.6% and 13%.

Finally, for Working Time Quality, with jobs in the 45 to 54 range the average working week is 45 hours, and 32% of workers go to work on Sundays at least twice a month, compared with 36 hours and just 3% for jobs in the 75 to 84 range.

Overall Trends

We begin our analysis of trends by presenting a description of changes in the means and in the dispersion of job quality, for all our nonwage job quality indices across all five waves of the survey, for all the older member states of the European Union (EU15) taken as a whole (Table 1a). The aim in starting with an aggregative approach is to obtain an initial picture of the extent and overall direction of change, treating these countries as if they were a single labor market, something that is more a long-term objective of

single-market policy than a realistic assumption about the present state of affairs. The risk of this approach is that it may hide the considerable underlying heterogeneity in the sample, a problem that is common among analyses of Europe as a whole. The data have been weighted to take account of the differential size of the working population, as well as survey and nonresponse weights. For our measure of dispersion we use the Gini index.

The first point to note from Table 1a is that job quality according to three of the indices is quite stable over time. To assess stability with a simple formal test, we regressed each index against time; Table 1a records with an asterisk a statistically significant trend at the 5% level. Since the full sample is quite large, even small changes are significant statistically, yet we are interested in substantive changes relative to the standard deviations of the indices (which range from 19 to 26; see Figure 1). We have therefore adopted a rule of thumb for identifying substantive changes: Whenever the mean value of an index changes significantly between 1995 and 2010 and by at least 3 points, Table 1a and subsequent tables show this by a direction-of-change arrow in the final column. Similarly, we use a direction-of-change arrow to indicate a substantive rise or fall in inequality, when the Gini coefficient changes by at least 0.02 points.[10]

With this convention, it can be seen that the mean level of Work Intensity index rose by 2.2 points, significantly but not amounting to a substantive change, while the mean values of Work Quality and Good Physical Environment were each stable. For these three indices the dispersion also changed very little, as indicated by the Gini coefficients.

By contrast, a substantive rise of 5.4 points occurs over time in the Working Time Quality index, accompanied by a fall by 0.025 points in the Gini coefficient. The rise in the mean comprises both declining work hours and falling use of shift work at weekends and nighttime. To illustrate with a specific example from one of the ingredients of this index: The proportion of workers in the EU15 countries who never worked on Saturdays rose from 44% to 50% over the period. The simultaneous fall in the dispersion and rise in the mean partly reflects gains at the low end, with the index's 5th percentile rising from 20.8 to 29.2 between 1995 and 2010; but it also picks up improvements for the large majority of workers: the median rose from 66.7 to 75.0.

Since job quality varies across industries, it could be that some of the improvement is associated with industrial change. Within our sample period, service industries and public administration increased their share of employment from 65% to 73%, while manufacturing and agriculture declined. Moreover, Working Time Quality is well below average in agriculture and well above in public administration. To see whether such compositional change was important we regressed Working Time Quality on year, and then

[10]Across these countries, one might expect to find a Gini coefficient range of between 0.10 and 0.15, depending on the index (see Tables 3 to 6). A Gini interval of 0.02 would be noticeable in terms of differences in percentile ratios.

Table 1b. The Correlation Coefficients between the Four Indices

Year	*Index*	*Work Quality*	*Work Intensity*	*Good Physical Environment*
1995	Work Intensity	0.046	1.000	—
	Good Physical Environment	0.262	–0.366	1.000
	Working Time Quality	–0.014	–0.113	0.140
2000	Work Intensity	0.037	1.000	—
	Good Physical Environment	0.196	–0.379	1.000
	Working Time Quality	–0.045	–0.099	0.140
2005	Work Intensity	0.011	1.000	—
	Good Physical Environment	0.228	–0.378	1.000
	Working Time Quality	–0.037	–0.164	0.145
2010	Work Intensity	0.035	1.000	—
	Good Physical Environment	0.167	–0.365	1.000
	Working Time Quality	–0.050	–0.144	0.123

on year and industry, with the result that the coefficient on year was reduced by only a small amount, from 0.35 (s.e. = 0.01) to 0.32 (s.e. = 0.01). We therefore conclude that the changes largely occurred within industry, rather than through industrial recomposition.[11]

Table 1a also shows the pattern of change between 2005 and 2010 in the expanded Working Time Quality (*WTQ_E*) index. No change occurs over this short period, implying that the picture is not as optimistic as suggested by the more limited index that is available from 1995. The above trends in working time and weekend working are counterbalanced by an unfavorable change, over this short most recent period, in the extent to which employees can exercise choice over their working time.

Should these indices, which capture quite distinct concepts, be reduced and brought together in a single index of job quality? While some writers argue that a single index facilitates a stronger impact from job quality research, despite the extra assumptions that have to be made about the weights to be attached to each elements (e.g., European Commission 2008; Muñoz de Bustillo et al., 2011a, 2011b; Holman and McClellan 2011), we have not been persuaded of the presentational advantages of a single index over those of a small number of separate indices whose names convey a reasonably direct relation to a known concept. Nor, as we shall see, could it be argued that a unified index would suffice because the indices are closely related or move in parallel. Table 1b records the correlation coefficients between the four indices that are available from 1995 onward. None of the coefficients are especially high, the largest in absolute terms being between Work Intensity and Good Physical Environment (–0.38 in two of the waves). A trend toward a closer linkage over time has not been observed. These low correlations, and the fact that the indices are moving, if anything, in opposite directions, make a strong case for examining the indices separately and not combining them into a single index of job quality.

[11]The same pattern is found for other trends reported below.

Table 2a. Work Quality Gaps by Gender, Age, Contract Type, and Occupational Group

Socioeconomic groups	*Categories*	*1995*	*2000*	*2005*	*2010*	*Change*
Gender	Female	59.6	58.4	58.8	60.2	
	Male	62.4	60.2	60.1	62.0	
Age	Younger than 40	61.3	59.2	58.6	60.0	
	Older than 40	61.1	59.7	60.5	62.3	
Education levels	Finished education at the age of 15	50.6	n/a	48.5	47.7	
	Finished education between the age of 16 to 19	60.7	n/a	56.6	58.4	
	Finished education at an older age than 20	70.2	n/a	70.1	70.5	
Type of contract	An indefinite contract	62.2	60.1	61.0	62.5	
	A fixed term contract	53.4	53.8	53.4	53.2	
	A temporary employment agency contract	44.2	42.7	43.9	49.5	↑
	An apprenticeship or other training scheme	52.6	52.7	58.5	53.9	
	Other	53.3	50.4	46.3	47.7	↓
Occupation	Legislators, senior officials and managers	73.5	72.0	71.4	75.4	
	Professionals	74.5	74.9	75.0	77.9	↑
	Technicians and associate professionals	69.7	69.8	69.8	71.5	
	Clerks	66.1	64.9	63.1	62.2	↓
	Service workers and shop and market sales workers	59.2	50.1	52.6	50.4	↓
	Skilled agricultural and fishery workers	52.3	54.7	58.9	54.2	
	Craft and related trades workers	55.7	55.2	52.5	55.6	
	Plant and machine operators and assemblers	44.0	42.3	37.9	43.8	
	Elementary occupations	43.8	39.2	42.8	41.4	

Notes: Directional arrows record that the trend is statistically significant at the 5% level and that the change is "substantive," that is, at least 3 points.

Job Quality Gaps

The aggregate picture of stability and change in Europe's 15 can hide substantive differentiation between and within countries and groups. Moreover, since the statistics are weighted by population size the patterns of change in Table 1a can be dominated by a few large countries, failing to reveal evolutions taking place in the smaller countries. Therefore, we next examine how the indices differ between groups. Tables 2a to 2d present the averages of the job quality indices by socioeconomic groups. For this analysis we retained gender, age groups, education levels, type of employment contract, and type of occupation.

Gender differences in aspects of job quality, not only in respect to wages, are especially relevant to an evaluation of progress toward gender equality (Smith, Burchell, Fagan, and O'Brien 2008). As can be seen, Work Quality is slightly higher for men, but the gap has been closing. The mean level of Work Quality rose by 0.58 points for females and dropped by 0.38 points for males. Meanwhile, Work Quality for older individuals (above the age of 40) increased by 1.18 points while it dropped by 1.27 points for individuals younger than 40. When it comes to education, Work Quality dropped by 2.88 points for those who have finished their education at the age of 15, it dropped by 2.31 points for those who finished their education between the age of 16 and 19, and finally it remained almost the same for the those who finished their education at an age older

Table 2b. Work Intensity Gaps by Gender, Age, Contract Type, and Occupational Group

Socioeconomic groups	*Categories*	*1995*	*2000*	*2005*	*2010*	*Change*
Gender	Female	37.3	38.0	39.7	39.2	
	Male	42.2	42.8	46.2	44.8	
Age	Younger than 40	41.5	42.8	45.5	44.2	
	Older than 40	38.4	38.3	41.2	40.4	
Education levels	Finished education at the age of 15	39.0	n/a	41.3	38.3	
	Finished education between the age of 16 to 19	41.8	n/a	45.0	43.7	
	Finished education at an older age than 20	38.3	n/a	42.0	42.0	↑
Type of contract	An indefinite contract	41.5	42.0	44.3	43.8	
	A fixed term contract	40.2	40.8	45.0	43.9	↑
	A temporary employment agency contract	40.5	40.9	52.6	53.0	↑
	An apprenticeship or other training scheme	39.8	43.9	48.7	44.5	↑
	Other	34.3	40.2	40.8	38.1	↑
Occupation	Legislators, senior officials and managers	42.4	41.1	43.2	45.0	
	Professionals	36.5	37.2	39.8	40.1	↑
	Technicians and associate professionals	36.8	39.8	41.9	40.2	↑
	Clerks	40.3	39.2	42.7	42.1	
	Service workers and shop and market sales workers	36.3	35.7	39.9	37.7	
	Skilled agricultural and fishery workers	36.8	37.5	42.3	34.2	
	Craft and related trades workers	45.5	47.5	52.4	49.2	↑
	Plant and machine operators and assemblers	48.6	50.1	53.0	52.0	↑
	Elementary occupations	37.0	38.6	38.5	40.2	↑

Notes: Directional arrows record that the trend is statistically significant at the 5% level and that the change is "substantive," that is, at least 3 points.

Table 2c. Good Physical Environment Gaps by Gender, Age, Contract Type, and Occupational Group

Socioeconomic groups	*Categories*	*1995*	*2000*	*2005*	*2010*	*Change*
Gender	Female	82.0	82.9	83.6	83.7	
	Male	76.4	75.2	75.1	75.5	
Age	Younger than 40	78.5	78.3	78.3	79.2	
	Older than 40	79.0	78.9	79.5	79.2	
Education levels	Finished education at the age of 15	70.8	n/a	71.8	71.2	
	Finished education between the age of 16 to 19	77.9	n/a	77.0	76.7	
	Finished education at an older age than 20	86.1	n/a	84.8	84.5	
Type of contract	An indefinite contract	79.6	78.8	79.4	79.7	
	A fixed term contract	75.7	78.3	79.3	78.5	
	A temporary employment agency contract	71.6	77.1	73.7	73.7	
	An apprenticeship or other training scheme	76.5	75.0	76.3	78.4	
	Other	77.6	77.6	76.8	78.5	
Occupation	Legislators, senior officials and managers	85.1	85.8	84.6	84.9	
	Professionals	87.8	88.4	87.7	87.0	
	Technicians and associate professionals	85.7	84.7	85.0	86.6	
	Clerks	87.3	88.4	87.5	86.2	
	Service workers and shop and market sales workers	82.5	82.0	82.3	82.2	
	Skilled agricultural and fishery workers	64.0	62.7	61.8	63.9	
	Craft and related trades workers	66.1	64.0	60.2	61.9	↓
	Plant and machine operators and assemblers	65.4	63.8	65.1	66.0	
	Elementary occupations	72.7	71.7	74.2	72.6	

Notes: Directional arrows record that the trend is statistically significant at the 5% level and that the change is "substantive," that is, at least 3 points.

Table 2d. Working Time Quality Gaps by Gender, Age, Contract Type, and Occupational Group

Socioeconomic groups	*Categories*	*1995*	*2000*	*2005*	*2010*	*Change*
Gender	Female	69.3	71.0	72.4	73.2	↑
	Male	57.7	60.8	62.3	63.7	↑
Age	Younger than 40	63.1	65.6	66.8	68.2	↑
	Older than 40	61.8	64.6	66.7	67.9	↑
Education levels	Finished education at the age of 15	58.5	n/a	64.1	64.8	↑
	Finished education between the age of 16 to 19	63.2	n/a	66.6	67.6	↑
	Finished education at an older age than 20	64.5	n/a	67.5	68.4	↑
Type of contract	An indefinite contract	66.3	68.1	69.9	70.2	↑
	A fixed term contract	66.0	69.8	68.3	70.9	↑
	A temporary employment agency contract	68.7	72.5	71.7	72.5	↑
	An apprenticeship or other training scheme	68.4	70.3	69.9	73.4	↑
	Other	65.3	70.7	69.4	70.9	↑
Occupation	Legislators, senior officials and managers	49.1	51.1	52.0	55.0	↑
	Professionals	66.5	67.7	69.5	68.3	
	Technicians and associate professionals	67.2	66.8	72.3	72.6	↑
	Clerks	72.4	75.4	75.6	76.3	↑
	Service workers and shop and market sales workers	59.8	62.1	63.7	65.5	↑
	Skilled agricultural and fishery workers	48.2	48.1	47.3	58.1	↑
	Craft and related trades workers	59.9	64.5	65.5	67.3	↑
	Plant and machine operators and assemblers	58.8	63.0	61.8	61.8	↑
	Elementary occupations	66.1	71.6	70.9	73.3	↑

Notes: Directional arrows record that the trend is statistically significant at the 5% level and that the change is "substantive," that is, at least 3 points.

than 20. Work Quality is slightly increasing for all types of employment contracts. The biggest increase in Work Quality is for those with a temporary employment agency contract; however, the sudden jump between 2005 and 2010 may be related to the economic recession. In other words, more of those workers with a temporary employment agency contract lost their jobs, raising the average quality of the remaining jobs. Looking across occupations, Work Quality increased for professionals by 3.4 points over this period of time while it decreased by 8.8 points for service workers. Also worth noting is that professional workers started at a high average of 74.5 points in 1995 while service workers started at an average of 59.2 in 1995 and ended at 50.4 in 2010, so the gap widened between these groups.

In contrast to earlier findings for Britain and the United States (Gorman and Kmec 2007), across the EU15 work intensity is greater for males than for females, with no indication of this gap closing. On the contrary, the Work Intensity index for males increased by 2.6 points over the 1995 to 2005 period, while that of females increased by 1.9 points. Work is also intensifying more quickly for individuals younger than 40 and for individuals with the highest level of education.

While work was intensifying for all employment contract types, a striking and large increase after 2000 took place for those with a temporary employment

agency contract.[12] Among occupations, work was intensifying for professionals, technicians and associate professionals, craft workers, and plant and machine operators, but volatility occurred among agricultural workers and little change among service workers.

Good Physical Environment was about 8 points higher for females than for males. It was also greater for those with more education and in higher status occupational groups. These gaps remained stable over time, as did those between age groups, employment contract type, and occupational groups. The only exception was craft workers for whom Good Physical Environment dropped by 4.2 points.

Working Time Quality has increased for both genders with males having a lower value than females in all periods, although note that males and females are slightly converging on this index. Working Time Quality has increased for both age groups over the 1995 to 2005 period, and the gap between the two is shrinking. When it comes to education, the highest increase—6.3 points—is for the lowest educational group. These small diminutions in the Working Time Quality gaps are in the same direction as the overall decline in inequality of this index reported in the previous section.

While Working Time Quality has gone up for all types of employment contracts, the highest increase is for apprentices (5 points).

Working Time Quality also went up for all occupational groups but the variation ranged between 1.8 points for professionals and 10 points for skilled agricultural and fishery workers. Note that skilled agricultural workers and craft workers started at a relatively low level, professional workers from a high level, indicating some convergence.

Job Quality Distributions between and within Countries

The above analysis of Tables 2a–d has shown that aggregate stability can hide heterogeneous patterns of change among different groups of workers. However, to examine whether the changes are consonant with universal theories that emphasize common causes, or with differentiated theories that allow for national labor market institutions and policies to generate divergent patterns, with Tables 3a–d and Figures 2 and 3 we now investigate the picture for each index across the international dimension and across time. We study countries separately, though in the light of what has been said about the differences between regimes. This method has the advantages of not prejudging whether countries fit with particular institutional categorizations, and of allowing us to include many countries that do not neatly fit the regimes literature.

As a baseline we look briefly first at the intercountry differences in job quality in 1995. In respect to three of the indices, one can detect a clear general association between job quality and a country's affluence. Work

[12]In this context, note that the European directive for agency workers was not agreed upon until 2008 and would not have taken effect in time to bring out any convergence with the conditions of other workers.

Table 3a. Distribution of Work Quality by Country in the EU15, 1995–2010

Country	*Statistic*	*1995*	*2000*	*2005*	*2010*	*Change*
Austria	Mean	58.1	61.9	64.9	64.2	↑
Belgium	Mean	59.0	59.8	64.7	64.2	↑
Denmark	Mean	69.7	70.7	72.8	75.0	↑
Finland	Mean	70.1	68.4	71.0	73.2	↑
France	Mean	60.1	58.4	61.6	58.2	
Germany	Mean	60.5	59.5	57.9	60.6	
Greece	Mean	48.2	46.8	52.6	53.0	↑
Ireland	Mean	57.4	57.4	62.7	62.7	↑
Italy	Mean	57.5	55.3	58.0	58.0	
Luxembourg	Mean	58.4	57.5	66.1	66.8	↑
Netherlands	Mean	70.0	71.6	69.5	69.7	
Portugal	Mean	53.5	46.3	54.4	56.0	
Spain	Mean	52.7	51.9	50.5	56.5	↑
Sweden	Mean	69.0	67.5	73.8	71.5	
United Kingdom	Mean	69.4	64.9	59.9	64.9	↓
Austria	Gini	0.228	0.21	0.217	0.209	
Belgium	Gini	0.206	0.225	0.201	0.216	
Denmark	Gini	0.151	0.155	0.143	0.135	
Finland	Gini	0.165	0.181	0.162	0.16	
France	Gini	0.208	0.219	0.221	0.241	↑
Germany	Gini	0.226	0.227	0.232	0.237	
Greece	Gini	0.236	0.245	0.234	0.237	
Ireland	Gini	0.221	0.237	0.204	0.225	
Italy	Gini	0.198	0.22	0.222	0.217	
Luxembourg	Gini	0.217	0.236	0.2	0.205	
Netherlands	Gini	0.178	0.171	0.165	0.175	
Portugal	Gini	0.218	0.263	0.231	0.237	
Spain	Gini	0.228	0.231	0.252	0.249	↑
Sweden	Gini	0.156	0.175	0.137	0.134	↓
United Kingdom	Gini	0.192	0.215	0.223	0.218	↑

Notes: Directional arrows record that the trend in the average level is statistically significant at the 5% level and that the change is "substantive," that is, by at least 3 points. For the Gini index, an arrow indicates a "substantive" change by at least 0.02.

Quality is low for Greece (48.2) and for Portugal (53.5), while it is high for the Netherlands (70.0) and for Finland (70.1). Similarly, with Good Physical Environment and Working Time Quality, less affluent countries are to be found at the lower end of the range. With Work Intensity, however, the relationship with affluence is far from clear, given that some of the richer countries have a high score (Germany), and others a very low score (Belgium). To formally confirm these impressions we regressed each index on the 1995 GDP per capita (in units of a thousand U.S. dollars), with the following estimated coefficients: for Work Quality, 1.3 ($p = 0.03$); for Good Physical Environment, 1.0 ($p = 0.00$); for Working Time Quality, 1.3 ($p = 0.01$); but for Work Intensity, 0.4 ($p = 0.41$), indicating no significant relationship.[13] It thus appears that affluence "buys" the workers in a country a higher job quality

[13]For the purposes of examining this association, we omitted Luxembourg, an outlier with an especially high per capita GDP, since a high proportion of Luxembourg workers commute from other countries.

Table 3b. Distribution of Work Intensity by Country in the EU15, 1995–2010

Country	*Statistic*	*1995*	*2000*	*2005*	*2010*	*Change*
Austria	Mean	48.8	42.9	47.6	42.1	↓
Belgium	Mean	33.2	37.3	42.8	40.2	↑
Denmark	Mean	39.0	37.6	47.9	39.1	
Finland	Mean	47.1	46.7	49.6	45.9	
France	Mean	38.4	39.5	40.5	43.0	↑
Germany	Mean	40.8	40.9	46.9	44.9	↑
Greece	Mean	40.9	43.5	50.5	48.6	↑
Ireland	Mean	39.0	42.2	36.9	47.0	↑
Italy	Mean	34.1	39.7	41.9	40.8	↑
Luxembourg	Mean	31.4	37.6	40.6	40.8	↑
Netherlands	Mean	41.8	41.3	40.3	38.5	↓
Portugal	Mean	36.2	31.8	40.1	31.6	↓
Spain	Mean	34.2	36.2	41.2	38.0	↑
Sweden	Mean	43.3	47.9	48.1	45.9	↑
United Kingdom	Mean	47.3	45.0	42.5	43.6	↓
Austria	Gini	0.267	0.317	0.288	0.301	↑
Belgium	Gini	0.393	0.336	0.306	0.331	↓
Denmark	Gini	0.326	0.314	0.283	0.300	↓
Finland	Gini	0.280	0.272	0.268	0.275	
France	Gini	0.365	0.355	0.340	0.338	↓
Germany	Gini	0.326	0.310	0.290	0.288	↓
Greece	Gini	0.331	0.300	0.281	0.301	↓
Ireland	Gini	0.347	0.324	0.350	0.307	↓
Italy	Gini	0.359	0.315	0.315	0.309	↓
Luxembourg	Gini	0.379	0.326	0.332	0.324	↓
Netherlands	Gini	0.313	0.291	0.307	0.307	
Portugal	Gini	0.351	0.357	0.337	0.383	↑
Spain	Gini	0.366	0.366	0.339	0.344	↓
Sweden	Gini	0.295	0.266	0.250	0.261	↓
United Kingdom	Gini	0.300	0.307	0.332	0.325	↑

Notes: Directional arrows record that the trend in the average level is statistically significant at the 5% level and that the change is "substantive," that is, by at least 3 points. For the Gini index, an arrow indicates a "substantive" change by at least 0.02.

in some but not all dimensions, though the process of causation might also be in the opposite direction.

Variations in job quality across countries only partially conform to those proposed in the literature. Table 3a concurs with previous studies looking at task discretion (e.g., Gallie 2003, which found that the social corporatist countries are highly ranked, with jobs in Denmark having the highest-ranked Work Quality (an index of 73.4). Many of the CMEs are highly ranked in terms of average Working Time Quality (Table 3d), with the Netherlands having the highest score on this index. In terms of the other indices (Tables 3b and 3c), however, the CMEs do not stand out as having better job quality. For example, the UK ranks among the top for Good Physical Environment (Table 3c), while the CMEs range from high (Denmark) to low (France, Austria). It can also be seen from Table 3a that Work Quality in the CMEs with dualist regimes varies quite a lot and does not stand out as being collectively better than in the UK. Overall, the variation among countries

Table 3c. Distribution of Good Physical Environment by Country in the EU15, 1995–2010

Country	*Statistic*	*1995*	*2000*	*2005*	*2010*	*Change*
Austria	Mean	77.8	80.8	78.8	80.0	
Belgium	Mean	82.1	81.3	80.8	79.1	↓
Denmark	Mean	83.1	83.3	81.1	83.1	
Finland	Mean	77.2	74.4	74.7	76.0	
France	Mean	75.9	75.3	75.9	74.3	
Germany	Mean	81.3	81.5	79.5	80.7	
Greece	Mean	66.3	68.9	67.1	72.1	↑
Ireland	Mean	80.5	78.9	82.6	81.4	
Italy	Mean	82.3	80.5	80.0	79.7	
Luxembourg	Mean	80.2	80.3	80.4	77.2	↓
Netherlands	Mean	81.1	81.2	83.3	84.4	↑
Portugal	Mean	75.2	77.5	74.0	76.8	
Spain	Mean	75.3	72.5	75.3	77.5	
Sweden	Mean	79.6	78.0	78.5	78.0	
United Kingdom	Mean	77.4	79.2	83.2	82.1	↑
Austria	Gini	0.134	0.117	0.132	0.108	
Belgium	Gini	0.115	0.111	0.115	0.115	
Denmark	Gini	0.096	0.090	0.098	0.087	
Finland	Gini	0.119	0.134	0.133	0.121	
France	Gini	0.148	0.153	0.152	0.140	
Germany	Gini	0.117	0.117	0.119	0.108	
Greece	Gini	0.189	0.189	0.210	0.191	
Ireland	Gini	0.127	0.135	0.105	0.113	
Italy	Gini	0.110	0.110	0.109	0.107	
Luxembourg	Gini	0.132	0.140	0.128	0.149	
Netherlands	Gini	0.114	0.097	0.084	0.080	↓
Portugal	Gini	0.142	0.137	0.128	0.120	↓
Spain	Gini	0.154	0.155	0.135	0.130	↓
Sweden	Gini	0.108	0.112	0.100	0.100	
United Kingdom	Gini	0.126	0.142	0.103	0.104	↓

Notes: Directional arrows record that the trend in the average level is statistically significant at the 5% level and that the change is "substantive," that is, by at least 3 points. For the Gini index an arrow indicates a "substantive" change by at least 0.02.

appears to vindicate our preference for presenting the data for countries separately, except for one generalization: The social corporatist countries are ranked among the lowest for dispersion of job quality, in respect to all four indices. Looking at the Gini coefficients shown throughout Table 3, Sweden, Finland, and Denmark indicate low inequality in each of these four dimensions of job quality.

With this baseline we now consider the trend patterns for each dimension over 1995 to 2010. Table 3a and Figure 2 show that the average level of Work Quality increased substantively in eight countries: Austria, Belgium, Denmark, Finland, Greece, Ireland, Luxembourg, and Spain, with the highest increase in Luxembourg. This picture of change differs from the aggregate narrative of stability reported in Table 1, and the contrast is attributable to the fact that in the three large countries, which dominate the overall sample—France, Germany, and the UK—change was largely absent.

Table 3d. Distribution of Working Time Quality by Country in the EU15, 1995–2010

Country	*Statistic*	*1995*	*2000*	*2005*	*2010*	*Change*
Austria	Mean	61.7	64.0	63.4	68.7	↑
Belgium	Mean	61.2	67.1	67.1	68.7	↑
Denmark	Mean	73.2	74.9	73.9	73.4	
Finland	Mean	63.1	63.6	66.7	69.6	↑
France	Mean	61.0	65.1	73.0	72.3	↑
Germany	Mean	65.3	67.9	66.8	68.0	
Greece	Mean	48.7	56.7	52.1	53.0	
Ireland	Mean	58.8	61.4	65.0	66.8	↑
Italy	Mean	58.9	61.1	62.9	66.1	↑
Luxembourg	Mean	60.5	64.6	67.8	67.4	↑
Netherlands	Mean	70.3	73.9	73.1	73.7	↑
Portugal	Mean	57.7	63.1	62.7	64.1	↑
Spain	Mean	59.4	60.6	62.4	67.0	↑
Sweden	Mean	68.2	68.1	67.7	68.7	
United Kingdom	Mean	63.8	65.3	68.3	66.9	↑
Austria	Gini	0.172	0.155	0.154	0.149	↓
Belgium	Gini	0.202	0.163	0.152	0.146	↓
Denmark	Gini	0.122	0.120	0.126	0.136	
Finland	Gini	0.166	0.160	0.136	0.131	↓
France	Gini	0.176	0.170	0.124	0.134	↓
Germany	Gini	0.151	0.147	0.141	0.146	
Greece	Gini	0.282	0.223	0.274	0.273	
Ireland	Gini	0.219	0.207	0.197	0.177	↓
Italy	Gini	0.198	0.185	0.179	0.172	↓
Luxembourg	Gini	0.161	0.147	0.131	0.150	
Netherlands	Gini	0.138	0.119	0.126	0.148	
Portugal	Gini	0.214	0.184	0.187	0.173	↓
Spain	Gini	0.203	0.198	0.183	0.162	↓
Sweden	Gini	0.111	0.123	0.118	0.134	↑
United Kingdom	Gini	0.203	0.188	0.174	0.181	↓

Notes: Directional arrows record that the trend in the average level is statistically significant at the 5% level and that the change is "substantive," that is, by at least 3 points. For the Gini index an arrow indicates a "substantive" change by at least 0.02.

Despite these changes for the mean values, little evidence of national divergence is observed. Work Quality is high in the social corporatist countries both in 1995 and in 2010.The range between the highest- and lowest-ranking countries (Finland and Greece) came down a small amount, from 22 to 20 points. We conducted a simple formal test for convergence by regressing the change in the country-level mean against the initial mean value: evidence of a significant negative (positive) coefficient on the initial mean would signify convergence (divergence). The coefficient, though negative, was insignificant ($p = 0.103$).[14]

In contrast to the level, the dispersion of Work Quality, measured by the Gini coefficients, was relatively stable in the large majority of countries (Figure 3). The only countries where inequalities increased by more than 2

[14]The fall away of the UK from being one of the highest on the Work Quality index in 1995 reflects a decline in task discretion that has also been found from data in the UK Skills Surveys (Gallie et al. 2004).

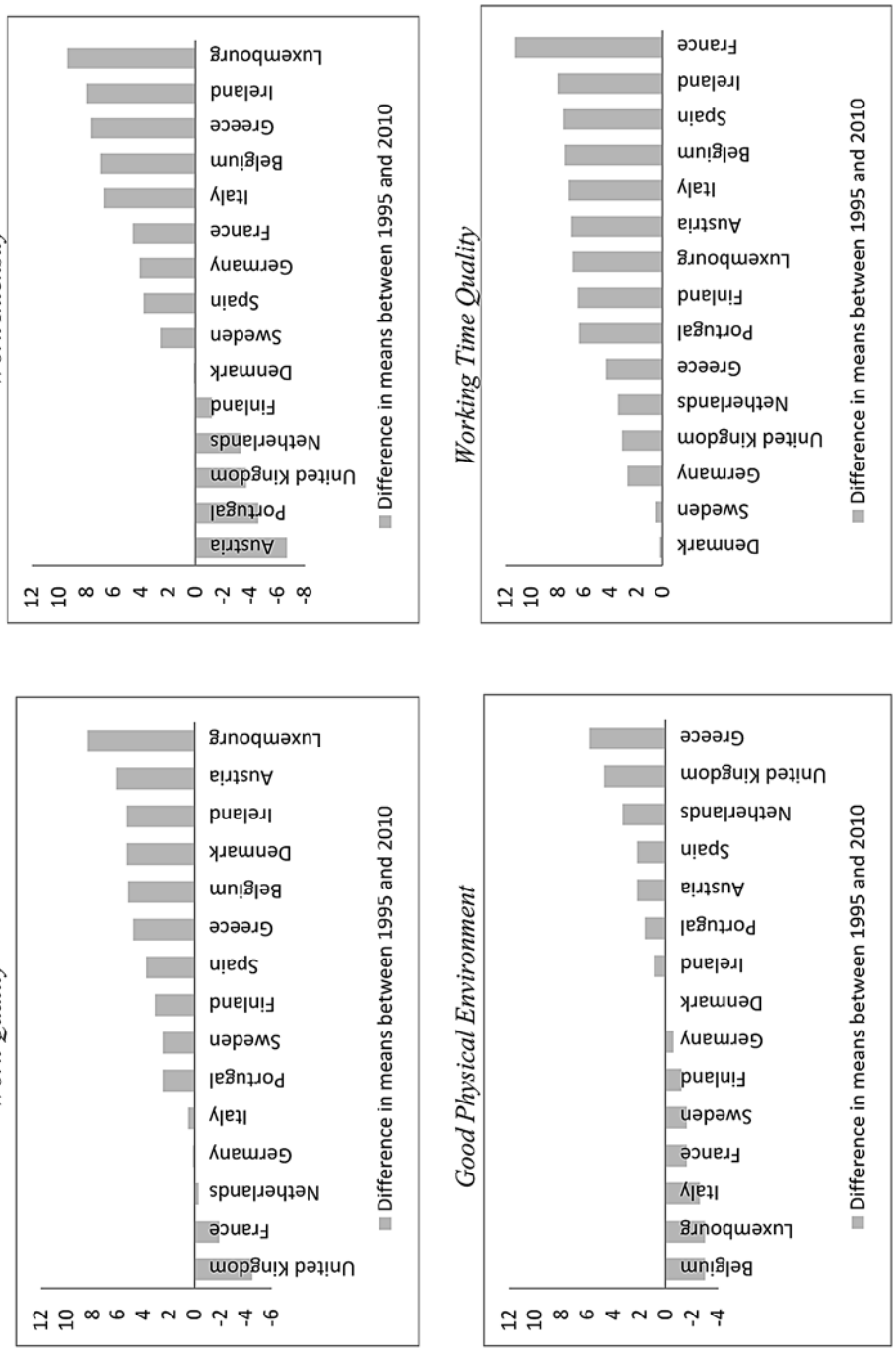


Figure 2. Difference in Means between 1995 and 2010

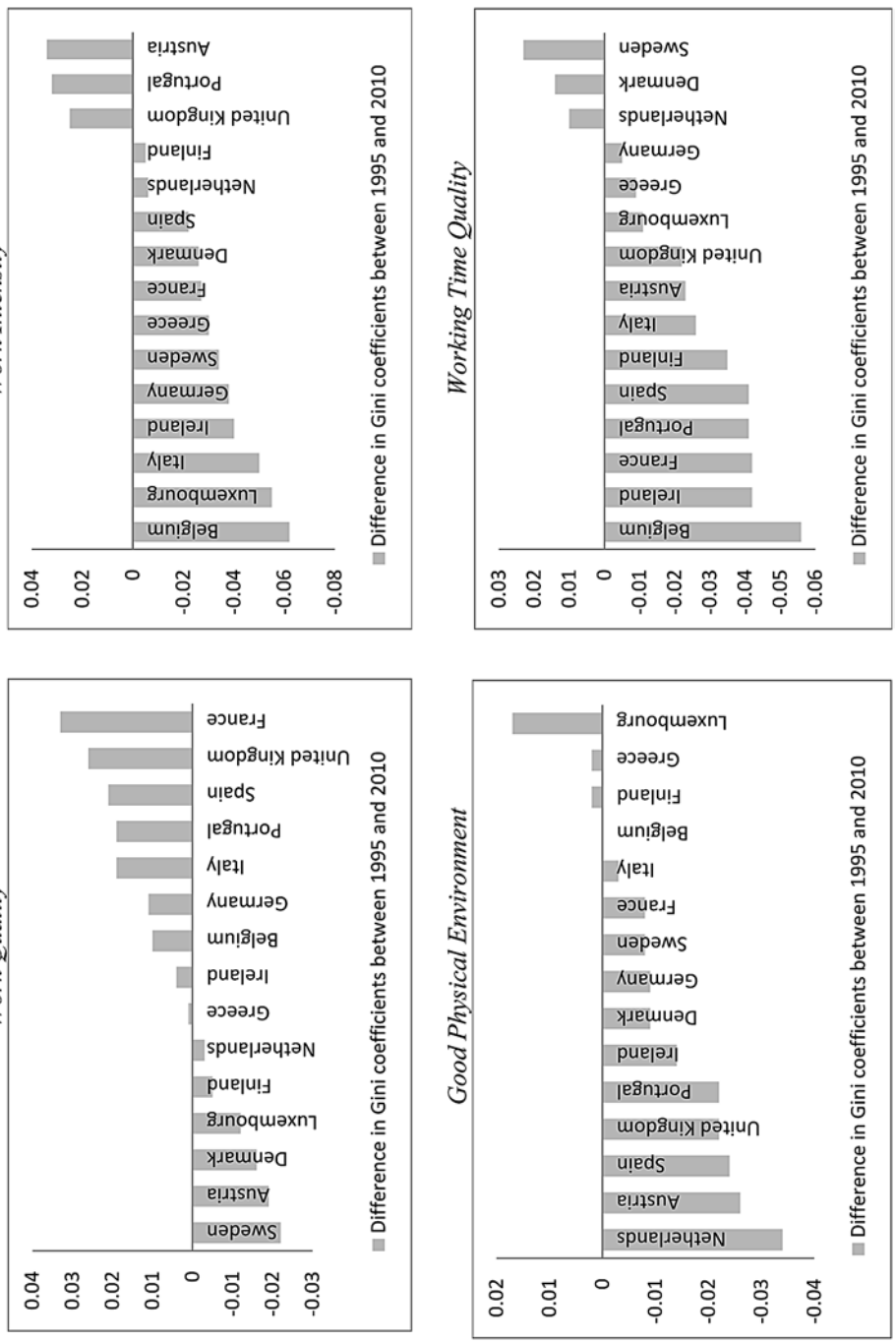


Figure 3. Difference in Gini Coefficients between 1995 and 2010

points were France, Spain, and the UK. By 2010 Spain had become the most unequal, while the Nordic countries remained by far the most equal.

Turning to Work Intensity (Table 3b), most countries in the EU15 experienced a progressive intensification of work over the 1995 to 2010 period, while inequalities on this index decreased during the same time. These countries are Belgium, France, Germany, Greece, Ireland, Italy, Luxembourg, Spain, and Sweden. Note, however, three contrasting countries. In Austria and Portugal, work intensity has been volatile, and while it arrived at a low note in 2010 it was high in 2005. In the UK, Work Intensity was at an exceptionally high level in 1995 and subsequently declined somewhat; however, it turns out that the early 1990s was, according to both the EWCS and other sources, a period of very substantive intensification. Comparing either the late 1990s or the early 2000s with the start of the 1990s, work effort in the UK rose according to multiple sources (Green 2006).

Both the means and the dispersion of Work Intensity converged between countries over the period. For example, the coefficient of variation of the means across countries fell from 0.63 to 0.61, and the above-mentioned formal test confirms that a lower initial level is associated with a greater increase ($p = 0.01$). The coefficient of variation across countries of the Gini indices fell a small amount from 0.11 to 0.10. Even so, the dispersion remained lowest in the Nordic countries.

Results are mixed for Good Physical Environment (Table 3c). The average levels rose in three countries (Greece, Netherlands, and the UK) and dropped in two others (Belgium and Luxembourg). The Gini coefficient dropped by more than two points in the Netherlands, Portugal, Spain, and the UK. Thus, the major pattern consists of a limited change in average Good Physical Environment and a somewhat more generalized drop in the inequality. Convergence of the mean levels is evident, and indeed the largest rises were in Greece and the UK, both of which had below average Good Physical Environment in 1995. Yet, some divergence in the inequality is seen, with the coefficient of variation across countries of the Gini index rising from 0.19 to 0.23.

Working Time Quality (Table 3d) increased in 11 countries, namely Austria, Belgium, Finland, France, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the UK, with the highest increase of about 11 points occurring in France. Note that average Working Time Quality did not decrease in any of the 15 countries. Nonetheless, the dispersion of Working Time Quality decreased in 9 countries: Austria, Belgium, Finland, France, Ireland, Italy, Portugal, Spain, and the UK, and rose only in Sweden. The Nordic countries remain among the most equal, joined in respect to this index by France. At the other end of the spectrum, workplaces in Greece stand out as having both the lowest and the most unequal Working Time Quality. Yet over time, both the means and the Gini indices converged between countries. In short, underpinning the overall change reported in Table 1, in most countries separately, a clear trend emerged consisting of an enhancement in Working Time Quality combined with an equalization process within, and convergence between, countries.

Discussion: Continuity and Change in Patterns of Job Quality

We have presented a picture of how several dimensions of nonwage job quality vary between groups and countries, and how they have changed over a recent 15-year period. In addition to examining 15 countries together, we have for the first time placed an emphasis not only on the levels of job quality indices but also on their dispersion across groups and countries. The literature led us to look for differences among countries according to both their level of affluence and their institutional regimes, and for certain trends over time, which might be consistent with either optimistic or pessimistic perspectives, and which could conceivably be either universal or differentiated among countries. Testing specific explanations for the changes reported is beyond the scope of this article; however, reviewing to what extent the pattern of change is consistent with the tenor of the theories of change outlined above is of interest.

Our baseline analysis confirmed that, as expected, the average levels of job quality tended to be higher in the more affluent countries. While we have not attempted to gather countries into groups predefined by employment or production regimes, the results also confirmed some predictions about the differences between countries associated with their institutional structures. Countries typically seen as CMEs show high levels of Working Time Quality, and of these, the subset of social corporatist countries have high levels of Work Quality. This superiority in Work Quality has been attributed to a long history of trade union concern with issues of job design in the social corporatist countries, and a somewhat more equal balance of power than elsewhere. Yet there was no support for the view that countries with CMEs had systematically higher job quality in the other respects examined here. How the social corporatist countries are systematically different is that they have especially low dispersions of job quality according to all indices, and this is consistent with their well-known low levels of income inequality attributable to the tradition of centralized solidarity bargaining.

As for the trends, taking as a whole all the 15 European countries that formed the European Union in 1995, the levels and distributions of the job quality indices across individuals and groups remained relatively stable over the period. Underneath the current of change we have been describing, a strong pool of continuity occurs in both the level and the inequality of job quality in these countries. No evidence of radical disjuncture in job quality is seen, even taking into account the time span of the Great Recession. Nevertheless, a steady rise is documented in the Working Time Quality index. While the trend might need qualifying, once further features associated with flexibility are included, this rise appears consistent with universal optimistic theories about the changing nature of work, including the idea that work features do respond positively if slowly to changing needs as in the case of work–life balance.

To some extent, however, the relative stability reflects the size dominance of France, Germany, and the UK. When countries are considered separately

a somewhat different pattern is found. Several countries experienced rises in the Work Quality index, though arguably these rises are surprisingly slow given that the Great Recession might have been expected to selectively diminish the share of low-quality jobs in this dimension. Meanwhile, the widespread rise in work intensity can also be seen as reflecting universal trends in technology and/or work organization and the pressures of global competition; but in this dimension the implications for job quality are negative.

With regard to Good Physical Environment, the high degree of continuity is not consistent with the optimistic view that there should be general increases in job quality. Nevertheless, this is an index that starts from a fairly high level, and for which improvements rely as much on the gradual spread of health and safety awareness as on the changing industrial structure. For certain hazards, consideration of focused advances is probably necessary. A notable achievement, for example, of the recent five-year period is the decline in the percentage of employed people exposed to tobacco smoke at work (from 77.1% to 64.1%).[15]

The trends in inequality that we have reported have also been fairly widespread, even if not universal. The falls in the dispersion of Good Physical Environment can be seen as reflecting the spread of national and supranational regulation. Similarly, the fall in the inequality of Working Time Quality, partly reflected also in slowly declining gaps between high- and low-education groups, could be interpreted as responding to a generalized demand that grew with the ubiquitously rising trend for female participation in the labor force. The observed widespread reductions in the dispersion of Work Intensity are consistent with the impact of technology being greatest among those whose required effort was below average, as implied in the theory of effort-biased technological change. If there were no changes in the association between intensive work effort and pay (about which we have no evidence), a reduction in the dispersion of work intensity would also amount to a fall in overall inequality.[16] These falls in inequality stand in contrast to previously noted rises in wage inequality. An account of why in several countries opposing trends for wages and other aspects of job quality occur should be the focus of future research.

While all these patterns of change are seen in many countries, they are not found in all. The question arises, then, as to whether respective countries' trends show divergence, this being a possible indicator of the power of heterogeneous country-level institutions to take job quality on varying paths. We have found this not to be the case. Indeed, a pattern of slow national convergence in the means and dispersion of Working Time Quality and of Work Intensity, and in the means of Good Physical Environment, has

[15]Evidence about tobacco smoke exposure is available since only 2005.

[16]The extent of this possible reduction depends on how the different indices are valued (upon which matter there are differences of approach that are not addressed here). Moreover, should the association between effort and wages be reduced, the effect on overall inequality is ambiguous, no matter how effort is weighted against pay.

emerged. Only for the Gini indices of Good Physical Environment is there some evidence of minor divergence, and otherwise there was little change in the spread across countries. This pattern does not necessarily imply that generalized forces of technology and global competition are behind the changes. Within Europe, regulation patterns can become generalized through policy learning, copying, and the open method of coordination, and through Brussels' directives that are subsequently enacted by national governments; and that regulation may have an equalizing effect on job quality is plausible.

Finally, we have also found mostly stable gaps in job quality between men and women and between socioeconomic groups, which are in most cases unsurprising. The stability is a reflection of the slow-changing inequality across the whole sample of countries.[17] Nevertheless, we have identified certain striking shifts that have implications for further analysis, including the dramatic rise in work intensity of temporary agency workers and the decline in work quality among service workers.

The indices presented in this article are far from perfect tools for understanding the changing workplace, even if they represent an advance on previous quantitative descriptions. Notably, the items on skills requirements of jobs (constituents of the Work Quality index) need development. Until recently the EWCS has not generated data on social support within the workplace, so we cannot look at long-term trends. And only recently was the survey extended to encompass as many as 34 countries. A broader spread of trends will be revealed in time, as long as continuity is maintained. Meanwhile, the surveys hitherto are all cross sections of data, rather than longitudinal, thereby limiting the extent to which they can contribute to identifying causal processes.

[17]Sample sizes militate against a country-level gap analysis; however, job quality gaps within country groups could be amenable to analysis in future work.

Appendix. Job Quality and Subjective Well-Being

Table A.1. Determinants of Subjective Well-Being at Work

Variable	*Health problems caused by work*[a]	*Health and safety risk*[b]	*Subjective well-being*[c]
Work Quality	0.00324 (0.000)	0.00161 (0.025)	—
Work Intensity	–0.00816 (0.000)	0.00966 (0.000)	—
Good Physical Environment	0.0282 (0.000)	–0.0472 (0.000)	—
Working Time Quality	0.00708 (0.000)	–0.0132 (0.000)	0.0334 (0.000)
Male	0.118 (0.000)	–0.106 (0.005)	0.00957 (0.719)
Age	–0.0672 (0.000)	0.0618 (0.000)	–0.05 (0.000)
Age^2	0.000723 (0.000)	–0.0006 (0.000)	0.00071 (0.000)
Number of dependents	—	—	–0.0533 (0.000)
N	21,093	21,348	21,646

Note: p-values are in parentheses.

[a] The variable capturing the subjective effect of work on health takes three values: 0 if the effect is negative, 1 if there is no effect, and 2 if the effect is positive. Estimation by ordinal logit.

[b] "Health and safety risk at work" takes the value of 0 if the worker does not perceive any risk caused by his work, and 1 otherwise. Estimation by logit.

[c] The variable capturing subjective work–life balance takes four values on a 4-point scale.

Hours Fit: "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"? Scale from 0 ("not at all well") to 3 ("very well"). Estimation by ordinal logit.

Table A.1 presents simple tests of the criterion validity of the four job quality indices available from 1995 that were used in the article. A correlation between subjective well-being and the satisfaction of need is expected, and the job quality indices are designed to capture aspects of need satisfaction from work. Hence, we do expect an appropriate relation between each index and subjective well-being, and this expectation provides a test of criterion validity. We apply this test using the 2010 data.

Controlling for sex, age, and age squared, the first column looks at an indicator of positive well-being, the worker's self-perceived effect of the job on his or her health, which is positively related to Work Quality, Good Physical Environment, and Working Time Quality, and negatively related to Work Intensity, as expected. Given the nature of this outcome variable, the index that has the largest estimated association with the outcome is Good Physical Environment. The second column provides further equivalent validation, but with a negative indicator, health and safety risk. The signs are reversed, with the exception that Work Quality is positively related to the perception of health and safety risk. The third column focuses on work–life balance. The survey contains an item capturing the worker's assessment of how well his or her work hours fit family or social commitments outside work. This assessment is expected to be positively related to the Working Time Quality index. As a control to capture outside commitments, we include the number of dependent children below age 16 in the household. Again, the index performs as expected.

All these coefficients are presented not as unbiased estimates of causal impacts of the indices on well-being, since other variables could be affecting both the dependent and independent variables. There could, for example, be a common rater bias. Hence, this is only a weak test of validity. The maintained assumption, however, is that these biases are either downward, or, if upward, are not of such great magnitude as to reverse the sign of a coefficient.

References

Atkinson, Anthony B. 2008. *The Changing Distribution of Earnings in OECD Countries*. Oxford and New York: Oxford University Press.

Autor, David H., Frank Levy, and Richard J. Murnane. 2003. The skill content of recent tech-

nological change: An empirical exploration. *Quarterly Journal of Economics* 118(4): 1279–1334.
Bescond, David, Anne Chataignier, and Farhad Mehran. 2003. Seven indicators to measure decent work: An international comparison. *International Labour Review* 142(2): 179–211.
Danford, Andrew, Michael Richardson, Paul Stewart, Stephanie Tailby, and Martin Upchurch. 2008. Partnership, high performance work systems and quality of working life. *New Technology Work and Employment* 23(3): 151–66.
Estevez-Abe, Margarita. 2005. Gender bias in skills and social policies: The varieties of capitalism perspective on sex segregation. *Social Politics* 12(2): 180–215.
Eurofound. 2006. Fifteen years of working conditions in the EU: Charting the trends. Dublin: Eurofound.
European Commission. 2008. Employment in Europe 2008. European Commission, Directorate-General for Employment and Social Affairs.
European Foundation for the Improvement of Living and Working Conditions. 2002. Quality of work and employment in Europe: Issues and challenges. Luxembourg, Foundation Paper No. 1, February.
European Foundation for the Improvement of Living and Working Conditions. 2009. Convergence and divergence of working conditions in Europe: 1990–2005. Luxembourg, Office for Official Publications of the European Communities.
Fevre, Ralph. 2007. Employment insecurity and social theory: The power of nightmares. *Work Employment and Society* 21:517–35.
Gallie, Duncan. 2003. The quality of working life: Is Scandinavia different? *European Sociological Review* 19(1): 61–79.
———. 2007a. Production regimes and the quality of employment in Europe. *Annual Review of Sociology* 33:85–104.
———. 2007b. Production regimes, employment regimes, and the quality of work. In Duncan Gallie (Ed.), *Employment Regimes and the Quality of Work*, pp. 1–34. Oxford: Oxford University Press.
Gallie, Duncan, Alan Felstead, and Francis Green. 2004. Changing patterns of task discretion in Britain. *Work Employment and Society* 18(2): 243–66.
Gallie, Duncan, Ying Zhou, Alan Felstead, and Francis Green. 2012. Teamwork, skill development and employee welfare. *British Journal of Industrial Relations* 50(1): 23–46.
Ghai, Dharam. 2003. Decent work: Concept and indicators. *International Labour Review* 142(2): 113–45.
Givord, Pauline, and Eric Maurin. 2004. Changes in job security and their causes: An empirical analysis for France, 1982–2002. *European Economic Review* 48(3): 595–615.
Goos, Maarten, and Alan Manning. 2007. Lousy and lovely jobs: The rising polarization of work in Britain. *Review of Economics and Statistics* 89(1): 118–33.
Goos, Maarten, Alan Manning, and Anna Salomons. 2010. Explaining job polarization in Europe: The roles of technology, globalization and institutions. London School of Economics, CEP Discussion Paper No. 1026.
Gorman, Elizabeth H., and Julie A. Kmec. 2007. We (have to) try harder. Gender and required work effort in Britain and the United States. *Gender & Society* 21(6): 828–56.
Green, Francis. 2004. Why has work effort become more intense? *Industrial Relations* 43(4): 709–41.
———. 2006. *Demanding Work. The Paradox of Job Quality in the Affluent Economy*. Princeton, NJ: Princeton University Press.
———. 2009. Subjective employment insecurity around the world. *Cambridge Journal of Regions, Economy and Society* 2(3): 343–63.
Green, Francis, and Tarek Mostafa. 2012. *Trends in job quality in Europe: A report based on the fifth European Working Conditions Survey*. Dublin: Eurofound.
Hall, Peter, and David Soskice. 2001. An introduction to varieties of capitalism. In Peter Hall and David Soskice (Eds.), *Varieties of Capitalism*, pp. 1–70. Oxford: Oxford University Press.
Handel, Michael J. 2005. Trends in perceived job quality, 1989 to 1998. *Work and Occupations* 32(1): 66–94.
Holman, D., and Chendler McClellan. 2011. Job quality in growing and declining economic sectors of the EU. University of Manchester, WALQING Working Paper 2011.3.

Kalleberg, Arne L. 2011. *Good Jobs, Bad Jobs: The Rise of Polarized and Precarious Employment Systems in the United States, 1970s to 2000s*. New York: Russell Sage Foundation.

Kim, Andrew E., and Innwon Park. 2006. Changing trends of work in South Korea: The rapid growth of underemployment and job insecurity. *Asian Survey* 46(3): 437–56.

Körner, Thomas, Katharina Puch, and Christian Wingerter. 2011. Quality of employment. Earning money and what else counts. Wiesbaden: Statistisches Bundesamt (Federal Statistical Office).

Lehto, Anna-Maija, and Hanna Sutela. 2005. Threats and opportunities: Findings of Finnish quality of work life surveys, 1977–2003. Helsinki: Statistics Finland.

Muñoz de Bustillo, Rafael, Enrique Fernández-Macías, José-Ignacio Antón, and Fernando Esteve. 2011a. E pluribus unum? A critical survey of job quality indicators. *Socio-Economic Review* 9(3): 447–75.

———. 2011b. *Measuring More than Money: The Social Economics of Job Quality*. Cheltenham: Edward Elgar.

Organisation of Economic Co-operation and Development [OECD]. 2003. *OECD Employment Outlook*. Paris, OECD.

———. 2008. Growing unequal? Income distribution and poverty in OECD countries. Paris: OECD.

Osterman, Paul. 2000. Work reorganization in an era of restructuring: Trends in diffusion and effects on employee welfare. *Industrial & Labor Relations Review* 53(2): 179–96.

Olsen, Karen M., Arne L. Kalleberg, and Torstein Nesheim. 2010. Perceived job quality in the United States, Great Britain, Norway and West Germany, 1989–2005. *European Journal of Industrial Relations* 16(3): 221–40.

Peña-Casas, Ramon. 2009. More and better jobs: Conceptual framework and monitoring indicators of quality of work and employment in the EU policy arena. Edinburgh: Working Papers on the Reconciliation of Work and Welfare in Europe, REC-WP 06/2009.

Rubery, Jill, and Damian Grimshaw. 2001. ICTs and employment: The problem of job quality. *International Labour Review* 140(2): 165–92.

Schmitt, John. 2001. Did job quality deteriorate in the 1980s and 1990s? In Ivar Berg and Arne L. Kalleberg (Eds.), *Sourcebook of Labor Markets: Evolving Structures and Processes*, pp. 387–407. New York: Kluwer Academic/Plenum Publishers.

Smith, Mark, Brendan Burchell, Colette Fagan, and Catherine O'Brien. 2008. Job quality in Europe. *Industrial Relations Journal* 39(6): 586–603.

Stiglitz, Joseph E., Amartya Sen, and Jean-Paul Fitoussi. 2009. Report by the Commission on the Measurement of Economic Performance and Social Progress. Accessed at http://www.stiglitz-sen-fitoussi.fr.

Thelen, Kathleen. 2004. *How Institutions Evolve. The Political Economy of Skills in Germany, Britain, the United States, and Japan*. Cambridge, UK and New York: Cambridge University Press.