

Workplace Job Satisfaction in Britain: Evidence from Linked Employer-Employee Data

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Abstract The paper examines the nature of workplace job satisfaction in Britain using an ‘overall’ and domain-specific job satisfaction outcomes from linked employer-employee data. A measure of aggregate job satisfaction alone might mask domain-specific differences in satisfaction; something the combined approach in this paper addresses. As well as controlling for a rich set of correlates on employees and their workplaces, the paper deploys alternative empirical models that account for employee- and workplace-level unobserved heterogeneity. The paper reports interesting results on the link between job satisfaction and observed as well as unobserved characteristics of employees and their workplaces.

Key words: Workplace Job satisfaction, linked employer-employee data, Cross-Sectional Models, Britain.

JEL classification: C21; J28; I31

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1. Introduction

There is renewed interest in the measurement and analysis of subjective wellbeing outcomes in public policy discourses in Britain and elsewhere in the OECD countries (see, for example, Dolan *et al.* 2011, Stiglitz *et al.* 2009 and Black 2008). This is partly driven by the general perception that the current level of quality of life in these countries fall short of the level their higher national income can deliver (Layard, 2010). Job satisfaction forms an integral part of subjective wellbeing. Traditionally, it has been regarded as an important predictor of labour market behaviour such as quits and absenteeism (Hamermesh 2001, Freeman 1978, Akerlof *et al.* 1988, Clark *et al.* 1998, Shields & Price 2002, Kristensen & Westergaard-Nielsen 2004, Levy-Garboua *et al.* 2007). Both in economics and other branches of social research, job satisfaction has also been linked to individual wellbeing (Argyle 1989, Clark 1997, Warr 1999, Sousa-Poza and Sousa-Poza 2000, Kahneman & Krueger 2006), job performance and productivity (e.g. Iaffaldano & Muchinsky 1985), organisational performance (Ostroff 1992) and innovation (Shipton, *et al.* 2006), among others.

While most previous studies sought to relate job satisfaction to a host of worker and job attributes (e.g. Clark 1996, Gazioglu and Tansel 2006), others have paid much attention to specific correlates of job satisfaction. These include, among others, gender (Clark 1997, Bender *et al.* 2005), age (Clark *et al.* 1996), wage (Borjas 1979, Clark *et al.* 1998, Clark 1999, Lydon & Chevalier 2002), relative income (Clark and Oswald 1994, 1996), unions (Borjas 1979, Berger *et al.* 1983, Bryson *et al.* 2004; 2010), work environment (Idson 1990), work relations and management (Gazioglu & Tansel 2006), and racial composition (Maume & Sebastian 2007).

Though there exists a long list of research into different aspects of job satisfaction and its correlates, there remains growing interest in establishing the determinants of job satisfaction (Hamermesh 2001); and the recent public policy focus

on wellbeing only reinforces this view. Three important reasons can be cited in this respect. *First*, most of the research into the determinants of job satisfaction do not account for unobserved individual- and workplace-level heterogeneity. One important lesson that research in labour economics in general underscores is the importance of such unobserved factors in determining labour market outcomes (see, for example, Abowd *et al.* 1999), which have also been shown to be important in happiness studies (Ferreri-i-Carbonell and Frijters 2004). Accounting for unobserved heterogeneity, which may explain selection effects such as worker sorting, is essential to predict job satisfaction more precisely. *Secondly*, only few studies (for example, Bryson, et al. 2004; 2010); have explored the determinants of various domains of job satisfaction, despite the importance attached to this (Van Praag *et al.* 2003). *Third*, with few exceptions most studies on job satisfaction have not used correlates of job satisfaction relating to both the employee and the workplace.

This paper attempts to contribute to the existing literature using a rich linked employer-employee data and accounting for employee- and workplace-level unobserved heterogeneity. The paper explores eight domains of job satisfaction monitored in WERS2004 that are modelled separately and as an aggregate outcome.¹ Given that aggregate job satisfaction may mask dissatisfaction elsewhere, the combined domain specific and aggregate outcome based analyses adopted in this paper are likely to allow determining whether job satisfaction is a single entity, as much of the literature makes it out to be, or not. There are only a few previous papers on job satisfaction that account for unobserved heterogeneity, with the vast majority of the papers not addressing this issue head-on.² In this paper OLS, Fixed Effects (FE) and Random-intercept (RI)

¹ Bryson *et al.* (2004, 2010) look at domains of job satisfaction; but using only three different domains monitored in the WERS1998 data as opposed to the eight domains from WERS2004 used in this paper.

² These include Winkelmann & Winkelmann (1998) using the GSOEP, Clark *et al.* (2009) using the Danish sample of ECHP matched to administrative records, Green and Heywood (2008) using the BHPS and

estimators have been used to determine the nature of workplace job satisfaction in Britain; and to establish if accounting for unobserved heterogeneity makes a difference and/or whether such a difference, if any, varies by the type of domain considered.

The rest of the paper is organised as follows. In section 2, a brief review of the existing literature is made. In section 3, a description of the data and variables used is given. Section 4 sets out the empirical models employed. In section 5, the empirical findings of the paper are discussed. The final section concludes the paper.

2. Review of the literature

The literature on job satisfaction has attempted to establish the nature of job satisfaction by modelling reported job satisfaction as a function of a range of employee, employer and other job related correlates. The most commonly used correlates include level of pay, hours of work, demographic and human capital characteristics, work environment, and union membership. Controlling for demographic and human capital characteristics, the weight of existing evidence suggests a U-shaped relationship between age and job satisfaction (Clark, 1996, Clark *et al.*, 1996, Sloane & Ward, 2001) although there is also some evidence that satisfaction increases with age (e.g. Shields & Price, 2002). The existing evidence also suggests women are more satisfied with their job than men (Clark, 1996, 1997; Clark & Oswald, 1996, Blanchflower & Oswald, 1999; Groot & Brink, 1999, Sloane & Williams, 2000) but based on a cross-national study Sousa-Poza & Sousa-Poza (2000) find this to be largely an Anglo-Saxon phenomenon. Higher level of education is generally associated with lower level of job satisfaction (Clark, 1996, Clark & Oswald, 1996, Clark *et al.*, 1996). Blanchflower & Oswald (2004) and Clark (1997) find some evidence attesting to higher levels of job satisfaction for married individuals while Shield & Price (2002) find no such evidence. There is also some evidence relating to the

Bryson *et al.* (2004, 2010) using the 1998 WERS data and Ferrer-i-Carbonell and Frijters (2004) using GSOEP.

effect of health condition on job satisfaction where Clark (1996) finds that health problems lead to lower level of job satisfaction.

Income is probably the most widely investigated correlate. Clark (1997) and Shields & Price (2002) find income to be an important determinant of both overall job satisfaction and satisfaction with pay. Others, for example Clark and Oswald (1996), find weak correlation between absolute income and job satisfaction while Belfield and Harris (2002) find no evidence that links job satisfaction with absolute income. However, there seems a consensus on the link between ‘relative’ income and job satisfaction.³ A number of studies including Clark and Oswald (1996), Levy-Garboua & Montmarquette (2004), Sloane & Ward (2001), Hamermesh (2001), and Shield & Price (2002) find relative income as having an effect on job satisfaction. Lydon & Chevalier (2002), on the other hand, question the validity of the notion of ‘relative’ income and estimate a satisfaction equation that addresses issues of wage endogeneity, finding a strong effect of wages (current as well as future) on job satisfaction.

Hours of work has been found to impact job satisfaction. Clark (1996) finds hours to have a significant negative effect on overall job satisfaction and an even stronger negative effect on satisfaction with pay. Union membership has, for the most part, been found to have a strong negative effect on job satisfaction (Freeman, 1978, Borjas, 1979, Meng, 1990). However, accounting for endogenous selection as well as individuals and firm level heterogeneity, Bryson *et al.* (2004, 2010) find no marked difference in job satisfaction between unionized and non-unionized workers. With regards to workplace size the evidence is that larger establishment size is associated with lower level of satisfaction (Idson, 1990, Clark, 1997, Gazioglu & Tansel, 2006).

³ In Clark and Oswald (1996) ‘relative’ income is taken as the average income level of workers with similar characteristics while Hamermesh (2001) regards ‘relative’ income as surprises that make an individual worker well off.

The review in the preceding paragraphs illustrates the mixed nature of the findings in the job satisfaction literature. This may be attributed to differences in the types of job satisfaction measures used (e.g. overall versus domain specific), the type of data used (e.g. matched or unmatched; cross-section or panel data), the range and extent of controls used (e.g. demographic versus others), the empirical methodology employed (e.g. with and without accounting for unobserved heterogeneity).

This paper uses (i) eight domain satisfaction outcomes that are likely to uncover possible variations that a single measure of overall satisfaction may mask, (ii) a summative ‘overall’ satisfaction outcome that is designed to determine if aggregate outcomes may mask domain-specific differences, (iii) linked employer-employee data that allows controlling for a battery of observable employee and employer characteristics, and (iv) alternative empirical specifications involving OLS, FE and RI designed to account for unmeasured heterogeneity at the levels of both employees and their workplaces.

3. Data and variables

The data in this paper come from the 2004 British Workplace Employment Relations Survey (WERS2004), the most authoritative source of linked employer-employee data on employment relations in Great Britain. The survey is representative of all workplaces with five or more employees in Britain and covers a range of topics relating to both employers and employees (Kersley *et al.*, 2006).⁴ The final sample used in

⁴ The only sectors of the British economy not covered by WERS2004 are: mining and quarrying; agriculture, hunting and forestry; fishing; private households with employed persons; and extraterritorial bodies.

this paper is comprised of 18689 employees in 1531 workplaces out of the original matched WERS2004 sample of 22451 employees in 1733 workplaces.⁵

The first important set of variables used in this study relates to employees' job-related satisfaction. WERS2004 scrutinised how satisfied employees were with eight different domains of their job, which were monitored using a five-point ordered scale from 'very satisfied' to 'very dissatisfied'.⁶ The responses to these eight questions on domain satisfaction constitute the main outcome variables of interest to this paper. In addition, a summative measure of 'overall' job satisfaction has also been generated by recoding each of the eight facets of satisfaction into a (-2, 2)-scales, where '-2' is "very dissatisfied" and '2' is "very satisfied", and summing across (see Bryson *et al.* 2013, Bryson *et al.* 2012 and Haile *et al.* 2015 for recent applications of this approach). The resulting single summative job satisfaction outcome measure, which is depicted in Figure 1 below, runs from -16 to 16. The top panel of Table 1 below reports a descriptive statistics on each of the domain and the 'overall' job satisfaction outcomes.

Table 1: Descriptive statistic on outcome and control variables.

	Mean	Std. Dev.	Min	Max
<i>Domains of satisfaction:</i>				
Achievement	3.77	0.93	1.0	5.0
Initiative	3.81	0.93	1.0	5.0
Influence	3.54	0.95	1.0	5.0
Training	3.32	1.08	1.0	5.0
Pay	2.88	1.12	1.0	5.0
Job security	3.56	1.01	1.0	5.0
Work itself	3.78	0.90	1.0	5.0
Decision	3.20	1.00	1.0	5.0
<i>Summative job satisfaction:</i>				
'Overall' job satisfaction	3.64	5.57	-16	16
<i>Employee characteristics</i>				
Age<30	0.22	0.41	0.0	1.0
Age30-39	0.26	0.44	0.0	1.0
Age50+	0.26	0.44	0.0	1.0

⁵ The final sample is the result of excluding (i) missing values on any of the domain satisfaction outcome measures; (ii) missing values on any of the employee characteristics/controls used, and (iii) keeping only workplaces with at least two responding employees.

⁶ These were: (i) the sense of achievement they get from their work (*achievement*); (ii) the scope for using their own initiative (*initiative*); (iii) the amount of influence they have over their job (*influence*); (iv) the training they receive (*training*); (v) the amount of pay they receive (*pay*); (vi) their job security (*job security*); (vii) their work itself (*work itself*) and (viii) their involvement in decision making (*decision*).

Female	0.53	0.50	0.0	1.0
Married	0.68	0.47	0.0	1.0
White	0.95	0.22	0.0	1.0
Children <7years old	0.18	0.39	0.0	1.0
Other dependents	0.16	0.37	0.0	1.0
Disabled	0.12	0.32	0.0	1.0
No academic qualification	0.15	0.36	0.0	1.0
O-level	0.23	0.42	0.0	1.0
A-level	0.09	0.29	0.0	1.0
Other qualification	0.34	0.47	0.0	1.0
Permanent contract	0.92	0.27	0.0	1.0
Full-time	0.79	0.41	0.0	1.0
Work over 48 hours	0.47	0.50	0.0	1.0
Skill required is same	0.42	0.49	0.0	1.0
Professional occupations	0.12	0.33	0.0	1.0
Associate professional or technical	0.17	0.37	0.0	1.0
Administrative & secretarial	0.19	0.39	0.0	1.0
Skilled trades, plant & machinery	0.15	0.35	0.0	1.0
Personal, Sales & customer	0.15	0.36	0.0	1.0
Elementary occupations	0.11	0.31	0.0	1.0
Weekly gross pay<110	0.09	0.29	0.0	1.0
Weekly gross pay 110-180	0.10	0.30	0.0	1.0
Weekly gross pay 180-260	0.16	0.37	0.0	1.0
Weekly gross pay 260-360	0.21	0.41	0.0	1.0
Trade union member	0.36	0.48	0.0	1.0
<i>Workplace characteristics</i>				
Log workplace age	3.25	1.13	0.0	6.8
Private establishment	0.70	0.46	0.0	1.0
Sole establishment	0.21	0.41	0.0	1.0
No. of employees/1000	0.39	0.81	0.0	7.7
Manufacturing	0.16	0.36	0.0	1.0
Construction	0.05	0.22	0.0	1.0
Whole sale & retail Trade	0.09	0.29	0.0	1.0
Hotel, rest & transport	0.09	0.29	0.0	1.0
Public & comm. Services	0.16	0.36	0.0	1.0
Education	0.12	0.33	0.0	1.0
Health	0.16	0.36	0.0	1.0
Urban area	0.82	0.38	0.0	1.0
Unemployment to vacancy ratio	3.40	2.40	0.0	10.0
No. of employees	18689			
No. of workplaces	1531			

Note: The reference categories for the categorical variables in the regressions carried out are as follows: for employees: 40-49 years of age, male, not married, non-white, no children under 7, no other dependents, do not have a disability, has at least 1st degree academic qualification, temporary contract, work part-time, work 48 hours or less (per week), skill level is more or less than required for the job, managerial or senior official occupations, earns at least £361 of gross pay per week and not a member of trade union; for workplaces: public enterprises, multi-plant establishment, finance & insurance industry.

A correlation matrix of the eight domain satisfaction measures together with the summative ‘overall’ satisfaction measure is presented in Table 2. Among others, the matrix shows there is a high degree of correlation between satisfaction with ‘*achievement*’ on the one hand and satisfaction with the ‘*work itself*’ and the scope for taking own

'initiative' on the other; and satisfaction with *'initiative'* and satisfaction with *'influence'*. The table also shows weak correlation between satisfaction with *'pay'* on the one hand and satisfactions with *'achievement'*, *'initiative'*, *'influence'* and *'training'* on the other. The summative *'overall'* satisfaction outcome is least correlated with satisfaction with *'pay'* followed by satisfaction with the *'work itself'* and *'training'*. On the other hand, *'overall'* satisfaction is most correlated with the *'influence'* and *'initiative'* domains.⁷

Table 2: Correlation matrix on domains and *'overall'* satisfaction (N = 18689)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Achievement	1.00								
2. Initiative	0.64	1.00							
3. Influence	0.59	0.73	1.00						
4. Training	0.38	0.38	0.42	1.00					
5. Pay	0.27	0.27	0.31	0.33	1.00				
6. Job security	0.33	0.31	0.35	0.36	0.31	1.00			
7. Work itself	0.68	0.55	0.54	0.37	0.28	0.35	1.00		
8. Decision	0.44	0.49	0.55	0.42	0.36	0.34	0.42	1.00	
9. <i>'Overall'</i>	0.70	0.73	0.76	0.66	0.59	0.72	0.63	0.71	1.00

Aggregate measure of job satisfaction does indeed seem to mask dissatisfaction in some domains. Figure 2 below confirms this in that although most of the domains bunch towards the top end of the distributions, as much of the literature confirms; this is by no means the general picture. In particular, the distributions of satisfaction with *'pay'*, where nearly 30 per cent of employees report to be dissatisfied, and *'decision'*, where nearly 40 per cent of respondents report to be neither satisfied nor dissatisfied, exhibit patterns dissimilar to the rest of the domains.⁸

⁷ Since these are raw correlations, however, it is difficult to read much into them.

⁸ Neither are the two similar to each other.

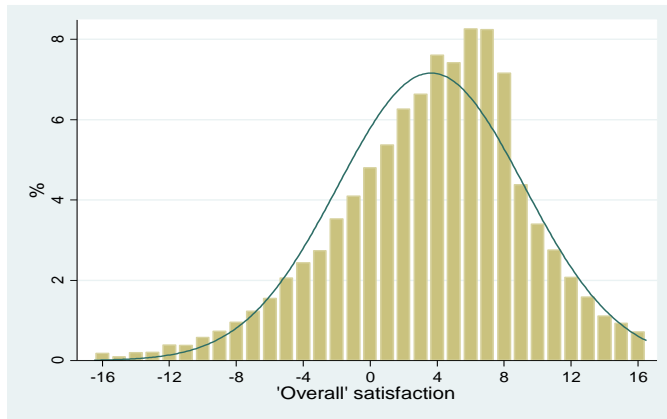


Figure 1: 'Overall' Job Satisfaction

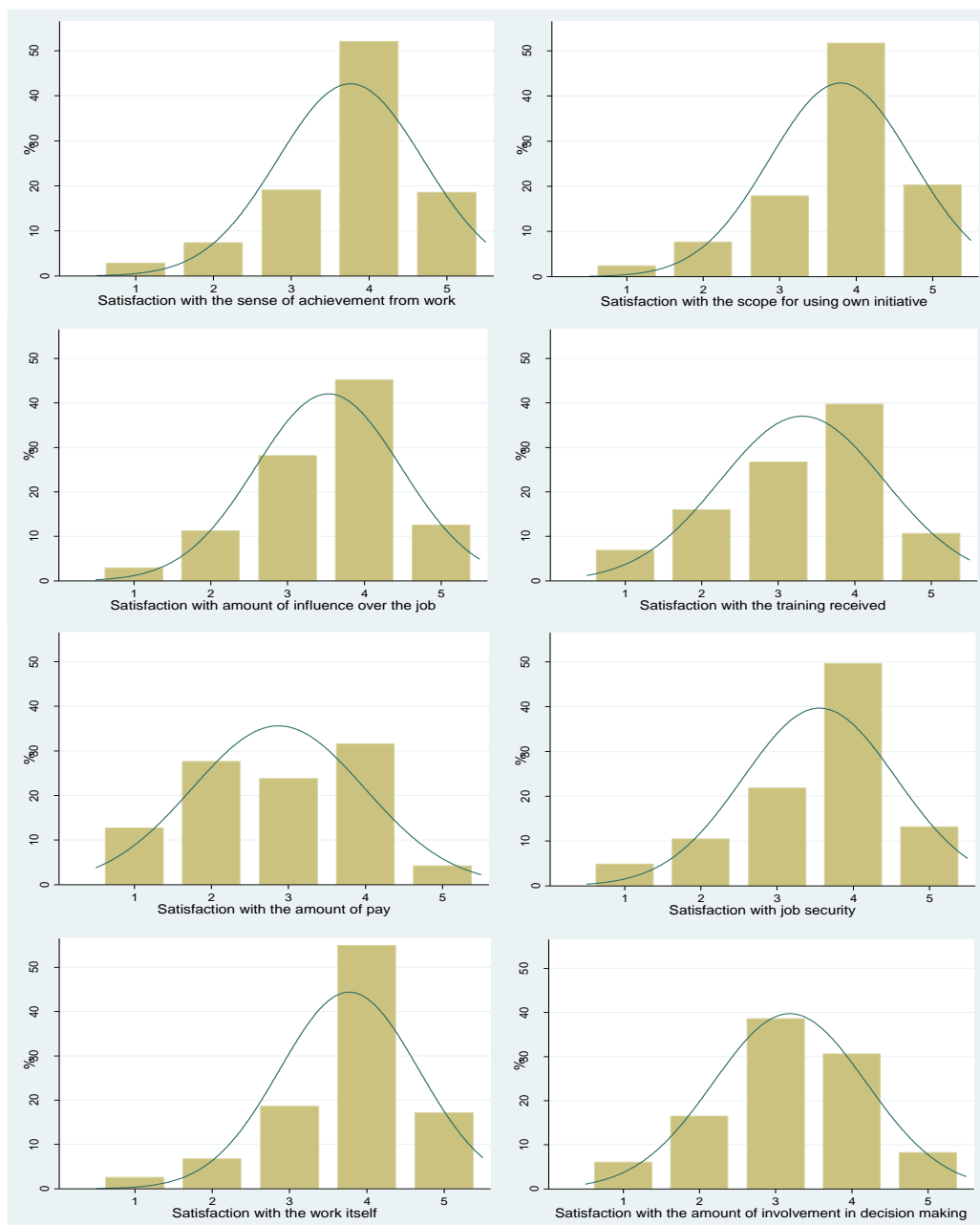


Figure 2: Domains of Job Satisfaction

The second important set of variables used relates to a range of controls pertaining to employees' demographic, human capital and job related characteristics as well as a battery of workplace-level characteristics, including geographic location and travel-to-work-area unemployment to vacancy ratio. Table 1 above reports descriptive statistics on all control variables used in the regression analysis.

4. A framework of analysis

The general framework adopted follows the utility function formulation of the usual sort, where self-reported domains of satisfaction are thought to proxy the utility associated with each domains of one's work, and can be given by;

$$U_{ij}^k = f(ee_{ij}, er_j), \quad k = 0, \dots, 8; i = 1, \dots, n; j = 1, \dots, m \quad (1)$$

where, ee represents employee's demographic, human capital and job related characteristics; er stands for workplace related characteristics; i, j and k represent employees, workplaces and domains of satisfaction, respectively, with $k=0$ corresponding to the 'overall' measure. What are observed in the WERS2004 data are the eight self-reported domains of job satisfaction for each employee i in a workplace j , DS_{ij}^k , which represent underlying continuous latent measures of domain satisfaction DS_{ij}^{k*} .

The paper deploys two different approaches centred on the 'overall' and domain-specific outcomes to analyse the nature of workplace job satisfaction in Britain. Although the WERS2004 data are cross-sectional, the presence of at least two employees

per workplace in the retained sample permits implementing a FE regressions on the ‘overall’ and facet-specific outcomes, which account for workplace-level unobserved heterogeneity.⁹ The FE equations for the domain-specific job satisfaction (DS) outcomes relating to the utility function specified in equation (1) can be given by:

$$DS_{ij}^k = \alpha^k + \boldsymbol{\beta}^k{}' \mathbf{ee}_{ij} + u_{ij}^k; \quad u_{ij}^k = \mu_j^k + e_{ij}^k \quad (2)$$

Comparing the parameters, $\boldsymbol{\beta}^k$, obtained from the FE specification in equation (2) with corresponding estimators from OLS, with the latter including workplace controls, allows establishing if measured and unmeasured workplace-level heterogeneity are worth accounting for. The corresponding FE equation for the ‘overall’ job satisfaction outcome becomes:

$$DS_{ij} = \alpha + \boldsymbol{\beta}' \mathbf{ee}_{ij} + u_{ij}; \quad u_{ij} = \mu_j + e_{ij} \quad (3)$$

In addition, the paper also implements a RI regression by including an individual effect common to all eight domains of satisfaction considered. This amounts to regarding the facet satisfaction outcomes for each employee as if they were repeat observations for each respondent, thereby generating a second measure of ‘overall’ job satisfaction outcome.

The RI model specification is given by:

$$S_{ijt} = \alpha + \boldsymbol{\beta}' \mathbf{ee}_{ijt} + \delta \mathbf{r}_{jt} + \mu_j + \nu_{ij} + e_{ijt} \quad (4)$$

⁹ However, it is not possible to control for workplace-level observable characteristics at the same time in the FE specification, which is why equation (2) does not include a term representing these characteristics.

where S represents job satisfaction of employee i in workplace j with the eight domains now viewed as repeat observations per worker (hence $t=k=8$), \mathbf{ee} and \mathbf{er} represent observable employee and employer characteristics, $\boldsymbol{\mu}$ with $\mu_j \sim N(0, \sigma_\mu^2)$ represents workplace-level unobserved heterogeneity, $\boldsymbol{\nu}$ with $\nu_{jt} \sim N(0, \sigma_\nu^2)$ represents employee-level unobserved heterogeneity and \mathbf{e} with $e_{ijt} \sim N(0, \sigma_e^2)$ is the idiosyncratic error term. Equation (4) reveals the multilevel set-up in the data with the eight domain outcomes (level 0) nested within employees (level 1) who are in turn nested within workplaces (level 2). It is estimated using the random-intercept model, which allows partitioning the variation in outcome that is unexplained by the employee- and employer-level observable characteristics into domain-, employee- and workplace-level variance representing unobserved heterogeneity at each level.¹⁰

The DS s in equation (2) are intrinsically ordinal in nature, which are often estimated using ordinal probability models. However, it has been shown that equivalent linear regression estimators can be obtained once the ordinal dependent variables are transformed into “pseudo” continuous variables (Terza 1987, Van Praag *et al.* 2003, Van Praag and Ferrer-i-Carbonnell 2006, Van Praag, Frijter and Ferrer-Carbonnell 2004 and Origo and Pagani 2009). In contrast to the routinely employed ordinal probability models, estimated coefficients from the linearised OLS models, which are termed “probit OLS (POLS)”, can be interpreted as marginal effects. In this paper the POLS transformation has been adopted for the domain-level analysis, which is thought to

¹⁰ Random-Effects model would have yield equivalent results otherwise. Needless to state that the *i.i.d* assumptions of the RI model are strong; but the model is thought to form a valid alternative nevertheless. Also, by regarding the eight domains as repeat observations, the RI model rules out variations in estimated coefficients on observable characteristics, which may be a strong assumption.

permit straightforward comparisons of the estimation results with those from the alternative specifications.¹¹

The employer-employee match at a particular workplace and the levels of domain satisfactions therein may not necessarily represent random phenomena, given possible employer and employee selection. Addressing the issue of non-randomness is thus crucial to avoid potentially biasing effects of unobserved heterogeneity. By deploying FE and RI regressions that account for workplace- and employee-level unobserved heterogeneity on top of using a rich linked employer-employee data, this paper constitutes a methodological improvement over most of the job satisfaction literature.

5. Empirical findings and discussion

5.1 *‘Overall’ job satisfaction and domain satisfactions as repeat outcomes*

Table 3 presents the full set of estimation results on the summative ‘overall’ satisfaction outcome and on the domain outcomes, which are regarded as repeat outcomes as detailed in Section Four. The FE based estimation results, which control only for employee characteristics, suggest that accounting for workplace fixed effects is important (with $\text{Prob.} > F = 0.000$).¹² This suggests the FE specification is the preferred specification over OLS for analysing the overall job satisfaction outcome. On the other hand, the RI specification, which controls for both employee and workplace characteristics extensively, also accounts for unobserved heterogeneity at both the employee- and workplace-level. As such it is likely to constitute the best specification in analysing the overall satisfaction outcome.

¹¹ Origo and Pagani (2009) provide a technical appendix on the transformation needed. OLS estimates on the transformed responses (POLS) are similar to Ordered Probit estimates.

¹² One cannot of course include workplace characteristics and control for workplace-level unobserved heterogeneity using a cross-section data.

The RI estimation results in Table 3 (column 3) confirm the importance of accounting for unobserved heterogeneity, even after controlling for the observable characteristics at both levels. This can be ascertained from the LR test statistic, which compares the RI regression output with that of a simple linear regression output. Importantly, the RI based estimation results also include estimates of variances at the domain-, employee- and workplace-levels, which can be partitioned to yield the proportions of the variations in job satisfaction outcome that are unexplained by the employee- and workplace-level characteristics the model controls for.

Accordingly, 4% of the variation in observed job satisfaction outcomes that is unexplained by the regressors in the model is attributed to workplace-level unobserved heterogeneity (i.e. between-workplace variations), while a much higher 29% of the unexplained variation lies within workplaces or between-employee variations, representing unobserved employee-level heterogeneity. An even higher proportion of the unexplained variation in job satisfaction (51%) is found to lie within employee-level responses or between-domain variations, thus representing unobserved domain-level heterogeneity.

Table 3: Domains of job satisfaction as ‘overall’ and repeat outcomes, estimates from OLS, FE and Random-intercept (RI) models.

	‘Overall’ Satisfaction		Domains as repeat outcomes
	OLS	FE	RI
Age<30	0.414*** (0.124)	0.220* (0.125)	-0.002 (0.011)
Age30-39	0.223** (0.113)	0.155 (0.110)	0.006 (0.010)
Age50+	0.656*** (0.113)	0.602*** (0.110)	0.077*** (0.010)
Female	0.557*** (0.097)	0.358*** (0.100)	0.062*** (0.008)
Married	0.348*** (0.091)	0.255*** (0.089)	0.040*** (0.008)
White	-0.242 (0.184)	-0.340* (0.192)	-0.032** (0.016)
Children <7years old	-0.034	0.008	0.009

	(0.114)	(0.111)	(0.010)
Other dependents	-0.516***	-0.499***	-0.049***
	(0.113)	(0.107)	(0.011)
Disabled	-0.825***	-0.744***	-0.082***
	(0.129)	(0.120)	(0.011)
No academic qualification	0.999***	0.814***	0.112***
	(0.161)	(0.162)	(0.015)
O-level	0.513***	0.454***	0.067***
	(0.130)	(0.133)	(0.012)
A-level	0.178	0.301*	0.032**
	(0.162)	(0.161)	(0.015)
Other qualification	0.334***	0.282**	0.046***
	(0.114)	(0.116)	(0.012)
Permanent contract	1.086***	1.142***	0.057***
	(0.152)	(0.155)	(0.014)
Full-time	-0.371***	-0.379***	-0.031***
	(0.137)	(0.137)	(0.011)
Work over 48 hours	0.098	0.085	0.028***
	(0.093)	(0.094)	(0.007)
Skill required is same	1.737***	1.540***	0.187***
	(0.077)	(0.079)	(0.007)
Professional occupations	-1.356***	-1.548***	-0.187***
	(0.168)	(0.175)	(0.012)
Associate professional or technical	-1.495***	-1.555***	-0.184***
	(0.151)	(0.158)	(0.012)
Administrative & secretarial	-1.894***	-1.651***	-0.242***
	(0.157)	(0.164)	(0.013)
Skilled trades, plant & machinery	-2.244***	-2.240***	-0.287***
	(0.171)	(0.182)	(0.015)
Personal, Sales & customer	-1.978***	-1.848***	-0.219***
	(0.174)	(0.186)	(0.012)
Elementary occupations	-1.674***	-1.739***	-0.240***
	(0.190)	(0.198)	(0.015)
Weekly gross pay<110	-0.435**	-1.224***	-0.096***
	(0.214)	(0.231)	(0.019)
Weekly gross pay 110-180	-0.963***	-1.539***	-0.139***
	(0.187)	(0.193)	(0.016)
Weekly gross pay 180-260	-1.124***	-1.381***	-0.144***
	(0.137)	(0.143)	(0.012)
Weekly gross pay 260-360	-1.130***	-1.157***	-0.132***
	(0.117)	(0.119)	(0.011)
Trade union member	-1.092***	-0.790***	-0.111***
	(0.095)		(0.008)
Log workplace age	-0.074**		-0.013***
	(0.035)		(0.003)
Private establishment	0.285**		0.067***
	(0.120)		(0.011)
Sole establishment	0.956***		0.122***
	(0.100)		(0.010)
No. of employees/1000	-0.313***		-0.044***
	(0.049)		(0.004)
Manufacturing	-0.420***		-0.046***
	(0.153)		(0.014)

Construction	1.235***		0.128***
	(0.197)		(0.019)
Wholesale & retail trade	0.886***		0.083***
	(0.162)		(0.015)
Hotel and restaurant	0.253		0.027*
	(0.175)		(0.015)
Public & community services	0.535***		0.089***
	(0.153)		(0.013)
Education	1.773***		0.238***
	(0.178)		(0.015)
Health	2.020***		0.252***
	(0.156)		(0.014)
Urban area	-0.381***		-0.040***
	(0.103)		(0.010)
Unemployment to vacancy ratio	-0.021		-0.007***
	(0.017)		(0.002)
Constant	20.476***	21.292***	0.063*
	(0.382)	(0.323)	(0.038)
<i>Random-effects Parameters:</i>			
Variance (Workplace)			0.0358
			(0.003)
Variance (Employee)			0.2910
			(0.004)
Variance (Residual)			0.5080
			(0.002)
R-squared	0.109		
F(28,17130)		42.33	
Prob. > F		0.000	
Log likelihood			-178200.87
Wald chi2(41)			5478.26
Prob. > chi2			0.0000
<i>F test that all u_i=0:</i>			
F(1530, 17130)		2.87	
Prob. > F		0.000	
<i>LR test vs. linear regression:</i>			
Chi2(2)			40765.43
Prob. > chi2			0.0000
No. of Employee-Domains (=8 domains*No. of employees)			149512
No. of Employees	18689	18689	18689
No. of Workplaces	1531	1531	1531

Standard errors in parentheses

RI standard errors are based on 150 bootstrap replications involving 18689 clusters/employees

*** p<0.01, ** p<0.05, * p<0.1

Turning into the estimated coefficients, there is remarkable consensus across the three specifications in terms of the sign and the statistical significance of the estimated

coefficients so much so that one can discuss these using anyone of the models.¹³ This suggests the robustness of the estimation results. The findings highlight the importance of a number of employee and workplace characteristics in explaining overall job satisfaction. Accordingly, being 50 years or older is found to be positively and statistically significantly linked to overall job satisfaction vis-à-vis the reference category of employees aged 40-49 years. Being female is found to have a positive and statistically significant association with overall job satisfaction; as is the case for being married. In terms of academic qualifications, being in the categories of no or lower-levels of academic qualifications as well as having non-standard such qualifications are found to be positively and significantly linked with overall job satisfaction vis-à-vis the comparison category of having a 1st degree or higher academic qualifications. Having a job with skill requirements that match one's own skills is also found to be associated positively and statistically significantly with overall job satisfaction.

On the other hand, being white, having dependants other than own children and having a disability are characteristics found to be negatively and statistically significantly linked with overall job satisfaction. On job characteristics, the estimated coefficients reveal that being on a full-time contract is found to be negatively and statistically significantly associated with overall job satisfaction; as are being in non-managerial occupations compared with being in a managerial occupation. Earning £360 per week or less is found to be associated negatively and statistically significantly with overall job satisfaction vis-à-vis earning £361 or more. Being a trade union member is also found to have a negative and statistically significant link with overall job satisfaction. Working at least 48 hours per week is found to be associated positively and statistically significantly with overall job satisfaction only in the RI specification. This may be suggestive of the

¹³ On the other hand, the magnitudes of the estimated coefficients from the three specifications are different among each other. However, they are of a particular focus neither in this paper nor in the wider job satisfaction literature.

presence of intrinsic motivation on the part of some employees that is correlated with unobserved individual heterogeneity, which the RI model accounts for.

On workplace characteristics, the estimation results suggest that being in a private establishment is associated positively and statistically significantly with overall job satisfaction vis-à-vis being in a workplace in the public sector, as is being in a sole establishment compared with a workplace with multi-plants. In terms of the type of industry, being in the construction, wholesale & retail trade, public & community services, education and health sectors are linked with job satisfaction positively and statistically significantly vis-à-vis being in the reference category of finance and insurance industry. On the other hand, being in the manufacturing sector is found to be linked negatively and weakly significantly with overall job satisfaction. Similarly, workplaces that are older, larger in size (no. of employees), located in urban areas and those in areas where the travel-to-work-area unemployment to vacancy ratio is higher are all found to have a negative and statistically significant link with overall job satisfaction.

5.2 *Domain satisfactions*

Table 4 reports domain-specific estimation results, which are based on OLS and FE specifications. In all cases, the F test (with Prob.>F=0.000) rejects the null hypothesis of zero workplace-level unobserved heterogeneity, suggesting that the FE specification, which accounts for unobserved workplace-level effects, is the preferred specification. The results discussed in the paragraphs below are therefore those from the FE specification. The domain-specific results underscore variations across the different domains with regards to the sign and the statistical significance of the estimated coefficients on employee characteristics, some of which could not have been uncovered using the ‘overall’ job satisfaction outcome.

The results in Table 4 thus reveal that being under 30 years of age, which was not found to have statistically significant link in the earlier analysis, does have a negative and statistically significant link with the domain satisfactions of ‘*achievement*’, ‘*initiative*’, ‘*influence*’ and ‘*work itself*’. On the other hand, being less than 30 years of age has a positive and significant association with the domains of ‘*training*’ and ‘*job security*’; and no statistically significant link with the domains of ‘*pay*’ and ‘*decision*’. Being 50 years or over has a positive and statistically significant association with all but the ‘*pay*’ and ‘*decision*’ domains, something that was not discernible from the analysis on the ‘overall’ satisfaction outcome. Being female was found to have a positive and statistically significant effect on overall satisfaction. However, the domain based analysis reveals that this is the case only in four of the eight domains considered, viz. ‘*achievement*’, ‘*training*’, ‘*pay*’ and the ‘*work itself*’. Similarly, being married is found to have a positive and statistically significant link across all but the ‘*training*’ and ‘*pay*’ domains, where it is not found to have statistically significant link. The negative and statistically significant association between being white and overall job satisfaction the ‘overall’ analysis revealed stems from only three of the domains - ‘*achievement*’, ‘*training*’ and ‘*influence*’ and the negative association with the latter is found to be only marginally significant. Having dependants other than own children is not found to have statistically significant link with the domain of ‘*work itself*’; and it is only marginally significant for the ‘*achievement*’ and ‘*pay*’ domains, something the analysis on overall satisfaction did not uncover.

Having a disability, being a trade union member and possessing skills that match one’s own job are the only three employee characteristics that are found to have uniform link - in terms of sign and statistical significance - across all the domains, which are also in line with the findings from the analysis on the overall satisfaction outcome. Accordingly, having a disability and being a trade union member are found to have a negative and statistically significant association with each and every one of the domains,

while possessing skills that match one's job requirement is found to have a positive and statistically significant association with each and every one of the domains. Having no or lower levels of academic qualifications as well as being with a non-standard academic qualification are generally found to have positive and statistically significant link, albeit with some variations, on all but the '*influence*', '*pay*' and '*job security*' domains.

Being on full-time employment is found to have statistically significant association only in two of the eight domains – '*training*', where it is found to have a positive link, and '*pay*' where it is found to have a negative association – unlike the results from the overall analysis. Spending at least 48 hours per week on one's job is found to have a statistically significant association only with six of the eight domains, having no statistically significant association with the domains of '*training*' and '*job security*'. Of the remaining six domains, the link is found to be negative on the '*pay*' domain but positive on the remaining five domains. Once again, the domain satisfaction based analysis has uncovered variations that the analysis on overall job satisfaction did not reveal. The findings in respect of spending at least 48 hours per week seem to reinforce the speculation made earlier, however, in that those that spend at least 48 hours per week on their jobs seem to do so out of the intrinsic motivation associated with their job, rather than the level of pay their jobs warrant.

Estimation results from the domain based analysis on the effects of employees' occupational status and levels of weekly earnings also reveal some, albeit marginal, variations across the domains considered, which the 'overall' satisfaction based analysis masked. Accordingly, being in a non-managerial occupation is generally found to have a negative and statistically significant link across all domains vis-à-vis the reference category of being in a managerial occupation. The '*training*' domain appears to be the exception in this regard however, with statistically insignificant coefficients on the characteristics of 'personal, sales and customer service' and 'elementary occupations'.

The effects of weekly pay also reveal some variations across the domains of job satisfaction in that compared with the reference category of earning at least £361 per week, being on lower bands of pay are found to have negative and statistically significant link across the domains. The only exception to this are the domains of ‘*training*’, ‘*job security*’ and ‘*work itself*’ where these associations are either marginally significant for the lower bands of the pay scale, or not significant at all.

As noted earlier, it is not possible to retrieve FE estimates on the workplace characteristics using the cross-section data. However, the remarkable similarity in terms of the sign and statistical significance of the OLS and RI (also FE for the employee characteristics) estimates noted in Section 5.1 suggests that we may be able to compare the estimated domain-specific OLS coefficients on workplace characteristics with those from the ‘overall’ satisfaction analysis obtained using the RI model. By far the most notable, perhaps unsurprising, difference this highlights is that relating to the estimated coefficient on private establishment status. This has positive and statistically significant association with ‘overall’ satisfaction. However, the domain-specific analysis uncovers that there is no such association when it comes to the domains of ‘*training*’ and ‘*job security*’.

6. Conclusion

This paper attempted to analyse the nature of workplace job satisfaction in Britain using linked employer-employee data with eight job satisfaction domains and as ‘overall’ job satisfaction outcome. The main questions the paper sought to address were: (i) whether overall satisfaction based analysis may mask some variations that domain based analysis may reveal and (ii) if accounting for employee- and workplace-level unobserved heterogeneity is worthwhile. The paper argued about the importance of domain based analysis since aggregate measures of satisfaction may mask dissatisfaction

in some domains, which the findings in this paper showed to be the case. As discussed in Section 5, only three of the employee characteristics used in the empirical analysis – viz., having a disability (negative), possessing skills that match the requirements of one’s job (positive) and trade union membership (negative) – deliver similar results irrespective of whether the analysis is domain specific or ‘overall’ satisfaction based. In all other cases, the paper highlighted significant variations across the domains that are worthy of consideration. For example, much of the literature suggests a positive link between job satisfaction and being female. However, the findings in this paper show this is not the case in four out of the eight domains considered (*‘initiative’*, *‘influence’*, *‘job security’* and *‘decision’*). Similarly, most of the other employee-level controls used are found to have varying association with the domains considered. The findings in the paper also revealed the importance of accounting for unobserved heterogeneity. Results from the statistical tests carried out are invariably in favour of controlling for unobserved heterogeneity.

As noted at the outset of this paper, there is a renewed interest in the measurement and analysis of job and life satisfaction in public policy discourses in recent years. This paper, using cross-sectional data from the WERS2004 survey and deploying alternative empirical approaches, has shown the importance of using domain-specific analysis of job satisfaction; and the need for accounting for unobserved heterogeneity in doing so. As such the paper contributes to the current discourse on subjective wellbeing, of which job satisfaction is an integral part. It is, however, worth noting that although the paper constitutes a methodological advance over much of the literature in its use of rich linked data and alternative empirical models, its reliance on a cross-section data may be its Achilles’ heel, something future research may usefully address. Another potential caveat is the issue of interpersonal comparability, or lack thereof, of self-reported subjective outcomes, something this paper does not address.

Table 4: Domains of satisfaction, OLS and FE Estimates (N=18689 employees in 1531 workplaces)

	Achievement		Initiative		Influence		Training	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Age<30	-0.111*** (0.021)	-0.110*** (0.022)	-0.051** (0.021)	-0.060*** (0.022)	-0.039* (0.021)	-0.046** (0.022)	0.122*** (0.022)	0.113*** (0.022)
Age30-39	-0.026 (0.019)	-0.035* (0.019)	0.020 (0.019)	0.008 (0.020)	0.018 (0.019)	0.009 (0.020)	0.011 (0.020)	0.011 (0.020)
Age50+	0.118*** (0.019)	0.108*** (0.019)	0.076*** (0.019)	0.064*** (0.019)	0.094*** (0.019)	0.088*** (0.020)	0.090*** (0.019)	0.102*** (0.020)
Female	0.078*** (0.017)	0.055*** (0.017)	0.035** (0.016)	0.016 (0.018)	0.040** (0.017)	0.020 (0.018)	0.097*** (0.017)	0.077*** (0.018)
Married	0.063*** (0.015)	0.051*** (0.016)	0.072*** (0.015)	0.064*** (0.016)	0.053*** (0.016)	0.043*** (0.016)	-0.006 (0.016)	-0.020 (0.016)
White	-0.073** (0.030)	-0.102*** (0.034)	-0.033 (0.032)	-0.043 (0.034)	-0.067** (0.032)	-0.067* (0.034)	-0.130*** (0.033)	-0.103*** (0.034)
Children <7years old	0.025 (0.019)	0.030 (0.019)	0.023 (0.019)	0.027 (0.020)	0.019 (0.020)	0.029 (0.020)	-0.018 (0.020)	-0.014 (0.020)
Other dependents	-0.029 (0.019)	-0.035* (0.019)	-0.052*** (0.019)	-0.052*** (0.019)	-0.037* (0.019)	-0.041** (0.019)	-0.079*** (0.019)	-0.077*** (0.019)
Disabled	-0.079*** (0.022)	-0.068*** (0.021)	-0.079*** (0.022)	-0.072*** (0.021)	-0.103*** (0.022)	-0.087*** (0.021)	-0.096*** (0.022)	-0.093*** (0.021)
No academic qualification	0.136*** (0.027)	0.123*** (0.028)	0.130*** (0.027)	0.141*** (0.029)	0.134*** (0.028)	0.127*** (0.029)	0.221*** (0.028)	0.172*** (0.029)
O-level	0.086*** (0.022)	0.086*** (0.023)	0.046** (0.022)	0.069*** (0.023)	0.070*** (0.023)	0.084*** (0.024)	0.132*** (0.023)	0.106*** (0.024)
A-level	0.009 (0.028)	0.041 (0.028)	-0.023 (0.027)	0.022 (0.028)	-0.030 (0.028)	0.002 (0.029)	0.074*** (0.028)	0.072** (0.029)
Other qualification	0.071*** (0.020)	0.066*** (0.020)	0.044** (0.020)	0.055*** (0.020)	0.026 (0.020)	0.027 (0.021)	0.107*** (0.020)	0.083*** (0.021)
Permanent contract	-0.037 (0.026)	-0.021 (0.027)	0.027 (0.026)	0.050* (0.027)	0.023 (0.026)	0.033 (0.028)	0.060** (0.027)	0.074*** (0.028)
Full-time	0.020 (0.024)	0.014 (0.024)	-0.004 (0.024)	-0.012 (0.024)	-0.017 (0.024)	-0.031 (0.024)	0.071*** (0.024)	0.066*** (0.024)

Work over 48 hours	0.064*** (0.016)	0.058*** (0.016)	0.086*** (0.016)	0.075*** (0.017)	0.037** (0.016)	0.040** (0.017)	-0.024 (0.016)	-0.011 (0.017)
Skill required is same	0.183*** (0.013)	0.164*** (0.014)	0.202*** (0.013)	0.188*** (0.014)	0.197*** (0.013)	0.176*** (0.014)	0.225*** (0.014)	0.195*** (0.014)
Professional occupation	-0.094*** (0.028)	-0.103*** (0.031)	-0.224*** (0.028)	-0.241*** (0.031)	-0.327*** (0.029)	-0.350*** (0.031)	-0.071** (0.029)	-0.067** (0.031)
Associate professional or technical	-0.085*** (0.026)	-0.102*** (0.028)	-0.188*** (0.026)	-0.199*** (0.028)	-0.270*** (0.027)	-0.280*** (0.028)	-0.101*** (0.027)	-0.086*** (0.028)
Administration and secretarial	-0.268*** (0.027)	-0.215*** (0.029)	-0.341*** (0.027)	-0.288*** (0.029)	-0.354*** (0.027)	-0.291*** (0.029)	-0.151*** (0.027)	-0.119*** (0.029)
Skilled trades, plant & machinery	-0.224*** (0.028)	-0.203*** (0.032)	-0.379*** (0.028)	-0.374*** (0.032)	-0.428*** (0.029)	-0.419*** (0.032)	-0.119*** (0.030)	-0.116*** (0.032)
Personal, Sales & customer	-0.123*** (0.030)	-0.084** (0.033)	-0.289*** (0.030)	-0.251*** (0.033)	-0.400*** (0.030)	-0.346*** (0.033)	-0.045 (0.031)	-0.024 (0.033)
Elementary occupations	-0.274*** (0.032)	-0.248*** (0.035)	-0.323*** (0.032)	-0.309*** (0.035)	-0.367*** (0.033)	-0.325*** (0.035)	-0.049 (0.032)	-0.034 (0.035)
Weekly gross pay<110	0.012 (0.037)	-0.106*** (0.040)	-0.117*** (0.037)	-0.248*** (0.041)	-0.142*** (0.037)	-0.288*** (0.041)	0.105*** (0.038)	0.031 (0.041)
Weekly gross pay 110-180	-0.016 (0.031)	-0.072** (0.034)	-0.127*** (0.032)	-0.203*** (0.034)	-0.155*** (0.032)	-0.250*** (0.034)	0.045 (0.032)	-0.018 (0.034)
Weekly gross pay 180-260	-0.042* (0.023)	-0.078*** (0.025)	-0.141*** (0.023)	-0.189*** (0.025)	-0.149*** (0.023)	-0.206*** (0.026)	-0.019 (0.024)	-0.047* (0.025)
Weekly gross pay 260-360	-0.048** (0.019)	-0.060*** (0.021)	-0.112*** (0.020)	-0.134*** (0.021)	-0.132*** (0.020)	-0.156*** (0.021)	-0.089*** (0.020)	-0.070*** (0.021)
Trade union member	-0.158*** (0.016)	-0.103*** (0.019)	-0.123*** (0.016)	-0.055*** (0.019)	-0.162*** (0.016)	-0.101*** (0.019)	-0.060*** (0.016)	-0.049*** (0.019)
Log workplace age	-0.010 (0.006)		-0.024*** (0.006)		-0.028*** (0.006)		-0.007 (0.006)	
Private establishment	0.054*** (0.021)		0.090*** (0.021)		0.099*** (0.021)		0.034 (0.021)	
Sole establishment	0.102*** (0.017)		0.098*** (0.017)		0.109*** (0.017)		0.053*** (0.018)	
No. of employees/1000	-0.043***		-0.039***		-0.049***		-0.016*	

	(0.008)	(0.008)	(0.009)	(0.009)				
Manufacturing	-0.068***	-0.012	0.039	-0.124***				
	(0.025)	(0.025)	(0.026)	(0.026)				
Construction	0.141***	0.101***	0.168***	0.070**				
	(0.033)	(0.032)	(0.033)	(0.035)				
Wholesale & retail trade	-0.004	0.042	0.116***	-0.034				
	(0.027)	(0.028)	(0.028)	(0.029)				
Hotel and restaurant	0.021	-0.028	0.000	0.032				
	(0.029)	(0.029)	(0.030)	(0.030)				
Public & community services	0.110***	0.092***	0.106***	0.066**				
	(0.026)	(0.026)	(0.026)	(0.027)				
Education	0.337***	0.253***	0.232***	0.113***				
	(0.031)	(0.031)	(0.031)	(0.032)				
Health	0.307***	0.260***	0.239***	0.256***				
	(0.027)	(0.027)	(0.027)	(0.028)				
Urban area	-0.033*	-0.022	-0.028	-0.008				
	(0.017)	(0.017)	(0.018)	(0.018)				
Unemployment to vacancy ratio	-0.007**	-0.007**	-0.008***	-0.005				
	(0.003)	(0.003)	(0.003)	(0.003)				
Constant	0.008	0.111**	0.106	0.150***	0.262***	0.319***	-0.168**	-0.131**
	(0.065)	(0.056)	(0.065)	(0.057)	(0.066)	(0.058)	(0.068)	(0.057)
R-squared	0.076		0.071		0.071		0.055	
F(28,17130)		20.14		30.11		29.96		16.14
Prob. > F		0.000		0.000		0.000		0.000
<i>F test that all $u_i=0$:</i>								
F(1530, 17130)		1.98		1.69		1.82		2.33
Prob. > F		0.000		0.000		0.000		0.000

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 (cont'd)

	Pay		Job security		Work itself		Decision	
	OLS	FE	OLS	FE	OLS	FE	OLS	FE
Age<30	0.026	0.006	0.191***	0.133***	-0.085***	-0.090***	0.012	-0.001
	(0.021)	(0.022)	(0.021)	(0.021)	(0.021)	(0.022)	(0.021)	(0.022)
Age30-39	0.030	0.016	0.063***	0.057***	-0.042**	-0.047**	0.013	0.010
	(0.019)	(0.019)	(0.019)	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)
Age50+	0.024	0.026	0.095***	0.078***	0.098***	0.089***	0.039**	0.034*
	(0.019)	(0.019)	(0.019)	(0.018)	(0.019)	(0.019)	(0.020)	(0.019)
Female	0.111***	0.109***	0.055***	0.022	0.106***	0.098***	0.036**	-0.011
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Married	0.030*	0.023	0.047***	0.032**	0.053***	0.040**	0.046***	0.042***
	(0.015)	(0.016)	(0.015)	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
White	0.055*	0.046	0.010	-0.021	0.028	-0.019	0.011	0.014
	(0.031)	(0.034)	(0.030)	(0.032)	(0.031)	(0.034)	(0.032)	(0.033)
Children <7years old	-0.008	0.000	-0.025	-0.026	0.030	0.029	-0.001	0.004
	(0.019)	(0.019)	(0.020)	(0.019)	(0.019)	(0.019)	(0.020)	(0.019)
Other dependents	-0.029	-0.034*	-0.094***	-0.075***	-0.020	-0.028	-0.049**	-0.052***
	(0.018)	(0.019)	(0.019)	(0.018)	(0.019)	(0.019)	(0.019)	(0.019)
Disabled	-0.081***	-0.082***	-0.082***	-0.069***	-0.067***	-0.060***	-0.111***	-0.098***
	(0.021)	(0.021)	(0.022)	(0.020)	(0.022)	(0.021)	(0.022)	(0.021)
No academic qualification	0.041	0.041	0.136***	0.078***	0.162***	0.150***	0.012	-0.002
	(0.028)	(0.028)	(0.028)	(0.027)	(0.027)	(0.028)	(0.028)	(0.028)
O-level	0.038*	0.038	0.030	-0.003	0.083***	0.085***	0.052**	0.043*
	(0.022)	(0.023)	(0.023)	(0.022)	(0.022)	(0.023)	(0.023)	(0.023)
A-level	0.050*	0.051*	0.019	0.021	0.030	0.053*	0.044	0.040
	(0.027)	(0.028)	(0.028)	(0.027)	(0.027)	(0.028)	(0.027)	(0.028)
Other qualification	0.026	0.028	0.017	0.001	0.078***	0.069***	0.019	0.010
	(0.020)	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)	(0.020)	(0.020)
Permanent contract	-0.137***	-0.088***	0.533***	0.494***	-0.046*	-0.023	-0.033	-0.012
	(0.027)	(0.027)	(0.027)	(0.026)	(0.026)	(0.027)	(0.025)	(0.027)
Full-time	-0.288***	-0.254***	-0.009	-0.015	0.006	0.004	-0.022	-0.028
	(0.024)	(0.024)	(0.023)	(0.023)	(0.024)	(0.024)	(0.023)	(0.024)

Work over 48 hours	-0.050***	-0.044***	-0.002	-0.019	0.070***	0.062***	0.039**	0.057***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)
Skill required is same	0.250***	0.230***	0.114***	0.096***	0.168***	0.149***	0.250***	0.216***
	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)	(0.014)	(0.013)	(0.014)
Professional occupations	-0.097***	-0.115***	-0.039	-0.091***	-0.122***	-0.151***	-0.434***	-0.457***
	(0.028)	(0.031)	(0.030)	(0.029)	(0.028)	(0.031)	(0.030)	(0.031)
Associate professional or technical	-0.178***	-0.201***	-0.103***	-0.117***	-0.063**	-0.097***	-0.434***	-0.399***
	(0.026)	(0.028)	(0.027)	(0.026)	(0.026)	(0.028)	(0.027)	(0.028)
Administrative & secretarial	-0.125***	-0.168***	-0.095***	-0.076***	-0.237***	-0.211***	-0.469***	-0.412***
	(0.027)	(0.029)	(0.028)	(0.027)	(0.027)	(0.029)	(0.028)	(0.029)
Skilled trades, plant & machinery	-0.191***	-0.215***	-0.136***	-0.151***	-0.229***	-0.227***	-0.624***	-0.605***
	(0.028)	(0.032)	(0.029)	(0.030)	(0.029)	(0.032)	(0.030)	(0.032)
Personal, Sales & customer	-0.219***	-0.266***	-0.159***	-0.154***	-0.125***	-0.089***	-0.490***	-0.479***
	(0.030)	(0.032)	(0.030)	(0.031)	(0.030)	(0.033)	(0.031)	(0.032)
Elementary occupations	-0.112***	-0.165***	-0.023	-0.074**	-0.281***	-0.270***	-0.505***	-0.491***
	(0.032)	(0.035)	(0.032)	(0.033)	(0.032)	(0.035)	(0.033)	(0.035)
Weekly gross pay<110	-0.442***	-0.340***	0.119***	-0.008	0.068*	-0.036	-0.053	-0.241***
	(0.038)	(0.040)	(0.036)	(0.038)	(0.036)	(0.040)	(0.037)	(0.040)
Weekly gross pay 110-180	-0.549***	-0.480***	0.035	-0.091***	-0.004	-0.061*	-0.134***	-0.238***
	(0.032)	(0.034)	(0.031)	(0.032)	(0.031)	(0.034)	(0.031)	(0.034)
Weekly gross pay 180-260	-0.531***	-0.462***	0.009	-0.048**	-0.050**	-0.084***	-0.152***	-0.211***
	(0.023)	(0.025)	(0.023)	(0.024)	(0.023)	(0.025)	(0.023)	(0.025)
Weekly gross pay 260-360	-0.381***	-0.339***	-0.070***	-0.082***	-0.092***	-0.092***	-0.138***	-0.165***
	(0.019)	(0.021)	(0.020)	(0.020)	(0.019)	(0.021)	(0.020)	(0.021)
Trade union member	-0.110***	-0.111***	-0.105***	-0.066***	-0.131***	-0.067***	-0.167***	-0.151***
	(0.016)	(0.019)	(0.016)	(0.018)	(0.016)	(0.019)	(0.016)	(0.019)
Log workplace age	-0.018***		0.017***		-0.004		-0.022***	
	(0.006)		(0.006)		(0.006)		(0.006)	
Private establishment	0.070***		-0.022		0.079***		0.046**	
	(0.021)		(0.021)		(0.020)		(0.021)	
Sole establishment	0.115***		0.153***		0.099***		0.127***	
	(0.017)		(0.017)		(0.017)		(0.018)	
No. of employees/1000	-0.037***		-0.025***		-0.043***		-0.064***	

	(0.009)		(0.009)		(0.008)		(0.009)	
Manufacturing	0.014		-0.082***		-0.028		-0.036	
	(0.025)		(0.026)		(0.025)		(0.025)	
Construction	0.132***		0.193***		0.116***		0.153***	
	(0.033)		(0.032)		(0.033)		(0.034)	
Wholesale & retail trade	0.007		0.282***		0.051*		0.114***	
	(0.028)		(0.027)		(0.028)		(0.028)	
Hotel and restaurant	0.077***		0.104***		0.083***		-0.038	
	(0.029)		(0.029)		(0.029)		(0.030)	
Public & community services	0.007		0.087***		0.144***		0.039	
	(0.026)		(0.026)		(0.026)		(0.026)	
Education	0.084***		0.262***		0.332***		0.231***	
	(0.031)		(0.031)		(0.031)		(0.031)	
Health	0.066**		0.345***		0.285***		0.190***	
	(0.027)		(0.027)		(0.027)		(0.027)	
Urban area	-0.084***		-0.056***		-0.030*		-0.057***	
	(0.018)		(0.018)		(0.017)		(0.018)	
Unemployment to vacancy ratio	-0.002		0.006**		-0.008***		-0.007**	
	(0.003)		(0.003)		(0.003)		(0.003)	
Constant	0.584***	0.495***	-0.734***	-0.385***	-0.142**	0.026	0.443***	0.452***
	(0.066)	(0.056)	(0.066)	(0.054)	(0.066)	(0.057)	(0.065)	(0.056)
R-squared	0.095		0.075		0.067		0.097	
F(28,17130)		45.02		22.08		18.33		45.68
Prob. > F		0.000		0.000		0.000		0.000
<i>F test that all $u_i=0$:</i>								
F(1530, 17130)		2.21		3.63		1.84		2.36
Prob. > F		0.000		0.000		0.000		0.000

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

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