The Impact of Bargaining Institutions on Employer-provided Training in Britain

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Abstract: Using linked employer-employee data from the 1998 Workplace Employee Relations Survey, we investigate the impact of collective bargaining institutions on the incidence and intensity of formal training provided by employers to employees. Initially using only variables from the employee survey, we find that private sector men and full-time women covered by unions typically receive significantly more work-related training than their non-union counterparts, and that this impact is large. However part-time women in workplaces with union recognition are significantly less likely to be trained. When we add in various additional controls from the linked employer questionnaire, the private-sector union coverage effect for men in general remains significant but its magnitude is considerably reduced, while the effect for full-time women is increased slightly. These findings suggest that the usual union coverage effect on training from individual-level surveys is biased, owing to omitted establishment-level characteristics. Finally, we estimate the impact on training incidence and intensity of three types of bargaining institution: the closed shop, the level at which pay bargaining takes place, and multi-unionism. We find considerable heterogeneity across manual and non-manual, and male and female workers, in the impact of these institutions on training incidence and intensity. Unsurprisingly, the direct effect of union coverage on the male training probability is reduced when these additional union bargaining controls are included in the regressions.

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1. Introduction

Investment in human capital is central to economic performance and growth. When tastes and technologies are changing rapidly, work-related training is crucial for maintaining competitiveness. Without a workforce that is continually acquiring new skills, it is difficult to reap all the returns from technological progress.[1]

What role do trade unions play in work-related training? According to textbook neo-classical economics, unions in their monopoly role use their power over labour supply to extract a larger share of the surplus, and thereby induce dead-weight losses. Higher union wages, restrictive work practices, and union resistance to the introduction of new skill-intensive technologies may therefore be expected to reduce employer incentives to provide training. On the other hand, it has long been recognised that unions are in some circumstances co-operative and instrumental in improving worker morale and organisation at the work place, and in reducing labour turnover (Freeman and Medoff, 1984). Unions may thereby be associated with increased training and productivity.

Micro-econometric studies show that unionised British workers are more likely to receive work-related training than non-unionised workers (Arulampalam and Booth, 1998; Booth, 1991; Green, Machin, and Wilkinson, 1999; Harris, 1999; Heyes and Stuart, 1998).[2] Moreover, the returns to training are significantly higher for union covered men than for those who are not covered (Booth, Francesconi, and Zoega, 2000). Streeck (1989) notes that higher union-set wages may actually increase the incentives for employers to invest in training, and points out the potential for trade unions and employers to cooperate to exploit mutual gains in training provision. Indeed at the beginning of the 1990s, the Trades Union Congress (TUC) (1991) introduced a "new

[1] For example, Dearden, Reed and Van Reenen (2000) show that training increases profitability.

[2] US American studies, however, provide conflicting evidence. For example, Lynch (1992) reports a significant positive impact of unions on on-the-job training, while Lynch and Black (1998) report a typically insignificant

bargaining agenda" which included training as way to a more "integrative" bargaining strategy. (For evaluations see Claydon and Green, 1994; and Munro and Rainbird, 2000.)

While these studies provide valuable information on how human capital is acquired on the job, they do not investigate the impact of various other features of collective bargaining on training provision. In this paper we use a new British data source - the 1998 linked employer-employee Workplace Employee Relations Survey (WERS 98) - which facilitates such an investigation. WERS 98 differs from the earlier Workplace Industrial Relations Surveys through a new component, the linked employee questionnaires, distributed randomly to 25 employees at each workplace, and generating over 28,000 responses. These data allow us to investigate in detail the role unions play in skill formation using linked employer-employee characteristics. In particular, we use data on individual characteristics (including training) linked to workplace attributes (including measures of collective bargaining institutions), in order to investigate the impact on the provision and intensity of employer-provided training of three broad institutional arrangements - the closed shop, the level of pay-bargaining, and multi-unionism. We also explore the degree to which studies that are reliant only on individual-level data may be estimating a union recognition effect on training that is upward-biased.

2. Unions and training — background

The power of a union is determined by the extent to which it can control the available supply of labour to a firm. This in turn depends in part upon an individual worker's right to remain outside a union, as opposed to the right of the union to require all workers to be union members. [3]

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association between union status and training. Mincer (1983) and Frazis, Gittleman and Joyce (2000) find a significantly negative impact of unions on training.

[3] In the UK, there were until the mid-1980s two forms of *closed shop* arrangements under which unions could require workers to be union members. The pre-entry closed shop gave the union more power over labour supply, as it enabled the union to dictate to firms the pool of workers (the set of registered union members) from which the firm could

Stewart (1987) shows that the pre-entry closed shop increased the capacity of the union to raise wages above non-competitive levels, the post-entry closed shop much less so. Metcalf and Stewart (1992) further show that the abolition of the closed shop under the Thatcher administration accounted for much of the reduction in the capacity of British unions to influence wages over that period. As we show in the following section, vestiges of the closed shop remain in a small proportion of workplaces in Britain, and we use this information as a measure of union power in our econometric modelling.

Although Britain is perceived as having a decentralised *bargaining structure* relative to the rest of Europe (see for example, Boeri, Brugavini and Calmfors, 2001), there is still considerable variation in the form that union-firm pay bargaining takes in Britain (Forth and Millward, 2000). Moreover, the location of collective bargaining often varies for different bargaining topics (Katz, 1993) and it is possible that wages and training are bargained at different levels. However since bargaining structure also affects union power, as emphasised by the contributions in Boeri *et al* (2001), the type of bargaining structure may well have an impact on the incidence and amount of training in Britain. On the one hand, coordinated unions bargaining nationally or at the industry level might be able to negotiate more training for their workforces, thereby raising the amount of embodied human capital of union employees and increasing their welfare. On the other hand, where bargaining is decentralised firms and unions may be more responsive to product demand fluctuations and individual workers' needs, and therefore be more willing to negotiate training. Ultimately it is an empirical issue as to which effect – if any – dominates.

Historically union organisation in Britain developed initially on a craft or occupational basis, and later also along industrial lines. The evolution of craft unions in the UK provides a partial

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recruit. In contrast, the post-entry closed shop merely enabled the union to require all employed workers (not the entire pool of all possible workers) to become union members *ex post*, after they had been hired by the firm. In the 1980s the Thatcher government instituted a number of legislative changes which had the effect of effectively outlawing the closed shop and reducing union bargaining power.

explanation of the widespread - though diminishing - incidence of *multi-unionism*, which occurs when a heterogeneous workforce at a single workplace is represented by more than one union. Multiple unionism is a feature for the majority of unionised workplaces. Cully, Woodland, O'Reilly and Dix (1999) report that 47% of workplaces have no union present, about 23% have members from only one union, 10% have members from two unions and 20% have members from more than two unions. Where there is more than one union, bargaining might be either 'separate', with the employer bargaining separately with each union, or 'joint' in which case the employer and representatives of all the local unions bargain together.

While to our knowledge there is no published study on the effects of multi-unionism or the level of bargaining on the provision of training, multi-unionism has been cited as a possible source of a negative effect on productivity (Oliver and Wilkinson, 1989; Metcalf, 1990; Machin, Stewart, and Reenen, 1993). Machin *et al* (1993) using the 1984 Workplace Industrial Relations Survey (WIRS) find that multi-unionism itself has no significant effect on bargained outcomes. Instead, there is a significant difference between separate bargaining by multiple unions (which is associated with higher wage levels and has a deleterious effect on financial performance), and single table or joint bargaining (which have less significant effects). However, Forth and Millward (2000) using the 1998 linked employer-employee WERS find that multiple-unionism has a significantly positive impact on individual private sector wages regardless of whether there is single-table or joint bargaining.[4]

The traditional view is that multi-unionism may reduce efficiency as each union protects its members' jobs by adhering to inefficient working practices and resisting the introduction of new technology. However, multi-unionism can also be thought of as increasing rather than reducing competitiveness. Multi-unionism may weaken unions through inter-union differences, allowing

[4] In addition, they find that multi-employer bargaining has no significant effect on the probability of coverage by employer pension schemes.

employers to operate a "divide and rule" strategy making it easier to introduce technological change.

Throughout our analysis we investigate men and women separately. It has often been argued that women's interests have been neglected by trade unions, which have instead represented the concerns of the (majority) male membership. Indeed, it has sometimes been suggested that collective bargaining has contributed to institutionalising gender gaps (Dex, Robson, and Wilkinson, 1999). For this reason, we might expect to observe gender differences in training provision. It is also possible that unions only look after the interests of full-time workers, and for this reason we also wish to explore how training varies across part-time women in union and non-union workplaces. However, there have been some changes in the gender composition of union coverage in the late 1990s, both with the increasing 'feminisation' of the British workforce and also in anticipation of provisions of the new Employment Relations Act (see for example Booth and Francesconi, 2000). For this reason there may be relatively small gender differences in the impact of union coverage on training probabilities.

3. Data description

We use the new cross-sectional linked employer-employee data from the 1998 Workplace Employee Relations Survey (WERS98), the first comprehensive survey of its kind for Britain. (See Cully *et al*, 1999, for further details.) This is a nationally representative survey of workplaces with ten or more employees, covering full-time and part-time workers in the private and public sectors, and excluding agriculture and coal-mining.[5] We use linked components of the 1998 survey: the management interview questionnaire and the individual self-completion questionnaire of 25 employees randomly selected at each workplace (or all employees in smaller workplaces).

[5] The sample of workplaces was obtained through a process of stratified random sampling using variable sampling fractions, and with over-representation of larger firms necessitating the use of weights in analysis of these data (for details see Forth and Kirby, 2000, and http://www.niesr.ac.uk/niesr/wers98/).

The management interview was carried out face-to-face with the most senior workplace manager responsible for personnel or employee relations. Interviews were conducted in 2191 workplaces over the period October 1997 and June 1998, with a response rate of 80.4%. The Survey of Employees was distributed to the 1880 workplaces where management permitted it, with a response rate of 64%.[6] We use in this paper the private-sector employee responses, to which workplace characteristics have been linked. Because of the nature of the sampling procedure, these data are weighted in our estimation as recommended by Forth and Kirby (2000). Our estimating sub-sample is 17,378 (18,249 weighted) private-sector men and women who are employed in workplaces with at least 10 employees, and with complete information on the variables of interest.[7] Table 1 shows the proportions of the sample who are part-time (10% of men and 46% of women) or manual workers (63% of men and 55% of women). It also provides summary statistics on key variables for all employees, and gives the means for the male and female sub-samples.[8]

Training

Training measures are obtained from the questionnaires distributed to employees.[9] *Training incidence* is defined as any training during the last 12 months either paid for or organised by the employer, and away from the normal place of work, either on or off the premises. Respondents also gave the amount of such training – what we term *training intensity* – in six bands, with the top band open-ended. From Table 1 it can be seen that about 55% of all workers in the sample

[6] Forth and Millward (2000: 14) note the "survey results can be generalised with confidence to the population of workplaces in Great Britain employing 10 or more employees in 1998. These 340,000 or so establishments employed roughly 18.6million employees, 82 per cent of employees in England, Scotland and Wales".

[7] In order to maximise sample size, we estimated our models for employees across all establishments in the survey, and we included in our specifications a dummy variable for establishments with fewer than 25 employees. This variable was typically insignificant.

[8] The summary statistics use the maximum available observations for each of the variables. Samples sizes vary across variables due to missing data. Restriction of the sample to observations which are used in *all* estimations, i.e. private manual men, private non-manual men, private manual women, and private non-manual women reduces the sample to some 13,000 observations.

[9] We provide the wording of the relevant questions in the Appendix.

received some form of training. Conditional on training receipt, the amount of training was on average 4.5 days over 12 months for men and 3.9 days for women (where we take the midpoint of the bracketed response and 35 for the top coded bracket to calculate a continuous measure of training intensity).[10]

Trade Union Recognition

Information on union activity is provided in both the management and employee questionnaires. We choose whether or not a union is recognised for bargaining as our broad measure of trade unionism, and construct union recognition from the managers' responses on how many unions are recognised for negotiating pay and conditions.[11] (The phrasing of the underlying variables, ERECOG01-ERECOG10 and ETOTREC, is given in Table A.1 in the Appendix.) Table 1 shows that about 49% of men are employed in establishments where at least one union is recognised for bargaining purposes.[12] For women the corresponding number is 37%. We also use in our analysis other measures of collective bargaining that are typically not available in individual-level surveys, and which we obtain from the linked establishment-level survey.[13] These are explained in more detail below.

Other aspects of unionism: closed shops, bargaining level and multiple unions

Closed shops: Unions may use various strategies to control the labour supply available to a company. We combine the indicator variables for pre- and post-entry closed shop, and whether or not management recommends union membership into a single indicator for strong unionisation,

[10] However, in our censored regression models of training intensity reported in the following section, we do not need to make any such assumptions.

[11] While our use of union coverage or recognition is consistent with other studies based on individual-level data, those studies typically use the individual worker's response. However it is sometimes suggested (for example, Jones, 1982) that union coverage in individual-level surveys will be measured with more error than membership. This is because employees will be aware of their own membership status if they belong to the union, but less aware of whether or not there is indeed a recognised union at their workplace, particularly if they are non-members. Therefore union coverage effects estimated using individual-level data may be biased towards zero.

[12] As a shorthand, we use "unionised" hereafter to indicate that a union is recognised for bargaining purposes.

[13] Alternatively we could have chosen individual membership, but this is only an imperfect measure of the extent and impact of union activity. Many employees are not members but their wages and conditions are effectively negotiated by a trade union.

'closed shop'. Our closed shop variable takes the value 1 if any of these variables is 1, and zero otherwise. From Table 1, we see that about 1% of employees work in workplaces where management states that they have to be trade union members to keep the job. About 0.5% of employees work in a pre-entry closed shop, and 4% of employees work in establishments where management recommends being a trade union member. Table 1 also shows that 5% of employees work in a "closed shop", according to our measure of strong unionism.

Bargaining level: To shed light on how collective bargaining processes are related to employer-provided training, we use information from the managers' responses on how pay is determined and match it to each worker's characteristics. For each occupational group (managers, professionals, technicians, clerks, crafts, personal services, sales, operators, other) we also have information how pay is usually set.[14] Pay determination can be (i) the result of collective bargaining (either multi-employer, single employer, or workplace), (ii) set by management (at the workplace or at a higher level), (iii) the outcome of individual negotiations, or (iv) be set by some other methods, e.g. by a Pay Review Body. The categories are not mutually exclusive and sum to more than 1. Collective bargaining is an important form of bargaining. Table 1 shows that about 15% of male employees and 18% of female employees work in establishments where collective bargaining is carried out at a multi-employer level. About 22% of men and 23% of women are in workplaces where collective bargaining takes place at organisational level, and for 22% of male employees and 18% of female employees bargaining is undertaken at the workplace level. The majority of workers have their pay determined by management: 33% of all male employees and 44% of all female employees have their pay determined by management at a higher level and about 42% report that the pay is set by the management at the workplace. Only about 13% of men

[14] Thus for each individual we map in workplace data on how pay is usually set for that individual's occupational group.

and 16% of women have their pay determined through individual negotiation. For 13% of men and 17% of women, pay is set by other methods.

Multiple unionism: For workers in establishments where more than one trade union is recognised, we use information on whether negotiations between management and unions are jointly with all recognised unions, separately with each trade union, or separately with groups of recognised unions. More men than women are employed in workplaces where more than one trade union is recognised, the fractions are 29% and 14% respectively. About 17% of men and 6% of women work in establishments where negotiations are carried out jointly with all recognised unions. For 9% of men and 6% of women negotiations are undertaken separately, and 2% of men and under 1% of women work in establishments where negotiations are carried out with separate groups of trade unions.

Table 2 gives the incidence and intensity of training as reported by employees, by whether or not any union is recognised for bargaining (as reported by the manager) in that workplace.[15] We distinguish between manual and non-manual workers. Table 2 reveals only very small differences between unionised and non-unionised workers with respect to training incidence. About 55% of private sector employees obtained training over the last 12 months. However, men and women employed in workplaces with union recognition receive more days of training than those in non-recognised workplaces.[16] In general, the differences are greater for non-manual workers. Finally, note that manual women receive more training in non-unionised than in unionised workplaces.

[15] All analysis uses Stata 6. We control for the complex sampling scheme, as laid out in Forth and Kirby (2000), using the weights provided with the data.

[16] As noted above, the responses to the training questions are given in bands. While in Table 2 we choose the midpoint for each band of training days and 35 for the top category (more than 10 days training over the last 12 months), in our multivariate analysis reported in the next section we adopt an estimation procedure that obviates the need for this arbitrary choice of the midpoint and an upper value for the top bracket.

3. The Results

We estimate two types of regression models – a discrete choice model of training incidence, and a censored regression model of training intensity. In the following sub-sections we report estimates of each of these models, using three different specifications, and for a number of different sub-samples of workers disaggregated by gender, then further disaggregated by manual and non-manual occupation. Our three specifications are as follows:

1. Specification [1] is similar to that in studies using individual cross-sectional surveys, as for example in Green *et al* (1999). Explanatory variables are union recognition, the respondents' age, highest qualification, workplace tenure, ethnic background, and contract type (temporary or fixed term, with permanent as the base). Also included are the respondents' occupation, workplace and organisation size,[17] and two-digit standard industrial classification.[18] The effect of local demand-side factors is captured by regional unemployment and vacancy rates.
2. Specification [2] includes all the variables in Specification [1], plus additional information from the management questionnaire that is unavailable in individual-level surveys. Our goal here is first to investigate the degree to which the estimated union coverage effect on training might suffer from omitted variable bias, and secondly to estimate the impact of certain workplace controls. We are particularly interested in how the probability of being trained is affected by skilled labour shortages, the presence of EU Works Councils, the negotiation of training, and the degree of product market competition. We therefore report in the following sub-sections the coefficients on these and the union recognition variables only. (The full set of controls is listed in the notes under each table, and in the Appendix.)

[17] Organisation size is the size of the total organisation for workplaces that are not independent or stand-alone.
[18] The propensity to train varies across industries, as some industries use more specialised equipment than others and have more stringent safety requirements, e.g. nuclear fuel (Dearden, Reed, and Van Reenen, 2000). We therefore include 92 industry dummy variables on a 2-digit SIC level in our regressions to control for such differences.

3. Specification [3] includes all the variables in Specification [2] plus our set of variables proxying collective bargaining institutions - the "closed shop", the bargaining level, and how negotiations with multiple unions are conducted (conditional on the presence of more than one trade union).

3.1 Training Incidence for All Private Sector Men and Women

We estimate the probability that a worker participated in employer-provided formal training over the last 12 months, using a discrete choice model where the dependent variable takes the value one if the worker received training, and zero otherwise. While the structure is essentially a probit model, the observations are not independent within a given workplace, and we therefore have to control for different sampling probabilities. We do this by using the sampling weights provided with WERS98 and estimating via pseudo-likelihood methods.[19]

Table 3 reports the results of survey probit regressions for *all workers* in the private sector for the selected covariates in which we are interested. (The full set of estimated coefficients for the remaining covariates is provided in Table A.2 in the Appendix.) The estimates using Specification [1] – see the first and fourth columns of Table 3 - show a significant positive correlation between union recognition and training for men and full-time women, but not for part-time women.[20] Part-time women working in union-recognised workplaces are significantly less likely to be trained relative to part-time women working in workplaces with no union recognition.[21]

[19] We use `svyprobt` with Stata 6.0.

[20] Note that we also experimented in preliminary regressions for both men and women with interactions of part-time status with union recognition and with all the other collective bargaining institutional measures. Since these were insignificant except for part-time status interacted with union recognition for women, we report only this interaction in our tables.

[21] From Specification [1] for women, the total union recognition effect for part-time women is given by (0.155-0.300)=-0.145.

This result for men and full-time women supports what has been found for other British studies about the positive relationship between union recognition and work-related training (see for example Arulampalam and Booth, 1998; and Green *et al,* 1999). However the result for part-time women is new: while full-time women in union-recognised workplaces are significantly more likely to be trained than their counterparts in non-union workplaces, the reverse holds for part-time women *ceteris paribus*. Furthermore, this finding is robust across all specifications for women in Table 3. Fernie and Gray (2000) using the WERS management questionnaire note that unionised workplaces offer more to women employees than non-union ones in the way of coverage by equal opportunities policies, shorter hours, flexible working arrangements and/or help with child care. Our results reveal that this relatively positive stance found in union workplaces is not carried through to the provision of work-related training to part-time female workers.

We now turn to the estimates from Specification [2] shown in Table 3 (with the full set of controls listed in the note to the table).[22] Notice that the introduction of the extra workplace controls is associated with a considerable reduction in the union recognition effect for men and a small increase in the union recognition effect for full-time women (no doubt reflecting the elimination of omitted variable bias to the estimated union recognition coefficient[23]). However, the estimated union recognition effect remains significantly positive for men and full-time women, and significantly negative for part-time women (0.169-0.281=-0.112).

We also investigate in Specifications [2] and [3] in Table 3 whether or not firms decide to train workers if they face a shortage of skilled labour. We do this by including a dummy variable

[22] We include indicators for market strength because there is evidence that training programmes are introduced when production is low (Black and Lynch, 1997; Nickell and Nicolitsas, 1996). Since the provision of training may be linked to the overall economic climate we also make use of the managers' assessment of the market conditions. These controls include the perception of the manager about the level of competition, the perception of financial performance, and whether markets are growing, mature or stagnant. In particular, we use answers to whether the managers regard the markets as turbulent, growing, mature, or declining, the company faces no, few, or many competitors, and how they rate the company's financial performance in relation to the industry average. Estimated coefficients to these variables are provided in Table A.2 in the Appendix.

set to one if the manager states that the company has difficulties hiring skilled labour, and zero otherwise. It is interesting that 'difficulties in filling vacancies' have no significant impact on the training probability, suggesting that firms are not training-up their current workers when they cannot fill vacancies. This is the case even though nearly two-thirds of men and over half of women are employed in workplaces where management reports such difficulties (see Table 1). This finding is consistent with (although it does not prove) the hypothesis that there may be a 'quitting externality': firms may not train sought-after workers because they may leave (and in that sense there might be under-training).

We also include in Specifications [2] and [3] a variable taking the value unity if the workplace operates a EU work's council, and zero otherwise, to see if such arrangements are associated with a greater probability of worker training. In all specifications for both men and women the estimated coefficient is insignificantly different from zero.

Notice from Specifications [2] and [3] that the male private sector training probability is significantly increased if management normally negotiates with employee representatives over the training of employees ('training is negotiated'), and the magnitude of this effect is quite large. This is perhaps not surprising, in that one would expect a higher individual training probability in firms with a training culture. What is striking, however, is that the same result is not found for women: the female training probability is unaffected by the 'training is negotiated' variable across all specifications (even though about 10% of men and women work in such establishments, as shown in Table 1).

Also of interest is the relationship between the individual training probability and the degree of product market competition faced by that individual's employer. An hypothesis of human capital theory is that firms will be unwilling to pay for training that is potentially valuable

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[23] This result suggests omitted variable(s) in Specification [1] that were positively correlated with both recognition and training for men and negatively correlated for women.

to other firms. For this reason we would expect there to be a negative correlation between the training probability and a competitive product market.[24] This is indeed what we find for private sector men, who are significantly less likely to receive training if their employer has many or few competitors relative to the base of no competitors. (For women, only 'few competitors' is associated with a significantly lower training probability.) Thus firms are less willing to pay for or organise the training of their workers if they anticipate that these workers might be poached by competitors in the field.

What happens to the union recognition effect when we introduce additional controls for our three classes of collective bargaining institutions – the closed shop, the level of pay bargaining, and multi-unionism? Our estimates from this exercise are reported as Specification [3] in Table 3.[25] For private sector men, there is not only a considerable reduction in the union recognition effect, but the coefficient is now insignificant. The closed shop and bargaining level variables also have an insignificant effect on the male training probability.[26] However the estimates from Specification [3] do indicate that the impact of unionism on the male private-sector training probability is through multiple unionism. If there are multiple unions engaged in joint pay negotiations, or in separate pay negotiations with groups, the male training probability is significantly higher.

One potential interpretation of this finding is that in such situations both pay and training are on the bargaining agenda. However, we also include as a control 'training negotiated', and the magnitude and significance of this variable is little altered between Specifications [2] and [3]. It

[24] The training question asks individuals for information about 'training either paid for or organised by the employer'. This does not necessarily exclude training that is paid for by the individual but organised by the employer. However, the firm would presumably be involved with some costs even in organising training.

[25] Although we cannot use log-likelihood tests to discriminate between specifications due to the estimation technique, we obtained log-likelihoods by estimating maximum-likelihood probit models, using the appropriate weights. The log-likelihood ratio tests on these models reveal that Specification [3] is the preferred model. We also tested the joint significance of the added variables by a Wald test (svytest), and our conclusions remain the same.

therefore seems more likely that the multiple unionism effect is picking up some aspect of task complexity or heterogeneity at the individual's workplace that is associated with a greater training probability (and which is not captured by the occupational, firm size and industry controls).

For private sector women, Specification [3] shows that there is no significant direct recognition effect for full-time women, although the negative effect of union recognition for part-time women remains statistically significant. There is also – as found for private sector men - a significantly negative effect of few competitors on the female training probability.

The full set of estimates is reported in Table A.2 in the Appendix, and we comment briefly on the most important findings. We find that for both men and women the training probability is decreasing with age and tenure, is greater for more educated workers and for individuals in managerial or professional occupations and less for operative and assembly workers relative to the base of service sector occupations, and is increasing in organisation size. Black African women and Indian men are significantly less likely to be trained relative to the base of white ethnic origin, and fixed-term contract workers are also less likely to be trained. The training probability is in general unresponsive to business cycle factors as proxied by the unemployment and vacancy rates, but it is significantly higher where market conditions are growing or mature (relative to the base of turbulent markets as defined in footnote 22) and where the organisation is foreign-owned.

3.2 Training Incidence for Manual and Non-manual Workers

Are these results for union influence robust to disaggregation of the sample? We next split the private sector sample into *manual and non-manual* workers and estimate the same models as above. Results are given in Table 4. The most striking finding is that the training probability for

[26] We also experimented with including each of the three sets of bargaining institutions (in addition to recognition) separately, and found little difference in our results in terms of sign and the level of significance. The magnitude of the coefficients did alter however.

full-time non-manual women is significantly higher if they work in unionised establishments, while there is no statistically association between training and recognition for female manual workers. And for non-manual part-time women there is now a small positive impact of union recognition on the training probability compared to their unrecognised counterparts (from Specification [1], 0.294-0.243=0.051).

The union-recognition results for men are broadly consistent with the findings for all private sector men in Table 3, but the magnitude of the union recognition effect on training is larger for non-manual men than for their manual counterparts. From Specification [3] it can be seen that for manual male workers only one of the collective bargaining institutions has a significant effect: collective bargaining at the organisational level, which increases the training probability.[27] In contrast, bargaining at the organisation-level significantly reduces the male non-manual training probability. Where training is negotiated between trade unions and the management non-manual workers are more likely to have formal training than those where training is not part of the bargaining agenda. This is not true for manual workers.

The association between the level of competitiveness of the product market and formal training is significant and negative for male and female non-manual workers. There is also a suggestion that higher levels of competitiveness are negatively associated with the formal training of manual men.

Female non-manual workers are more likely to have participated in employer-provided formal training if there is multi-unionism and separate negotiations. For male non-manuals, the training probability is increased is there is an EU works council but only in Specification [2] – once other collective bargaining institutions are included this effect becomes insignificant. The

[27] Due to sample size considerations we combined the indicator variables for "separate negotiations" and "separate negotiations in groups" into one variable "Separate Negotiations".

male and female non-manual training probability is greater if training is negotiated, but for manual women this effect is found only in Specification [3].

3.3 Training Intensity

In addition to the estimation of the incidence of employer-provided training, we also estimate the intensity of training for a given employee, and we briefly comment on our results here. Intensity is the number of days spent in employer-provided training over the last 12 months. Since intensity is provided in banded responses, we employ the method of interval regression to obtain consistent estimates.[28] The estimated models correspond to those used for estimating the incidence of training, and are reported in Table 5. Again, we distinguish between private sector manual and non-manual, and male and female workers.

First consider the results for men. The association between the trade union recognition term and training days is not statistically significant for male manual workers. This implies that, although male manual workers are more likely to receive any training if a union is recognised at their workplace, there is no significant difference in the intensity of training across unionised and non-unionised workplaces.

Employer-provided training intensity for *non-manual men* in the private sector shows a positive association with the trade union recognition variable in Specifications [1] and [2]. This relationship only disappears when additional controls for collective bargaining institutions are included in the regression – Specification [3]. These results mirror the findings for training incidence. Male non-manual days of training are increased if management reports difficulty finding skilled employees, relative to the base of no skill shortages reported by management.

[28] We use `svyintreg` with Stata 6.0.

For women, union recognition has no significant impact on manual and non-manual days of training. There is some evidence that female manual workers receive fewer days of training in establishments reporting difficulties filling vacancies than in workplaces where this is not the case, and fewer days when collective bargaining is at the organisation or workplace level, relative to the base of other forms of pay determination. Manual women receive more training days when the product market is competitive, in contrast to the results for incidence.

Non-manual private sector women receive fewer days of training when collective bargaining is at the employer level and also if their workplace operates a 'closed shop'. Interestingly non-manual women receive more days of training when the workplace operates an EU Works Council. The competition variables have no significant impact on days of training for non-manual men or women.

4. Conclusions

Using newly available data that allow the combination of detailed workplace characteristics with individual data, we estimated the probability of participation in employer-provided formal training over the last 12 months for a representative sample of British establishments. Our primary interest is on the relationship between trade unions and employer-provided formal training. Initially using only variables from the employee survey (and information on size of the workplace as well as SIC codes and regional unemployment and vacancy rates, provided in the restricted files), we find that private sector full-time men and women in union-recognised workplaces typically receive significantly more training, and that this impact is large. However, part-time women in union recognised workplaces are significantly less likely to be trained than their part-time counterparts in non-union–covered workplaces.

When we add in various additional controls from the linked employer questionnaire, the private-sector union-coverage effect typically remains significant but its magnitude is reduced for men but increased for women, suggesting that the usual union coverage effect on training from individual-level surveys is biased owing to omitted establishment-level characteristics.[29] We also find some evidence that firms are less likely to train workers where the product market is competitive.

Finally, we estimated the impact on training incidence and intensity of three types of bargaining institution (information on which is obtained from the management questionnaire): the closed shop, the level of pay bargaining, and multi-unionism. We find considerable heterogeneity across manual and non-manual, and male and female workers, in the impact of these institutions on training incidence and intensity. Unsurprisingly, the direct effect of union coverage *per se* is reduced when these additional union bargaining controls are included in the regressions. The lack of any clear pattern in the impact of collective bargaining institutions (apart from recognition) on training provision suggests that the 'integrative' approach of the Trades Unions Congress has not yet been fully implemented.

We also estimated our models disaggregated by manual and non-manual status. The most striking finding is that the training probability for full-time *non-manual* women is significantly higher if they work in union-recognised establishments, while there is no statistically association between training and recognition for female *manual* workers. And for non-manual part-time women there is now a small positive impact of union recognition on the training probability compared to their unrecognised counterparts. The union-recognition results for manual and non-manual men are broadly consistent with the findings for all private sector men, but the magnitude

[29] The reduction in the union coverage effect varies across estimating sub-samples. The private sector reductions range from approximately 30 percentage points for private sector men and for private manual men, through 20 percentage points for private non-manual men; 15 percentage points for private manual women; and just 2 percentage points for private non-manual women.

of the union recognition effect on training is larger for non-manual men than for their manual counterparts

Overall our estimates clearly show that, in the private sector, the provision of training is strongly influenced by union presence. Moreover, private sector employees are more likely to receive training if management normally negotiates with employee representatives over the training of employees. We also find a positive association between certain forms of multi-unionism and employer-provided training.

Tables

Table 1: Summary statistics of private sector employees, by sex.

	Men		Women	
	Mean	S.D.	Mean	S.D.
Training incidence	0.541		0.558	
Training intensity (days) [a]	4.539	0.172	3.874	0.186
Part-time (less than 30 hours/week)	0.107		0.453	
Manual worker	0.632		0.552	
At least one union recognised for bargaining	0.495		0.368	
TU member to get job	0.002		0.005	
TU member to keep job	0.018		0.010	
Ought to be TU member	0.037		0.039	
"Closed shop"	0.047		0.044	
Collective bargaining: multi-employer	0.149		0.177	
Collective bargaining: organisational level	0.222		0.234	
Collective bargaining: workplace	0.217		0.177	
Pay set: management at higher level	0.329		0.441	
Pay set: management at workplace	0.418		0.419	
Pay set: individual negotiation	0.133		0.159	
Pay set: other	0.131		0.167	
Multiple unions	0.289		0.136	
joint negotiations	0.171		0.062	
separate negotiations	0.093		0.064	
separate negotiations with groups	0.022		0.006	
Difficulties filling vacancies	0.610		0.550	
EU work's council	0.149		0.110	
Training negotiated	0.010		0.010	
Many competitors	0.488		0.543	
Few competitors	0.321		0.262	
N subpopulation (weighted)	9865 (10717)		8483 (8621)	

Note: "Closed shop" is 1 if either "TU member to get job", "TU member to keep job", or "Ought to be TU member" is equal to 1, and zero otherwise. Sample size varies across variables due to missing data.

[a] Banded responses have been converted into a continuous variable by taking the midpoint of the band and 35 for the top-coded bracket.

Table 2: Training incidence and intensity by union recognition and sex.

	Men		Women	
	Union recognised	No union recognised	Union recognised	No union recognised
All				
Incidence in %	0.553	0.528	0.558	0.558
Intensity in mean days	4.913	4.171	4.067	3.762
N (weighted)	4767 (5301)	5098 (5416)	3202 (3171)	5281 (5450)
Manual workers				
Incidence in %	0.464	0.467	0.453	0.532
Intensity in mean days	3.665	3.525	2.975	3.232
N (weighted)	2566 (3624)	2407 (3154)	1235 (1768)	2271 (2992)
Non-manual workers				
Incidence in %	0.746	0.612	0.691	0.591
Intensity in mean days	7.617	5.067	5.437	4.405
N (weighted)	2201 (1677)	2691 (2262)	1967 (1403)	3010 (2459)

Note: Sampling weights. WERS 1998, linked employer-employee data, private sector employees. Training incidence and intensity provided by employees, trade union recognition by managers. Intensity is constructed from banded response categories, see text for details.

Table 3: Incidence of training estimates (Survey probit regression). Private Sector.

	Men			Women		
	[1]	[2]	[3]	[1]	[2]	[3]
	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
TU recognised	**0.224 (0.067)**	**0.157 (0.066)**	0.053 (0.128)	**0.155 (0.067)**	**0.169 (0.068)**	0.038 (0.118)
Part-time	**-0.256 (0.088)**	**-0.242 (0.088)**	**-0.242 (0.089)**	**-0.145 (0.057)**	**-0.136 (0.057)**	**-0.142 (0.058)**
Part-time*TU recognised	—	—	—	**-0.300 (0.099)**	**-0.281 (0.098)**	**-0.251 (0.099)**
"Closed shop"			-0.058 (0.097)			0.007 (0.107)
Bargaining level						
Employers			-0.092 (0.111)			0.070 (0.145)
Organisation			0.011 (0.082)			0.032 (0.086)
Workplace			0.080 (0.094)			0.023 (0.123)
Multiunionism						
Joint Negotiations			**0.280 (0.151)**			0.217 (0.156)
Separate Negotiations			-0.043 (0.144)			0.183 (0.146)
Separate Negotiations with groups			**0.652 (0.187)**			0.586 (0.364)
Difficulties filling vacancies		0.062 (0.052)	0.073 (0.052)		0.022 (0.058)	0.029 (0.058)
EU work's council		0.046 (0.071)	-0.004 (0.070)		-0.007 (0.082)	-0.013 (0.082)
Training negotiated		**0.324 (0.166)**	**0.361 (0.171)**		0.184 (0.333)	0.294 (0.275)
Many competitors		**-0.206 (0.080)**	**-0.229 (0.079)**		-0.127 (0.091)	-0.128 (0.088)
Few competitors		**-0.164 (0.088)**	**-0.196 (0.086)**		**-0.218 (0.097)**	**-0.222 (0.096)**
N observations (population size)	24,554 (24,765)	24,554 (24,765)	24,554 (24,765)	24,520 (24,719)	24,520 (24,719)	24,520 (24,719)
N subpopulation (subpopulation size)	9,368 (10,128)	9,368 (10,128)	9,368 (10,128)	8,010 (8,121)	8,010 (8,121)	8,010 (8,121)

Specification [1] also includes age, education, race, occupation, job tenure, size, number of employees, whether fixed-term contract, SIC codes, unemployment rate, and vacancy rate as covariates. Specification [2] as specification [1] plus time at current address, market conditions, whether franchise, and whether workplace is the headquarter of the company. Specification [3] as [2] plus additional indicators for pay determination. Estimated coefficients on these covariates are tabulated in Table A.2 in the Appendix. Employees in establishments with 10 or more employees. Estimations are weighted. The number of observations are the total number of employees who are used in the estimation. The population size is the number of observations which are obtained when the sampling weights are applied. The subpopulation size is the unweighted number of observation who are male or female workers in the private sector. The subpopulation sizes are obtained when the weights are applied.

Table 4: Incidence of training estimates (Survey probit regression). Private Sector.

	Men			Women		
	[1]	[2]	[3]	[1]	[2]	[3]
Manual	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
TU recognised	**0.193 (0.080)**	**0.132 (0.079)**	0.047 (0.154)	-0.030 (0.104)	-0.031 (0.104)	-0.044 (0.179)
Part-time	**-0.311 (0.102)**	**0.306 (0.103)**	**-0.308 (0.104)**	-0.117 (0.074)	-0.116 (0.075)	**-0.150 (0.076)**
Part-time*TU recognised	—	—	—	-0.141 (0.135)	-0.095 (0.131)	-0.019 (0.134)
"Closed shop"			-0.056 (0.120)			0.021 (0.158)
Bargaining level						
Employers			-0.147 (0.137)			-0.101 (0.209)
Organisation			**0.169 (0.106)**			-0.015 (0.123)
Workplace			0.125 (0.122)			0.226 (0.146)
Multiunionism						
Joint Negotiations			0.266 (0.179)			0.117 (0.279)
Separate Negotiations			0.080 (0.171)			0.118 (0.246)
Difficulties filling vacancies		0.032 (0.067)	0.034 (0.067)		-0.050 (0.077)	-0.041 (0.074)
EU work's council		-0.008 (0.093)	-0.017 (0.093)		-0.159 (0.121)	-0.172 (0.120)
Training negotiated		0.316 (0.205)	0.321 (0.217)		0.107 (0.410)	**0.606 (0.247)**
Many competitors		**-0.209 (0.101)**	**-0.194 (0.099)**		-0.099 (0.139)	-0.094 (0.134)
Few competitors		-0.140 (0.108)	-0.150 (0.105)		-0.233 (0.151)	-0.208 (0.144)
N observations (population)	24272 (24128)	24272 (24128)	24272 (24128)	23,792 (24,056)	23,792 (24,056)	23,792 (24,056)
N subpopulation	4679 (6352)	4679 (6352)	4679 (6352)	3,267 (4,445)	3,267 (4,445)	3,267 (4,445)
Non-manual						
TU recognised	**0.296 (0.088)**	**0.249 (0.088)**	0.112 (0.175)	**0.294 (0.083)**	**0.302 (0.083)**	0.068 (0.142)
Part-time	**-0.288 (0.145)**	**-0.286 (0.148)**	**-0.283 (0.147)**	**-0.199 (0.082)**	**-0.199 (0.081)**	**-0.200 (0.080)**
Part-time*recognised	—	—	—	**-0.243 (0.135)**	**-0.250 (0.133)**	**-0.246 (0.133)**
"Closed shop"			0.069 (0.186)			0.122 (0.146)
Bargaining level						
Employers			0.056 (0.146)			0.209 (0.132)
Organisation			**-0.233 (0.119)**			-0.019 (0.119)
Workplace			-0.021 (0.128)			-0.136 (0.150)
Multiunionism						
Joint Negotiations			0.304 (0.198)			0.249 (0.163)
Separate Negotiations			0.014 (0.197)			**0.345 (0.199)**
Difficulties filling vacancies		0.102 (0.072)	0.083 (0.070)		**0.131 (0.077)**	0.127 (0.078)
EU work's council		**0.159 (0.095)**	0.146 (0.092)		0.099 (0.112)	0.123 (0.110)
Training negotiated		**0.373 (0.188)**	**0.378 (0.210)**		**0.390 (0.199)**	**0.362 (0.192)**
Many competitors		-0.170 (0.104)	**-0.198 (0.105)**		-0.164 (0.105)	-0.150 (0.104)
Few competitors		-0.166 (0.117)	**-0.204 (0.117)**		**-0.215 (0.118)**	**-0.208 (0.116)**
N observations (population)	24087 (24396)	24087 (24396)	24087 (24396)	24,517 (24,714)	24,517 (24,714)	24,517 (24,714)
N subpopulation	4666 (3726)	4666 (3726)	4666 (3726)	4718 (3,641)	4718 (3,641)	4718 (3,641)

Table 5: Intensity of training estimates (Survey interval regression). Private Sector.

	Men			Women		
	[1]	[2]	[3]	[1]	[2]	[3]
Manual	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)	Coefficient (S.E.)
TU recognised	-0.186 (0.192)	-0.111 (0.191)	-0.168 (0.352)	0.186 (0.310)	0.202 (0.315)	-0.094 (0.423)
Part-time	**-1.153 (0.275)**	**-1.118 (0.277)**	**-1.108 (0.276)**	**-0.665 (0.252)**	**-0.688 (0.250)**	**-0.727 (0.249)**
Part-time*TU recognition	—	—	—	-0.397 (0.352)	-0.396 (0.350)	-0.316 (0.364)
"Closed shop"			-0.090 (0.330)			**1.021 (0.408)**
Bargaining level						
Employers			**-0.923 (0.355)**			**-0.505 (0.308)**
Organisation			-0.363 (0.295)			**-0.456 (0.235)**
Workplace			**-0.570 (0.332)**			-0.066 (0.614)
Multiunionism						
Joint Negotiations			0.540 (0.415)			-0.253 (0.558)
Separate Negotiations			0.435 (0.435)			0.739 (0.624)
Difficulties filling vacancies		0.165 (0.158)	0.124 (0.159)		-0.213 (0.159)	**-0.322 (0.162)**
EU work's council		0.090 (0.256)	0.055 (0.257)		-0.028 (0.221)	-0.025 (0.227)
Training negotiated		0.199 (0.541)	0.269 (0.553)		0.645 (0.765)	0.327 (0.620)
Many competitors		0.363 (0.256)	0.395 (0.252)		**0.506 (0.257)**	**0.442 (0.257)**
Few competitors		0.135 (0.263)	0.158 (0.259)		**0.590 (0.310)**	**0.541 (0.309)**
N observations (population)	24293 (24157)	24293 (24157)	24293 (24157)	23,814 (24,085)	23,814 (24,085)	23,814 (24,085)
N subpopulation	4700 (6382)	4700 (6382)	4700 (6382)	3,289 (4,474)	3,289 (4,474)	3,289 (4,474)
Non-manual						
TU recognised	**0.347 (0.191)**	**0.455 (0.187)**	0.063 (0.452)	0.170 (0.241)	0.115 (0.227)	0.363 (0.410)
Part-time	-0.241 (0425)	-0.254 (0.435)	-0.251 (0.435)	-0.274 (0.224)	-0.341 (0.222)	-0.349 (0.222)
Part-time*TU recognition	—	—	—	0.035 (0.333)	0.150 (0.330)	0.187 (0.328)
"Closed shop"			0.644 (0.469)			**-0.745 (0.313)**
Bargaining level						
Employers			0.083 (0.525)			**-0.605 (0.353)**
Organisation			0.129 (0.261)			-0.244 (0.293)
Workplace			**-0.566 (0.316)**			-0.226 (0.402)
Multiunionism						
Joint Negotiations			0.499 (0.496)			0.292 (0.442)
Separate Negotiations			0.697 (0.503)			0.326 (0.682)
Difficulties filling vacancies		**0.423 (0.156)**	**0.439 (0.158)**		0.095 (0.170)	0.082 (0.165)
EU work's council		-0.091 (0.193)	-0.079 (0.191)		**0.566 (0.257)**	**0.498 (0.254)**
Training negotiated		-0.583 (0.629)	-0.692 (0.624)		-0581 (0.427)	-0.356 (0.428)
Many competitors		-0.117 (0.240)	-0.130 (0.238)		-0.120 (0.233)	-0.154 (0.232)
Few competitors		0.171 (0.251)	0.126 (0.253)		0.192 (0.271)	0.141 (0.262)
N observations (population)	24089 (24416)	24089 (24416)	24089 (24416)	24,522 (24,729)	24,522 (24,729)	24,522 (24,729)
N subpopulation	4668 (3745)	4668 (3745)	4668 (3745)	4,723 (3,656)	4,723 (3,656)	4,723 (3,656)

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Appendix

Table A.1: Selected Questions from WERS 98

Managers' questionnaire

Variable	Question (Answer)
ACONHEAD	Is this establishment the controlling Head Office? (Yes, No)
ACONTROL	Which of the following statements best describes the ownership of this workplace? (UK owned, Predominantly UK owned, UK and foreign owned, Predominantly foreign owned, Foreign owned)
AFRANCH	Is this workplace part of a franchise operation? (Yes, No)
AHOWLONG	For how long has this establishment been operating here at this address? (0, ..., 997)
ASINGLE	Is this establishment one of a number of different workplaces in the UK belonging to the same organisation, a single independent establishment, or the sole UK establishment of a foreign organisation? (One of a number of different establishments within a larger organisation, Single independent establishment not belonging to another body, Sole UK establishment of a foreign organisation)
ASTATUS	How would you describe the formal status of [this establishment]? Is it privately or publicly owned? (Private sector company PLC, Private sector-other, Public sector)
AUKTOT (Size)	How many employees are there within [name of organisation] in the UK? (Less than 50, 50 to less than 100, 100 to less than 200, 200 to less than 500, 500 to less than 1,000, 1,000 to less than 2,000, 2,000 to less than 5,000, 5,000 to less than 10,000, 10,000 to less than 50,000, 50,000 to less than 100,000, 100,000 or more)
COFFJOB (Training)	What proportion of experienced [employees in the largest occupational group] have had formal off-the-job training over the past 12 months? PROMPT: off-the-job training is training away from the normal place of work, but either on or off the premises. (All, Almost all, Most, Around half, Some, Just a few, None)
CVACDIF1—CVACDIF9	In the occupational groups you had vacancies in the past 12 months, are there any in which you have had difficulties filling vacancies? (Managers, Professional occupations, Technical occupations, Clerical occupations, Craft and skilled manual occupations, Personal service occupations, Sales occupations, Operative and assembly manual occupations, Routine unskilled manual occupations, None of these)
DCOUNCIL	Does the organisation of which you are part operate a European Works Council? (Yes, NO)
EDEDUCT	Do you deduct trade union or staff association subscriptions from any employees pay? (Yes, No)
EFORMAL	Do you have a formal agreement to recognise [union name] or has it just worked out that way? (Formal agreement, Just worked out that way)

EHAVETO	Do these new recruits have to be union members BEFORE starting work? (Yes, No)
EJOINT	Does management negotiate jointly with the recognised unions, or are there separate negotiations? (Jointly, Separately-each recognised union, Separately-groups of recognised unions)
EKEEPJOB	Are there any employees here who have to be members of unions in order to get or keep their jobs? (Yes, No)
EOUGHTO	Are there any employees here who management strongly recommends should be union members? (Yes, No)
ERECOG01	*If any union* Is the [name of first union] **recognised** by management for negotiating pay and conditions for any sections of the workforce in this establishment? INTERVIEWER NOTE- if agreements are negotiated at a higher level in the organisation or by an employers' association, but apply to union/staff association members here, count as recognised. (Yes, No)
ERECOG02-ERECOG10	*If more than one union at workplace* What about [name of subsequent unions]? Is that recognised?
ETOTREC (Trade union indicator)	Total number of recognised unions
ETRAINA/ETRAINB	I'd like to know whether management at this workplace normally negotiates, consults, informs, or does not involve employee representatives at all over the training of employees. (Negotiates, Consults, Informs, None)
EUNIONUM	How many separate unions or independent staff associations have members at this workplace? (Number)
FSOC1-FSOC9	Which of the following statements most closely characterises the way that pay is set [each occupational group present at the workplace]? (Collective bargaining for more than one employer (e.g. industry-wide agreement), Collective bargaining at an organisation level, Collective bargaining at this workplace, Set by management at a higher level in this organisation, Set by management at this workplace, Negotiation with individual employees, Some other way (e.g. pay review body), None of these)
KCOMPET	How many competitors do you have for your [main] product or services? (None, Few, Many)
KESTPER1	How would you assess your workplace's financial performance? (A lot better than average, better than average, about average for industry, below average, a lot below average, no comparison possible, relevant data not available)
KSTAMAR	Looking at this list, which of these statements best describes the current state of the market [for the main product or service] in which you operate? (The market is Growing, Mature, Declining, Turbulent)

Employees' questionnaire

Variable	Question (Answer)

A1 (Tenure)	How many years in total have you been working at this workplace? By workplace we mean the site or location at, or from, which you work? (Less than 1 year, 1 to less than 2 years, 2 to less than 5 years, 5 to less than 10 years, 10 years or more)
A2 (Fixed-term)	I your job permanent, or is it temporary or for a fixed-term? (Permanent, Temporary, Fixed-term)
A3 (Hours)	How many hours of you usually work each week. including any overtime or extra hours?
B2 (Training)	During the last 12 months, how much training have you had, either paid for or organised by your employer? (None, Less than 1 day, 1 to less than 2 days, 2 to less than 5 days, 5 to less than 10 days, 10 days or more)
D1 (Gender)	Are you male or female? (Male, Female)
D2 (Age)	How old are you? (Less than 20 years, 20-24, 25-29, 30-39, 40-49, 50-59, 60 or more)
D5 (Qualification)	What is the highest educational qualification you hold? (CSE or equivalent/GCSE (grades D-G), O level or equivalent/GCSE (grades A-C), A level or equivalent, Degree or equivalent, Postgraduate degree or equivalent, None of these)
D8 (Ethnicity)	To which of these groups do you consider you belong? (White, Black Caribbean, Black African, black other, Indian, Pakistani, Bangladeshi, Chinese, Another ethnic group)
D9 (Occupation)	Which of the following occupation groups best describes your job at present? (Managers & senior administrators, Professional, Associate professional & technical, Clerical & secretarial, Craft & skilled service, Personal & protective service, Sales, Operative and assembly, Other occupations)

Restricted Files

SIC code	Standard Industrial Classification 1992
GORTUR	Unemployment rate by government office region
GORTVACR	Average vacancy rate over the course of the fieldwork by government office region

Table A.2: Incidence of training estimates (Survey probit regression), private sector. Variables not reported in Table 3.

	Men			Women		
	[1]	[2]	[3]	[1]	[2]	[3]
Age						
< 20	**0.208 (0.102)**	**0.198 (0.102)**	**0.195 (0.101)**	-0,090 (0,103)	-0,062 (0,103)	-0,057 (0,103)
20—24	0.127 (0.082)	0.130 (0.082)	0.130 (0.082)	-0,059 (0,078)	-0,045 (0,077)	-0,048 (0,077)
25—29	-0.051 (0.078)	-0.047 (0.078)	-0.057 (0.078)	0,023 (0,070)	0,016 (0,070)	0,013 (0,070)
40—49	-0.050 (0.063)	-0.054 (0.063)	-0.058 (0.063)	-0,086 (0,058)	-0,090 (0,059)	-0,094 (0,059)
50—59	-0.071 (0.061)	-0.069 (0.061)	-0.078 (0.061)	**-0,197 (0,075)**	**-0,189 (0,076)**	**-0,191 (0,075)**
>60	**-0.468 (0.099)**	**-0.472 (0.100)**	**-0.484 (0.100)**	-0,168 (0,120)	-0,160 (0,121)	-0,167 (0,122)
Education						
O levels	**0.201 (0.053)**	**0.201 (0.052)**	**0.200 (0.053)**	**0,191 (0,051)**	**0,169 (0,051)**	**0,166 (0,051)**
A levels	**0.204 (0.066)**	**0.191 (0.065)**	**0.188 (0.064)**	**0,260 (0,065)**	**0,237 (0,066)**	**0,237 (0,066)**
Degree	**0.239 (0.062)**	**0.225 (0.065)**	**0.225 (0.063)**	**0,264 (0,084)**	**0,228 (0,085)**	**0,237 (0,084)**
Race						
Black Caribbean	-0.118 (0.244)	-0.092 (0.245)	-0.123 (0.244)	-0.120 (0.195)	-0.130 (0.197)	-0.139 (0.190)
Black African	0.008 (0.267)	-0.004 (0.273)	-0.022 (0.274)	**-0.824 (0.243)**	**-0.892 (0.243)**	**-0.898 (0.245)**
Black other	-0.103 (0.479)	-0.121 (0.474)	-0.128 (0.464)	0.199 (0.287)	0.227 (0.290)	0.292 (0.295)
Indian	**-0.491 (0.172)**	**-0.482 (0.172)**	**-0.493 (0.170)**	-0.145 (0.228)	-0.174 (0.213)	-0.187 (0.210)
Pakistani/Bangladeshi	-0.383 (0.251)	-0.362 (0.252)	-0.347 (0.247)	0.274 (0.375)	0.266 (0.385)	0.296 (0.376)
Chinese	-0.082 (0.472)	-0.052 (0.465)	-0.047 (0.460)	-0.023 (0.320)	-0.016 (0.311)	-0.007 (0.306)
Other	**-0.341 (0.197)**	**-0.347 (0.195)**	**-0.336 (0.195)**	**-0.338 (0.171)**	**-0.12 (0.169)**	**-0.332 (0.170)**
Occupation						
Manager	**0.307 (0.087)**	**0.312 (0.087)**	**0.338 (0.087)**	**0.300 (0.085)**	**0.305 (0.084)**	**0.308 (0.084)**
Professional	**0.235 (0.099)**	**0.231 (0.098)**	**0.254 (0.097)**	**0.484 (0.103)**	**0.504 (0.104)**	**0.487 (0.105)**
Associate professional	0.139 (0.088)	**0.144 (0.087)**	**0.144 (0.086)**	**0.319 (0.089)**	**0.337 (0.088)**	**0.315 (0.086)**
Craft and skilled service	**-0.204 (0.091)**	**-0.201 (0.091)**	**-0.199 (0.091)**	**-0.403 (0.155)**	**-0.393 (0.156)**	**-0.403 (0.156)**
Personal and protective service	0.181 (0.147)	0.185 (0.145)	0.134 (0.146)	0.161 (0.111)	**0.186 (0.108)**	0.171 (0.107)
Sales	**0.219 (0.118)**	**0.224 (0.117)**	**0.230 (0.116)**	**0.337 (0.077)**	**0.339 (0.078)**	**0.312 (0.077)**
Operative and assembly	**-0.297 (0.084)**	**-0.316 (0.083)**	**-0.308 (0.084)**	**-0.517 (0.101)**	**-0.551 (0.104)**	**-0.577 (0.103)**
Other	**-0.249 (0.103)**	**-0.241 (0.102)**	–	**-0.393 (0.089)**	**-0.386 (0.088)**	0.146 (0.352)
Tenure						
1 to less than 2 years	-0.047 (0.071)	-0.059 (0.071)	-0.057(0.071)	-0.034 (0.072)	-0.026 (0.071)	-0.025 (0.071)
2 to less than 5 years	**-0.238 (0.064)**	**-0.245 (0.063)**	**-0.247 (0.063)**	**-0.235 (0.061)**	**-0.239 (0.062)**	**-0.231 (0.063)**
5 to less than 10 years	**-0.369 (0.071)**	**-0.385 (0.070)**	**-0.384 (0.070)**	**-0.349 (0.071)**	**-0.359 (0.072)**	**-0.362 (0.072)**
10 years or more	**-0.249 (0.072)**	**-0.276 (0.071)**	**-0.286 (0.071)**	**-0.295 (0.073)**	**-0.321 (0.074)**	**-0.325 (0.074)**
Size of workplace						
10—24 employees	**-0.159 (0.083)**	-0.086 (0.080)	-0.092 (0.078)	**-0.146 (0.083)**	-0.059 (0.083)	-0.042 (0.080)
500—1499 employees	0.121 (0.082)	0.072 (0.082)	0.048 (0.082)	0.044 (0.087)	-0.014 (0.084)	-0.033 (0.083)
More than 1500 employees	**0.275 (0.122)**	0.219 (0.136)	**0.230 (0.126)**	**0.409 (0.204)**	0.259 (0.222)	0.248 (0.225)

Table A.2: Incidence of training estimates (Survey probit regression), private sector. Variables not reported in Table 3.

	Men			Women		
	[1]	[2]	[3]	[1]	[2]	[3]
Number of employees in UK						
50—99	0.008 (0.188)	0.032 (0.201)	0.041 (0.194)	0.035 (0.109)	0.077 (0.124)	0052 (0.118)
100—499	**0.196 (0.085)**	**0.231 (0.089)**	**0.234 (0.088)**	**0.241 (0.100)**	**0.192 (0.099)**	**0.161 (0.097)**
500—999	**0.323 (0.112)**	**0.282 (0.107)**	**0.274 (0.106)**	**0.525 (0.123)**	**0.463 (0.122)**	**0.422 (0.121)**
1,000—9,999	**0.260 (0.073)**	**0.255 (0.072)**	**0.240 (0.072)**	**0.299 (0.082)**	**0.293 (0.079)**	**0.235 (0.080)**
More than 10,000	**0.263 (0.084)**	**0.246 (0.085)**	**0.234 (0.087)**	**0.461 (0.099)**	**0.449 (0.089)**	**0.405 (0.089)**
Time at current address						
5--9 years		-0.054 (0.082)	-0.053 (0.082)		0.010 (0.094)	-0.001 (0.095)
10—24 years		-0.034 (0.077)	-0.016 (0.077)		0.083 (0.082)	0.084 (0.082)
More than 25 years		0.103 (0.079)	0.091 (0.079)		0.071 (0.082)	0.062 (0.082)
Pay determination						
Management at workplace			-0.073 (0.061)			-0.099 (0.067)
Individual negotiations			-0.131 (0.100)			**-0.477 (0.185)**
Other method			0.182 (0.125)			-0.145 (0.108)
Market conditions						
Growing		0.099 (0.067)	**0.111 (0.066)**		**0.131 (0.072)**	**0.139 (0.071)**
Declining		0.016 (0.106)	-0.029 (0.103)		0.092 (0.113)	0.072 (0.110)
Mature		**0.204 (0.075)**	**0.226 (0.074)**		**0.159 (0.082)**	**0.179 (0.080)**
Financial performance						
Above average			0.086 (0.053)			**0.125 (0.053)**
Below average			0.084 (0.088)			-0.029 (0.104)
Fixed-term contract	**-0.192 (0.097)**	**-0.199 (0.096)**	**-0.193 (0.096)**	**-0.189 (0.089)**	**-0.204 (0.091)**	**-0.196 (0.092)**
Franchise business		-0.047 (0.150)	-0.082 (0.157)		-0.113 (0.261)	-0.150 (0.253)
Under foreign ownership		**0.122 (0.067)**	0.105 (0.065)		**0.342 (0.095)**	**0.355 (0.095)**
Headquarters of company		-0.038 (0.091)	-0.051 (0.087)		0.065 (0.099)	0.076 (0.098)
Unemployment rate	-0.023 (0.022)	-0.024 (0.022)	-0.029 (0.023)	-0.008 (0.023)	-0.008 (0.022)	-0.012 (0.021)
Vacancy rate	-0.070 (0.124)	0.022 (0.126)	0.028 (0.127)	0.046 (0.138)	0.103 (0.144)	0.106 (0.141)
SIC 2 digits	included	included	included	Included	Included	included
Constant	0.118 (0.211)	-0.051 (0.232)	0.084 (0.236)	-0.069 (0.229)	-0.388 (0.265)	-0.250 (0.271)
N observations (population)	24554 (24765)	24554 (24765)	24554 (24765)	24,520 (24,719)	24,520 (24,719)	24,520 (24,719)
N subpopulation (subpopulation size)	9368 (10128)	9368 (10128)	9368 (10128)	8,010 (8,121)	8,010 (8,121)	8,010 (8,121)

Note: Omitted categories are age between 30 and 39 years, no or little formal education, White, clerical and secretarial workers, tenure less than one year, less than 500 employees, less than 50 employees in the UK, less than 5 years at current address, management sets pay at higher level, product markets are turbulent. Employees in workplaces with 10 or more employees. Estimations are weighted.