Does the employment status matter for job quality?

Franz Ferdinand Eiffe[1], Jessie Gevaert*, Deborah De Moortel* and Christophe Vanroelen*

Abstract

This paper contains an in-depth analysis of employment status in the European Union. Our main objective is to study the relations between employment status and workers' job quality. We identify seven employment status categories: indefinite contracts, fixed-term contracts of longer than one year, fixed-term contracts of less than one year, other employees, dependent self-employed without employees, independent self-employed without employees, and self-employed with employees. The results of this study show clear differences in job quality according to the categories of employment status. Also the importance of country-level variation in employment status and its relationships with job quality is demonstrated. The conclusions of this research are embedded in the on-going EU policy debate on job quality and non-standard employment.

Introduction

This paper is based on a larger research project the results of which were published as a Eurofound Working Paper at https://www.eurofound.europa.eu/sites/default/files/wpef18005en.pdf

The focus of this paper lies with the potential consequences of certain forms of employment for job quality. Especially, country-group variations (based on the production regime approach by Gallie 2011) in the association between job quality and employment status is of interest here. Mainly micro-data from the European Working Conditions Survey 2015 is used.

In this paper, we place 'employment status' under the wider umbrella of 'employment conditions' – in other words the conditions under which the work is organised, including contractual, temporal, interactional and rewards-related settlements (Benach *et al.* 2014a). Holman and McLeland (2011) label these characteristics of a job as 'employment quality', which for them is clearly distinct from 'work quality'. With the latter, they refer to the content of work tasks themselves (e.g. Is a job physically/mentally demanding? Is it interesting and enriching? ergonomically taxing?). Employment quality and work quality together then constitute 'job quality' – a kind of overarching concept that tries to grasp into all aspects that determine the quality of a job.

Conceptualizing and monitoring job quality has always been the aim of Eurofound's European Working Conditions Surveys. That aim has been translated into a series of dimensions of job quality, enabling researchers to monitor evolutions (Green & Mostafa 2012). Green and Mostafa (2012) distinguish between seven dimensions of job quality: skills and discretion, physical environment, social environment and work intensity (constitute work quality) – and three refer to what we would here call employment quality: working time quality, earnings and prospects (Green & Mostafa 2012).

In this paper, 'employment status' is defined in a narrow way as the complement of these seven job quality dimensions: our approach towards employment status refers to the contractual aspect of employment quality in terms of duration. It is consequently, our main objective to relate these contractual features to the other dimensions of job quality identified by Green and Mostafa (2012).

When referring to employment status in this way, almost simultaneously the distinction between 'standard' and 'non-standard' employment emerges (Eurofound 2017a; International

[1] Research Officer, European Foundation for the Improvement of Living and Working Conditions, Dublin

* Free University, Brussels

Labour Office 2016a). This distinction is firmly rooted in the recent history of labour market developments in Western economies (Bosch 2004). More specifically, the distinction explicitly refers to the **Standard Employment Relationship** (SER) – a kind of Post-Second-World-War-point of reference, against which employment status is usually assessed (Kalleberg *et al.* 2000). The norm was one of waged employment, on a permanent and full-time basis, with an implicit assumption of an almost careerlong engagement for one employing organisation (Castel 2007). Until today, this SER-model of employment is seen as a *golden standard*, involving against which other (non-standard) forms of employment can be compared. These other forms of employment may depart from the SER in various ways (Rodgers 1989), however most notable are departures in terms of the contractual (like temporary, agency, freelance work) or temporal (like part-time and all kinds of irregular working hours) nature of work.

Since the economic restructuring starting in the 1970's, it is assumed that the SER as a golden standard for employment started to erode (Bosch 2012). Although, many observers have highlighted the enduring importance of 'standard' permanent full-time employment as a model of reference (Auer & Cazes 2000; International Labour Office 2016a). A mix of causes has been held responsible for the supposed **decline of the SER**: ideological transformations often described as 'neoliberalism'; a shift from Keynesian to supply-side macro-economics; technological innovations, involving automatization and real-time communication, cheaper and easier logistics; organisational innovations, involving for example lean production, delocalisation, franchising and subcontracting; the relaxation of barriers to free trade of goods, services and capital; changes in the characteristics and composition of the work force; and altered power relations between capital and labour are among the main factors often referred to (Vallas 1999).

'Job quality' as used in this article refers to the quality of different features of a job. A conceptualization of job quality is presented in recent Eurofound reports (Eurofound 2016; Green & Mostafa 2012). In the last report, seven indices were presented: physical environment, work intensity, working time quality, social environment, skills and discretion, prospects and earnings (Eurofound 2016). Our approach towards job quality fits within this broader conceptualisation of Eurofound.

Although the subject is relatively under-studied, from the existing literature some evidence emerges regarding the relation between employment status and job quality. In countries with a strong polarization of the labour market, a larger number of low-quality jobs are found (Gallie 2007). While there are only small differences in working conditions between permanent and non-permanent contracts, there is a weak but significant relationship between having a non-permanent contract and low time control and lack of skills (Eurofound 2002). There is also a significant relationship between having a non-permanent contract and low job control (Eurofound 2002). Similar relations with less favourable job quality outcomes are seen for indicators of employment precariousness (Bosmans *et al.* 2016b; Julià *et al.* 2017b; Pyöriä & Ojala 2016) and for a typology of employment quality types (Van Aerden *et al.* 2014). In some cases, nonstandard employment presents itself as an interesting challenge (Bosmans *et al.* 2017), a welcome response to worker-desired flexibility (Girard 2010) or as a stepping-stone into the labour market (Jahn & Rosholm 2014).

Self-employed, in general, experience more autonomy, self-determination, freedom and motivation in their job (Dijkhuizen *et al.* 2016; Nordenmark *et al.* 2012; Stephan & Roesler 2010). Some studies have pointed towards considerable variation in job quality among the self-employed, with small business owners and dependent self-employed being in a less favourable situation than economically independent self-employed, liberal professionals and large employers (Eurofound 2017b).

Policy context

New forms of employment (non-standard forms) are changing the labour market at a growing rate. But how is non-standard work defined at the European level? A definition is provided by

the European Commission: '*Non-standard employment is defined as including the self-employed, employees with a temporary or fixed-term contract, and those working part-time or fewer than 30 hours per week, as well as family workers (who tend to be ignored in the usual definitions but who are obviously in employment that deviates from the norm)* (European Commission 2015).

An important future evolution in non-standard forms of employment is expected in the so called 'gig-economy' (International Labour Office 2016b). Examples of these new forms of employment are temporary work, informal self-employed work, informal entrepreneurs, part-time workers, unpaid family workers, casual work, on-call work and dependent self-employment... (there is an extensive list available at the ILO website) (International Labour Office 2015c, 2017). These forms of employment come with several risks such as in work-poverty and inequality (ETUI 2017a). Currently efforts are made to gain insights in these new non-standard forms of employment by for example developing a framework on job quality (OECD 2016) or developing a typology on the types of new employment forms (Eurofound 2015b).

The European Union believes that the responsibility for social policy and employment lies primarily with the national governments. However, the EU makes efforts to coordinate, support and monitor the national policies (European Union 2017). It is however possible to identify a small number of policy measurements targeting non-standard employment at the EU-level. In addition, also the OECD and the ILO are shaping the international policy debate on forms of employment.

The European Union adopts a European Employment Strategy. The aim of this strategy is to create more and better jobs, and to establish common objectives and targets for the employment and labour market policy on national levels. The **employment package** and the **flexicurity strategy** are part of the European Employment Strategy. The employment package formulates strategies for better jobs. The flexicurity strategy aims to enhance both flexibility and security in European labour markets (European Commission 2017a).

The European Commission has been implementing a social dimension in European level policy-making under the form of the **European Pillar of Social Rights** – and previously already under the objective of 'more and better jobs' as a part of the **Lisbon Strategy**. One particular aim of the Social Pillar is to modernise the rules for employment contracts and broaden the scope of traditional employment to new and atypical forms of work (European Commission 2017a). Currently the European Commission is in discussion with various stakeholders, unions, and employer's organisations in order to revise the Written Statement Directive (with all the new forms of employment), and to improve the social protection of non-standard workers (European Commission 2017a).

A concrete example of these debates turning into actual policy is the Temporary and Agency Directive (2008/104/EC). The aim of this directive is the protection of these non-standard workers by ensuring the principle of equal treatment (International Labour Office 2013). Other European Directives, trying to eliminate risks of precariousness in non-standard work, are directives on part-time work, fixed-term contracts, outsourcing, and posted work (European Union, 2016) and most recently the Directive and Transparent and Predictable Working Conditions.

Secondary analyses of the EWCS-surveys

Data

Our main source of statistical information on employment status, job quality and quality of working life, are the EWCS-surveys. The EWCS is a large-scale survey of the European working population (employees and self-employed), organised by Eurofound every 5 years, since 1991[2]. Respondents in the EWCS are surveyed face-to-face on a broad range of factors

[2]For detailed technical information on the EWCS-surveys, we refer to the webpage: www.eurofound.europa.eu/surveys/european-working-conditions-surveys

related to their work. All information is self-reported and cross-sectional. The EWCS excludes people out of employment at the moment of the interview, leaving the inactive population out of our scope. The EWCS-data for this study was limited to the current 28 EU-countries. In some of the descriptive analyses, data from the pooled 2005, 2010 and 2015-editions has been used, amounting to a total weighted number of 98,706 workers. The 2015-edition alone includes data on a weighted sample of 35,610 workers from the 28 EU-countries. Where necessary, results presented in this report have been weighted according to the appropriate sampling weights.[3]

Finally, as an introduction to the labour market configuration in European countries, time series data of the European Labour Force Surveys have been used. These data are derived from the publicly accessible macro-data of Eurostat[4].

Indicators

The indicators that have been used in our analyses of the EWCS are shown in Annex 1. This list of indicators includes: specifications of 'employment status', indicators of 'job quality', and a selection of demographic and socio-economic control and stratification variables. In the tables, for each indicator, basic information on its composition and distribution over the sample is given. Besides, also a number of 'country-level policy indicators' was involved in our analyses. These indicators are mentioned in Annex 2.

Methodology

The main aim of this paper is to highlight the relations between employment status and job quality. For that purpose, a series of multi-variable hierarchical regression models has been fitted. The primary data units are individual respondents, while the second-level data unit are countries. Multi-variable regression models allow to statistically control the association between employment status and job quality for confounding effects coming from third variables. Moreover, the hierarchical (multilevel) modelling approach allows us to separate micro/meso-level and contextual effects and to estimate the independent direct effects of employment status on a series of indicators representing aspects of job quality (Hox 2002). At the country-level, these data are complemented with macro-level policy indicators derived from Eurostat, The World Bank, ILO, the Amsterdam Institute for Advanced Labour Studies (AIAS) and the The Swedish Institute for Social Research (see Annex 1). We thus test to what extent country-variation in the selected job quality indices can be explained by (a) individual and meso-level characteristics of the working populations of these countries and (b – option 1) macro-indicators representing aspects of the socio-economic and policy environment of these countries or (b – option 2) a Gallie production regime indicator. Moreover, it allows to investigate whether employment status (remains) an independent predictor of job quality after controlling for relevant confounders. For some cases, OLS-regression is the most appropriate modelling approach, while for the other outcomes logit modelling has been used – the applied estimation technique is mentioned in the results tables. In fitting the models, a stepwise approach is applied (see box 1).

The following dependent variables have been assessed in the multilevel analyses: good physical environment; work intensity; good social environment; skills and discretion; high job strain; training received; low regularity; working time quality; job security; being called to work at short notice; difficulties in arranging time off; employment prospects.

Box.1 Generic modelling approach for predicting job quality as a dependent variable

For each of the job quality indicators mentioned above, a largely generic stepwise procedure has been followed. However, when deemed appropriate during modelling, this

[3] Analyses performed on the entire EU28-sample are weighted using 'W5_EU28', which is a weighting factor correcting for the sample distribution within countries, as for the size of the working population of countries; for stratified analyses at the country-level, 'W4' has been used, only correcting for the sample distribution within countries.

[4] All included LFS-macro data originates from this webpage: http://ec.europa.eu/eurostat/data/database

generic approach outlined below was modified. More specifically, the following steps have been made:

- Step 1: Null model, distinguishing level 1 (respondents) and level 2 (countries) variance
- Step 2: Bivariate models. For each independent variable, first a bivariate analysis is estimated
- Step 3: Employment status is added to the null model (EMPSTAT_2015 and Part-time)
- Step 4: All other job quality indices are added to step 3 (exceptions are made for multicollinear indicators)
- Step 5: The individual level variables are added to step 4
- Step 6: Meso-level variables are added to step 5

Proceedings after step 6: option macro-level indicators

- Step 7: Country-level variables are added in two steps
  A. For each country-level variable, a bivariate analysis is estimated
  B. The significant country-level variables are added to the model from step 6
- Step 8: Interaction effects between the remaining country level variables and employment status are tested, also other interaction effects between education and employment status are added

The reported estimates represent the effect of belonging to a certain employment status (for example being self-employed with employees) on the level of a certain job quality indicator, using the status of 'permanent employment' as a reference group. The results are shown in table 1. Secondly, associations between macro-level indicators at the country level and job quality characteristics (only significant effects) are shown. These estimates represent the standardised effect (z-scores) on job quality of a one unit increase in the macro-characteristic. The associations between production regimes and job quality characteristics are also shown. The results are shown in tables 2 and 3.

Results

Relations between job status and job quality

In the current section, scores on the job quality indices for each of the employment statuses will be discussed. These comments refer to table 1, showing the results of hierarchical regression analyses comparing parameter estimates for the separate employment status categories with a reference category. The regression procedure followed a stepwise approach whereby bit by bit additional independent variables were added to a model of employment status predicting job quality.

As it is the majoritarian category in the sample, holders of permanent contracts show job quality scores very similar to the average. Only receiving training and work schedule regularity are higher than average. In the multivariable models permanent contracts serve as a reference category.

Longer lasting (more than 1 year) temporary contracts diverge from permanent contracts for a number of indicators of job quality. Work intensity is slightly lower, while also the quality of the social environment, skills and discretion, the chance of receiving training, working schedule regularity, working time quality, job security and employment prospects are significantly lower compared to permanent workers as well. Moreover, longer term temporary contracts more frequently experience high job strain, are being called to work at short notice more regularly and experience more difficulties arranging time off. After controlling for potential confounders, the effects for the quality of the social environment, high job strain,

regularity, being called to work at short notice and job strain did not differ significantly from permanent employment anymore. For shorter-term temporary contracts, the pattern is very similar. After controlling for confounders, significant divergences from permanent employment were the following: a higher score for good social environment, clearly lower skills and discretion, more high job strain, less chance to receive training, lower working time quality, a higher chance for being called to work at short notice, more difficulties in arranging time off, lower job security and lower employment prospects. In sum, these analyses make clear that temporary employment - and especially short-term temporary employment - scores worse on several aspects of job quality, compared to permanent employment.

Because of its heterogeneous composition, the category of 'other employees' is not so straightforward to interpret: one should keep in mind that workers explicitly stating not having a written employment contract are majoritarian in this category. Also temporary agency workers are an important second category, besides of other groups. The specific composition and magnitude of this group is also quite different between countries. Nevertheless, it is safe to state that this heterogeneous group is predominantly composed of workers in less stable, non-standard types of employment. When looking at job quality, a picture of largely lower quality emerges. Compared to employees holding a permanent contract, the other employees-category shows less favourable scores on the quality of the physical environment and the social environment, lower skills and discretion scores, less training and lower regularity. Furthermore, this group is more confronted with being called to work at short notice and experiences less job security and lower employment prospects, compared with those workers holding a permanent contract. Work intensity is, in contrast, significantly lower than the reference category. The overall measure of working time quality is slightly higher. Controlling for confounders causes the difference with permanent employees to disappear for the quality of social environment and working time quality.

Dependent solo self-employed - when compared to employees holding a permanent contract, show lower scores on work intensity, less high job strain, slightly higher working time quality and report less frequently difficulties to arrange some time off during work. In contrast, the quality of the physical and social environment is less favourable. The same holds - still compared to employees holding a permanent contract - for skills and discretion, receiving training, regularity, being called to work at short notice and job security. 'Independent' solo self-employed, for many job quality indices, show relatively similar patterns as dependent solo self-employed, although the magnitudes of the effects vary. Nevertheless, a few exceptions underline the generally more favourable job quality of 'independent' solo self-employed. Compared to employees holding a permanent contract (and also compared to dependent solo self-employed), solo self-employed show more favourable scores on skills and discretion and employment prospects. Their level of job security is equal to that of employees with a permanent contract, while working time quality is clearly less favourable. These crude findings are quite robust, in the sense that controlling for confounders does not change much to these findings, except for employment prospects becoming non-significant.

Self-employed with employees constitute a relatively favourable group in terms of job quality. Compared to employees holding a permanent contract, they have on average better social environment, skills and discretion, less situations of high job strain, they are less confronted with difficulties to arrange time off and have higher employment security and employment prospects. To the contrary, receiving training is slightly less common than for permanent employees, besides also working time quality (including the overall scale, regularity and being called to work at short notice) is more problematic.

When compared to the general average, it can be seen that workers in an unstable employment status experience clearly lower skills and discretion, job security and general employment prospects, while they also receive less training. In contrast, they are exposed more often to high job strain, are more often called to work on short notice and experience more difficulties arranging time off during their working hours.

Workers in part-time employment (less than 35 h/week) - compared to full time employed - show a slightly less favourable social environment score, less often receive training, have lower scores for skills and discretion, are confronted with less work schedule regularity and less job security and employment prospects. In contrast, more favourable scores are noted for the quality of the physical environment and the occurrence of high job strain. Also, overall working time quality as well as more specific indicators of working time quality - being called to work at short notice and difficulties arranging time off - are more favourable on average. Workers in involuntary part-time employment (only descriptive analyses), on average have clearly lower skills and discretion, receive less training, have less schedule regularity and are more often called to work at short notice. Moreover, they have on average less secure jobs and less employment prospects.

Table 1: Associations between job quality indicators and employment status (EU28, 2015)

	Good physical environment [a] (dummy)		**Work intensity (scale)**		**Good social environment [a] (dummy)**		**Skills and Discretion (scale)**	
	Bivariate	Controlled [(*)]	Bivariate	Controlled [(*)]	Bivariate	Controlled [(*)]	Bivariate	Controlled [(*)]
Intercept		85.88		96.27		-1.89		42.05
Employment status (intercept)	(83.73)		(34.13)		(0.64)		(55.95)	
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than one year	-0.63	-0.44	-1.17**	-1.07**	-0.19***	-0.07	-4.67***	-0.98*
	(-1.30; 0.04)	(-1.03,0.16)	(-2.02; -0.32)	(-1.88,-0.27)	(-0.29,-0.09)	(-0.19,0.04)	(-5.58; -3.76)	(-1.78,-0.19)
A fixed term contract of less than one year	-2.48***	-0.43	-0.37	0.20	-0.10	0.14*	-10.99***	-3.66***
	(-3.22; -1.73)	(-1.12,0.26)	(-1.31; 0.56)	(-0.74,1.15)	(-0.22,0.01)	(0.00,0.28)	(-12.00; -9.98)	(-4.58,-2.73)
Other employees	-2.65***	-0.78**	-5.23***	-1.92***	-0.14**	0.03	-12.01***	-3.31***
	(-3.25; -2.04)	(-1.35,-0.21)	(-5.97; -4.48)	(-2.70,-1.13)	(-0.24,-0.05)	(-0.08,0.14)	(-12.81; -11.21)	(-4.08,-2.53)
Self-employed without employees-dependent	-1.41**	-0.91	-10.78***	-5.70***	-0.88***	-0.91***	-0.38	2.82***
	(-2.39; -0.42)	(-2.08,0.26)	(-11.97; -9.60)	(-7.30,-4.10)	(-1.07,-0.70)	(-1.13,-0.70)	(-1.66; 0.89)	(1.24,4.40)
Self-employed without employees-independent	-1.60***	-0.99*	-9.13***	-8.81***	-0.73***	-1.04***	8.48***	8.76***
	(-2.16; -1.03)	(-1.75,-0.23)	(-9.81; -8.44)	(-9.85,-7.78)	(-0.85,-0.61)	(-1.18,-0.90)	(7.74; 9.22)	(7.74,9.78)
Self-employed with employees	0.37	0.55	-0.41	-4.18***	0.54***	0.23**	16.46***	10.30***
	(-0.37; 1.12)	(-0.19,1.28)	(-1.33; 0.51)	(-5.18,-3.18)	(0.41,0.68)	(0.07,0.39)	(15.47; 17.46)	(9.31,11.28)
Working time (intercept)	(82.83)		(34.07)		(0.64)		(57.10)	
Fulltime	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Part-time (less than 34 hours)	3.30***	0.02	-6.95***	-1.01***	-0.20***	-0.13***	-5.32***	-0.97***
	(2.93; 3;67)	(-0.36,0.39)	(-7.40; -6.50)	(-1.52,-0.50)	(-0.26,-0.14)	(-0.20,-0.06)	(-5.82; -4.82)	(-1.47,-0.46)

[(*)] All effects are controlled for employment status and part-time work; the other job quality indices; individual level characteristics (sex; age; education; citizenship; life stage; seniority and income decile); meso level characteristics (ISCO and nace); and a selection of macro-level indicators (see table 5 of this report). For high strain; training, good social environment; regularity; called to work at short notice; difficulty to take time off; and employment prospects; the estimates are on a logit scale. For other outcomes; a linear scale

Table 10: Associations between job quality indicators and employment status (EU28, 2015) (continued)

	High strain [a] (dummy)		**Training received**		**Regularity (medium to high)**		**Working time quality (scale)**	
	Bivariate	Controlled [(*)]	Bivariate	Bivariate	Bivariate	Controlled [(*)]	Bivariate	Controlled [(*)]
Intercept		1.40		0.28		-1.92		62.01
Employment status (intercept)	(-2.14)		(-0.39)		(1.28)		(71.47)	
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than one year	0.22**	0.04	-0.38***	-0.18**	-0.14*	-0.03	-1.37***	-1.25***
	(0.08,0.36)	(-0.13,0.20)	(-0.48,-0.28)	(-0.30,-0.06)	(-0.25,-0.03)	(-0.16,0.10)	(-2.02; -0.72)	(-1.86,-0.65)
A fixed term contract of less than one year	0.62***	0.30***	-0.76***	-0.27***	-0.14*	0.02	-0.96**	-1.13**
	(0.49,0.75)	(0.14,0.47)	(-0.88,-0.64)	(-0.41,-0.12)	(-0.26,-0.02)	(-0.14,0.18)	(-1.68; -0.24)	(-1.83,-0.43)
Other employees	0.28***	0.04	-1.11***	-0.39***	-0.59***	-0.41***	0.73*	-0.29
	(0.17,0.40)	(-0.11,0.19)	(-1.22,-1.01)	(-0.51,-0.27)	(-0.68,-0.50)	(-0.53,-0.29)	(0.16; 1.30)	(-0.86,0.29)
Self-employed without employees-dependent	-0.76***	-0.45*	-1.58***	-1.19***	-1.73***	-1.29***	1.34**	-1.79**
	(-1.02,-0.50)	(-0.83,-0.08)	(-1.79,-1.38)	(-1.48,-0.90)	(-1.86,-1.59)	(-1.51,-1.06)	(0.43; 2.25)	(-2.97,-0.61)
Self-employed without employees-independent	-1.78***	-1.79***	-0.94***	-0.59***	-1.90***	-1.37***	-3.39***	-4.32***
	(-2.01,-1.55)	(-2.18,-1.39)	(-1.03,-0.85)	(-0.75,-0.43)	(-1.99,-1.82)	(-1.52,-1.22)	(-3.92; -2.86)	(-5.09,-3.55)
Self-employed with employees	-1.74***	-1.52***	-0.53***	-0.55***	-1.66***	-0.90***	-10.74***	-7.64***
	(-2.06,-1.42)	(-1.90,-1.13)	(-0.64,-0.41)	(-0.70,-0.41)	(-1.76,-1.55)	(-1.05,-0.75)	(-11.45; -10.03)	(-8.38,-6.90)
Working time (intercept)	(-2.20)		(-0.52)		(1.00)		(69.04)	
Fulltime	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Part-time (less than 34 hours)	-0.12**	0.11*	-0.57***	-0.15***	-0.32***	-0.61***	7.08***	4.32***
	(-0.21,-0.04)	(0.00,0.23)	(-0.62,-0.51)	(-0.22,-0.07)	(-0.37,-0.27)	(-0.69,-0.53)	(6.74; 7.42)	(3.94,4.69)

[(*)] All effects are controlled for employment status and part-time work; the other job quality indices; individual level characteristics (sex; age; education; citizenship; life stage; seniority and income decile); meso level characteristics (ISCO and nace); and a selection of macro-level indicators (see table 5 of this report). For high strain; training, good social environment; regularity; called to work at short notice; difficulty to take time off; and employment prospects; the estimates are on a logit scale. For other outcomes; a linear scale

Table 10: Associations between job quality indicators and employment status (EU28, 2015) (continued)

	Called to work at short notice (%)		**Difficulties in arranging time off (%)**		**Job security (scale)**		**Employment prospects [a] (dummy)**	
	Bivariate	Controlled [(*)]	Bivariate	Bivariate	Bivariate	Controlled [(*)]	Bivariate	Controlled [(*)]
Intercept		-1.76		0.73		0.69		-0.48
Employment status (intercept)	(-2.24)		(-0.61)		(0.76)		(0.94)	
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than one year	0.21**	0.14	0.31***	0.14*	-0.20***	0.00	-0.55***	-0.58***
	(0.06,0.35)	(-0.03,0.31)	(0.21,0.41)	(0.02,0.25)	(-0.22; -0.19)	(0.00; 0.00)	(-0.65,-0.46)	(-0.69,-0.46)
A fixed term contract of less than one year	0.46***	0.39***	0.43***	0.17*	-0.32***	-0.16***	-0.86***	-0.71***
	(0.31,0.61)	(0.20,0.58)	(0.32,0.54)	(0.03,0.30)	(-0.34; -0.31)	(-0.18; -0.14)	(-0.96,-0.75)	(-0.84,-0.58)
Other employees	0.54***	0.28***	0.01	-0.13*	-0.17***	-0.25***	-0.67***	-0.46***
	(0.42,0.66)	(0.12,0.44)	(-0.08,0.10)	(-0.25,-0.02)	(-0.19; -0.16)	(-0.26; -0.23)	(-0.75,-0.58)	(-0.57,-0.35)
Self-employed without employees-dependent	0.71***	0.58***	-1.01***	-0.49***	-0.05***	-0.12***	0.02	0.14
	(0.52,0.90)	(0.30,0.86)	(-1.18,-0.84)	(-0.75,-0.24)	(-0.07; -0.02)	(-0.13; -0.10)	(-0.13,0.17)	(-0.10,0.38)
Self-employed without employees-independent	0.91***	0.63***	-1.22***	-0.56***	0.00	-0.03*	0.30***	0.15
	(0.80,1.02)	(0.44,0.81)	(-1.32,-1.11)	(-0.74,-0.37)	(-0.01; 0.01)	(-0.07; -0.00)	(0.21,0.39)	(-0.01,0.31)
Self-employed with employees	1.19***	0.81***	-1.01***	-0.36***	0.05***	-0.01	0.84***	0.51***
	(1.05,1.32)	(0.64,0.99)	(-1.15,-0.88)	(-0.54,-0.19)	(0.03; 0.07)	(-0.03; 0.01)	(0.70,0.98)	(0.33,0.69)
Working time (intercept)	(-2.06)		(-0.70)		(0.74)		(0.94)	
Fulltime	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Part-time (less than 34 hours)	0.14***	0.28***	-0.11***	-0.06	-0.05***	0.02	-0.28***	-0.06
	(0.06,0.21)	(0.17,0.39)	(-0.17,-0.06)	(-0.14; 0.02)	(-0.06; -0.04)	(-0.00; 0.04)	(-0.34; -0.23)	(-0.13; 0.02)

[(*)] All effects are controlled for employment status and part-time work; the other job quality indices; individual level characteristics (sex; age; education; citizenship; life stage; seniority and income decile); meso level characteristics (ISCO and nace); and a selection of macro-level indicators (see table 5 of this report). For high strain; training, good social environment; regularity; called to work at short notice; difficulty to take time off; and employment prospects; the estimates are on a logit scale. For other outcomes; a linear scale

Country-level effects

The production regimes typology classifying the EU-countries into five country-types sharing common institutional and labour market related features has been added to the regressions as a macro-variable. The results shown in table 2, are therefore controlled for employment status and all other individual-level and workplace variables mentioned in the legend of the table. The Northern countries are considered the reference category. It can be noted that this 'fully controlled model' does not generate strong effects for the production regimes typology. Belonging to an Anglo-Saxon market regime-country is associated with a higher score for regularity and being called to work at short notice, while working time quality in general is significantly lower than in Northern countries. Workers from continental coordinated countries have - compared to those from the Northern countries - higher estimates for regularity and for experiencing difficulties to arrange time off during working times. In Southern state coordinated countries, workers generally experience lower skills and discretion scores, more difficulties arranging time off, lower job security and lower employment prospects. At the same time, they have a higher regularity score, compared to the Northern countries. The workers from Central Eastern and Baltic countries have generally lower scores for work intensity and skills and discretion, experience lower overall working time quality as well as higher scores for being called to work at short notice and having difficulties arranging time off during working hours. Moreover, also job security scores are lower. In contrast, a lower score for work intensity and higher work schedule regularity are found as well.

As an alternative approach to the production regimes, a series of macro-variables (with separate scores for 2015 for each country) was added to the individual level/workplace fully controlled model. The results of the macro variables, converted to z-scores, are reported in Table 3. The results show that particularly those indicators related to 'labour market performance' and 'working class power' are significantly related to a number of job quality indices. In countries with a high extent of centralisation in collective bargaining, respondents tend to have higher scores for working time quality. The country-level unemployment rate shows a significant negative association with skills and discretion and with employment prospects, while the estimate for experiencing high job strain is significantly higher as well. Collective bargaining coverage is positively associated with work schedule regularity. Union density shows a negative association with experiencing difficulties in arranging time off during working hours and a positive association with job security and employment prospects. GDP per capita at the country level, finally, shows a small positive association with individual-level job quality.

Table 2: The relation between production regimes and job quality indices

	Physical Environment [b]	**High work intensity** [b]	**Social environment** [a]	**Skills and Discretion** [b]	**High strain** [a]	**Training received** [a]	**Regularity (medium-high)** [a]	**Working time quality** [b]	**Called to work at short notice** [a]	**Difficulties in arranging time off** [a]	**Job security** [b]	**Employment prospects** [a]
Intercept	85.59	98.16	-2.07	48.36	1.11	0.53	-2.68	63.50	-1.95	0.09	0.76	-0.20
Production regimes												
Anglo-Saxon market regime	1.71 (-1.13,4.55)	1.17 (-2.96,5.30)	0.45 (-0.34,1.23)	-2.85 (-9.80,4.09)	0.38 (-0.59,1.35)	0.35 (-0.56,1.27)	0.92*** (0.41,1.43)	-2.56* (-4.78,-0.35)	0.35* (0.04,0.66)	0.19 (-0.56,0.94)	-0.04 (-0.14,0.06)	-0.14 (-0.64,0.37)
Northern countries	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Continental coordinated reg.	0.84 (-1.37, 3.04)	-1.84 (-5.04,1.36)	-0.06 (-0.67,0.55)	-3.53 (-8.91,1.86)	0.20 (-0.56,0.96)	0.16 (-0.55,0.87)	0.57** (0.18,0.97)	-1.10 (-2.82,0.62)	0.12 (-0.12,0.37)	0.65* (0.07,1.24)	-0.04 (-0.12,0.03)	-0.16 (-0.55,0.24)
Southern state coordinated regime	-0.50 (-2.65,1.66)	1.21 (-1.92,4.35)	0.50 (-0.10,1.10)	-9.74*** (-14.99,-4.48)	0.58 (-0.16,1.32)	-0.64 (-1.34,0.05)	1.17*** (0.78,1.56)	-1.53 (-3.22,0.16)	-0.04 (-0.29,0.21)	0.67* (0.10,1.24)	-0.08* (-0.16,-0.01)	-0.47* (-0.86,-0.09)
Central Eastern and Baltic countries	-0.64 (-2.70, 1.42)	-5.70*** (-8.69,-2.70)	0.16 (-0.41,0.73)	-7.83** (-12.84,-2.81)	0.12 (-0.59,0.83)	-0.37 (-1.03,0.29)	0.83*** (0.46,1.20)	-3.14*** (-4.75,-1.53)	0.40*** (0.17,0.64)	0.92*** (0.38,1.47)	-0.11** (-0.18,-0.04)	-0.32 (-0.69,0.05)

*p-values: * p<0.05; ** p<0.01; *** p<0.001; All effects are controlled for employment status and part-time work, individual level characteristics (sex, age, education, citizenship, life stage, seniority and income decile), workplace characteristics (ISCO and nace), and the production regime indicator. Estimates with an 'a-label' are obtained using logistic regression; estimates with a 'b-label' are obtained using OLS-regression. Estimates in italic are reference categories. Indicators: Physical environment - scale from 0 to 100 (good physical environment). Work intensity - scale from 0 to 100 (high work intensity). Working time quality - scale from 0 to 100 (good working time quality). High strain - dummy 0 to 1 (high strain). Social environment - dummy 0 to 1 (good social environment), 25% cut-off. Regularity - dummy 0 to 1 (medium/high regularity). Job security - scale 0 to 1 (High job security). Prospects - dummy 0 to 1 (good prospects), 25% cut-off. Skills and Discretion - scale from 0 to 100 (good skills and discretion/ work quality).*

Table 3: The relation between macro-indicators and job quality indicators

	Physical Environment [b]	High work intensity [b]	Social environment [a]	Skills and Discretion [b]	High strain [a]	Training received [a]	Regularity (medium-high) [a]	Working time quality [b]	Called to work at short notice [a]	Difficulties arranging time off [a]	Job security [b]	Employment prospects [a]
Intercept	85.88	96.27	-1.89	42.05	1.40	0.28	-1.92	62.01	-1.76	0.73	0.69	-0.48
Net social protection benefits	n.s.	0.93 (-0.29; 2.15)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Labour Cost per hour	0.26 (-0.39; 0.91)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Passive Labour market policies	n.s.	n.s.	n.s.	-0.26 (-1.90; 1.38)	n.s.	0.10 (-0.15; 0.35)	n.s.	n.s.	n.s.	-0.06 (-0.24; 0.13)	n.s.	n.s.
Active Labour market policies	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.01 (-0.01;0.04)	0.05 (-0.04; 0.15)
High collective bargaining centralization	0.23 (-0.40; 0.86)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.71** (0.19; 1.24)	n.s.	n.s.	n.s.	n.s.
Unemployment rate	-0.65 (-1.36; 0.06)	n.s.	n.s.	-2.52** (-4.07;-0.98)	0.35** (-0.14; 0.55)	-0.17 (-0.42;0.08)	n.s.	-0.07 (-0.70; 0.57)	n.s.	n.s.	-0.02 (-0.04;0.00)	-0.18*** (-0.28;-0.07)
Collective bargaining coverage	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.12* (0.01; 0.24)	n.s.	n.s.	n.s.	n.s.	n.s.
Union density	n.s.	1.14 (-0.11;2.39)	n.s.	0.43 (-0.91; 1.77)	n.s.	n.s.	n.s.	n.s.	n.s.	-0.20* (-0.37;-0.03)	0.02* (0.00; 0.04)	0.09* (0.01; 0.18)
Employment in foreign enterprises	n.s.	n.s.	n.s.	n.s.	n.s.	0.17 (-0.05; 0.39)	n.s.	n.s.	n.s.	n.s.	n.s.	0.03 (-0.06; 0.12)
Share of tertiary educated 25-64-year-old	n.s.	-0.34 (-1.61; 0.93)	n.s.	1.16 (-0.26; 2.58)	n.s.	0.07 (-0.12; 0.26)	n.s.	n.s.	n.s.	-0.16 (-0.34; 0.02)	n.s.	n.s.
Employment knowledge intensive activities	n.s.	0.98 (-0.50; 2.45)	n.s.	n.s.	-0.06 (-0.23; 0.12)	n.s.	n.s.	n.s.	n.s.	0.03 (-0.18; 0.23)	n.s.	n.s.
R&D Expenditure	n.s.	n.s.	-0.22** (-0.38; -0.06)	1.23 (-0.37; 2.83)	n.s.	0.13 (-0.07; 0.34)	-0.44*** (-0.55;-0.32)	n.s.	n.s.	n.s.	-0.00 (-0.03;0.02)	n.s.
GDP per capita	n.s.	n.s.	n.s.	0.66 (-0.74; 2.06)	n.s.	0.06 (-0.13; 0.26)	n.s.	n.s.	n.s.	n.s.	0.02* (0.00; 0.04)	0.04 (-0.05; 0.13)

*p-values: * p<0.05; ** p<0.01; *** p<0.001; effects controlled for employment status, part-time work, individual level characteristics (sex, age, education, citizenship, life stage, seniority, income decile), workplace characteristics (ISCO, nace), and macro-level indicators. The selection of macro indicators was based upon statistical significance in bivariate models and multicollinearity. Estimates with 'a' are obtained using logistic regression; estimates with 'b' are obtained using OLS-regression. Indicators: Physical environment - scale 0 to 100 (good physical environment). Work intensity - scale 0 to 100 (high work intensity). Working time quality - scale 0 to 100 (good working time quality). High strain - dummy 0 to 1 (high strain). Social environment - dummy 0 to 1 (good social environment), 25% cut-off. Regularity - dummy 0 to 1 (medium/high regularity). Job security - scale 0 to 1 (High job security). Prospects - dummy 0 to 1 (good prospects), 25% cut-off. Skills and Discretion - scale 0 to 100 (good skills and discretion).*

Variation between production regimes in the association between employment status and job quality

Finally, we carried out regression analyses stratified by production regimes exploring how the relation between employment status and job quality may differ between production regimes. Note that these results are 'net associations' controlling for a series of potential confounders (Annex 2).

Physical environment. In two of the regime-types (Anglo-Saxon countries and Central Eastern and Baltic states) the quality of the physical environment is lower for independent self-employed without employees than for people in indefinite contracts. This effect is stronger in the Anglo-Saxon countries. Furthermore, the table also shows that particularly in the Northern countries employers and fixed-term contracts of more than one year have a better physical environment than the reference group.

Work intensity. Based on the fully controlled models, in all production regimes, all the self-employed tend to have lower work intensity compared to people in indefinite contracts. The effect is largest for the independent self-employed without employees. While the effects sometimes differ in size (meaning the effect for independent self-employed is largest in Anglo-Saxon countries (β -12.49), and smallest in Central Eastern and Baltic states (β -6.24), these results show that there is very little variation in the direction of the association between self-employed and work intensity. There is one exception, in the Northern countries, we do not find such an effect for the self-employed with employees.

Social environment. In all production regimes the independent self-employed without employees have a worse social environment than the reference group. In the continental coordinated countries, Southern state coordinated countries and Central Eastern and Baltic states this is also the case for the dependent self-employed without employees. Furthermore, in the Central Eastern and Baltic states, continental and Southern state coordinated countries the employers have a better social environment than the workers in indefinite contracts. In Anglo-Saxon countries, fixed term contracts (+ 1 year) have a significantly worse score in comparison to employees with a permanent contract.

Skills and discretion. In all country groups, workers in short-term fixed contracts have poorer skills and discretion than do workers on indefinite contracts. This effect is largest in the Anglo-Saxon countries (β -6.84). The table also shows that in all production regimes, the independent self-employed without employees and the self-employed with employees have better skills and discretion scores than the reference category. Both effects are largest in the Southern state coordinated countries (β 12.39 and β 14.36) while the effects are the smallest in the Northern countries (β 3.78 and β 5.82). In the Southern state coordinated countries and Central Eastern and Baltic states we also found a positive effect of dependent self-employment without employees on skills and discretion. Working time quality.

The *working time quality* is considerably poorer for the independent self-employed without employees and the self-employed with employees in all production regimes. These effects are largest in Northern and continental coordinated countries, and smallest in Central Eastern and Baltic states. Furthermore, we find that the working time quality of workers in fixed-term contracts (both long-term and short-term) is poorer than workers in indefinite contracts, but the contrast with permanent contracts is only statistically significant in the Central Eastern and Baltic states.

Employment prospects. Fixed-term workers have poorer employment prospects compared to permanent workers in all but one production regime (Anglo-Saxon countries). Lastly, the table shows that the self-employed with employees have better employment prospects, in all countries, except for the Southern state coordinated countries. This section considered the country-level determinants of job quality. The associations between production regimes and job quality do not show to be strong effects however, we found that Southern countries and Central Eastern countries are often associated to poor job quality indicators, compared to Northern countries, with only few exceptions (e.g. higher Employment status and job quality).

Conclusion and policy discussion

The main objectives of this paper were **(1)** to construct a straightforward set of indicators for employment status and **(2)** to investigate the relation between employment status and job quality.

As it is the majoritarian category in the sample, holders of permanent contracts show job quality scores very similar to the average. However, this finding probably obscures in-group variation: even among indefinite/ permanent contracts large variation in job quality exists. Nonetheless, in the multivariable models, permanent contracts served as a reference category, being closest to the average.

Longer lasting fixed-term contracts diverge from permanent contracts for a number of indicators of job quality. Work intensity is slightly lower, while also the quality of the social environment, skills and discretion, the chance of receiving training, work schedule regularity, working time quality, job security and employment prospects are significantly lower compared to permanent workers as well. These relationships held after controlling for potential confounders. For shorter-term fixed contracts, the pattern is very similar, while more pronounced. The analyses have made it clear that especially people in short-term temporary employment, score worse on several aspects of job quality (such as skills and discretion, job strain, working time quality) compared to permanent contract holders.

Self-employed with employees constitute a relatively favourable group in terms of job quality. Favourable job quality for self-employed with employees can be explained by them being more inclined to have chosen for self-employment voluntarily and thus seeing self-employment as an opportunity. This group, moreover, represents an established fraction in self-employment, often with higher seniority. 'Independent' solo self-employed (i.e. self-employed without employees), for many job quality indices, show relatively similar patterns as dependent solo self-employed, although the magnitudes of the differences with the average is often smaller. Nevertheless, a few exceptions underline the generally more favourable job quality of 'independent' solo self-employed. The 'dependent' self-employed without employees have low employment prospects, and poor skills and discretion compared to the average overall employment statuses. They also have a less favourable physical and social environment. In contrast, they also have lower scores on work intensity, less high job strain, slightly higher working time quality and have less difficulty trying to arrange some time off during work compared to other employment statuses. These are generally less attractive jobs, also content-wise – belonging rather to the periphery of the labour market or providing less strategically important activities.

Finally, workers in part-time employment (less than 35h/week) show less favourable scores for the quality of their social work environment, training, skills and discretion, regularity, job security and employment prospects, compared to full time employed. At the same time, scores for physical environment, job strain and working time quality are more favourable. Research generally finds a 'positive profile' for part-time workers, with the exception of a 'risk profile' for involuntary part-time work (for example low demands, but also less favourable job characteristics).

Anglo-Saxon countries are only sometimes associated to poor job quality indicators, with Northern countries as reference (e.g. being called into work at short notice, and poor working time quality). Our analyses of the associations between macro-indicators and job quality have shown that especially indicators relating to 'labour market performance' and 'working class power' affect job quality. In addition, analyses stratified by production regime showed that the relation between employment status and job quality indices can differ between production regimes. Most often these differences are manifested in the size of the effects, more so than in the direction of the associations. As a consequence, it may be assumed that the policy-related characteristics of these country groups (such as the Northern countries) may attenuate potential negative effects of certain employment statuses on job quality.

References

Auer, P. and Cazes, S. (2000), 'The resilience of the long-term employment relationship: Evidence from the industrialized countries', *International Labour Review*, Vol. 139, No. 4, pp. 379-408.

Benach, J., Vanroelen, C., Vives, A., De Witte, H., Puig-Barrachina, V., Belvis-Costes, F. et al (2014), *Quality of employment conditions and employment relations in Europe*, Eurofound, Dublin.

Bosch, G. (2004), 'Towards a new standard employment relationship in Western Europe', *British Journal of Industrial Relations*, Vol. 42, No. 4, pp. 617-636.

Bosch, G. (2012), *The re-insitutionalization of a new flexible standard relationship*, Duisburg.

Bosmans, K., Hardonk, S., De Cuyper, N. and Vanroelen, C. (2016), 'Explaining the relation between precarious employment and mental well-being. A qualitative study among temporary agency workers', *Journal of Work*, Vol. 53, No. 2, pp. 259-264.

Bosmans, K., Lewchuk, W., De Cuyper, N., Hardonk, S., Van Aerden, K. and Vanroelen, C. (2017), 'The experience of employment strain and activation among temporary agency workers in Canada', *Society, Health and Vulnerability*, Vol. 8, No. 1.

Castel, R. (2007), 'Au-delà du salariat ou en deçà de l'emploi? L'institutionnalisation du précariat', *Repenser la solidarité: l'apport des sciences sociales*, pp. 416-433.

Dijkhuizen, J., Gorgievski, M., Van Veldhoven, M. and Schalk, R. (2016), 'Feeling succesful as an entrepreneur: A job demands-resources approach', *International Entrepreneurship and Management Journal*, Vol. 12, No. 2, pp. 555-573.

Etui (European Trade Union Institute) (2017a), *Benchmarking Working Europe*, Brussels.

Eurofound (2002), *Quality of work and employment in Europe, Issues and challenges*, Publications Office of the European Union, Luxembourg.

Eurofound (2015b), *Upgrading or polarisation? Long-term and global shifts in the employment structure: European jobs monitor 2015*, Publications Office of the European Union, Luxembourg.

Eurofound (2017a), *Sixth European Working Conditions Survey – Overview report (2017 update)*, Publications Office of the European Union, Luxembourg.

Eurofound (2017b), *Aspects of non-standard employment in Europe*, Publications Office of the European Union, Luxembourg.

European Commission (2015), Non-standard employment and access to social security, research note 8/2015.

European Commission (2017), Proposal for a directive of the European parliament and the council on transparant and predictable working conditions in the European Union, COM(2017)797 final, Brussels.

European Union (2017), *Employment and social affairs*, web page, available at: https://europa.eu/european-union/topics/employment-social-affairs_en, accessed 11 October 2018.

Gallie, D. (2007), *Employment regimes and the quality of work*, Oxford University Press, New York.

Gallie, D. (2011), *Production regimes, employee job control and skill development*, Centre for Learning and Life Chances in Knowledge Economies and Societies, London.

Girard, M. (2010), 'Effects of non-standard work on the work-family balance: A literature review', *McGill Sociological Review*, Vol. 1, pp. 46-58.

Green, F. and Mostafa, T. (2012), *Job quality indices for Europe. A report based on the fifth European Working Conditions Survey*, Centre for Learning and Life Chances in Knowledge Economies and Societies, London.

Holman, D. and McClelland, C. (2011), *Job Quality in Growing and Declining Economic Sectors of the EU*, Manchester Business School, Manchester.

Hox, J. (2002), *Multilevel analysis: Techniques and applications*, Lawrence Erlbaum, New Jersey.

ILO (International Labour Office) (2013), *Regulating the employment relationship in Europe: A guide to Recommendation No. 198*, International Labour Office, Geneva.

ILO (2015c), Conclusions of the meeting of experts on non-standard forms of employment, GB323/POL/3, Geneva.

ILO (2016a), *Non-standard employment around the world: Understanding challenges, shaping prospects*, International Labour Office, Geneva.

ILO (2017), *The rising tide of non-standard employment*, web page, accessed 11 October 2018.

Jahn, E. J. and Rosholm, M. (2014), 'Looking beyond the bridge: The effect of temporary agency employment on labor market outcomes', *European Economic Review*, Vol. 65, pp. 108-125.

Julià, M., Vives, A., Tarafa, G. and Benach, J. (2017b), 'Changing the way we understand precarious employment and health: Precarisaion affects the entire salaried population', *Safety Science*, pp. 66-73.

Kalleberg, A., Reskin, B. and Hudson, K. (2000), 'Bad jobs in America: Standard and nonstandard employment relations and job quality in the United States', *American Sociological Review*, Vol. 65, No. 2, pp. 256-278.

Nordenmark, M., Vinberg, S. and Strandh, M. (2012), 'Job control and demands, work-life balance and wellbeing among self-employed men and women in Europe', *Vulnerable Groups & Inclusion*, Vol. 3, No. 1.

OECD (2016), *Job quality*, web page, available at: http://www.oecd.org/statistics/job-quality.htm, accessed 11 October 2018.

Pyöriä, P. and Ojala, S. (2016), 'Precarious work and intrinsic job quality: Evidence from Finland', *The Economic and Labour Relations Review*, Vol. 27, No. 3, pp. 349-367.

Rodgers, G. (1989), 'Precarious work in Western Europe', in Rodgers, J. and Rodgers, G. (eds.), *Precarious jobs in labour market regulation: The growth of atypical employment in Western Europe*, International Institute for Labour Studies, Geneva, pp. 1-16.

Stephan, U. and Roesler, U. (2010), 'Health of entrepreneurs versus employees in a national representative sample', *Journal of Occupational and Organizational Psychology*, Vol. 83, No. 3, pp. 717-738.

Vallas, S. P. (1999), 'Rethinking post-fordism: The meaning of workplace flexibility', *Sociological Theory*, Vol. 17, No. 1, pp. 68-101.

Van Aerden, K., Moors, G., Levecque, K. and Vanroelen, C. (2014), 'Measuring employment arrangements in the European labor force', *Social Indicators Research*, Vol. 116, No. 3, pp. 771-791.

Annex 1: Specification and description of indicators of employment status

Employment status (main indicator)

Construction. This indicator is created for the 2015 data only. The indicator is constructed out of different source variables. For employees, type of contract was used (Q11). Based on a dichotomy, 'more or less than 1 year', contract duration (Q12) was used to distinguish between shorter (less than 1 year) and longer (more than 1 year) temporary contracts. All other types of contracts (agency, apprentice, no contract) were collapsed to the 'other employees-category'. For the self-employed, the variable Q7 was used to distinguish between employees and self-employed, while a distinction was made between those with and without employees, based on the variable Q9c. Further, for self-employed, also a distinction was made between 'dependent' and 'independent' self-employed without employees (based on Q9a,b,d): those with a score on 2 or 3 items were classified as 'dependent'. For self-employed with employees, dependency was not considered. Self-employed who did not have clear information on having employees were considered as self-employed without employees. Also if no information on dependency was available, the self-employed were assumed to be independent.

Characteristics. Employment status is a categorical indicator consisting of 7 categories: (1) an indefinite contract; (2) a fixed term contract of more than 1 year; (3) a fixed term contract of less than a year; (4) other employees; (5) Self-employed without employees – dependent; (6) Self-employed without employees – independent; (7) Self-employed with employees.

Related indicators.

Employment status (long term). This indicator is created in order to enable making time series for the period 2005 - 2015. The indicator consists of 5 categories: (1) an indefinite contract; (2) a fixed term contract of more than 1 year; (3) a fixed term contract of less than a year; (4) other employees; (5) self-employed.

Agency is a dummy indicator derived from the same source variable as employment status, distinguishing between (1) all other workers and (2) employees with an employment agency contract.

Apprentice is a dummy indicator derived from the same source variable as employment status, distinguishing between (1) all other workers and (2) employees with an apprentice contract.

No contract is a dummy indicator derived from the same source variable as employment status, distinguishing between (1) all other workers and (2) employees without a (written) contract.

Unstable employment status is a dummy indicator derived from the same source variable as employment status, distinguishing between (1) all other workers and (2) unstable employment status. The latter is a combination of employment status categories that can be considered particularly unstable in terms of continuation of paid work: short term (less than 1 year) temporary work; employment agency work; dependent solo self-employment.

Part-time employment (main indicator)

Construction. This indicator is created using question Q24: those respondents indicating working less than 35 hours a week are qualified as part-time.

Characteristics. Part-time employment is a dummy indicator consisting of the following categories: (1) full-time (more than 35 hours/week); (2) part-time (less than 35 hours/week).

Related indicators.

Small part-time employment. This indicator is created using question Q24: those respondents indicating working less than 20 hours a week are qualified as part-time, leading to the following dummy variable: (1) more than 20 hours/week; (2) less than 20 hours/week.

Involuntary part-time employment. This indicator is created by combining the questions Q24 and Q25: those workers indicating to work part-time (<35h/week) and indicate wanting to work full-time, are considered involuntary part-time. The result is the following categorical variable: (1) full-time; (2) part-time, not wanting to work full-time; (3) part-time, wanting to work full-time.

Long working hours

Construction. This indicator is created using the question Q24: those respondents indicating working 48 hours a week or more are qualified as working long hours.

Characteristics. Long working hours is a dummy indicator consisting of the following categories: (1) working less than 48 hours a week; (2) working 48 hours a week or more.

Table 2: Specification and description of indicators of job quality

Hourly earnings (in euros, converted in purchasing power parities – ppp's)

Construction. This indicator is based on the question q104 in the questionnaire, using the coding suggested by EUROFOUND.

Characteristics. The 'hourly earnings' indicator is a scale ranging from 0.21 to 148.34.

Good physical environment

Construction. This indicator is based on the following questions in the questionnaire, using the coding suggested by EUROFOUND: Q29a-i (physical risks) and Q30a,b,c,e (posture related risks).

Characteristics. The indicator for 'good physical environment' is a scale ranging from 0 to 100, where the maximum score represents the best possible physical environment.

Work intensity

Construction. This indicator is based on the following questions in the questionnaire, using the coding suggested by EUROFOUND: Q49a,b (high speed, deadlines); Q61o (hide feelings); Q61g (time pressure); Q30g,h (emotional demands).

Characteristics. The indicator for 'work intensity' is a scale ranging from 0 to 100, where the maximum score represents the highest possible work intensity.

Good social environment

Construction. This indicator is based on the following questions in the questionnaire: Q61a (co-worker support); Q80a,b,c,d (abuse); Q81a,b,c (harassment). This was done using the coding suggested by EUROFOUND.

Characteristics. The indicator for 'good social environment' is a scale ranging from 0 to 100, where the maximum score represents the best possible social work environment. For the hierarchical models, the scale has been converted into a dummy, using the 75th percentile as a cut-off value.

Skills and discretion

Construction. This indicator is based on the following questions in the questionnaire, using the coding suggested by EUROFOUND: Q65c (on-the-job-training); Q53c,e,f (unforeseen problems, complex tasks, learning new things); Q54a,b,c (skill discretion); Q61c,e,i,n,d (discretion, participation); Q30i – comp (working with computers); Aved2 (average educational level in ISCO 2-digit); Manprof (managerial and professional occupations); Training (Having received training paid by employer or by self if self-employed – Q65a,b)

Characteristics. The indicator for 'skills and discretion' is a scale ranging from 0 to 100, where the maximum score represents the highest possible skills and discretion score.

High strain

Construction. This indicator is based on the following indicators from the questionnaire: Q54a,b,c (autonomy); Q53a,b,c,e,f (skill discretion); 49a,b (work intensity). All items are summed to their respective scales and standardised to a 0-100 range. Subsequently a control score is calculated by taking the mean of autonomy and skill discretion. Job quadrants are calculated based on the tertile cut-off of job control and job demands. The combination with low control and high demands is considered as (acute) job strain.

Characteristics. 'High strain' is a dummy indicator consisting of the following categories: (1) no high strain; (2) high strain.

Receiving training (training)

Construction. This indicator is based on the questions Q65a and b, where cases with training received (either paid by the employer or by the worker him/herself) are contrasted with cases where neither one of both possibilities happened.

Characteristics. 'Training' is a dummy indicator consisting of the following categories: (1) no training received; (2) training received.

Working time quality

Construction. This indicator is based on the following questions in the questionnaire, using the coding suggested by EUROFOUND: Q24 (working hours per week); Q37a,b,c,d (combination of frequency of night, Saturday, Sunday and work days of more than 10 hours); Q42, Q43 (setting/regularity working time arrangements); Q47 (taking time off); Q46 (working in free time); Q40 (come to work in short notice).

Characteristics. The indicator for 'working time quality' is a scale ranging from 0 to 100, where the maximum score represents the highest possible working time quality score.

Regularity (working the same number of hours per day and per week, same number of days per week and fixed starting and finishing times)

Construction. This indicator is based on the following questions in the questionnaire, using the coding suggested by EUROFOUND: Q39a,b,c,d (regularity of numbers and starting hours of working hours, days).

Characteristics. 'Regularity' is a categorical indicator consisting of the following categories: (1) low regularity; (2) medium regularity; (3) high regularity. In several analyses the category (1) low regularity is contrasted with the categories (2&3) medium and high regularity.

Being called to work at short notice

Construction. This indicator is based on question Q40, where those workers being called to work at short notice daily, several times a week and several times a month are considered as workers called to work at short notice.

Characteristics. Being called to work at short notice is a dummy indicator consisting of the following categories: (1) not being called to work at short notice; (2) being called to work at short notice.

Difficulties in arranging an hour or two time off during working hours for personal or family matters

Construction. This indicator is based on question Q47, where those workers having difficulties to arrange time off (very difficult and fairly difficult) are considered as those workers reporting difficulties.

Characteristics. 'Difficulties in arranging time off' is a dummy indicator consisting of the following categories: (1 not difficult to arrange time off; (2) finding it difficult to arrange time off.

Employment prospects

Construction. This indicator is based on the following questions in the questionnaire, using the coding suggested by EUROFOUND: q89b (career progression); q89g (job insecurity); q19 (change of number of employees at work place). Type of contract (q11) is not included in this modified indicator, as it is part of the employment status indicators

Characteristics. The indicator for 'employment prospects' is a scale ranging from -300 to 100, where the maximum score represents the best possible employment prospects score. For the hierarchical models, the scale has been converted into a dummy, using the 75th percentile as a cut-off value.

Job security

Construction. Job security is s a scale based on question q89 (might lose my job in the coming 6 months), where all answering categories are converted to a decimal score between 0 and 1 assuming equal distances.

Characteristics. The indicator for 'job security' is a scale ranging from 0 to 1, where the maximum score represents the highest possible job security.

Annex 2: Associations between job quality indices and employment status, stratified by production regime

Physical environment	**Whole sample**	**Anglo-Saxon market regime**	**Northern countries**	**Continental coordinated regime**	**Southern state coordinated regime**	**Central Eastern and Baltic countries**
Intercept	85.52***	82.92***	79.63***	85.87***	86.44***	85.11***
Employment Status						
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than 1 year	-0.41 (-1.00,0.17)	-1.00 (-3.72,1.72)	2.09 (0.44,3.75)*	-0.38 (-1.46,0.69)	-1.06 (-2.28,0.15)	-0.06 (-1.08,0.97)
A fixed term contract of less than a year	-0.45 (-1.14,0.23)	-1.77 (-5.01,1.47)	0.34 (-1.69,2.38)	0.34 (-1.10,1.78)	-0.53 (-1.67,0.62)	-0.48 (-1.89,0.93)
Other employees	-0.75 (-1.32,-0.18)**	-0.79 (-2.41,0.83)	2.20(0.19,4.20) *	-1.84 (-3.02,-0.67)**	-0.35 (-1.28,0.57)	-0.81 (-2.22,0.61)
Self-employed without employees - dependent	-0.80 (-1.96,0.36)	-2.64 (-5.81,0.52)	2.19 (-2.10,6.48)	1.54 (-1.21,4.30)	-0.55 (-3.09,1.99)	-1.74 (-3.59,0.12)
Self-employed without employees - independent	-0.94 (-1.69,-0.18)*	-3.39 (-5.74,-1.04)**	0.79 (-1.18,2.77)	-0.01 (-1.41,1.40)	0.14 (-1.33,1.61)	-2.42 (-4.01,-0.83)**
Self-employed with employees	0.48 (-0.25,1.21)	-0.62 (-2.99,1.75)	3.41 (1.29,5.52)**	1.08 (-0.25,2.42)	1.15 (-0.27,2.57)	-0.78 (-2.28,0.72)
Work intensity	**Whole sample**	**Anglo-Saxon market regime**	**Northern countries**	**Continental coordinated regime**	**Southern state coordinated regime**	**Central Eastern and Baltic countries**
Intercept	96.08***	98.22***	105.98***	103.48***	98.36***	85.82***
Employment Status						
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than 1 year	-1.07 (-1.88,-0.26)**	-4.39 (-8.44,-0.35)*	-0.96 (-3.62,1.71)	-1.38 (-2.99,0.23)	-1.25 (-2.90,0.40)	-0.54 (-1.79,0.71)
A fixed term contract of less than a year	0.20 (-0.74,1.14)	0.71 (-4.10,5.52)	-3.81 (-7.07,-0.55)*	-0.73 (-2.89,1.43)	1.15 (-0.40,2.71)	-0.28 (-1.99,1.44)
Other employees	-1.93 (-2.72,-1.15)***	-1.32 (-3.74,1.10)	-2.47 (-5.68,0.75)	-2.36 (-4.12,-0.59)**	-1.74 (-2.99,-0.48)**	-1.60 (-3.33,0.12)
Self-employed without employees - dependent	-5.73 (-7.33,-4.13)***	-5.41 (-10.11,-0.72)*	-10.35 (-17.20,-3.50)**	-6.37 (-10.48,-2.25)**	-5.18 (-8.62,-1.73)**	-5.12 (-7.37,-2.86)***
Self-employed without employees - independent	-8.82 (-9.86,-7.79)***	-12.49 (-15.94,-9.03)***	-10.49 (-13.63,-7.35)***	-8.21 (-10.30,-6.11)***	-9.13 (-11.11,-7.15)***	-6.24 (-8.18,-4.30)***
Self-employed with employees	-4.19 (-5.19,-3.19)***	-5.95 (-9.47,-2.43)***	-2.67 (-6.05,0.72)	-5.68 (-7.68,-3.69)***	-3.53 (-5.46,-1.60)***	-3.15 (-4.97,-1.32)***

*p-values: * p<0.05; ** p<0.01; *** p<0.001; All effects are controlled for gender, age, education, citizenship, life stage, seniority, income decile, ISCO, nace, and the job quality indicators. The estimates are on a linear scale.*

Annex 2: Associations between job quality indices and employment status, stratified by production regime (continued)

Social environment	**Whole sample**	**Anglo-Saxon market regime**	**Northern countries**	**Continental coordinated regime**	**Southern state coordinated regime**	**Central Eastern and Baltic countries**
Intercept	-1.87***	-1.84**	-2.23***	-2.84***	-1.11**	-1.57***
Employment Status						
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than 1 year	-0.07 (-0.18,0.04)	-0.75 (-1.32,-0.18)*	0.14 (-0.25,0.52)	-0.05 (-0.27,0.16)	0.01 (-0.23,0.24)	-0.17 (-0.36,0.03)
A fixed term contract of less than a year	0.14 (0.00,0.27)*	0.61 (-0.16,1.38)	0.32 (-0.16,0.80)	-0.14 (-0.43,0.16)	0.11 (-0.11,0.33)	0.24 (-0.03,0.52)
Other employees	0.03 (-0.08,0.14)	0.06 (-0.30,0.42)	-0.23 (-0.68,0.22)	0.05 (-0.19,0.30)	0.10 (-0.08,0.28)	-0.13 (-0.39,0.14)
Self-employed without employees - dependent	-0.91 (-1.13,-0.69)***	-0.59 (-1.24,0.06)	-0.93 (-1.88,0.01)	-0.58 (-1.14,-0.02)*	-0.92 (-1.38,-0.45)***	-1.19 (-1.53,-0.84)***
Self-employed without employees - independent	-1.04 (-1.18,-0.90)***	-1.17 (-1.65,-0.69)***	-0.74 (-1.18,-0.30)***	-0.86 (-1.14,-0.57)***	-1.06 (-1.32,-0.79)***	-1.45 (-1.75,-1.15)***
Self-employed with employees	0.23 (0.07,0.39)**	0.14 (-0.43,0.71)	-0.06 (-0.55,0.43)	0.40 (0.10,0.70)**	0.51 (0.20,0.83)**	-0.12 (-0.42,0.19)
Skills and discretion	**Whole sample**	**Anglo-Saxon market regime**	**Northern countries**	**Continental coordinated regime**	**Southern state coordinated regime**	**Central Eastern and Baltic countries**
Intercept	42.15***	49.27***	55.90***	40.15***	42.56***	36.11***
Employment Status						
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than 1 year	-1.00 (-1.80,-0.21)*	-1.51 (-5.18,2.16)	-1.38 (-3.53,0.77)	-0.68 (-2.19,0.84)	-0.63 (-2.21,0.95)	-0.73 (-2.16,0.71)
A fixed term contract of less than a year	-3.68 (-4.61,-2.75)***	-6.84 (-11.21,-2.47)**	-3.91 (-6.54,-1.28)**	-2.92 (-4.95,-0.89)**	-3.59 (-5.07,-2.10)***	-3.21 (-5.18,-1.24)**
Other employees	-3.31 (-4.09,-2.54)***	-4.93 (-7.10,-2.75)***	-1.65 (-4.25,0.94)	-3.69 (-5.34,-2.03)***	-3.53 (-4.74,-2.33)***	-2.33 (-4.30,-0.36)*
Self-employed without employees - dependent	2.80 (1.22,4.38)***	-3.51 (-7.79,0.77)	-2.51 (-8.06,3.04)	-0.67 (-4.54,3.19)	4.26 (0.96,7.57)*	6.32 (3.74,8.91)***
Self-employed without employees - independent	8.75 (7.73,9.77)***	4.13 (0.95,7.30)*	3.78 (1.23,6.34)**	7.56 (5.59,9.53)***	12.39 (10.50,14.28)***	9.00 (6.78,11.22)***
Self-employed with employees	10.30 (9.31,11.28)***	6.89 (3.69,10.08)***	5.82 (3.08,8.56)***	8.13 (6.26,10.00)***	14.36 (12.53,16.18)***	9.96 (7.88,12.05)***

*p-values: * p<0.05; ** p<0.01; *** p<0.001; All effects are controlled for gender, age, education, citizenship, life stage, seniority, income decile, ISCO, nace, and the job quality indicators. For Social environment the estimates are on a logit scale. For skills and discretion; a linear scale*

Annex 2: Associations between job quality indices and employment status, stratified by production regime (continued)

Working time quality	**Whole sample**	**Anglo-Saxon market regime**	**Northern countries**	**Continental coordinated regime**	**Southern state coordinated regime**	**Central Eastern and Baltic countries**
Intercept	61.55***	60.45***	63.08***	66.08***	62.23***	55.84***
Employment Status						
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than 1 year	-1.27 (-1.86,-0.67)***	0.57 (-2.47,3.61)	-1.37 (-3.27,0.54)	-0.75 (-1.87,0.38)	-1.00 (-2.15,0.15)	-1.94 (-2.96,-0.92)***
A fixed term contract of less than a year	-1.18 (-1.87,-0.49)***	-0.98 (-4.60,2.65)	-1.85 (-4.19,0.48)	-0.33 (-1.83,1.17)	-0.95 (-2.03,0.13)	-1.87 (-3.27,-0.47)**
Other employees	-0.30 (-0.87,0.28)	0.29 (-1.52,2.09)	-0.46 (-2.75,1.84)	0.41 (-0.81,1.64)	-0.47 (-1.34,0.40)	-1.10 (-2.50,0.30)
Self-employed without employees - dependent	-1.73 (-2.91,-0.56)**	0.76 (-2.79,4.30)	-6.61 (-11.52,-1.70)**	-1.57 (-4.43,1.30)	-2.06 (-4.47,0.34)	-1.68 (-3.52,0.17)
Self-employed without employees - independent	-4.28 (-5.04,-3.52)***	-4.12 (-6.75,-1.50)**	-4.41 (-6.67,-2.15)***	-5.07 (-6.53,-3.61)***	-5.49 (-6.88,-4.11)***	-1.71 (-3.29,-0.12)*
Self-employed with employees	-7.55 (-8.29,-6.82)***	-6.57 (-9.21,-3.93)***	-11.84 (-14.23,-9.46)***	-10.51 (-11.88,-9.14)***	-7.84 (-9.18,-6.51)***	-3.22 (-4.71,-1.73)***
Employment prospects	**Whole sample**	**Anglo-Saxon market regime**	**Northern countries**	**Continental coordinated regime**	**Southern state coordinated regime**	**Central Eastern and Baltic countries**
Intercept	-0.48**	-0.64	-1.27	-0.04	-0.89**	-0.34
Employment Status						
An indefinite contract	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
A fixed term contract of more than 1 year	-0.58 (-0.69,-0.46)***	-0.16 (-0.76,0.45)	-1.13 (-1.53,-0.73)***	-0.67 (-0.90,-0.44)***	-0.46 (-0.68,-0.24)***	-0.50 (-0.69,-0.31)***
A fixed term contract of less than a year	-0.71 (-0.84,-0.58)***	-0.47 (-1.13,0.20)	-1.37 (-1.84,-0.90)***	-0.70 (-1.01,-0.40)***	-0.80 (-1.00,-0.60)***	-0.29 (-0.56,-0.03)*
Other employees	-0.47 (-0.58,-0.36)***	-0.48 (-0.82,-0.15)**	-0.91 (-1.39,-0.43)***	-0.46 (-0.71,-0.21)***	-0.42 (-0.59,-0.25)***	-0.51 (-0.78,-0.25)***
Self-employed without employees - dependent	0.13 (-0.11,0.37)	-0.19 (-0.87,0.49)	1.14 (-0.42,2.70)	0.21 (-0.43,0.86)	0.12 (-0.35,0.59)	0.13 (-0.24,0.49)
Self-employed without employees - independent	0.15 (-0.01,0.30)	0.24 (-0.33,0.82)	0.80 (0.14,1.47)*	-0.12 (-0.44,0.21)	0.10 (-0.17,0.37)	0.22 (-0.11,0.55)
Self-employed with employees	0.51 (0.33,0.69)***	1.10 (0.28,1.92)**	1.16 (0.28,2.05)**	0.47* (0.08,0.86)	0.08 (-0.19,0.36)	1.13 (0.69,1.57)***

*p-values: * p<0.05; ** p<0.01; *** p<0.001; All effects are controlled for gender, age, education, citizenship, life stage, seniority, income decile, ISCO, nace, and the job quality indicators. For employment prospects; the estimates are on a logit scale. For working time quality; a linear scale*