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Employee Participation and Wages: An Empirical Investigation with Selectivity Correction

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Abstract - This paper analyzes the relationship between employee participation in work teams, profit sharing and consultation between employees and management, and wages. It uses matched employee-establishment data from the British economy. It takes explicit account of selectivity that arises from self-selection of employees into their preferred establishments and selective adoption of participatory practices by employers. The estimates indicate wage premium for the employees who work in establishments with participatory practices. The selectivity appears to be an important factor in the relationship between employee participation and wages. The estimates without selectivity correction suggest a lower wage premium than that suggested by selectivity corrected estimates. The selectivity corrected estimates show that employees in establishment with any one, two or all of the participatory practices earn a wage premium of 18%, 32.7% and 55.1%, respectively. The estimates of the interaction model of participation and education indicate that an extra year of education earns lower wage premium in establishments with participatory practices than in establishments with no participatory practice. This finding suggests that the equalizing effect of employee participation can reduce wage inequality between high and low educated employees.

Jel Classification: C21,C25, J31, J24, J41, J53, L22.
Keywords: Work teams; Pro.t sharing; Employee participation; Selectivity; Wage.

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1 Introduction

In recent years, work organization and compensation scheme have come to the forefront of academic and management practitioners' debate about the effect of different internal labour market rules on the performance of the firm. There has been a spate of empirical works examining the effect of employee participation on different dimensions of firm performance. In these works employee participation has often taken the form of work teams, quality circle, job rotation, profit sharing and others that are deemed to reverse the hierarchical organizational structure (Kato and Morishima 2002, Janod and Saint-Martin 2004, Freeman et al. 2000, Ichniowski et al. 1997, Black and Lynch 2001 and Hamilton et al. 2003). The broad picture that emerges from this huge empirical literature is that employee participation has positive effect on labour productivity. As for the other dimensions of firm performance, like financial performance and product quality, the effect of employee participation is not as convincing as its proponents might expect. Distinguishing the levels of analysis, it is evident that the case study literature has been more successful than establishment or firm level studies to establish the supposed relationship. In spite of immense interest shown by the economists and management practitioners, the literature has mainly been focused on the relationship between employee participation and organizational performance, paying less attention to other issues of importance like employee welfare.

The effect of employee participation on firm performance has direct implication for the employees' wages. The relationship between employee participation and wages can be considered as a derived relationship from that between employee participation and firm performance. If employee participation in work teams and profit sharing raises firm's financial performance, one would expect that employees in such firms earn more than those in other firms. Similarly, the positive productivity effect of employee participation would fetch higher wage in a competitive labour market. On the other hand, if the employees value non-pecuniary (cooperation and socialization) aspects of employee participation, they may be willing to accept a lower wage. There exist very few studies on how employees benefit in an environment where work is organized around work teams and a considerable part of compensation is based on the performance of the firm. Also, there is little known if the benefit accrued to the employer from employee participation is shared with the employees. Specifically, are the wages of employees working in participatory firms higher than those who are not? Are the employees in participatory firms paid less because they enjoy the non-pecuniary aspects of their jobs? Are employees in the participatory firms paid at par with employ-

ees in non-participatory firms, but the non-pecuniary aspects of the former provide incentives for higher efforts that fetch benefit to the employer? This paper aims to answer these questions using matched employee-establishment data from UK.

The small empirical literature on this issue examines the effect of bundles of different participatory practices on wages, with a considerable variation in the composition of bundles across works of different researchers. This paper focuses on three dimensions of employee participation, namely work teams, profit sharing and consultation between employees and management, and analyzes their effects on hourly wage. An additive index of these three dimensions of employee participation is used to examine the effect of the intensity of employee participation on wages. In spite of several documentations and expectation, by academics and business commentators, of the potential of employee participation for the firm performance, the diffusion of participatory practices has been limited and slow. This observation leads to the issue of adoption of employee participation that has implication for the analysis of wage effect. The empirical literature invariably ignores the issue of selectivity in the analysis of wage effect of employee participation. This paper takes explicit account of the selectivity that arises from the selective adoption of participatory practices by employers and self-selection of employees into their preferred participatory firms. We find that OLS estimates without correction for selectivity under-estimate the wage effect of employee participation. The selectivity corrected GLS estimates show that wages increase by 12% when any of the three employee participation practices is present. The selectivity corrected wage gains are as high as 22% and 41% for employees who work in establishments with, respectively, two and three employee participation practices.

The rest of the paper is organized as follows. The second section reviews the theoretical views on the relationship between participatory work practices and employees' wages. Section 3 presents brief review of the existing empirical literature. Section 4 describes the data used for this study. Section 5 presents the estimation strategy. Estimation results and interpretation are presented in section 6. The final section concludes the paper.

2 Theoretical Discussion

There is no well developed theory for the relationship between employee participation and wages. Economists and other social scientists have developed

a number of theories that explain why wages differ across individuals and employers. Some of these theories can be applied to shed light on the relationship between employee participation and wages[1]. This section reviews the theoretical strands that have implication for the relationship between employee participation and wages. Broadly the theories can be identified as representing four different schools of thought.

The *human capital theory* predicts that employees with higher skill levels earn higher wages. Skill is commonly meant to comprise of schooling, on-the-job training and job experience. If the participatory practices are skill biased i.e. effective implementation of participatory practices requires higher initial skills, then firms may adopt rigorous selection and hiring criteria to recruit skilled employees, resulting in higher demand and wages for skilled employees. Works by Caroli and van Reenen (2001) and by Osterman (2000) suggest that organizational change may be skill biased. It is well known that training raises the wages of the employees. Employer provided general and firms-specific training that are required for employees to contribute effectively in participatory environment can also increase their wages. Recently the notion of skill is being extended to incorporate some other aspects of worker quality such as communication skill, skills for collecting and interpreting information, leadership skill and collaborative skill. If participatory practices require these additional skills on the part of employees, the wages of the employees with such skills will be higher than those without. Hamilton et al. (2003) show that the productivity gains of teams partly derive from the effective use of these non-technical skills. In particular, the collaborative skills of team members generate spill-over effect of human capital that raises productivity and wages of the team members.

An explanation of the relationship between employee participation and wages can be derived from the *theory of efficiency wage* that provides alternative rationales for why higher wages may lead to increased productivity. The relevance of this theory for the participation-wages relationship comes from the recognition that the ability of the employer to make employees conform to their authority is far from complete. Rather empirical sociologists suggest the existence of a complex equilibrium in which official work rules exist side by side with a set of informal customs. The enforced rules are often partial variations of both formal and informal norms. It is not difficult to imagine that employer's authority is even less in participatory employment than in individual employment. In this framework of incomplete authority of employer, the loyalty of employees becomes an important contributor to

[1]For a recent review of the literature, see Handel & Levine (2004).

high productivity. The efficiency wage theory suggests that the loyalty of employees is exchanged for high wages (Akerlof 1984). Another variant of efficiency wage theory focuses on the turnover cost to firms (Salop 1979). Turnover is costly to the firm for its direct costs of orientation and training and indirect cost of lower productivity during the adjustment period with new entrants. As a result, firms use wage policy to reduce turnover. The experienced and trained employees are paid more to economize on turnover cost. If implementation of participatory practices requires additional training for the workforce, the cost consideration of employee turnover may lead to higher wages for employees in firms with employee participation than those for employees in similar firms without employee participation. The intuition of Shapiro & Stiglitz (1984) can also be applied to justify wage differential between firms with and without employee participation practices. They argue that in presence of involuntary unemployment paying employees more than the "going wage" leads to higher cost of job-loss to the employees. This potential cost of job-loss reduces employee's incentive for shirking, given that there is a positive probability of being caught for shirking and fired. In employee participatory practices the employer, who reserves the right to fire an employee for shirking, is less effective in detecting shirking, since monitoring is delegated to lower level employees who are in effect co-worker of the shirking employee. With lower probability of being caught in firms with participatory practices than in other firms, the cost of job-loss in the former must be high enough to induce employees not to shirk.

The *theory of organizational complementarity* suggests that the combined effect of participatory practices is greater than the sum of effects of individual practices (Milgrom & Roberts 1995). Kandel & Lazear (1992) argue that effectiveness of teams is conditional on the presence of shared mode of compensation. The introduction of variable pays enhance workers motivation as well as shifts the earning risks to the employees (Lazear 2000). The effect of this joint change on employees' earnings will depend on the correlation between employees' efforts and the objective measure on which the shared compensation is based. A strong correlation between them not only motivates the employees, but also institutes a culture of peer monitoring, sense of ownership and identification with organizational goal, resulting in higher performance and higher earnings. On the other hand, if the performance measure is a bad proxy of employees effort, the effect on employees' earnings remains uncertain. Other channel through which shared mode of compensation such as profit sharing affects wages is the effect of profit sharing on turnover. Profit sharing makes wages flexible because the labour costs of a firm with profit sharing adjust automatically to its profitability. This flexibil-

ity leads to lower employment reduction under adverse shocks affecting profit. Lower turnover raises the value of firm-specific human capital accumulation, resulting in higher productivity and wages.

The principle of *compensating wage differentials* of Smith (1961) states that differences in pecuniary wages are required to compensate for non-pecuniary advantages and disadvantages of different jobs. The hedonic pricing version of the test of the principle defines a job as a vector non-wage attributes[2]. The pecuniary value of each attribute is not observable but is implicit in a single wage rate attached to a job. Firms offering less desirable non-wage attributes have to pay higher wages to attract workers of a given quality compared to firms offering more favorable attributes. If jobs in participation practices require higher efforts and have the possibility of termination, firms should offer better wages to attract workers for these jobs. On the other hand, if employees regard participatory practices as benefits because they make their job more interesting and relieve them from boredom of monotonous jobs, then firms may offer them lower wages. Hamilton et al. (2003) find that employees join work team even when their earnings decreases. On the contrary, Brown (1980) finds from a survey that employees show less interest in non-pecuniary benefits when it means foregoing some of the pecuniary benefits. So, it is not obvious if employees keep pecuniary and non-pecuniary benefits in separate mental accounts or they trade off some of pecuniary benefits for non-pecuniary aspects of their jobs.

3 Previous Empirical Works

This section presents a brief review of the empirical literature on the effect of employee participation on employees' wages. Capelli and Carter (2000) use a nationally representative sample of US establishments to analyze the effect of "high performance work practice" and computer usage on employees' pay. They find that higher wages are associated with team work and computer usage by front-line employees. The relationship appears to be weak in other occupations and in non-manufacturing sectors.

Black et al. (2004) examine the effect of organizational innovation on wages, wage-inequality, and employment changes. They use data from a representative sample of U.S. manufacturing establishments. Data come from

[2]see McNabb (1989) for an empirical test of the compensating differentials principle using hedonic wage equation.

two periods, with a panel design for a sub-sample of establishments. Their cross-section and first-difference estimation results show that organizational innovation in the form of employee participation increases wages. As for the distribution of wage gains, they find that non-production employees earn a wage premium, while production employees' pay remains unaffected. This is consistent with their second finding that organizational innovation increases within establishment wage inequality. Finally, they find that the association between different workplace practices and employment changes is not symmetric across workplace practices; work teams are associated with higher employment reduction than job-rotation is. The aggregate nature of variables (including the dependent variable for the wage equation, i.e. average establishment wage) in their study makes it difficult to draw a clear conclusion about employees' welfare.

Handel and Gittleman (2004) use data from a sample of U.S. non-agricultural establishments. The survey also interviewed two employees of each establishments covered in the main survey. They estimate three models: establishment model (average establishment wage as the dependent variable), employee model (individual wage as the dependent variable) and interaction model (taking account of different forms of complementarity between practices). From their estimates, they conclude that employee involvement practices do not have a detectable effects on the wages of the employees. The second model (employee model) might have failed to capture the true effects because the number of employees surveyed from each establishment is too few to be used for a serious test of the wage effect of organizational innovation.

Bailey et al. (2001) use survey data from 45 establishments in three industries - apparel, steel, and medical electronics and imaging. They find that participatory practices like self-directed teams, autonomy in decision making and communication have a positive association with the earning of employees in steel and apparel industry. The association becomes insignificant in medical electronincs and imaging industry when control for education is introduced.

Forth and Millward (2004) use the same data set used for the present study, the UK Workplace Employee Relations Survey (WERS) 1998. They divide the nine workplace practices in three categories: task practices, individual supports and organizational supports. Information contained in the data set allows controlling for detailed individual and establishment characteristics. Though they find non significant wage effects of most of the individual practices, the variable counting the number of practices appears to be

highly significant in individual wage equation. Also significant is the effect of the dummy variable they defined as "high-involvement management". Another important finding is the existence of a wage premium from innovative practices in presence of powerful trade union.

The works cited above and others in the literature do not take account of who adopts new workplace practices or who joins such workplace. Though the prescriptive literature on organization change has been obsessed to show the beneficiary effects of new workplace practices, their adoption has not been wide spread. A lot many firms have changed their work organization system, whereas a considerable number preferred to rely on old system. It is plausible to assume that there exists a stochastic process that determines the adoption of new practices and reasonably there exists a selection process that determines the type of employees who work in changed systems.

4 Data

This paper uses the British Workplace Employee Relations Survey 1998 (WERS'98) data[3] to analyze wage effect of employee participation. The management questionnaire of WERS'98 asks detailed information about the establishment characteristics and labour relations practices of 2191 non-agricultural establishments. In addition, it provides data on several dimensions of employee participation in the establishment. The employee questionnaire contains information about weekly earnings, educational qualification and other individual characteristics of 25 randomly selected employees of each establishment, or of all employees where the establishment has less than 25 employees. Data from establishments with 25 or more employees are used for this analysis. The two data files (management data file and employee data file) are matched to generate a unique data set that allows controlling for different individual and establishment characteristics. The analysis excludes the public sector establishment as the pays in public sector establishment are determined by a centralized process for which much information is not available in the data set.

In order to estimate the wage effect of employee participation we need a measure of employee participation in establishment. We consider three

[3]Department of Trade and Industry, Advisory, Conciliation and Arbitration Service, Workplace Employee Relations Survey : Cross-Section, 1998 [computer file]. 6th ed. Colchester, Essex: UK Data Archive [distributor], 23 January 2001. SN: 3955.

dimensions of employee participation - team work, profit sharing and consultation with the management. The importance of consultation is less or indirectly pronounced in the theoretical literature as compared to that of teams and profit sharing. Nevertheless, the industrial relations literature suggests that in an era of reduced trade union power the joint consultative committee (JCC) between workers and management serves as a vital platform for communication between the two levels. Usually work related issues are discussed in this committee, and valuable suggestions regarding improvement of work and work condition are generated. From the management data file of WERS'98 three dummy variables are constructed to represent these three dimensions of employee participation. Establishment is classified as team based workplace if 60% or more employees of largest occupational group are involved in work teams. If the establishment has profit sharing scheme for the employees of non-managerial occupational groups it is considered to contribute to the other dimension, shared mode of compensation, of the measure of participatory system. The third dummy variable is constructed from the presence of JCC in the establishment. Following Osterman (1994), a single additive index of employee participation is constructed that takes the following values

$$
\begin{aligned}
index &= 0 \text{ if none of team, profit sharing and JCC is present} \\
&\quad \text{in the establishment} \\
&= 1 \text{ if one of team, profit sharing and JCC is present} \\
&= 2 \text{ if two of team, profit sharing and JCC are present} \\
&= 3 \text{ if all of team, profit sharing and JCC are present}
\end{aligned}
$$

The employee data file contains information about weekly earnings in 12 bands and hours worked per week by an employee; the median of the band an employee's earning belong to is used to calculate hourly wage[4]. Other variables used in the estimation include years of education, tenure, training, demographic characteristics and several establishment characteristics. Observations with missing values are omitted. That leads to a final data set of 10979 employees from 747 private sector establishments with 25 or more employees.

[4]Battu et al. (2003) use similar method to calculate hourly earnings in their analysis of educational spillover.

Table 1: Employee participation and wage

Participatory practices	Employees	Establishments	Hourly wage	
			Mean	Std. Dev.
None (y=0)	1,625	131	6.2176	3.5114
Any one (y=1)	3,368	230	6.7660	4.3796
Any two (y=2)	4,337	280	7.3690	4.7143
All (y=3)	1,649	106	7.9257	4.3566
Total	10,979	747	7.0972	4.4288

Table 1 gives the mean hourly wages for different employee participation sectors corresponding to different values of the participation index. Details of all variables are given in Appendix A. Mean hourly wage for the whole sample is little more than £7. Mean wages are higher for the employees in establishment with higher employee participation. Average education level of the employees is more than 12 years. Mean years of education is lower than 12 years for the employees with no participatory practice, whereas that for the employees with at least one participatory practice is more than 12 years. There are 42% female employees and there is considerable variation in terms of industry and occupational group.

5 Estimation Strategy

The empirical literature on the impact of employee participation on the outcomes of interest ignores the issue of selectivity. In interpreting the empirical findings of the wage effect of employee participation, it is important to consider both the employers who adopt such practices and the employees who work in such environment. Though Black et al. (2004) among others mention the importance of the issue, they do not account for the selectivity problem in their econometric model.

Conceptually, selectivity or endogeneity or both can arise in wage-employee participation relationship. It is well known that employers use job design and compensation structure to screen the right type of workers for their jobs. The process of selectivity can be conceptualized as matching between employer and employees. The employers offer a menu of jobs that includes specification of workplace practices and compensation structures. The job specification

affects the distribution of potential workers who accept the job. The employees select the job offers that suit them best. A successful matching occurs when the seekers of a particular job are also the ones targeted by that job specification. On the employer side, the decision to adopt a participatory work practice, hence to offer a job with participatory practices, depends on industry, market condition, size of the establishment and training provisions for the employees[5]. On the employee side, the decision to accept a job offer in a participatory workplace depends on their perception on how they fit in the participatory workplace, and how they value the pecuniary and non-pecuniary aspects of the job.

An appropriate econometric model for wage-employee participation relationship would account for the selectivity inherent in the relationship[6]. We observe employee participation in four mutually exclusive groups. Suppose that employee participation affects the wages of the employees through intercept term. Then we can formulate the wage equations for four employee participation sectors as

$$w_{i0} = \alpha_0 + X_i\beta + v_{i0} \quad (1)$$
$$w_{i1} = \alpha_1 + X_i\beta + v_{i1} \quad (2)$$
$$w_{i2} = \alpha_2 + X_i\beta + v_{i2} \quad (3)$$
$$w_{i3} = \alpha_3 + X_i\beta + v_{i3} \quad (4)$$

where

w is the log of individual hourly wage
X is the vector of explanatory variables in wage equation
$\alpha_0, \alpha_1, \alpha_2, \alpha_3, \beta$ are the parameters of the equations

With $j = 0, 1, 2, 3$ for four employee participation sectors and d_{ij} as the dummies for these four sectors, the wage equations can be compactly written as

$$w_i = \alpha_0 + \sum_{j=1}^{3}(\alpha_j - \alpha_0)d_{ij} + X_i\beta + v_{i0} + \sum_{j=1}^{3}(v_{ij} - v_{i0})d_{ij} \quad (5)$$

The choice process underlying the matching between employers and em-

[5]Osterman (1994) and Pil and MacDuffie (1996) study the employer characteristics that facilitate the adoption of employee participation practices.

[6]Reilly (1996) uses a selectivity correction approach to analyze the effect of union density on wage.

ployees in different employee participation sectors can be modelled[7] as

$$D_i^* = Z_i\gamma + u_i \tag{6}$$

where D^* is the latent variable underlying the observed variable D taking values $0, 1, 2, 3$ for four employee participation sectors, Z is the vector of explanatory variables (both employer level and employee level) for the choice process and u is a random term. The v_j's of the wage equations and u are assumed to jointly normally distributed with covariance matrix

$$\sum = \begin{matrix} \sigma_0^2 & \sigma_{01} & \sigma_{02} & \sigma_{03} & \sigma_{0u} \\ . & \sigma_1^2 & \sigma_{12} & \sigma_{13} & \sigma_{1u} \\ . & . & \sigma_2^2 & \sigma_{23} & \sigma_{2u} \\ . & . & . & \sigma_3^2 & \sigma_{3u} \\ . & . & . & . & \sigma_u^2 \end{matrix}$$

where $\sigma_j^2 = Var(v_j)$ for $j = 0, 1, 2, 3$, $\sigma_u^2 = Var(u)$, and $\sigma_{01} = Cov(v_0, v_1)$, $\sigma_{12} = Cov(v_1, v_2)$ and so on. Suppose that the matching between employer and employee is determined as follows

$$\begin{aligned} D_i &= 0 \text{ or } d_{io} = 1 \text{ iff } Z_i\gamma + u_i \prec c_0 \\ D_i &= 1 \text{ or } d_{i1} = 1 \text{ iff } c_0 \preceq Z_i\gamma + u_i \prec c_1 \\ D_i &= 2 \text{ or } d_{i2} = 1 \text{ iff } c_1 \preceq Z_i\gamma + u_i \prec c_2 \\ D_i &= 3 \text{ or } d_{i3} = 1 \text{ iff } c_2 \preceq Z_i\gamma + u_i \end{aligned}$$

The selectivity in the wage determination precess implies that

$$E(v_{ij}|d_{ij} = 1) \neq 0 \qquad j = 0, 1, 2, 3$$

Controlling for the selectivity requires correction of the error terms of the wage equations incorporating the choice process. Since we observe employee participation in four mutually exclusive and ordered groups, the distribution of the latent variable is truncated around three points. Assuming standard

[7] It is possible to model the two components - employer side and employee side - of the matching process separately, and combine them to represent the successful matching. This approach leads to the same specification of the model presented here.

normal distribution of the u, we have

$$\begin{aligned}
\Pr(d_{i0} &= 1) = \Pr(Z_i\gamma + u_i \prec c_0) = -\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)} \\
\Pr(d_{i1} &= 1) = \Pr(c_0 \preceq Z_i\gamma + u_i \prec c_1) = \frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)} \\
\Pr(d_{i2} &= 1) = \Pr(c_1 \preceq Z_i\gamma + u_i \prec c_2) = \frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)} \\
\Pr(d_{i3} &= 1) = \Pr(c_2 \preceq Z_i\gamma + u_i) = \frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)}
\end{aligned}$$

The joint normality of the error terms in the wage equations and the choice process implies that the former error terms satisfy the following[8]

$$\begin{aligned}
E(v_{i0}|d_{i0} &= 1) = -\sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)} \\
E(v_{i1}|d_{i1} &= 1) = \sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)} \\
E(v_{i2}|d_{i2} &= 1) = \sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)} \\
E(v_{i3}|d_{i3} &= 1) = \sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)}
\end{aligned}$$

The wage equations, after correcting for the selectivity, can be written as

$$w_{i0} = \alpha_0 + X_i\beta - \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)} + \left[v_{i0} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right] \tag{7}$$

$$\begin{aligned}
w_{i1} &= \alpha_1 + X_i\beta + \sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)} \\
&\quad + \left[v_{i1} - \sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)}\right]
\end{aligned} \tag{8}$$

$$\begin{aligned}
w_{i2} &= \alpha_2 + X_i\beta + \sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)} \\
&\quad + \left[v_{i2} - \sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)}\right]
\end{aligned} \tag{9}$$

$$\begin{aligned}
w_{i3} &= \alpha_3 + X_i\beta + \sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)} \\
&\quad + \left[v_{i3} - \sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)}\right]
\end{aligned} \tag{10}$$

[8] See Maddala (1983, p. 366) for univariate presentation of the results used here.

Now the error terms (inside the square brackets) have zero means. The selectivity corrected wage equations can be compactly written as

$$
\begin{aligned}
w_i = \alpha_0 + \sum_{j=1}^{3}(\alpha_j - \alpha_0)d_{ij} + X_i\beta - \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)} \\
+ \sum_{j=1}^{2}\left(\sigma_{ju}\frac{\phi(c_{j-1} - Z_i\gamma) - \phi(c_j - Z_i\gamma)}{\Phi(c_j - Z_i\gamma) - \Phi(c_{j-1} - Z_i\gamma)} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right)d_{ij} \\
+ \left(\sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right)d_{i3} \\
+ \eta_{i0} + \sum_{j=1}^{3}(\eta_{ij} - \eta_{i0}) \qquad (11)
\end{aligned}
$$

where η_{ij}'s are the error terms of selectivity corrected wage equations for four employee participation sectors. Though the error terms in the final equation have zero means, they are heteroskedastic.

For the estimation of the selectivity corrected equation we proceed as follows: first we estimate the ordered probit model, from the estimates of γ and c's we calculate the correction terms, and finally we estimate the selectivity corrected equation by GLS method. The estimable form of the equation is given in Appendix B.

6 Estimation Results

First the ordered probit model is estimated for the index of employee participation using individual characteristics of the employees and several establishment characteristics. The establishment level variables include size of the establishment, trade union presence and market conditions. The industrial relations and management literature suggests that establishments with larger size economize on communication costs by organizing work around small teams. It is often argued that employers adopt more participatory practices when they cater to a competitive market. We include controls for several characteristics of the market. The industry dummies are also included to control for the technology and other specific effects of the industries. On the employee side the control variables include educational qualification, experience, training, occupation and other demographic characteristics. The ordered probit estimates (given in Appendix C) show that employees with

more education and training are more likely to join the participatory establishments. On the employer side, larger establishment size and more competitive market are positively associated with the adoption of participatory practices.

Given the probit estimates, the Mincerian wage equation is estimated for the employees. The explanatory variables include education, tenure, training, demographics and several characteristics of job and industry. The establishment level variables for market conditions which are likely to affect the adoption of participatory practices not wages are excluded for the estimation of wage equation. For the purpose of comparison we estimate the wage equation using two methods - OLS without correction for selectivity and GLS with selectivity correction terms. Table 2 gives estimates of the main parameters (details are left for Appendix C). The first column gives the OLS estimates without correction for selectivity and the second column gives selectivity corrected GLS estimates.

The wage effect of education is higher in simple OLS estimation than in selectivity corrected GLS estimation. The OLS estimate suggests that an extra year of education increases wage by 3.6%. The wage gain for an extra year of education is about 3% according to the selectivity corrected estimate. For other variables estimates are similar in both estimation methods. One exception is establishment size[9], OLS estimate suggests that the establishment size has a positive significant effect on wages whereas the size effect in GLS estimation is insignificant. More training and higher tenure are associated with higher wage. Most of the coefficients have expected signs. The selectivity correction terms in GLS estimation are all significant.

The OLS estimates of the dummy variables representing different employee participation sectors are different from those of GLS, though both set of estimates indicate positive effects on wage. Since the omitted sector in this set of dummy variables is "none of team, profit sharing and JCC", the estimates imply change of wage for a participatory sector as compared to this omitted sector. Moreover, the econometric specification implies that the coefficient of the dummy variable of a participatory sector is the difference between the intercept terms of the wage equations of that sector and of the omitted sector. In other words, the wage equations of different participatory sectors are parallel and the coefficients of the dummy variables capture the shift of the wage equations from the sector with no employee participation.

[9]In all estimations - probit, OLS and GLS - log of number of employees is used, instead of number of employees.

Table 2: Estimates of the Wage Equation

	OLS estimates		GLS estimates	
Variable	Coefficient	T-statistics	Coefficient	T-statistics
Intercept	0.8325	22.44	0.8950	17.96
d(1)	0.0301	2.91	0.1656	3.78
d(2)	0.0311	2.97	0.2831	4.58
d(3)	0.0480	3.76	0.4393	4.66
Education	0.0364	20.27	0.0293	17.21

The OLS estimates suggest that having any one of the participatory practices increases the wage of the employees by 3%. The wage gain for having two and three participatory practices are 3.1% and 4.9%, respectively. The selectivity corrected GLS estimates give a different picture, the wage gains are higher for higher levels of employee participation. The wage gain for at least one practice is 18%. The wage premium for any two and three participatory practices are 32.7% and 55.1% respectively. It is evident that employee participation has positive effect on the wages of the employees and the effect is much higher than the simple estimation method can capture. It is also apparent that ignoring the issue of selectivity can lead to downward biased estimates of the actual effect.

The employer size premium, which has been documented in several empirical studies, disappears as we control for selectivity. The indication of this finding is that the employer size premium derives from adoption of participatory practices and selectivity of workers into such practices. Futher investigation is required to resolve the issue. However, it is consistent with the theory of organizational design that emphasize that larger employers economize on coordination and monitoring costs by adopting employee participatory practices and employees are paid higher wages by large employers to compensate for the additional responsibility of coordination with the co-worker and to deter shirking in absence of centralized monitoring.

We investigate the wage effect of education in different participatory sectors. An interaction model is estimated to capture the wage effect of education across participatory sectors. Estiamtes of the main parameters are given in table 3 (details are in Appendix C). The effect of employee participation exhibits similar pattern - wage gain is higher for higher employee participation. The effect of education exhibits a reverse pattern. The selectivity

Table 3: Estimates of the Wage Equation (Interaction Model)

	OLS estimates		GLS estimates	
Variable	Coefficient	T-statistics	Coefficient	T-statistics
Intercept	0.8110	13.50	0.8383	12.29
d(1)	0.0137	0.23	0.1826	2.53
d(2)	0.0666	1.14	0.3608	4.36
d(3)	0.1256	1.83	0.5561	4.87
Education*d(0)	0.0382	8.69	0.0340	7.19
Education*d(1)	0.0395	14.32	0.0325	12.04
Education*d(2)	0.0353	14.47	0.0275	12.37
Education*d(3)	0.0319	8.54	0.0247	8.01

corrected GLS estimates show that the highest wage gain (3.4%) for an extra year of education is in no employee participation sector. The gain from education gradually decreases for higher employee participation sectors. An extra year of education earns the lowest wage gain (2.5%) in the employee participation sector characterized by the presence of all employee participatory practices. This finding has implication for the wage gap between high educated and low educated employees, hence for the wage inequality. It lends support to the hypothesis that the emerging "*paradigm of employment relationship*" can reverse the wage inequality between high educated and low educated employees that has widened in last 30 years. It is also consistent with the view that high educated employees join participatory systems in spite of lower wage gain for their education. The findings that high educated employees tend to join participatory establishments and that education earns a lower wage premium in participatory establishments suggests the existence of non-pecuniary benefits for high educated employees. Data shows that employee heterogeneity in terms of education is higher in establishments with more employee participation practices. The non-pecuniary benefits for high educated employees, thus, can be in the form of leadership. Similarly the wage gains for less educated employees can derive from peer learning from high educated employees and human capital spill-over of high educated employees.

In the data set we have valid observations for 9218 full-time employees - those who work 30 or more hours a week. We estimate the wage equation for the full time employees. Main estimates are given in table 4 (details in Appendix C). The selectivity correction terms are all significant. The pattern is similar to the estimates for all employees. The wage gains are 13%, 27.7%

Table 4: Estimates of the Wage Equation (Full-time employees)

	OLS estimates		GLS estimates	
Variable	Coefficient	T-statistics	Coefficient	T-statistics
Intercept	0.4095	10.01	0.5189	10.10
d(1)	0.0319	3.06	0.1223	2.91
d(2)	0.0369	3.50	0.2448	4.06
d(3)	0.0537	4.17	0.3907	4.23
Education	0.0365	20.87	0.0298	17.75

and 47.8% for having respectively one, two and all employee participatory practices.

7 Conclusion

In this paper we have estimated the wage effect of employee participation practices - work team, profit sharing and joint consultative committee - using matched employee-establishment data. Using an additive index of employee participation we find that employee participation raises the hourly wage of the employees. Wage gains are higher for higher levels of employee participation.

We take explicit account of the selectivity that arises because of selective adoption of employee participation practices by employers and self-selection of employees into preferred participatory establishments. It is evident that the simple OLS method under-estimates the effect of employee participation on wage. The selectivity corrected GLS estimates show that the presence of one employee participatory practice raises the hourly wage by 18%. The wage gain for two and three employee participation practices are 32.7% and 55.1% respectively. The pattern of wage gains remains similar when only full-time employees are considered.

There is indication that the employer size premium results from the selectivity that arises from large employers offering job-design and compensation schemes to attract a particular type of workers. So when control is taken for selectivity the employer size premium disappears. However, futher investigation is required to resolve this issue. The estimates show that the wage gain for higher education is lower in participatory establishment than in traditionally organized establishments, indicating an equalizing effect of

employee participatory practices. In spite of lower wage gains high educated employees tend to join participatory practices, suggesting the existence of non-pecuniary benefits for high educated employees. On the other hand, less educated employees' wage gain can be the result of peer learning and human capital spill-over in participatory establishments with heterogenous education levels.

This findings have important policy implications. The policy measures to promote employee participation to boost competitiveness of the economy can also put downward pressure on the growing wage inequality between high educated and less educated employees. Since most of the employee participatory practices involve employees from the bottom end of the occupational ladder, these policy measures can reverse the trend of creation of "bad job" for the these employees.

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A Appendix A

Employee Level Variables

Variable	Definition	Mean	Std. Dev.
Hourly wage	(median of the earnings band)/(hours worked)	7.0972	4.4288
Education	Years of education: converted from highest educational qualification; no qualification (10 years), CSE/GCE/O-level (11 years), A-level (13 years), Degree (16years), Higher degree (18 years). For vocational training one extra year is added.	12.3707	2.2760
Tenure			
(ref. is less than 1 yr)			
Tenure1to2	1 for tenure between 1 and 2 yrs, 0 otherwise	0.1257	0.3315
Tenure2to5	1 for tenure between 2 and 5 yrs, 0 otherwise	0.2310	0.4215
Tenure5to10	1 for tenure between 5 and 10 yrs, 0 otherwise	0.2058	0.4043
Tenure10	1 for tenure more than 10 yrs, 0 otherwise	0.2607	0.4390
Training			
(ref. is no training)			
Training1	1 if the employee had 1 day training, 0 otherwise	0.0964	0.2951
Training1to2	1 if the employee had 1 to 2 days training, 0 otherwise	0.1212	0.3264
Training2to5	1 if the employee had 2 to 5 days training, 0 otherwise	0.1861	0.3892
Training5to10	1 if the employee had 5 to 10 days training, 0 otherwise	0.0916	0.2885
Training10	1 if the employee had more than 10 days training, 0 otherwise	0.0902	0.2864
Disability	1 if the employee has physical disability, 0 otherwise	0.0527	0.2235
Ethnic	1 if the employee has ethnic origin, 0 otherwise	0.0390	0.1936
Job type			
(ref. is temporary)			
Permanent	1 if he job is permanent, 0 otherwise	0.9554	0.2065
Fixed term	1 if the job is fixed-term, 0 otherwise	0.9554	0.2065
Female	1 if the employee is female, 0 otherwise	0.4170	0.4931
Age			
(ref. is less than 20 yrs)			
Age20to24	1 if age is between 20 and 24 yrs, 0 otherwise	0.0944	0.2923
Age25to29	1 if age is between 25 and 29 yrs, 0 otherwise	0.1484	0.3555
Age30to39	1 if age is between 30 and 39 yrs, 0 otherwise	0.2748	0.4464
Age40to49	1 if age is between 40 and 49 yrs, 0 otherwise	0.2242	0.4170
Age50to59	1 if age is between 50 and 60 yrs, 0 otherwise	0.1691	0.3749
Age60	1 if age is more than 60 yrs, 0 otherwise	0.0336	0.1802
Occupational Group			
(ref. is unskilled)			
Managerial	1 for managerial job, 0 otherwise	0.1171	0.3216
Professional	1 for professional job, 0 otherwise	0.0880	0.2833
Assist. prof & technical	1 for assistant professional & technical, 0 otherwise	0.0815	0.2736
Clerical & Secretarial	1 for clerical & secretarial, 0 otherwise	0.1985	0.3989
Craft & Skilled	1 for craft & skilled job, 0 otherwise	0.1176	0.3221
Personal & Protective	1 for personal & protective services, 0 otherwise	0.0247	0.1552
Sales	1 for sales job, 0 otherwise	0.1351	0.3418
Operative & assembly	1 for operative & assembly job, 0 otherwise	0.1558	0.3627

Establishment Level Variables

Variable	Definition	Mean	Std. Dev.
Participation dummies			
(ref. none of the three)			
d(1)	1 if one of team, profit-sharing & JCC, 0 otherwise	0.3068	0.4612
d(2)	1 if two of team, profit-sharing & JCC, 0 otherwise	0.3950	0.4889
d(3)	1 if all of team, profit-sharing & JCC, 0 otherwise	0.1502	0.3573
Size	number of employees in the establishment	283.5227	669.8967
Union			
(Ref. is no recognized trade union)			
Single trade union	1 if single recognized trade union, 0 otherwise	0.2879	0.4528
Multiple trade union	1 if multiple recognized trade union, 0 otherwise	0.2722	0.4451
Competition			
(ref. is no competitor)			
Few comp	1 if number of competitors is less than 5, 0 otherwise	0.3322	0.4710
Many comp	1 for number of competitors is more than 5, 0 otherwise	0.6104	0.4877
Mkt. condition			
(ref. is stable market)			
Growing mkt.	1 if the mkt. is growing, 0 otherwise	0.4812	0.4997
Declining mkt.	1 if the mkt. is declining, 0 otherwise	0.0751	0.2635
Turbulent mkt.	1 if the mkt. is turbulent, 0 otherwise	0.1603	0.3669
Industry			
(ref. is manufacturing)			
EGW	1 for electricity, gas & water industry, 0 otherwise	0.0580	0.2338
Construction	1 for construction industry, 0 otherwise	0.0526	0.2233
W&R	1 for wholesale & retail, 0 otherwise	0.2209	0.4149
H&R	1 for hotel & restaurant, 0 otherwise	0.0635	0.2438
T&C	1 for transport & communication, 0 otherwise	0.0767	0.2661
Financial services	1 for financial services, 0 otherwise	0.1098	0.3126
Obs	1 for other business services, 0 otherwise	0.1332	0.3398

A Appendix B

$$
\begin{aligned}
w_i = \alpha_0 + \sum_{j=1}^{3}(\alpha_j - \alpha_0)d_{ij} + X_i\beta - \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)} + \left[v_{i0} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right] \\
+ \left(\sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right) d_{i1} \\
+ \left[v_{i1} - \sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)}\right] d_{i1} \\
+ \left(\sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right) d_{i2} \\
+ \left[v_{i2} - \sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)}\right] d_{i2} \\
+ \left(\sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)} + \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right) d_{i3} \\
+ \left[v_{i3} - \sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)}\right] d_{i3}
\end{aligned}
$$

$$
\begin{aligned}
\Rightarrow w_i = \alpha_0 + \sum_{j=1}^{3}(\alpha_j - \alpha_0)d_{ij} + X_i\beta - \sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\left(1 - (d_{i1} + d_{i2} + d_{i3})\right) \\
+ \left(\sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)}\right) d_{i1} \\
+ \left(\sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)}\right) d_{i2} \\
+ \left(\sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)}\right) d_{i3} + \eta_{i0} + \sum_{j=1}^{3}(\eta_{ij} - \eta_{i0})
\end{aligned}
$$

$$
\begin{aligned}
\Rightarrow w_i = \alpha_0 + \sum_{j=1}^{3}(\alpha_j - \alpha_0)d_{ij} + X_i\beta - \left(\sigma_{0u}\frac{\phi(c_0 - Z_i\gamma)}{\Phi(c_0 - Z_i\gamma)}\right) d_{i0} \\
+ \left(\sigma_{1u}\frac{\phi(c_0 - Z_i\gamma) - \phi(c_1 - Z_i\gamma)}{\Phi(c_1 - Z_i\gamma) - \Phi(c_0 - Z_i\gamma)}\right) d_{i1} \\
+ \left(\sigma_{2u}\frac{\phi(c_1 - Z_i\gamma) - \phi(c_2 - Z_i\gamma)}{\Phi(c_2 - Z_i\gamma) - \Phi(c_1 - Z_i\gamma)}\right) d_{i2} \\
+ \left(\sigma_{3u}\frac{\phi(c_2 - Z_i\gamma)}{1 - \Phi(c_2 - Z_i\gamma)}\right) d_{i3} + \eta_{i0} + \sum_{j=1}^{3}(\eta_{ij} - \eta_{i0})
\end{aligned}
$$

The final form can be estimated once the correction terms are known (from 1st stage estimation).

A Appendix C

Ordered Probit Estimates

Variable	Coefficient	S. E.	T-statistics
Education	0.0198	0.0059	3.36
Tenure1to2	-0.0768	0.0384	-2.00
Tenure2to5	0.0125	0.0340	0.37
Tenure5to10	0.0416	0.0361	1.15
Tenure10	0.0821	0.0369	2.22
Training1	0.1800	0.0378	4.76
Training1to2	0.2264	0.0347	6.52
Training2to5	0.2372	0.0307	7.72
Training5to10	0.2516	0.0397	6.35
Training10	0.2536	0.0400	6.35
Disability	-0.0174	0.0469	-0.37
Ethnic	-0.1405	0.0539	-2.61
Permanent	0.1920	0.0665	2.89
Fixed term	0.1877	0.1028	1.83
Female	0.0326	0.0254	1.28
Age20to24	0.0490	0.0573	0.85
Age25to29	0.0556	0.0550	1.01
Age30to39	0.0236	0.0527	0.45
Age40to49	0.0476	0.0542	0.88
Age50to59	0.0591	0.0561	1.05
Age60	-0.0093	0.0760	-0.12
Managerial	0.2317	0.0523	4.43
Professional	0.3777	0.0587	6.43
Assist.. prof & technical	0.2808	0.0566	4.96
Clerical & Secretarial	0.3441	0.0482	7.14
Craft & Skilled	0.0735	0.0513	1.43
Personal & Protective	-0.0571	0.0779	-0.73
Sales	0.2589	0.0509	5.08
Operative & assembly	0.2253	0.0490	4.60
Size	0.2588	0.0111	23.25
Single union	0.0383	0.0272	1.41
Multiple union	0.2796	0.0328	8.53
Few comp	0.2920	0.0538	5.42
Many comp	0.2520	0.0539	4.68
Growing mkt.	-0.1178	0.0256	-4.61
Declining mkt.	-0.4282	0.0440	-9.73
Turbulent mkt.	-0.3655	0.0332	-11.01
EGW	0.9419	0.0603	15.62
Construction	-0.4437	0.0540	-8.22
W&R	0.3742	0.0379	9.87
H&R	0.0443	0.0548	0.81
T&C	0.1051	0.0429	2.45
Financial services	0.5917	0.0439	13.47
Obs	0.1504	0.0398	3.78
c(0)	1.3350	0.1314	
c(1)	2.4217	0.1323	
c(2)	3.7622	0.1343	

OLS Estimates

Variable	Coefficient	S. E.	T-statistics
Intercept	0.8325	0.0371	22.44
d(1)	0.0301	0.0103	2.91
d(2)	0.0311	0.0105	2.97
d(3)	0.0480	0.0128	3.76
Education	0.0364	0.0018	20.27
Tenure1to2	0.0148	0.0117	1.27
Tenure2to5	0.0476	0.0104	4.59
Tenure5to10	0.0703	0.0110	6.40
Tenure10	0.1136	0.0112	10.14
Training1	0.0186	0.0116	1.60
Training1to2	0.0470	0.0106	4.44
Training2to5	0.0534	0.0094	5.71
Training5to10	0.0500	0.0120	4.15
Training10	-0.0123	0.0122	-1.01
Disability	-0.0384	0.0142	-2.69
Ethnic	-0.0131	0.0165	-0.80
Permanent	0.0247	0.0201	1.23
Fixed term	-0.0720	0.0310	-2.33
Female	-0.1106	0.0078	-14.25
Age20to24	-0.0153	0.0175	-0.87
Age25to29	0.1077	0.0168	6.42
Age30to39	0.2238	0.0161	13.93
Age40to49	0.2168	0.0165	13.11
Age50to59	0.2034	0.0171	11.90
Age60	0.1447	0.0231	6.26
Managerial	0.5346	0.0159	33.52
Professional	0.4814	0.0179	26.94
Assist.. prof & technical	0.3957	0.0172	22.96
Clerical & Secretarial	0.1745	0.0147	11.88
Craft & Skilled	0.1685	0.0155	10.85
Personal & Protective	-0.0188	0.0236	-0.80
Sales	0.1266	0.0156	8.12
Operative & assembly	0.0072	0.0149	0.48
Size	0.0214	0.0034	6.27
Single union	-0.0518	0.0083	-6.23
Multiple union	0.0627	0.0100	6.28
EGW	0.0917	0.0158	5.80
Construction	0.0168	0.0159	1.05
W&R	-0.0615	0.0116	-5.31
H&R	-0.2240	0.0165	-13.57
T&C	-0.0183	0.0131	-1.40
Financial services	0.1241	0.0129	9.60
Obs	0.0511	0.0120	4.24

GLS Estimates with Correction for Selectivity

Variable	Coefficient	S. E.	T-statistics
Intercept	0.8950	0.0498	17.96
d(1)	0.1656	0.0438	3.78
d(2)	0.2831	0.0618	4.58
d(3)	0.4393	0.0942	4.66
Education	0.0293	0.0017	17.21
Tenure1to2	0.0240	0.0124	1.94
Tenure2to5	0.0473	0.0106	4.45
Tenure5to10	0.0676	0.0109	6.19
Tenure10	0.1058	0.0112	9.48
Training1	0.0007	0.0117	0.06
Training1to2	0.0226	0.0110	2.05
Training2to5	0.0293	0.0101	2.91
Training5to10	0.0286	0.0125	2.29
Training10	-0.0129	0.0134	-0.96
Disability	-0.0289	0.0132	-2.18
Ethnic	-0.0013	0.0188	-0.07
Permanent	0.0415	0.0223	1.86
Fixed term	-0.0426	0.0344	-1.24
Female	-0.1279	0.0075	-17.07
Age20to24	-0.0249	0.0220	-1.13
Age25to29	0.0953	0.0213	4.48
Age30to39	0.2099	0.0209	10.02
Age40to49	0.2018	0.0212	9.53
Age50to59	0.1926	0.0215	8.95
Age60	0.1451	0.0257	5.64
Managerial	0.5212	0.0172	30.25
Professional	0.4571	0.0194	23.54
Assist.. prof & technical	0.3744	0.0184	20.31
Clerical & Secretarial	0.1586	0.0164	9.65
Craft & Skilled	0.1673	0.0159	10.50
Personal & Protective	0.0231	0.0285	0.81
Sales	0.0885	0.0173	5.10
Operative & assembly	-0.0059	0.0158	-0.37
Size	-0.0023	0.0063	-0.37
Single union	-0.0568	0.0082	-6.96
Multiple union	0.0379	0.0108	3.50
EGW	0.0211	0.0214	0.99
Construction	0.0714	0.0179	3.99
W&R	-0.0980	0.0132	-7.40
H&R	-0.2508	0.0160	-15.69
T&C	-0.0399	0.0119	-3.34
Financial services	0.0575	0.0165	3.47
Obs	0.0554	0.0128	4.32
Correction term (0)	-0.1221	0.0329	-3.71
Correction term (1)	-0.1010	0.0244	-4.14
Correction term (2)	-0.1148	0.0250	-4.60
Correction term (3)	-0.1139	0.0318	-3.58

OLS Estimates (Interaction Model)

Variable	Coefficient	S. E.	T-statistics
Intercept	0.8110	0.0601	13.50
d(1)	0.0137	0.0604	0.23
d(2)	0.0666	0.0586	1.14
d(3)	0.1256	0.0688	1.83
Education*d(0)	0.0382	0.0044	8.69
Education*d(1)	0.0395	0.0028	14.32
Education*d(2)	0.0353	0.0024	14.47
Education*d(3)	0.0319	0.0037	8.54
Tenure1to2	0.0143	0.0117	1.22
Tenure2to5	0.0473	0.0104	4.57
Tenure5to10	0.0702	0.0110	6.39
Tenure10	0.1131	0.0112	10.09
Training1	0.0182	0.0116	1.57
Training1to2	0.0467	0.0106	4.41
Training2to5	0.0533	0.0094	5.69
Training5to10	0.0501	0.0120	4.16
Training10	-0.0121	0.0122	-0.99
Disability	-0.0381	0.0142	-2.68
Ethnic	-0.0132	0.0165	-0.80
Permanent	0.0252	0.0201	1.25
Fixed term	-0.0715	0.0310	-2.31
Female	-0.1105	0.0078	-14.23
Age20to24	-0.0156	0.0175	-0.89
Age25to29	0.1074	0.0168	6.40
Age30to39	0.2237	0.0161	13.92
Age40to49	0.2166	0.0165	13.10
Age50to59	0.2033	0.0171	11.89
Age60	0.1449	0.0231	6.27
Managerial	0.5338	0.0160	33.46
Professional	0.4817	0.0179	26.95
Assist.. prof & technical	0.3950	0.0172	22.91
Clerical & Secretarial	0.1732	0.0147	11.76
Craft & Skilled	0.1676	0.0155	10.78
Personal & Protective	-0.0202	0.0236	-0.86
Sales	0.1254	0.0156	8.04
Operative & assembly	0.0069	0.0149	0.46
Size	0.0215	0.0034	6.30
Single union	-0.0518	0.0083	-6.23
Multiple union	0.0629	0.0100	6.29
EGW	0.0932	0.0158	5.89
Construction	0.0175	0.0159	1.10
W&R	-0.0612	0.0116	-5.29
H&R	-0.2241	0.0165	-13.58
T&C	-0.0182	0.0131	-1.39
Financial services	0.1245	0.0129	9.62
Obs	0.0507	0.0121	4.20

GLS Estimates with Correction for Selectivity (Interaction Model)

Variable	Coefficient	S. E.	T-statistics
Intercept	0.8383	0.0682	12.29
d(1)	0.1826	0.0722	2.53
d(2)	0.3608	0.0828	4.36
d(3)	0.5561	0.1142	4.87
Education*d(0)	0.0340	0.0047	7.19
Education*d(1)	0.0325	0.0027	12.04
Education*d(2)	0.0275	0.0022	12.37
Education*d(3)	0.0247	0.0031	8.01
Tenure1to2	0.0238	0.0124	1.92
Tenure2to5	0.0473	0.0106	4.45
Tenure5to10	0.0683	0.0109	6.25
Tenure10	0.1045	0.0112	9.36
Training1	0.0005	0.0117	0.04
Training1to2	0.0223	0.0110	2.03
Training2to5	0.0282	0.0101	2.80
Training5to10	0.0290	0.0125	2.32
Training10	-0.0112	0.0134	-0.84
Disability	-0.0279	0.0133	-2.11
Ethnic	-0.0003	0.0188	-0.01
Permanent	0.0419	0.0224	1.87
Fixed term	-0.0434	0.0344	-1.26
Female	-0.1266	0.0075	-16.91
Age20to24	-0.0252	0.0220	-1.14
Age25to29	0.0950	0.0213	4.46
Age30to39	0.2096	0.0210	9.99
Age40to49	0.2026	0.0212	9.55
Age50to59	0.1930	0.0216	8.95
Age60	0.1450	0.0258	5.62
Managerial	0.5214	0.0173	30.23
Professional	0.4600	0.0194	23.73
Assist.. prof & technical	0.3756	0.0184	20.37
Clerical & Secretarial	0.1570	0.0165	9.53
Craft & Skilled	0.1673	0.0160	10.47
Personal & Protective	0.0189	0.0285	0.66
Sales	0.0875	0.0174	5.03
Operative & assembly	-0.0059	0.0159	-0.37
Size	-0.0021	0.0063	-0.33
Single union	-0.0574	0.0082	-7.04
Multiple union	0.0375	0.0108	3.46
EGW	0.0227	0.0214	1.06
Construction	0.0715	0.0178	4.02
W&R	-0.0965	0.0132	-7.29
H&R	-0.2501	0.0159	-15.68
T&C	-0.0387	0.0120	-3.24
Financial services	0.0587	0.0165	3.55
Obs	0.0554	0.0129	4.30
Correction term (0)	-0.1218	0.0332	-3.67
Correction term (1)	-0.0975	0.0245	-3.99
Correction term (2)	-0.1161	0.0250	-4.64
Correction term (3)	-0.1173	0.0319	-3.67

Ordered Probit Estimates (Full-time employees)

Variable	Coefficient	S. E.	T-statistics
Education	0.0192	0.0063	3.04
Tenure1to2	-0.0723	0.0439	-1.65
Tenure2to5	-0.0215	0.0380	-0.57
Tenure5to10	0.0131	0.0398	0.33
Tenure10	0.0023	0.0406	0.06
Training1	0.2195	0.0445	4.94
Training1to2	0.2180	0.0384	5.68
Training2to5	0.2043	0.0332	6.16
Training5to10	0.2363	0.0423	5.58
Training10	0.2332	0.0423	5.52
Disability	-0.0232	0.0516	-0.45
Ethnic	-0.1819	0.0602	-3.02
Permanent	0.2837	0.0889	3.19
Fixed term	0.2109	0.1253	1.68
Female	0.0737	0.0284	2.60
Age20to24	-0.0470	0.0756	-0.62
Age25to29	-0.0433	0.0732	-0.59
Age30to39	-0.0761	0.0719	-1.06
Age40to49	-0.0723	0.0732	-0.99
Age50to59	-0.0483	0.0749	-0.64
Age60	-0.1195	0.0970	-1.23
Managerial	0.1915	0.0605	3.17
Professional	0.3180	0.0666	4.77
Assist.. prof & te	0.2267	0.0644	3.52
Clerical & Secre	0.2332	0.0590	3.95
Craft & Skilled	0.0162	0.0588	0.28
Personal & Prot	-0.0713	0.0936	-0.76
Sales	0.1825	0.0667	2.73
Operative & ass	0.1719	0.0573	3.00
Size	0.2537	0.0122	20.86
Single union	0.1283	0.0306	4.20
Multiple union	0.3937	0.0351	11.21
Few comp	0.3148	0.0565	5.57
Many comp	0.2666	0.0567	4.71
Growing mkt.	-0.1125	0.0277	-4.07
Declining mkt.	-0.4494	0.0465	-9.66
Turbulent mkt.	-0.3397	0.0359	-9.47
EGW	0.9661	0.0620	15.59
Construction	-0.4255	0.0555	-7.66
W&R	0.3635	0.0409	8.88
H&R	0.0486	0.0606	0.80
T&C	0.0970	0.0440	2.20
Financial service	0.5720	0.0467	12.25
Obs	0.2298	0.0420	5.47
c(0)	1.2627	0.1566	
c(1)	2.3583	0.1575	
c(2)	3.7327	0.1594	

OLS Estimates (Full-time employees)

Variable	Coefficient	S. E.	T-statistics
Intercept	0.4095	0.0409	10.01
d(1)	0.0319	0.0105	3.06
d(2)	0.0369	0.0105	3.50
d(3)	0.0537	0.0129	4.17
Education	0.0365	0.0017	20.87
Tenure1to2	0.0146	0.0122	1.20
Tenure2to5	0.0603	0.0105	5.72
Tenure5to10	0.0837	0.0110	7.60
Tenure10	0.1216	0.0112	10.85
Training1	0.0087	0.0124	0.70
Training1to2	0.0572	0.0107	5.37
Training2to5	0.0644	0.0092	7.00
Training5to10	0.0653	0.0117	5.59
Training10	0.0257	0.0117	2.20
Disability	-0.0348	0.0143	-2.43
Ethnic	-0.0503	0.0168	-3.00
Permanent	0.0711	0.0244	2.91
Fixed term	-0.0156	0.0343	-0.46
Female	-0.1212	0.0079	-15.38
Age20to24	0.2477	0.0210	11.81
Age25to29	0.3874	0.0203	19.07
Age30to39	0.5095	0.0199	25.57
Age40to49	0.5135	0.0203	25.29
Age50to59	0.5027	0.0208	24.21
Age60	0.4597	0.0268	17.14
Managerial	0.5785	0.0168	34.46
Professional	0.5242	0.0185	28.38
Assist.. prof & technical	0.4411	0.0179	24.68
Clerical & Secretarial	0.2659	0.0164	16.24
Craft & Skilled	0.2283	0.0162	14.06
Personal & Protective	-0.0300	0.0259	-1.16
Sales	0.1928	0.0186	10.37
Operative & assembly	0.0670	0.0159	4.22
Size	0.0252	0.0034	7.44
Single union	-0.0561	0.0085	-6.63
Multiple union	0.0570	0.0098	5.83
EGW	0.0786	0.0147	5.33
Construction	0.0253	0.0149	1.70
W&R	-0.0622	0.0114	-5.45
H&R	-0.2279	0.0166	-13.69
T&C	-0.0242	0.0122	-1.98
Financial services	0.1137	0.0125	9.08
Obs	0.0649	0.0116	5.60

GLS Estimates with Correction for Selectivity (Full-time employees)

Variable	Coefficient	S. E.	T-statistics
Intercept	0.5189	0.0514	10.10
d(1)	0.1223	0.0421	2.91
d(2)	0.2448	0.0604	4.06
d(3)	0.3907	0.0924	4.23
Education	0.0298	0.0017	17.75
Tenure1to2	0.0199	0.0128	1.56
Tenure2to5	0.0582	0.0108	5.39
Tenure5to10	0.0787	0.0110	7.18
Tenure10	0.1153	0.0111	10.41
Training1	-0.0069	0.0131	-0.53
Training1to2	0.0353	0.0109	3.25
Training2to5	0.0397	0.0098	4.07
Training5to10	0.0426	0.0123	3.47
Training10	0.0103	0.0128	0.80
Disability	-0.0278	0.0130	-2.14
Ethnic	-0.0306	0.0170	-1.80
Permanent	0.0656	0.0243	2.70
Fixed term	-0.0067	0.0365	-0.18
Female	-0.1330	0.0078	-17.01
Age20to24	0.2494	0.0260	9.61
Age25to29	0.3874	0.0254	15.23
Age30to39	0.5130	0.0252	20.34
Age40to49	0.5199	0.0254	20.45
Age50to59	0.5056	0.0257	19.68
Age60	0.4742	0.0297	15.98
Managerial	0.5694	0.0173	33.00
Professional	0.5104	0.0191	26.66
Assist.. prof & technical	0.4262	0.0180	23.63
Clerical & Secretarial	0.2423	0.0166	14.58
Craft & Skilled	0.2234	0.0159	14.03
Personal & Protective	0.0026	0.0345	0.08
Sales	0.1636	0.0206	7.94
Operative & assembly	0.0491	0.0161	3.05
Size	0.0004	0.0061	0.07
Single union	-0.0636	0.0086	-7.40
Multiple union	0.0238	0.0120	1.97
EGW	0.0103	0.0212	0.49
Construction	0.0694	0.0167	4.16
W&R	-0.0859	0.0134	-6.42
H&R	-0.2527	0.0163	-15.46
T&C	-0.0404	0.0115	-3.51
Financial services	0.0581	0.0159	3.65
Obs	0.0612	0.0128	4.80
Correction term (0)	-0.0947	0.0316	-3.00
Correction term (1)	-0.1094	0.0239	-4.58
Correction term (2)	-0.1139	0.0247	-4.61
Correction term (3)	-0.1051	0.0310	-3.39