Pay enough, don't pay too much or don't pay at all? An empirical study of the non-monotonic impact of incentives on job satisfaction

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Abstract

This paper attempts to test the non-monotonic effect of monetary incentives on job satisfaction. Specifically, 8 waves (1998-2005) of the British Household Panel Survey (BHPS) are used to investigate the *ceteris paribus* association between the intensity of bonus/profit-sharing payments and the utility derived from work. After controlling for individual heterogeneity biases, it is shown that relatively 'small' bonuses exert a significant *negative* effect on worker satisfaction. In contrast, job utility is found to rise only in response to 'large' bonus payments, primarily in skilled, non-unionized private sector jobs. The empirical evidence of the paper is therefore consistent with a 'V-effect' of incentives, suggesting that employers wishing to motivate their staff should indeed "pay enough or don't pay at all".

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1. Introduction

The principal-agent model, with its convincing illustration of the trade-off that arises between risk and incentive provision when attempting to align the conflicting interests of two contracting parties, remains central for our understanding of the compensation strategies employed by firms (Mirlees, 1976; Holmstrom, 1979). According to the standard model of agency theory, the introduction of financial incentives as part of an agent's remuneration package will increase his/her productivity and effort, as it is assumed that individuals derive utility from income whilst the exertion of effort entails a utility cost. Importantly, if the additional disutility of higher effort is compensated by an adequate wage premium, an implication of the theory is that the marginal utilities of workers under fixed and variable compensation schemes should be equalized in the long-run. What this implies at the extreme is that there should be no difference in the job satisfaction of those employees receiving monetary incentives and those on non-contingent payment arrangements.

The above conclusion has been disputed by a psychological (and increasingly economical) literature, which has stressed that the incorporation of other-regarding (non-pecuniary) motives into the economic paradigm, such as the desire for reciprocation or for engaging in interesting tasks, has important implications for an individual's motivation and/or job satisfaction (Deci, 1971; Deci and Ryan, 1985; Kreps, 1997; Frey and Jegen, 2001). Specifically, the ultimate effect of incentives on performance and satisfaction is said to depend on the extent to which the provision of contingent compensation fosters (crowds-in) or compromises (crowds-out) a worker's *intrinsic motivation* to perform his/her job tasks. In addition, it has been argued that 'wrong' monetary incentives may incite dysfunctional behavioural responses by employees, as they are likely to induce deliberate 'multi-tasking' (Holmstrom and Milgrom, 1991; Baker, 1992) or other biases (centrality/leniency) in effort (Prendergast, 1999). It is also claimed that they may undermine team work, creativity and innovation (Kohn, 1993), or have a detrimental effect on employee morale and job security via the inequitable and risky pay distributions that arise as a consequence (Baker et al., 1988).

Once these mechanisms are taken into consideration, it becomes clear that the theoretical impact of monetary incentives on worker effort and job satisfaction can be ambiguous. As formalized recently by Pouliakas and Theodossiou (2007) and corroborated in a number of economic experiments (Falk and Kosfeld, 2004; Eriksson and Villeval, 2004), the incentive effects of monetary rewards are likely to be compromised in a world of imperfect labour mobility populated by heterogeneous agents with varying psychological dispositions. To the extent that incentive schemes allow for optimization, facilitate worker autonomy and enhance self-determination they should increase job satisfaction, other things equal. Yet, increasing earnings risk, crowding out of the inherent pleasantness in performing one's job and lower morale can lead to disgruntled employees.

The study of the effect of monetary rewards on job satisfaction is therefore an empirical issue, which has only until recently received any attention. In particular, McCausland et al. (2005), Pouliakas and Theodossiou (2007) and Green and Heywood (2008) have shown that in Britain bonuses and profit-sharing schemes result in higher average job satisfaction of workers, although there is no effect of individual-based pay systems once unobserved heterogeneity is taken into account. Using US data, Heywood and Wei (2006) have also confirmed that all types of performance pay (bar piece-rates) yield greater job satisfaction relative to time rates.

A potential deficiency of the above-mentioned studies is that they only focus on the discrete difference in job satisfaction between workers receiving performance-enhancing pay and those on alternative schemes. Thus, they ignore the fact that worker performance and satisfaction may vary in a non-monotonic way with incentives. As suggested by a series of field experiments performed by Gneezy and Rustichini (2000, p. 802), "for all positive but small enough compensations, there is a reduction in performance as compared with the zero compensation, or, better, with the lack of any mention of compensation". Nevertheless, once the extrinsic motivation is large enough, it results in better performance than the no-incentive case. This non-monotonicity in the reaction of worker effort to both positive and negative incentives (e.g. bonuses or fines, respectively) has consequently been termed the

"W effect" of incentives (Gneezy, 2004).[2] By contrast, the recent experimental study of Pokorny (2008) finds an inverse U-shaped relationship between effort levels and incentive intensity.

This paper attempts to test the above contrasting hypotheses by looking beyond the effect of the mere incidence of performance-related pay (PRP) on job satisfaction and examining the impact of the *amount of bonus* received by individuals instead. Specifically, 8 waves (1998-2005) of the British Household Panel Survey (BHPS) are used to investigate the association between the distribution of bonus/profit-sharing payments and the utility derived from work, holding the incidence of individual-based PRP, the level of pay and other important determinants constant. The responses of employees to a question concerning their satisfaction with the 'actual work itself' are also utilized, on the grounds that they potentially constitute superior proxies of intrinsic motivation. After controlling for individual fixed effects (such as ability or motivation) that may bias the influence of payment schemes on job satisfaction, it is hence shown that relatively 'small' bonuses exert a significant *negative* effect on individual satisfaction. In contrast, job utility is found to rise only in response to 'large' bonus payments. The empirical evidence of the paper is therefore consistent with the 'V'-pattern of incentives, suggesting that employers wishing to motivate their staff should indeed "pay enough or don't pay at all".

The structure of the paper is as follows. Section 2 engages in a review of the available literature on the effect of financial incentives on job satisfaction. In Section 3 the data that are used are described and preliminary statistical correlations are outlined. Section 4 describes the basic econometric issues and methodology that is used in the paper. Section 5 illustrates the main empirical results of the relationship between the amount of bonus/profit-sharing received by workers and the utility derived from their employment. Section 6 tests the robustness of the predictions of the empirical analysis and examines the heterogeneity in the sample further. Finally, Section 7 concludes with potential interpretations of the findings of this study.

[2] Gneezy's (2004) *W-effect* refers to the effect of the provision of both positive (bonuses) and negative (fines) incentives on worker performance, as depicted on a 4-quadrant diagram. However, as the focus of this paper is on the provision of positive incentives only, as measured by the amount of bonuses received, it is therefore more accurate to speak of the "V-effect".

2. Literature Review

The growing economics literature on subjective well-being (Clark and Oswald, 1996; Clark, 1999; Blanchflower and Oswald, 2004; Van Praag and Ferrer-i-Carbonell, 2004; EPICURUS, 2007) has now emphasized that measures of job satisfaction are significant predictors of quit behaviour (Freeman, 1978), absenteeism (Clegg, 1983) and worker productivity in general (Judge et al., 2001). It follows that understanding the influence of monetary incentives on job satisfaction is important given that the composition of an employee's remuneration package is an integral element of his/her overall working conditions. It is known that within firms human resource managers typically employ an extensive toolkit of incentive mechanisms (Gibbons and Waldman, 1999). The need for such a wide array of instruments has been attributed to the fundamental agency problem that plagues the employment relationship, whereby the interests of the contracting parties are usually in conflict due to the non-verifiability of worker effort. It follows that firms will aspire to combat the ensuing problem of moral hazard by designing incentive contracts that seek to achieve goal congruence with their employees (Mirlees, 1976; Holmstrom, 1979).[3]

As shown by Lazear (1986, 2000), the introduction of financial rewards as part of an employee's compensation should induce the more highly geared workers to put forth extra effort to the point where the marginal value added equates the marginal cost of the additional work. Indeed, empirical evidence suggests that even after controlling for the sorting effects of variable pay, the mean wages of workers earning part (or all) of their income due to explicit incentives are higher than those who are paid according to time rates (Seiler, 1984; Brown, 1992; Booth and Frank, 1999; Parent, 1997; Lazear, 2000). In long-run equilibrium, however, one would not expect to observe any differences in the marginal utilities of workers under fixed or variable payment schemes, as firms would ensure that the expected value of the higher wages paid under PRP are just sufficient to compensate the workers for the additional earnings risk and disutility of the extra effort.

[3] As noted by Prendergast (1999, p. 7), these modes of furnishing employee effort vary widely across different organizations, with some firms relying on explicit contracts that tie pay to observable measures of (individual or aggregate) performance (piece rates, stock options, bonuses, profit sharing), others preferring reward systems that are based on more discretionary subjective measures of productivity, and some eschewing the use of pay-for-performance altogether in favour of alternative (dynamic) strategies (promotions, efficiency wages, deferred compensation, career concerns etc.).

Once the standard assumptions of the agency model are relaxed, though, there are many reasons to expect that PRP is not likely to have a negligible impact on the job satisfaction of workers. Expectancy-based theories of organizational psychology have asserted that attitudes about work are shaped from the rewards produced by performance (Lawler and Porter, 1967), which are valued outcomes in themselves (Judge et al., 2001, p. 378; Brown and Sessions, 2003).[4] Furthermore, Pouliakas and Theodossiou (2008) show that employees express a preference for employment practices that are associated with the so-called 'new high performance workplaces', the latter been found to be positively related to job satisfaction (Bauer, 2004). As PRP is considered to be an integral element in the operation of such workplaces, it may thus be the case that PRP may enhance job satisfaction via this avenue.

Other aspects of PRP may, nonetheless, diminish productivity and worker satisfaction. It has been argued that wrongly devised compensation schemes can have counterproductive consequences, as they may encourage workers to 'game' the system to their advantage by multitasking (Baker, 1992) or by engaging in rent-seeking behaviour in order to influence the subjective evaluations of their line managers (Prendergast, 1999). Holmstrom's (1982) seminal paper has also showed that in settings where final output is the outcome of the joint contribution of many individuals, utilizing team production incentive schemes (such as profit-sharing) may dilute individual performance as a result of free-riding. In the face of evidence suggesting that the job satisfaction and morale of employees is intrinsically linked to their relative pay status (Clark and Oswald, 1996; Clark, 1999; Ferrer-i-Carbonell, 2005; Panos and Theodossiou, 2008), the demoralising dispersion and variability in wages that ensues from PRP schemes is also likely to affect attitudes to work in a negative fashion. Furthermore, it has often been claimed that financial incentives undermine collaboration and team work, emphasize the power asymmetry between management and the workforce, and reduce employee risk-taking and innovation (Kohn, 1993).

Added to the above is a prominent non-economic criticism of PRP which is based on the so-called cognitive evaluation or *motivation crowding-out* hypothesis (Deci and Ryan, 1985; Frey and Jegen, 2001). According to this theory of social psychology, once it is acknowledged that individuals may

[4] This is consistent with empirical evidence suggesting that human beings may receive pleasure from wage increases *per se*, as they consistently favour upward-sloping earnings profiles even if their present discounted value is lower than that of flatter profiles (Loewenstein and Sicherman, 1991; Frank and Hutchens, 1993).

derive *intrinsic satisfaction* from their jobs, explicit rewards that are perceived as controlling devices or as indicators that the employment relationship is a pure market exchange (Kreps, 1997, p. 363), are likely to reduce job satisfaction and performance. In fact, there are now a number of experimental studies indicating that explicit incentives may backfire by acting as a signal of employer distrust (Falk and Kosfeld, 2004) or by undermining reciprocity-based voluntary cooperation (Fehr and Gachter, 1998).

Only recently did the economic literature pay any attention to the study of which of the aforementioned effects of PRP on job utility predominate. McCausland et al. (2005) are the first to contrast the satisfaction of those receiving PRP with those on alternative arrangements. Using waves 8-11 of the BHPS, and after correcting for potential selectivity and endogeneity biases, they focus on the demotivating consequences of PRP on the lower-paid segment of the population. Heywood and Wei (2006) subsequently expanded the analysis in the US context (using the NLSY), showing that profit sharing and individual-based pay are associated with higher overall satisfaction and greater satisfaction with the facet of pay. Interestingly, by allowing for the isolation of the various elements of PRP (piece rates, commissions, bonuses, stock options or tips), their study also finds some evidence that piece rates may *reduce* overall job satisfaction despite the fact that it increases workers' pay on average. More recently, Pouliakas and Theodossiou (2007) and Green and Heywood (2008) use the BHPS to investigate the impact of PRP on a fuller set of facets of job satisfaction. Specifically, they show that although bonuses and profit-sharing schemes result in higher average job satisfaction of workers, there is no effect of individual-specific pay systems once unobserved heterogeneity is taken into account. They also fail to find any supporting evidence in favour of arguments that PRP crowds-out the intrinsic satisfaction of jobs or has an adverse impact on job security. Artz (2008), on the other hand, argues that on the net PRP increases job satisfaction but does so largely among union workers and males in larger firms.

The above studies focus merely on the impact of the *incidence* of PRP on job satisfaction. In other words, they contrast the mean job satisfaction of those who receive incentive wages with that of employees on non-contingent pay schemes. This masks the possibility that the performance and utility of workers may vary in a non-monotonic manner with incentives, as suggested by the experiments performed by Gneezy and Rustichini (2000[a][b]). In these experiments the effect of the introduction of a

monetary reward and the differential impact of small and large payoffs was tested in Israel, first on a group of university students who were offered different marginal payoffs for giving correct answers to an IQ test and, second, high-school students doing volunteer work by collecting donations for charitable organizations. The evidence indicates that "the effect of monetary incentives can be, in small amounts, detrimental to performance" and that there is "a discontinuity at the zero payment of the effect of monetary incentives" (ibid., p. 801-802).[5]

An important common element of the above experiments is that "small" incentives are likely to exert a negative effect on behaviour (with discontinuity close to zero), while for high powered rewards (or punishments) the standard price effect is expected to prevail.[6] This prediction has been corroborated in the proposer-respondent game experiment of Gneezy (2004), which ultimately gives rise to a (V)W-shaped relationship between effort and intensity of (positive) incentives. In contrast, the IQ and counting tasks experiments performed by Pokorny (2008) on undergraduate German students indicate an inverse U-shaped relationship between effort levels and the strength of monetary payoffs. The author attributes her contradicting findings to the existence of reference dependent preferences among subjects, which imply decreasing effort choices with stronger incentives once a reference income level is exceeded.

Finally, as another example of the non-monotonic motivation effect of incentives, the field study of Marsden et al. (2001) highlights that although a large number of workers experience the effects of PRP in a deterioration of workplace relations and cooperation, it motivates those who receive *above average* payments.

The remaining part of the paper now turns to an investigation of which of the aforementioned contrasting patterns regarding the effort-incentives relationship, as depicted in Figure 1, are likely to

[5] A related field study was also carried out by Gneezy and Rustichini (2000[b]), although emphasizing the effect of penalties, such as fine for late arrivals of parents collecting their children in Israeli day-care centres. In contradiction to the deterrence hypothesis, according to which one would expect to observe a reduction in a sanctioned behaviour, the effect that was observed was an increase in the number of late-coming parents after the imposition of the fine. Interestingly, once the fine was removed no reduction occurred in the number of late arrivals, thus suggesting that changing perceptions, once realized, are hard to reverse. The deterrence hypothesis has also been recently rejected by the neutrally framed laboratory experiment of Horisch and Strassmair (2008), who test whether crime is weakly decreasing in the probability and severity of punishment. Allowing for subjects to steal from another participant's payoff, they show that except for very high levels of incentives, subjects steal more the stronger the incentives. They also observe that this effect depends on whether the subjects are selfish or fair-minded, with the former complying with the predictions of agency theory and deterrent incentives backfiring for the latter.

[6] "Of course, the question of what is a high reward or fine is case-dependent" (Gneezy, 2004, p. 8). As argued by Gneezy and Rustichini (2000, p. 805), not all small compensations may be insulting, neither are insulting compensations necessarily small. With this proviso, a useful contribution of this paper is that it provides an indication of the approximate amounts of bonus payments offered by employers that are likely to trigger adverse or positive reactions by employees.

describe the association between job satisfaction and the amount of monetary rewards received by British employees.

[INSERT FIGURE 1 ABOUT HERE]

3. Data and Descriptive Statistics

This study uses data from waves 8 to 15 (1998-2005) of the British Household Panel Survey (BHPS), as readily available information on incentive payment schemes is only available for those years. 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. It has been conducted annually since late 1991 and contains a wealth of information on employees' personal and employment characteristics. The sample used in the paper is restricted to individuals between 18 and 65 years of age who are employees at the survey date. For 8 waves of the BHPS this yields an unbalanced panel of 57,752 observations on 13,801 different individuals.

A sizeable portion of this sample (29.18% corresponding to 16,812 observations) replied affirmatively to the question: *"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? This excludes overtime payments"*. Beginning from wave 7 of the BHPS, the above individuals are also asked to state in a follow-up question the exact amount of bonus/profit-sharing that they received in the past year, and whether this amount is gross or net of taxes. Finally, in order to capture the presence of pay incentives that are based on individual employee performance only, the BHPS asks its respondents "*Does your pay include performance related pay*"? Approximately 15% of the sample responded that they are indeed recipients of such forms of remuneration.[7]

As the empirical analysis wishes to study the relationship between the quantity of incentive compensation and the job satisfaction of employees, the focus is on the variable indicating the amount of

[7] The Pearson correlation coefficient between the bonus and the PRP questions is 0.25. Specifically, only 8.4% of the sample receives both types of incentive compensation simultaneously, while 27% are recipients of either of the two. The remaining percentage receives no form of performance-contingent pay.

bonus/profit-sharing that workers receive. Given that for 4,472 observations (out of a total of 15,130 in which the amount of bonus/profit-sharing question was answered) the reported figure is post-tax, the variable was firstly refined so that it represents a gross measure. This was done by utilizing the available information on the gross and take-home pay (at the last payment) of the respondents, subsequently calculating the rate with which the net bonus figures should be multiplied in order to be converted into a gross amount. In addition, in order to neutralize the effect of outliers the bonus variable was top-coded at the 99th percentile of its distribution (corresponding to an annual bonus payment of £30k). After engaging in the above manipulations, the individuals in the sample were found to receive average bonus/profit-sharing payments of £1637 per annum. This corresponds to approximately 7% of their average yearly gross usual earnings.

Table 1 provides a break-down of the mean amount of bonus received by various demographic and socio-economic groups of the sample.[8] It is evident that men receive higher bonus/profit-sharing payments on average relative to women, while an inverse U-shaped age effect is apparent. Individuals who are married and more educated are also recipients of higher incentive rewards. With respect to working conditions, full-time employees who primarily work in the private sector, on permanent contracts and in non-union jobs are found to enjoy greater bonus payments. Finally, the receipt of individual-based performance pay schemes and the type of occupation also play an important role in determining the amount of reward, with managers and professionals benefiting the most.

[INSERT TABLE 1 ABOUT HERE]

In the BHPS 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'.[9] 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*

[8] Also see Table A1 in the Appendix for an econometric estimation of the determinants of the intensity of bonus pay.
[9] The questions regarding promotion prospects, relations with boss, and the use of initiative were discontinued after the 7th wave.

with your present job overall using the same 1-7 scale?" This study employs the latter overall job satisfaction question to identify the determinants of the utility of employment as perceived by the individual workers themselves. In addition, the information on employee satisfaction with the actual work itself is also utilized, on the grounds that this partial measure may be a more accurate proxy of an individual's *intrinsic* satisfaction with his/her job.

Table 2 shows how the mean values of the aforementioned job satisfaction measures vary depending on the type and amount of incentives provided. Particular emphasis is paid on the variation of job utility across the various percentiles of the distribution of bonus payments. Interestingly, average job satisfaction varies in a V-type fashion with the intensity of bonus/profit-sharing pay received by employees. It initially falls from a value of 5.36, when no bonus rewards are present, to 5.27 at the median value of bonuses. Job satisfaction subsequently rises at above average rewards, exhibiting a marked increase for those workers at the top 5% of the bonus ladder. A similar pattern is observed for the average satisfaction that workers receive from the work itself.

[INSERT TABLE 2 ABOUT HERE]

Finally, Table 3 presents some descriptive statistics on a number of variables describing aspects of the working conditions of employees, which are expected to influence their job satisfaction. These variables constitute a standard control set in the job satisfaction literature, and have been specifically chosen to be consistent with those used in Pouliakas and Theodossiou (2007) and Green and Heywood (2008).

[INSERT TABLE 3 ABOUT HERE]

4. Econometric Issues

In the remaining part of the paper a multivariate regression methodology is employed in order to uncover the true *ceteris paribus* influence of the explanatory variables on job satisfaction. The empirical framework that is employed assumes that (either partial or overall) job satisfaction (*JS*) of individual i (i = 1,…, N) in time period t (t = 1,…, 8) is a function of a variety of individual and job characteristics:

$$JS_{it} = \alpha_1 + \alpha_2 B_{it} + \alpha_3 \mathbf{X}_{it} + \alpha_4 \mathbf{T}_t + u_{it} \quad (1)$$

where **X** is a vector of individual and employment variables assumed to influence JS (inclusive of the incidence of individual-based PRP, the absolute and relative level of pay), **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 bonuses and JS), the α's are associated coefficients, and u_{it} is a randomly distributed error term with E(**u**) = 0 and $E(uu') = \sigma_u^2$. The main independent regressor **B** is a (censored) variable denoting the amount of bonus/profit-sharing received by employees, B^*, as follows:

$$B = \begin{cases} B^* & if \quad B_s = 1 \\ 0 & if \quad B_s = 0 \end{cases} \quad (2)$$

where B_s is the endogenously determined selection variable that denotes whether individual workers have received a bonus or not:

$$B_s = \begin{cases} 1 & if \quad B_s^* > 0 \\ 0 & if \quad B_s^* \leq 0 \end{cases} \quad (3)$$

One way of estimating the above system is by regressing the dependent JS variable in equation (1) against **B**, using the sample of individuals that are recipients of positive monetary incentives (B_s = 1) and after correcting for the potential selectivity bias.[10] Nevertheless, in order to test Gneezy's (2004) suggestion that there is discontinuity close to the zero payoff in the effect of monetary rewards on job performance, as well as Marsden's et al. (2001) evidence that only above average incentives are

[10] Such a methodology is likely to suffer from the inability of the researcher to find appropriate identifying variables for the estimation of the selection equation. McCausland et al. (2005) have attempted to use a Heckman-type econometric strategy, ensuring that the identifying variables used as instruments pass all of the necessary (rank and exogeneity) econometric tests. Nevertheless, their selection variables do appear to be rather *ad hoc*.

beneficial, the decision was taken to estimate (1) on the full sample of workers using a series of indicator variables, $\mathbf{B}_d$, that describe the frequency distribution of **B**, as regressors:

$$JS_{it} = \alpha_1 + \alpha_2 B_{dit} + \alpha_3 \mathbf{X}_{it} + \alpha_4 \mathbf{T}_t + u_{it} \quad (4)$$

where d = {0, 0.05, 0.25, 0.5, 0.75 and 0.95} refers to the 0, 5, 25, 50, 75 and 95th percentile of the distribution of the amount of bonus variable.

Standard OLS estimation of equation (4), however, is likely to reveal a distorted effect of $\mathbf{B}_d$ on job satisfaction, given the presence of unobserved heterogeneity among the employees of the sample. Specifically, it is reasonable to believe on the grounds of agency theory that bonus payments are likely to be higher for those individuals who are less risk-averse, more extrinsically motivated and for whom the cost of effort is less (Lazear, 1986). Given that these individual attributes, which are likely to be correlated with both $\mathbf{B}_d$ and JS, are unobserved to the survey statistician, it follows that a least-squares regression will lead to inconsistent estimates. It is therefore necessary to estimate (4) using a fixed effects model of panel analysis. 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 $E(\varepsilon_i, \eta_{it}) = 0$, as follows:

$$JS_{it} = \alpha_1 + \alpha_2 B_{dit} + \alpha_3 \mathbf{X}_{it} + \alpha_4 \mathbf{T}_t + \varepsilon_i + \eta_{it} \quad (5)$$

Given that with the estimation of equation (5) the influence of any fixed individual effects is controlled for, it is hence expected that the 'true' influence of $\mathbf{B}_d$ on the stated job satisfaction of individuals will be uncovered.

However, implementing the above methodology when the dependent variable (JS) is ordinal in nature can be problematic. The literature has only recently investigated the potential properties of estimators

dealing with fixed effects in an ordinal framework.[11] Moreover, in one of the most comprehensive studies of this type, Ferrer-i-Carbonell and Fritjers (2004) concluded that although the inclusion of panel individual effects is important for the estimation of subjective well-being models, adopting a cardinality assumption for the satisfaction responses does not make much of a difference. Thus, in order to facilitate the estimation of (5) an appropriate linearization of the ordinal JS variable has been adopted, based on the so-called Probit OLS (POLS) approach (van Praag and Ferrer-i-Carbonell, 2004).[12]

5. Empirical Results

The regression output in Table 4 shows the effect of individual and job characteristics on overall job satisfaction and the facet of satisfaction with the actual work itself, with and without correcting for the presence of fixed individual effects. Consistent with the evidence presented in Pouliakas and Theodossiou (2007) and Green and Heywood (2008), the significant negative effect of individual-based PRP schemes on job satisfaction (and satisfaction with the work itself) is found to vanish once potential heterogeneity biases are taken into account. This is indicative of the presence of unobserved person-specific traits (e.g. ambition; diligence) which are correlated with performance-contingent modes of pay and which are also associated with lower job satisfaction (presumably because they are linked to higher expectations from one's career). It also reflects the importance of controlling for the fact that jobs that are easily monitored and paid by performance tend to be simple and repetitive (Green and Heywood, 2008, p. 11).

Further interesting insights regarding the impact of incentive pay on job utility are nonetheless drawn, once one examines the distribution of the amount of bonus/profit-sharing pay received. According to the predictions of previous studies, those receiving profit-sharing or bonuses have a significantly higher level of overall job satisfaction. However, Table 4 illustrates that this conclusion is confirmed only for *above*

[11] Indeed, preliminary evidence seems to suggest that fixed-effects well-being equations have a similar structure to cross-section equations (Clark and Oswald, 2002).

[12] The POLS approach replaces JS using a 'conditional mean' approximation that takes into consideration the frequency distribution of the JS variable (Maddala, 1983, p. 366). It has been shown to yield approximately the same estimates as a traditional OP regression, apart from a multiplying factor that stems from a different normalization, while the significance of the estimates, e.g. as evaluated by t-values, is practically the same for both methods (see Ferrer-i-Carbonell and Fritjers, 2004; Van Praag and Ferrer-i-Carbonell, 2004, Ch. 2).

average rewards. This finding is robust to the removal of unmeasured worker-specific effects in Column (2), whereby it is clear that the positive effect of bonuses on job satisfaction is most pronounced (and statistically significant) for individuals at the top 5% of the ladder of rewards. Importantly, the fixed effects estimation reveals a significant *negative* impact on overall job satisfaction (and satisfaction with the job itself) for individuals who are recipients of the bottom 5% (25%) of bonuses, relative to those who receive no such incentive payments. Such a detrimental effect of 'small' financial rewards on job utility is consistent with Gneezy's (2004) suggestion of discontinuity at the zero monetary payoff, while the overall non-monotonic pattern observed in Table 4 is in agreement with the V-hypothesis. Importantly, the V-effect between job satisfaction and incentive intensity is found even after including a measure of reference dependent earnings within the control set. Therefore, it cannot be argued that job utility increases with incentives because individual wages have not surpassed a given reference point, as would be the suggestion of the Pokorny (2008) model.

The influence of the remaining covariates is in accordance with the predictions of previous research. Higher wages significantly increase overall job satisfaction; job satisfaction is U-shaped with age; males are less satisfied compared to women; more hours of work reduce utility; the greater job security of permanent contracts leads to higher satisfaction, though those working on a full-time basis appear to be more dissatisfied; good promotion prospects and incremental pay rises unambiguously influence attitudes towards the job in a positive direction; healthy individuals living with a partner report higher satisfaction scores; public sector workers are generally more satisfied with their jobs, compared to their private sector counterparts; finally, job satisfaction declines with higher educational attainment and firm size and is lower for trade union members. It also appears to be the case that once fixed effects are controlled for, the coefficients of a number of independent variables that are potentially correlated with unobserved person-specific characteristics are affected, such as education, union status, type of contract and multiple job-holding.

[INSERT TABLE 4 ABOUT HERE]

6. Sensitivity Analysis

The estimated coefficients that are reported in Table 4 are robust to a number of alternative econometric specifications, as suggested by Heywood and Green (2008). For instance, the magnitude of the estimates of the bonus dummies remains unaltered even after the variables of 'hours of work' and 'earnings' are excluded, both of which are believed to be highly correlated with the presence of performance pay schemes in the workplace. Beyond that, significant heterogeneity in the reported effect of bonuses or profit-sharing on job satisfaction is found for various sub-groups of the population. While Heywood and Green (2008, p. 17) and Artz (2008) suggest that profit-sharing schemes seem to be more beneficial for men rather than women on average, Table 5 illustrates that this finding is driven by the greater job satisfaction of male employees at the highest segment of the bonus distribution only. In addition, it is clear from Table 6 that below average rewards are found to have a notable crowding out effect on the intrinsic job satisfaction of female workers.

The former authors also present evidence that profit-sharing increases the job satisfaction of unionized employees, while no such effects are noticeable in non-union jobs. Nevertheless, the more extensive insight offered by Tables 5 and 6 reveals that while union workers offered above average bonuses do indeed enjoy greater satisfaction, there are offsetting tendencies in the satisfaction of non-union workers at the tails of the bonus distribution. Low powered bonus payments are also shown to have a detrimental impact on the intrinsic satisfaction of unionized workers. These results may be indicative of the fact that union workers derive pleasure from relatively "equitable" bonus rewards. In contrast, performance-related schemes that exacerbate the inequality of earnings are found to intensify the satisfaction difference between non-unionized workers at the opposing sides of the spectrum of rewards.

It has often been argued that in certain organisational environments where intrinsic work motivation is high (e.g. public sector/skilled non-manual jobs), the need for incentive pay is reduced and different pay arrangements need to be designed instead (Burgess and Rato, 2003). Tables 5 and 6, however, indicate that 'small' performance-contingent payments are most likely to backfire amongst those who are employed in private sector unskilled non-manual jobs. On the contrary, 'large' bonus or profit-sharing outlays enhance the job satisfaction of private sector skilled employees.

The estimates of Tables 5 and 6 would therefore suggest that relatively generous bonuses are most likely to enhance the job satisfaction of male, skilled employees who are employed in private sector jobs. Instead, 'small' bonuses are found to be harmful to female, unskilled private sector employees who are not covered by some form of trade union arrangement. Finally, financial rewards that are concentrated around the median are most likely to be appreciated by unionized public sector workers.

[INSERT TABLE 5 ABOUT HERE]

[INSERT TABLE 6 ABOUT HERE]

7. Concluding Remarks

The empirical results of this paper provide support to experimental evidence suggesting a V-effect of monetary incentives on performance and, concurrently, job satisfaction. All other things equal, a discontinuity at the zero payment of the effect of financial compensation on job satisfaction is found. But above average rewards, and, especially, very generous bonuses and profit-sharing payments are observed to enhance the utility that workers derive from their jobs. These conclusions hold even after controlling for the effect of unobserved heterogeneous biases that confound the incentives-job satisfaction relationship. In fact, since the hours worked and the absolute/relative level of pay have been held constant in the analysis, the non-monotonic relationship between pecuniary incentives and job satisfaction is indicative of the fact that factors other than money and effort enter into the utility function of the agent.

Indeed, the significant negative association between 'small' bonus payments and the satisfaction of workers with the *actual job itself* constitutes evidence in favour of the so-called crowding-out hypothesis. By altering the perception of the nature of the activity, the introduction of small compensation appears to have the effect of "displacing" the original intrinsic motivation to which agents attributed their performance (Festinger, 1957). Gneezy and Rustichini (2000[a]) also emphasize that the introduction of a monetary incentive is likely to alter the nature of an incomplete contract. For instance, if workers had previously engaged in certain job tasks without compensation, once the employer associates those activities with the payment of bonuses the perception of the contract now changes, with the employee

"expecting" to be paid for the execution of those tasks in the future. Crucially, what this implies is that "the change in perception, once realized, is hard to reverse" (ibid, 2000, p. 804). This assertion is confirmed by our dataset, as it is found that the average job satisfaction of those workers switching from no bonus payments to positive ones is greater than that of workers moving in the reverse direction (5.33 versus 5.24, respectively).[13] What the above imply is that caution should be exercised on behalf of employers in their decision whether to introduce a monetary incentive in the first place.

Once introduced, though, the findings of this paper suggest that rewards should tend to be relatively "generous" should employers wish to enhance the job satisfaction of their workforce. Positive attitudes towards work are also more likely to be fostered among male employees who work in skilled occupations within the private sector of the economy. In unionized and public sector workplaces, instead, bonuses that are close to the median are more likely to trigger positive feelings, as they conform with a norm of equitable wage distributions characterizing such environments.

[13] A two-sample t-test between the means of these two groups reveals that the difference is statistically significant (t = 3.13).

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Table 1

Mean amount of annual gross bonus/profit-sharing by groups, BHPS, Employees, 1998-2005

	N	*Mean (£)*
Gender		
Male	8329	2002
Female	6024	1132
Age		
18-25	2432	967
26-35	4360	1765
36/45	4071	1983
46/55	2612	1666
56/65	878	1167
Partner		
Married	10574	1773
Single	3777	1257
Education		
Higher	399	3243
First	1920	2997
Hnd, hnc, teach	1143	1963
A level	3735	1720
O level	4338	1250
Cse	844	873
None	1847	760
Performance-pay		
No	10269	1361
Yes	4064	2339
Contract		
Temporary	194	845
Permanent	14156	1648
Sector		
Private	12684	1740
Public	1160	874
Other	508	812
Union		
No	8187	1854
Yes	5863	1365
Hours status		
Part-time	1774	695
Full-time	12516	1771
Occupation		
Managers and Administrators	2834	3199
Professional Occupations	940	2416
Associate professional & Technical	1410	1958
Clerical & Secretarial	2639	949
Craft & Related	1352	1072
Personal and Protective Service	614	578
Sales	1359	1549
Plant & machine Operatives	1250	759
Other	804	654

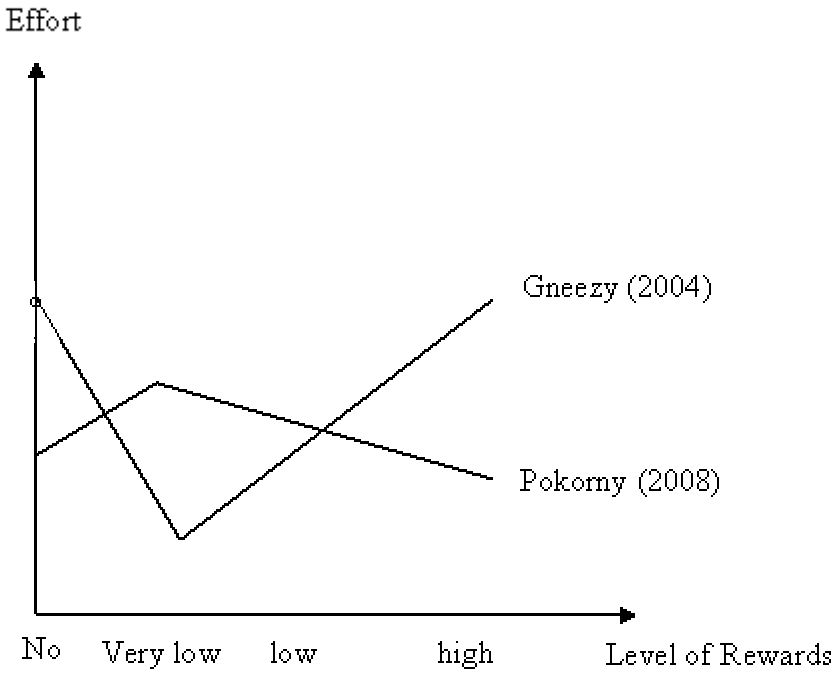

Figure 1 The effect of the level of incentives on effort

Table 2
Mean (s.d) job satisfaction scores by type and amount of incentive, BHPS, Employees, 1998-2005

	N	*Overall JS*	*JS Work itself*
PRP			
No	48975	5.37 (1.27)	5.45 (1.31)
Yes	8608	5.28 (1.25)	5.34 (1.30)
Bonus			
No	40807	5.36 (1.28)	5.45 (1.31)
Yes	16812	5.34 (1.24)	5.37 (1.29)
Amount bonus(%; pa)			
<5 (£30)	760	5.35 (1.35)	5.36 (1.36)
5-25(£30-150)	2870	5.34 (1.28)	5.36 (1.33)
25-50(£150-500)	3769	5.27 (1.28)	5.32 (1.30)
50-75(£0.5-1.5k)	3374	5.31 (1.22)	5.35 (1.28)
75-95(£1.5-7k)	2880	5.35 (1.18)	5.35 (1.18)
>95 (£7-30k)	700	5.59 (1.07)	5.64 (1.11)
Total	14353	5.34 (1.24)	5.37 (1.29)

Notes: Job satisfaction scores measured on a 1-7 Likert scale.

Table 3
Summary statistics, BHPS, Employees, 1998-2005

Variables	*Mean*	*s.d.*
Amount bonus(%; pa)		
No bonus (£0)	0.739	0.439
<5 (£30)	0.014	0.117
5-25(£30-150)	0.052	0.222
25-50(£150-500)	0.068	0.253
50-75(£0.5-1.5k)	0.061	0.240
75-95(£1.5-7k)	0.052	0.223
>95 (£7-30k)	0.013	0.112
PRP	0.149	0.357
Demographic		
Gender	0.483	0.500
Age	38.719	11.588
Partner	0.725	0.447
Education		
Higher	0.038	0.190
First	0.143	0.350
Hnd, hnc, teach	0.086	0.280
A level	0.221	0.415
O level	0.284	0.451
Cse	0.060	0.238
None	0.168	0.374
Work-related		
Ln(Pay)	1.774	0.536
Ln(Hours)	3.482	0.399
Permanent	0.952	0.215
Time travel to work	23.437	20.552
Manager	0.213	0.409
Foreman/super	0.154	0.361
None	0.634	0.482
Annual increments	0.473	0.499
Promotion opportunities	0.508	0.500
Union	0.512	0.500
Two Jobs	0.084	0.277
Full-time	0.802	0.399
Sector		
Private	0.662	0.473
Civil Service	0.046	0.208
Local Government	0.151	0.358
NHS/Higher Edu	0.086	0.280
Other	0.021	0.142
Firm Size		
Non-profit orgs.	0.034	0.182
1-24	0.345	0.475
25-99	0.266	0.442
100-499	0.222	0.415
500+	0.168	0.374

Table 4
Determinants of Job Satisfaction in the UK, 1998-2005

Variables	*Overall JS* (1) OLS	(2) FE	*JS Work Itself* (3) OLS	(4) FE
Incentive Pay				
PRP	-0.044***	0.009	-0.037**	0.003
	(0.016)	(0.015)	(0.016)	(0.015)
Amount of Bonus				
<5% (£30)	-0.006	-0.081**	-0.056	-0.106***
	(0.045)	(0.041)	(0.043)	(0.041)
5-25% (£30-150)	0.008	0.018	-0.045**	-0.042**
	(0.023)	(0.021)	(0.023)	(0.021)
25-50% (£150-500)	0.000	0.006	-0.033	-0.029
	(0.021)	(0.019)	(0.021)	(0.019)
50-75% (£0.5-1.5k)	0.063***	0.042**	0.016	0.012
	(0.022)	(0.020)	(0.022)	(0.020)
75-95% (£1.5-7k)	0.080***	-0.000	0.015	-0.015
	(0.025)	(0.024)	(0.026)	(0.024)
>95% (£7-30k)	0.283***	0.091**	0.246***	0.044
	(0.044)	(0.045)	(0.046)	(0.045)
(Omit: No Bonus)				
Demographic				
Gender	-0.137***	0.000	-0.072***	0.000
	(0.016)	(0.000)	(0.017)	(0.000)
Age	-0.024***	-0.020**	-0.008*	-0.012
	(0.004)	(0.008)	(0.004)	(0.008)
Age square	0.000***	0.000	0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Partner	0.086***	0.016	0.071***	-0.033
	(0.016)	(0.021)	(0.016)	(0.021)
Education				
Higher degree	-0.277***	-0.224	-0.209***	0.137
	(0.043)	(0.174)	(0.045)	(0.174)
First degree	-0.265***	-0.127	-0.198***	0.093
	(0.030)	(0.142)	(0.031)	(0.141)
Hnd, hnc, teaching	-0.199***	-0.152	-0.125***	0.022
	(0.032)	(0.157)	(0.032)	(0.157)
A-level	-0.182***	-0.185	-0.112***	0.078
	(0.026)	(0.136)	(0.026)	(0.135)
O-level	-0.104***	-0.113	-0.059**	0.119
	(0.024)	(0.131)	(0.024)	(0.131)
Cse	-0.061*	-0.107	-0.026	0.114
	(0.035)	(0.202)	(0.035)	(0.201)
(Omit: None of above)				
Health				
Excellent	0.369***	0.276***	0.211***	0.112*
	(0.072)	(0.058)	(0.070)	(0.058)
Good	0.191***	0.182***	0.040	0.021
	(0.071)	(0.057)	(0.070)	(0.057)
Fair	0.061	0.107*	-0.087	-0.050
	(0.072)	(0.057)	(0.070)	(0.057)
Poor	-0.022	0.055	-0.135*	-0.101*
	(0.073)	(0.058)	(0.072)	(0.058)
(Omit: Very poor)				
Work-related				
Ln(Pay)	0.059***	0.097***	-0.024	0.035*

Comparison Pay	-0.065	0.040	-0.041	0.052
	(0.031)**	(0.029)	(0.032)	(0.028)*
	(0.017)	(0.018)	(0.017)	(0.018)
Ln(Hours)	-0.144***	-0.111***	-0.062**	-0.072***
	(0.028)	(0.028)	(0.028)	(0.028)
Time travel to work	-0.001***	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Annual increments in pay	0.121***	0.104***	0.087***	0.067***
	(0.012)	(0.011)	(0.012)	(0.011)
Promotion opportunities	0.189***	0.213***	0.150***	0.153***
	(0.013)	(0.012)	(0.013)	(0.012)
Union	-0.112***	-0.021	-0.117***	-0.032**
	(0.016)	(0.016)	(0.016)	(0.016)
Second Job	-0.017	-0.048**	-0.008	-0.035*
	(0.021)	(0.020)	(0.021)	(0.020)
Permanent contract	0.113***	0.035	0.003	-0.039
	(0.025)	(0.026)	(0.026)	(0.026)
Full-time	-0.085***	-0.031	-0.025	-0.002
	(0.026)	(0.025)	(0.027)	(0.025)
Manager	0.036*	-0.022	0.081***	0.006
	(0.020)	(0.020)	(0.021)	(0.019)
Foreman/supervisor	-0.008	-0.033**	0.020	-0.034**
	(0.016)	(0.015)	(0.017)	(0.015)
(Omit: not manager/sup)				
Sector				
Civil Service	-0.012	0.090**	-0.101***	0.027
	(0.035)	(0.041)	(0.036)	(0.041)
Local Government	0.074***	0.168***	0.047*	0.112***
	(0.025)	(0.030)	(0.026)	(0.030)
NHS/Higher educ.	0.086***	0.177***	0.072**	0.144***
	(0.029)	(0.036)	(0.029)	(0.036)
Other	0.030	0.136***	0.023	0.120***
	(0.046)	(0.041)	(0.046)	(0.041)
Non-profit orgs.	0.093***	0.175***	0.125***	0.268***
	(0.033)	(0.039)	(0.034)	(0.039)
(Omit: Private)				
Firm Size				
25-99	-0.092***	-0.028*	-0.116***	-0.053***
	(0.016)	(0.015)	(0.016)	(0.015)
100-499	-0.148***	-0.060***	-0.170***	-0.110***
	(0.017)	(0.018)	(0.018)	(0.018)
500+	-0.137***	-0.057***	-0.180***	-0.105***
	(0.020)	(0.021)	(0.020)	(0.021)
(Omit: 1-24)				
Constant	0.891***	0.486**	0.653***	0.485**
	(0.156)	(0.241)	(0.155)	(0.240)
N	41755	41755	41755	41755
R^2	0.08	0.03	0.07	0.02
No individuals		10738		10738
F-test(df)	27.7***	14.6***	23.5***	11.08***
Corr(u, X)		-0.28		-0.27

Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Occupation, industry and regional dummies have also been included as controls; The comparison pay term has been defined as the average wage by gender, age groups, occupation, region and year; The full regression output is available from the author upon request.

Table 5
Fixed Effects Estimates of the Amount of Bonus/Profit-sharing on Job Satisfaction by Groups, BHPS, 1998-2005

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Distribution	*Male*	*Female*	*Union*	*Non-Union*	*Private*	*Public*	*Sknonman*	*Skman*	*Usknonman*	*Uskman*
<5% (£30)	-0.073	-0.088	-0.084	-0.099*	-0.112**	-0.100	-0.002	0.045	-0.157**	-0.044
	(0.063)	(0.054)	(0.069)	(0.055)	(0.045)	(0.154)	(0.089)	(0.173)	(0.064)	(0.093)
5-25% (£30-150)	-0.011	0.045	0.011	0.018	0.006	0.098*	0.034	0.066	0.037	0.024
	(0.029)	(0.031)	(0.032)	(0.030)	(0.024)	(0.057)	(0.043)	(0.077)	(0.034)	(0.050)
25-50% (£150-500)	0.015	-0.007	-0.003	0.007	0.029	0.008	0.030	0.054	0.004	0.007
	(0.025)	(0.029)	(0.027)	(0.028)	(0.021)	(0.052)	(0.032)	(0.064)	(0.033)	(0.052)
50-75% (£0.5-1.5k)	0.029	0.054	0.063**	0.032	0.041*	0.124**	0.095***	0.127**	-0.015	0.077
	(0.025)	(0.033)	(0.029)	(0.030)	(0.023)	(0.061)	(0.032)	(0.061)	(0.039)	(0.059)
75-95% (£1.5-7k)	0.007	-0.023	-0.039	0.022	0.020	-0.193**	0.030	0.197***	-0.068	-0.078
	(0.029)	(0.043)	(0.038)	(0.033)	(0.026)	(0.081)	(0.034)	(0.073)	(0.053)	(0.089)
>95% (£7-30k)	0.116**	0.015	0.048	0.112**	0.095**	0.097	0.135**	0.135	0.061	0.218
	(0.051)	(0.092)	(0.088)	(0.055)	(0.047)	(0.289)	(0.056)	(0.130)	(0.118)	(0.404)
Constant	0.454	0.740**	0.721*	0.907**	0.956***	1.465***	1.566***	2.029*	1.345***	0.940
	(0.352)	(0.356)	(0.382)	(0.364)	(0.302)	(0.529)	(0.467)	(1.227)	(0.469)	(1.031)
Observations	20057	21698	22043	19712	27211	12348	14339	5252	15337	6827
No Individuals	5119	5619	6315	6773	8001	3315	4796	2013	5363	2772
R^2	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.04	0.04	0.04

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; The remaining control variables are as in those included in Table 4; Public sector defined as: Civil Service, Local Government, NHS and Higher Education. Occupational groups defined as: 1. Skilled non-manual (*Sknonman*) = Managers and Administrators, Professionals and Craft and Related; 2. Skilled manual (*Skman*) = Associate Professionals and Technical; 3. Unskilled non-manual (*Usknonman*) = Clerical and Secretarial, Personal and Protective Service and Sales; 4. Unskilled manual (*Uskman*) = Plant and Machine Operatives and Other. Full regression output is available from the author upon request.

Table 6
Fixed Effect Estimates of the Amount of Bonus/Profit-sharing on Job Satisfaction with Actual Work Itself by Groups, BHPS, 1998-2005

Distribution	(1) *Male*	(2) *Female*	(3) *Union*	(4) *Non-Union*	(5) *Private*	(6) *Public*	(7) *Sknonman*	(8) *Skman*	(9) *Usknonman*	(10) *Uskman*
<5% (£30)	-0.076	-0.128**	-0.175**	-0.081	-0.113**	-0.216	-0.134	0.145	-0.173***	0.044
	(0.063)	(0.054)	(0.070)	(0.055)	(0.045)	(0.155)	(0.088)	(0.175)	(0.064)	(0.091)
5-25% (£30-150)	-0.028	-0.058*	-0.048	-0.032	-0.049**	0.063	-0.042	0.014	-0.043	0.003
	(0.029)	(0.031)	(0.032)	(0.030)	(0.024)	(0.057)	(0.043)	(0.078)	(0.034)	(0.049)
25-50% (£150-500)	0.001	-0.070**	-0.028	-0.017	-0.012	-0.017	-0.012	0.008	-0.055*	0.019
	(0.025)	(0.029)	(0.027)	(0.028)	(0.021)	(0.052)	(0.032)	(0.065)	(0.033)	(0.051)
50-75% (£0.5-1.5k)	0.011	0.008	-0.004	0.042	0.015	0.043	0.045	0.057	-0.054	0.043
	(0.025)	(0.033)	(0.030)	(0.030)	(0.022)	(0.061)	(0.032)	(0.062)	(0.039)	(0.058)
75-95% (£1.5-7k)	-0.016	-0.012	-0.052	0.025	0.001	-0.123	0.002	0.043	-0.047	-0.068
	(0.029)	(0.043)	(0.038)	(0.033)	(0.026)	(0.082)	(0.034)	(0.074)	(0.053)	(0.087)
>95% (£7-30k)	0.076	-0.053	0.047	0.075	0.049	0.107	0.091	0.083	-0.070	0.439
	(0.051)	(0.092)	(0.089)	(0.055)	(0.047)	(0.290)	(0.056)	(0.132)	(0.118)	(0.397)
Constant	0.446	0.657*	0.310	1.247***	0.865***	1.177**	1.357***	4.224***	1.104**	1.744*
	(0.353)	(0.353)	(0.384)	(0.361)	(0.301)	(0.531)	(0.462)	(1.239)	(0.470)	(1.013)
Observations	20057	21698	22043	19712	27211	12348	14339	5252	15337	6827
No Individuals	5119	5619	6315	6773	8001	3315	4796	2013	5363	2772
R^2	0.03	0.02	0.02	0.03	0.02	0.02	0.02	0.04	0.03	0.03

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; The remaining control variables are as in those included in Table 4; Public sector defined as: Civil Service, Local Government, NHS and Higher Education. Occupational groups defined as: 1. Skilled non-manual (*Sknonman*) = Managers and Administrators, Professionals and Craft and Related; 2. Skilled manual (*Skman*) = Associate Professionals and Technical; 3. Unskilled non-manual (*Usknonman*) = Clerical and Secretarial, Personal and Protective Service and Sales; 4. Unskilled manual (*Uskman*) = Plant and Machine Operatives and Other. Full regression output is available from the author upon request.

Appendix

Table A1
Random effects Tobit estimates of the determinants of the amount of bonus/profit-sharing in the UK, BHPS, 1998-2005

Variables	Coefficients
Demographic	
Gender	0.402***
	(0.151)
Age	0.072**
	(0.037)
Age square	-0.001***
	(0.000)
Partner	0.141
	(0.130)
Education	
Higher degree	-0.509
	(0.432)
First degree	0.067
	(0.277)
Hnd, hnc, teaching	-0.152
	(0.298)
A-level	1.035***
	(0.230)
O-level	0.835***
	(0.216)
Cse	0.150
	(0.320)
(Omit: None of above)	
Work-related	
PRP	2.785***
	(0.107)
Ln(Pay)	1.728***
	(0.134)
Ln(Hours)	1.193***
	(0.247)
Time travel to work	3.396***
	(0.289)
Annual increments in pay	0.005**
	(0.002)
Promotion opportunities	0.378***
	(0.092)
Union	0.546***
	(0.097)
Second Job	-0.146
	(0.119)
Permanent contract	-0.131
	(0.175)
Full-time	0.255
	(0.227)
Manager	0.886***
	(0.159)
Foreman/supervisor	0.669***
	(0.123)

(Omit: not above)	
Sector	
Civil Service	-3.178***
	(0.284)
Local Government	-7.182***
	(0.250)
NHS/Higher educ.	-7.284***
	(0.312)
Other	-2.104***
	(0.326)
Non-profit orgs.	-3.284***
	(0.335)
(Omit: Private)	
Firm Size	
25-99	-0.048
	(0.126)
100-499	0.388***
	(0.137)
500+	0.823***
	(0.158)
(Omit: 1-24)	
Occupation	
Professional	-0.615***
	(0.217)
Association Prof/Technical	-0.556***
	(0.199)
Clerical/Secretarial	0.311
	(0.192)
Craft and related	-0.788***
	(0.232)
Personal/Protective Service	-1.703***
	(0.251)
Sales	0.513**
	(0.227)
Plant/Machine Operatives	-0.824***
	(0.238)
Other	-0.134
	(0.247)
(Omit: Managers)	
Constant	-16.308***
	(1.299)
Observations	41755
No individuals	10738
Wald χ^2	3924.53***

Notes: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Health, industry and regional dummies have also been included as controls; The full regression output is available from the author upon request.