Underemployment: a skills utilisation perspective

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Abstract

More than half of all employees believe that the skills they possess are higher than those required to do their present jobs. This is one of several findings reported in a research paper on 'under-employment' in the current edition of the University of Strathclyde's Fraser of Allander Review published today. According to the author of the paper, John Sutherland of the Scottish Centre for Employment Research at the university, this provides further evidence that 'under-employment' is as important a policy problem as 'unemployment'.

The Context

Underemployment has become accepted as a major labour market policy problem. Statistics on underemployment now frequently accompany statistics on the unemployment rate and the activity rate when comment is made about the performance of the labour market. In April 2013 underemployment was the subject of the 6th Report of the Economy, Energy and Tourism Committee of the Scottish Parliament (Economy, Energy and Tourism Committee, 2013).

The International Labour Office defines underemployment as individuals 'willing and able to work more adequately'. Therefore, the concept has both quantitative and qualitative dimensions. The former is reflected in the number of hours an individual works and the latter is reflected in the extent to which he/she fully utilises the skills possessed working in his/her present job.

Measuring hours is the more tractable. Consequently this has been the focus of most research. In the UK, this research has made use of data available in the quarterly Labour Force Surveys (LFS) since 2000. These data provide information on the number of individuals who wish to work more hours. Since the advent of these data, there have always been individuals identified as hours constrained. What has been observed of late, however, is that the number in this category increased by 1 million between 2008 and 2012, with most of this increase occurring in the 12 months of the 2008-9 recession (ONS, 2012). At present, approximately 1 in every 10 workers wants to work more hours. There is an argument, therefore, that aggregate changes in this quantitative dimension of underemployment are likely to be related to the economic cycle.

As measured in this way, underemployment is seen to vary across the devolved countries of the UK and the regions of England. It is highest in the East Midlands, Yorkshire and the Humber and the North East regions of England. It is lowest in the South East region of England (ONS, 2012). There are also (sometimes wide) intra country/region variations. For example, in Scotland it is highest in Dundee City and the Shetland Islands and lowest in Eilean Siar (Western Isles) and Aberdeen City (Economy, Energy and Tourism Committee, 2013).[i] Using the micro data available in the LFS, the incidence of underemployment is seen to be more likely for part time workers rather than full time workers; workers in the private sector rather than workers in the public sector; workers in the Distribution and Hotels industrial sector rather than workers in the Energy and Water industrial sector; women rather than men; and younger workers rather than older workers (Bell and Blanchflower, 2011: 2013).

However, this relatively more visible perspective of underemployment gives only a partial perspective of the nature and extent of the phenomenon and, therefore, its potential impact on individuals, organisations, local communities and regional and national economies. As Felstead (2012) argues, wasted skill resources also have negative consequences for all the principal actors in the labour market. The operational problem in this respect is the absence of appropriate and regular data sets suitable to measure the extent and examine incidence of skills underutilisation.[ii]

This paper addresses this research lacunae. The research reported is an analysis of a matched workplace-employee data set which contains responses to the question: "How well do the work skills you personally have match the skills you need to do your present job?" Therefore, the paper presents evidence on the extent of skills underutilisation and how its incidence varies across individuals. The extent of skills underutilisation – and therefore underemployment from a more qualitative perspective - is seen to be considerable, constituting more than half the respondents. Its incidence across individuals is seen to be explained by factors which reflect both the personal characteristics of the individual and the characteristics of the workplace at which he/she is employed.

The Data set

The data set used in the research investigation is a matched workplace-employee data set which has its origins in the 2011 Workplace Employment Relations Study.[iii] The 2011 Workplace Employment Relations Study (WERS 2011) is the sixth in a series of workplace surveys which map the changing contours of employment relations in Britain (Brown et al, 2009). The survey population is all workplaces in Britain that have five or more employees operating in Sections C-S of the 2007 Standard Industrial Classification (i.e. Agriculture and Mining is excluded). A workplace is defined as comprising the activities of a single employer at a single set of premises.

The WERS 2011 sample design had two aims. The first was to obtain interviews at 900 of the 2,295 workplaces which had participated in the cross section sample of the 2004 study, the most recent of the previous studies. These were to constitute a 'panel sample'. The second was to obtain interviews at a further 1,800 workplaces, selected as a stratified random sample from the Inter Departmental Business Register maintained by the Office for National Statistics. These were to constitute a 'refreshment sample'. When taken together, therefore, the 'panel sample' and the 'refreshment sample' constitute the 'combined sample'.[iv]

There are four components to the 2011 study: the Survey of Managers; the Survey of Worker Representatives; the Survey of Employees; and, for workplaces in the trading sectors, the Financial Performance Questionnaire. This investigation makes use of a data set which merges responses to the survey of managers and the survey of employees.

At each participating workplace, the most senior manager responsible for employment relations was interviewed. Prior to this interview, this manager was asked to provide a demographic profile of the workplace. The management questionnaire sought information on the following: workplace/organisation characteristics; the management of personnel and employment relations; recruitment, training and the organisation of work; consultation and communication; representation at work; payment systems and pay determination; collective disputes and procedures; fair treatment at work; workplace flexibility; workplace performance; and workplace change.

Permission was sought from this manager to distribute a self-completion questionnaire to employees at the workplace. If the manager agreed, 25 employees were selected randomly from a list of all employees and invited to complete the questionnaire. At workplaces with fewer than 25 employees, each employee participated. In addition to asking questions which relate to the personal characteristics of the individual, the survey of employees sought information about the individual's job; the workplace at which he/she was employed; personal views about working at this workplace; and representation at work.

For the particular purpose of this investigation of skills underutilisation, the timing of the WERS 2011 study is important. Fieldwork took place between March 2011 and June 2012, therefore, some 3/4 years after the financial and economic crises of 2008. During the recession consequential of these crises, the decrease in the level of aggregate employment was comparatively small given the corresponding fall in output, especially so when compared to previous recessions (Gregg and Wadsworth, 2011). Bell and Blanchflower (2011) compare and contrast the level of employment with aggregate hours worked by individuals and illustrate the manner in which adjustment during this period was associated more with changes to the latter rather than changes to the former i.e. organisations adjusted to the demands of the recession by changing their utilisation of labour rather than the size of their labour stocks. In this way, organisations were seeking to 'survive' through the recession, where these employment based survival strategies were facilitated, perhaps, by labour market de-regulation which had created the opportunities for this type of labour market flexibility.

By 2012 employment had recovered its pre-recessionary level, nationally if not across all the constituent parts of the UK. There were, however, substantial compositional changes to the stock of workplace jobs in the interim, principally attributable to respective governments' contrasting fiscal stances in response to these crises. Whereas employment in the private sector decreased during 2008 -2009, employment in the public sector increased. Thereafter, whereas employment in the private sector increased, employment in the public sector decreased.[v]

It is to be expected that these changes in the labour market environment had some probable, if incalculable, effects on the nature of skills match/mismatch in many workplaces. To illustrate, confronted with the need to make some staff redundant, management prefer to retain the more highly skilled, irrespective of the skills requirements of the jobs the retained workers subsequently do. Similarly, confronted with the need to hire, and presented with a choice between job applicants, management prefer to engage the more highly skilled, again irrespective of the skill requirements of the jobs the new recruits do, thereby generating considerable displacement effects in the labour market as a consequence.

The Estimation model

The focus of the investigation is responses to one of the questions put in the survey of employees: "How well do the work skills you personally have match the skills you need to do your present job?" The frequency and percentage distributions of the responses are reported in Table 1. To different degrees, 11,275 individuals (i.e. 51.67 per cent of the total) claimed that the skills they had were higher than the skills required for the job of work they did.[vi]

These responses were recoded and a binomial probit was used to determine the probability that an individual reported that the skills possessed were higher than the skills required for the job of work done. The model was of the conventional sort viz:

$$y_{iw} = X_{iw}\beta + \varepsilon_{iw}$$

where y_{iw} is the recoded response of an individual (i) in a workplace (w); X_{iw} β and ε_{iw} are, respectively, a vector of independent variables, a set of coefficients to be estimated, and an error term (cf. Cameron and Trivedi, 2010: Long and Freeze, 2006). In the estimation, $y_{iw} = 1$, if an individual reported that he/she possessed skills higher than the skills required for his/her present job (and = 0 otherwise).

The independent variables in the model were of two sorts. The first related to the personal characteristics of the individual. Illustrative examples include: gender; age; work status; tenure; pay grade; and qualifications. This information had its origin in the survey of employees. The second related to the characteristics of the workplace at which the individual was employed. Illustrative examples include: its size; the (2007) Standard Industrial Classification (SIC) of the principal activity undertaken at the workplace; and its legal status. This information had its origin in the management questionnaire. Details about the complete set of independent variables used in the estimation model – and how they appear in it – are to be found in column 1 of Table 3 and the footnotes of this table.

When observations which had an incomplete set of all the variables used in the estimation were dropped from the data set, the resulting working data set had 18,422 observations.[vii]

The Results

The results are reported in two tables. Table 3 presents the results of the probability that an individual reports that his/her personal work skills are higher than the skills needed in his/her present job, for the more salient independent variables. The sign of the coefficient (column 2 of Table 3) denotes the qualitative nature of the relationship between the independent variable and the dependent variable. Positively (negatively) signed coefficients denote that an individual is more (less) likely to report this outcome. The value of the average marginal effect (column 5 of Table 3) denotes the magnitude of the relationship. Table 2 reports statistical tests of the joint significance of sets of associated categorical variables, for example the 9 individual variables associated with a person's age; and the 3 variables associated with his/her work status.

There is a statistically significant gender difference in the probability of reporting that skills possessed are higher than skills required.[viii] Females are 7 per cent less likely to do so than males. This outcome is contrary to expectations. Conventionally, female labour supply is assumed to be constrained, for diverse reasons. Therefore, there is a corresponding consequential assumption that the jobs occupied by women are less likely to make full use of the skills they possess.

The 9 variables associated with the age factor are jointly significant. Three age category variables are statistically significant. Relative to the omitted reference category (aged 20 – 21), an individual aged 50 - 59; 60 -64; and 65 and over is 8 per cent; 15 per cent; and 14 per cent, respectively, more likely to report that the skills possessed are higher than required for the job done. These results are much as expected. Skills, often tacit skills, are acquired and developed with age. Consequently, for many older workers, the skills possessed become greater than the skills required in the jobs they currently do. Less expected are the positive signs of the coefficients associated with some of the younger age categories, although these results are not statistically significant. If anything, the expectation is that these coefficients would be negatively signed, relative to the reference age category. That they are not may be attributed, perhaps, to

the low skilled/no skilled nature of the jobs available to many in these age groups, relative to the skills these individuals perceive they possess.

The 3 variables associated with the work status factor are not jointly statistically significant. Further, neither of the coefficients of the individual variables associated with work status is statistically significant. That there is no statistically significant difference between these variables with respect to reporting that the skills possessed are higher than the skills required may be attributable, perhaps, to the increasing frequency with which individuals holding permanent contracts and individuals holding temporary or fixed term contracts are no longer complements in the workplace but substitutes.

The 5 variables associated with the tenure factor are jointly statistically significant. Further, 2 of the coefficients of the tenure category variables are statistically significant. Relative to those in the omitted reference category (of being employed at the workplace for 2 to less than 5 years), an individual with tenure of 5 to less than 10 years; and an individual with 10 years or more is 4 and 6 per cent, respectively, less likely to report that the skills possessed are higher than those required for the present job. This outcome is surprising. The conventional assumption is that with time at the workplace, and with learning by doing, skills are enhanced. Consequently, the expectation is that for many the skills possessed tend to become greater than the skills required in the jobs held. That this is not observed may be attributable, perhaps, to the skills content of the jobs being done currently also increasing, and at a proportionately greater rate, perhaps indicative of work re-organisation as another strategic response to difficulties encountered at some workplaces during the recession. The negatively signed coefficients associated with the shorter duration tenure categories are more in accord with expectations. None of them, however, is statistically significant.

The 14 variables associated with the pay grade factor are jointly statistically significant. Two observations are to be made about the results pertaining to the individual pay grade variables. The first is to note the negatively signed (and statistically significant) coefficients associated with the 4 highest pay grades. An individual earning £27,041 - £33,800 per year; £33,801 - £42,640 per year; £42,641 - £54,600 per year; and £54,601 and over is, respectively 4 per cent; 9 per cent; 9 per cent; and 16 per cent less likely to report that the skills possessed are higher than the skills required to do his/her present job, relative to the omitted reference pay grade category of earning £11,441 - £13, 520 per year. These results may be explained, perhaps, by the skills dimension of the 'demands of the job' associated with individuals in these higher earnings echelons. The second observation to note is the positively signed coefficients associated with the variables denoting relatively lower pay grade categories, although none of them is statistically significant. That individuals in these pay grade categories report that the skills they possess (and human capital theory would suggest that these skills must be relatively limited at these low pay grades) are nonetheless higher than the skills they require to do their present job may be indicative of the low/no skills content of many of these low paid jobs.

The 3 variables associated with the union status factor are not statistically significant. Further, neither of the two coefficients associated with the variables denoting union status is statistically significant. This result may be attributable, perhaps, to the increasing irrelevance of individual union membership in many sectors of the economy on matters germane to skills utilisation, indeed skills in general.

There are 3 separate variables associated with qualifications. Each is statistically significant and each accords with expectations. An individual with graduate status, relative to an equivalent individual who does not have a degree, is 7 per cent more likely to report that the skills he/she possesses are higher than the skills required in his/her current job. This outcome concurs with previous research about the contemporary nature of employment for some graduates, often reflected in the phrase 'over-education' (McGuinness, 2006). An individual with no academic qualifications, relative to an equivalent individual who has some academic qualifications, and an individual with no professional or vocational qualifications, relative to an equivalent individual who has some professional or vocational qualifications, is 7 per cent and 12 per cent, respectively, less likely to report that the skills he/she possesses are higher than those required to do his/her present job.

The 6 variables associated with the workplace size factor are jointly statistically significant. However, only one coefficient of the relevant variables is statistically significant. An individual in a workplace with 500 or more employees, relative to an individual employed in the omitted reference workplace size category (i.e. employing between 20 –49) is 4 per cent more likely to report possessing skills higher than those required in his/her present job. Although not all of the results are statistically significant, it is noteworthy that the signs of the coefficients of the variables associated with an individual employed in relatively smaller workplaces are negative, whereas the signs of the coefficients of the variables associated with an individual employed in relatively larger workplaces are positive.

The 17 variables associated with the SIC of the activity undertaken at the workplace are jointly statistically significant. However, the coefficients of only two variables (viz. Accommodation and Food Service and Arts, Entertainment etc.) are statistically significant. Whereas an individual in the former sector is 12 per

cent more likely to report that the skills possessed are higher than the skills required, the corresponding percentage for an individual in the latter sector is 10, where both magnitudes are relative to an individual in the omitted reference SIC category of Wholesale and Retail. It may be concluded, therefore, that, in general, there is little by way of statistically significant differences between individuals across the industrial sectors of the economy with respect to the skills underutilisation issue under investigation. This result differs somewhat from the earlier one reported by Bell and Blanchflower (2011), although a different measure of the concept of underemployment is being examined.

The 3 variables associated with the workplace type factor are jointly statistically significant. Relative to the omitted reference category of the individual at a workplace which is a single independent establishment, the individual at a workplace which is part of a multi-establishment organisation is 3 per cent more likely to report that he/she possesses skills higher than those required for the job. Notably, the sign of the coefficient for the workplace being the sole UK establishment of a foreign organisation is negative, although not statistically significant.

Finally, the 12 variables associated with the formal status of the workplace factor are not jointly statistically significant. Further, not one of the coefficients which relate to these variables is statistically significant. In the context of whether an individual is more likely to possess skills higher than those required for the job done he/she does, the formal (i.e. legal) status of the workplace, therefore, is of no consequence.

In essence, therefore, the extent of skills underutilisation is considerable, constituting more than half the respondents, and its incidence across individuals is to be explained by factors which reflect both the personal characteristics of the individual and the characteristics of the workplace at which he/she is employed.

Conclusions

Just more than half (i.e. 51.67 per cent) of the employees surveyed in the 2011 Workplace and Employment Relations Study reported that, to different degrees, the skills they possessed were higher than the skills required to do their present jobs. Further, the probability that an individual reported that he/she possessed skills which were higher than those required in his/her present job were explained by variables which reflected both who the individual is and the workplace at which he/she is employed. Skills under-utilisation was *more* likely to be reported by: individuals in the older age categories; and graduates. However, in contrast, individuals who were: female; with relatively long tenure at the workplace; in the highest pay grades; and with neither no academic qualification nor no professional or vocational qualification were *less* likely to report that the skills they possessed were higher than the skills required to do their present jobs. The size of the workplace at which the individual was employed; its SIC; and its type were also of consequence in explaining this outcome. However, often there was little by way of statistical differences between the individual variables within these three sets of factors.

This analysis of skill under-utilisation provides a partial, qualitative perspective of underemployment undertaken at what may have been an atypical point in time.

It is a partial perspective to the extent that it is a survey of employees in employment. As such, it ignores the self-employed, an increasing proportion of the employed workforce in the post-recessionary period. Traditionally, one motivating factor underlying an individual's decision to move from being an employee to being self-employed was to make better use of his/her skills. Although this may continue to be the case for many, what is not known is how many of those who have made this transition in recent years have done so opting for self-employment rather than unemployment. The 'new' self-employed do appear to have quite different characteristics from those in self-employment before the recession, not least the tendency to work on a part time basis.

It is a qualitative perspective because its focus has been upon the relatively less visible skills dimension of underemployment. This, however, is the major contribution of the research investigation reported because there is much less evidence which relates to the skills underutilisation dimension issue than to the hours constrained dimension.

Finally, the point in time may be atypical, therefore perhaps less than conducive to examining the problem of skills utilisation/underutilisation. The analysis has its origins in a cross section survey undertaken between March 2011 and June 2012, months during which many workplaces must still have been adjusting to the traumas of the financial and economic crises of 2008 and its consequences. Most likely, many of these adjustments focussed upon the internal labour markets of the workplace, with incalculable effects for person- job skills matches.

There are, nonetheless, a number of policy implications which follow both from this research and the other research to which it relates which, collectively, challenge the conventional dichotomy between 'working' and 'not working'.

The first is that it would be futile to attempt to design and implement policies to address the problem of underemployment per se. Hours constrained underemployment may not be caused only by inadequate demand for labour. However, the level of labour demand prevailing within the economy at present undoubtedly exacerbates the magnitude of the current problem. Increasing the demand for labour, therefore, would go some way towards mitigating this dimension of underemployment. As Bell and Blanchflower (2013) argue, currently, there is substantial spare capacity in the labour market. Consequently, were demand to be higher output could be higher without exerting any significant upward pressure on wages. That said, merely addressing the problem of aggregate demand for labour will not necessarily remove the problem of hours constrained underemployment. There is evidence to the effect that, if to a lesser extent, this also existed prior to the recession.

The second is that the hours dimension of underemployment provides only a very partial, quantitative perspective of the extent of the problem. There is also a qualitative perspective, manifest, for example, in skills underutilisation. To a certain degree, skills underutilisation will always exist. However, opportunities within the labour market will allow some who believe that they are not fully utilising their skills to quit their current workplace voluntarily in favour of another where better use may be made of their skills. What is disconcerting is the extent to which skills underutilisation appears to exist even in non-recessionary years, as reported in the Employee Skills Survey series (Felstead et al, 2007: Felstead et al, 2013). In this context, the policy requirement is more one comparable with that outlined – if not necessarily fully implemented - in *Skills for Scotland: A Lifelong Skills Strategy* which emphasises the importance of stimulating the demand for skills on the part of employers and, thereby, improving the utilisation of skills at the workplace (Payne, 2009).

Finally, to the extent that there is significant underemployment within the economy – of both a quantitative and qualitative nature – it is important to recognise that when the recovery does come, employers are more likely to meet the associated increase in labour demand by first making use of their existing personnel, rather than making new hires, with manifold consequences for unemployed job seekers and potential new entrants to the labour market.

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Statistical appendix

Table 1.
Responses to the Question: "How well do your personal work skills match the skills you need in your present job?"

Response	Frequency	Percentage
Much higher	4,111	18.84
A bit higher	7,164	32.83
About the same	9,670	44.32
A bit lower	714	3.27
Much lower	161	0.74
Total	21,820	100.00

Table 2.
Statistical Test Results for the Joint Significance of Selected Sets of Factor Variables

Factor Variables	Df	F	P > F
The set of variables associated with AGE	8	4.22	0.0000
The set of variables associated with WORK STATUS	2	0.34	0.7116
The set of variables associated with TENURE	4	4.54	0.0012
The set of variables associated with a WAGE GRADE	13	3.19	0.0001
The set of variables associated with UNION STATUS	2	1.37	0.2551
The set of variables associated with the SIZE OF THE WORKPLACE (measured by number of employees)	5	2.72	0.0185
The set of variables associated with the SIC (2007) OF THE WORKPLACE	16	3.37	0.0000
The set of variables associated with the TYPE OF WORKPLACE	2	4.64	0.0097
The set of variables associated with the FORMAL (i.e. LEGAL) STATUS OF THE WORKPLACE	11	0.85	0.5899

Table 3.

Probit Results for the Probability than an Individual Reports That His/her Personal Work Skills are Higher than the Skills Needed in His/her Present Job

Variable	Coefficient	Linearized Standard Error	P > |t|	Average Marginal Effects
Female	-.1861	.0340	0.000	-.072
Age, in years 16 – 17	.0571	.1782	0.749	.022
18 – 19	-.2320	.1352	0.086	-.088
20 - 21 *				
22 – 29	.0831	.0956	0.384	.032
30 – 39	.0822	.0979	0.401	.031
40 - 49	.1608	.0984	0.102	.062
50 -59	.2011	.1000	0.044	.077
60 -64	.3912	.1133	0.001	.150
65 and over	.3768	.1464	0.010	.144
Work status Permanent *				
Temporary	-.0576	.0733	0.432	-.022
Fixed Period	.0151	.0790	0.847	.005
Tenure, in years Less than 1	-.0939	.0529	0.076	-.036
1 to less than 2	-.0428	.0513	0.404	-.016
2 to less than 5 *				
5 to less than 10	-.0978	.0399	0.014	-.037
10 or more	-.1673	.0403	0.000	-.064
Pay Grade, in pounds per annum £3,120 or less	.0724	.1012	0.474	.027
£3,121 - £5,200	.0238	.0880	0.787	.009
£5,201 - £6,760	.1232	.0913	0.177	.046
£6,761 - £8,840	.0245	.0817	0.763	.009
£8,841 - £11,440	.0619	.0671	0.357	.023
£11,441 - £13,520 *				
£13,521 - £16,120	-.0374	.0645	0.562	-.014
£!6,121 - £19,240	.0004	.0642	0.994	.000
£19,241 - £22,360	-.1039	.0645	0.107	-.040
£22,361 - £27,040	-.0892	.0648	0.169	-.034
£27,041 - £33,800	-.0999	.0670	0.136	-.038
£33,801 - £42,640	-.2449	.0707	0.001	-.094
£42,641 - £54,600	-.2245	.0840	0.008	-.086
£54,601 or more	-.4148	.0907	0.000	-.159
Union Membership Currently a member *				
No, but have been in the past	.0560	.0433	0.196	.021
No, and have never been	-.0105	.0366	0.774	-.004
Has graduate status	.1791	.0356	0.000	.069
Has no academic quals.	-.1751	.0715	0.014	-.067
Has no prof./vocational quals.	-.3160	.0640	0.000	-.122

Table 3. cont.

Variable	Coefficient	Linearized Standard Error	P > |t|	Average Marginal Effects
Workplace Size Between 5 – 9 employees	-.0780	.0651	0.231	-.030
Between 10 – 19 employees	-.0768	.0474	0.105	-.029
Between 20 – 49 employees *				
Between 50 -99 employees	.0435	.0419	0.299	.016
Between 100 -499 employees	.0373	.0399	0.350	.014
500 or more employees	.1019	.0462	0.028	.039
Standard Industrial Classification (2007) Manufacturing	-.0936	.0651	0.150	-.036
Electricity, Gas etc.	-.2623	.1518	0.084	-.101
Water Supply, Sewage etc.	-.0631	.1356	0.642	-.024
Construction	-.0578	.0848	0.495	-.022
Wholesale and Retail *				
Transportation and Storage	.0779	.0859	0.365	.030
Accommodation and Food Service	.3108	.0765	0.000	.117
Information and Communication	-.0520	.0875	0.552	-.020
Financial and Insurance Activities	-.1504	.1092	0.169	-.058
Real Estate Activities	.0569	.0947	0.548	.022
Professional, Scientific etc.	-.0774	.0820	0.343	-.030
Administrative and Support etc.	-.0591	.0941	0.530	-.023
Public Admin. and Defence	-.0021	.0783	0.978	-.000
Education	-.0858	.0728	0.239	-.033
Human Health and Social Work	-.0527	.0682	0.440	-.020
Arts, Entertainment etc.	.2691	.0898	0.003	.102
Other Service Activities	.0304	.0919	0.740	.011
Workplace Type Part of multi-establishment organisation	.0713	.0343	0.038	.027
Single independent establishment *				
Sole UK establishment of foreign organisation	-.1264	.0830	0.128	-.049

Table 3. cont.

Variable	Coefficient	Standard Linearized Error	P > |t|	Average Marginal Effects
Formal (i.e. legal) Status of Workplace				
Public Limited Company	.0287	.0620	0.643	.011
Private Limited Company	.0090	.0562	0.873	.003
Company Limited by Guarantee	.0180	.0952	0.850	.007
Partnership/Self-proprietor	-.0961	.0750	0.200	-.037
Trust/Charity	-.0222	.0549	0.685	-.008
Body established by Royal Charter	-.1540	.1467	0.294	-.059
Co-operative/Mutual/Friendly Society	-.1888	.1464	0.197	-.073
Government Owned Limited Company (Nationalised Industry)	.0626	.0902	0.487	.024
Public Service Agency	.0995	.0733	0.175	.038
Other Non-trading Public Corporation	.1405	.1561	0.368	.054
QUANGO	.0702	.2244	0.754	.027
Local/Central Government *				
Constant	.1500	.1647	0.362	
Number of Observations = 18442				
Population Size = 84.2264				
Design df = 18441				
F (75, 18367) = 4.42				
Prob > F = 0.0000				

Footnotes to Table:

*indicates the omitted reference category, where applicable.

Additionally, the estimation included the following: a scalar variable denoting the number of hours usually worked; factor variables denoting marital status; a factor variable denoting whether the individual had a dependent child/dependent children; a factor variable denoting ethnic grouping (i.e. ‘British’ or ‘other’); a scalar variable denoting the percentage of males employed at the workplace; and a scalar variable denoting the percentage of part time employees employed at the workplace.

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[i] *The nature and extent of some of these spatial variations would seem to challenge the perspective that changes in underemployment are attributable wholly to changes in labour demand.*

[ii] *The series of Employee Skills Surveys is 'appropriate' in this context. However, unlike the quarterly LFS, these surveys cannot be described as 'regular'. Sutherland (2010) makes use of the 2006 data set to examine the qualifications/jobs mismatch in Scotland. For the purpose of this survey, the numbers surveyed in Scotland were boosted, thereby allowing an analysis of a statistically representative sample of employees in employment in Scotland.*

[iii] *The Workplace Employment Relations Study, 2011 was sponsored by: the Department for Business, Innovation and Skills (BIS), the Economic and Social Research Council (ESRC), the UK Commission for Employment and Skills (UKCES), the Advisory, Conciliation and Arbitration Service (ACAS) and the National Institute of Economic and Social Research (NIESR). The principal investigators were: BIS, ACAS, and NIESR. The data were collected by NatCen Social Research. The data were deposited at the UK Data Archive (UKDA) by BIS. The data were accessed via UKDA. Crown copyright is held jointly with ESRC, UKCES, ACAS and NIESR. Crown copyright material is reproduced with the permission of the Controller of HMSO and the Queen's Printer for Scotland. None of the above parties bears any responsibility for the analysis of the data set undertaken or any interpretation made from this analysis. The bibliographic citation for this data collection is: Department for Business, Innovation and Skills, Advisory, Conciliation and Arbitration Service and National Institute of Economic and Social Research, Workplace Employee Relations Survey, 2011 [computer file]. Colchester, Essex: UK Data Archive [distributor], February, 2013. SN: 7226, http://dx.doi.org/10.5255/UKDA-SN-7226-1*

[iv] *The resulting 'combined sample' is not representative of the total population of workplaces of this size in Britain. Hence, analysis needs to make use of the appropriate weighting factor for each component of the survey, partly to account for the bias in the original survey design and partly to account for varying rates of non-response in its components. For this investigation, the employee weight variable was used.*

[v] *See Sutherland (2013) for a discussion of the changes which occurred in the labour market in Scotland during this period.*

[vi] *As an aside, it would appear that 'skills gaps' (i.e. situations in which some individuals do not possess the skills required for the jobs they do) no longer constitute a major problem within most workplaces, at least from the perspective of employees. Managers, of course, may be of a different opinion.*

[vii] *This explains the difference in the number of observations which appear in Table 3 from Table 1.*

[viii] *Statistical significance is assumed to be determined when the value of ($P > |t|$) (cf. column 4 in Table 3) is < 0.05.*