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Confronting objections to performance pay: A study of the impact of individual and gain-sharing incentives on the job satisfaction of British employees

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Abstract

The increasing use of incentive pay schemes in recent years has raised concerns about their potential detrimental effect on *intrinsic* job satisfaction (JS), job security and employee morale. This study explores the impact of pay incentives on the overall job satisfaction of workers in the UK and their satisfaction with various facets of jobs. Using data from eight waves (1998-2005) of the British Household Panel Survey (BHPS) and a uniquely-designed well-being dataset (EPICURUS), a significant positive impact on job satisfaction is only found for those receiving fixed-period bonuses. These conclusions are robust to unobserved heterogeneity, and are shown to depend on a number of job-quality characteristics that have not been controlled for in previous studies.

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1. Introduction

When faced with the classical agency problem, whereby the interests of the firm and the worker are misaligned, employers have an incentive to design reward mechanisms that induce employees to act in their best interests. Mirlees (1976) and Holmström (1979) were among the first to demonstrate the theoretical dominance of performance-related pay (PRP) over alternative reward systems when monitoring the effort of an agent is imperfect. Indeed, such incentive schemes have increasingly found favour in many organisations in the UK and other advanced Western economies (Murphy, 1999) as they have been considered to be the firm's solution to the problem of 'moral hazard' that exists in the workplace.

Notwithstanding the substantial insights that agency analysis has offered, a number of shortcomings have been pointed out. The thrust of these arguments is that the introduction of incentive pay schemes may lead to dysfunctional behavioural responses when the employees are engaged in "multitasking" (Holmström and Milgrom, 1991; Baker, 1992). Subjective appraisal, believed to be capable of rewarding a more holistic evaluation of performance, is no less contentious, as it may lead to rent-seeking on behalf of workers and distortionary evaluations by supervisors (Prendergast, 1999). Added to these problems are assertions that financial incentives are likely to undermine collaboration and team work (Milgrom and Roberts, 1992), emphasize the power asymmetry between management and workforce and reduce risk taking, creativity and innovation (Kohn, 1993). In addition, non-economic concerns have been raised postulating that the use of extrinsic incentives may erode *intrinsic motivation* and satisfaction, with adverse effects on productivity and profitability (Deci, 1971; Lepper *et al*, 1973). These claims, which constitute 'one of the most important anomalies in economics' (Frey and Jegen, 2001), have, nonetheless, not been mirrored in the empirical evidence reported by economists. For example, Lazear (2000) shows significant positive effects of incentive pay on productivity in his unique dataset of a firm that exogenously changed its established compensation plan. Nevertheless, it may be that economists have

identified the short run benefits of incentives, and any long run negative effects on employee motivation and job satisfaction (JS) postulated by psychologists have yet to be witnessed in the data.

A careful examination of the link between PRP and JS may therefore unveil significant insights into the workings of incentive pay and its consequences for employee morale and productivity. It is, thus, the primary aim of this paper to examine how the increasingly changing nature of compensation methods has affected attitudes towards work. To do so the practice of a growing number of economists, who use self-reported JS data to proxy individual utility, is followed. Based on the reasoning of conventional microeconomic models no significant differences in JS are expected between the marginal workers receiving PRP and those paid a fixed salary. Nonetheless, the disparity in the psychological processes and in the workplace environments of these two types of workers leads to the expectation that salient differences in utility could arise, especially in a world of imperfect labour mobility.

This paper builds on a number of recent studies that have examined the extent to which PRP may affect the satisfaction that workers receive from their jobs (Drago *et al*, 1992; McCausland *et al.*, 2005; Heywood and Wei, 2006; Pouliakas, 2007; Artz, 2008; Green and Heywood, 2008; Cornelissen *et al*., 2008). Significant heterogeneity has been found in the estimates of this research, such as PRP being primarily conducive to the well-being of risk tolerant individuals (Cornelissen *et al*., 2008), males (Artz, 2008), unionized workers (Green and Heywood, 2008), the higher-paid (McCausland *et al.,* 2005) and those who are employed in larger firms (Artz, 2008). Fixed-effects estimates have also been used to control for the impact of a number of time-invariant individual and firm-specific characteristics that may cause spurious correlation between PRP on JS, such as worker ability and the nature of the job task (Pouliakas, 2007; Green and Heywood, 2008). Nevertheless, to date no study has examined the influence of particular characteristics describing the quality of the workplace (e.g. whether it is dangerous, noisy, hot, dirty etc.) and the nature of the job task (e.g. hard work, repetitiveness, autonomy, rotating teams etc.) as moderators of the relationship between PRP and JS, mainly due to the unavailability of appropriate data.

In this study the effect of PRP on the overall JS and on satisfaction with various aspects of jobs is firstly estimated using eight waves (1998-2005) of the British Household Panel Survey (BHPS), a large representative panel sample of UK employees. The model specification is then replicated on a new unique dataset, the EPICURUS database. Though not directly comparable with the BHPS, the latter dataset is used as it has been specifically designed to examine the relationship between the well-being of workers and a whole host of job-quality variables that are typically unavailable in large household surveys. In this manner, the robustness of the significant positive impact of bonuses on JS, which has been found in the literature, is confirmed. Importantly, the interaction between a number of important variables, describing either the nature of the job task or the quality of the workplace, and PRP is also shown to be a significant determinant of the satisfaction that workers derive from their employment.

The remainder of the chapter is organised as follows. In the next section the theoretical predictions regarding the incentives-job satisfaction relationship are examined. In section 3 the data are described and summary statistics are displayed. Section 4 details the econometric methodology used. The estimates of the JS regressions are then presented in section 5. Concluding remarks are made in section 6.

2. Job Satisfaction and Incentives

While the literature on happiness and well-being has advanced at a rapid pace (Freeman, 1978; Clark and Oswald, 1996; Clark, 1997; Layard, 2005; Blanchflower and Oswald, 2004; EPICURUS, 2007), and the theory of firms' choice of incentive contracts is firmly rooted in the agency problem (Mirlees, 1976; Homstrom, 1979; Holmstrom and Milgrom, 1987), only recently has the impact of financial incentives on JS received any attention. From conventional economic thought it is well-known that due to the existence of information asymmetries that result in a conflict of interests between a risk-neutral principal and a risk-averse agent, an efficient contract must balance the goals of full insurance and first-best incentives. At the optimum, given the agent's inherent disutility for exerting effort, a firm can induce higher levels of effort by tying the agent's compensation to random realisations of his/her output. Choosing to do so,

however, implies that the expected value of the agent's wages must compensate him/her for the risk intrinsic in the production process and the disutility of the extra effort. It follows that the (reservation) utility of individuals who receive performance-enhancing pay should, in equilibrium, be equal to that of non-recipients.

As formalized in Pouliakas (2007), the above prediction may not necessarily hold in the presence of imperfect labour mobility, since it requires time for the sorting behaviour described by Lazear (1986; 2000) to take effect. Belfield and Marsden (2003), for instance, report a significant experimentation and learning-by-doing process in the implementation of suitable compensation strategies by managers, with a significant proportion of workplaces operating 'wrong' remuneration schemes, in the sense that they do not match the conditions of their monitoring environment. In this case, the introduction of PRP schemes by firms may be associated with lower mean JS, given that for those agents for whom the marginal cost of effort is dear compensation schemes which reward performance will be less attractive. In contrast, Heywood and Wei (2006) have emphasised that PRP generates the maximum surplus for workers, as it allows them to put forth infra-marginal effort that achieves a more complete optimization of their utility compared to other payment arrangements.

Psychological literature has also argued that once one allows for the fact that rational individuals may receive *intrinsic satisfaction* from their jobs, extrinsic intervention may trigger psychological responses that will alter the agent's utility. This forms the basis of cognitive evaluation theory (Deci and Ryan, 1985), which asserts that the ultimate effect of performance-contingent compensation on individual motivation depends on its impact on perceived self-determination and esteem. If incentives are perceived by individuals as being *supportive*, they facilitate worker autonomy and foster self-esteem, thus enlarging self-determination. In this case intrinsic motivation is *crowded-in*, and PRP schemes should enhance JS. In contrast, rewards that are regarded as *controlling* may cause "distaste for the required effort" (Kreps, 1997, p. 362).[i] Such a shift in the locus of control will subsequently *crowd-out* the utility that employees

derive from work, giving rise to the so-called *'hidden cost of reward'* (Frey, 1997; Frey and Jegen, 2001; Fehr and Falk, 2002).

In the face of the above arguments, it is expected that monetary inducements are unlikely to have a neutral effect on the subjective JS scores of individuals. Specifically, the ultimate effect of PRP on mean JS is likely to depend on the relative proportions of intrinsically and extrinsically motivated agents that are employed in the workplace, as well as on the impact that PRP has on the psychological disposition of intrinsically-motivated individuals. It will also hinge on the extent to which the mobility of labour will permit workers whose utility has been adversely affected by the offer of PRP to move to alternative employment that suits their preferences best.[ii]

Added to the above are assertions that financial incentives are likely to alter a recipient's absolute and *relative* level of pay, both of which are known to be significant determinants of JS (Clark and Oswald, 1996; Clark, 1999; Grund and Sliwka, 2005; Ferrer-i-Carbonell, 2005; Panos and Theodossiou, 2009). Given the overwhelming evidence that workers attach an equal (or even greater) value to other facets of their jobs besides wages (Van Praag *et al*., 2003; Skalli *et al*., 2008), it is also expected that PRP will affect overall attitudes towards work by influencing individual perceptions of the security of employment, of inter-personal relationships and of equity and fairness, *inter alia*. For instance, aggressive PRP systems may be detrimental to employee morale as it conflicts with the inherent preference of employees for horizontal equity arrangements, which treat workers of 'comparable worth' at the same level of an organization "fairly" and "equally" (Baker *et al*., 1988). In addition, firms that rely on work incentives to motivate employee effort are less likely to foster ongoing worker-firm attachments for that purpose (Drago and Heywood, 1995), thus compromising job security (Valetta, 1999).[iii] Nevertheless, it might also be true that the provision of variable pay may provide firms with sufficient flexibility to avoid layoffs during periods of weak demand, in which case the incidence of PRP could ultimately enhance job tenure. It is also likely to be the case that in those circumstances in which PRP may require subjective evaluation (for instance, when the problem of multitasking is more acute), there may be employee discontent as they

may feel that their supervisor's appraisal is not a fair reflection of their performance. Finally, it has been asserted that explicit incentives are likely to undermine collaboration and team work (Milgrom and Roberts, 1992; Marsden and French, 1998), emphasize the power asymmetry between management and workforce, and reduce risk taking, creativity and innovation (Kohn, 1993).

The above analysis makes clear that ultimately the impact of PRP on JS is an empirical question, and is likely to vary substantially in response to a number of individual- and/or job-related characteristics and across different facets of the employment contract. Previous studies that have explored this association have indeed confirmed the significant heterogeneity in estimates. Green and Heywood (2008), Artz (2008) and Cornellisen *et al.* (2008) have highlighted that performance-based pay exerts a significant impact on the JS of males who are more risk-tolerant and who are predominantly employed in unionized jobs and within larger-sized firms. McCausland *et al*. (2005) also showed that once the sorting effects of PRP are taken into consideration, PRP is only likely to affect the utility of higher-paid workers, as the risk inherent in variable-pay schemes may de-motivate lower-paid staff. Moreover, Pouliakas (2007) and Green and Heywood (2008) showed that only bonuses and profit-sharing schemes result in higher JS in the UK, while the effect of individually-linked rewards is correlated with unobserved heterogeneity. Those authors also examine a fuller set of partial job satisfactions and find that PRP has a significant impact on the facets of 'pay', 'job security' and 'hours worked', while the insignificant impact on the 'work itself' casts doubt on the validity of the motivation crowding–out theory. Finally, Drago *et al.* (1992) and Heywood and Wei (2006) reveal positive effects of PRP on the JS of Australian and US employees, respectively.

As most of the above studies have relied on large household panel surveys (e.g. BHPS, GSOEP, NLSY), variables describing intrinsic features of the workplace environment and of the nature of the job task have been missing from the analysis. In particular, the interaction between such job-specific variables and the offer of PRP is expected to be a significant determinant of individual JS. For example, Fernie and Metcalfe (1999), McLeod and Parent (1999) and Belfield and Marsden (2003) have

emphasized that the monitoring environment of the workplace is a crucial factor in firms' decisions of the appropriate method of compensation. Pouliakas and Theodossiou (2009) have also illustrated that characteristics of the workplace environment are significant determinants of the perceived effectiveness of monetary incentives by the employees themselves. Nevertheless, previous studies have been unable to incorporate such elements into the analysis, and have resorted to the use of time-demeaning in order to purge their overall effect.

This paper aims to explicitly take such job-related features into account when investigating the relationship between incentive pay and employee well-being. To do so, the analysis firstly utilizes data from eight waves (1998-2005) of the BHPS, corroborating the results of previous findings in the literature. It is argued that the marked discrepancy between OLS and fixed effects estimates is indicative of the presence of unobserved individual and job effects. A new and unique dataset, the EPICURUS database, which has been explicitly designed to investigate the relationship between workplace characteristics and employee well-being in Europe, is then utilized. Using a similar specification to that used in household surveys, a number of previously unavailable job-specific variables are subsequently introduced in the analysis. It is hence shown that amongst all types of incentive pay, only fixed bonuses have a significant positive effect on overall JS. Moreover, the interaction between particular features of the work environment and PRP is found to exert an important influence on job utility.

3. Data and Job Satisfaction Measures

This study uses data from waves 8 to 15 (1998-2005) of the British Household Panel Survey (BHPS), as well as the unique cross-sectional EPICURUS database for the year 2004, both of which are described in detail below.

The BHPS is a nationally representative survey that each year interviews a random sample of nearly 10,000 individuals in approximately 5,500 British households, the addresses of which are taken from the National Postcode Address File. It has been conducted annually since late 1991 and contains a wealth of

information on employees' personal and employment characteristics. Respondents in employment are also asked about their satisfaction with seven specific facets of their jobs (promotion prospects, total pay, relations with supervisors, job security, ability to work on their own initiative, the actual work itself and hours of work) evaluated on a seven point scale (where a value of one corresponds to '*not satisfied at all*' and seven reflects '*complete satisfaction*'). The questions regarding promotion prospects, relations with boss, and the use of initiative were discontinued after the seventh wave. Subsequent to their rating of the various partial satisfactions of a job, individuals are asked a final question regarding overall job satisfaction, worded as follows: *"All things considered, how satisfied or dissatisfied are you with your present job overall using the same 1-7 scale?"* As in most empirical work in this field, this study employs these job satisfaction questions to identify the determinants of the quality of employment as perceived by the individual workers themselves.

The sample is restricted to individuals between 16 and 65 years of age who are in employment (both full and part-time) at the survey date. Those who are self-employed, retired, work in the armed forces and live in Northern Ireland are excluded. For waves 8 to 15 of the BHPS this yields 57,438 observations on 13,752 different individuals. A sizeable portion of this sample (15%) corresponds to individuals that replied affirmatively to the question: "*Does your pay include performance related pay*"? This is the main question in the BHPS capturing the presence of pay incentives that are based on *individual* employee performance. A follow-up question also attempts to distinguish the component of pay that is usually supplemented via irregular bonuses and commissions, or rewards based on some measure of overall company performance, such as profits. Specifically, the respondents are asked *"In the last 12 months have you received any bonuses such as a Christmas or quarterly bonus, profit-related pay or profit sharing bonus, or an occasional commission?"* Approximately 29% of the employees in the sample declare to be recipients of such forms of compensation. This variable is included in the empirical analysis as an indicator of *gain-sharing (GS) schemes*. A more insightful look at the composition of the various incentive options that firms employ as part of their human resource toolkit reveals that 64.22% of

individuals in the sample receive none of the two contingent-pay schemes described above, 6.47% and 20.79% are sole recipients of individual PRP and GS, respectively, while the pay of the remaining 8.51% is characterized by both PRP and GS elements.

The EPICURUS data have been collected as part of a survey of workers in lower- and middle-skilled occupations that was undertaken as part of the EU-funded EPICURUS project in August and September 2004 in seven European countries (Denmark, Finland, France, Greece, the Netherlands, Spain and the UK). A specialized survey company was used to ensure that appropriate dissemination and data collection procedures were followed. Moreover, due to time and budget considerations it was decided that a homogenous group of individuals should be chosen. The final sample therefore includes salaried workers (excluding students) whose employment is the main activity, employed in all industries except agriculture and fishery, between the ages of 18 to 65, with a maximum educational level of 4 in the ISCED International Classification of 1997. For the purposes of this study we use the UK questionnaire only, which was administered online via the Internet. This led to a sample of 1.002 random respondents.

The contents of the questionnaire are fairly extensive in terms of information about the individual respondent, her/his household and his/her current job situation. In comparison with large household surveys, the EPICURUS database is far more precise about the contents of the job, especially in terms of working conditions. A larger set of subjective information is also available encompassing general opinions about the individual's employment (on a 1-10 Likert scale with 10 reflecting '*complete satisfaction*') and contains answers to as much as thirteen specific domains of the job. This allows a more detailed study of the dependence of JS on a set of traditionally overlooked job features, such as the quality of work conditions and the intensity and interest of the job (EPICURUS, 2007). It is also possible to examine closer the interaction of the latter job measures with various compensation policies pursued by UK organizations.

Respondents were asked specific questions about the composition of their remuneration package. Specifically, after being invited to answer a series of questions on their personal incomes, there were

queried about the receipt of any extra payments from their main job. Two of the options included were "*received extra payments such as bonus and stock options*", and "*received end of the year bonus*", which led to 23.75% and 21.36% positive responses, respectively. The survey also revealed that in 10.28% of the cases the employees' circumstances in the main job were characterized by an individual-based "*performance/merit-related payment system*". The frequencies of the EPICURUS sample are comparable to those of the BHPS, with 59.38% of the sample receiving no form of contingent-pay compensation, 28.24% being recipients of either of the three incentive devices, while the pay of the residual 12.38% consists of some combination of these. The correlation coefficients between alternative combinations of the compensation options do not exceed 0.24 in either case, indicating that these consist of relatively separate motivational instruments.

Table 1 illustrates descriptive statistics from both datasets, highlighting the differences in the characteristics of those employees who receive at least one form of reward from their employment and those who do not. It is apparent that the percentage of male, young and non-unionized workers is higher among those receiving incentive pay than it is among those on alternative wage schemes. Employees whose remuneration is broadly linked to their performance are also more likely to be in full-time, permanent, private sector jobs offering promotion opportunities. They are found primarily among managerial/administrative and sales occupations and in larger firms. They also receive higher mean wages, although they work a greater average number of hours. They are characterized by a higher incidence of shift work, teamwork and usually work on jobs involving a variety of duties. Their jobs tend to be repetitive and require working under tight deadlines and high speed, often resulting in fatigue. A greater proportion of employees receiving incentive rewards declare to be in safer and of superior quality jobs relative to those on time rates. Finally, fewer people receiving extrinsic compensation enjoy good relationships with their colleagues, though they are in better terms with their supervisors. No major differences seem to exist with respect to educational qualifications, marital status and working time patterns.

[INSERT TABLE 1 ABOUT HERE]

The mean JS by facets of jobs and method of pay is displayed in Table 2. Interesting patterns emerge, with individuals in receipt of any form of performance incentive (bonuses or PRP) reporting higher satisfaction with their pay and job security. In contrast, workers on non-contingent compensation schemes seem to be unambiguously more satisfied with the hours (and times) of work compared to those on PRP. Individuals in receipt of PRP are also found to be more dissatisfied in terms of their relations with their boss, their use of initiative and, in particular, the level of workload, work tension and job stress. In general those in receipt of PRP are the least satisfied group of employees, while those paid performance bonuses are usually happier than individuals on time rates.

[INSERT TABLE 2 ABOUT HERE]

4. Methodology and Econometric Issues

For the rest of the paper a multivariate regression methodology is employed in order to uncover the true *ceteris paribus* influence of the incentive pay variables on JS. The empirical framework that is used assumes that (either partial or overall) *JS* of individual i (i = 1,…, N) in time period t (t = 1,…,T) is a function of a vector of individual and job characteristics:

$$JS_{it} = \beta_1 + \beta_2 PRP_{it} + \beta_3 GS_{it} + \beta_4 \mathbf{X}_{it} + \beta_5 \mathbf{Jc}_{it} + \beta_6 \mathbf{T}_t + u_{it} \quad (1)$$

where *PRP* is an indicator capturing whether the individual is working under a performance-based scheme, *GS* differentiates between those workers who have received a gain-sharing bonus and those who have not, **X** is a vector of other individual variables assumed to influence JS, **Jc** captures a set of conventional employment-related factors (used in previous studies in the literature), **T** is a vector of yearly dummy variables capturing the presence of fixed time effects (such as changing technologies or

shifting managerial styles, both of which could potentially affect the relationship of PRP and JS), the β's are associated coefficients, and u_{it} is a randomly distributed error term with $E(u_{it}| \mathbf{X, Jc, T}) = 0$.

OLS estimation of equation (1) is likely to reveal a distorted effect of PRP and GS on JS given the presence of unobserved individual and job heterogeneity. Such heterogeneity is likely to be particularly pronounced in the case under study, due to both non-random sorting of workers into particular wage schemes as well as the non-systematic offer of contingent-rewards by firms. Specifically, Lazear's (1986) model has convincingly illustrated that firms offering PRP are likely to attract workers of higher ability, ambition or talent, while Fernie and Metcalfe (1999), McLeod and Parent (1999) and Belfield and Marsden (2003) have emphasized the importance of the monitoring environment in the firm's decision whether to offer PRP. Given that these characteristics, which are likely to be correlated with both the incentive pay and JS variables, are usually unobserved, it follows that an OLS regression will lead to inconsistent estimates.

In order to overcome this omitted variables problem, equation (1) is estimated in this study by, first, using a fixed effects model of panel analysis on the BHPS dataset,[iv] and, subsequently, controlling for a number of previously omitted job-related variables using the EPICURUS database. With this strategy it hence becomes possible not only to confirm the *ceteris paribus* influence of incentive pay on JS, purged of any unobserved heterogeneity, but also to infer the impact of the interaction between contingent rewards and a number of previously unavailable job-specific factors on individual JS.

In addition to (1), the following equation is thus also estimated:

$$JS_{it} = \beta_1 + \beta_2 PRP_{it} + \beta_3 GS_{it} + \beta_4 \mathbf{X}_{it} + \beta_5 \mathbf{Jc}_{it} + \beta_6 \mathbf{Juc}_{it} + \beta_7 \mathbf{T_t} + \varepsilon_i + \eta_{it} \qquad (2)$$

where, as is standard (Wooldridge, 2002), the idiosyncratic disturbance term u_{it} is split into the time-invariant fixed individual effect, ε_i, and a pure random error term, η_{it}, with $E(\eta_{it}) = 0$ and $E(\varepsilon_i, \eta_{it}) = 0$, while **Juc** is a vector of non-standard regressors that capture specific characteristics of an employee's job (such as the nature of the job task, the level of teamwork, the quality of the working environment etc).

As the dependent variable (JS) is ordinal in nature, statistical models such as (1) and (2) usually make use of an ordered probit estimator (with random or fixed effects). Ferrer-i-Carbonell and Fritjers (2004) and Van Praag and Ferrer-i-Carbonell (2004) have nevertheless shown that well-being models utilizing fixed effects or other complicated estimators can be consistently estimated with the use of a linear Probit OLS (POLS) methodology. Such a technique transforms the ordered responses to a JS question into a linear scale, by using an approximation that takes the frequency distribution of the variable into account (Maddala, 1983). It has been shown that the estimates obtained with this method can be converted back to those of an ordered probit estimator via an appropriate multiplication factor and that statistical inference is unaffected. Moreover, such a monotonic transformation makes the empirical process relatively inexpensive and permits the use of complicated linear econometric tools. The POLS methodology has therefore been adopted in this study.[v]

5. Econometric Results

5.1 *Conventional Estimates of Job Satisfaction*

The regression results in Table 3 show the effect of individual and job characteristics on overall JS in the UK. The specification that has been selected follows closely that in Green and Heywood (2008) and has been kept as consistent as possible across both datasets. In examining the findings in columns (1) and (3), which present OLS estimates of equation (1) on the BHPS and the EPICURUS dataset, respectively, it is notable that both datasets show that only performance bonuses have a positive and significant impact on JS, thus confirming the evidence of previous studies in the literature. By breaking up the question on bonuses and profit-sharing into two distinct components, the EPICURUS dataset also reveals that it is end of the year bonuses that are mostly appreciated by employees. Individual PRP, in contrast, is not found to have any significant effect on JS. It is important to notice that these effects are robust to the inclusion of the level of pay and of work hours which are mostly influenced by the receipt of contingent pay, while the

regressions have also controlled for occupational and sectoral differences in the jobs that individuals perform.

The influence of the remaining covariates is in accordance with previous findings in the literature, though a number of important variables are statistically insignificant in the EPICURUS survey, presumably due to the smaller sample size and the lack of sufficient variability in some of the regressors resulting from the homogeneity of the sample. For example, the level of pay, working hours, age, education and firm size are not found to significantly affect JS in the EPICURUS sample. Nonetheless, the gender and union paradoxes are confirmed, whereby females and non-union employees appear to be more satisfied. Permanent contract jobs with promotion opportunities are also found to yield higher JS, though those working on the employer's premises and on jobs requiring more commuting time appear to be more dissatisfied.

[INSERT TABLE 3 ABOUT HERE]

5.2 Estimates of Job Satisfaction Controlling for Unobserved Heterogeneity

The relationship between incentive pay and JS reported in the previous section is likely to be biased due to the presence of unobserved heterogeneity. As was argued above, the researcher cannot be certain that a consistent estimate of variable pay on JS has been obtained with the use of least squares, due to sorting of workers and jobs across different pay regimes. Instead, the coefficients on the incentive pay dummy variables might be capturing the impact on satisfaction of differential person- and job-specific traits which are correlated with the propensity of individuals to belong to either mode of pay and, simultaneously, enhance their JS.

For this reason, columns (2) and (4) of Table 3 report the estimated coefficients of regressions that either purge the existence of time-invariant effects or control for a set of non-typical workplace factors. Comparing this to the conventional specification in columns (1) and (3), where no such corrections were introduced, interesting differences arise. In particular, the robustness of the positive effect of bonuses on

JS is confirmed, though it is slightly reduced in magnitude. The coefficients of a number of the remaining independent variables which are potentially correlated with unobserved characteristics (e.g. age, union status, managerial duties) have also been affected accordingly.

Importantly, the EPICURUS survey allows the examination of the effect of some previously unexplored job factors on JS. For instance, it can be seen that a system of rotating shifts and jobs involving a variety of duties yield higher utility to workers compared to fixed time schedules and standard workplace routines, respectively. Non-repetitive jobs are also significantly appreciated, as are jobs which are perceived as being of higher quality in terms of the physical environment. Finally, individuals who enjoy a happy relationship with their supervisors and colleagues are found to be more satisfied workers, which also can explain the significant disutility associated with rotating teams.

5.3 Interaction effects between incentive pay and job-specific characteristics

With the use of the information made available by the EPICURUS survey, is possible to investigate how the various incentive pay tools interact with a number of relevant job characteristics in terms of affecting the overall well-being of employees. The coefficients of such interactive terms, added in the estimation of equation (2) in turn, are presented in Table 4. Interesting conclusions are drawn, as it is shown that the marginal impact of gain-sharing bonuses on JS is greater among higher-paid workers in the sample, which is in line with the finding of McCausland *et al.* (2005). This is also the case for those employees suffering wider pay inequities relative to comparable workers, as performance bonuses are presumably viewed as instruments that can rectify such pay imbalances (Brown, 2001). PRP is found to have a greater effect on the JS of permanent contract employees, which may be explained by the fact that workers on insecure jobs are averse to the risk and uncertainty inherent in variable pay schemes. Furthermore, in contrast to the findings of Green and Heywood (2008) and Artz (2008), no significant differences in the effect of incentive pay on JS are found by gender, while the marginal benefit of fixed-period bonuses is reduced as the size of the establishment increases.

Green and Heywood (2008) report a greater role for PRP among unionized workers. They attribute this paradoxical result to international evidence illustrating that when unions are involved in the creation and implementation of PRP schemes, such modes of pay enjoy a greater probability of success. Since the EPICURUS dataset allows the identification of whether the respondents' current firm is covered by a collective wage agreement that is negotiated by a trade union, the above hypothesis is tested via appropriate interaction terms. It is clear from Table 4 that PRP systems are associated with employee disutility only for those workers whose collective bargaining agreement is *not* negotiated by a trade union. This provides some indirect evidence in favour of the hypothesis put forward by Green and Heywood (2008).

Examining the interaction of incentive pay and job-specific characteristics closer, it can also be seen that discretionary bonuses are more likely to have a beneficial impact on the JS of workers performing autonomous jobs, as opposed to those engaged in fixed routines. This also holds for jobs which are perceived as being of superior quality in terms of the physical environment. Indeed, the "case studies of call centres by Drago (1996) and Fernie and Metcalfe (1999) present bleak pictures of low wages and high stress made worse by computerized monitoring and piece rates" (Green and Heywood, 2008, p.711). It is also evident that performance bonuses have a greater utility impact among individuals who work longer hours and who believe that their work is physically tiring, which constitutes evidence of the potential of variable pay policies to reward hard-working individuals accordingly. Finally, there is evidence of a smaller utility effect of performance bonuses for those individuals who work in teams. This is expected, given that the relations among co-workers within an organization are likely to be strained by the existence of a PRP system (Marsden and French, 1998).

[INSERT TABLE 4 ABOUT HERE]

5.4 Estimates of the effect of incentive pay on partial job satisfactions

The EPICURUS dataset permits the investigation of the impact of incentive pay on a much richer set of facets of jobs compared to the BHPS. Table 5 summarizes the direction and statistical significance of

these effects for both datasets. Performance-based pay systems are found to have a positive impact on the satisfaction that workers receive from their pay, which is expected given the higher mean earnings that they typically entail (Seiler, 1984; Brown, 1992; Booth and Frank, 1999; Parent, 1999; Lazear, 2000). They are also associated with greater satisfaction with job security, despite the assertion that PRP practises can act as a signal of low tolerance for sub-standard productivity by firms (Lazear, 2000, p. 1355). Employees on gain-sharing schemes are generally more satisfied with their relationship with their employers, their work load and their promotion prospects. Importantly, individuals receiving PRP are found to be significantly less satisfied with their working hours and the level of job stress, suggesting that such schemes may be placing a psychological strain on workers.

[INSERT TABLE 5 ABOUT HERE]

6. Discussion

The insignificant coefficient of PRP in the overall JS regressions gives credence to the fundamental microeconomic model, which predicts that in the long-run the marginal utilities of 'similar' employees on different compensation plans should be equalized. In contrast, it is interesting to notice that the effect of gain-sharing schemes (in particular fixed-term bonuses) on employee well-being is quite robust. There is therefore an important asymmetry in the way in which individual and gain-sharing incentives affect the well-being of employees.

In addition, no evidence is uncovered in this study to suggest that having pay tied to performance leads to greater feelings of insecurity among workers, which might arise due to substitution of firms away from long-term attachments with their employees. After all, employers are usually faced with more than one managerial problem, so there is no reason to believe that they trade-off the various incentive tools available to them. Moreover, PRP can ultimately provide firms with adequate flexibility to respond to the vagaries of the business cycle.

The evidence also does not support the view that incentive pay reduces the 'intrinsic' satisfaction of workers, since no statistical relationship is found between the PRP variable and the satisfaction that workers derive from the work itself or the use of initiative, used here as surrogates for the intrinsic motivation of workers. Nonetheless, the finding of a significant difference in pay satisfaction is reassuring, given that most studies have found that the mean wage of workers receiving incentive pay is higher relative to those who are paid hourly rates or salaries.

Finally, the notable differences in the size and significance of the coefficients that are reported in Table 3 highlight the importance of taking the heterogeneous nature of employee and job characteristics into account when examining the effect of contingent-rewards on JS.

7. Conclusions

In recent years firms have not only focused on increasing the flexibility of the *external* aspects of the employment relationship (e.g. hiring/firing, contractual arrangements, outsourcing), but have embarked on *internal* flexibility as well. This has entailed (among others) the restructuring of the workplace in a manner that gives emphasis to financial flexibility, such as the widespread provision of incentive reward schemes (bonuses, piece-rates, stock options, profit sharing etc.), designed to motivate workers and increase the effort that they exert at their jobs. The aim of this paper has therefore been to investigate the impact of such motivational instruments on the (stated) well-being of employees in the UK. Using data from the BHPS and a unique cross-sectional survey of British workers, and after accounting for the presence of unobserved heterogeneity, the main theoretical prediction of the conventional microeconomic paradigm was confirmed, namely that no significant difference in the job utility of workers should arise between those receiving PRP and those on alternative methods of pay. Nevertheless, an important asymmetry in the manner in which individual and gain-sharing incentives affect JS is found, as only the latter exert a positive effect on employee well-being. Moreover, doubt is cast on arguments that incentive

pay is likely to crowd-out the intrinsic satisfaction of work and on concerns regarding the adverse impact of PRP schemes on job security.

An important contribution of this study is that it has been able to detect the impact on JS that arises from the interaction between various incentive pay tools and specific job characteristics that were previously unexplored in the literature. It has been confirmed that consideration of the organizational environment and the nature of the job task is crucial for the design of compensation policies that will successfully enhance the well-being of the workforce. To further purse the investigation of these issues requires more informative datasets that will facilitate additional empirical research focussing explicitly on the link between organizational characteristics and the provision of performance-related rewards.

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TABLE 1 DESCRIPTIVE STATISTICS BY INCIDENCE OF INCENTIVE PAY

	BHPS		EPICURUS	
Variables	*Yes*	*No*	*Yes*	*No*
(%)				
Demographic				
Male	57.12	43.44	44.23	40.34
Partner	73.19	72.13	65.60	69.02
Educ: Below Tertiary	82.46	81.58	100.00	100.00
- Above Tertiary	17.54	18.42		
Job-related (standard)				
Union	46.48	53.98	16.04	22.03
Promotion	59.50	46.17	51.04	32.75
Full-time	87.46	76.22	83.04	76.71
Contract: Permanent	98.55	93.67	94.84	84.87
Sector: Private	82.26	57.21	77.15	55.13
Firm Size: 1-24	30.67	36.54	33.66	36.22
- 25-99	24.48	27.68	21.78	22.01
- 100-499	25.86	20.14	24.01	20.62
- 500+	18.99	15.64	20.54	21.14
Occupation: Managers and Admin	20.25	10.69	9.63	4.22
- Professional	8.45	11.43	3.95	5.07
- Ass. Prof. and Technical	10.5	12.92	5.93	6.76
- Clerical and Secretarial	20.09	16.89	31.36	32.09
- Craft & Related	10.48	9.33	1.98	2.2
- Personal & Protective Srv	5.14	15.33	1.48	3.72
- Sales	9.8	6.17	20.49	11.66
- Plant & Machine Oper.	9.32	8.5	3.7	3.72
- Other	5.97	8.74	21.49	30.57
Job-related (extended)				
Working times: Same			52.22	49.66
- Rotating			14.29	17.34
- Variable			33.50	33.00
Shift work			38.08	32.77
Teamwork: Same people			60.15	58.32
- Changing teams			21.29	19.83
- Work on own			18.56	21.85
Nature of task: Fixed routine			21.39	23.76
- Variety of duties			70.90	66.67
- Autonomy			7.71	9.57
Repetitiveness: Yes			23.08	7.71
- Sometimes			68.98	63.88
- No			7.94	10.39
Hardtask			59.64	52.36
Job Dangerous: Hardly ever *(risk of physical accidents, contact with dangerous products)*			78.57	70.02
Job Quality: Hardly ever *(noisy, dirty, hot)*			63.55	57.58
Job Physically Tiring: Hardly ever			45.81	39.56
Good relationship co-workers			69.88	71.55
Good relationship supervisor			86.88	82.34
Means				
Age	37.58	39.33	32.90	36.66
Hourly wage	7.65	6.44	7.65	7.05
Usual Weekly hours	36.12	33.12	38.19	35.57

TABLE 2 MEAN JOB SATISFACTION BY FACETS OF JOBS AND MODE OF INCENTIVE PAY

	BHPS				EPICURUS			
Facets	*Bonus*	*PRP*	*Bonus +PRP*	*No*	*Bonus*	*PRP*	*Bonus +PRP*	*No*
JS	5.37	5.31	5.27	5.37	6.63	6.06	6.65	6.20
pay	5.03	4.99	5.09	4.89	5.69	4.50	5.64	4.47
job security	5.57	5.55	5.45	5.46	6.80	6.74	7.06	6.24
work itself	5.40	5.35	5.34	5.47	6.72	6.76	6.62	6.52
total working hours	5.19	5.14	5.06	5.26	6.71	5.74	6.73	6.57
relations with boss					7.11	6.15	7.33	6.43
use of own initiative					7.02	6.53	7.20	6.77
promotion prospects					4.90	4.12	5.20	4.11
working times (e.g. shifts)					6.75	6.38	6.84	6.48
employer's behaviour					6.55	5.35	6.16	5.60
work load					6.38	5.85	5.91	5.97
work tension					6.00	5.00	5.62	5.58
level of job stress					5.80	4.71	5.58	5.45
physical risk					7.37	6.84	7.86	6.81

Notes: JS is measured on a 1-7 (1-10) Likert scale in the BHPS (EPICURUS) dataset.

TABLE 3 EFFECT OF INCENTIVE PAY ON JOB SATISFACTION

	BHPS		EPICURUS	
	(1) POLS *Standard*	(2) FE	(3) POLS *Standard*	(4) POLS *Extended*
INCENTIVE PAY				
PRP	-0.004	0.031	-0.019	-0.021
	(0.021)	(0.019)	(0.143)	(0.156)
Bonus + Profit Sharing (GS)	0.043***	0.022*	0.127	0.121
	(0.014)	(0.013)	(0.097)	(0.093)
End of Year Bonus (GS)			0.201**	0.196**
			(0.102)	(0.089)
PRP + GS	-0.009	0.022	0.093	0.029
	(0.020)	(0.018)	(0.101)	(0.098)
DEMOGRAPHIC				
Male	-0.132***		-0.287***	-0.233***
	(0.016)		(0.082)	(0.079)
Age	-0.022***	-0.024	0.002	-0.015
	(0.004)	(0.016)	(0.022)	(0.022)
Age Square	0.000***	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Partner	0.077***	0.008	0.001	0.005
	(0.015)	(0.019)	(0.067)	(0.062)
EDUCATION				
Upper Secondary	0.060**		-0.345	-0.248
	(0.027)		(0.250)	(0.252)
Lower Secondary	0.113***			
	(0.020)			

None	0.213***			
	(0.029)			
JOB-RELATED (STANDARD)				
Employer Premises	-0.051***	-0.047***	-0.217**	-0.171*
	(0.017)	(0.018)	(0.092)	(0.092)
Ln(Pay)	0.119***	0.135***	0.074	0.033
	(0.018)	(0.019)	(0.066)	(0.060)
Comparison Pay	-0.082***	-0.019	0.093	0.243
	(0.027)	(0.025)	(0.246)	(0.252)
Ln (Week Hours)	-0.198***	-0.102***	-0.023	-0.019
	(0.019)	(0.022)	(0.123)	(0.129)
Weekly Overtime	0.001	0.001*	0.009	0.014**
	(0.001)	(0.001)	(0.007)	(0.007)
Permanent Contract	0.123***	0.044*	0.195**	0.195**
	(0.025)	(0.026)	(0.092)	(0.095)
Commuting Time	-0.001***	-0.000	-0.004**	-0.004**
	(0.000)	(0.000)	(0.002)	(0.002)
Incremental Pay Rise	0.118***	0.096***		
	(0.012)	(0.010)		
Promotion	0.183***	0.205***	0.700***	0.554***
	(0.012)	(0.011)	(0.066)	(0.068)
Union	-0.124***	-0.029*	-0.185**	-0.046
	(0.015)	(0.015)	(0.079)	(0.078)
JOB DUTIES				
Manager	0.040**	-0.026		
	(0.020)	(0.018)		
Supervisor	-0.013	-0.028**		
	(0.016)	(0.014)		
SECTOR				
Civil Service	-0.025	0.079**	-0.096	-0.119
	(0.034)	(0.039)	(0.116)	(0.119)
Local Government	0.084***	0.167***		
	(0.025)	(0.029)	0.001	-0.072
NHS/Higher Educ.	0.110***	0.187***	(0.085)	(0.085)
	(0.029)	(0.035)		
Other	0.047	0.142***		
	(0.045)	(0.039)		
Non-Profit Orgs	0.089***	0.176***	0.142	0.067
	(0.032)	(0.037)	(0.145)	(0.135)
FIRM SIZE				
25-99	-0.095***	-0.036**	0.060	0.089
	(0.015)	(0.014)	(0.088)	(0.084)
100-499	-0.147***	-0.065***	-0.026	0.046
	(0.017)	(0.017)	(0.089)	(0.087)
500+	-0.138***	-0.057***	0.033	0.040
	(0.019)	(0.020)	(0.091)	(0.089)
JOB-RELATED (EXTENDED)				
Working Time Schedules				
Rotating shifts				0.170*
				(0.089)
Variable				0.025
				(0.073)
Shifts (Sat/Sun/night)				-0.042
				(0.077)
Nature of job task				
Variety of duties				0.202**
				(0.087)

Autonomy				0.099
				(0.137)
REPETITIVENESS				
Sometimes				0.220**
				(0.085)
No				0.416***
				(0.119)
TIRING				
Sometimes				0.107
				(0.094)
Hardly ever				0.054
				(0.095)
Hard Task				0.008
(High speed + tight deadlines)				
				(0.014)
Quality of work environment				
Sometimes Low				0.297***
				(0.111)
Hardly ever Low				0.341***
				(0.112)
DANGEROUSNESS				
Sometimes				-0.033
				(0.130)
Hardly ever				0.037
				(0.135)
Workplace Relationships				
Good relations Supervisor				0.567***
				(0.111)
Good relations Colleagues				0.379***
				(0.069)
TEAMWORK				
Rotating teams				-0.136*
				(0.081)
No teams				0.026
				(0.087)
Occupation dummies	YES	YES	YES	YES
Industry dummies	YES	YES	YES	YES
Region dummies	YES	YES	NO	NO
Constant	0.980***	0.553	-0.485	-1.995**
	(0.131)	(0.529)	(0.900)	(0.943)
N	43118	43540	762	719
(Individuals)	(10776)	(10907)		
R^2	0.06	0.03	0.21	0.36
F(vars, clusters)	21.62***	15.82***	6.30***	8.42***
Corr(u_i, **xb**)		-0.37		

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Omitted categories: *Incentive Pay*: No; *Education*: First/Higher (BHPS)/Below upper secondary (EPICURUS); *Job Duties*: Not manager/supervisor; *Sector*: Private; *Firm Size*: 1-24; *Working time*: Same every day; *Nature of job task*: Fixed routine; *Repetitiveness*: Yes; *Tiring*: Yes; *Job Quality*: Frequently Low; *Dangerousness*: Frequently; *Teamwork*: Non-rotating teams.

TABLE 4 INTERACTION EFFECTS BETWEEN MODES OF PAY AND INDIVIDUAL AND JOB CHARACTERISTICS, EPICURUS DATABASE

	Bonus + Profit Sharing	End of Year Bonus	PRP	PRP + GS
Male	0.04	-0.04	0.44	0.11
	(0.18)	(0.18)	(0.29)	(0.18)
Ln(Pay)	0.52**	0.21	-0.19	-0.17
	(0.12)	(0.18)	(0.43)	(0.14)
Comparison Pay	0.84**	0.08	0.27	0.22
	(0.36)	(0.39)	(0.61)	(0.40)
Ln(Week Hours)	0.21	-0.36	0.52*	0.02
	(0.24)	(0.27)	(0.31)	(0.32)
Permanent	0.16	-0.34	0.83**	0.13
	(0.24)	(0.43)	(0.37)	(0.29)
Collective bargaining agreement				
- Yes, but not negotiated by trade union	-0.69**	0.03	-0.97**	0.19
	(0.31)	(0.30)	(0.49)	(0.33)
- Yes, but negotiated by trade union	-0.02	-0.12	-0.36	-0.05
	(0.23)	(0.25)	(0.43)	(0.24)
Firm Size: 25-99	-0.22	-0.40*	0.24	-0.15
	(0.27)	(0.24)	(0.32)	(0.30)
- 100-499	-0.22	-0.49**	0.40	-0.12
	(0.24)	(0.24)	(0.38)	(0.24)
- 500+	-0.16	-0.44**	-0.12	0.22
	(0.25)	(0.23)	(0.63)	(0.27)
Nature of job task: Autonomy	0.01	0.76*	-0.07	0.31
	(0.39)	(0.42)	(0.41)	(0.34)
Low Quality: Hardly ever	0.64**	0.68**	-0.25	-0.17
	(0.32)	(0.32)	(0.29)	(0.24)
Tiring: Sometimes	-0.31	-0.68***	-0.35	-0.42**
	(0.26)	(0.25)	(0.42)	(0.21)
- Hardly ever	0.08	-0.61**	-0.05	-0.13
	(0.26)	(0.25)	(0.37)	(0.22)
Teamwork: Rotating teams	-0.65**	-0.55*	0.53	-0.22
	(0.29)	(0.29)	(0.44)	(0.29)
- Same teams	-0.48**	-0.29	0.35	-0.26
	(0.23)	(0.25)	(0.32)	(0.23)

Notes: The interaction terms have been added in turn to an extended specification (similar to Column 4, Table 3); Omitted categories: *Collective Bargaining*: No; *Firm Size:* 1-24; *Nature of job task*: Fixed routine; *Tiring*: Yes; *Job Quality*: Frequently Low; *Teamwork*: Non-rotating teams.

TABLE 5 EFFECT OF MODES OF INCENTIVE PAY ON FACETS OF JOB SATISFACTION

	BHPS			EPICURUS			
Facets	*PRP*	*GS*	*PRP+GS*	*Bonus + PS*	*End of Year Bonus*	*PRP*	*PRP+GS*
pay	+***	+***	+***	+***	+***		+***
job security	+**	+***	+***	+**	+**		+***
work itself		_ *					
total working hours						-***	
relations with boss				+**	+***		+*
use of own initiative							
promotion prospects				+**	+*		
working times (e.g. shifts)							
employer's behaviour				+***	+***		
work load					+*		
work tension							
level of job stress						_**	
physical risk							+*

Notes: The direction and statistical significance levels have been derived from separate POLS regressions using facets of JS as dependent variables. *BHPS*: fixed effects estimates (similar to Column 2, Table 3); *EPICURUS*: estimates of an extended specification (similar to Column 4, Table 3).

Endnotes

i For instance, financial rewards based on performance may be perceived by workers as signals that the employment relationship is a pure market exchange (Kreps, 1997, p. 363). More recently, Benabou and Tirole (2003) also allowed for the possibility that incentive rewards may alter the intrinsic motivation of agents, by affecting their information sets concerning the nature of the task they perform or their uncertain self-confidence.

ii The experimental evidence of Eriksson and Villeval (2004) corroborates this assertion, as it shows that in a setting representing a long-term employer-employee relationship with reciprocity and inequality aversion, a non-negligible fraction of the high-skilled subjects, who in accordance with the theory would have previously selected to work in variable pay schemes, now opt for a fixed pay scheme. This points to the importance of other-regarding preferences when employees select their preferred method of remuneration.

iii This is consistent with McKersie et al.'s (1964) evidence of a positive association between layoff prevalence and incentive prevalence.

iv Clark and Oswald (2002) have shown that fixed-effects well-being equations have a similar structure to cross-section equations.

v The estimates based on an ordered probit technique reveal no significant differences compared to those reported in this paper, which use the POLS transformation. They are readily available from the authors upon request.