



Munich Personal RePEc Archive

# **Rewarding Carrots Crippling Sticks: Eliciting Employee Preferences for the Optimal Incentive Mix in Europe**

Pouliakas, Konstantinos and Theodossiou, Ioannis

University of Aberdeen Business School

19 March 2009

Online at <https://mpra.ub.uni-muenchen.de/14167/>

MPRA Paper No. 14167, posted 21 Mar 2009 01:16 UTC

# Rewarding Carrots & Crippling Sticks: Eliciting Employee Preferences for the Optimal Incentive Mix in Europe

K. Pouliakas<sup>1</sup> and I. Theodossiou<sup>2</sup>

*Centre for European Labour Market Research, University of Aberdeen Business School*

**Keywords:** Incentives, effectiveness, effort, attitudes, employees.

JEL- Code: C14, J33, M52, M54

## Abstract

A ranking of a variety of incentive devices used by firms according to their perceived effectiveness by employees is identified. The determinants of employee incentive preferences are also investigated, suggesting a ‘menu’ of conditions under which an organization’s personnel policies will have maximum motivational impact on its workforce. Based on the beliefs of a unique sample of workers from seven European countries, the results suggest that (a) the primary determinant of the level of employee effort is the amount of discretion offered at work; (b) pay incentives and ‘gift exchanges’ are the most important motivators; (c) the use of monitoring and Taylor-type assembly lines are the least effective incentives; and (d) the optimal design of incentive strategies by firms is strongly shaped by a host of contextual factors. The expressed desire for autonomy, and distaste for control, by employees gives credibility to the “participative” management approach.

---

<sup>1</sup> Corresponding author: Research Fellow, Centre for European Labour Market Research (CELMR), University of Aberdeen Business School, Edward Wright Building, Dunbar Street, Old Aberdeen AB24 3QY, UK – Tel. ++44 01224 272172, email: [k.pouliakas@abdn.ac.uk](mailto:k.pouliakas@abdn.ac.uk).

<sup>2</sup> Professor of Economics, Centre for European Labour Market Research (CELMR), University of Aberdeen Business School, Edward Wright Building, Dunbar Street, Old Aberdeen AB24 3QY, UK – Tel. ++44 01224 272181, email: [theod@abdn.ac.uk](mailto:theod@abdn.ac.uk).

## 1. Introduction

Those who manage human resources within firms have a rich toolkit of incentive mechanisms at their disposal (Gibbons and Waldman, 1999). The need for such a wide array of instruments arises due to the fundamental agency problem that plagues the employment relationship, whereby the interests of the contracting parties are typically in conflict. It follows that firms may combat the ensuing problem of moral hazard by designing appropriate incentive contracts that seek to establish goal congruence with their employees (Holmstrom, 1979; Mirlees, 1976).

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 (e.g. piece rates, stock options, bonuses, profit sharing etc.), 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 (e.g. promotions, efficiency wages, deferred compensation, career concerns, layoffs etc.). Bryson *et al.* (2008) have also shown that there has been considerable growth in the use of “families” of contingent rewards at the same workplace in the UK in the last two decades, while Belfield and Marsden (2003) discover evidence of significant experimentation amongst UK managers seeking for the optimal “bundle” of compensation for their individual establishment.

Economists have made considerable progress in the past three decades in terms of understanding the internal workings of the incentive structure of organizations. The principal-agent model focuses on the trade-off between risk and incentives (Holmstrom, 1979; Mirlees, 1976). The efficiency wage paradigm postulates an inverse relationship between market rents and monitoring sustained by the threat of layoffs (Akerlof, 1982; Akerlof and Yellen, 1990; Shapiro and Stiglitz, 1984). Moreover, tournament theory emphasizes the relative competition among workers for fixed prizes (Lazear and Rosen, 1981). The above literature remains central for our understanding of the framework which compels and constrains firms in designing their incentive policies.

Researchers have also investigated the conditions influencing the choice of different reward schemes by firms, such as the dimensionality of job tasks and the monitoring environment *inter alia*

(Belfield and Marsden, 2003; Bryson et al. (2008); Drago and Garvey, 1998; Frederiksen and Takats, 2004; Gibbons and Waldman, 1999; MacLeod and Malcomson, 1989; MacLeod and Parent, 1998). Furthermore, empirical and experimental studies have attempted to ascertain whether employees actually respond to such a variety of performance metrics (Lazear, 2000; Marsden *et al.*, 2001).

Despite the above innovations, the economic literature has not paid sufficient attention to an important link of the incentives-productivity chain, namely the *beliefs of employees about their effectiveness*. This is an important omission given that the success of any compensation scheme hinges critically on the value assigned to it by employees (Heneman and Young, 1991; Nigro, 1981). Reward schemes that enjoy higher perceived worker value can act as powerful attraction, retention and motivational tools (e.g. the stock options granted by many high-tech companies in the mid-1990s). Finding out what employees think about their remuneration plans can also help identify those motivational components that are likely to have the greatest impact on worker performance, thus allowing firms to restructure their human resource (HR) procedures accordingly. Indeed, it is generally agreed that the successful alignment of rewards with business strategy relies very much on understanding employee reward perceptions (Lawler, 1995; Wilson, 1995).

The above underscores the necessity of research that will assist in our understanding of the taxonomy of workers' reward preferences and their determinants. Although a number of recent studies have looked at the relationship between different forms of incentive pay and individual job satisfaction (Artz, 2008; Drago *et al.*, 2002; Green and Heywood, 2008; Heywood and Wei, 2006; McCausland *et al.*, 2005; Pouliakas and Theodossiou, 2009), few studies exist that identify employee beliefs about the incentive mix that is most likely to drive and motivate optimal performance. In addition, knowledge of the specific conditions that influence these views is incomplete at best.

This study aims to address the above gaps in knowledge. To do so, employees from seven European countries have been requested to subjectively evaluate the relevance of a number of incentive options for the effort they exert in their jobs. Insofar as employees' 'stated' preferences act as a signal of their 'actual' effort choices, and provided that firms pay attention to the opinions of their workforce, this study provides potentially valuable insight into the prevalence of some reward schemes over others

in the contemporary workplace. Moreover, by investigating the conditions under which incentive options are considered to be effective by employees themselves, a ‘menu’ of factors which may be conducive to securing employee support for an organization’s compensation strategy is identified.

The structure of the paper is organised as follows. Section 2 integrates the predictions of the available economic, management and psychological literature on the determinants of employee reward preferences, and describes the incentive alternatives used in the survey of this study. In section 3 the dataset and summary statistics of the variables of interest are presented. Section 4 outlines the main results, identifying the relative ranking of the incentive options and the underlying determinants of their perceived effectiveness. Section 5 considers the implications of the findings for the purposes of effective human resource policy. Section 6 concludes.

## **2. Literature Review**

### *2.1 The availability of incentive options*

The aim of this paper is to elicit the perceptions of employees about the relative importance of a number of incentive alternatives for their effort exposure at the workplace. Given that individuals who are active in the labour market are likely to have formed concrete beliefs about the effectiveness of different motivational schemes, it seems reasonable to ask them directly about their views in the form of a survey questionnaire. This was done via a unique survey of lower- and middle-skilled workers from seven European countries (Denmark, Finland, France, Greece, the Netherlands, Spain and the UK), that took place in the year 2004 as part of the EU-funded EPICURUS project. Thus, for the remainder of this section, a brief description of the incentive categories that were included in the survey is offered, along with a discussion of the reasons that underlined their selection as suggested by the existing literature.<sup>1</sup>

- *The risk of losing your job*: Perhaps the most common channel of incentive provision used by firms is the threat of dismissal if the performance of employees falls below some critical level (Kwon, 2005). With this non-linear contract firms may pay wages that vary little with performance, yet the threat of

firing acts as a binding constraint on the actions of workers. Agell (1994), for instance, finds a positive relationship between effort and workers' perception of the likelihood of layoff. Bewley (1999: 110) argues, however, that firms are reluctant to use the dismissal card as it is bad for morale.

- *Pay incentives*: In order to ameliorate the agency problem, it has been suggested that a principal should condition the payments of workers on a set of verifiable (collective or individual) signals, which are informative about the agent's effort (e.g. realization of output). Moral hazard will then be less likely to come into play the greater the sensitivity of pay to measured performance. The optimal contract must nonetheless balance the goals of full insurance and first-best incentives. The psychological theory of cognitive evaluation has also asserted that extrinsic intervention may have a detrimental effect on employee performance due to crowding-out of intrinsic job satisfaction (Deci, 1971; Deci and Ryan, 1985; Lepper *et al.*, 1973) or because of distortion in the nature of the psychological contract (Benhabou and Tirole, 2003; Kreps, 1997; Sliwka, 2003). Furthermore, PRP systems may be detrimental to employee morale (Bewley, 1999) and perceptions of job security (Baker *et al.*, 1988; Valetta, 1999), are likely to undermine team work (Milgrom and Roberts, 1992) and creativity and innovation (Kohn, 1993), and may influence certain facets of job satisfaction in a negative fashion (Green and Heywood, 2008; Pouliakas and Theodossiou, 2009).

- *Closer monitoring (supervision or appraisals)*: Related to the risk of layoff is another method that is conventionally believed to resolve the agency problem, namely the use of intense monitoring. This may be accomplished either by delegating the responsibility of overseeing worker effort to a supervisor, or via in-depth evaluations of employee performance that culminate in the drafting of reports and appraisals by HR managers. In both cases, tighter monitoring by the principal is expected to induce effort by workers who wish to reduce the risk of a penalty if caught shirking (Alchian and Demsetz, 1972; Nagin *et al.*, 1998).

Moreover, it has been suggested that subjective performance evaluation is desirable since it rewards a more holistic measure of worker performance (Prendergast, 1999). The problem with subjective assessments, though, is that they cannot be verified by outsiders, and, thus, there is ample scope for

manipulation of the performance measures (e.g. “centrality”/“leniency” biases; supervisory favoritism responding to rent-seeking actions by workers) that often results in employee discontent (Lawler, 1971, p. 171; Prendergast, 2002).

More recent arguments challenging the disciplining potential of stringent monitoring evolve around the so-called “crowding out” theory, which postulates that the use of ‘sticks’ by employers entails hidden costs as workers may perceive such controls as a signal of distrust (Falk and Kosfeld, 2004; Frey, 1993).

- *Akerlof’s ‘gift exchange’ and efficiency wages*: If intense monitoring is to be avoided or is costly in its implementation, the so-called ‘efficiency wage’ theories have claimed that firms can induce effort exertion by offering wage rents to workers. Though these theories share the common notion that a *level* of pay in excess of the ‘going rate’ will have a positive effect on productivity, the channels via which this process takes place differ (e.g. reduced turnover, superior pool of applicants, higher effort etc.; see Krueger and Summers, 1998). This study focuses on the so-called ‘fair wage’ model of Akerlof (1982), which has argued that effort increases as the offered wage rises relative to what workers believe to be a ‘fair’ pay rate, formed by comparison to an appropriate reference group (such as similarly qualified workers).

Evidence has established the existence of reciprocity-driven voluntary cooperation among hypothetical employers and employees (Fehr *et al.*, 1997; Dohmen *et al.*, 2009). Management science and psychology research, in contrast, has failed to support a causal link between higher pay *levels* and motivation or productivity, though there is ample evidence that effort is increased by *incentives* that make pay depend on performance (Lawler, 1971; 133; Vroom, 1964: 252).

- *Peer pressure*: Most workers are employed in settings where final output is the outcome of the joint contribution of individuals. Consequently, firms that decide to utilize team production incentive schemes are likely to face the classic free-rider (or 1/N) problem, whereby agents fail to internalize the benefits that accrue to other members of the team when making their own effort decisions (Prendergast, 1999: 39). Kandel and Lazear (1992) suggested that a possible solution to this team production

problem is *peer pressure*, whereby agents monitor one another and mete out punishments to those colleagues who fail to perform adequately, provided that the cost of delivering such sanctions is sufficiently low. After all, human beings are social beings who are willing to perform certain activities (e.g. contribution to a public good/punishment of free-riding) simply for the sake of obtaining social approval (Fehr and Falk, 2002; Falk and Ichino, 2006; Gächter and Fehr, 1999).

Furthermore, the empirical evidence of Weiss (1987) and Hansen (1997) suggests that peer pressure could be an effective motivator for blue-collar workers in particular, whereas their white-collar counterparts are more likely to be motivated by individual-based pay schemes instead.

- *Closer contact with clients and customers*: ‘Business literacy’ is a popular concept in employee motivation research. Business literacy is defined as employees “thinking like strategic business partners” (Philpott *et al.*, 2005). This is usually achieved by companies investing considerable effort in helping individuals to link personal with organizational goals. After all, firms recognize that many workers invest their lives and financial security in the company, so that employees who better realize how their job supports the mission and vision of the firm are likely to enhance their sense of belonging and satisfaction (Heller, 2005).

In this spirit, many companies build and nurture an organizational culture centered on customer driven service (Kiska, 2004). It is therefore expected that employees will be motivated by the need to satisfy the needs of the firm’s clientele. Indeed, HR managers who aspire to have a business-literate workforce will ensure that workers will receive direct feedback about their impact on customer satisfaction. Employees are then motivated by the awareness that their future progression within the company will depend on how well they are meeting customer expectations.

- *Assembly lines*: The dominant strategy adopted by many firms in the past was to deskill jobs, and, thus, exercise tighter control over how work was performed. This approach was heavily influenced by the theories and methods of F.W. Taylor, which aimed to improve the employer’s position in conflicts over the control and price of labour. This was accomplished by deconstructing jobs into simple, repetitive tasks that were executed within the specified constraints of automated assembly lines. The



effort required from workers could then be precisely monitored and calculated by supervisors. Since such jobs required low-grade labour, which would be cheaply available and would require little training, workers could then be reduced to a disposable resource (Palmer, 1983).

Taylorite schemes are particularly effective in manufacturing employment, which explains why this option was included in a survey of mostly blue-collar workers. Nevertheless, with the decline of the manufacturing sector as a share of national output, such techniques of managerial control have become increasingly irrelevant in modern labour markets.

## *2.2 Determinants of incentive preferences*

Few studies have given explicit consideration to the topic of employee reward preferences, with most of them originating from the fields of management and psychology. The primary focus has been the detection of determinants of employee support for various incentive tools. A number of interesting predictions have been made, summarized in Table 1 for convenience. Most of these are based on the predictions of the psychological theories of motivation that emphasize the notions of ‘*expectancy*’ and ‘*equity*’ as drivers of employee performance (Adams, 1963; Bartol and Locke, 2000; Lawler, 1973).<sup>2</sup>

For instance, Andrews and Henry (1963), Bergmann *et al.* (1983), Torrington (1993) and Brown (2001) find that with increased age there is less emphasis on merit pay and more support for seniority or tenure-based systems, as the appetite for risk decreases over the years. In Hallock and Olson’s (2009) case-study, older workers and females are found to prefer guaranteed base pay relative to stock options. Koys *et al.* (1989) and Majors (1988) attribute this to a preference for equitable pay systems by females, though Golding (1986) and Brown (2001) emphasize the desirability of performance-related pay (PRP) schemes given that women suffer from a higher incidence of labour force intermittency.

A number of important job-related factors have also been highlighted as being conducive to the offer of extrinsic rewards. These mostly describe the “monitoring environment” of a workplace (Ferne and Metcalfe, 1999), such as low costs of output measurement, low supervision intensity, large workgroup sizes (Brown, 1990), repetitive job tasks (McLeod and Parent, 1999), minimal teamwork (Kohn, 1993; Marsden and Richardson, 1994), high worker heterogeneity (of ability), low risk aversion, no union recognition (Balkin, 1989; Brown, 2001; Drago and Heywood, 1995), short tenure (Lazear,

1979), low task complexity (Drago and Garvey, 1998; McLeod and Parent, 1999) and high product market competition. Furthermore, an increased preference for at risk pay (such as PRP) is found for higher-paid individuals (Hallock and Olson, 2009; Mahoney, 1964; McCausland *et al.*, 2005), those who believe that they are underpaid relative to comparable workers (Brown, 2001; 51), those in private sector jobs (Burgess and Rato, 2003) and those enjoying (suffering from) good (bad) relations with their superiors (colleagues) (Beer and Gery, 1972; Brown, 2001; Greenberg, 1990; Milkovich and Newman, 1996).

Environmental determinants that may influence employee perceptions have been proposed too, such as the state of the labour market (MacLeod and Malcomson, 1998) and job insecurity (Brown, 2001; 41), both of which enhance the disciplining power of unemployment and make PRP schemes less desirable due to their inherent uncertainty. Cross-country differences in preferences for incentives have also been identified (Chiang and Birtch, 2005; Marjaana *et al.*, 2005), depending on whether cultures are more individualistic or collectivist (Hofstede, 1980).

Finally, Beer and Gery (1972) have shown that an individual's past experience of an appraisal system informs expectations about what it would be like under a given pay scheme, and this determines future pay adjustment preferences of employees.

### **3. Data and summary statistics**

The data for this study are derived from 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). For the purpose of comparability, individuals from all countries responded to an (appropriately translated) identical questionnaire. A specialized survey company was used to ensure that appropriate dissemination and data collection procedures were followed (e.g. stratified random sampling, adequate response rate etc.).<sup>3</sup> 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 whose employment is the main activity (excluding students), 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.

The data was administered online via the Internet, except for Greece where face-to-face interviews were organized instead, since the degree of Internet penetration at the time of the survey was relatively low in that country. The eventual size of the sample varies in each country as follows: 1,011 observations in Denmark, 1,008 in France, 1,007 in the Netherlands, 1,002 in the United Kingdom, 800 in Greece, 331 in Finland and 304 in Spain. In order to facilitate a robust empirical analysis the individual country samples have been pooled, resulting in an overall cross-section sample of 5463 European employees.

The content of the completed database is fairly extensive in terms of describing the labour market conditions of individuals. First, wide-ranging information is available about individual and household characteristics. Secondly, the survey contains extensive descriptions of the working conditions that prevail in the respondents' current jobs. With regard to the particular questions of interest to this study, people were asked to answer the following questions regarding the importance of a number of motivational devices for either the level or the marginal change in their job effort:

*Which, if any, of the items listed below are important for the **level** of effort you put in your work? Please grade each factor with a number from 1 to 5, where 1 stands for 'very unimportant' and 5 stands for 'very important'.*

(i) a machine or assembly line; (ii) clients or customers; (iii) a supervisor or boss; (iii) your colleagues; (v) your own discretion; (vi) payment incentives (e.g. extra payments, premiums, bonuses, piece rates – i.e. payment by results); (vii) reports and appraisals.

*Which, if any, of the items listed below are important for **inducing you to increase** your effort in your job? Please grade each factor with a number from 1 to 5, where 1 stands for 'very unimportant' and 5 stands for 'very important'.*

(i) speeding up the machine or assembly line; (ii) closer contact with clients and customers; (iii) stricter supervision; (iii) your fellow workers' opinion; (v) pay incentives; (vi) reports and appraisals; (vii) being paid more than similarly qualified colleagues working in other firms.

Table 2 illustrates summary statistics on some of the variables contained in the survey which reflect the heterogeneity in the respondents' current job experiences (e.g. experience of specific incentive tools). These may potentially affect their views on the importance of the aforementioned incentive options. It is evident that the selected sample is mostly comprised of individuals working on private sector, non-unionised, permanent contract jobs. The majority of the respondents also state that they usually work with the same people and on jobs involving a variety of duties, though for a significant portion of the sample fixed work routines are the norm. Moreover, the workers are distributed evenly across establishments of varying sizes and are mainly employed within the services sector.

Importantly, 20% of the employees in the sample are recipients of some form of performance-based gain-sharing bonus in their current employment, while 7% are subject to individual compensation by merit. A significant portion of the sample also suffers from job insecurity, while most respondents believe that their relationships with their co-workers and supervisors are good and that they earn approximately the same pay as other similarly qualified workers. The conclusion that one can draw from Table 2 is that to obtain a fuller understanding of the conditions under which various incentive tools may motivate a firm's workforce, an empirical investigation of the correlation between workers' perceptions and the above (individual/job) characteristics is required.

## **4. Econometric results**

### *4.1 Ranking of the importance of incentive alternatives*

Prior to examining the underlying factors that influence the beliefs of the respondents, the relative ranking of the offered motivators in terms of their perceived effectiveness is firstly identified. As the objective is to infer the workers' preferences over a discrete set of alternatives, the rank-ordered logit

(ROL) model is used (Beggs *et al.*, 1981), as this is the standard tool for analyzing preferences in case rank data.<sup>4</sup>

In the spirit of the conventional random utility framework (Manski, 1977), the effort ratings of each surveyed individual  $i = 1, \dots, N$ , over the set of incentive options,  $j = 1, \dots, J$ , are represented as a set of latent variables  $e_{i1}^*, \dots, e_{iJ}^*$ , defined as

$$e_{ij}^* = V_{ij} + \varepsilon_{ij} = x_i' \beta_j + \varepsilon_{ij} \quad (1)$$

where  $V_{ij}$  is the deterministic part of the rating determined by the interaction of individual observable characteristics (as given by the  $m$ -dimensional vector  $x_i$ ) and the relative weights associated with the alternatives  $j$  (given by the  $m$ -dimensional parameter vector  $\beta$ ), while  $\varepsilon_{ij}$  is the random component of the ratings.

Assuming that the respondents' ratings imply a complete ordering,  $r_i$ , of the importance of each incentive tool, so that  $e_{i1}^* > e_{i2}^* \dots > e_{iJ}^*$ , and that  $\varepsilon_{ij}$  follows an independent type-I extreme value distribution (McFadden, 1974), the probability of observing a particular ranking  $r_i$  equals

$$\begin{aligned} \Pr[r_i, \beta] &= \Pr[e_{i1}^* > e_{i2}^* \dots > e_{iJ}^*] \\ &= \prod_{j=1}^{J-1} \frac{\exp(V_{irij})}{\sum_{l=j}^J \exp(V_{iril})} \end{aligned} \quad (2)$$

where use is made of Efron's method of handling potential "ties" in the workers' responses (i.e. indifference among the alternatives as indicated by equal effort scores).

The estimates of a ROL model of the importance of various motivators for job effort are given in Table 3, from which a number of consistent patterns emerge. The principal finding is that the European employees of the sample consider the existence of discretion in their jobs as the most important factor affecting their effort decisions. The desire for approval by one's peers and consideration for the needs of the firm's clientele follow in importance. Interestingly, pay incentives are considered by employees

as being of lesser relevance for the level of their effort. Even less important is the existence of monitoring in the workplace, in the form of supervision or the drafting of reports and appraisals. Finally, working in an assembly line is consistently graded as the least significant determinant of worker effort choices.

In contrast to the effect of pay incentives on the level of effort, Table 3 clearly shows that such rewards are highly capable of inducing a *change* in effort. The respondents also perceive a ‘gift exchange’ as a potentially important incentive device. In other words, if firms offer a wage premium over what is regarded to be a ‘fair wage’, they would be willing to wield extra effort. The fear of dismissal, peer or customer pressure and reports and appraisals all follow in terms of their relative significance in affecting worker effort. Finally, the existence of strict supervision and the possibility of speeding up the assembly line are consistently ranked as the least effective amongst all effort-enhancers.

It should be noted that a remarkable cross-country similarity in the findings is found (discussed in the Appendix). This is consistent with the findings of Chiang and Birtch (2005), who argue that with the internationalization of the economic environment cross-country convergence in reward systems and employee preferences has ensued. It therefore appears to be the case that the influence of national culture on reward preference has given way to a host of other contextual variables, such as organization, industry and environmental characteristics, which are examined closely in the next section.

#### *4.2 Determinants of the perceived effectiveness of incentive alternatives*

The optimal mix of incentive mechanisms that is expected to command high employee support is likely to be strongly shaped by a multitude of variables, as suggested in Table 1. This section aims to identify those conditions, thereby proposing a ‘menu’ of factors which may be conducive to the design of effective motivation policies by firms.

Given the ordered discrete nature (ranging from 1 to 5) of the individuals’ ratings, an Ordered Probit (OP) technique may be used to uncover the determinants that increase the probability of higher stated effort scores. Nevertheless, due to the highly skewed nature of the effort responses, an alternative estimation method of ordered response data is utilized, namely a “semi-nonparametric”

estimator for a series of generalized models that nests the OP model (Stewart, 2004). This estimator, first proposed by Gallant and Nychka (1987), has been recently advocated by Stewart (2004) on the grounds that it provides a more flexible and general fit to a large class of unknown densities and relaxes the distributional assumptions of the OP model. For the sake of brevity further details of this estimator are provided in the Appendix.<sup>5</sup>

The predictions of separate regressions of equation (1) for each of the incentive options available in the survey are summarized in Tables 4A and 4B (the full regression output is available in the Appendix). The tables classify a list of determinants that are likely to enhance the perceived effectiveness of each incentive device. A striking conclusion is that in many instances the forecasts of standard economic models (e.g. agency theory) and the beliefs of employees coincide with respect to the optimal conditions for offering certain incentive tools.

Examining individual characteristics first, it is clear that male workers consider pay incentives to be less important determinants of the level of effort compared to their female counterparts, which is in line with the findings of Goldin (1986) and Brown (2001). Male employees are also relatively less likely to be motivated by monitoring, efficiency wages and the threat of firing, yet they regard assembly lines as important for their effort decisions.

As predicted on the basis of their differing risk aversion, older employees are less likely to believe that monetary rewards are critical for inducing additional effort. Older workers are also less likely than their younger colleagues to think that supervision, peer pressure and efficiency wages are effective tools, and they seem to highly value the offer of discretion in their work.

In section 2 it was argued that workers with longer seniority will be less stimulated by the offer of PRP compared to those with shorter tenure spans, and this is indeed borne out in the data. The crowing-out hypothesis might also underpin the negative feelings of senior employees for any type of monitoring.

The outcomes on a number of variables that describe the monitoring environment of the workplace and the nature of the job correspond to the suggestions of Table 1 concerning the preference for output-versus input-based pay. The larger the establishment size, the greater the probability that pay

incentives, the risk of layoff and assembly lines are considered important. In contrast, employees in larger establishments are less likely to be in regular contact with clients, hence their lack of motivation by customer satisfaction. Pecuniary rewards and assembly lines are valued highly by workers who are employed in jobs involving repetitive tasks, on fixed routines and requiring on-site clocking or signing-in. Furthermore, when the nature of the job involves low task complexity, the discretion that is awarded to employees and the lack of supervision becomes paramount to their effort.

In contrast to prior expectations (Booth and Frank, 1999; McCausland *et al.*, 2005), no significant differences are found with respect to the perceived effectiveness of extrinsic rewards between workers of different wage levels. Lower-paid workers are nonetheless significantly more likely to wield extra effort in the face of the threat of dismissal. Lower absolute and relative wages also increase the perceived effectiveness of a 'gift exchange' as a motivational device. This agrees with Brown's (2001; 51) assertion that workers who believe that they are underpaid relative to equivalent colleagues regard PRP schemes as a means of restoring equity. Lower-paid workers also do not trust subjective appraisals probably due to a general feeling of vulnerability on their behalf.

For those who work in rotating teams pressure amongst peers operates as a significant deterrent compared to those who always work alongside the same people. In addition, workers who are on good terms with their colleagues consider the option of pay incentives as less significant, as they may believe that PRP is liable to provoke envious behaviour (Drago and Garvey, 1998; Marsden *et al.*, 2001). PRP is also less likely to be considered important by those workers who enjoy a healthy relationship with their supervisor, while the opposite holds for the options of 'supervision' and the 'risk of redundancy'.

According to Table 1, individuals who are subject to feelings of job insecurity are less enticed by the offer of pay incentives and feel more content with the up-front offer of efficiency wages. This is confirmed by the employees' responses, as it is shown that a greater probability of losing one's job results in a higher ranking of the efficiency wage incentive option, while permanent contract holders (who enjoy a relative sense of job security) are more sympathetic to the PRP alternative. Workers who think that it is likely to lose their jobs are also less intimidated by the threat of firing.



As expected, pay incentives are considered to be less important motivators by trade union members as well as individuals who are employed within the non-profit sector and (less so) the civil service. For the latter, the opinion of peers is found to be a more significant incentive device instead. Moreover, customer satisfaction appears to play a notable role within the non-manufacturing sectors, whereas manufacturing workers clearly perceive assembly lines as being a crucial determinant of their effort.

Finally, evidence is found that prior experience with particular reward systems is likely to affect the attitudes of workers about their perceived effectiveness (Beer and Gery, 1972). For instance, those employees who are already paid under some form of PRP scheme regard such mechanisms as significant determinants of their level of effort, while those who are paid by merit view the appraisal process in a more favourable fashion.

#### *4.3 Mismatch between employee preferences and firm practices*

In a recent survey of the American workforce, LeBlanc and Mulvey (1998; 25) demonstrated that there exists a wide discrepancy in the preferred approaches to pay by employers and their employees, noting that "...workers prefer permanent base increases based on merit, while management is fonder of one-time variable pay systems, since these systems cost less and are more short-term focused". A final issue that is therefore examined in this paper is whether there exists an inconsistency between the employees' beliefs regarding the manner in which they "ought" to be paid in order to be productive, conditional on the determinants shown above, and the usage of actual incentive mechanisms within their current jobs.

In order to investigate this, we focus on the 'pay incentives' option and use a probit model that predicts the probability that the workers' responses will be at the top of the effort scale (i.e. 4 or 5), given the set of explanatory variables that were discussed above (but excluding their current experience with PRP). On the basis of the predicted probability statistic (using a cut-off probability of 0.5), the sample of workers is then divided into those who believe that they "ought" to be paid by PRP in order to exert a high level of effort and those that "ought not".<sup>6</sup> Combining this binary information with the available data on the employees' actual receipt of monetary rewards in their current jobs, it then

becomes possible to detect whether a significant mismatch exists between employee perceptions and tangible job market practices.<sup>7</sup>

On the basis of the above classification, Table 5 reveals that about 23-24% of those workers who believe that pay incentives are crucial for their effort decisions are indeed recipients of actual extrinsic forms of pay. In contrast, less than 10% of those who consider the PRP alternative as insignificant are found in jobs which offer contingent payments. So the evidence suggests that the pay preferences of employees are somewhat satisfied in practice. A notable mismatch remains, however, with 76-77% of the employees considering PRP an effective tool not being offered such an alternative in the real job market. There is thus significant scope for firms to modify their existing compensation systems by paying closer attention to the reward preferences of their workers.

## **5. Implications for human resource policy**

The results of this study can be summed up by a number of largely interrelated conclusions, which are highly relevant for the conduct of HR managerial policy: (a) the primary determinant of the level of employee effort is the amount of discretion offered to workers; (b) pay incentives and reciprocal employer-employee behaviour (as in Akerlof's 'gift exchange' theory) are considered by workers to be the most important factors for inducing marginal changes in their effort; (c) the use of 'sticks' (in the form of strict supervision and appraisals) and Tayloristic assembly lines are likely to be counterproductive; and (d) the optimal design of motivational policies by firms is strongly shaped by a host of contextual (individual, organizational and environmental) factors.

Overall, the findings reveal that the low-skilled employees in the sample have a marked preference for a more task-integrated and flatter organizational structure, with decentralization of responsibility and worker participation in decision making (Lindbeck and Snower, 2000). This contrasts with the traditional mode of work for blue-collar jobs, which typically involves a task-specialized structure that can be easily monitored via an 'impersonal' pyramidal hierarchy of line management and mechanical controls.

The expressed desire of employees for more autonomy, coupled with their aversion for rule by fear, also gives credence to the contemporary fashion of “participative” management. This particular management style strives to “increase communication in all directions, upward, horizontally, and downward within the company chain of command; to push decision making down to the level at which the appropriate information was available; to have employees take initiatives to improve operations; to eliminate layers of middle management; and to have employees work as near equals in teams with minimal supervision” (Bewley, 1999; 46). This managerial approach contrasts with the more stern and ruthless cost-cutting school, which relies on both fear of authority and fear of job loss, thus diminishing the stake employees have in their company.

Based on the subjective beliefs of workers in this paper, incentives that make pay depend on performance are regarded as effective motivation instruments, though they have little effect on the level of motivation. The Akerlof idea of loyalty and reciprocation to employers’ ‘gifts’ is also viewed favourably. This agrees with Bewley’s (1999; 431) suggestion that even when effective financial incentives exist, they and employee goodwill should be thought of as mutually reinforcing. After all, “workers have so many opportunities to take advantage of employers that it is not wise to depend on coercion and financial incentives alone as motivators” (ibid; 431).

Finally, the results of this paper provide some support to Falk and Kosfeld’s (2004) *behavioural* rationale for the deliberate incompleteness of many real-life contracts. The employee responses suggest that characteristics of the workplace environment that limit freedom of choice and signal distrust, such as high levels of monitoring and surveillance, may lead to lower performance on their behalf. Consequently, “if the principal anticipates this effect, he may be better off choosing a less complete contract, leaving the agent substantial discretion and thereby signalling the principal’s trust in the agent’s non-opportunistic behaviour” (ibid; 3).

## **6. Conclusions**

By requesting from employees of seven European countries to subjectively evaluate the importance of a number of incentive options for their effort, this study has inferred a relative taxonomy of various

incentive devices in terms of their perceived effectiveness. The results have highlighted the important role of discretion for the level of effort that employees exert in their jobs, and of pay incentives and reciprocal employer-employee behaviour for inducing changes to effort. They have also emphasized the potentially negative role of monitoring for productivity. The evidence of this paper is therefore supportive of the adoption of “participative” management techniques by European organizations. In fact, the ‘menu’ of factors provided within this study, which identifies the conditions under which an organization’s personnel policies are likely to enjoy widespread employee support, may provide some helpful guidance towards the achievement of that goal.

Many issues in the study of the psychological dispositions of workers remain unexplored and warrant further investigation. An important consideration for future research is to control for a number of cognitive characteristics of the employees (e.g. risk aversion, intrinsic satisfaction, personality) that may potentially affect their responses. Finding the optimal procedures which will allow firms to translate the suggestions of its workforce into practice is also vital. In general, future research needs to focus more on employee attitudes and their interface with socio-economic determinants, as this is essential for those who wish to design and implement efficient HR strategies that will achieve the highest possible motivational potential.

## **Acknowledgments**

This research formed part of the EPICURUS project (Societal and economic effects on quality of life and well-being: preference identification and priority setting in response to changes in labour market status) - a project supported by the European Commission through the Fifth Framework Programme "Improving Human Potential" (contract number: HPSE-CT-2002-00143). The authors would like to acknowledge the helpful comments of Professor Ron Oaxaca and thank the remaining EPICURUS participants for their useful input. The usual disclaimer applies.

## **References**

- Adams, J.S. (1963), ‘Towards an understanding of inequity’, *Journal of Abnormal Social Psychology*, 67: 421-436.
- Akerlof, G.A. and Yellen, J.L. (1990), ‘The fair wage-effort hypothesis and unemployment’, *The Quarterly Journal of Economics*, 105(2): 255-283.
- Andrews, I.R. and Henry, M.M. (1963), ‘Management attitudes toward pay’, *Industrial Relations*, 3(1): 29-39.
- Artz, B. (2008), ‘Firm Size, Performance Pay and Job Satisfaction’, *Labour*, 2(2): 315-343.
- Agell, S.A. (1994), ‘Swedish Evidence on the Efficiency Wage Hypothesis’, *Labour Economics*, 1: 129-150.

- Akerlof, G. A. (1982), 'Labor Contracts as Partial Gift Exchange', *The Quarterly Journal of Economics*, 97(4): 543-569.
- Alchian, A.A. and Demsetz, H. (1972), 'Production, Information Costs, and Economic Organization', *American Economic Review*, 62: 777-795.
- Baker, G., Jensen, M., and Murphy, K.J. (1988), 'Compensation and Incentives: Practise vs. Theory', *Journal of Finance*, 43: 593-616.
- Balkin, D.B. (1989), 'Union influences on pay policy: a survey', *Journal of Labour Research*, 10(3): 299-310.
- Bartol, K. and Locke, E. (2000), 'Incentives and motivation' in *Compensation in Organization*. S. Rynes and B. Gerhart (eds.), San Francisco: Jossey-Bass.
- Beer, M. and Gery, G.J. (1972), 'Individual and organizational correlates of pay system preferences' in *Managerial Motivation and Compensation* H.K. Tosi, R.J. House and M.D. Dunnette (eds.), East Lansing, MI: MSU Business Studies.
- Beggs, S., S. Cardell, and J. Hausman (1981), 'Assessing the Potential Demand for Electric Cars', *Journal of Econometrics*, 16: 1-19.
- Belfield, R. and Marsden, D. (2003), 'Performance pay, monitoring environments and establishment performance', *International Journal of Manpower*, 24(4): 452-471.
- Benabou, R. and Tirole, J. (2003), 'Intrinsic and Extrinsic Motivation', *Review of Economic Studies*, 70: 489-520.
- Bergmann, T.J., Hills, F.S. and Priefert, L. (1983), 'Pay comparisons: causes, results and possible solutions', *Compensation Review*, 13(3): 17-26.
- Bewley, T.F. (1999), *Why Wages Don't Fall During a Recession?* Cambridge: Harvard University Press.
- Booth, A. and Frank, J. (1999), 'Earnings, Productivity, and Performance-Related Pay', *Journal of Labor Economics*, Vol. 17, No. 3, pp. 447-463.
- Brown, C. (1990), 'Firms Choice of Method of Pay', *Industrial and Labour Relations Review*, 43(3): 165-182.
- Brown, M. (2001), Merit pay preferences among public sector workers', *Human Resource Management Journal*, 11(4), 38-54.
- Bryson, A., Pendleton, A. and Whitfield, K. (2008), 'The Changing Use of Contingent Pay at the Modern British Workplace', *NIESR Discussion Paper*, No. 319.
- Burgess, S. and Rato, M. (2003), 'The Role of Incentives in the Public Sector: Issues and Evidence', *Oxford Review of Economic Policy*, 19(2): pp. 285-300.
- Chiang, F.F.T. and Birtch, T.A. (2005), 'A taxonomy of reward preference: Examining country differences', *Journal of International Management*, 11: 357-375.
- Deci, E. (1971), 'The Effects of Externally Mediated Rewards on Intrinsic Motivation', *Journal of Personality and Social Psychology*, 18(1): 105-115.
- Deci, E. and Ryan, R.M. (1985), *Intrinsic Motivation and Self-Determination in Human Behaviour*, New York: Plenum Press.
- Dohmen, T., Falk, A., Huffman, D. and Sunde, U. (2009), 'Homo reciprocans: Survey evidence on behavioural outcomes', *Economic Journal*, 119(536): 592-612.
- Drago, R., Estrin, S., and Wooden, M. (1992), 'Pay for Performance Incentives and Work Attitudes', *Australian Journal of Management*, 17(2): 217-232.
- Drago, R. and Garvey, G.T. (1998), 'Incentives for helping on the Job: Theory and Evidence', *Journal of Labor Economics*, 16(1): 1-25.
- Drago, R. and Heywood, J.S. (1995), 'The Choice of Payment Schemes: Australian Establishment Data', *Industrial Relations*, 34: 507-31.
- Falk, A. and Ichino, A. (2006), 'Clean Evidence on Peer Pressure', *Journal of Labor Economics*, 24(1): 39-57..
- Falk, A., and Kosfeld, M. (2004), 'Distrust – The Hidden Cost of Control', *IZA Discussion paper*, No. 1203.
- Fehr, E., Gächter, S. and Kirchsteiger, G. (1997), 'Reciprocity as a Contract Enforcement Device – Experimental Evidence', *Econometrica*, 65: 833-860.
- Fehr, E. and Falk, A. (2002), 'Psychological Foundations of Incentives', *European Economic Review*, 46: 687-724.
- Fernie, S. and Metcalfe, D. (1999), '(Not) hanging on the telephone: payment systems in the new sweatshop', *Advances in Industrial Relations*, 9: 23-68.
- Frederiksen, A. and Takats, E. (2004), 'Optimal Incentive Mix of Performance Pay and Efficiency Wages', *KTI/IE Discussion Papers 2004/18*.
- Frey, B.S. (1993), 'Shirking or Work Morale? The Impact of Regulating', *European Economic Review*, 37: 1523-32.
- Gächter, S. and Fehr, E. (1999), 'Collective Action as a Social Exchange', *Journal of Economic Behaviour and Organization*, 39: 341-369.
- Gallant, A.R. and Nychka, D.N. (1987), 'Semi-nonparametric maximum likelihood estimation', *Econometrica*, 55: 363-390.

- Gibbons, R. and Waldman, M. (1999), 'Careers in Organizations: Theory and Evidence', in O.Ashenfelter, R. Layard and D.E.Card, eds., *Handbook of Labor Economics*, 3(B): Elsevier.
- Goldin, C. (1986), 'Monitoring Costs and Occupational Segregation by Sex', *Journal of Labour Economics*, 4(1): 1-27.
- Green, C. and Heywood, G. (2008), 'Does Performance Pay Increase Job Satisfaction', *Economica*, 75: 710-728.
- Greenberg, J. (1990), 'Organizational Justice: yesterday, today and tomorrow', *Journal of Management* 16(2): 399-432.
- Hallock, K.F. and Olson, C. (2009), 'Employees' Choice of Method of Pay', working paper, University of Cornell.
- Hansen, D. (1997), 'Worker Performance and Group Incentives: A Case Study', *Industrial and Labour Relations Review*, 51: 37-49.
- Heller, R. (2005), 'Employees and Customers: In the Quest for for Customer Satisfaction, the Link Between employees and Customers is Key', <http://www.thinkingmanagers.com/management/employees-customers.php>.
- Heneman, H.G. and Young, P.I. (1991), 'Assessment of a merit pay program for school district administrators', *Public Personnel Management*, 20(1): 35-48.
- Heywood, J.S. and Wei, X. (2006), 'Performance Pay and Job Satisfaction', *Journal of Industrial Relations*, 48: 523-40.
- Hofstede, G. (1980), *Culture's Consequences, International Differences in Work-related Values*, Newbury Park: Sage Publications.
- Holmstrom, B. (1979), 'Moral Hazard and Observability', *Bell Journal of Economics*, 9: 74-91.
- Kandel, E. and Lazear, E. (1992), 'Peer Pressure and Partnerships', *Journal of Political Economy*, 100(4): 801-17.
- Kiska, J. (2004), 'Customer Satisfaction Pays Off Rewards Can Motivate Employees to Deliver Top-Notch Customer Service', *HR Magazine*, 49(2): 87-94.
- Kohn, A. (1993), *Punished By Rewards: The Trouble with Gold Stars, Incentive Plans, A's, Praise, and Other Bribes*, Mariner Books.
- Koys, D.J., Keaveny, T. and Allen, R. (1989), 'Demographic and attitudinal predictors of preferences for alternative pay increase policies', *Proceedings of the Thirty-Second Annual Meeting of the Midwest Academy of Management*, 32; 159-163.
- Kreps, D.M. (1997), 'Intrinsic Motivation and Extrinsic Incentives', *The American Economic Review*, 87(2): 359-364.
- Krueger, A. and Summers, L. (1988), 'Efficiency Wages and the Inter-Industry Wage Structure', *Econometrica*, 56(2): 259-293.
- Kwon, I. (2005), 'Threat of dismissal. Incentive or Sorting', *Journal of Labor Economics*, 23(4): 797-838.
- Lazear, Edward P. (1979), 'Why is There Mandatory Retirement?', *Journal..of Political Economy*, 87: 1261-84.
- Lazear, E.P. (2000), 'Performance Pay and Productivity', *The American Economic Review*, 90(5): 1346-1361.
- Lazear, E.P. and Rosen, S. (1981), 'Rank-order tournaments as optimum labor contracts', *Journal of Political Economy*, 89: 841-864.
- Lawler, E.E. (1971), *Pay and Organizational Effectiveness: A Psychological View*. New York: McGraw-Hill.
- Lawler, E.E. (1973), *Motivation in Work Organization*, Monterey, California: Brooks-Cole.
- Lawler, E.E. (1995), 'The new pay: a strategic approach', *Compensation and Benefits Review*, 27(4): 14-22.
- LeBlanc, P. and Mulvey, P. (1998), 'How American workers see the rewards of work', *Compensation and Benefits Review*, 30(!): 24-31.
- Lepper, M., Greene, D., and Nisbett, R. (1973), 'Undermining Children's Intrinsic Interest with Extrinsic Reward', *Journal Personality and Social Psychology*, 28(1): 129-137.
- Lindbeck, A, and Snower. D. J., (2000), 'Multitask Learning and the Reorganization of Work: From Tayloristic to Holistic Organization', *Journal of Labor Economics*, 18(3): 353-376.
- Mahoney, T.A. (1964), 'Compensation preferences of managers', *Industrial Relations*, 3(3): 135-144.
- Majors, B (1988), 'Gender, justice and the psychology of entitlement;', *Review of Personality and Social Psychology*, 7: 124-148.
- Manski, C. (1977), 'The Structure of Random Utility Models', *Theory and Decision*, 8: 229-254.
- Marjaana, R., Edward, L. and Birgitta, W. (2005), 'Incentive Preferences in Germany and the USA: An Empirical Investigation', *The International Review of Management Studies*, 16(1): 81-98.
- Marsden, D. and Richardson, R. (1994), 'Performing for pay? The effects of "merit pay" on motivation in a public service', *British Journal of Industrial Relations*, 32(2): 243-263.
- Marsden, D., French, S. and Kubo, K. (2001), 'Does performance pay de-motivate, and does it matter?', Discussion paper, Centre for Economic Performance, London.

- McCausland, W.D., Pouliakas, K. and Theodossiou, I. (2005), 'Some are Punished and some are Rewarded: A Study of the Impact of Performance Pay on Job Satisfaction', *International Journal of Manpower*, 26(7/8): 636-659.
- McFadden, D. (1974), 'Conditional Logit Analysis of Qualitative Choice Behaviour', in P. Zarembka, eds., *Frontiers in Econometrics*, 105-142, New York: Academic Press.
- McLeod, W.B. and Malcomson, J.M. (1989), 'Implicit contracts, incentive compatibility and involuntary unemployment', *Econometrica*, 57(2): 447-480.
- McLeod, W.B. and Parent, D. (1999), 'Job characteristics and the form of compensation': in S.Polacheck (ed.), *Research in Labor Economics*, 18: 177-242, Stamford, Conn: JAI Press.
- Milkovich, G.T. and Newman, J.M. (1996), *Compensation* (5<sup>th</sup> ed), Chicago: Erwin.
- Milgrom, P. and Roberts, J. (1992), *Economics, Organizations and Management*: NY: Prentice-Hall.
- Mirlees, J. (1976), 'The optimal structure of incentives and authority within an organization', *Bell Journal of Economics*, 7: 105-131.
- Nagin, D., Rebitzer, J., Sanders, S., and Lowell, T. (1998), 'Monitoring and Motivation in an Employment Relationship: An Analysis of a Field Experiment', Discussion Paper, Carnegie Mellon University.
- Nigro, L.G. (1981), 'Attitudes of federal employees towards performance appraisal and merit pay: implications for CSRA implementation', *Public Administration Review*, 41(1): 84-86.
- Palmer, G. (1983), *British Industrial Relations*, London: George Allen & Unwin.
- Philpott, S., Morton, M., Rinehart, D., Stankiewicz, T. and Thake, S. (2005), '*Supervisor's Guide to Motivating Employees*', [www.colorado.edu/humres/managers/](http://www.colorado.edu/humres/managers/)
- Pouliakas, K. and Theodossiou, I. (2009), 'Confronting objections to performance pay: an study of the impact of individual and gain-sharing incentives on the job satisfaction of British employees', forthcoming in *Scottish Journal of Political Economy*.
- Prendergast, C. (1999), 'The Provision of Incentives in Firms', *Journal of Economic Literature*, 37(1): 7-63.
- Prendergast, C. (2002), 'Uncertainty and Incentives', *Journal of Labor Economics*, 20(S2): S115-S137.
- Shapiro, C. and Stiglitz, J.E. (1984), 'Equilibrium unemployment as a worker discipline device', *American Economic Review*, 74: 433-444.
- Sliwka, D. (2003), 'On the Hidden Costs of Incentive Schemes', *IZA Discussion Paper No. 844*.
- Stewart, M.B. (2004), 'Semi-nonparametric Estimation of Extended Ordered Probit Models', *Stata Journal*, 4(1): 27-39.
- Torrington, D. (1993), 'Sweets to the sweet: performance related pay in British', *International Journal of Employment Studies*, 1(2): 149-164.
- Valetta, R. G. (1999), 'Declining Job Security', *Journal of Labour Economics*, Vol. 17, No. 4, pp. S170-S197.
- Vroom, V. H. (1964), *Work and Motivation*, New York: John Wiley.
- Weiss, A. (1987), 'Incentives and Worker Behaviour', in: Nalbantian, H., *Information, Incentives and Risk Sharing*, ed. Towota, NJ: Rowan and Littlefield.
- Wilson, T.B. (1995), *Innovative Reward Systems for the Changing Workplace*, New York: McGraw-Hill.

## Appendix

### *A1: Semi-nonparametric estimation of extended ordered probit models*

The "semi-nonparametric" estimator proposed by Stewart (2004) can be used for a series of generalized ordered response models that nest the OP model and relax the distributional assumption

$\varepsilon_i \sim F \sim N(0, \sigma^2)$ , usually made for the cumulative density function  $F$  of the random error term of an econometric model such as equation (1). This method approximates the unknown density  $F$  of  $\varepsilon$  using a Hermite form polynomial expansion with Gaussian leading term i.e. the product of a squared

polynomial and a normal density. The choice of a normal density is made deliberately, so that the approximation nests the OP model. The approximation is thus specified as

$$f_K(\varepsilon) = \frac{1}{\theta} \left( \sum_{k=0}^K \gamma_k \varepsilon^k \right)^2 \varphi(\varepsilon) \quad (\text{A1})$$

with the scaling factor defined as

$$\theta = \int_{-\infty}^{\infty} \left( \sum_{k=0}^K \gamma_k \varepsilon^k \right)^2 \varphi(\varepsilon) d\varepsilon \quad (\text{A2})$$

where  $\varphi(\varepsilon)$  is the standard normal density function and where the normalization  $\gamma_0 = 1$  is required. The required distribution is therefore specified as

$$F_K(u) = \frac{\int_{-\infty}^u \left( \sum_{k=0}^K \gamma_k \varepsilon^k \right)^2 \varphi(\varepsilon) d\varepsilon}{\int_{-\infty}^{\infty} \left( \sum_{k=0}^K \gamma_k \varepsilon^k \right)^2 \varphi(\varepsilon) d\varepsilon} \quad (\text{A3})$$

This defines a family of “semi-nonparametric” (SNP) distributions for increasing values of  $K$ .

Provided that the unknown density of  $\varepsilon$  satisfies certain smoothness conditions, it can be approximated arbitrarily closely by this Hermite series by increasing the choice of  $K$ , the degree of the polynomial. By replacing the unknown distribution function  $F$  by that in (A3), the model parameters are estimated consistently by maximising a pseudo-likelihood function (Gallant and Nychka, 1987). A location normalization is, nonetheless, necessary for semi-parametric identification, which is done by setting the first threshold,  $\alpha_1$ , equal to its ordered probit estimate. Importantly, in the case that  $K = 0, 1, 2$ , the model reduces to the OP model. The model with  $K = 3$  is therefore the first model in the series that is a generalization of the OP model. In practice, inference is conducted conditional on  $K$ , possibly for a range of alternative values of  $K$ , with the final specification of the model chosen by testing between them.



## *A2: Cross-country robustness of empirical findings*

A number of management studies (Chiang and Birtch, 2005; Hofstede, 1980; Marjaana *et al.*, 2005) point out that reward type preference may be largely influenced by the value systems inherent in different countries (e.g. individualistic vs. collectivist cultures). As the conclusions of the paper are drawn on the basis of a pooled sample of workers from distinct European countries, the cross-country robustness of the reported rankings was examined further.

Table A1 presents the relative standing of the motivational instruments as estimated by a ROL model separately for each country. Interesting national differences in the taxonomy of the importance of different incentive devices for the effort decisions of workers emerge. For instance, French employees believe that pay incentives are more essential for their level of exerted effort, while the Greeks consider monitoring as the most essential ingredient of motivation. Greek employees also stand out in terms of the factors eliciting extra effort, as peer pressure and layoff risk come up at the top of their rankings, while efficiency wages are remarkably at the bottom.<sup>8</sup> Peer pressure plays a primary role in the effort decisions of Dutch employees as well.

Despite these differences, it is noteworthy that a remarkable degree of cross-country consistency is exhibited in terms of the perceived importance of the options ‘discretion’ and ‘peer-- or ‘customer-pressure’ for the level of effort, and of ‘pay incentives’ and ‘efficiency wages’ for changes in effort. Monitoring (in the form of appraisals and/or supervision) and Taylor-type assembly lines, in contrast, are consistently believed to be less vital for the effort decisions of the sampled employees.

<i>Factor</i>	<i>Incentive</i>	<i>PPR</i>	<i>Discr.</i>	<i>Akerlof</i>	<i>Risk</i>	<i>Fellow</i>	<i>Client</i>	<i>Super</i>	<i>Appr.</i>	<i>Assem.</i>
↑ Age		-	+		-			-	-	
Female		±		-	+					-
↑ Tenure		-			-			-	-	
↑ Pay		+		-	-					
↑Relative Pay		+		-						
<i>Monitoring environment</i>										
↑Firm Size		+		-	+	-	-			+
Repetitive		+	-							+
Variety of duties		-	+			+			+	-
Autonomy		-	+			-		-		-
<i>Workplace Relations</i>										
Employee-Employee		-		-		+				
Employee-Super		-						+	+	
<i>Other job-related</i>										
Job security		+			-					
Unions		-		-	-	+			+	+
Public Sector		-	+	-	-	+	-		+	-
<i>Industry: Manufacturing</i>		±	-		+		-	+		+
<i>Culture: Individualistic</i>		+		+		-				

*Notes:* Relationships as predicted by existing literature; + positive effect; - negative effect; ± ambiguous effect.

	<i>Mean</i>	<i>sd</i>
<i>Demographic: Gender</i>	0.50	(0.50)
- Age	37.25	(10.64)
- > upper secondary education	0.76	(0.43)
<i>Job-related: Private sector</i>	0.63	(0.48)
- Trade union member	0.34	(0.47)
- Actual Weekly Hours	37.77	(10.19)
- Hourly wage (€)	9.50	(15.82)
- Promotion probability	0.32	(0.47)
- Paid Overtime Hours	7.78	(8.35)
- Clocking/sign-in	0.20	(0.40)
<i>Job security: Permanent contract</i>	0.83	(0.38)
- U last year	0.11	(0.31)
- Probability stop job	0.56	(0.50)
<i>Teamwork : Same people</i>	0.66	(0.47)
- Rotating teams	0.16	(0.36)
- Mostly on own	0.18	(0.38)
<i>Task complexity: Fixed routine</i>	0.29	(0.45)
- Variety of duties	0.64	(0.48)
- Autonomy	0.07	(0.26)
<i>Firm Size: &lt;10</i>	0.15	(0.36)
- 10-24	0.21	(0.40)
- 25-99	0.22	(0.41)
- 100-499	0.22	(0.41)
- > 500	0.20	(0.40)
<i>Industry: Manufacturing</i>	0.14	(0.35)
- Wholesale/retail	0.12	(0.33)
- Services	0.30	(0.46)

- Public admin/ education/health	0.27	(0.44)
- Other	0.17	(0.37)
<i>Relationships:</i> Good relations fellow workers	0.77	(0.42)
- Good relations supervisor	0.85	(0.35)
<i>Correlates of options:</i> Merit Pay	0.07	(0.25)
- End of year bonus	0.20	(0.40)
- Extra bonus/stock options	0.20	(0.40)
- <i>Comparison Pay:</i> Less	0.31	(0.46)
- Same	0.52	(0.50)
- More	0.18	(0.38)

<b>Table 3: Ranking of incentive alternatives in terms of perceived importance for level and change in employee effort, EPICURUS survey, 2004</b>	
<i>Level of effort</i>	<i>Changes in effort</i>
own discretion	pay incentives
colleagues	paid more than similar qualified workers
clients/customers	risk of losing job
pay incentives	peer opinion
reports/appraisals	reports/appraisals
supervisor/boss	closer contact clients
assembly line	strict supervision
	speed up assembly line
<i>Notes:</i> Ranking as predicted by a ROL model.	

<b>Table 4A: Determinants of perceived effectiveness of incentive alternatives for level of employee effort, EPICURUS survey, 2004</b>							
	PPR	Discretion	Fellow	Client	Super	Appraisal	Assembly
Gender	Female	---	---	---	Female	Female	Female
Age Group	---	Older	Younger	Older	Younger		---
Hours	More	More	---	More	---	More	---
Pay	---	---	---	Lower	Lower	---	---
Promotion	---	Yes	Yes	Yes	Yes	Yes	
Trade Union	---	---	---	---	Yes	---	Yes
Contract	Permanent	Permanent	---	---	---	---	---
Non-profit sector	No	---	Yes	---	---	---	---
Civil servant	No	No	Yes	---	---	---	---
Firm Size	Small/ v.Large	---	Medium	v.Small	Medium/ v.Large	---	Medium
Teamwork	---	Alone	Not alone	---	Not alone	---	Rotating teams/ Not alone

Task complexity	Fixed routine	Variety/Autonomy	---	---	No autonomy	Variety	No variety
Repetitiveness	Yes	No	---	---	---	Yes	Yes
Industry	Wholesale/Retail	---	---	Services	---	---	Manufacturing
Perform. pay	Bonuses/options	---	---	Merit	---	Merit	---
Clocking/sign-in	Yes	---	---	---	---	---	Yes
Good relation co-workers	---	---	Yes	---	---	---	---
Good relation supervisor	No	---	---	---	Yes	---	---
Relative Pay	Less	Not same	---	More	Not same	---	---
Layoff risk	---	---	Not probable	---	---	---	---

*Notes:* As predicted by semi-nonparametric estimates of ordered models for each incentive option (eq. 1), indicating a higher probability of the perceived effectiveness of each incentive alternative by factor.

**Table 4B: Determinants of the perceived effectiveness of incentive alternatives for changes in employee effort, EPICURUS survey, 2004**

	PRP	Akerlof	Risk	Fellow	Clients	Apprais.	Super	Assemb.
Gender	---	Female	Female	---	---	Female	---	Male
Age Group	Younger	Younger	---	Younger	---	---	Younger	---
Hours	More	More	More	Less	More	More	---	---
Pay	---	Lower	Lower	Lower	---	---	Lower	Lower
Promotion	---	Yes	---	---	Yes	Yes	---	Yes
Trade Union	No	---	---	---	---	---	---	---
Contract	Permanent	---	---	---	---	---	---	---
Non-profit sector	No	No	---	---	---	---	---	---
Firm Size	Medium/Large	Medium	Large	---	Small	Medium/Large	Medium/v.Large	---
Teams	---	---	---	Rotating teams/Not alone	---	---	Not alone	Not alone
Task complex	Fixed routine	No variety of duties	---	---	Variety of duties/autonomy	---	No autonomy	---
Repetitive	Yes	Yes	Yes	No	---	Yes	Yes	Yes
Industry	---	---	---	---	Services	---	---	Manufacturing
Perform. pay	Merit	---	---	---	Merit	Merit	---	---
Clocking/sign-in	---	Yes	---	---	---	---	---	Yes
Good relation coworkers	No	---	---	Yes	---	---	No	Yes
Good relation superv.	---	No	Yes	---	---	---	---	---
Relative Pay	Less	Less	More	---	More	Same/More	Same	---
Layoff risk	---	Probable	Improbab.	---	---	---	---	---

Previous U status	---	---	---	---	---	Yes	Yes	---
Notes: As predicted by semi-nonparametric estimates of ordered models for each incentive option (eq. 1), indicating a higher probability of the perceived effectiveness of each incentive alternative by factor.								

<b>Table 5: Match between employee beliefs about importance of PRP and actual receipt in workplace, frequency (%), EPICURUS survey, 2004</b>			
<i>Level of effort</i> <i>Change in effort</i>	<i>Actual receipt of PRP</i>		
<i>Employee beliefs</i>	<i>No</i>	<i>Yes</i>	<i>Total</i>
Not important	685 (93.32%) 507 (90.05%)	49 (6.68%) 56 (9.95%)	734 (100%) 563 (100%)
Important	2429 (76.03%) 2607 (77.45%)	766 (23.97%) 759 (22.55%)	3195 (100%) 3366 (100%)
<b>Total</b>	3114 (79.26%)	815 (20.74%)	3929 (100%)
Notes: Employee beliefs about the ‘importance’ of PRP for job effort generated by a probit model with dependent binary variable: 1 if workers rank the effectiveness of PRP highly (scores 4 or 5), 0 otherwise (see Table A5). Respondents with predicted probability above 0.5 are regarded as workers who “ought” to be paid with PRP to be productive.			

<b>Table A1: Ranking of incentive alternatives in terms of perceived importance for level and change in employee effort by country, EPICURUS survey, 2004</b>						
<i>Level of effort</i>						
<i>Denmark</i>	<i>Finland</i>	<i>France</i>	<i>Greece</i>	<i>Netherlands</i>	<i>UK</i>	<i>Spain</i>
own discretion	own discretion	own discretion	supervisor/ boss	own discretion	own discretion	own discretion
colleagues	clients/ customers	pay incentives	own discretion	colleagues	colleagues	clients/ customers
clients/ customers	colleagues	clients/ customers	pay incentives	clients/ customers	clients/ customers	colleagues
supervisor/ boss	pay incentives	reports/ appraisals	reports/ appraisals	pay incentives	pay incentives	pay incentives
pay incentives	supervisor/ boss	colleagues	clients/ customers	supervisor/ boss	supervisor/ boss	reports/ appraisals
-----	reports/ appraisals	supervisor/ boss	colleagues	reports/ appraisals	reports/ appraisals	supervisor/ boss
assembly line	assembly line	assembly line	assembly line	assembly line	assembly line	assembly line
<i>Change in effort</i>						
pay incentives	paid more than s.q.w	pay incentives	peer opinion	peer opinion	pay incentives	pay incentives
paid more than s.q.w	pay incentives	paid more than s.q.w	risk of losing job-	paid more than s.q.w	paid more than s.q.w	paid more than s.q.w
closer contact clients	peer opinion	reports/ appraisals	pay incentives	pay incentives	peer opinion	peer opinion
risk of losing job	closer contact clients	risk of losing job	reports/ appraisals	closer contact clients	risk of losing job	closer contact clients
reports/ appraisals	risk of losing job	closer contact clients	closer contact clients	reports/ appraisals	reports/ appraisals	risk of losing job

peer opinion	reports/ appraisals	peer opinion	strict supervision	risk of losing job	closer contact clients	reports/ appraisals
speed up assembly line	strict supervision	strict supervision	speed up assembly line	strict supervision	strict supervision	strict supervision
strict supervision	speed up assembly line	speed up assembly line	paid more than s.q.w	speed up assembly line	speed up assembly line	speed up assembly line
<i>Notes:</i> Ranking as predicted by a ROL model.						

**Table A4A: SNP Estimates of Perceived Effectiveness of Incentive Options for Level of Effort, EPICURUS survey, 2004**

	PPR	Discretion	Fellow	Client	Super	Appraisal	Assembly
<i>Demograph.</i> Male	-0.099***	-0.031	-0.012	-0.030	-0.175***	-0.229***	0.148***
	(0.038)	(0.035)	(0.033)	(0.054)	(0.039)	(0.044)	(0.047)
Agegroup: 40-65	-0.001	0.131***	-0.118***	0.128*	-0.168***	-0.022	0.041
	(0.044)	(0.040)	(0.037)	(0.077)	(0.042)	(0.040)	(0.050)
Education: > upper secondary	-0.091*	-0.049	-0.011	0.043	-0.055	-0.124***	-0.038
	(0.048)	(0.049)	(0.044)	(0.068)	(0.050)	(0.046)	(0.056)
<i>Job-related</i> ln(Weekly Hours)	0.282***	0.183***	0.014	0.177*	-0.083	0.197***	-0.043
	(0.042)	(0.065)	(0.041)	(0.097)	(0.052)	(0.048)	(0.084)
ln(Pay)	-0.023	0.018	-0.022	-0.185***	-0.080**	-0.016	-0.031
	(0.042)	(0.041)	(0.033)	(0.053)	(0.038)	(0.037)	(0.051)
Promotion	0.061	0.077**	0.062*	0.149**	0.144***	0.248***	0.063
	(0.039)	(0.037)	(0.036)	(0.068)	(0.041)	(0.047)	(0.049)
Trade Union	-0.030	0.052	0.032	0.081	0.114**	0.057	0.136**
	(0.044)	(0.044)	(0.038)	(0.069)	(0.045)	(0.043)	(0.054)
Clock/sign	0.087*	0.067	-0.029	-0.042	0.037	0.030	0.259***
	(0.047)	(0.044)	(0.040)	(0.102)	(0.046)	(0.041)	(0.052)
<i>Sector</i> - Non-profit	-0.163**	0.059	0.228***	-0.121	-0.007	0.035	-0.168
	(0.079)	(0.081)	(0.069)	(0.118)	(0.082)	(0.073)	(0.116)
- Civil Servant	-0.247***	-0.111*	0.131**	-0.134	0.007	-0.007	-0.088
	(0.064)	(0.059)	(0.057)	(0.089)	(0.062)	(0.062)	(0.081)
- Public	-0.075	-0.021	0.068	0.012	-0.061	0.014	-0.046
	(0.058)	(0.055)	(0.050)	(0.085)	(0.057)	(0.052)	(0.072)
<i>Firm Size</i> - 10-24	0.123*	-0.037	0.070	-0.208**	0.009	0.049	-0.008
	(0.064)	(0.053)	(0.055)	(0.088)	(0.065)	(0.058)	(0.074)
- 25-99	0.071	-0.055	0.164***	-0.459***	0.117*	0.091	0.119*
	(0.061)	(0.059)	(0.053)	(0.110)	(0.061)	(0.057)	(0.070)
- 100-499	0.068	-0.038	0.075	-0.571***	-0.008	0.070	0.131*
	(0.062)	(0.065)	(0.053)	(0.136)	(0.064)	(0.060)	(0.073)
- > 500	0.108*	-0.026	0.083	-0.524***	0.122*	0.098	0.035
	(0.063)	(0.063)	(0.056)	(0.127)	(0.068)	(0.064)	(0.079)

<i>Job security</i> Permanent	0.125**	0.097*	0.011	0.071	-0.033	0.061	0.021
	(0.062)	(0.057)	(0.047)	(0.080)	(0.057)	(0.055)	(0.066)
U last year	0.101	0.049	0.024	-0.024	0.010	0.040	0.039
	(0.068)	(0.064)	(0.055)	(0.105)	(0.066)	(0.058)	(0.074)
Turnover: Probable	0.038	0.017	-0.061*	-0.054	0.044	0.036	-0.018
	(0.036)	(0.035)	(0.032)	(0.055)	(0.037)	(0.035)	(0.045)
<i>Teams</i> - Rotating	0.021	0.065	0.060	0.065	-0.011	0.069	0.138**
	(0.050)	(0.046)	(0.044)	(0.078)	(0.050)	(0.049)	(0.061)
- Alone	0.022	0.113**	-0.431***	0.040	-0.204***	-0.083	-0.115*
	(0.050)	(0.049)	(0.059)	(0.100)	(0.054)	(0.051)	(0.062)
<i>Tasks</i> - Variety of duties	-0.080*	0.252***	-0.027	0.013	0.008	0.097**	-0.095*
	(0.049)	(0.055)	(0.041)	(0.066)	(0.049)	(0.047)	(0.056)
- Autonomy	-0.138*	0.332***	-0.106	0.097	-0.292***	-0.051	-0.161
	(0.082)	(0.101)	(0.068)	(0.121)	(0.086)	(0.081)	(0.106)
<i>Repetitive</i> - Sometimes	-0.124***	0.065	0.019	-0.064	-0.045	-0.075*	-0.140***
	(0.045)	(0.047)	(0.038)	(0.109)	(0.044)	(0.043)	(0.053)
- No	-0.155**	0.166***	-0.028	-0.015	-0.100	-0.197***	-0.248***
	(0.063)	(0.063)	(0.055)	(0.117)	(0.063)	(0.068)	(0.078)
<i>Industry</i> Wholesale/ retail	0.132*	0.049	0.030	0.517**	0.013	0.019	-0.531***
	(0.068)	(0.064)	(0.053)	(0.210)	(0.070)	(0.063)	(0.077)
- Services	0.041	0.059	0.021	0.333**	-0.054	0.036	-0.436***
	(0.054)	(0.056)	(0.045)	(0.147)	(0.057)	(0.054)	(0.066)
- Public admin/educ/ health	0.009	0.115	0.027	0.169	-0.008	-0.010	-0.536***
	(0.076)	(0.071)	(0.061)	(0.122)	(0.071)	(0.068)	(0.087)
- Other	-0.003	0.057	0.021	0.178*	-0.018	-0.044	-0.322***
	(0.066)	(0.062)	(0.054)	(0.105)	(0.065)	(0.061)	(0.076)
<i>Relations</i> Good with co-workers	-0.016	0.024	0.202***	0.108	-0.050	0.023	-0.017
	(0.041)	(0.042)	(0.036)	(0.075)	(0.044)	(0.041)	(0.054)
Bad with supervisor	0.140**	0.078	0.029	-0.028	-0.167*	-0.033	-0.014
	(0.071)	(0.074)	(0.067)	(0.106)	(0.101)	(0.075)	(0.095)
<i>Incentives</i> - Merit pay	0.102	0.099	-0.058	0.441***	0.041	0.180***	-0.005
	(0.067)	(0.063)	(0.056)	(0.124)	(0.071)	(0.066)	(0.087)
- End of year Bonus	0.145***	0.061	0.004	0.006	0.015	0.053	-0.041
	(0.052)	(0.044)	(0.036)	(0.059)	(0.045)	(0.042)	(0.056)
- Extra pay: bonuses/ options	0.135**	0.056	0.030	0.028	0.043	0.020	-0.008
	(0.053)	(0.045)	(0.040)	(0.063)	(0.048)	(0.044)	(0.058)
<i>Relative Pay</i>	-0.197***	-0.081**	0.014	0.031	-0.085**	0.037	-0.024

- Same							
	(0.054)	(0.037)	(0.036)	(0.068)	(0.043)	(0.039)	(0.050)
- More	-0.225***	-0.024	-0.038	0.126*	-0.030	0.012	0.013
	(0.063)	(0.053)	(0.047)	(0.075)	(0.055)	(0.053)	(0.065)
Country - Denmark	-0.126*	0.310***	0.326***	0.507***	0.651***	NA	-0.187*
	(0.073)	(0.070)	(0.066)	(0.185)	(0.075)	NA	(0.099)
- France	0.284***	0.128*	-0.474***	0.203	0.069	0.195***	0.651***
	(0.070)	(0.074)	(0.064)	(0.220)	(0.065)	(0.073)	(0.104)
- Greece	0.233**	-0.035	-0.512***	-0.354**	0.833***	-0.602***	-0.548***
	(0.108)	(0.079)	(0.072)	(0.142)	(0.080)	(0.094)	(0.099)
- Holland	-0.332***	0.032	0.192***	-0.086	0.033	-0.454***	-0.317***
	(0.064)	(0.060)	(0.055)	(0.085)	(0.062)	(0.092)	(0.117)
- Spain	-0.141	-0.157*	-0.366***	-0.261*	-0.182**	-0.802***	-0.201*
	(0.090)	(0.083)	(0.080)	(0.135)	(0.091)	(0.121)	(0.115)
- Finland	-0.078	0.435***	-0.031	0.252	0.219**	-0.444***	-0.616***
	(0.090)	(0.098)	(0.080)	(0.161)	(0.092)	(0.074)	(0.097)
N	3792	3883	3898	3802	3888	3125	3169
Wald chi2(42)	213.98***	121.18***	337.22***	55.86*	394.76***	108.90***	853.63***
LR test OP vs. SNP $\chi^2(1)$	55.22***	7.16***	46.57***	0.84	9.62***	47.55***	43.52***
Notes: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; <b>Reference groups:</b> Agegroup: 18-39; Education: Below upper secondary; Sector: Private; Firm Size: < 10; Teams: Same people; Tasks: Fixed routines; Repetitive: Yes; Industry: Manufacturing; Relative Pay: Less; Country: UK.							

**Table A4B: SNP Estimates of Perceived Effectiveness of Incentive Options for Changes in Effort, EPICURUS survey, 2004**

	PRP	Akerlof	Risk	Fellow	Clients	Appraisal	Super	Assembly
Demograp. Male	-0.021	-0.086**	-0.092***	0.014	-0.035	-0.203***	0.023	0.166***
	(0.034)	(0.034)	(0.035)	(0.038)	(0.040)	(0.041)	(0.046)	(0.046)
Agegroup: 40-65	-0.145***	-0.151***	-0.062	-0.070*	0.057	-0.055	-0.135***	-0.049
	(0.038)	(0.038)	(0.043)	(0.042)	(0.044)	(0.047)	(0.051)	(0.049)
Education: > upper second.	-0.119***	-0.030	0.003	-0.008	-0.051	-0.107*	-0.040	-0.025
	(0.043)	(0.042)	(0.045)	(0.049)	(0.051)	(0.055)	(0.057)	(0.055)
Job-related ln(Weekly Hours)	0.216***	0.257***	0.210***	-0.092*	0.162***	0.153***	0.017	0.081
	(0.053)	(0.044)	(0.081)	(0.052)	(0.056)	(0.048)	(0.058)	(0.080)
ln(Pay)	-0.060	-0.087**	-0.119***	-0.079*	-0.075	-0.036	-0.113**	-0.105**
	(0.037)	(0.038)	(0.042)	(0.041)	(0.048)	(0.045)	(0.046)	(0.048)
Promotion	0.058	0.088**	0.022	0.064	0.136**	0.224***	0.034	0.089*
	(0.036)	(0.036)	(0.035)	(0.040)	(0.054)	(0.044)	(0.047)	(0.049)
Trade Union	-0.084**	0.052	-0.010	-0.024	0.074	0.001	-0.053	0.045
	(0.040)	(0.040)	(0.042)	(0.045)	(0.051)	(0.050)	(0.053)	(0.055)
Clock/sign	0.031	0.097**	-0.018	-0.017	0.054	-0.001	-0.024	0.160***



	(0.042)	(0.041)	(0.041)	(0.045)	(0.048)	(0.050)	(0.054)	(0.052)
<i>Sector</i> - Nonprofit	-0.264***	-0.156**	0.060	0.061	0.078	-0.075	-0.016	-0.075
	(0.077)	(0.079)	(0.070)	(0.080)	(0.092)	(0.083)	(0.098)	(0.109)
- Civil Servant	-0.079	-0.065	-0.012	0.052	0.008	-0.076	0.066	-0.066
	(0.057)	(0.057)	(0.069)	(0.067)	(0.067)	(0.072)	(0.077)	(0.078)
- Public	-0.039	-0.039	-0.007	0.017	0.043	0.040	-0.067	0.029
	(0.052)	(0.053)	(0.054)	(0.056)	(0.062)	(0.066)	(0.070)	(0.072)
<i>Firm Size:</i> - 10-24	0.181***	0.139**	0.108*	0.020	-0.155**	0.077	0.070	-0.031
	(0.053)	(0.056)	(0.055)	(0.065)	(0.074)	(0.070)	(0.073)	(0.073)
- 25-99	0.166***	0.091*	0.031	0.048	-0.308***	0.208***	0.200***	0.104
	(0.055)	(0.053)	(0.052)	(0.061)	(0.104)	(0.066)	(0.072)	(0.070)
- 100-499	0.195***	0.090	0.113**	0.042	-0.408***	0.167**	0.084	0.066
	(0.056)	(0.057)	(0.057)	(0.063)	(0.121)	(0.069)	(0.073)	(0.073)
- > 500	0.166***	0.063	0.122**	0.050	-0.352***	0.202***	0.133*	0.095
	(0.058)	(0.058)	(0.059)	(0.066)	(0.113)	(0.072)	(0.076)	(0.077)
<i>Job security</i> Permanent	0.129***	0.059	-0.082	-0.017	0.053	-0.024	-0.037	0.013
	(0.050)	(0.051)	(0.050)	(0.053)	(0.060)	(0.060)	(0.068)	(0.065)
Turnover: Probable	0.031	0.118***	-0.115***	-0.020	-0.038	-0.001	-0.029	0.005
	(0.033)	(0.033)	(0.034)	(0.037)	(0.043)	(0.041)	(0.044)	(0.044)
U last year	0.067	-0.037	0.056	0.025	0.096	0.139**	0.142*	0.045
	(0.058)	(0.057)	(0.058)	(0.062)	(0.073)	(0.068)	(0.081)	(0.073)
<i>Teams</i> - Rotating	0.008	0.065	0.006	0.124**	0.041	0.085	0.038	0.060
	(0.045)	(0.044)	(0.043)	(0.051)	(0.061)	(0.056)	(0.061)	(0.061)
- Alone	-0.028	0.066	-0.083	-0.265***	0.059	-0.034	-0.296***	-0.187***
	(0.045)	(0.047)	(0.055)	(0.050)	(0.067)	(0.062)	(0.063)	(0.062)
<i>Tasks:</i> - Variety of duties	-0.076*	-0.169***	-0.008	0.075	0.111**	0.058	0.028	-0.006
	(0.042)	(0.046)	(0.044)	(0.050)	(0.051)	(0.055)	(0.056)	(0.055)
-Autonomy	-0.137*	-0.106	-0.106	-0.068	0.231**	-0.103	-0.210**	-0.123
	(0.077)	(0.080)	(0.088)	(0.086)	(0.091)	(0.099)	(0.104)	(0.098)
<i>Repetitive</i> Sometimes	-0.055	-0.136***	-0.122***	-0.085*	-0.047	-0.097*	-0.129**	-0.153***
	(0.040)	(0.040)	(0.039)	(0.045)	(0.046)	(0.054)	(0.054)	(0.052)
No	-0.170***	-0.243***	-0.231***	-0.077	-0.053	-0.143**	-0.240***	-0.317***
	(0.056)	(0.059)	(0.061)	(0.063)	(0.067)	(0.072)	(0.078)	(0.078)
<i>Industry</i> Wholesale/ retail	0.017	-0.004	-0.009	0.066	0.260***	-0.101	-0.002	-0.364***
	(0.063)	(0.059)	(0.060)	(0.066)	(0.074)	(0.073)	(0.080)	(0.079)
- Services	-0.045	-0.020	0.028	0.028	0.201***	-0.073	-0.038	-0.298***
	(0.049)	(0.051)	(0.052)	(0.056)	(0.065)	(0.062)	(0.067)	(0.066)
- Public admin/edu/ health	-0.005	0.059	0.010	0.004	0.248***	0.025	-0.049	-0.433***
	(0.063)	(0.065)	(0.071)	(0.073)	(0.077)	(0.080)	(0.086)	(0.085)
Other	-0.058	-0.068	0.034	0.067	0.129*	-0.183***	-0.137*	-0.275***
	(0.057)	(0.059)	(0.060)	(0.064)	(0.074)	(0.070)	(0.076)	(0.076)
<i>Relations</i> Good with co-workers	-0.082**	-0.002	0.004	0.212***	0.072	-0.025	-0.153***	0.091*
	(0.039)	(0.040)	(0.040)	(0.043)	(0.047)	(0.048)	(0.053)	(0.055)
Bad with supervisor	0.078	0.168**	-0.170**	-0.071	0.112	-0.053	-0.125	-0.047

	(0.070)	(0.072)	(0.069)	(0.075)	(0.088)	(0.087)	(0.092)	(0.091)
<i>Incentives</i> - Merit pay	0.125**	0.048	0.067	0.028	0.249***	0.263***	0.042	-0.062
	(0.060)	(0.061)	(0.065)	(0.069)	(0.084)	(0.076)	(0.087)	(0.084)
- End of year Bonus	0.063	0.000	0.048	0.019	0.065	0.059	-0.008	-0.000
	(0.041)	(0.042)	(0.043)	(0.044)	(0.058)	(0.047)	(0.054)	(0.055)
- Extra pay: bonus/ options	-0.002	-0.034	0.009	0.049	0.041	0.043	0.077	-0.021
	(0.042)	(0.044)	(0.046)	(0.046)	(0.050)	(0.051)	(0.056)	(0.056)
<i>Relative Pay</i> - Same	-0.104***	-0.204***	0.050	-0.025	0.026	0.104**	0.085*	0.016
	(0.038)	(0.038)	(0.038)	(0.042)	(0.045)	(0.046)	(0.049)	(0.049)
- More	-0.119**	-0.228***	0.178***	0.006	0.145**	0.137**	0.039	0.078
	(0.048)	(0.049)	(0.052)	(0.054)	(0.060)	(0.059)	(0.065)	(0.065)
<i>Country</i> - Denmark	-0.470***	-0.321***	-0.006	-0.755***	0.384***	-0.509***	-0.340***	0.204**
	(0.071)	(0.071)	(0.065)	(0.072)	(0.104)	(0.085)	(0.090)	(0.098)
- France	-0.082	0.250***	0.280***	-0.398***	0.441***	0.506***	0.538***	0.097
	(0.064)	(0.064)	(0.075)	(0.063)	(0.088)	(0.069)	(0.093)	(0.073)
- Greece	-0.306***	-1.213***	0.653***	1.134***	0.351***	0.959***	1.247***	1.108***
	(0.065)	(0.074)	(0.086)	(0.085)	(0.095)	(0.092)	(0.117)	(0.081)
- Holland	-0.744***	-0.389***	-0.144**	0.139**	-0.036	-0.250***	-0.177**	-0.291***
	(0.071)	(0.058)	(0.062)	(0.059)	(0.062)	(0.074)	(0.076)	(0.079)
- Spain	-0.258***	-0.182*	-0.157	-0.021	0.283***	-0.097	0.333***	0.085
	(0.088)	(0.095)	(0.116)	(0.090)	(0.106)	(0.100)	(0.106)	(0.099)
- Finland	-0.542***	-0.017	-0.365***	-0.426***	-0.154	-0.689***	-0.113	-0.023
	(0.085)	(0.087)	(0.080)	(0.088)	(0.125)	(0.115)	(0.107)	(0.106)
N	3806	3799	3812	3829	3748	3792	3793	3089
Wald chi2(42)	421.51***	718.27***	395.70***	823.33**	192.93***	393.55***	208.76***	776.93***
LR test OP vs. SNP $\chi^2(1)$	19.24***	177.42***	11.99***	8.19***	28.23***	30.37***	8.22***	9.56***

*Notes:* Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1; **Reference groups:** Agegroup: 18-39; Education: Below upper secondary; Sector: Private; Firm Size: < 10; Teams: Same people; Tasks: Fixed routines; Repetitive: Yes; Industry: Manufacturing; Relative Pay: Less; Country: UK.

<b>Table A5 Probit model of effectiveness of 'pay incentives' option</b>		
	<i>Coeff.</i>	<i>Marginal Effect</i>
<i>Demographic</i>		
Male	-0.018	-0.006
	(0.047)	(0.017)
Agegroup: 40-65	-0.200***	-0.071***
	(0.050)	(0.018)
Education: > upper secondary	-0.102*	-0.035*
	(0.057)	(0.019)
<i>Job related: ln(Weekly Hours)</i>	0.280***	0.098***
	(0.078)	(0.027)
Ln(Pay)	-0.003	-0.001
	(0.051)	(0.018)
Promotion	0.081	0.028
	(0.051)	(0.017)
Trade union	-0.060	-0.021
	(0.057)	(0.020)
Clocking/signing-in	0.034	0.012
	(0.059)	(0.020)
Sector: Non-profit	-0.309***	-0.114***
	(0.104)	(0.040)
- Civil service	-0.091	-0.032

	(0.079)	(0.028)
- Public Company	-0.023	-0.008
	(0.077)	(0.027)
Firm Size: 10-24	0.191**	0.064***
	(0.077)	(0.025)
- 25-99	0.158**	0.054**
	(0.074)	(0.024)
- 100-499	0.218***	0.073***
	(0.076)	(0.025)
- > 500	0.123	0.042
	(0.079)	(0.027)
Job security: Permanent contract	0.173***	0.062**
	(0.066)	(0.024)
- Turnover: Probable	-0.003	-0.001
	(0.046)	(0.016)
- U last year	0.115	0.039
	(0.081)	(0.027)
Teams: Rotating	-0.011	-0.004
	(0.065)	(0.023)
- Alone	-0.092	-0.033
	(0.061)	(0.022)
Tasks: Variety of duties	-0.108*	-0.037*
	(0.061)	(0.021)
- Autonomy	-0.259***	-0.095**
	(0.098)	(0.037)
Repetitive: Sometimes	-0.016	-0.006
	(0.056)	(0.020)
- No	-0.201***	-0.072***
	(0.074)	(0.028)
Industry: Wholesale/retail	-0.093	-0.033
	(0.087)	(0.031)
- Services	-0.061	-0.021
	(0.074)	(0.026)
- Public admin/educ/health	-0.043	-0.015
	(0.092)	(0.032)
- Other	-0.108	-0.038
	(0.084)	(0.030)
Relationships: Good with co-workers	-0.092*	-0.032*
	(0.056)	(0.019)
Bad with supervisor	0.077	0.026
	(0.094)	(0.032)
Relative Pay: Same	-0.114**	-0.040**
	(0.052)	(0.018)
- More	-0.113*	-0.040*
	(0.067)	(0.024)
Country: Denmark	-0.741***	-0.279***
	(0.092)	(0.035)
- France	-0.378***	-0.139***
	(0.083)	(0.031)
- Greece	-0.418***	-0.155***
	(0.094)	(0.036)
- Netherlands	-0.967***	-0.364***
	(0.083)	(0.031)
- Spain	-0.426***	-0.160***
	(0.112)	(0.044)
- Finland	-0.724***	-0.277***
	(0.112)	(0.044)
Constant	0.249	
	(0.324)	
N	3806	3806
R <sup>2</sup>	0.09	0.09
<i>Notes:</i> Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; <b>Reference groups:</b> Agegroup: 18-39; Education: Below upper secondary; Sector: Private; Firm Size: < 10; Teams: Same people; Tasks complexity: Fixed routines; Repetitive: Yes; Industry: Manufacturing; Relative Pay: Less; Country: UK.		

## Endnotes

---

1 In designing the questionnaire we were constrained by the need to strike a balance between retaining a parsimonious set of incentive options, on the one hand, which would enhance the response reliability of the respondents, and allowing for the necessary complexity that provides behavioural realism, on the other. Therefore, and given that the sample includes workers who are mostly employed in the secondary sector of the labour market, the chosen options do not encapsulate the entirety of motivating mechanisms that have been discussed in the literature, and specifically those mostly associated with white-collar jobs (e.g. promotions, career concerns etc.).

2 The former emphasizes the importance of management rewarding performance via rewards that are valued by the employees, while the latter focuses on worker reactions that aim to restore equity perceptions whenever inequitable output-input outcomes relative to a comparator group emerge.

3 This entailed having the text of the survey translated into each country's language by native speakers, so as to avoid any inconsistencies in terminology. The members were invited by e-mail to answer the questionnaire, and within this large population respondents were screened through their answers to the first five questions. Each member of the panel that did not fulfil the criteria of stratification was then forced to stop answering the questionnaire and was thanked for their cooperation.

4 We have also estimated an ordered probit model which controls for the effect of individual and current job characteristics on the workers' stated effort choices, and which includes country-dummies that take into consideration potential cultural or institutional differences on reward preferences (available from the authors upon request). The rankings of the ROL model of Table 3 remain largely unaffected.

5 This estimator is available from the econometric software STATA in the form of the command 'sneop'.

6 The results are robust to small fluctuations in the cut-off value. The estimates of the probit model of the perceived effectiveness of the PRP option are available in the Appendix (Table A5).

7 A similar methodology is used by Belfield and Marsden (2003), who examine the potential mismatch between the predicted and actual usage of PRP systems by workplaces on the basis of their monitoring environments.

8 It is acknowledged that the unconventional results found for Greece may be attributed to the different data collection mode (face-to-face surveys) as opposed to the Internet questionnaire used in the other countries. Nevertheless, it needs to be pointed out that all necessary efforts were made to make the Greek interviewing process as comparable as possible to the remaining countries. One also needs to take into account the important dissimilarities between the Greek economy and the rest of the EU (e.g. high share of agricultural and public sector employment and a disproportionate share of self-employment within small or medium-sized firms).