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Decomposing the Impacts of Overeducation and Overskilling on Earnings and Job Satisfaction: An Analysis Using REFLEX data

Nuria Sánchez-Sánchez[a] and Seamus McGuinness[b c d]

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Abstract: This paper uses the REFLEX dataset to test the hypothesis that the generally observed negative impacts of overeducation and overskilling on both job satisfaction and earnings can be attributed to under-utilisation in specific job related skills. We find that the penalties to both forms of mismatch are insensitive to the inclusion of controls for overskilling in a wide range of job specific competencies. The research suggests that the problem of mismatch relates to an inability for fully utilise general or innate ability as opposed to specific areas of acquired learning. The analysis suggests the problem of mismatch can only be effectively addressed by raising general levels of job quality within economies and this, in turn, presents serious challenges for policy.

Keywords: Overeducation, Overskilling, job satisfaction, earnings

Corresponding Author: Seamus McGuinness, Email: seamus.mcguinness@esri.ie

[a] University of Cantabria, Spain
[b] Economic & Social Research Institute, Dublin
[c] Department of Economics, Trinity College Dublin
[d] National Institute for Labour Studies, Flinders University, Australia

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Introduction

There now exists a very substantial international literature examining the link between overeducation and labour market outcomes such as earnings, career mobility and job satisfaction (see McGuinness, 2006 for a review). However, overeducation represents a very broad measure of mismatch and will be prone to inaccuracy in circumstances where (a) job entry requirements represent a poor proxy for job skill content and (b) educational attainment represents a poor proxy accumulated human capital. Thus, the overeducation measure will tend to be affected on the demand side by credentialism and grade inflation and on the supply-side by on-the-job training and unmeasured innate ability ((McGuinness & Wooden (2009)). A more recent strand of the literature has focused on overskilling as a measure of mismatch, as it asks respondents to compare actual job content directly with their work related skills (Allen, Badillo-Amador and van der Velden (2006), Green and Zhu (2008), Mavromaras et al (2009), McGuinness & Sloane (2011)). It is argued that overskilling overcomes many of the perceived measurement problems associated with overeducation as respondents directly compare all skills and abilities, whether they relate to formal / informal schooling or innate ability, with the actual skill requirements of their job. A further conceptual advantage of the overskilling measure is that it is conceivable that we can separate overskilling into its various work related components in order to identify the degree to which any observed wage or job satisfaction penalty relates to a specific area of skill accumulation. However, to date, presumably mainly as a consequence of data constraints, no study has examined the correlation between aggregate measures of mismatch and their individual components and it is this gap in the literature that we attempt to address in this paper.

The underlying rationale for our attempt to decompose the elements of mismatch stems from the large body of evidence that has demonstrated lower earnings and job satisfaction among mismatched workers (see McGuinness (2006) for a review), which, in turn, implies that such phenomena will constrain productivity growth within the economy. Consequently, it is important to identify the areas where the costs of skill under-utilisation are greatest in order to facilitate the formulation of an appropriate policy response aimed at improving the quality of employment matches for workers and limited the costs to individuals, firms and the economy from mismatch. However, if it transpires that the mismatch penalty is poorly correlated with specific observable skill attributes, then the obvious conclusion is that constraints relate primarily to unused general or innate ability. Such a finding would support the view that overskilled workers feel generally unchallenged within their work environments, suggesting that the mismatch problem relates more heavily to a general poor quality of employment as opposed to a poor match on specific acquired skills. The central aim of this paper is to shed light on these issues and consider the implications for policy.

It terms of the evidence linking mismatch with lower job satisfaction and earnings, the bulk of the literature has focused on the impacts of both overeducation and overskilling on lowering pay (McGuinness, (2006), Mavromaras et al (2007) McGuinness & Wooden (2009), however, the impacts on job satisfaction have received much less attention. While a number of studies have shown overeducated workers have lower levels of job satisfaction (Battu, Belfield and Sloane (1999), Fleming and Kler (2007), the situation becomes more complex when overskilling is brought into consideration. For Britain, Green and Zhu (2010) find that overqualification is not a problem for job satisfaction in itself if it is not accompanied by skill mismatch. Similarly, for Spain Badillo Amador, Nicolas and Vila (2008) also find that skill mismatches are a better predictor of job satisfaction than educational mismatches. McGuinness & Sloane (2011), in their study of the UK Graduate labour market, found that overskilling was associated with a lower pay penalty but a higher job satisfaction when compared to overeducation, with the authors concluding that overeducated workers tended to trade-off other job attributes, such as an improved work-life balance, for lower wages thus explaining the reduced impact on job satisfaction. The object of this paper is to examine the mismatch wage \ job satisfaction relationship across a range of countries in order to assess the extent to which the patterns observed in previous studies are replicated within an international dataset and can be attributed to a misalignment in specific skill \ competency areas.

Data

In this paper we use the Flexible Professional in the Knowledge Society (REFLEX) project was financed as a Specific Targeted Research Project (STREP) of the European Union's Sixth Framework Programme covering 15 countries[1]. It is limited to graduates in the 1999/2000 academic year, who were interviewed five years later in 2005. The REFLEX data contains information on 15 countries (we only consider the 13 European countries within the data)[2] It is limited to graduates in the 1999/2000 academic year, who were interviewed five years later in 2005. The use of graduate cohort data is relatively common within the mismatch literature (see, for example, Dolton and Vignoles (2000), Chevalier (2003), and McGuinness and Bennett (2007). Indeed, some authors argue that such data are less prone to unobserved heterogeneity bias due to the fact that respondents have uniform levels of education and labour market experience (eg McGuinness and Bennett, 2007, and Kelly et al., 2010). For the purposes of our study, we restrict our sample to those individuals currently employed (ignoring self-employment, and unemployment) and who studied for their third level qualification on a full-time basis.

With respect to our key mismatch variables, in keeping with the approach adopted by McGuinness & Sloane (2011) we include measures of both educational (overeducation,

[1] The countries included in the analysis are: Italy, Spain, France, Austria, Germany, Netherland, UK, Finland, Norway, Chez Republic, Portugal, Belgium and Estonia.

[2] There is also data for Japan which we exclude in order to focus on European countries.

undereducation) and skill mismatch (overskilling, underskilling), both of which are measured subjectively within the data. As a result of our exclusions, the effective sample falls from 34.347 to 16.876. Individual country samples range from 291 for Portugal to 3,033 in the Czech Republic. Respondents were defined as overeducated if they indicated that a below tertiary level of education was most appropriate for the job. Conversely, they were deemed to be undereducated if the most appropriate level of education was above that actually acquired. Overskilling was based on the response to a question asking individuals to rate on a 1 to 5 scale[3] the extent to which their skills and knowledge were utilised in their work with a response of 1 or 2 deemed consistent with overskilling. Using the same scale, workers were deemed to be underskilled if they responded 4 or 5 to a question indicating that their job demanded more knowledge and skills than they could actually offer. Summary statistics for our sample of countries are provided in the Table 1. Overeducation rates ranged from 2 per cent in Belgium to 16 per cent in Spain, while overskilling, at 14 per cent, was found to be highest in Spain the UK and France and lowest in Portugal at 3 per cent of the sample.

<Insert Table 1 here>

A unique feature of the REFLEX is that in addition to collecting information of overall skill utilisation, is also asked specific questions with respect to skill acquisition and usage in 19 key competency areas related to job performance. The competency fields are (1) Knowledge of own discipline (2) knowledge of other disciplines (3) analytical thinking (4) ability to acquire new knowledge (5) ability to negotiate (6) ability to perform under pressure (7) alertness to new opportunities (8) ability to coordinate activities (9) ability to use time effectively (10) ability to work productively with others (11) ability to mobilize the capabilities of others (12) ability to make your meaning clear to others (13) ability to assert your authority (14) ability to use computers and the internet (15) ability to come up with new ideas and solutions (16) willingness to question your own ideas and others (17) ability to present products and ideas (18) ability to write reports etc, (19) ability to write and speak in a foreign language. To derive a measure of overskilling in each area we compared acquired skills and their level of utilisation in the workplace. The survey asks respondents to rate, on a five point scale, both their level of expertise in a given competency and the extent to which this competency is required for their current job. If the acquired competency level is two points higher than the required job level, then individuals were defined as overskilled[4] in that area.

It is somewhat difficult to distinguish clear patterns from 19 competencies distributed across 13 countries; however, it is probably fair to say that the individual competency overskilling

[3] Where 1 was not at all and 5 to a very high extent.

[4] We tested the sensitivity of our analysis to variations of this definition and found that our results remained largely unchanged.

rates appear relatively tightly distributed within countries. In terms of cross-country comparisons, the evidence suggests that overskilling is generally higher in terms of individual's alertness to new opportunities and language skills with individual's time management skills relatively well utilised. Given the central question posed within the analysis, a key point of interest relates to the extent to which overskilling in individual competency areas relates to our more general measures of overskilling and overeducation. Furthermore, it is clear that many of the individual competency areas will be highly correlated with each other and to explore these issues further we present a skill correlation matrix in table 2. The first thing to note is that, consistent with the findings of previous research, the two central measures of mismatch are moderately correlated with each other with a correlation coefficient of 0.38. What is much more striking is that both overeducation and overskilling are relatively poorly correlated with overskilling in specific skill areas. This suggests that either (a) the key competency driving general mismatch has been omitted from our data or (b) the perception of general under-utilisation relates more heavily to unused inate or general ability as opposed to specific acquired skills. Given the comprehensive nature of the job competency information collected within the REFLEX data, we would argue that the latter explanation is likely to be most consistent. In terms of the skill specific overskilling variables, these are all appear strongly related to each other with correlation coefficients generally in the order of 0.7. The possible exception to the overall pattern is perhaps unused language skills which generally has a correlation coefficient of approximately 0.5 with respect to the other competency areas.

<Insert Table 2 here>

In order to get a clearer picture of the key skill areas where workers under-utisation is most pronounced, we next attempt to reduce the competency data to a more sensible level using Principal Components Analysis (PCA). Principal Components Analysis is a statistical technique for taking high dimensional data and, using the dependencies between variables, represents it in a lower dimensional data without any notable information loss. Perhaps not surprisingly, given the high correlations between the individual skill components, the Kaiser-Meyer-Olkin (KMO) test has a value of just over 0.9[5], indicating that the data is highly suited to such an approach. Within PCA, the vector with the largest eigenvalue is called the first principal component and explains most of the differences in our data, the vector with the next largest eigenvalue is called the second principal component and so on. To control the trade-off between loosing information and simplifying the problem ,we retain the number of factors which explain 78% of the variance in the data, that is to say 4 factors. We perform a Varimax rotation in order to make the interpretation of the retained factors easier. Table 3 shows the scoring coefficients. Component one gathers together under-utilisation in the areas of

[5] A KMO of above 0.5 is generally considered desirable for PCA.

pressure working, opportunity alertness, co-ordination, time management, productive co-operation, mobilization, expression and authority and can collectively be referred to as elements of "work productivity". The second component consists of overskilling in the areas of computer use, problem solving, questioning ideas, presentation and writing and these can be collectively viewed as relating to "problem solving and communication". The third component relates to under-utlisation in the areas of one's own specialist discipline, other disciplines, analytical thinking, knowledge acquisition and negotiation which we term "acquired learning". Finally, the fourth component relates to "language skills". Within the subsequent empirical analysis we test the impact of these collective components, alongside the individual competencies, on both job satisfaction and earnings.

<Insert Table 3 here>

Econometric Analysis

The approach adopted here centres around an attempt to quantify the proportion of the overall earnings / job satisfaction overskilling / overeducation penalties that can be attributed to mismatch in individual skill competencies. In our models we begin by estimated an OLS / probit model in a basic specification including only controls for mismatch in first and current employment before adding the principal components and individual skill mismatch variables to allow an assessment of the sensitivity of the general penalty to these effects. Our models are based on a pooled sample containing controls for sector and country level fixed effects. We did separate our data into groups of countries[6] to assess the extent to which differential pattern occurred, however, the results were largely indistinguishable from those of the pooled sample[7]. With respect to concerns related to both sample selection and unobserved heterogeneity bias, we assume these to be trivial given the evidence from recent studies that demonstrate that the estimated impact of overskilling on both wages and job satisfaction is unaffected by such factors (Mavromaras et al (2009), McGuinness (2008)). In fact, a recent study by McGuinness & Sloane (2011) use propensity score matching and a sensitivity test for unobserved influences to demonstrate the robustness of the overskilling and overeducation measures used in this dataset.

Table 4 presents the results from the probit model for job satisfaction. Consistent with McGuinness & Sloane (2011), we find that overskilling has the most significant impact on job satisfaction with overskilled workers 27.7 per cent less likely to be satisfied in the current

[6] We check four country groupings: Central Europe countries: Austria, Germany, France, Netherlands and Belgium; East Europe countries: Check republic, and Estonia; Nordic countries: Finland, Norway and UK; and finally Mediterranean countries: Portugal, Spain and Italy.

[7] Results available from the authors.

employment. Overeducation was found to lower the probability of job satisfaction by 17.9 per cent. Underskilled workers were found to have a slightly higher probability of job satisfaction at 5.8 per cent, while no effects were detected for undereducation. When we add the individual components to our model (specification 2) we detect a variety of influences not all of which lower job satisfaction. While overskilling in the areas of non-specialist knowledge, analytical ability, knowledge acquisition, alertness to opportunities, time management, idea creation and language skills all reduced job satisfaction, we found that surplus skills in time management actually raised satisfaction levels. Crucially, the general overeducation and overskilling penalties remained more or less unchanged when the additional controls were added, suggesting that the general effects of overeducation and overskilling on job satisfaction cannot be adequately attributed to under-utilised skills in any specific area. When the principal components are introduced into the regression, we find that while overskilling in the areas of "problem solving and communication", "knowledge acquisition" and "language skills" all reduce job satisfaction, overskilling in areas related to job "productivity" actually raises it. This would suggest that job satisfaction is higher in circumstances where workers have surplus skills in areas considered core to their performance, implying that workers prefer to have a skill buffer zone that allows them to comfortably perform key tasks within their given job. What is also notable is that the marginal effects of both the principal components and the individual competencies are much lower than the for the general mismatch variables. The results suggest that the widely observed penalties related to overeducation and overskilling relating more to a sense of unused general potential as opposed to under-utilised specific skills.

<Insert Table 4 here>

The results from the wage equation are presented in table 5. Again these are consistent with previous research showing that the overeducation pay penalty is much more substantial than that for overskilling. Overeducated workers were found to earn 29 per cent less than their well matched counterparts while overskilled workers earned 5.6 per cent below that of workers reporting full skill utilisation. No wage impacts were found with respect to undereducation or underskilling. When the controls for specific overskilling were introduced, the general mismatch pay penalties again remained largely unchanged, confirming the view that lower earnings among mismatched workers related more heavily to an inability to use their general or innate ability as opposed to a lack of opportunities in specific skill areas. Specification 2 revealed that overskilling in the areas of non-specialist knowledge and presentation skills resulted in modest wage premiums, while an inability to fully utilise writing skills lowered earnings by 3 per cent. When the principal components are added to the model, a 1.2 per cent pay penalty was observed for overskilling in the areas of problem solving and communication, however, as was the case in specification 2, the large pay penalties associated with overall overeducation and overskilling were unaffected by the introduction of the more specific overskilling controls.

<Insert Table 5 here>

On the basis that observed patterns might vary by gender, we estimated both our job satisfaction and earnings equations separately for males and females. With respect to job satisfaction, our overriding conclusion that the previously observed effects of overeducation and overskilling on job satisfaction were unrelated to under-utilisation in any specific skill area held, furthermore, no notable differences were apparent with respect to the impact of specific key competencies. For both males and females, we again found that surplus job productivity related skills raised job satisfaction, while under-utilisation in the areas of "problem solving and communication" and "acquired learning "lowered it somewhat (Table 6 & Table 7).

<Insert Table 6 here>

<Insert Table 7 here>

With respect to earnings, once again the patterns were remarkably similar with the overall mismatch pay penalties insensitive to the inclusion of controls for specific skill mismatch (Table 8 & Table 9). The only difference of note related to the influence of the principal component variables, whereby surplus "acquired knowledge" resulted in a slight pay premium for males while under-utilised "problem solving and communication skills" lowered the earnings of females slightly.

<Insert Table 8 here>

<Insert Table 9 here>

Summary and Conclusions

This paper utilised cross-country graduate cohort data from REFLEX to test the hypothesis that the widely observed effects of both overeducation and overskilling on job satisfaction and wages can be attributed to an under-utilisation in employment of specific key work related skills. We found that even after the inclusion of controls for skill under-utilisation in 19 areas key to job performance the observed effects of both overeducation and overskilling remain unchanged. These differences held when the analysis was conducted separately by gender and were insensitive to re-organisation of the data by country groupings. The work points to the conclusion that the observed impacts of both forms of mismatch relate to a general perception of under-utilised innate or general ability rather than a constrained ability to make full use of specific areas of acquired learning or skills. The implication of such a finding that the problem

of mismatch cannot easily be addressed by focusing policy on improving the job match of individuals possessing certain skill sets. The findings suggest that graduate mismatch can only be alleviated by increasing general levels of job quality within economies, suggesting that such phenomena is likely to be a permanent facet of developed economies for some time to come. Finally, an interesting finding emanating from the analysis is that surplus skills in areas related to job productivity performance actually raise levels of job satisfaction by, presumably, providing workers with an operational comfort zone within their given job.

Table 1: Descriptive by countries.

	Nº observations	Mean	Std dev.
ITALY			
overeducated	1175	0.129	0.335
undereducated	1175	0.122	0.328
overskill	1175	0.108	0.311
underskill	1175	0.225	0.418
SPAIN			
overeducated	2269	0.160	0.367
undereducated	2269	0.071	0.258
overskill	2269	0.143	0.350
underskill	2269	0.238	0.426
FRANCE			
overeducated	949	0.044	0.205
undereducated	949	0.144	0.351
overskill	949	0.139	0.346
underskill	949	0.154	0.362
AUSTRIA			
overeducated	773	0.106	0.308
undereducated	773	0.084	0.277
overskill	773	0.084	0.277
underskill	773	0.306	0.461
GERMANY		0.047	
overeducated	998	0.063	0.211
undereducated	998	0.088	0.243
overskill	998	0.259	0.283
underskill	998		0.438
NETHERLAND		0.070	
overeducated	2129	0.053	0.255
undereducated	2129	0.089	0.224
overskill	2129	0.252	0.285
underskill	2129		0.434
UK		0.137	
overeducated	1078	0.055	0.344
undereducated	1078	0.140	0.229
overskill	1078	0.261	0.347
underskill	1078	0.057	0.439
FINLAND		0.109	
overeducated	1350	0.062	0.233
undereducated	1350	0.263	0.312
overskill	1350		0.242
underskill	1350	0.028	0.440
NORWAY		0.116	
overeducated	1522	0.043	0.165
undereducated	1522	0.291	0.320
overskill	1522		0.203
underskill	1522	0.030	0.454
CHEZ REPUBLIC		0.111	
overeducated	3033	0.093	0.173
undereducated	3033	0.178	0.314
overskill	3033		0.291
underskill	3033	0.065	0.382
PORTUGAL		0.226	
overeducated	291	0.034	0.247
undereducated	291	0.508	0.419

overskill	291		0.182
underskill	291	0.020	0.500
BELGIUM	908	0.064	
overeducated	908	0.083	0.143
undereducated	908	0.255	0.246
overskill	908		0.277
underskill		0.022	0.436
ESTONIA	401	0.184	
overeducated	401	0.084	0.148
undereducated	401	0.331	0.388
overskill	401		0.278
underskill			0.471

Table 2: Correlation matrix

	overeduc	undereduc	overskill	underskill	ownf	othf	anal	ackn	negot	press	alert	coord	time	woth	mob	cmean	auth	compu	solut	quest	pres	write	lang
overeducated	1																						
undereducated	`-0.086	1																					
overskill	0.380	`-0.054	1																				
underskill	`-0.081	0.091	`-0.030	1																			
overownf	0.072	`-0.071	0.074	`-0.141	1																		
overothf	0.041	`-0.066	0.038	`-0.129	0.709	1																	
overanal	0.062	`-0.072	0.048	`-0.138	0.741	0.71	1																
overackn	0.047	`-0.066	0.036	`-0.137	0.728	0.70	0.742	1															
overnegot	`-0.001	`-0.054	`-0.007	`-0.123	0.690	0.67	0.692	0.694	1														
overpress	`-0.003	`-0.060	`-0.011	`-0.126	0.738	0.70	0.731	0.737	0.747	1													
overalert	0.025	`-0.060	0.020	`-0.124	0.681	0.66	0.689	0.690	0.708	0.729	1												
overcoord	0.024	`-0.062	0.012	`-0.129	0.722	0.69	0.724	0.716	0.719	0.766	0.723	1											
overtime	0.003	`-0.062	`-0.002	`-0.127	0.745	0.70	0.741	0.732	0.731	0.794	0.720	0.786	1										
overwoth	0.007	`-0.060	`-0.002	`-0.119	0.707	0.67	0.701	0.703	0.702	0.748	0.685	0.752	0.775	1									
overmob	0.019	`-0.057	0.003	`-0.127	0.708	0.67	0.700	0.701	0.717	0.737	0.705	0.755	0.766	0.759	1								
overcmean	0.008	`-0.063	`-0.004	`-0.125	0.734	0.69	0.724	0.719	0.729	0.760	0.706	0.761	0.786	0.755	0.770	1							
overauth	0.019	`-0.065	0.010	`-0.124	0.699	0.67	0.691	0.688	0.715	0.734	0.692	0.740	0.747	0.718	0.747	0.768	1						
overcompu	0.031	`-0.063	0.010	`-0.122	0.686	0.65	0.685	0.681	0.657	0.706	0.652	0.689	0.713	0.679	0.672	0.705	0.669	1					
oversolut	0.038	`-0.069	0.031	`-0.135	0.714	0.68	0.713	0.712	0.698	0.731	0.717	0.730	0.744	0.713	0.725	0.748	0.723	0.711	1				
overquest	0.063	`-0.068	0.049	`-0.125	0.680	0.66	0.688	0.679	0.666	0.695	0.683	0.702	0.706	0.682	0.695	0.718	0.697	0.663	0.75	1			
overpres	0.058	`-0.077	0.035	`-0.127	0.678	0.65	0.674	0.673	0.678	0.693	0.676	0.694	0.700	0.672	0.696	0.707	0.690	0.663	0.70	0.687	1		
overwrite	0.084	`-0.079	0.059	`-0.133	0.700	0.66	0.701	0.680	0.672	0.702	0.659	0.703	0.712	0.678	0.686	0.712	0.684	0.684	0.70	0.678	0.731	1	
overlang	0.019	`-0.079	0.017	`-0.113	0.562	0.55	0.561	0.558	0.544	0.583	0.546	0.563	0.583	0.555	0.562	0.578	0.557	0.568	0.57	0.554	0.574	0.5	1

Table 3: Principal Components: Scoring coefficients (Orthogonal Varimax rotation)

	comp1	comp2	comp3	comp4
overownf	0.0426	0.0233	0.4097	-0.0048
overothf	-0.0256	-0.0245	0.5362	0.0207
overanal	-0.0095	0.0372	0.4794	-0.0203
overackn	0.0420	-0.0012	0.4364	-0.0113
overnegot	0.3174	-0.0293	0.0484	-0.0104
overpress	0.2824	-0.0692	0.1464	0.0376
overalert	0.2400	0.1200	0.0089	-0.0330
overcoord	0.3230	-0.0055	0.0370	-0.0197
overtime	0.3158	-0.0512	0.0900	0.0197
overwoth	0.3947	-0.0960	0.0011	0.0169
overmob	0.4036	0.0146	-0.1214	0.0025
overcmean	0.3036	0.0747	-0.0242	0.0019
overauth	0.3563	0.0984	-0.1411	-0.0090
overcompu	-0.0117	0.2589	0.1883	0.0700
oversolut	0.0776	0.3741	0.0078	-0.0588
overquest	0.0351	0.4900	-0.0650	-0.0764
overpres	-0.0230	0.5438	-0.0806	0.0286
overwrite	-0.0872	0.4552	0.0949	0.0774
overlang	0.0124	0.0014	-0.0242	0.9870

Names of factors

f1 can be called as productivity
f2 innovation
f3 knowledge
and f4 languages

Table 4: Job Satisfaction Equation.

	Model 1	Model 2	Model 3
	coef.	coef.	coef.
male	-0.011	-0.008	-0.008
	(0.008)	(0.008)	(0.008)
labexp	0.000***	0.000	0.000**
	(0.000)	(0.000)	(0.000)
overeducated	-0.179***	-0.160***	-0.160***
	(0.017)	(0.018)	(0.017)
undereducated	0.008	0.004	0.005
	(0.013)	(0.013)	(0.013)
overskill	-0.277***	-0.257***	-0.260***
	(0.014)	(0.015)	(0.015)
underskill	0.058***	0.053***	0.055***
	(0.008)	(0.008)	(0.008)
osownf		-0.033**	
		(0.017)	
osothf		-0.032***	
		(0.015)	
osanal		-0.047***	
		(0.017)	
osackn		-0.058***	
		(0.016)	
osnegot		0.014	
		(0.015)	
ospress		0.064***	
		(0.017)	
osalert		-0.031***	
		(0.015)	
oscoord		-0.016	
		(0.178)	
ostime		0.048***	
		(0.018)	
oswoth		0.019	
		(0.016)	
osmob		0.010	
		(0.017)	
oscmean		0.027	
		(0.018)	
osauth		-0.001	
		(0.016)	
oscompu		0.041*** (0.014)	
ossolut		-0.038***	
		(0.017)	
osquest		-0.085***	
		(0.015)	
ospres		0.003	
		(0.014)	
oswrite		-0.011	
		(0.015)	
oslang		-0.036***	
		(0.010)	
productivity			0.013***
			(0.003)
innovation			-0.024***
			(0.004)
knowledge			-0.020***
			(0.004)
languages			-0.009***
			(0.004)
Spain	0.065***	0.061***	0.058***
	(0.016)	(0.016)	(0.016)
France	0.097***	0.098***	0.096***
	(0.018)	(0.018)	(0.018)
Austria	0.141***	0.146***	0.143***
	(0.017)	(0.017)	(0.017)
Germany	0.115***	0.117***	0.113***
	(0.017)	(0.017)	(0.017)
Netherland	0.056***	0.053***	0.053***
	(0.017)	(0.017)	(0.017)
UK	0.028	0.027	0.026
	(0.021)	(0.021)	(0.021)

Finland	0.023	0.018	0.018
	(0.018)	(0.019)	(0.019)
Norway	0.052***	0.051***	0.049***
	(0.020)	(0.020)	(0.020)
Chech Republic	0.112***	0.111***	0.110***
	(0.015)	(0.015)	(0.015)
Portugal	-0.030	-0.013	-0.020
	(0.032)	(0.032)	(0.032)
Belgium	0.095***	0.092***	0.091***
	(0.018)	(0.018)	(0.018)
Estonia	0.044	0.046	0.046
	(0.026)	(0.026)	(0.026)
Pseudo R-squared	0.088	0.097	0.093

Nº observations: 16.876.

Note: Models also contain controls for sector

Table 5: Wage Equation.

	Model 1	Model 2	Model 3
	coef.	coef.	coef.
male	0.086***	0.087***	0.087***
	(0.007)	(0.007)	(0.007)
labexp	0.003***	0.003***	0.003***
	(0.000)	(0.000)	(0.000)
Overeduc.	`-0.290 ***	`-0.283***	`-0.284***
	(0.015)	(0.015)	(0.015)
Undereduc.	`-0.003	`-0.004	`-0.004
	(0.012)	(0.012)	(0.012)
overskill	`-0.056***	`-0.051***	`-0.052***
	(0.012)	(0.013)	(0.012)
underskill	0.012	0.011	0.011
	(0.008)	(0.008)	(0.008)
osownf		`-0.001	
		(0.016)	
osothf		0.025**	
		(0.013)	
osanal		`-0.021	
		(0.015)	
osackn		0.003	
		(0.014)	
osnegot		`-0.010	
		(0.014)	
ospress		0.038***	
		(0.017)	
osalert		0.004	
		(0.013)	
oscoord		0.007	
		(0.016)	
ostime		0.015	
		(0.018)	
oswoth		`-0.002	
		(0.015)	
osmob		`-0.006	
		(0.016)	
oscmean		`-0.002	
		(0.017)	
osauth		`-0.027	
		(0.015)	
oscompu		`-0.016	
		(0.013)	
ossolut		0.005	
		(0.015)	
osquest		`-0.019	
		(0.013)	
ospres		0.004	
		(0.013)	
oswrite		`-0.030***	
		(0.014)	
oslang		`-0.014	
		(0.009)	
productivity			0.000
			(0.003)
innovation			`-0.012***
			(0.004)
knowledge			0.004
			(0.004)
languages			`-0.006
			(0.004)
Spain	`-0.048***	`-0.049***	`-0.050***
	(0.017)	(0.017)	(0.017)
France	0.353***	0.352***	0.352***
	(0.206)	(0.207)	(0.206)
Austria	0.368***	0.369***	0.368***
	(0.021)	(0.021)	(0.021)
Germany	0.677***	0.679***	0.678***
	(0.020)	(0.020)	(0.020)
Netherland	0.450***	0.449***	0.448***
	(0.018)	(0.018)	(0.018)
UK	0.510***	0.510***	0.510***

	(0.21)	(0.214)	(0.213)
Finland	0.435***	0.434***	0.433***
	(0.018)	(0.018)	(0.018)
Norway	0.828***	0.830***	0.829***
	(0.020)	(0.020)	(0.020)
Chech Republic	`-0.766***	`-0.768***	`-0.767***
	(0.017)	(0.017)	(0.017)
Portugal	`-0.256***	`-0.253***	`-0.252***
	(0.029)	(0.029)	(0.029)
Belgium	0.402***	0.401***	0.400***
	(0.020)	(0.020)	(0.020)
Estonia	`-0.846***	`-0.845***	`-0.846***
	(0.026)	(0.026)	(0.026)
R-squared	0.655	0.655	0.655

Nº observations: 16.015, models also contain controls for sector

Table 6: Job Satisfaction Equation: Males

	Model 1	Model 2	Model 3
	coef.	coef.	coef.
labexp	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)
overeducated	-0.168***	-0.143***	-0.139***
	(0.030)	(0.030)	(0.030)
undereducated	-0.007	-0.012	-0.010
	(0.020)	(0.020)	(0.020)
overskill	-0.285*** (0.023)	-0.264***	-0.262***
		(0.023)	(0.023)
underskill	0.054***	0.046***	0.048***
	(0.013)	(0.013)	(0.013)
osownf		-0.016	
		(0.028)	
osothf		-0.047***	
		(0.023)	
osanal		-0.055***	
		(0.027)	
osackn		-0.083***	
		(0.026)	
osnegot		0.026	
		(0.023)	
ospress		0.046	
		(0.028)	
osalert		-0.059***	
		(0.024)	
oscoord		`-0.003	
		(0.027)	
ostime		0.067***	
		(0.029)	
oswoth		0.038	
		(0.025)	
osmob		-0.014	
		(0.027)	
oscmean		0.022	
		(0.029)	
osauth		0.027	
		(0.024)	
oscompu		0.003	
		(0.022)	
ossolut		-0.008	
		(0.022)	
osquest		-0.102***	
		(0.024)	
ospres		0.004	
		(0.023)	
oswrite		-0.012	
		(0.025)	
oslang		-0.036***	
		(0.017)	
productivity			0.016***
			(0.006)
innovation			-0.028***
			(0.007)
knowledge			-0.030***
			(0.007)
languages			-0.008
			(0.007)
Spain	0.068***	0.064***	0.060***
	(0.025)	(0.026)	(0.026)
France	0.096***	0.098***	0.098***
	(0.030)	(0.030)	(0.030)
Austria	0.163***	0.167***	0.164***
	(0.024)	(0.023)	(0.024)
Germany	0.128***	0.128***	0.123***
	(0.024)	(0.024)	(0.024)
Netherland	0.077***	0.071***	0.070***
	(0.026)	(0.026)	(0.026)
UK	0.067***	0.065**	0.062**
	(0.032)	(0.032)	(0.032)
Finland	0.046	0.040	0.040
	(0.029)	(0.029)	(0.029)

Norway	0.116***	0.112***	0.113***
	(0.028)	(0.028)	(0.028)
Chech Republic	0.127***	0.121***	0.122***
	(0.023)	(0.023)	(0.023)
Portugal	-0.033	-0.016	-0.027
	(0.056)	(0.055)	(0.057)
Belgium	0.072***	0.062**	0.064**
	(0.030)	(0.031)	(0.030)
Estonia	0.103***	0.099***	0.098***
	(0.042)	(0.043)	(0.043)
Pseudo R-squared	0.092	0.106	0.1016

Nº observations: 6.817, models also contain controls for sector

Table 7: Job Satisfaction Equation: Females

	Model 1	Model 2	Model 3
	coef.	coef.	coef.
labexp	0.000***	0.000	0.000**
	(0.000)	(0.000)	(0.000)
overeducated	-0.190***	-0.173***	-0.175***
	(0.022)	(0.022)	(0.022)
undereducated	0.024	0.022	0.021
	(0.017)	(0.017)	(0.017)
overskill	-0.270***	-0.252***	-0.254***
	(0.019)	(0.019)	(0.019)
underskill	0.061***	0.056***	0.057***
	(0.011)	(0.011)	(0.011)
osownf		-0.043**	
		(0.023)	
osothf		-0.019	
		(0.020)	
osanal		-0.039**	
		(0.022)	
osackn		-0.040**	
		(0.021)	
osnegot		0.003	
		(0.021)	
ospress		0.076***	
		(0.022)	
osalert		-0.010	
		(0.019)	
oscoord		-0.029	
		(0.023)	
ostime		0.036	
		(0.024)	
oswoth		0.005	
		(0.022)	
osmob		0.026	
		(0.022)	
oscmean		0.030	
		(0.024)	
osauth		-0.025	
		(0.022)	
oscompu		0.065***	
		(0.018)	
ossolut		-0.055***	
		(0.023)	
osquest		-0.075***	
		(0.020)	
ospres		0.006	
		(0.019)	
oswrite		-0.014	
		(0.019)	
oslang		-0.037***	
		(0.013)	
productivity			0.009**
			(0.005)
innovation			-0.021***
			(0.006)
knowledge			-0.013***
			(0.006)
languages			-0.010
			(0.005)
Spain	0.063***	0.062***	0.058***
	(0.021)	(0.021)	(0.021)
France	0.094***	0.095***	0.092***
	(0.023)	(0.023)	(0.023)
Austria	0.120***	0.127***	0.125***
	(0.025)	(0.024)	(0.024)
Germany	0.107***	0.113***	0.110***
	(0.024)	(0.024)	(0024)
Netherland	0.043**	0.044**	0.041
	(0.023)	(0.023)	(0.023)
UK	0.004	0.006	0.001
	(0.029)	(0.029)	(0.029)

Finland	0.008	0.006	0.003
	(0.024)	(0.025)	(0.025)
Norway	0.007	0.013	0.009
	(0.027)	(0.027)	(0.027)
Chech Republic	0.099***	0.102***	0.100***
	(0.020)	(0.020)	(0.020)
Portugal	-0.031	-0.014	-0.019
	(0.040)	(0.039)	(0.039)
Belgium	0.111***	0.113***	0.109***
	(0.023)	(0.023)	(0.023)
Estonia	0.016	0.019	0.017
	(0.033)	(0.033)	(0.033)
Pseudo R-squared	0.089	0.097	0.092

Nº observations: 10.059, models also contain controls for sector

Table 8: Wage Equation: males

	Model 1	Model 2	Model 3
	coef.	coef.	coef.
labexp	0.004***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)
overeducated	-0.270***	-0.268***	-0.268***
	(0.024)	(0.025)	(0.025)
undereducated	-0.026	-0.027	-0.027
	(0.017)	(0.017)	(0.017)
overskill	-0.045***	-0.045***	-0.045***
	(0.019)	(0.019)	(0.019)
underskill	0.017	0.016	0.017
	(0.012)	(0.012)	(0.012)
osownf		-0.013	
		(0.024)	
osothf		0.026	
		(0.020)	
osanal		0.015	
		(0.023)	
osackn		0.008	
		(0.022)	
osnegot		-0.025	
		(0.022)	
ospress		0.049*	
		(0.027)	
osalert		-0.015	
		(0.020)	
oscoord		0.0210	
		(0.024)	
ostime		0.024	
		(0.028)	
oswoth		0.001	
		(0.024)	
osmob		`-0.038	
		(0.024)	
oscmean		`-0.013	
		(0.271)	
osauth		`-0.021	
		(0.022)	
oscompu		-0.012	
		(0.020)	
ossolut		0.011	
		(0.024)	
osquest		-0.021	
		(0.020)	
ospres		-0.009	
		(0.021)	
oswrite		0.004	
		(0.023)	
oslang		-0.019	
		(0.015)	
productivity			-0.005
			(0.005)
innovation			-0.009
			(0.006)
knowledge			0.015***
			(0.006)
languages			-0.007
			(0.006)
Spain	-0.057***	-0.056***	-0.058***
	(0.026)	(0.026)	(0.026)
France	0.403***	0.401***	0.402***
	(0.033)	(0.033)	(0.033)
Austria	0.393***	0.395***	0.394***
	(0.030)	(0.030)	(0.030)
Germany	0.690***	0.693***	0.690***
	(0.028)	(0.028)	(0.028)
Netherland	0.436***	0.433***	0.435***
	(0.027)	(0.027)	(0.027)
UK	0.518***	0.517***	0.517***
	(0.032)	(0.033)	(0.032)
Finland	0.432***	0.430***	0.432***

	(0.029)	(0.029)	(0.029)
Norway	0.803***	0.803***	0.803***
	(0.031)	(0.031)	(0.031)
Chech Republic	-0.748***	-0.749***	-0.748***
	(0.025)	(0.025)	(0.025)
Portugal	-0.187***	-0.186***	-0.187***
	(0.049)	(0.049)	(0.049)
Belgium	0.383***	0.379***	0.380***
	(0.031)	(0.031)	(0.031)
Estonia	-0.757***	-0.762***	-0.760***
	(0.046)	(0.046)	(0.046)
R-squared	0.671	0.672	0.671

Nº observations: 6.479, models also contain controls for sector

Table 9: Wage Equation: Females

	Model 1	Model 2	Model 3
	coef.	coef.	coef.
labexp	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)
overeducated	-0.293***	-0.284***	-0.285***
	(0.019)	(0.019)	(0.019)
undereducated	0.016	0.015	0.014
	(0.016)	(0.016)	(0.016)
overskill	-0.063***	-0.056***	-0.056***
	(0.017)	(0.017)	(0.017)
underskill	0.009	0.008	0.008
	(0.010)	(0.010)	(0.010)
osownf		0.007	
		(0.021)	
osothf		0.021	
		(0.018)	
osanal		-0.041***	
		(0.020)	
osackn		0.000	
		(0.019)	
osnegot		0.004	
		(0.019)	
ospress		0.030	
		(0.020)	
osalert		0.015	
		(0.018)	
oscoord		-0.007	
		(0.021)	
ostime		0.001	
		(0.024)	
oswoth		0.000	
		(0.020)	
osmob		0.018	
		(0.021)	
oscmean		0.010	
		(0.023)	
osauth		-0.027	
		(0.020)	
oscompu		-0.019	
		(0.018)	
ossolut		-0.008	
		(0.021)	
osquest		-0.023	
		(0.018)	
ospres		0.014	
		(0.018)	
oswrite		-0.049***	
		(0.018)	
oslang		-0.012	
		(0.012)	
productivity			0.006
			(0.004)
innovation			-0.015***
			(0.005)
knowledge			-0.003
			(0.006)
languages			-0.005
			(0.005)
Spain	-0.041*	-0.042*	-0.044**
	(0.022)	(0.023)	(0.022)
France	0.320***	0.321***	0.320***
	(0.026)	(0.026)	(0.026)
Austria	0.338***	0.342***	0.339***
	(0.029)	(0.030)	(0.029)
Germany	0.661***	0.665***	0.662***
	(0.028)	(0.028)	(0.028)
Netherland	0.465***	0.466***	0.465***
	(0.024)	(0.024)	(0.024)
UK	0.501***	0.505***	0.502***
	(0.028)	(0.028)	(0.028)
Finland	0.428***	0.430***	0.427***

	(0.024)	(0.024)	(0.024)
Norway	0.849***	0.852***	0.850***
	(0.027)	(0.027)	(0.027)
Chech Republic	-0.777***	-0.776***	-0.777***
	(0.023)	(0.023)	(0.023)
Portugal	-0.292***	-0.288***	-0.287***
	(0.037)	(0.037)	(0.037)
Belgium	0.423***	0.425***	0.422***
	(0.027)	(0.027)	(0.027)
Estonia	-0.879***	-0.873***	-0.877***
	(0.032)	(0.032)	(0.032)
R-squared	0.637	0.638	0.637

Nº observations: 9.536, models also contain controls for sector

APPENDIX

Summary Statistics

	ITALY		SPAIN		FRANCE		AUSTRIA		GERMANY		NETHERLAND	
	Mean	Std. Dev.	Mean	Std. Dev	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
wage	1867.6	2529	1526.0	1.762	2565.8	4.112	2836.8	2.465	4030.3	6.814	2450.3	1.566
satisfied	0.49	0.50	0.57	0.49	.60	0.49	0.63	0.48	0.65	0.47	0.62	0.48
overeducated	0.11	0.31	0.15	0.35	0.03	0.18	0.08	0.27	0.04	0.21	0.07	0.25
undereducated	0.10	0.30	0.06	0.24	0.13	0.34	0.07	0.25	0.06	0.23	0.05	0.22
overskilled	0.09	0.29	0.13	0.34	0.11	0.32	0.07	0.25	0.08	0.27	0.08	0.27
underskilled	0.21	0.40	0.21	0.41	0.14	0.35	0.27	0.44	0.24	0.43	0.23	0.42
male	0.39	0.49	0.32	0.46	0.30	0.46	0.43	0.49	0.48	0.49	0.34	0.47
labexp	51.0	16.6	48.1	16.0	44.08	15.5	52.5	12.6	53.19	12.93	53.71	12.35
age	31.3	3.3	28.7	2.0	28.3	3.2	32.0	4.90	32.46	3.16	29.28	3.03
education	0.01	0.12	0.12	0.33	0.05	0.22	0.12	0.32	0.07	0.26	0.133	0.34
art	0.14	0.34	0.08	0.28	0.14	0.35	0.11	0.32	0.12	0.33	0.05	0.22
social	0.36	0.48	0.32	0.46	0.30	0.45	0.38	0.48	0.23	0.42	0.32	0.46
science	0.12	0.32	0.14	0.34	0.25	0.43	0.10	0.31	0.11	0.31	0.07	0.26
engineering	0.18	0.39	0.13	0.34	0.10	0.30	0.18	0.38	0.24	0.42	0.12	0.33
agvet	0.01	0.11	0.03	0.19	0.00	0.08	0.01	0.13	0.03	0.18	0.01	0.12
health	0.13	0.34	0.13	0.33	0.07	0.26	0.05	0.22	0.13	0.34	0.21	0.41
services	0.00	0.07	0.00	0.09	0.03	0.18	0.01	0.11	0.02	0.15	0.04	0.21
masters	0.89	0.30	0.60	0.48	0.58	0.49	1	0	0.79	0.40	0.30	0.45
unemp	0.37	0.48	0.60	0.48	0.35	0.47	0.35	0.47	0.31	0.46	0.24	0.43
supervisory	0.28	0.45	0.32	0.46	0.26	0.44	0.25	0.43	0.20	0.40	0.22	0.41
fieldmatchnow	0.31	0.46	0.25	0.43	0.29	0.45	0.25	0.43	0.32	0.46	0.22	0.41
fieldrelatednow	0.43	0.49	0.51	0.49	0.39	0.48	0.46	0.49	0.49	0.50	0.54	0.49
fieldmatchjob1	0.25	0.43	0.20	0.40	0.28	0.45	0.36	0.48	0.38	0.48	0.23	0.42
fieldrelatedjob1	0.43	0.49	0.45	0.49	0.36	0.48	0.43	0.49	0.46	0.49	0.53	0.49
hours	36.54	9.1	35.9	8.80	33.3	9.08	38.9	8.98	37.8	8.63	35.50	7.16
coursemp	0.30	0.45	0.40	0.49	0.28	0.45	0.40	0.49	0.35	0.47	0.41	0.49
courseprest	0.48	0.49	0.34	0.47	0.18	0.39	0.41	0.49	0.34	0.47	0.20	0.40
coursevoc	0.29	0.45	0.23	0.42	0.24	0.43	0.27	0.44	0.30	0.46	0.57	0.49
rdfirm	0.31	0.46	0.32	0.46	0.27	0.44	0.45	0.49	0.40	0.49	0.36	0.48
size5099	0.08	0.27	0.08	0.27	0.05	0.21	0.07	0.26	0.06	0.24	0.06	0.24
size100249	0.09	0.28	0.08	0.27	0.07	0.25	0.07	0.26	0.06	0.24	0.12	0.32
size250999	0.10	0.30	0.10	0.30	0.09	0.29	0.12	0.33	0.09	0.29	0.17	0.38
size1000	0.23	0.42	0.32	0.47	0.42	0.49	0.32	0.46	0.31	0.46	0.36	0.48
public	0.26	0.44	0.31	0.46	0.41	0.49	0.30	0.45	0.41	0.49	0.45	0.49
numemployers	2.26	1.7	3.13	3.67	2.09	1.79	2.19	1.81	1.89	2.57	2.19	1.62
Osownf	0.22	0.41	0.17	0.38	0.20	0.40	0.24	0.42	0.14	0.35	0.14	0.35
Osothf	0.27	0.44	0.18	0.38	0.24	0.42	0.29	0.45	0.17	0.38	0.16	0.37
Osanal	0.25	0.43	0.18	0.39	0.20	0.40	0.27	0.44	0.16	0.37	0.16	0.37
Osackn	0.26	0.44	0.19	0.39	0.23	0.42	0.27	0.44	0.16	0.37	0.18	0.38
Osnegot	0.25	0.43	0.19	0.39	0.21	0.41	0.27	0.44	0.18	0.38	0.16	0.37
Ospress	0.23	0.42	0.16	0.37	0.20	0.40	0.23	0.42	0.13	0.34	0.14	0.35
Osalert	0.26	0.44	0.21	0.41	0.27	0.44	0.27	0.44	0.18	0.38	0.16	0.36
Oscoord	0.25	0.43	0.18	0.38	0.20	0.40	0.26	0.44	0.15	0.36	0.16	0.37
Ostime	0.24	0.42	0.16	0.36	0.17	0.38	0.25	0.43	0.12	0.33	0.13	0.34
Oswoth	0.25	0.43	0.19	0.39	0.20	0.40	0.27	0.44	0.16	0.36	0.14	0.35
Osmob	0.26	0.44	0.18	0.38	0.21	0.40	0.27	0.44	0.17	0.38	0.14	0.35
Oscmean	0.27	0.44	0.15	0.36	0.17	0.38	0.26	0.44	0.17	0.38	0.14	0.34
Osauth	0.25	0.43	0.18	0.38	0.20	0.40	0.28	0.44	0.17	0.38	0.16	0.37
Oscompu	0.26	0.44	0.20	0.40	0.24	0.42	0.25	0.43	0.17	0.38	0.17	0.37
Ossolut	0.26	0.43	0.17	0.38	0.22	0.42	0.26	0.44	0.16	0.37	0.15	0.36
Osquest	0.28	0.45	0.22	0.41	0.22	0.41	0.31	0.46	0.21	0.40	0.16	0.37
Ospres	0.26	0.44	0.19	0.39	0.21	0.41	0.29	0.45	0.18	0.38	0.19	0.39
Oswrite	0.26	0.44	0.19	0.39	0.24	0.42	0.28	0.45	0.16	0.37	0.18	0.38
Oslang	0.32	0.46	0.25	0.43	0.29	0.45	0.36	0.48	0.29	0.45	0.29	0.45

	UK		FINLAND		NORWAY		CHEZ REPUBLIC		PORTUGAL		BELGIUM		ESTONIA	
	Mean	Std. Dev.	Mean	Std. Dev	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev	Mean	Std. Dev.	Mean	Std. Dev.
wage	2679.6	1368	2.479	1.217	4373.7	6.495	758.4	350	1287.2	608	2684.0	2.556	766.1	415.3
satisfied	0.58	0.49	0.56	0.49	0.67	0.46	0.63	0.48	0.59	0.49	0.70	0.45	0.62	0.48
overeducated	0.13	0.33	0.05	0.22	0.02	0.16	0.02	0.17	0.05	0.23	0.019	0.13	0.01	0.13
undereducated	0.05	0.22	0.09	0.29	0.10	0.31	0.11	0.32	0.21	0.41	0.06	0.24	0.16	0.36
overskilled	0.13	0.33	0.06	0.23	0.04	0.19	0.08	0.28	0.03	0.17	0.08	0.27	0.07	0.25
underskilled	0.23	0.42	0.23	0.42	0.27	0.44	0.16	0.37	0.48	0.50	0.25	0.43	0.30	0.46
male	0.36	0.48	0.31	0.46	0.35	0.47	0.41	0.49	0.32	0.46	0.41	0.49	0.26	0.44
labexp	49.94	13.52	48.63	13.05	60.73	12.24	40.24	13.76	62.49	16.81	52.7	11.57	61.12	16.16
age	29.66	7.22	30.96	3.94	32.91	4.93	27.45	1.71	28.58	2.28	27.11	1.38	29.21	3.25
education	0.03	0.18	0.05	0.23	0.18	0.39	0.15	0.36	0.17	0.37	0.02	0.15	0.17	0.38
art	0.27	0.44	0.09	0.29	0.04	0.21	0.03	0.18	0.08	0.27	0.19	0.39	0.12	0.32
social	0.32	0.46	0.24	0.43	0.18	0.38	0.26	0.43	0.32	0.46	0.33	0.47	0.29	0.45
science	0.18	0.38	0.08	0.27	0.08	0.27	0.05	0.22	0.06	0.24	0.09	0.28	0.11	0.31
engineering	0.05	0.23	0.20	0.40	0.11	0.32	0.25	0.43	0.18	0.38	0.23	0.42	0.09	0.29
agvet	0.02	0.14	0.02	0.16	0.02	0.14	0.04	0.20	0	0	0.00	0.06	0.02	0.16
health	0.06	0.25	0.24	0.42	0.31	0.46	0.13	0.34	0.14	0.35	0.07	0.26	0.10	0.30
services	0.03	0.17	0.03	0.18	0.04	0.20	0.02	0.16	0.02	0.14	0.01	0.13	0.05	0.23
masters	0.07	0.26	0.45	0.49	0	0	0.85	0.35	0.73	0.44	0.94	0.21	0.83	0.37
unemp	0.34	0.47	0.36	0.48	0.20	0.40	0.42	0.49	0.40	0.49	0.34	0.47	0.24	0.43
supervisory	0.43	0.49	0.25	0.43	0.39	0.48	0.30	0.46	0.32	0.46	0.32	0.46	0.41	0.49
fieldmatchnow	0.23	0.42	0.29	0.45	0.31	0.46	0.30	0.45	0.32	0.47	0.20	0.40	0.30	0.46
fieldrelatednow	0.37	0.48	0.48	0.50	0.56	0.49	0.46	0.49	0.53	0.49	0.62	0.48	0.44	0.49
fieldmatchjob1	0.20	0.40	0.33	0.47	0.31	0.46	0.29	0.45	0.29	0.45	0.20	0.40	0.45	0.49
fieldrelatedjob1	0.29	0.45	0.50	0.50	0.56	0.49	0.36	0.48	0.53	0.49	0.59	0.49	0.33	0.47
hours	37.59	7.97	36.54	6.36	36.41	6.31	38.28	6.91	35.33	8.39	36.98	7.64	36.69	7.88
coursemp	0.29	0.45	0.41	0.49	0.63	0.48	0.44	0.49	0.35	0.48	0.40	0.49	0.26	0.44
courseprest	0.45	0.49	0.33	0.47	0.31	0.46	0.30	0.46	0.58	0.49	0.49	0.50	0.41	0.49
coursevoc	0.26	0.44	0.61	0.48	0.60	0.48	0.51	0.49	0.44	0.49	0.30	0.45	0.23	0.42
rdfirm	0.39	0.48	0.44	0.49	0.37	0.48	0.35	0.47	0.33	0.47	0.39	0.48	0.38	0.48
size5099	0.08	0.27	0.07	0.26	0.07	0.25	0.10	0.30	0.11	0.31	0.08	0.27	0.14	0.35
size100249	0.07	0.27	0.10	0.30	0.10	0.31	0.11	0.31	0.10	0.30	0.10	0.30	0.13	0.34
size250999	0.12	0.33	0.16	0.37	0.14	0.35	0.15	0.35	0.16	0.37	0.15	0.36	0.13	0.34
size1000	0.41	0.49	0.30	0.45	0.35	0.47	0.22	0.41	0.25	0.43	0.40	0.49	0.15	0.36
public	0.43	0.49	0.40	0.49	0.58	0.49	0.33	0.47	0.38	0.48	0.34	0.47	0.50	0.50
numemployers	2.62	2.88	2.11	1.65	2.17	2.10	1.65	0.91	2.46	1.75	2.15	1.53	2.39	1.80
Osownf	0.17	0.38	0.22	0.41	0.13	0.34	0.20	0.40	0.13	0.34	0.07	0.26	0.20	0.40
Osothf	0.19	0.39	0.21	0.40	0.14	0.35	0.22	0.41	0.18	0.38	0.11	0.32	0.21	0.41
Osanal	0.19	0.39	0.22	0.41	0.17	0.37	0.20	0.40	0.15	0.36	0.08	0.28	0.22	0.41
Osackn	0.19	0.39	0.22	0.41	0.16	0.37	0.19	0.39	0.17	0.38	0.10	0.31	0.22	0.41
Osnegot	0.17	0.38	0.21	0.41	0.17	0.37	0.20	0.40	0.19	0.39	0.09	0.29	0.24	0.42
Ospress	0.16	0.36	0.21	0.40	0.14	0.35	0.19	0.39	0.13	0.34	0.08	0.27	0.22	0.41
Osalert	0.20	0.40	0.24	0.43	0.16	0.37	0.23	0.42	0.23	0.42	0.09	0.29	0.23	0.42
Oscoord	0.17	0.37	0.22	0.41	0.14	0.35	0.20	0.40	0.16	0.37	0.09	0.29	0.23	0.42
Ostime	0.15	0.35	0.20	0.40	0.14	0.35	0.20	0.40	0.12	0.33	0.07	0.26	0.22	0.41
Oswoth	0.16	0.37	0.21	0.41	0.17	0.38	0.21	0.41	0.12	0.33	0.08	0.27	0.22	0.41
Osmob	0.17	0.38	0.21	0.41	0.15	0.36	0.21	0.41	0.14	0.35	0.08	0.28	0.25	0.43
Oscmean	0.15	0.35	0.21	0.40	0.12	0.33	0.20	0.40	0.13	0.34	0.07	0.25	0.21	0.40
Osauth	0.18	0.38	0.22	0.41	0.16	0.37	0.20	0.40	0.15	0.36	0.12	0.33	0.23	0.42
Oscompu	0.21	0.40	0.23	0.42	0.19	0.39	0.21	0.41	0.17	0.37	0.08	0.28	0.24	0.42
Ossolut	0.20	0.40	0.21	0.41	0.17	0.37	0.22	0.42	0.17	0.38	0.08	0.27	0.23	0.42
Osquest	0.20	0.40	0.23	0.42	0.18	0.38	0.23	0.42	0.21	0.41	0.10	0.30	0.26	0.44
Ospres	0.21	0.41	0.24	0.42	0.17	0.38	0.22	0.41	0.21	0.41	0.12	0.33	0.24	0.43
Oswrite	0.20	0.40	0.26	0.44	0.15	0.36	0.20	0.40	0.17	0.37	0.11	0.32	0.25	0.43
Oslang	0.25	0.43	0.29	0.45	0.31	0.46	0.26	0.43	0.30	0.45	0.14	0.35	0.22	0.42

Data Appendix

Lwage	Gross monthly earnings in main employment logged.
Overeducated:	Dummy variable takes value 1 if overeducated in current job and zero otherwise
Undereducated:	Dummy variable takes value 1 if undereducated in current job and zero otherwise
Overskilled:	Dummy variable takes value 1 if overskilled in current job and zero otherwise
Underskilled:	Dummy variable takes value 1 if underskilled in current job and zero otherwise
Male:	Dummy variable takes value 1 if Male and zero otherwise
Labexp:	Number of months employed since graduation
age:	Age in years
Education:	Dummy variable takes value 1 if main field of study was Education and zero otherwise
Art:	Dummy variable takes value 1 if main field of study was Humanities and art zero otherwise
Social:	Dummy variable takes value 1 if main field of study was Social Science and zero otherwise
Science:	Dummy variable takes value 1 if main field of study was Science and zero otherwise
Engineering:	Dummy variable takes value 1 if main field of study was Engineering and zero otherwise
Agvet:	Dummy variable takes value 1 if main field of study was Agriculture / Veterinary and zero otherwise
Health:	Dummy variable takes value 1 if main field of study was Health and Welfare and zero otherwise
Services:	Dummy variable takes value 1 if main field of study was Services and zero otherwise
Masters degree:	Dummy variable takes value 1 if possessed a Masters degreeers degree and zero otherwise
Supervisory respon:	Dummy variable takes value 1 if Supervisory respond staff members and zero otherwise
Field_match_now:	Dummy variable takes value 1 if current job matched exclusively to field of study and zero otherwise
Field_related_now:	Dummy variable takes value 1 if current job matched on own or a related field of study and zero otherwise
Field_match_job1:	Dummy variable takes value 1 if first job matched exclusively to field of study and zero otherwise
Field_related_job1:	Dummy variable takes value 1 if first job matched on own or a related field of study and zero otherwise
Coursemp:	Dummy variable takes value 1 if employers were familiar with course and zero otherwise. Measured subjectively by respondent.
Courseprest:	Dummy variable takes value 1 if course was academically prestigious and zero otherwise. Measured subjectively by respondent.
Coursevoc:	Dummy variable takes value 1 if course was vocationally and zero otherwise Measured subjectively by respondent.
Hours worked:	Regular contract Hours worked per week
R&D Firm:	Dummy variable takes value 1 if employed in a research intensive firm and zero otherwise
Firmsize 50-99:	Dummy variable takes value 1 if employed in a firm with 50 to 99 workers and zero otherwise
Firmsize 100-249:	Dummy variable takes value 1 if employed in a firm with 100 to 249 workers and zero otherwise
Firmsize 250-999:	Dummy variable takes value 1 if employed in a firm with 250 to 999 workers and zero otherwise
Firmsize 1000+:	Dummy variable takes value 1 if employed in a firm with over 1000 workers and zero otherwise
Public:	Dummy variable takes value 1 if employed in a public sector organisation and zero otherwise
Numemployers:	Number of employers since graduation
Osownf:	Dummy variable takes value 1 if overskilled in own field and zero otherwise
Osthf:	Dummy variable takes value 1 if overskilled in another field and zero otherwise
Osanal:	Dummy variable takes value 1 if overskilled in analytical thinking and zero otherwise
Osackn:	Dummy variable takes value 1 if overskilled in ability to acquire new knowledge and zero
Osnegot:	Dummy variable takes value 1 if overskilled in ability to negotiate effectively and zero otherwise
Ospress:	Dummy variable takes value 1 if overskilled in ability to perform well under pressure and zero otherwise
Osalert:	Dummy variable takes value 1 if overskilled in alertness to new opportunities and zero otherwise
Oscoord:	Dummy variable takes value 1 if overskilled in ability to coordinate activities and zero otherwise
Ostime:	Dummy variable takes value 1 if overskilled in ability to use time effectively and zero otherwise
Oswoth:	Dummy variable takes value 1 if overskilled in ability to work productively with others and zero otherwise
Osmob:	Dummy variable takes value 1 if overskilled in ability to mobilize the capabilities of others and zero otherwise
Oscmean:	Dummy variable takes value 1 if overskilled in ability to make your meaning clear to others and zero otherwise
Osauth:	Dummy variable takes value 1 if overskilled in ability to assert your authority and zero otherwise
Oscompu:	Dummy variable takes value 1 if overskilled in ability to use computers and zero otherwise
Ossolut:	Dummy variable takes value 1 if overskilled in ability to come up with new ideas and solutions and zero otherwise
Osquest:	Dummy variable takes value 1 if overskilled in ability to question yours and others ideas and zero otherwise
Ospres:	Dummy variable takes value 1 if overskilled in ability to present ideas / products to others and zero otherwise
Oswrite:	Dummy variable takes value 1 if overskilled in ability to write reports memos or documents and zero otherwise
Oslang:	Dummy variable takes value 1 if overskilled in ability to write and speak in a foreign language and zero otherwise

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