Lancaster University Management School
Working Paper
2004/031

The Impacts of Human Resource Management Practices and Pay Inequality on Workers' Job Satisfaction

Bradley, Steve; Petrescu, Alina and Simmons, Rob

The Department of Economics
Lancaster University Management School
Lancaster LA1 4YX
UK

The Impacts of Human Resource Management Practices and Pay Inequality on Workers' Job Satisfaction

Paper presented at the Western Economic Association 79th Annual Conference
Vancouver 2004

Steve Bradley, Alina Petrescu and Rob Simmons

Department of Economics
The Management School
Lancaster University
Lancaster, U.K.
Email: s.bradley@lancaster.ac.uk

May 2004

ABSTRACT

In this paper we investigate the relationship between Human Resource Management (HRM) practices and workers' overall job satisfaction and their satisfaction with pay. To investigate these issues we use British data from the 'Changing Employment Relationships, Employment Contracts and the Future of Work Survey' and the 'Workplace Employment Relations Survey'. After controlling for personal, job and firm characteristics, it is shown that several HRM practices raise workers overall job satisfaction and their satisfaction with pay, but these effects are only significant for non-union members. Satisfaction with pay is higher where performance-related pay and seniority-based reward systems are in place. A pay structure that is perceived to be unequal is associated with a substantial reduction in both non-union members' overall job satisfaction and their satisfaction with pay. Although HRM practices can raise worker job satisfaction, if workplace pay inequality widens as a consequence then non-union members may experience reduced job satisfaction.

Keywords: Job satisfaction, HRM practices, union members, pay inequality

JEL-Code: J28, J31

1. Introduction

The past two decades have witnessed a burgeoning literature on the economics of job satisfaction.[1] There is also a large Human Resource Management (HRM) literature that emphasises the influence of so-called 'high-performance workplace practices' on job satisfaction and hence employee performance. The HRM literature can be split into empirical studies, which in the case of the UK are primarily based on the Workplace Industrial Relations Survey (WIRS) series, and a considerably larger number of studies that typically rely on case study analyses.[2] Relatively few studies have sought to combine the job satisfaction and HRM literature. One objective of this paper is therefore to present new empirical evidence on the impact of HRM practices on workers overall job satisfaction and their satisfaction with their pay. Some authors claim that HRM practices are a substitute for unionisation, offering management '…the prospect of improved performance whilst simultaneously improving workers' job satisfaction, security and perhaps pay' (Machin and Wood, 2004). A second objective of this paper is to investigate whether HRM practices have a different impact on the job satisfaction of union members as opposed to non-union members.

There is a longstanding interest, especially amongst economists, in the role played by pay and reward structures in determining worker effort, performance and job satisfaction. However, the focus of the existing literature has tended to be on the impact of workers' own pay or their comparison wage. Little is known beyond particular cases about the impact of the distribution of pay within a firm on worker

[1] See, for example Clark (1996), Oswald (1997), Robie *et al* (1998), Blanchflower and Oswald (2000), Clark (2001), Gazioglu and Tansel (2003), Bryson, Cappellari and Lucifora (2003) or Nguyen, Taylor and Bradley (2003).

[2] Kling (1995), Ichniowski *et al* (1996) and Ichniowski *et al* (1997), Black and Lynch (1997), Leigh and Gill (1999), Appelbaum *et al* (2000), and Delaney and Goddard (2001) are examples for the US,

performance. This is intriguing because there is a growing literature, which fervently advocates the implementation of contingent, and implicitly variable, pay structures that encourage wage dispersion.[3] A third objective of this paper is therefore to analyse the impact of perceived pay inequality on workers' job satisfaction.

To investigate these issues we analyse two British datasets, the 'Changing Employment Relationships, Employment Contracts and the Future of Work Survey' (CERS), conducted in 2000, and the 1998 Workplace Employment Relations Survey (WERS). The CERS and the WERS datasets differ in that the former has a larger proportion of workers from small firms (i.e. those with less than 10 employees), whereas the WERS excludes establishments with fewer than 10 employees. This means that WERS excludes 73% of the 1.3 million establishments in the UK (Cully et al, 1999). However, WERS covers 82% of employees, which means that it is representative of employees whereas CERS is representative of establishments. These two datasets can thus be seen as complements in our analysis. To allow a comparison of the findings from these two datasets we construct a set of covariates that are as consistent as possible. In terms of HRM practices, we identify the following sets of variables: work organisation, supervision, employee involvement/voice, recruitment and selection, training and learning, and pay practices. In addition, we include variables for the workers' perception of pay inequality in the workplace and whether it is unionised. Note that our comparison of the two datasets can only be performed with respect to the workers' satisfaction with their pay, since the WERS dataset does not include a variable for overall job satisfaction.

---

whereas British research includes Heywood *et al* (1997), Poole and Jenkins (1998), Whitfield (2000), Addison *et al* (2000) and Addison *et al* (2001), Delbridge and Whitfield (2001).

[3] However, evidence on the incidence of these practices has been continuously accumulating in the UK, US and other countries (Addison and Belfield, 2001; Arthur 1992; Bailey *et al* 2001; Osterman, 1994; Pfeffer, 1998; and Wood, 1999).

The remainder of the paper is broken down as follows. In section 2 we briefly review the theoretical and empirical literature on job satisfaction and then discuss the literature on the impact of HRM practices on worker performance. The issue of pay inequality is also introduced. Section 3 describes the two datasets used in the analysis together with our econometric methodology. In section 4 we discuss the findings of our analysis of the impact of HRM practices on workers' overall satisfaction and that with pay. This section then examines the differences in outcome between union and non-union members, followed by a discussion of the impact of pay inequality. Our conclusions follow in section 5.

2. Job satisfaction and HRM practices: theory and literature

Various theories of job satisfaction have been developed by psychologists and management scholars. They tend to assign various degrees of importance to sources of satisfaction, which can be classified as either intrinsic or extrinsic. Intrinsic sources depend on the individual characteristics of the person, such as attitudes. Extrinsic sources are situational, and depend on the environment, such as workplace climate. Theories which rely on extrinsic sources are more typically adopted by economists, albeit using different terminology, whereas intrinsic sources are more commonly associated with other social sciences (Luchak, 2003). Extrinsic theories also have deep roots in the social sciences, and can be traced back, for instance, to Herzberg (1959)'s hygiene-motivation theories, who develops two distinct sets of factors influencing motivation and satisfaction. One set of factors is called 'motivators' (i.e., job factors that are work related). These factors are: recognition, achievement, the possibility for growth and advancement, the level of responsibility and the nature of the work itself. Secondly, 'hygiene' factors, which are not directly related to the job

itself, are also important and relate to the conditions that surround doing that job. These include salary, technical support, company policy and administration, working conditions, status, job security, and interpersonal relationships among supervisors, subordinates and peers. As an aside it is interesting to note that this theory suggests that pay is not a good motivator, consistent with some weak observed effects of pay practices in the empirical job satisfaction literature.

A further strand of this theoretical literature is known as situational theory, an example of which is Locke's value-based theory. According to Clark (1996), this is 'a classic reference for the meaning of job satisfaction'. Locke (1976) defines job satisfaction as 'a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences' (Clark 1996, p190). Finally, Hackman and Lawler (1971) present an alternative facet-based theory of job satisfaction, whereby job characteristics, such as task variety, autonomy, feedback, identity and task significance influence motivation and job satisfaction.

Traditionally, economists have embraced job satisfaction with 'professional suspicion' (Freeman, 1978: 135) because it is a subjective variable, and hence it is not surprising that the study of job satisfaction by economists is 'still in its infancy' (Blanchflower and Oswald, 2000, p8). However, the empirical analysis of job satisfaction either implicitly or explicitly draws on the theoretical models discussed above, and in so doing job satisfaction is specified as a function of several individual *and* job characteristics, and interpreted as a utility function (Clark and Oswald 1996; Easterlin, 2001; Nguyen, Bradley and Taylor, 2003).

Previous research on the determinants of job satisfaction shows that women are more satisfied with their jobs than men, possibly a reflection of their lower expectations from work, which may in turn be a consequence of their relatively poor position in the labour market (Clark 1996, 1997; Groot and Brink, 1999). A U-shaped relationship between age and job satisfaction has also been observed (Sloane and Ward 2001; Blanchflower and Oswald 2001), and married workers are more likely to report a higher level of job satisfaction (Blanchflower and Oswald 2001). More highly educated workers report lower levels of job satisfaction (Clark and Oswald 1996), possibly because job satisfaction depends on the gap between outcomes and aspirations, and the latter increase with the level of education.

In the HRM literature, a few sociological and psychological studies have focused on the effects of job satisfaction on firm and employee performance. The majority of these studies are descriptive and often based on case studies (see the reviews in Purcell 1999 and Ramllal 2003), which means that the findings from this research cannot be generalised. For instance, Truss 2001 analyses a single firm (Hewlett Packard), whereas Rigano and Donna 1998 research the experience of one worker.

Economists have also investigated the relationship between HRM practices and company and worker performance, and suggest that these practices have the potential to 'transform' organisations into being cost-efficient and productive, whilst also increasing employee well-being. For instance, Huselid (1995) finds that a standard deviation increase in 'high-performance work practices' translates into a seven percent decrease in turnover, an increase of $2,700 in sales per employee, a $19,000 increase in market value and $4,000 rise in profits.

Some studies by labour economists show that certain HRM practices, such as working in teams, greater discretion and autonomy in the workplace and various employee involvement and pay schemes, do motivate workers and hence generate higher labour productivity (Cully *et al*, 1999; Boselie *et al*., 2001). However, overall job satisfaction need not increase if effort is a 'bad' and rational workers aim is to maximise the returns from the exerted effort.

Reward systems have been analysed predominantly by economists, although there are relatively few empirical studies (Pfeffer and Langton, 1993). What evidence there is on the effects of pay and pay practices is mixed. In terms of the relationship between pay and job satisfaction, Clark and Oswald (1996) show that a workers' reported level of well-being is weakly correlated with their income, whereas Belfield and Harris (2002) find no evidence of such a relationship for those working in higher education. Other studies show that it is relative income rather than own income that matters (Hamermesh, 2001; Clark and Oswald, 1996; Shields and Price, 2002).

A wider literature exists on the effects of introducing new pay practices in companies, although there are few empirical studies and none that address the relationship between such practices and job satisfaction. The most notable exceptions on the empirical side are Black and Lynch (2004), Booth and Frank (1999), Cappelli and Neumark (1999) and Lazear (2000). There are also very few studies that seek to examine the relationship between the pay distribution within a firm, including the perception of that distribution by a worker, and individual worker performance or

their job satisfaction.[4] An exception is Bloom and Michel (2002) who discuss the advantages and disadvantages of dispersed and compressed 'actual' pay structures. Dispersed pay structures may induce higher levels of performance as employees have to work harder to move up the pay ladder. This is consistent with the notion of promoting the 'star' workers in a competitive environment and the provision of compensating differentials for high-risk jobs. However, dispersed pay systems may also be linked to workforce instability and higher turnover. The latter effect is in accordance with the prediction of tournament theory whereby the winners stay with the company in order to compete in further tournaments, but losers are implicitly expected to leave or to face truncated careers (Bloom and Michel, 2002). On the other hand, compressed pay promotes team effort and cooperation by creating a more egalitarian workplace, which tends to reduce turnover (Beaumont and Harris, 2003). However, it may discourage effort above a certain minimal necessary level, and may be perceived as unfair because of being open to free-rider problems. Hence, it is difficult to sign the effect of the pay distribution within a firm on workers' job satisfaction.

3. Data and methodology

We use two British datasets for our empirical analysis. The *Changing Employment Relationships, Employment Contracts and the Future of Work Survey* (CERS) was commissioned by the Policy Studies Institute as part of the *Future of Work* research programme. This data was collected between July 2000 and January 2001, and the

[4] The benefits of including subjective (such as perception-based) variables in research have been highlighted ever since Freeman (1978) who remarks: 'while there are good reasons to treat subjective variables gingerly, the answers to questions about how people feel toward their job are not meaningless but rather convey useful information about economic life that should not be ignored' (Freeman 1978 : 135).

main aim of the Survey was to identify and describe the key changes in British employee relations. Two data collection methods were used: interviews and self-completion questionnaires. The one-hour interviews were personal, paper-based, conducted in the home, and totalled 2,466. Self-completion questionnaires were issued together with the interviews and returned by 2,349 respondents, which represents a 95-percent response rate. Once we omit respondents with missing values on key variables and the self-employed (334), the sample drops to 1,518. The *Workplace Employment Relations Survey* (WERS) contains a much larger sample of workers (19,890 once we allow for missing data), and has the advantage that responses are obtained from both employees and their managers.

An advantage of the CERS data is that it contains a question on overall job satisfaction, which is reported in Table 1. The majority of the respondents to the survey are satisfied with their job, the modal group being 'satisfied'. The distribution of job satisfaction observed in Table 1 is consistent with other British studies and shows that the reported levels of satisfaction are very high (Blanchflower *et al* 1993, Millward et al 1999, Oswald and Gardner, 2001). These results may reflect a self-selection effect insofar as workers sort themselves into the jobs that they like and quit those they dislike. However, this explanation over-states workers' ability to find a suitable job match. There are very few observations in some categories and hence we collapse the job satisfaction into five discrete categories (see below).

A drawback of the WERS is that it does not contain an equivalent question on overall job satisfaction, but instead asks workers about their satisfaction with job autonomy and pay. An equivalent question is asked in the CERS on workers' satisfaction with

pay, and hence we also model the determinants of workers satisfaction with their pay. Table 2 compares the means for all covariates for the CERS and the WERS.

Descriptive statistics for all variables constructed from both datasets are shown in Tables A1 and A2 in the Appendix. Variables for HRM and pay inequality variables are constructed from the questions listed in Table A3 in the Appendix. Table A2 allows us to compare the sample means for the variables extracted from the two datasets. It is clear that the CERS has fewer professional workers and more managerial/intermediate technical workers than the WERS. As noted earlier, there is also a clear difference between the CERS and WERS in terms of the distribution of employees by firm size, with the WERS having far more respondents in medium-sized firms (100-499 employees), and no micro-firms (under 10 employees). In terms of HRM practices, workers in CERS are less likely to work in teams, get involved in improvement groups or be in firms that offer profit-related pay. Conversely, workers in WERS are less likely to be supervised, or work in firms that encourage both training and skill development. The fact that CERS is representative of establishments whereas WERS is representative of workers makes an analysis of both datasets potentially very revealing.

Following the theory and previous literature discussed above, job satisfaction, *S*, can be expressed as:[5]

$$S = \boldsymbol{\beta}_1' X + \boldsymbol{\beta}_2' HRM + \boldsymbol{\beta}_3' INEQUALITY + u \qquad (1)$$

[5] Note that an identical specification is adopted for satisfaction with pay.

where *X* refers to a vector of worker, job and firm characteristics, including whether the worker is a union member. Worker characteristics include their age, gender, marital status, number of children, and highest educational qualification, whereas the job and firm characteristics include the workers occupation/skill level and firm size. Unlike the previous literature a vector of variables reflecting human resource management practices, *HRM*, are included in the model and classified under the following headings: (i) work organisation, (ii) supervision, (iii) employee involvement, (iv) recruitment and selection, (v) training and learning, and (iv) pay practices, including seniority-based pay and performance-related pay. Finally, *INEQUALITY* refers to the workers perception of the pay distribution in the firm and in particular whether is regarded as unequal or not. Hamermesh (2004) has warned about the inclusion of subjective covariates when the dependent variable is itself subjective. We defend the inclusion of this particular variable on the grounds that perception of pay is probably what is most important within a firm. If the distribution of pay is regarded as unequal and this reduces workers' job satisfaction then either management needs to change that distribution by altering its pay practices, or if it is based on a misperception of the pay distribution then management needs to improve information flows in the firm.

It is clear from Table 1 that job satisfaction is measured on an ordinal scale, however, since there is a lack of data on some categories it is necessary to combine them. This gives the following classification for overall job satisfaction and for satisfaction with pay:

$Y = 5$ completely / very satisfied

$Y = 4$ satisfied

$Y = 3$ neither satisfied nor dissatisfied

$Y = 2$ dissatisfied

$Y = 1$ completely / very dissatisfied.

The same ordinal scale is adopted for satisfaction with pay in the CERS and the WERS. Since job satisfaction is an ordinal variable, we estimate an ordered probit model, which assumes that there is an unobserved random variable, Y^*, such that:

$$Y^* = \beta' X + \varepsilon, \qquad \varepsilon \sim N[0,1] \qquad (2)$$

The observed counterpart to Y^* is the categorical variable Y, ordered as follows:

$$Y = \begin{cases} 0 \quad if & Y^* \le \mu_0 \\ 1 \quad if & \mu_0 < Y^* \le \mu_1 \\ 2 \quad if & \mu_1 < Y^* \le \mu_2 \\ 3 \quad if & \mu_2 < Y^* \le \mu_3 \\ \quad . & \\ \quad . & \\ \quad . & \\ J \quad if & Y^* > \mu_{j-1} \end{cases} \qquad (3)$$

where $\mu_1, \mu_2, \mu_3, ..., \mu_{J-1}$ are the cutpoints, with a constant $\mu_0 = 0$. Since $\varepsilon \sim N[0.1]$ then

$$\begin{aligned} P(Y = j) &= P(\mu_{j-1} < Y^* \le \mu_j) \\ &= P(\mu_{j-1} - \beta' X < Y^* - \beta' X < \mu_j - \beta' X \\ &= P(\mu_{j-1} - \beta' X < \varepsilon \le \mu_j - \beta' X \\ &= \Phi(\mu_j - \beta' X) - \Phi(\mu_{j-1} - \beta' X) \end{aligned} \qquad (4)$$

where Φ is the standard normal distribution function. The likelihood for an individual is then

$$L_i = \prod_{j=1}^{m} \left(\left[\int_{\mu_{j-1} - \beta' X}^{\mu_j - \beta' X} \Phi(u) du \right]^{d_{ij}} \right) \quad (5)$$

where $d_{ij} = 1$ if the ith observation is in the jth job satisfaction category; $i = 1,2,\ldots,n$ and $j = 1,2,\ldots,m$.

It is difficult to interpret the estimates from the ordered logit model, therefore we report marginal effects along with the p-value on the underlying coefficient estimates.

4. Results

The effect of HRM practices

We begin by discussing the effect of HRM practices on overall job satisfaction, which are reported in Panel A of Table 3, and then discuss their effect on satisfaction with pay. The results in Table 3 show that after controlling for a wide range of personal, job and firm characteristics (reported in Panel B, Table 3), several HRM practices have a statistically significant effect on job satisfaction.[6]

Creating workplaces which embed 'on-going learning' has a highly significant effect on job satisfaction, insofar as it increases the probability of a worker being either completely or very satisfied by sixteen percentage points (see *Training and learning*). This result is consistent with the HRM literature where on-the-job learning figures

[6] Since many of the findings for the personal, job and firm characteristics are in keeping with the existing literature, we do not dwell on them here.

prominently among practices that enhance employee motivation and commitment. For instance, Doeringer *et al* (1998) find that US companies adopting Japanese workplace practices tend to emphasise 'social and organisational learning' and to offer career employment and high wages. In turn, employees reciprocate by increased effort and productivity. Interestingly, the provision of employer provided education and training is insignificant, suggesting that workers prefer continuous on-the-job instruction to off-the-job training.

In the model for satisfaction with pay we construct training variables that are comparable for CERS and WERS (Tables 4 and 5). Firms are classified into those that offer either training or continuous skill development, those that offer both training and skill development, which are compared to the base firms that offer neither. For CERS there is no statistically significant relationship between the training variables and satisfaction with pay (see Table 4), whereas for WERS workers who receive training and encouragement do develop skills are more satisfied with their pay (see Table 5). Furthermore, those workers who work in firms that offer both training and encouragement to develop skills are more likely to report that they are 'very satisfied' or 'satisfied' with their pay (compare the marginal effects of 0.17 and 0.08). One explanation for the difference in our results between CERS and WERS may be the fact that CERS contains a higher proportion of micro firms, which typically offer very little training or opportunity for continuous skill development, whereas the WERS includes more medium-large firms, who tend to offer more training.

Constant direct supervision, where the employee can be seen all the time by a supervisor or a manager, has a significant negative impact on job satisfaction, reducing the probability of being completely satisfied by 2.5 percentage points, which

is offset by an increased risk of being dissatisfied (see *Supervision*, Table 3). In contrast, the fact that 'work progress can be visually assessed' by a supervisor has a small but positive effect on job satisfaction, increasing the probability of feeling completely or very satisfied by 5 percentage points. Thus, whereas close supervision of work is disliked, perhaps because it is associated with a feeling of being controlled, workers do like some feedback on their performance, suggesting that *some* monitoring is actually desirable. These findings are consistent with the view that HRM practices enhance employee participation, voice and creativity, thereby increasing job satisfaction, motivation and workplace performance. However, there is no evidence from CERS that these variables affect satisfaction with pay (see Table 4), whereas in WERS 'supervision of work progress' does have a statistically significant and positive effect on satisfaction with pay, albeit small in magnitude (see Table 5).

Table 3 shows that teamwork is only significant at the 10% level and although this kind of practice increases job satisfaction, the effects are quite small (see *work organisation*). Working in a team increases the probability of being completely or very satisfied by only 4 percentage points. The finding that teamwork has little effect on job satisfaction is interesting because it is often advocated as one of the most important HRM practices (Osterman 1994, MacDuffie 1995, Pfeffer 1995), and has been shown elsewhere to have a significant impact on employee productivity, commitment, and job satisfaction (Griffin 1988, Banker *et al* 1996, Batt and Appelbaum 1995). Our results are perhaps in keeping with the behaviour in organisation literature, which warns of the negative effects of increased pressure from peers in the team. Barker (1993) speaks of 'concertive control', whereby the management's supervision is multiplied by peer surveillance. Furthermore, Parker and Slaughter (1988) introduce the concept of 'management by stress' to conjure up the

effect of Japanese style practices on employee well-being. It is also interesting to note from Tables 4 and 5 that there is no statistically significant relationship between teamwork and workers satisfaction with their pay, as one might expect given the findings that workers are more satisfied when their own progress and performance are monitored.

Job autonomy is captured in the model for overall job satisfaction in the CERS dataset by the organisation of work in such a way that individual performance can be differentiated from that of one's peers (see *Work organisation*, Table 3). This variable has borderline significance and has a modest effect insofar as it increases the probability of a worker being completely or very satisfied by 4.7 percentage points. This is a less substantial effect on job satisfaction than has been found for the US[7]. In the models of satisfaction with pay, job autonomy is reflected in the worker's influence over job tasks, the pace of work and how the job is done. In the CERS, only influence over the pace of work has a statistically significant effect on satisfaction with pay (Table 4), whereas in the WERS all three measures of work organisation are highly significant (Table 5). In general, workers with greater job autonomy are more satisfied with their pay, and influence over the pace of work is amongst the larger of the effects. For instance, in the WERS, the marginal effects on this variable sum to approximately 0.06 for 'very satisfied'/ 'satisfied'. In contrast, the equivalent sum for influence over how the job is done is only 0.026, implying that workers are happier with their pay when they have more control over their level of effort.

[7] See Nguyen, Taylor and Bradley (2003) who focus specifically on the relationship between job autonomy and job satisfaction in Britain. They find that the impact of job autonomy is highly statistically significant on all five aspects of job satisfaction: pay, fringe benefits, promotion prospects, job security and (5) importance / challenge of work.

A set of five variables relates to *employee involvement* or channels through which workers can *voice* their grievances or views (see Table 3). These employee involvement variables can be placed on a scale from the most passive form of involvement (information dissemination) to the most engaging form (management holds meetings with employees). The idea of an employee involvement 'continuum' was initially proposed in the Freeman-Lazear model, and has been tested by Addison *et al* (2000). However, many of these variables have an insignificant effect on job satisfaction in our model, the exception being 'management holds meetings with employees'. The variable has a very strong effect in raising job satisfaction increasing the probability of a worker being completely or very satisfied by 15 percentage points. This finding may reflect a preference amongst workers for a simple and direct channel of face to face communication with management.

In the models of satisfaction with pay in Tables 4 and 5 the information dissemination variable is disaggregated, increasing in sophistication from 'notice boards' to 'email or website', whereas the same variables are used to reflect employee involvement. There is some evidence that workers are more satisfied with their pay the more technologically sophisticated the method of information dissemination used in the firm. To see this compare the negative effect on the notice board variable with the positive effect on the email and website variables. With respect to employee involvement, workers are more satisfied with their pay when they are able to meet and express their views to managers, and the magnitude of this effect is very similar in the CERS and the WERS (see Tables 4 and 5, *employee involvement / voice*).

The effect of involvement in negotiation regarding initial pay raises workers overall job satisfaction (Table 3, *recruitment & selection*) and, perhaps unsurprisingly their

satisfaction with pay (Tables 4 and 5). What is interesting, however, is the finding that the effect of negotiation over initial pay is larger for overall satisfaction, increasing the probability of being completely or very satisfied by almost 6 percentage points, than it is for satisfaction with pay, where it increases this probability by 3 percentage points. This finding suggests that allowing workers to negotiate over initial pay has spillover effects insofar as workers are more satisfied with the job as a whole.

The effect of pay practices

Table 3 shows that seniority-based pay mechanisms**,** such as pay based on tenure, have a significant positive effect on job satisfaction. This is the traditional type of payment practice, designed to maximise effort from the firm's perspective while minimising risk for the worker. The probability of being 'completely' or 'very' satisfied is increased by 7 percentage points for workers in these firms. Interestingly, there is also a positive and statistically significant relationship between 'pay based on tenure' and satisfaction with pay in the CERS (Table 4) but not in the WERS (Table 5). The results for the CERS may come as a surprise to the advocates of the 'new' performance related pay practices, given the dramatic decline of seniority-based pay mechanisms (Ornatowski, 1998). However, there is contrary evidence from our analysis that workers are more satisfied with 'new' pay practices, especially when pay is related to individual performance. This type of compensation system links rewards to individual performance by comparing their achievement to the goals set at the beginning of the year. Thus, although individual, team and company performance-related pay practices have no statistically significant effect on overall job satisfaction (see *Performance- related pay*, Table 3), individual performance-related pay does increase a workers' satisfaction with their pay. The effect is larger and more highly significant in CERS than in WERS (compare Tables 4 and 5), but is nonetheless

positive in both cases. Similarly, where the firm operates a profit sharing or option scheme, worker satisfaction with pay is enhanced.

The observed link between individual performance-related pay and satisfaction with pay is consistent with our earlier findings that workers prefer systems when work can be visually assessed and differentiated from co-workers. Why then is there no statistically significant relationship between performance-related pay and overall job satisfaction? The answer may simply be that workers agree with the principle of relating effort to rewards but suffer disutility from effort. Furthermore, creating a performance-pay link that is perceived as fair can be problematic, especially in the case of subjective performance appraisals where the appraisers may be suspected of giving biased judgements (Prendergast, 1999).

In keeping with the existing literature on the determinants of workers' job satisfaction, our model for overall job satisfaction includes a variable reflecting comparison income, albeit one based on the workers own perception of their relative pay. Table 3 shows that where workers perceive their own pay to be relatively low this reduces their overall job satisfaction. This is consistent with existing evidence (Nguyen, Taylor and Bradley, 2003; Clark and Oswald, 1994). In comparison to the estimated effects on many of the HRM variables, relative income has a much larger effect, reducing the probability of being 'completely' or 'very' satisfied by over 15 percentage points. Thus, although workers are more satisfied with their pay when it is related to tenure and/or a system of performance-related pay, the 'level' of pay or the additional reward reduces overall job satisfaction.

Union versus non-union differences in the impact of HRM practices

It is possible that the role of unions within the workplace has been replaced by the introduction of HRM practices, which have the potential to increase workers' job satisfaction and performance and hence offer competing services to those provided by unions. Although there is some debate about whether this substitution has in fact occurred (Machin and Wood, 2004), it is still possible that workers are more satisfied if they can voice their concerns, for instance, via one or more of the HRM practices rather than indirectly via a union. Some groups of workers, such as the young, may not see a role for unions in resolving workplace disputes regarding pay and practices and consequently may not join a union. Therefore, it is appropriate to assess union - non-union member differences in the effect of HRM practices on their job satisfaction. We do this by interacting union membership with the statistically significant HRM practices identified in the previous sections. The estimated models are otherwise identical, except for the inclusion of these interaction effects.

A general finding is that, for virtually all of the HRM practices, the main effects on job satisfaction are positive and statistically significant, whereas the interaction effects between union membership and the HRM practice are either negative or insignificant. For instance, workers' overall job satisfaction (Table 6, *employee involvement / voice*) and their satisfaction with pay (see Tables 7 and 8) is higher where they can voice their views via meetings with employers. For satisfaction with pay, the sum of the marginal effects for the top two satisfaction categories ranges from 0.05 to 0.06. The effect for union members, reflected by the interaction effect, is negative and insignificant in both the CERS and the WERS. In terms of skill development, it can be seen that where the job requires on-going learning (Table 6, Training & learning) or where both skill development and training are encouraged by the firm (Table 8),

workers' overall job satisfaction and their satisfaction with pay is much higher. The sum of the marginal effects for the two highest categories of overall satisfaction is 0.16 and is 0.15 for satisfaction with, both large effects. In contrast, the equivalent interaction effect for union workers is not significantly different from zero. It is also worth noting the positive and statistically significant effects of the performance-related pay and the profit sharing variables for non-union members in the CERS (Table 7).

One interpretation of these findings is that HRM practices perform similar functions for non-union members as unions do for their members through bargaining over pay and working conditions. Just as unions are able to successfully negotiate over issues regarding pay and conditions of employment on behalf of workers so HRM practices play an important role in raising satisfaction with pay for non-union members.

The effect of workplace pay inequality on job satisfaction

As suggested in the review of the literature there is very little evidence on the impact of the distribution of pay in the workplace on job satisfaction. Workers may be concerned about inequality in the workplace simply out of a sense of fairness or natural justice. Alternatively, a highly compressed pay distribution implies that there is little opportunity for advancement in the firm. There may also be a difference in attitude regarding workplace pay inequality between union members and non-members, the former being expected to be more egalitarian.

Table 3 shows that after controlling for an individual worker's perception of being low paid, we find that a pay structure that is perceived to be over-dispersed is associated with lower levels of job satisfaction (see *Perceived workplace inequality*).

These effects are substantial, especially in those firms where the 'pay gap is much too big'. In these firms the probability of a worker being 'completely' or 'very' satisfied is reduced by 15 percentage points. The equivalent figure for firms where the 'pay gap is too big' is 12 percentage points. A highly dispersed wage structure may therefore alienate those workers at the lower end of the job-wage hierarchy because they feel under-valued. It is perhaps for this reason that Pfeffer and Langton (1993) have suggested that the best system of pay is one that is based on a mixture of seniority, productivity and credentials. This finding is replicated with respect to workers' satisfaction with pay in the CERS (see Table 4), whereas in WERS the only variable we could include is 'Pay gap is small' (Table 5). The estimate for this variable is statistically insignificant.

Tables 6 and 7 report the interaction effects of perceived workplace pay inequality and union status for the CERS. Our results suggest that it is non-union members who are least satisfied with respect to perceived pay inequality in the firm. For instance, the probability of non-union members being 'completely' or 'very satisfied' is reduced by 18 percentage points for non-union members when the pay gap in the workplace is perceived to be 'much too big' (Table 6, *Perceived workplace inequality*). Where the gap is perceived to be 'too big' the effect falls to -0.16, and notice that the effects for union members are positive and insignificant. With respect to workers' satisfaction with pay (Table 7) there is no statistically significant effect of the pay inequality variables for union members. In contrast, for a non-union member the probability of being 'completely' or 'very' satisfied is reduced by 11 percentage points where the pay gap is perceived to be 'much too big', compared to 9 percentage points where the gap is perceived to be 'too big'.

The findings with respect to perceived pay inequality are interesting insofar as they suggest that although many HRM practices raise workers' job satisfaction, particularly amongst non-union members, there may be a downside. If HRM practices, especially those related to pay, create a more unequal distribution of pay within the firm then workers' job satisfaction can be substantially reduced. Clearly, it is important to know whether this is sufficient to counter the positive effects of the HRM practices, and so whether pay inequality reduces worker performance and increases quit rates. Moreover, it is useful to assess whether the perception of workplace pay inequality is more important than actual workplace pay inequality. A case can be made for either variable, and it can be argued that worker perceptions are more relevant where there is imperfect information in the workplace, which is likely in larger firms.

5. Conclusion

In this paper we have investigated the effect of HRM practices on workers' overall job satisfaction and their satisfaction with pay. After controlling for a large number of personal, job and firm-related characteristics, we find that HRM practices have a statistically significant, and in some cases substantial, effect on workers' overall job satisfaction and on their satisfaction with pay. Specifically, we find that workers enjoy on-going learning, job autonomy and working in teams. Close supervision of work is disliked, but workers enjoy some visual assessment of their performance, suggesting that some monitoring is desirable. Furthermore, giving workers a 'voice' through employee involvement schemes has a positive effect on job satisfaction. Managers who hold regular meetings with employees to enable them to express their views about work have the most substantial effect in raising job satisfaction. Satisfaction

with pay is higher where seniority and individual performance-related schemes are in place. When we investigate differences in the effect of HRM practices on the job satisfaction of union members and non-members, we find that many of the effects positive effects are only important for non-union members, which suggests that HRM practices are either a threat or an irrelevance to union members.

Finally, a pay structure that is seen as overly dispersed is associated with low levels of job satisfaction. These effects are large and once again only apply to non-union members. It can be conjectured that, although HRM practices have a direct positive effect in raising workers' job satisfaction, if these policies also raise pay inequality in the workplace then there may be an offsetting negative effect on satisfaction and performance. This clearly raises implications for the design and implementation of HRM practices, particularly with respect to pay and incentive systems. However, it should be noted that we measure the effect of perceived workplace pay inequality, rather than actual pay inequality, and it may be that the distribution of pay is misperceived. The implication would then be that information flows about pay structure should be improved if managers are concerned with their workers' job satisfaction.

References

Addison, J. T. and Belfield, C. R. (2001) Updating the determinants of firm performance: estimation using the 1998 UK workplace employee relations survey, *British Journal of Industrial Relations*, 39 (3), 341-366.

Addison, J. T., Siebert S. W., Wagner, J. and Wei, X. (2000) Worker participation and firm performance: evidence from Germany and Britain, *British Journal of Industrial Relations*, 38 (1), 7-48.

Appelbaum, E., Bailey, T., Berg. P. and Kalleberg, A. L. (2000) *Manufacturing advantage: why high performance work systems pay off*, Cornell University Press: Ithaca New York.

Arthur, J. B. (1992) The link between business strategy and industrial relations systems in American steel mills, *Industrial and Labour Relations Review*, 45 (3), 488 - 506.

Bailey, T., Berg, P. and Sandy, C. (2001) The effect of high-performance work practices on employee earnings in the steel, apparel and medical electronics and imaging industries, *Industrial and Labour Relations Review*, 54, 525 - 544.

Baker, G., Gibbons, R. and Murphy, K. J. (1994) Subjective performance and measures in optimal incentive contracts, *Quarterly Journal of Economics*, 109 (4), 1125 - 1156.

Banker, R. D., Lee, S. Y., Potter, G. and Srinivasan, D. (1996) Contextual analysis of performance impacts of outcome-based incentive compensation, *Academy of Management Journal*, 39 (4), 920 - 948.

Barker, J. (1993) Tightening the iron cage: concertive control in self-managing teams, *Administrative Science Quarterly*, 38, 408 – 437.

Batt, R. and Appelbaum, E. (1995) Worker participation in diverse settings: does the form affect the outcome and if so, who benefits?, *British Journal of Industrial Relations*, 33 (3), 353 - 378.

Beaumont, P. B. and Harris, R. I. D. (2003) Internal wage structures and organizational performance, *British Journal of Industrial Relations*, 41 (1), 53 - 70.

Black, S. E. and Lynch, L. M. (1997) Beyond the incidence of training, Discussion Paper No 362, Centre for Economic Performance, London School of Economics, November 1997.

Black, S. E. and Lynch, L. M (2004) What's driving the new economy: the benefits of workplace innovation, *Economic Journal*, 114 (2) F97-F116.

Blanchflower, D. G., Oswald, A. J. and Warr, P. B. (1993) Well-being over time in Britain and the USA, Paper presented at an Economics of Happiness Conference, London School of Economics.

Blanchflower, D. G. and Oswald, A. J. (2000) Is the UK moving up the international wellbeing rankings?, presentation at an NBER Conference.

Blooom, M. and Michel, J. G. (2002) The relationships among organizational context, pay dispersion and managerial turnover, *Academy of Management Journal*, 45 (1), 33 - 42.

Booth, A. and Frank, J. (1999) Earnings, productivity, and performance-related pay, *Journal of Labor Economics,* 17, 447 – 463.

Boselie, P. and Van der Wiele, T. (2001) Employee perceptions of HRM and TQM and the effects on satisfaction and intention to leave, ERIM Report Series Research in Management. Erasmus Research Institute of Management. July.

Bryson, A., Cappellari, L. and Lucifora, C. (2003) Does union membership really increase job dissatisfaction?, Centre for Economic Performance Discussion Paper No. 569, London School of Economics.

Cappelli, P. and Neumark, D. (1999) Do "high-performance" work practices improve establishment-level outcomes?, *Industrial and Labour Relations Review*, 54 (4), 737 – 776.

Clark, A. E. (1996) Job satisfaction in Britain, *British Journal of Industrial Relations*, 34 (2), 189 – 217.

Clark, A. E. (2001) What really matters in a job? Hedonic measurement using quit data, *Labour Economics*, 8 (2), 223 - 242.

Clark, A. E. and Oswald, A. J. (1996) Satisfaction and comparison income, *Journal of Public Economics,* 61, 359 – 381.

Cully, M., Woodland, S., O'Reilly, A. and Dix, G. (1999) *Britain at work: as depicted by the 1998 Workplace Employee Relations Survey*, London: Routledge.

Delaney, J. T. and Godard, J. (2001) 'An industrial relations perspective on the high-performance paradigm', *Human Resource Management Review*, Vol. 11(4) : 395 - 429.

Delbridge, R. and Whitfield, K. (2001) 'Employee perceptions of job influence and organizational participation'*, Industrial Relations,* Vol. 40 (3): 472 - 489.

Doeringer, P. B., Evans-Klock, C. and Terkla, D. G. (1998) 'Hybrids or hodgepodges? Workplace practices of Japanese and domestic startups in the United States', *Industrial and Labor Relations Review,* January.

Easterlin, R. A. (2001) 'Income and happiness: Towards a unified theory', *Economic Journal*, Vol 111 (July): 465 - 484.

Eisenhardt, K. M. (1989) 'Agency theory: an assessment and review', *Academy of Management Review*, Vol. 14 (1): 57 - 74.

Freeman, R. B. (1978) 'Job satisfaction as an economic variable', *American Economic Review*, Vol. 68 (2): 135 - 141.

Freeman, R. B. and Lazear, E. P. (1995) 'An economic analysis of works councils', in J. Rogers and W. Streeck (eds.) *Works Councils: Consultation, Representation and Cooperation in Industrial Relations*. Chicago: University of Chicago Press.

Frick, B. and Prinz, J. (2003) ‘Pay inequality and team performance: empirical evidence from the North American major leagues’, Discussion Paper, University of Zurich. ISSN 1324 – 0459.

Gazioglu, S. and Tansel, A. (2003) 'Job satisfaction in Britain: individual and related factors', Department of Economics, Middle East Technical University, Ankara.

Gibbons, R. (1998) 'Incentives in organizations', *Journal of Economic Perspectives*, 12 (4) : 115 - 132.

Griffin, R. W. (1988) ‘Consequences of quality circles in an industrial setting: a longitudinal assessment’, *Academy of Management Journal*, Vol. 31 : 338 – 358.

Hackman, J. and Lawler, E. (1971) ‘Employee reactions to job characteristics’, *Journal of Applied Psychology Monograph*, Vol. 55 : 259 – 286.

Herzberg, F., Mausner, B. and Snyderman, B. (1959) *The Motivation to Work*. New York: John Wiley.

Heyman, F. (2002) ‘Pay inequality and firm performance: evidence from matched employer-employee data’, Working Paper Series from Trade Union Institute for Economic Research, No. 186, http://www.fief.se/library/WP/WP186.pdf

Heywood, J. S., Siebert W. E. and Wei, X. (1997) ‘Payment by results systems: British evidence’, *British Journal of Industrial Relations*, 35 (1) : 1-22.

Huselid, M. A. (1995) ‘The impact of human resource management practices on turnover, productivity, and corporate financial performance’, *Academy of Management Journal*, Vol. 38 (3) : 635 – 672

Ichniowski, C., Kochan, T. A., Levine, D., Olson, C., Strauss, G. (1996) ‘What works at work: Overview and assessment’, *Industrial Relations*, Vol. 35 (3) : 299 - 333.

Ichniowski, C., Shaw, K., Prennushi, G. (1997) 'The effects of human resource management practices on productivity: a study of steel finishing lines', *American Economic Review*, Vol. 87 (3) : 291 - 313.

Kling, Jeffrey (1995) 'High performance work systems and firm performance' , *Monthly Labor Review*, Vol. 118 (5) : 29-36.

Lazear, E. (2000) 'Performance pay and productivity', *American Economic Review,* Vol. 90: 1346- 1361.

Leigh, D. E and Gill, A. M. (1999) 'The effect of high-performance workplace practices on individual workers' productivity', The Annual Conference 'What Skills Matter in the Economy?', Feb 26-27 1999, University of British Columbia

Locke, E. A. (1976) 'The nature and causes of job satisfaction', in Dunnette, M. D. (ed.) *Handbook of Industrial and Organizational Psychology*. Chicago : Rand McNally.

MacDuffie, J. (1995) 'Human resource bundles and manufacturing performance: organizational logic and flexible production systems in the world auto industry', *Industrial and Labor Relations Review*, Vol. 48 (2) : 197- 221.

Machin, S. and Wood, S. (2004) Looking for HRM/Union substitution: Evidence from British workplaces, LSE CEP Discussion Paper, January.

Millward, N., Forth, J. and Bryson, A. (1999) *All Change at Work?* London: Routledge

Nguyen, A. N., Taylor, J. and Bradley, S. (2003) 'Job autonomy and job satisfaction', Discussion Paper, Economics Department, Lancaster University.

Ornatowski, G. K. (1998) 'The end of Japanese-style human resource management?', *Sloan Management Review*, Vol. 39 (3) : 73 - 84.

Osterman, P. (1994a) 'How common is workplace transformation and who adopts it?", *Industrial and Labour Relations Review*, Vol. 47 (2): 173-87.

Osterman, P. (1994b) 'Supervision, discretion and work organization', *American Economic Review, Papers and Proceedings*, Vol. 84 : 380-384

Osterman, P. (2000) 'Work reorganization in an era of restructuring: trends in diffusion and effects on employee welfare', *Industrial and Labor Relations Review*, Vol. 53 (2) : 179-196.

Oswald, A. (1997) 'Happiness and economic performance', *The Economic Journal*, Vol. 107 : 1815 - 1831.

Oswald, A. and Gardner, J. (2001) 'What has been happening to job satisfaction in Britain?', Discussion Paper.

Parker, M. and Slaughter, J. (1988) *Choosing Sides: Unions and the Team Concept.* Boston: South End Press.

Pfeffer, J. (1995) 'Producing sustainable competitive advantage through the effective management of people', *The Academy of Management Executive*; Ada; Feb 1995 : 55-72

Pfeffer, J. and Langton, N. (1993) 'The effect of wage dispersion on satisfaction, productivity, and working collaboratively', *Administrative Science Quarterly*, Vol. 38 (3) : 382 – 408.

Prendergast, C. (1999) 'The provision of incentives in firms', *Journal of Economic Literature*, Vol. 36 (1) : 7-63.

Purcell, J. (1999) 'Best practice and best fit: chimera or cul-de-sac?', *Human Resource Management Journal,* Vol. 9 (3) : 26 - 41

Ramllal, S. J. (2003) 'Measuring human resource management's effectiveness in improving performance', *Human Resource Planning*, Vol. 26 (1) : 51 - 63.

Robie, C. and Ryan, A. M. (1998) 'The relation between job level and job satisfaction', *Group and Organization Management*, Vol. 23 (4) : 470 – 496.

Winter-Ebmer, R. and Zweimüller, J. (1999) 'Intra-firm wage dispersion and firm performance', *Kyklos*, Vol. 52 (4) : 555 - 572.

Wood, S. (1999) 'Human resource management and performance', *International Journal of Management Reviews*, Vol. 1 (4) : 367 - 414.

TABLES

Table 1 The distribution of overall job satisfaction (CERS)

	Frequency	Percent
Completely satisfied	230	10.79
Very satisfied	730	34.24
Satisfied	831	38.98
Neither satisfied not dissatisfied	164	7.69
Dissatisfied	117	5.49
Very dissatisfied	26	1.22
Completely dissatisfied	24	1.13
Total	**2, 132**	

Note: 10 respondents did not state their level of job satisfaction.

Table 2A The distribution of satisfaction over pay (CERS)

	Frequency	Percent
Completely satisfied	59	2.77
Very satisfied	215	10.08
Satisfied	976	45.78
Neither satisfied not dissatisfied	301	14.12
Dissatisfied	403	18.90
Very dissatisfied	101	4.74
Completely dissatisfied	64	3.00
Total	**2, 119**	**99.39**

Note: Out of the 2,132 respondents in the dataset, for 1 respondent, the question was not applicable, and 12 respondents did not state their level of satisfaction with pay.

Table 2B The distribution of satisfaction over pay (WERS)

	Frequency	Percent
Very satisfied	970	3.43
Satisfied	9,011	31.91
Neither satisfied nor dissatisfied	6,568	23.26
Dissatisfied	7,885	27.92
Very dissatisfied	3,480	12.32
Total	**27, 914**	**98.84**

Note: 1.16 percent of respondents (326) did not answer the question, or answered ‘I don’t know’.

Table 3 (Panel A) The effect of HRM practices and perceived pay inequality on overall job satisfaction (CERS)

Variables	P-values	Completely satisfied	Very satisfied	Satisfied	Neutral	Dissatisfied
			Work organisation			
Teamwork	0.087	0.015	0.025	-0.018	-0.010	-0.012
			Supervision			
Performance differentiated from others	0.075	0.017	0.030	-0.020	-0.012	-0.015
Employee can be seen all the time by supervisor or manager	0.006	-0.025	-0.041	0.030	0.017	0.020
Work progress can be visually assessed	0.041	0.019	0.031	-0.022	-0.013	-0.015
			Employee involvement / voice			
Information dissemination	0.545	-0.008	-0.012	0.009	0.005	0.006
Employee part of an improvement group	0.805	0.002	0.004	-0.003	-0.002	-0.002
Formal suggestion scheme	0.220	0.012	0.019	-0.014	-0.008	-0.009
Management holds meetings were employees	0.000	0.049	0.091	-0.054	-0.037	-0.049
			Recruitment & selection			
Initial pay is negotiable	0.032	0.023	0.035	-0.027	-0.014	-0.017
			Training & learning			
Employer provided education or training	0.735	0.003	0.005	-0.004	-0.002	-0.002
Job requires on-going learning	0.000	0.052	0.109	-0.053	-0.044	-0.063
			Seniority-based pay			
Pay based on tenure	0.003	0.028	0.043	-0.033	-0.018	-0.021
			Performance-related pay			
Own performance	0.578	0.006	0.010	-0.008	-0.004	-0.005
Team performance	0.540	-0.008	-0.014	0.010	0.006	0.007
Company performance	0.258	-0.014	-0.023	0.016	0.009	0.011
Profit-share/share option	0.563	0.008	0.012	-0.009	-0.005	-0.006
			Perception of relative income			
Own pay is relatively low	0.000	-0.055	-0.101	0.061	0.041	0.054
			Perceived workplace inequality			
Pay gap is much too big	0.000	-0.049	-0.095	0.053	0.039	0.052
Pay gap is too big	0.000	-0.043	-0.079	0.049	0.032	0.042
Sample size = 1,518 Log likelihood = -1938.79 LR chi2(30) = 314.87						

Table 3 (Panel B) The effect of personal, job and firm characteristics on overall job satisfaction (CERS)

VARIABLES	P-values	Completely satisfied	Very satisfied	Satisfied	Neutral	Dissatisfied
Age	0.072	-0.006	-0.010	0.007	0.004	0.005
Age squared	0.090	0.000	0.000	0.000	0.000	0.000
Gender (male)	0.000	-0.039	-0.063	0.046	0.026	0.031
Separated, divorced or widowed	0.728	-0.004	-0.007	0.005	0.003	0.004
Single	0.073	-0.021	-0.036	0.024	0.015	0.018
One child	0.257	-0.013	-0.022	0.015	0.009	0.011
Two children	0.469	-0.009	-0.016	0.011	0.006	0.008
More than two children	0.522	0.013	0.020	-0.016	-0.008	-0.010
Degree or higher degree	0.670	0.005	0.008	-0.006	-0.003	-0.004
A-level or equivalent	0.631	0.007	0.012	-0.009	-0.005	-0.006
No qualification	0.000	0.055	0.072	-0.065	-0.030	-0.033
Professionals	0.362	0.018	0.026	-0.021	-0.011	-0.012
Skilled non-manual	0.518	-0.008	-0.013	0.009	0.005	0.007
Skilled manual	0.554	0.008	0.013	-0.010	-0.005	-0.006
Partly skilled/semi-skilled	0.475	0.011	0.017	-0.013	-0.007	-0.008
Unskilled	0.956	0.001	0.002	-0.002	-0.001	-0.001
Union member	0.123	-0.016	-0.026	0.018	0.011	0.013
Permanent part-time	0.001	0.052	0.068	-0.061	-0.028	-0.031
No permanent job	0.908	-0.002	-0.003	0.002	0.001	0.001
Employees > 1000	0.350	-0.015	-0.026	0.017	0.011	0.013
500 – 999	0.672	0.008	0.013	-0.010	-0.005	-0.006
100 – 499	0.994	0.000	0.000	0.000	0.000	0.000
50 – 99	0.086	-0.026	-0.048	0.029	0.020	0.025
25 – 49	0.120	-0.022	-0.040	0.025	0.016	0.021
20 – 24	0.648	0.010	0.015	-0.011	-0.006	-0.007
11 – 19	0.979	0.000	0.001	-0.001	0.000	0.000
Public sector	0.001	0.041	0.060	-0.048	-0.024	-0.028
Other	0.852	-0.004	-0.006	0.005	0.003	0.003
Sample size = 1,518 Log likelihood = -1938.79 LR chi2(30) = 314.87						

Base group: Female, married, high school qualification (i.e. GCE/GCSE), no children, permanent full time contract, manager, non-union member, private sector and micro firm (i.e. less than 10 employees).

Table 4 The effect of HRM practices and pay practices on satisfaction with pay (CERS)

VARIABLES	P-values	Completely satisfied	Very satisfied	Satisfied	Neutral	Dissatisfied
			Work organisation			
Teamwork	0.894	0.000	-0.001	-0.002	0.001	0.003
			Supervision			
Supervision of work progress	0.395	0.003	0.007	0.012	-0.004	-0.018
Employee can be seen all the time by supervisor or manager	0.763	-0.001	-0.003	-0.004	0.001	0.006
			Employee involvement / voice			
			Information dissemination			
notice boards	0.095	-0.005	-0.015	-0.023	0.008	0.035
Newsletter or internal magazine	0.035	-0.007	-0.020	-0.031	0.011	0.048
email or website	0.458	0.003	0.007	0.012	-0.004	-0.018
			Involvement in decision making			
Improvement groups	0.738	0.001	0.003	0.005	-0.002	-0.007
formal suggestion schemes	0.852	0.001	0.002	0.003	-0.001	-0.004
Meetings where employees can express their views	0.001	0.010	0.030	0.056	-0.015	-0.081
			Recruitment & selection			
Initial pay is negotiable	0.022	0.008	0.022	0.033	-0.012	-0.051
			Training & learning			
Both training and skill development are encouraged	0.540	-0.003	-0.009	-0.014	0.005	0.021
Either training or skill development is encouraged	0.496	-0.003	-0.009	-0.015	0.005	0.022
			Seniority-based pay			
Pay related to tenure	0.000	0.012	0.033	0.050	-0.018	-0.077
			Performance related pay			
Individual performance	0.001	0.013	0.035	0.048	-0.019	-0.077
Team performance	0.342	0.004	0.012	0.018	-0.006	-0.028
Company performance	0.590	-0.002	-0.006	-0.010	0.003	0.015
Profit sharing / option schemes	0.004	0.014	0.036	0.047	-0.020	-0.076
			Perceived workplace inequality			
Pay gap is much too big	0.000	-0.025	-0.082	-0.203	0.028	0.283
Pay gap is too big	0.000	-0.021	-0.066	-0.138	0.029	0.196
			Job autonomy- influence over			
job tasks	0.672	-0.001	-0.004	-0.006	0.002	0.010
pace of work	0.023	0.007	0.021	0.039	-0.011	-0.056
how job is done	0.351	-0.003	-0.009	-0.014	0.005	0.021
			Union			
Union member	0.964	0.000	0.000	0.001	0.000	-0.001
Sample size = 1,496						
Log likelihood = -1,837.78						
LR chi2(51) = 301.48						

The model also includes controls for age, gender, marital status, educational qualifications, occupation, contract type, firm size and sector.
'Neutral' refers to 'neither satisfied nor dissatisfied'. 'Dissatisfied' includes: 'dissatisfied', 'very dissatisfied' and 'completely dissatisfied'.

Table 5 The effect of HRM practices and pay practices on satisfaction with pay (WERS)

VARIABLES	P-values	Very satisfied	Satisfied	Neutral*	Dissatisfied	Very Dissatisfied
			Work organisation			
Teamwork	0.876	0.000	-0.002	0.000	0.001	0.001
			Supervision			
Supervision of work progress	0.003	0.004	0.023	0.001	-0.015	-0.014
			Employee involvement / voice			
			Information dissemination			
Notice boards	0.015	-0.005	-0.027	-0.001	0.017	0.015
Newsletter or internal magazine	0.952	0.000	0.000	0.000	0.000	0.000
Email or website	0.000	0.007	0.038	0.003	-0.025	-0.023
			Involvement in decision making			
Improvement groups	0.367	0.001	0.006	0.000	-0.004	-0.004
Formal suggestion schemes	0.096	0.002	0.013	0.001	-0.008	-0.008
Meetings where employees can express their views	0.000	0.007	0.045	0.005	-0.028	-0.029
			Recruitment & selection			
Management asks employees about pay	0.000	0.021	0.099	0.001	-0.066	-0.055
			Training & learning			
Both training and skill development are encouraged	0.000	0.028	0.138	0.004	-0.091	-0.080
Either training or skill development is encouraged	0.000	0.013	0.070	0.003	-0.046	-0.041
			Seniority-based pay			
Pay related to tenure	0.825	0.000	0.002	0.000	-0.001	-0.001
			Performance-related pay			
Performance related pay	0.160	0.002	0.011	0.001	-0.007	-0.007
Profit sharing/ option schemes	0.170	0.002	0.012	0.001	-0.008	-0.007
			Perceived workplace inequality			
Pay gap is small	0.775	0.002	0.010	0.001	-0.007	-0.006
			Job autonomy - influence over			
job tasks	0.000	0.008	0.045	0.004	-0.028	-0.028
pace of work	0.000	0.009	0.052	0.005	-0.033	-0.033
how job is done	0.004	0.004	0.022	0.002	-0.014	-0.014
			Union			
Union member	0.129	-0.002	-0.010	-0.001	0.006	0.006
Sample size = 19,890						
Log pseudo-likelihood = -27,317.11						
LR chi2(46) = 1,928.30						

See footnotes to Table 4.

Table 6 Union - non-union differences in the effect of HRM practices on overall job satisfaction (CERS)

VARIABLES	P-values	Completely satisfied	Very satisfied	Satisfied	Neutral*	Dissatisfied*
		Work organisation				
Teamwork	0.732	0.004	0.006	-0.004	-0.002	-0.003
Teamwork (unions)	0.066	0.037	0.054	-0.045	-0.022	-0.024
		Supervision				
Performance differentiated from others	0.107	0.020	0.036	-0.024	-0.014	-0.018
Performance differentiated from others (unions)	0.579	-0.011	-0.019	0.013	0.008	0.009
Employee can be seen all the time by supervisor or manager	0.125	-0.017	-0.028	0.020	0.011	0.013
Employee can be seen all the time by supervisor or manager (unions)	0.301	-0.018	-0.033	0.022	0.013	0.016
Supervision of work progress	0.053	0.022	0.037	-0.027	-0.015	-0.018
Supervision of work progress (unions)	0.528	-0.012	-0.020	0.014	0.008	0.010
		Employee involvement / voice				
		Involvement in decision				
meetings where employees can express their views	0.000	0.051	0.098	-0.058	-0.040	-0.052
meetings where employees can express their views (unions)	0.442	-0.015	-0.027	0.018	0.011	0.013
		Recruitment & selection				
Initial pay is negotiable	0.171	0.016	0.026	-0.020	-0.011	-0.012
Initial pay is negotiable (unions)	0.308	0.025	0.036	-0.031	-0.015	-0.016
		Training & learning				
Job requires ongoing learning	0.000	0.052	0.111	-0.054	-0.045	-0.063
Job requires ongoing learning (unions)	0.993	0.000	0.000	0.000	0.000	0.000
		Seniority-based pay				
Pay related to tenure	0.025	0.025	0.040	-0.030	-0.016	-0.019
Pay related to tenure (unions)	0.715	0.007	0.011	-0.008	-0.004	-0.005
		Perception of relative income				
Own pay is relatively low	0.000	-0.065	-0.123	0.072	0.050	0.066
Own pay is relatively low (unions)	0.075	0.039	0.053	-0.047	-0.022	-0.023
		Perceived workplace inequality				
Pay gap is much too big	0.000	-0.057	-0.118	0.062	0.048	0.066
Pay gap is much too big (unions)	0.162	0.036	0.049	-0.043	-0.020	-0.022
Pay gap is too big	0.000	-0.054	-0.103	0.060	0.042	0.055
Pay gap is too big (unions)	0.058	0.045	0.060	-0.054	-0.024	-0.026
Sample size = 1,518						
Log likelihood = -1930.54						
LR chi2(58) = 331.36						

See footnote to Table 4.

Table 7 Union - non-union differences in the effect of HRM practices on satisfaction with pay (CERS)

VARIABLES	P-values	Completely satisfied	Very satisfied	Satisfied	Neutral	Dissatisfied
		Employee involvement / voice				
		Information dissemination				
notice boards	0.055	-0.007	-0.021	-0.033	0.011	0.050
notice boards*union	0.336	0.006	0.017	0.026	-0.010	-0.040
newsletter or internal magazine	0.055	-0.008	-0.022	-0.034	0.012	0.052
newsletter or internal magazine*union	0.616	0.004	0.010	0.016	-0.005	-0.024
		Involvement in decision making				
meetings where employees can express their views	0.001	0.012	0.035	0.066	-0.018	-0.095
meetings where employees can express their views*union	0.331	-0.006	-0.018	-0.032	0.009	0.047
		Recruitment & selection				
Initial pay is negotiable	0.092	0.007	0.018	0.028	-0.010	-0.043
Initial pay is negotiable* union	0.591	0.004	0.011	0.017	-0.006	-0.026
		Seniority-based pay				
Pay related to tenure	0.004	0.010	0.028	0.044	-0.015	-0.067
Pay related to tenure* union	0.404	0.005	0.015	0.022	-0.008	-0.034
		Performance-related pay				
based on individual performance	0.006	0.013	0.035	0.048	-0.020	-0.077
based on individual performance*unions	0.872	-0.001	-0.003	-0.005	0.002	0.008
Profit sharing/ option schemes	0.010	0.015	0.039	0.050	-0.022	-0.081
Profit sharing/ option schemes*union	0.857	-0.001	-0.004	-0.007	0.002	0.010
		Perceived workplace inequality				
Pay gap is much too big	0.000	-0.026	-0.084	-0.211	0.028	0.293
Pay gap is much too big* union	0.562	0.004	0.012	0.018	-0.007	-0.028
Pay gap is too big	0.000	-0.023	-0.070	-0.150	0.031	0.212
Pay gap is too big*union	0.340	0.007	0.019	0.027	-0.010	-0.042
		Job autonomy – influence over				
pace of work	0.015	0.009	0.028	0.054	-0.014	-0.077
pace of work*union	0.321	-0.006	-0.019	-0.033	0.010	0.048
		Sample size = 1,496				
		Log likelihood = -1,835.13				
		LR chi2(61) = 306.79				

See footnote to Table 4.

Table 8: Union - non-union differences in the effect of HRM practices on satisfaction with pay (WERS)

VARIABLES	P-values	Very satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
			Supervision			
Supervision of work progress	0.010	0.004	0.023	0.001	-0.015	-0.014
Supervision of work progress (unions)	0.966	0.000	-0.001	0.000	0.000	0.000
			Employee involvement / voice			
			Information dissemination			
notice boards	0.019	-0.006	-0.029	-0.001	0.019	0.017
notice boards (unions)	0.545	0.003	0.014	0.001	-0.009	-0.008
email or website	0.000	0.006	0.031	0.002	-0.020	-0.019
email or website (unions)	0.131	0.003	0.017	0.001	-0.011	-0.010
			Involvement in decision making			
formal suggestion schemes	0.441	0.001	0.008	0.001	-0.005	-0.005
formal suggestion schemes (unions)	0.384	0.002	0.012	0.001	-0.008	-0.007
meetings where employees can express their views	0.000	0.008	0.051	0.006	-0.032	-0.034
meetings where employees can express their views (unions)	0.219	-0.004	-0.022	-0.002	0.014	0.013
			Recruitment & selection			
Initial pay is negotiable	0.000	0.024	0.111	0.001	-0.074	-0.061
Initial pay is negotiable (unions)	0.005	-0.005	-0.031	-0.003	0.020	0.020
			Training & learning			
Both training and skill development are encouraged	0.000	0.026	0.129	0.004	-0.085	-0.075
Both training and skill development are encouraged (unions)	0.154	0.004	0.021	0.001	-0.014	-0.012
Either training or skill development is encouraged	0.000	0.014	0.074	0.004	-0.048	-0.043
Either training or skill development is encouraged (unions)	0.371	-0.002	-0.012	-0.001	0.008	0.007
			Job autonomy – influence over			
job tasks	0.000	0.009	0.055	0.005	-0.035	-0.035
job tasks (unions)	0.022	-0.005	-0.027	-0.002	0.017	0.017
pace of work	0.000	0.006	0.036	0.003	-0.023	-0.023
pace of work (unions)	0.003	0.007	0.037	0.002	-0.024	-0.022
how job is done	0.004	0.005	0.030	0.003	-0.019	-0.019
how job is done (unions)	0.304	-0.003	-0.016	-0.001	0.010	0.010
Sample size = 19,890						
Log pseudo-likelihood = -27,300.80						
LR chi2(57) = 1,975.98						

See footnote to Table 4.

APPENDIX

Table A1 Sample means and standard deviations, CERS (Overall satisfaction)

	Mean	Standard Deviation
Personal characteristics		
Age	39.05	10.60
Age squared	1636.88	848.87
Gender (male=1)	0.48	0.50
Marital status		
Married, living with spouse	0.65	0.48
Separated, or divorced, or widowed	0.14	0.34
Single	0.22	0.41
Number of children under 16 living with respondent		
One child	0.19	0.40
Two children	0.17	0.38
More than two children	0.06	0.24
No children	0.57	0.50
Highest educational qualification		
Degree or higher degree	0.31	0.46
A-level (or equivalent)	0.10	0.30
Less than A-level	0.37	0.48
no qualification	0.31	0.46
Level of skill		
Professional	0.10	0.30
Managerial and technical	0.31	0.46
Skilled non-manual	0.24	0.43
Skilled manual	0.19	0.39
Partly skilled/semi-skilled	0.15	0.36
Unskilled	0.04	0.20
Union member	0.31	0.46
Job characteristics		
Contract status		
Permanent full-time	0.71	0.45
Permanent part-time	0.20	0.40
Fixed term, temporary	0.09	0.28
Firm characteristics		
Size (number of employees)		
> 1000	0.12	0.32
500 – 999	0.07	0.25
100 – 499	0.20	0.40
50 – 99	0.11	0.31
25 – 49	0.15	0.35
20 - 24	0.07	0.25
11 – 19	0.09	0.29
< 10	0.20	0.40
Sector		
Public	0.31	0.46
Private	0.65	0.48
Other	0.04	0.20

Table A1 (continued)

	Mean	Standard Deviation
Work organisation & supervision		
Working in groups or teams	0.59	0.49
Individual performance differentiated from peer	0.78	0.41
Employee can be seen all the time by supervisor or manager	0.50	0.50
Work progress can be visually assessed	0.53	0.50
Employee involvement / voice		
Information is disseminated in workplace	0.78	0.41
Employee is part of an improvement group	0.30	0.46
Workplace has a formal suggestion scheme	0.36	0.48
Management holds meetings were employees can express their views	0.69	0.46
Recruitment & selection		
Initial pay is negotiable	0.29	0.45
Training & learning		
Education or training paid by employer in the past 2 years	0.52	0.50
Job requires on-going learning	0.83	0.38
Seniority-based pay		
Pay is related to tenure	0.40	0.49
Performance-related pay		
Incentive payment based on own performance	0.22	0.42
Incentive payment based on team performance	0.17	0.37
Incentive payment based on company performance	0.26	0.44
Participating in a profit-share scheme or share (option) scheme	0.15	0.36
Perception of own pay		
own pay is relatively high	0.09	0.29
own pay is reasonably similar	0.58	0.49
own pay is relatively low	0.32	0.47
Effect of perceived workplace inequality on performance		
pay gap is much too big	0.22	0.42
pay gap is too big	0.29	0.45
pay gap is about right	0.45	0.50
pay gap is too small	0.03	0.18
pay gap is much too small	0.01	0.07

Table A2 Sample means and standard deviations for pay practices

	CERS		WERS	
	Mean	**St. dev.**	**Mean**	**St. dev.**
HRM PRACTICES				
Work organisation & supervision				
Teamwork	0.60	0.49	0.89	0.31
Supervision of work progress	0.52	0.50	0.27	0.44
Constant supervision	0.50	0.50	Na	na
Employee involvement / voice				
Information dissemination				
Notice boards	0.58	0.49	0.93	0.26
newsletter or magazine	0.62	0.49	0.75	0.43
email or website	0.42	0.49	0.49	0.50
Involvement in decision making				
improvement groups	0.33	0.47	0.50	0.50
Formal suggestion schemes	0.39	0.49	0.28	0.45
meetings where employees can express their views	0.71	0.45	0.87	0.34
Recruitment & selection				
Management asks employees about pay	0.29	0.45	0.27	0.44
Training & learning				
Both training and skill development are encouraged	0.50	0.50	0.39	0.49
Either training or skill development is encouraged	0.39	0.49	0.38	0.49
Neither training nor skill development are encouraged	0.11	0.31	0.23	0.42
Seniority-based pay				
Pay based on tenure	0.40	0.49	0.52	0.50
Performance-related pay	Na	Na	0.27	0.44
Own performance	0.24	0.43	na	na
Team performance	0.19	0.39	na	na
Company performance	0.29	0.46	na	na
Profit sharing/ option schemes	0.17	0.38	0.45	0.50
Perceived workplace inequality				
Pay gap is small	Na	Na	0.01	0.12
pay gap is much too big	0.23	0.42	na	na
pay gap is too big	0.29	0.45	na	na
pay gap is about right	0.48	0.50	na	na
pay gap is too small	0.02	0.17	na	na
pay gap is much too small	0.01	0.07	na	na
Job autonomy – influence over				
job tasks	0.64	0.48	0.66	0.47
pace of work	0.79	0.41	0.71	0.45
how job is done	0.45	0.50	0.85	0.36

Table A2 (continued)

	CERS		WERS	
	Mean	**St. dev.**	**Mean**	**St. dev.**
Age 18 – 24	0.08	0.27	0.11	0.32
25 – 39	0.47	0.50	0.43	0.49
40 – 49	0.25	0.43	0.26	0.44
50 or over 50	0.21	0.40	0.20	0.40
Gender (1=male)	0.50	0.50	0.52	0.50
Married living with spouse	0.64	0.48	0.70	0.46
Separated, divorced, or widowed	0.14	0.34	0.08	0.27
Single	0.23	0.42	0.22	0.42
No children	0.58	0.49	0.59	0.49
One child	0.20	0.40	0.30	0.46
Two children	0.17	0.37	0.11	0.31
More than two children	0.05	0.23	0.01	0.07
Degree or higher degree	0.33	0.47	0.28	0.45
A-level or equivalent	0.10	0.31	0.17	0.38
Qualification less than A-level	0.36	0.48	0.37	0.48
No qualification	0.20	0.40	0.19	0.39
Professional	0.07	0.25	0.18	0.38
Managerial/intermediate technical	0.34	0.47	0.22	0.42
Skilled non-manual	0.23	0.42	0.21	0.41
Skilled manual	0.18	0.39	0.15	0.36
Partly skilled /semi-skilled	0.14	0.35	0.15	0.36
Unskilled	0.03	0.18	0.08	0.28
Union member	0.35	0.48	0.40	0.49
Permanent full-time contract	0.76	0.43	0.75	0.43
Permanent part-time	0.17	0.37	0.17	0.38
Not permanent	0.07	0.26	0.08	0.27
Firm size (No. of employees)				
> 1000	0.13	0.34	0.05	0.22
500 – 999	0.08	0.27	0.09	0.28
100 – 499	0.21	0.41	0.40	0.49
50 – 99	0.11	0.32	0.19	0.40
25 – 49	0.14	0.34	0.19	0.39
20-24	0.06	0.23	0.03	0.18
10-19	0.09	0.29	0.04	0.21
1-10	0.18	0.39	na	na
Public sector firm	0.31	0.46	0.34	0.47
Private sector	0.65	0.48	0.39	0.49
Other	0.04	0.21	0.28	0.45

Table A3 Construction of the HRM variables from CERS and WERS

Work organisation and supervision	
CER: Teamwork: employee is part of a team	Employee is asked: Excluding any supervisor or manager you work for, do you usually work in a group or team with two or more other people?
WERS: Teamwork incidence in the workplace	HR Manager is asked: What proportion, if any, of [employees in the largest occupational group] at this workplace work in formally designated teams? Coded 1 for teamwork, 0 for no employees working in teams.
CER: Employee reports that work progress can be visually assessed	Employee is asked: Most of the time, can your supervisor or manager tell at a glance how your work is progressing?
WERS: Supervision of work progress used as a practice in the workplace	HR Manager is asked: what are the main methods by which logs are made aware of their job responsibilities? Coded 1 for supervision amongst the first three answers to this question (i.e. amongst the main three methods used in the organisation).
CER: Employees report they can be seen all the time by supervisor or manager	Employee is asked: Do you carry out your work in a place where you can be seen all the time by a supervisor or manager?
WERS: -	Variable not available in the dataset.
Employee involvement/ voice	
Information dissemination	
CER: notice boards	Employee is asked: Does your employer give you news of what is happening in the organisation by any of the methods on this card? notice boards
WERS: notice boards	Employee is asked: How helpful do you find the following in keeping up-to-date about this workplace? notice boards Coded 1 if notice boards are used, 0 if notice boards are 'not used here'
CER: newsletter or magazine: combination of	Employee is asked: Does your employer give you news of what is happening in the organisation by any of the methods on this card? news-sheet, internal newspaper or magazine
WERS: newsletter or magazine	Employee is asked: How helpful do you find the following in keeping up-to-date about this workplace? newsletters or magazines Coded 1 if newsletters or magazines are used, 0 if newsletters or magazines are 'not used here'
CER: e-mail or website	Employee is asked: Does your employer give you news of what is happening in the organisation by any of the methods on this card? web-site or internal e-mails
WERS: e-mail	Employee is asked: How helpful do you find the following in keeping up-to-date about this workplace? e-mail Coded 1 if notice e-mail is used, 0 if e-mail is 'not used here'.
Involvement in decision making	
CER: Employee as part of an improvement group	Employee is asked: Some organisations have groups of employees who meet regularly to think of improvements that could be made within the organisation. Are you involved in such a group?
WERS: Incidence of improvement groups in the workplace	HR manager is asked: Do you have groups at this workplace that solve specific problems or discuss aspects of performance or quality? They are sometimes known as quality circles or problem-solving groups or continuous improvement groups.
CER: Workplace has a formal suggestion scheme	Employee is asked: Does your employer have a formal suggestion scheme?
WERS: Workplace has a formal suggestion scheme	HR manager is asked: Do you have any channels through which employees can make suggestions for improving working methods? Coded 1 for suggestion schemes.

Table A3 (continued)

CER: Management holds meetings were employees can express their views	Employee is asked: Does management hold meetings in which you can express your views about what is happening in the organisation?
WERS: Management holds meetings were employees can express their views	A combination of: Employee is asked: How helpful do you find the following in keeping up-to-date about this workplace? meetings of managers and employees Coded 1 if notice meetings are used, 0 if meetings are 'not used here'. and Employee is asked: How good would you say managers here are at the following: providing everyone with the chance to comment on proposed changes? Coded 1 for 'very good' and 'good', 0 for the rest. The combined variable is coded 1 if both variables above are 1.
Financial involvement, Recruitment & selection	
CER: Employee is part of a profit-share scheme or share (option) scheme	Employee is asked: Do you participate in profit-sharing scheme or share (option) scheme?
WERS: Incidence of profit-sharing scheme or share ownership schemes in the workplace	HR manager is asked: Do any employees at this workplace receive payments or dividends from any of the following variable pay schemes? 1. Profit-related payments or bonuses 2. Deferred profit sharing scheme 3. Employee share ownership schemes Coded 1 if 'yes' at any of the three above.
CER: Initial pay is negotiable	Employee is asked: When you entered your present job, were you able to negotiate personally with your employer over the pay they were offering you?
WERS: Frequency of being asked about pay issues	Employee is asked: How often are you and others working here asked by managers for your views on the following? pay issues Coded 1 for frequently and sometimes, 0 for hardly ever and never.
Training & learning	
CER: Both/ Either/ Neither training and skill development are encouraged :	Combination of the variables in the two rows below:
education or training paid by employer in the past 2 years	Employee is asked: Have you received any education or training provided or paid for by your current employer, in the last 2 years? Please include any education or training which is still continuing.
job requires on-going learning	Employee is asked: Statements about job: My job requires that I keep learning new things.
WERS: Both/ Either/ Neither training and skill development are encouraged	Combination of the variables in the two rows below:
training paid or organised by the employer in the last year	Employee is asked: During the last 12 months, how much training have you had, either paid for or organised by your employer? Coded 1 for any training, 0 for none.
encouragement of skill development in the workplace	Employee is asked: Do you agree or disagree, with the following statements about working here? people working here are encouraged to develop their skills Coded 1 for strongly agree and agree, 0 for the rest.

Table A3 (continued)

Pay practices	
Seniority-based pay	
CER: Use of pay based on tenure in the workplace	Employee is asked: How true is it that the organisation rewards employees who have worked there a long time?
WERS: Use of pay structures based on tenure in the workplace	HR manager is asked: Which, if any, of the factors listed on this card explain the differences between actual pay levels of fulltime [employees in the largest group] at this workplace? age of employees, years of service
Performance-related pay	
CER: Performance-related pay	
Incentive payment based on own performance	Employee is asked: Do you receive any incentive payment, bonus or commission based on your own performance?
Incentive payment based on team performance	Employee is asked: Do you receive any incentive payment, bonus or commission based on team performance?
Incentive payment based on company performance	Employee is asked: Do you receive any incentive payment, bonus or commission based on organisational performance?
WERS: Incidence of performance-related pay in the workplace	HR manager is asked: Do any employees at this workplace receive payments or dividends from any of the following variable pay schemes? Individual or group performance-related schemes
Perceived workplace inequality	
CER: Pay equality	Employee is asked: Thinking of the highest and the lowest paid people at your place of work, how would you describe the gap between their pay, as far as you know? Pay gap is much too big / pay gap is too big / pay gap is about right / pay gap is too small / pay gap is much too small
WERS: Pay equality	HR manager is asked: Which, if any, of the factors listed on this card explain the differences between actual pay levels of fulltime [employees in the largest group] at this workplace? None. If 'none' above, checking again: So, all full-time [employees in the largest group] receive the same amount of pay? Coded 1 if the answer is Yes.
Perception of relative income	
CER: Perception of relative income:	Employee is asked: How would you describe wages or salary paid? own pay is relatively high / own pay is reasonably similar / own pay is relatively low.
WERS: -	Variable not available in the dataset.
	Job autonomy- influence over
CER: job tasks	Employee is asked: Do you decide the specific tasks that you carry out from day to day or does someone else? Coded 1 for employee, 0 for someone else.
WERS: job tasks	Employee is asked: In general, how much influence do you have about the following: the range of tasks you do in your job Coded 1 for 'a lot' and 'some', 0 for the 'a little' and 'none'.
CER: pace of work	Employee is asked: Does someone else decide how much work you do or how fast you work during the day? Coded 1 for employee, 0 for someone else.
WERS: pace of work	Employee is asked: Employee is asked: In general, how much influence do you have about the following: the pace at which you work Coded 1 for 'a lot' and 'some', 0 for the 'a little' and 'none'.
CER: how job is done	Employee is asked: Is yours a job which allows you to design and plan important aspects of your own work or is your work largely defined for you? Coded 1 for yes.
WERS: how job is done	Employee is asked: Employee is asked: In general, how much influence do you have about the following: how you do your work Coded 1 for 'a lot' and 'some', 0 for the 'a little' and 'none'.