



## Profit sharing and the quality of relations with the boss

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### ABSTRACT

Profit sharing generates conflicting changes in the relationship between supervisors and workers. It may increase cooperation and helping effort. At the same time it can increase direct monitoring and pressure by the supervisor, and mutual monitoring and peer pressure from other workers that is transmitted through the supervisor. Using UK data on satisfaction with the boss, we show in both cross-section and panel estimates that workers under profit sharing tend to have lower satisfaction with their supervisor. This result persists even as profit sharing has no or a positive influence on other dimensions of job satisfaction. Additional estimates show that lower satisfaction with the supervisor is largely generated by women, who may be less able to respond to peer pressure, and by non-union workers, who may have more to lose by failing to respond to peer pressure.

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### 1. Introduction

Profit sharing has been identified with a range of positive economic outcomes including increased firm productivity, innovation and profits, reduced worker turnover and increased worker training (Kruse, 1992; Bhargava, 1994; Azfar and Danninger, 2001; Green and Heywood, forthcoming-a; Harden et al., 2008). Most of these outcomes have at their base theoretical conjectures about how profit sharing changes the relationships between co-workers and between workers and the firm. Without these changes, the potential for increased worker effort and productivity remains limited by the strong incentive for free-riding. One view of these changes claims that profit sharing increases cooperation between colleagues and between workers and management in a repeated game (Weitzman and Kruse, 1990; McNabb and Whitfield, 1998; Pendelton, 2006). An alternative view emphasizes that profit sharing generates mutual monitoring and peer pressure (Kandel and Lazear, 1992; Freeman et al., 2010). The role of the supervisor emerges as key in this second view. Profit sharing enhances both the ability and the

incentive for supervisors to monitor and punish workers in order to reduce shirking (Heywood et al., 2005b). Moreover, much of the mutual monitoring between co-workers takes place through the reporting of shirking to supervisors (Freeman et al., 2010). In this second view, while profit sharing may change relationships between supervisors and workers to increase effort, the resulting increase in monitoring may nonetheless decrease workers' utility or, at the minimum, worsen relationships with the supervisor.

We use the British Household Panel Survey (BHPS) to examine the influence of whether or not an individual worker receives profit sharing on his or her relationship with the supervisor or boss. While recognizing that profit sharing has many aspects and may influence overall workers' utility, we are interested in the utility flowing from this relationship. Thus, we focus on a specific measure of how satisfied workers are with their immediate boss. We confirm that individual workers receiving profit sharing report lower satisfaction with the boss than do workers not receiving profit sharing. Moreover, workers receiving profit sharing report less emphasis on the importance of getting along with their boss and greater stress at work. Yet, this deterioration in relations with the supervisor does not reflect a diminution in overall job satisfaction and is specific to the relationship with the boss. Profit sharing has a neutral or positive influence on all of the other available dimensions of job satisfaction over the time period investigated. Moreover, the negative influence of profit sharing on relations with the boss

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persists when directly controlling for the worker's overall job satisfaction and when exploiting the panel data to control for sorting and worker specific fixed effects.

We also identify strong patterns within the general finding. Estimating the equation separately by gender reveals that women disproportionately generate the negative relationship between profit sharing and relations with the supervisor. This difference confirms earlier cross-sectional estimates in Germany and is consistent with the contention that women may be less able to respond to peer pressure because of greater commitments outside of work. Unionisation also plays a key role. While profit sharing is associated with poorer relations with supervisors for non-union members, it is actually associated with improved relations for union members. As we discuss, unions may limit the ability of the boss to pressure workers or may be instrumental in creating successful profit sharing agreements.

The finding that profit sharing diminishes satisfaction with the supervisor supports the view that profit sharing increases the incentive for monitoring by the supervisor and for mutual monitoring that likely involves the supervisor. Apart from this major implication, the evidence on satisfaction with the boss is of interest in its own right as the industrial psychology literature has long seen it as particularly important in predicting worker productivity (Yammarino and Dubinsky, 1987) and turnover (DeConninck, 2009). Among economists Clark (2001) finds a significant role for satisfaction with the supervisor in predicting turnover but one that does not persist when seven other facets of satisfaction are entered. Delfgauw (2007) finds that low satisfaction with management plays a significant role in workers' decisions to search for a job outside the current organization even given many other facets of satisfaction while Cornellissen (2009) links the quality of relations with supervisors to both job search and eventual turnover.

In what follows, the next section isolates the potential contradictory influences of profit sharing on relations with co-workers and, in more detail, with the boss. The third section introduces our data and methodology while the fourth section presents the critical estimations. A final section concludes and makes suggestions for further research.

## 2. Profit sharing and supervisory pressure

At its core profit sharing seeks to alleviate agency problems by more closely aligning worker and firm interests. For instance, in a survey of US firms, Kruse (1993) reports that the most prevalent reason given by managers for providing profit sharing is to motivate workers. Yet, profit sharing remains potentially problematic as the limited liability constraint (rewarding workers for firm profits but not punishing them for losses) can encourage strategies that increase profit in the short term at the cost of lower overall performance (Oyer, 2000). More generally, the alignment of interest may simply not motivate workers as each worker faces an incentive to free-ride on the effort of others. Except in the case of strong production complementarities between workers (Adams, 2006), individual workers recognize that only  $1/N$  of their productivity increase will be returned to them through profit sharing and will under supply effort.<sup>1</sup> Yet, this simple conclusion fails to recognize that profit sharing creates an incentive for each worker to influence the productivity of their co-workers. This incentive can change group norms. On the one hand, it can encourage increased cooperation and helping on-the-job (see the evidence presented by Drago and Garvey, 1998). On the other hand, it also encourages mutual monitoring and peer pressure to reduce shirking (Kandel

and Lazear, 1992). While both of these may increase productivity, they can have very different influences on worker utility.<sup>2</sup>

At first thought both helping on-the-job and mutual monitoring represent workers taking on responsibilities previously done only by managers. Certainly the basic managerial function of monitoring effort is replaced, in part, by horizontal monitoring by co-workers. Workers are often in a better position than managers to monitor effort. As workers conduct their activities, they gain knowledge about the productivity of their co-workers and profit sharing creates an incentive to act on this knowledge. Much of the emphasis in the literature is on the creation of peer pressure. Kandel and Lazear (1992) discuss examples including internal pressure by guilt and external pressure by shame, ostracism and even physical punishment when a worker is caught shirking by his co-workers. The case study of Continental Airlines by Knez and Simester (2001) identify both a high incidence of mutual monitoring of absence and of peer pressure induced by the company's profit sharing plan. More generally, survey data used by Freeman et al. (2010) reveal that most workers can detect shirking among co-workers and that profit sharing (group incentive) schemes are associated with a significantly larger likelihood of taking action against those shirking.

Less explicit in this story of horizontal monitoring and enforcement is the important role of the supervisor. The survey data make clear that the most likely response to observing shirking is to report it to the supervisor (Freeman et al., 2010). Profit sharing creates an incentive to provide information to supervisors that would otherwise be absent or only available at higher cost. Moreover, not only does the supervisor have better information on worker shirking because of profit sharing, she also has an increased incentive to use this information by putting pressure on shirkers to perform. This incentive is at least two-fold. First, the workers themselves have an incentive to pressure the supervisor to deal with shirkers. Thus, the label 'horizontal monitoring' does not necessarily mean that the resulting pressure on those shirking comes directly from co-workers. Second, most profit sharing arrangements include the immediate supervisor who, as a consequence, has a large financial incentive to pressure shirkers. Indeed, the unique tools of a supervisory position suggest that the effectiveness of such pressure may be particularly effective. For instance, Freeman et al. (2010) show an increased willingness to act against shirkers in order to raise group earnings as one gets higher in the firm hierarchy.

Thus, profit sharing should be anticipated to result in increased monitoring and pressure from the boss. This reflects the improved information and pressure provided by horizontal monitoring (through the interaction of the workers with the boss) and the increased financial incentive for the boss to pressure shirkers. With this anticipation, a critical point is that made by Kandel and Lazear (1992, p. 805): "While pressure guarantees higher effort, it does not guarantee higher utility because the pressure itself is borne by all members of the firm." Barron and Gjerde (1997) go further arguing that some firms may reduce the intensity of profit sharing or eliminate it altogether because the disutility imposed by monitoring and peer pressure violates the participation constraint. In essence, the individually rational worker engages in too much peer pressure because the disutility that his or her peer pressure imposes on others is not internalised. As much of this pressure may be channelled through the supervisor, profit sharing may cause workers to dislike or resent their supervisor even as it causes them to exert more effort.

Moreover, even as profit sharing increases effort, the increased monitoring and pressure may crowd-out cooperation and trust within the firm (Orr, 2001). In this view profit sharing creates a 'suspicion effect' in which workers suspect that co-workers and the boss provide effort and help not for intrinsic reasons but simply to avoid monitoring and

<sup>1</sup> An example of such complementarities would be "weakest-link" technology in which the productivity of the least productive worker determines the productivity of the workplace.

<sup>2</sup> Such changes in norms need not always increase profit. Workers may value helping for its own sake and help "too much" or they may punish shirkers through sabotage or other counterproductive methods.

pressure. This may reduce the utility that the workers receive from their relationships with their boss.

We recognize that profit sharing changes many dimensions of employment and certainly do not suggest they will all be negative. Again, the net influence of profit sharing may be to increase utility but our primary interest is the utility derived from the relationship between workers and their boss. Even here profit sharing may have positive influences. [Drago and Turnbull \(1988\)](#) demonstrate that profit sharing provides incentives for helping on-the-job since each worker's income depends, in part, on the output of co-workers. Indeed, empirical work by [Drago and Garvey \(1998\)](#) shows an increased willingness of workers to share tools under profit sharing. Moreover, [Rotenberg \(1994\)](#) emphasises the close connection between such cooperation and the utility one gets from interacting with co-workers. [Bandiera et al. \(2005\)](#) add the element of social relations within the workplace showing evidence that workers are more likely to internalize externalities associated with incentive schemes when they work with close friends. Similar reasoning applies to relations with the supervisors. Profit sharing may lead to more helping of workers by the supervisor, improved relationships and higher utility. In this view cooperation may be beneficial and add to utility regardless of the motivation.

Profit sharing may also influence how fairly supervisors treat workers. [Prendergast and Topel \(1993\)](#) argue that favouritism is more likely when supervisors are not the residual claimants of workers' outputs. [Laffont \(1990\)](#) shows that the supervisor's incentive to engage in hidden gaming and favouritism is reduced if the supervisor receives a profit share. These results follow from the observation that if a supervisor's remuneration is dependent on worker output this increases the cost of 'incorrectly' rewarding relatively poor performing subordinates. Certainly, empirical work by [Bandiera et al. \(2009\)](#) show that when supervisors are paid fixed wages, they favour those subordinates who are friends. Performance bonuses (including perhaps those tied to profit sharing) are shown to reduce such favouritism. Insofar as favouritism and other unfair treatment increases conflict, it would be expected that profit sharing should increase worker satisfaction with their superiors.

Overall, theory provides an ambiguous answer to how profit sharing should influence the satisfaction of workers with their supervisors. The few studies that have directly examined this provide little consensus either. As part of a more general study of the relationship between job satisfaction and performance pay, [Heywood and Wei \(2006\)](#) present a single specification for the year 1988 from the NLSY. They find that profit sharing is associated with a small and weakly significant increase in satisfaction with the supervisor. Importantly, this cross-sectional increase appears as part of a broader relationship in which those in profit sharing tend to have higher overall satisfaction as well. [Heywood et al. \(2005b\)](#) examine a single year of the GSOEP, 1995, that asks about the degree of conflict with the boss. Profit sharing reduced the degree of conflict for male workers who were in good health and had no supervisory responsibilities. For others, the influence was often absent or even negative. [Kruse et al. \(2010\)](#) probe individual elements of work life showing that "shared capitalism" is associated with worker perceptions of being treated with respect, of promotions being handled fairly and of management–employee relations being good. Profit sharing, in particular, is strongly associated with perceptions that the company is fair to employees. Yet, the link between overall job satisfaction and profit sharing emerged as insignificant in one data source and as having offsetting influences in the second data source.<sup>3</sup> This may not be surprising as in their review of 12 studies examining the influence of various forms of employee ownership on job satisfaction, [Kruse et al. \(2010 p. 7\)](#) conclude that there exists "no clear generalization." In short, the issue deserves additional empirical inquiry.

## 2.1. Moderating influences

Workers differ in their ability to increase their effort and productivity in response to incentives. This point becomes critical in thinking about the behaviour of supervisors under profit sharing. Workers who are less able to increase their effort as a result of increased pressure may find themselves singled out by co-workers and supervisors. In our estimations, we focus on a number of specific groups for whom it may be expected that this could be true. Thus, in addition to asking the general question of whether or not profit sharing influences the job satisfaction associated with the supervisor, we examine circumstances in which a negative influence might be particularly likely.

Women may demand greater flexibility between work and home due to greater responsibility of household production. This leads them to be sorted (or sort) into jobs with lesser degrees of interdependent worker productivity ([Goldin, 1986; Heywood and Wei, 1997](#)). Insofar as this is linked to lower workplace effort ([Heywood and Jirjahn, 2004](#)) and less responsiveness of effort to group incentives, this may lead to greater supervisory pressure on women in a profit sharing environment. In turn, this makes women more likely to report that profit sharing reduces their satisfaction with the supervisor. This influence may be exacerbated further for women who have dependent children. These workers may be particularly less able to respond to pressure because they have even greater home responsibilities. While we confirm the anticipated difference by gender, we do not find differences based on children.

The role of union membership in determining job satisfaction has been extensively researched ([Clark, 1996; Bender and Sloane, 1998, Bryson et al., 2004](#)) with most studies finding a negative correlation and debate ensuring over whether it reflects causation or sorting. We confirm the negative partial correlation with satisfaction with the supervisor but are more interested in its interaction with profit sharing.

Several threads of theory suggest that the relationship of union members to their supervisor may not respond to profit sharing in the same fashion as does that of non-union members. First, worker organisations may be instrumental in creating a successful profit sharing scheme that is believed in by workers ([Heywood and Jirjahn, 2007](#)). The access of the union to information and the ability of the union to enforce terms may generate a scheme less subject to managerial moral hazard ([Chisholm, 1997](#)). Moreover, the ability of workers to negotiate the terms of the scheme may also increase satisfaction with the scheme and the incentives that flow from it. [Marsden and Belfield \(2004\)](#) identify a strong role for unions in enforcing and modifying the terms of performance pay schemes arguing they take on a "procedural justice role." Second, unions may limit the extent to which supervisors can pressure workers and change the ability or incentive of workers to report shirking to supervisors. The more formalized work rules and grievance process of the union setting imply that relations with the supervisor need not be worsened by the introduction of profit sharing. Third, the union may be instrumental in generating the workplace norms and peer pressure changing the focus away from the supervisor. This fits with the survey evidence of [Freeman et al. \(2010\)](#) that the nature of management–employee relations is critical in determining the extent of mutual monitoring. While not exhaustive, each of these threads hints that profit sharing may alter relations with supervisors differently in union and non-union settings.

Indeed, we find that among non-union workers profit sharing is associated with worsening satisfaction with the supervisor while among union workers it is associated with improved satisfaction with the supervisor. We use this result to speculate about differences between relations found in the UK data and that from Germany.

## 3. Data and methodology

The data in this paper are drawn from the British Household Panel Survey (BHPS), which has run from 1991 onwards. The BHPS is a nationally representative sample that each year interviews

<sup>3</sup> Thus, [Kruse et al. \(2010\)](#) use their NBER data to show that profit sharing provision is associated with lower job satisfaction even as the share of earnings derived from profit sharing is associated with higher job satisfaction.

approximately 10,000 individuals from roughly 5500 households across Great Britain. The BHPS contains a number of variables related to job satisfaction and we are specifically interested in attitudes towards the boss. The related variable, how satisfied are you with the boss, is available only from 1991 to 1997. All job satisfaction questions in the BHPS are reported on a 7 value Likert scale, 1 being the least satisfied, 7 the most satisfied. We restrict our sample to those working individuals aged 20 to 65 and exclude the self-employed, public sector workers and those with missing data (3145 individuals in total are excluded). This yields an unbalanced panel of 6807 workers.

Over the years the BHPS has contained different information on payment methods but for 1991–1997 participants were asked the question “did you receive a profit share or bonus” which we use as our indicator of profit share receipt. As recognized by others (Booth and Frank, 1999), for the years 1992–1994 this question was only asked for individuals who changed jobs. In our empirical analysis we estimate all models for the complete sample, 1991–1997, assuming that if the worker did not change jobs their profit sharing status did not change. While others have made this assumption (Lemieux et al., 2009), we recognize that it generates an errors-in-variables problem potentially biasing our estimates toward insignificance. In an alternative approach, we used only the observations that provide a current year indicator of profit sharing. This alternative becomes more important if there exist numerous changes in the use of profit sharing for workers who retain the same job.<sup>4</sup> Importantly, all of our key results remain identical across these alternative treatments of the data difficulty.

Following past research, the values of satisfaction with the boss are fitted to the cumulative normal distribution through ordered probit estimates (see Clark and Oswald, 1996 and Clark, 1997 among others). Such ordered probit estimation is designed for dependent variables with a natural ordering, such as least to most satisfied (see McKelvey and Zavonia, 1975). At issue is whether or not we identify lower satisfaction with the boss among workers receiving profit sharing after accounting for reasonable controls. Among the available controls are characteristics of the worker (such as gender, education and age) and characteristics of the job (such as occupation, industry and size of the workplace). We experiment with various combinations of the available controls but repeatedly confirm lower satisfaction with the boss among those receiving profit sharing.

A critical control included in the ordered probit estimates will be the individual's overall job satisfaction. The specific dimensions of job satisfaction (such as with the boss) are often seen as components of overall job satisfaction and, indeed, are frequently used to create an index of overall job satisfaction (Bryson et al., 2004). Moreover, in the BHPS the individual dimensions of job satisfaction are known to be highly correlated with the overall satisfaction measure as reported by the workers (Green and Heywood, forthcoming-b). Thus, by controlling for the overall measure, we focus on the specific role profit sharing plays on relations with the boss rather than potentially picking up the correlation between various measures of job satisfaction. In presenting the results we emphasize this point by comparing the estimates with and without including overall job satisfaction.

A second methodological concern arises from the potential of non-random sorting by workers into profit sharing jobs. Specifically, workers naturally dissatisfied with their boss may sort into jobs with profit sharing arrangements leading to a spurious suggestion that profit sharing lowers satisfaction with the boss. While the potential mechanism for such sorting is not obvious, profit sharing could be associated with more conflict between workers and supervisor and those workers who inherently view bosses negatively may have a lower psychic cost of working in environments with such conflict. The point is

**Table 1**

Satisfaction by payment type.

Source: BHPS, standard deviations in parentheses.

	Overall job satisfaction	Satisfaction with the boss	Satisfaction with pay	Satisfaction with hours
Profit share/Bonus	5.333 [1.363]	5.459 [1.539]	4.690 [1.637]	5.091 [1.523]
No profit share/Bonus	5.392 [1.438]	5.581 [1.539]	4.534 [1.771]	5.237 [1.571]
Observations	20,983			

not that we can test this specific mechanism, but that non-random sorting raises the possibility that profit sharing has no influence on relations with the boss. Instead, profit sharing might merely attract a different set of workers who would have lower satisfaction with their boss regardless of the presence of profit sharing. We investigate this general possibility of non-random sorting by re-estimating individual fixed effects ordered probit versions of the models. These estimates follow from a routine dedicated to this purpose in Limdep 8.0.<sup>5</sup> The estimates are based on the changes in satisfaction with the boss measured on those individual workers switching between regimes with and without profit sharing.

Moreover, we will examine whether or not the pattern of results supports differences by demographic groups that may be more or less able to respond to peer and employer pressure. We will examine differences by gender and differences by unionization.

Table A1 presents summary statistics split by whether the worker receives profit sharing or not. Briefly, women are less likely to be employed under profit sharing arrangements, as are workers with dependent children. Workers under profit sharing relationships, on average, work longer hours, both in terms of normal hours and overtime. They also have higher average education levels and are less likely to have poor/fair health.

Table 1 provides preliminary evidence of a link between profit shares and attitudes to the boss. It reports sample means for satisfaction with the boss split according to whether the worker received a profit share or not. For the purposes of comparison we also report overall job satisfaction, as well as the two other dimensions available in the BHPS for this period, satisfaction with pay and satisfaction with hours. Workers on profit shares report a significantly (at 1%) lower average satisfaction with the boss than other workers. In terms of more general differences, there is no statistically significant difference in average overall job satisfaction between profit share workers and other workers. Workers on profit sharing do report significantly (at 1%) higher satisfaction with pay and lower satisfaction with hours.

We note several related data issues before turning to the results. First, the available profit sharing measure is dichotomous indicating only whether or not the worker received such payments. The survey provides no indication of how many workers in the workplace received profit sharing or of the share of worker compensation comprised by the resulting payments. While general surveys of individual workers often share this limitation, they do allow the tracking of specific workers over time. Second, the profit sharing variable identifies workers who have received profit sharing rather than those who participate in a scheme. The latter is potentially important as even when the scheme doesn't pay out it may still motivate workers making interpretation tricky. Third, the question appears to leave open the inclusion of other types of performance pay. While we anticipate that it captures all instances of profit sharing, the “bonus” mentioned might not necessarily be related to profit. In later years of the BHPS (1998 onwards) a second question is introduced explicitly separating out performance pay and also in those later years the profit sharing question identifies “profit related pay or profit sharing bonus.” This might be a superior question but

<sup>4</sup> Indeed, in his examination of profit sharing in Germany, Jirjahn (2002) found that between 1994 and 1996 more establishments either added or dropped profit sharing than retained it over the two-year period. In our results, we will present evidence on how often profit sharing status changes for those on the same job.

<sup>5</sup> The Limdep routine is “fixed effects ordered choice models, E18.5.1” and its advantages and limitations are discussed in Greene (2001).

**Table 2**  
Profit sharing and satisfaction with the boss. BHPS 1991–97, private sector employees 20–65 years old.

	(I)	(II)	(III)	(IV)	Marginal effects (most satisfied)
Profit share/Bonus	−0.046** [0.020]	−0.046** [0.020]	−0.041** [0.021]	−0.064* [0.021]	−0.021* [0.007]
Male	−0.201* [0.025]	−0.166* [0.027]	−0.128* [0.029]	−0.048*** [0.028]	−0.016*** [0.009]
Age	−0.045* [0.007]	−0.045* [0.007]	−0.042* [0.007]	−0.023* [0.007]	−0.008* [0.002]
Age <sup>2</sup>	0.0007* [0.00009]	0.0007* [0.00009]	0.0006* [0.00008]	0.0004* [0.00009]	0.0001* [0.00003]
Married	0.040*** [0.024]	0.046*** [0.024]	0.046*** [0.024]	0.016 [0.023]	0.005 [0.008]
Dependent child	0.217* [0.035]	0.204* [0.035]	0.141* [0.036]	0.076** [0.035]	0.025** [0.012]
A Level	−0.044 [0.029]	−0.061** [0.030]	−0.062** [0.031]	0.011 [0.029]	0.003 [0.009]
Diploma	−0.054 [0.043]	−0.090** [0.044]	−0.083*** [0.044]	−0.021 [0.041]	−0.007 [0.013]
Degree or higher	−0.064** [0.032]	−0.108* [0.038]	−0.113* [0.038]	0.006 [0.037]	0.002 [0.012]
Tenure		−0.004* [0.001]	−0.004* [0.001]	−0.005* [0.001]	−0.002* [0.0004]
Normal hours			−0.006* [0.001]	−0.0015 [0.001]	−0.0004 [0.0004]
Overtime hours			−0.002 [0.002]	−0.004* [0.002]	−0.001* [0.0005]
Foreman/Supervisor			0.039 [0.026]	−0.011 [0.025]	−0.004 [0.008]
Manager			0.071** [0.035]	−0.006 [0.033]	−0.002 [0.011]
Large firm			−0.160* [0.022]	−0.131* [0.021]	−0.042* [0.007]
Job satisfaction				0.435* [0.008]	0.142* [0.003]
Regional controls	✓	✓	✓	✓	✓
Industry controls		✓	✓	✓	✓
Occupation controls		✓	✓	✓	✓
Pseudo <i>r</i> <sup>2</sup>	0.012	0.015	0.019	0.105	
Observations	20,983	20,983	20,983	20,983	

Notes: Numbers in parentheses are robust standard errors. \*\*, and \*\*\* indicate statistical significance at the 1%, 5% and 10% level respectively. Models I–III include controls for year. Results are ordered probit average effects.

unfortunately these later years do not include the critical information on satisfaction with the supervisor. Thus, we recognize the ambiguity and that it introduces an errors-in-variable problem of unknown dimensions requiring caution in interpretation. Fourth, we recognize that profit sharing is often seen as part of a bundle of HRM practices that are simultaneously introduced. This bundle may include other incentives and organizational strategies designed to elicit effort and commitment. As an individual based survey, the BHPS contains no information on the use of teams, worker involvement or high performance workplaces.

**Table 3**  
Profit shares and overall job satisfaction. BHPS 1991–1997, private sector employees 20–65 years old.

	Model (III)		
	Overall job satisfaction	Satisfaction with hours	Satisfaction with pay
Profit share/Bonus	0.013 [0.022]	0.004 [0.021]	0.081** [0.022]
Regional controls	✓	✓	✓
Industry controls	✓	✓	✓
Occupation controls	✓	✓	✓
Pseudo <i>r</i> <sup>2</sup>	0.026	0.036	0.015
Observations	20,983		

Notes: Numbers in parentheses are robust standard errors. \*\*, and \*\*\* indicate statistical significance at the 1%, 5% and 10% level respectively. All controls as per model III in Table 2.

**Table 4**  
Profit shares and alternative measures. BHPS 1991–1997, private sector employees 20–65 years old.

	Getting along with the boss important? (1991 only)	Constantly under strain?	Overall happiness
Profit share/Bonus	−0.087* [0.018]	0.058* [0.022]	0.010 [0.021]
Regional controls	✓	✓	✓
Industry controls	✓	✓	✓
Occupation controls	✓	✓	✓
Pseudo <i>r</i> <sup>2</sup>	0.086	0.034	0.029
Observations	2973	20,792	20,792

Notes: Numbers in parentheses are robust standard errors. \*\*, and \*\*\* indicate statistical significance at the 1%, 5% and 10% level respectively. All controls as per model IV in Table 2. Results for getting along with the boss are probit marginal effects, all others are ordered probit average effects.

These dimensions of the workplace necessarily remain outside our analysis but may influence relations with the boss.

**4. Results**

Table 2 provides estimates of the association between profit sharing arrangements and satisfaction with the boss. We start with a parsimonious specification and add a growing series of additional controls.

The first (I) specification includes controls for basic personal characteristics. As shown, men are less satisfied with their boss perhaps reflecting the general tendency for women to be more satisfied with most aspects of employment (see Clark, 1997). Age appears to have the U-shape identified in many job satisfaction studies (Clark et al., 1996) and marital status is generally a positive determinant while education is a negative determinant; both are common results in general studies of job satisfaction (Clark and Oswald, 1996). Of central importance, profit sharing is associated with a statistically significant negative reduction in satisfaction with the boss.<sup>6</sup>

The second specification (II) adds years of completed tenure with the employer to the other controls. It also adds controls for occupation and industry. Tenure emerges as negative, suggesting that additional tenure is associated with reduced satisfaction with the boss. We emphasize that years of tenure might also be anticipated to reflect the satisfaction of workers as the dissatisfied will tend to leave their current employment. Yet, despite this concern, the inclusion of the tenure variable does not alter the role played by profit sharing and, indeed, adding or subtracting tenure from any of our estimations proves completely immaterial. The inclusion of occupation and industry controls also does not affect the relationship between profit sharing and satisfaction with the boss.

The third specification (III) retains all the previous controls and adds those for hours of work, whether the worker is a supervisor or is a manager and the size of the workplace in which the worker is employed. The results suggest that longer hours are associated with lower satisfaction with the boss while managers are more satisfied with their boss. Workers in larger establishments (100 workers or more) report lower satisfaction with the boss.<sup>7</sup> It might be thought that higher pay under profit sharing compensates for poorer relations with supervisors yet in unreported estimates that add worker’s pay to specification (III), the negative relationship between profit sharing and satisfaction with the boss remained.

<sup>6</sup> All of our estimates use robust standard errors as we are concerned about the clustering of several observations per worker. In addition, depending on the survey design, explicit use of sample weights in the regression may make a material difference (Magee et al., 1998). Using the cross-sectional weights given by the BHPS, we found no such difference and that the estimates repeated the patterns of significance shown in Table 2.

<sup>7</sup> This large workplace dummy comes from identifying those in the two largest categories given by the BHPS. Introducing a full set of dummies to capture all categories does not change the role of profit sharing.

**Table 5**  
Fixed effects estimates. BHPS 1991–1997, private sector employees 20–65 years old.

	Satisfaction with the boss (full sample)	Satisfaction with the boss (1995–1997)	Constantly under strain?
Profit share/Bonus	−0.059** [0.029]	−0.100* [0.035]	0.040** [0.018]
Regional controls	✓	✓	✓
Industry controls	✓	✓	✓
Occupation controls	✓	✓	✓
Pseudo $r^2$	0.345	0.268	0.398
Observations	20,983	9011	20,792

Notes: Numbers in parentheses are robust standard errors. \*\*, and \*\*\* indicate statistical significance at the 1%, 5% and 10% level respectively. All controls as per model III in Table 2.

Despite adding a score of control variables, the coefficient and significance associated with profit sharing barely moves. Hence, there is initial evidence of a negative relationship between profit shares and satisfaction with the boss that is not explained by standard personal and workplace characteristics.

In the fourth specification (IV) we retain all the previous controls but add the measure of overall job satisfaction. As anticipated, it emerges as a highly significant and positive partial correlate of satisfaction with the supervisor. In including this measure we recognize that the various measures of job satisfaction tend to move together. Thus, overall satisfaction could be an omitted correlated variable leaving us unable to isolate the specific relationship between profit sharing and satisfaction with the supervisor. There is support for this general type of concern when examining some of the control variables. Thus, managers and supervisors are known to have higher overall job satisfaction (Clark, 1996) and our earlier results suggested that they had higher satisfaction with their boss. This suggestion is no longer evident as the coefficient for managers becomes insignificant after controlling for overall satisfaction.<sup>8</sup> Nonetheless, the general tenor of the control variables remains and, most critically, the role of profit sharing remains. Indeed, if anything the size and significance of the profit sharing coefficient has increased. Holding constant the overall satisfaction with the job, those workers receiving profit sharing report lower satisfaction with their boss.<sup>9</sup>

The magnitude of this effect is shown in column 4 which reports the marginal effects from model IV. Specifically, the marginal effects are those associated with the probability of being in the most satisfied category of relations with the boss. They suggest that those on profit sharing are 2 percentage points less likely to be in this category. As the overall sample probability of being in this category is 30.3%, this is a non-trivial decline.

We have emphasized that the estimates of profit sharing's negative effect on satisfaction with the boss do not merely reflect an effect on overall job satisfaction. To demonstrate this in an alternative fashion we re-estimate the specification in Column 3 of Table 2 with overall job satisfaction as the dependent variable. Estimates, reported in column 1 of Table 3, suggest that there is no

<sup>8</sup> Recognizing that supervisors and foreman are higher in the firm hierarchy, we estimated the specification on a subsample of just these workers. Despite the smaller sample size, the coefficient is  $-.060$  with a standard error of  $.032$ . Including an interaction of profit sharing with this occupational group in the full sample specification returns an insignificant coefficient suggesting that their reaction to profit sharing is not different from that of others workers.

<sup>9</sup> Another potential concern is that workers in specific occupations may tend to both receive profit sharing and have better relations with the boss. As a robustness check, we replaced the broad occupational dummies in model IV with 354 disaggregated 3-digit occupational dummies. Despite the addition of these controls, the role of profit sharing remains strongly evident with a coefficient of  $-.070$  and a standard error of  $.021$ .

**Table 6**  
Profit shares and satisfaction with the boss, gender and unions. BHPS 1991–1997, private sector employees 20–65 years old.

	Male	Female	Union	Non-union
<i>Pooled models</i>				
Profit share/Bonus	−0.036 [0.028]	−0.094* [0.031]	0.049** [0.044]	−0.062* [0.021]
Regional controls	✓	✓	✓	✓
Industry controls	✓	✓	✓	✓
Occupation controls	✓	✓	✓	✓
Pseudo $r^2$	0.095	0.111	0.094	0.107
<i>Fixed effects models</i>				
Profit share/Bonus	−0.021 [0.038]	−0.116** [0.052]	0.105** [0.050]	−0.054* [0.026]
Regional controls	✓	✓	✓	✓
Industry controls	✓	✓	✓	✓
Occupation controls	✓	✓	✓	✓
Pseudo $r^2$	0.333	0.354	0.212	0.295
Observations	11,294	9689	2983	18,000

Notes: Numbers in parentheses are robust standard errors. \*\*, and \*\*\* indicate statistical significance at the 1%, 5% and 10% level respectively. All controls as per model IV in Table 2.

relationship between profit sharing and overall job satisfaction.<sup>10</sup> Table 3 also reports analogous estimates of the relationship between profit sharing and satisfaction with hours, and satisfaction with pay, respectively. Again there is no evidence of a relationship between profit shares and satisfaction with working hours. There is, however, evidence that profit sharing is associated with higher satisfaction with pay.<sup>11</sup> This, when coupled with the negative impact of profit shares on satisfaction with the boss, highlights the potential for a trade-off between higher productivity (and hence improved pay) and increased supervisory pressure under profit sharing. Thus, it seems consistent that profit sharing brings additional peer and supervisory monitoring that increases productivity and earnings but which reduces the quality of relations with the supervisor.

We obviously see this evidence as somewhat at odds with the US evidence from Kruse et al. (2010) that workers in “shared capitalism” are more likely to see their boss as caring and helpful and less likely to report being closely supervised. We note that these US results emerge more strongly when focusing on employee ownership and less strongly when focusing on profit sharing. We also note the large differences in scope between our broad measure of job satisfaction with the boss and the more detailed aspects examined in the US surveys. Nonetheless, the marked differences suggest the need to break down our results to search for patterns that could be consistent with a role for supervisory pressure. In short, supervisory pressure may not be applied equally to all workers.

We further investigate the negative association between profit sharing and relations with the boss by using information on what workers consider the most important aspects of a job and by examining strain and overall well-being. The first wave of the BHPS (1991) records what workers consider the first and second most important aspect of a job. Possible responses include pay, promotion prospects, job security, the actual work itself, use of initiative or hours worked. Another category of response is “good relations with the manager”. We use this response to create a binary variable taking the value of unity if the individual responded that good relations with the manager is among the first or second most important aspect of a job. This becomes an

<sup>10</sup> Using later BHPS waves, Green and Heywood (2008) report a positive relationship between profit sharing and overall job satisfaction while Artz (2008) shows an insignificant relationship using “Working in Britain in the Year 2000” survey. Differences in the questionnaire prohibit an exact replication of the Green and Heywood (2008) specification using these earlier data while the later BHPS years do not include the question on satisfaction with the boss.

<sup>11</sup> Importantly the relationship between profit sharing and satisfaction with pay remains even after controlling for workers actual pay, although the magnitude of the coefficient diminishes slightly,  $0.053$  [0.023].

alternative dependent variable in a model with the same covariates as (IV) in Table 2. Our thinking is merely that workers who value this characteristic less should sort into circumstances in which relations are worse. Marginal effects from probit estimation of this equation are reported in column 1 of Table 4. These demonstrate that workers under profit shares are 8 percentage points less likely to list good relations with the manager as an important aspect of the job. While we will return explicitly to issues of sorting, at this stage we merely take the result as suggestive that workers who do not value the quality of relations with the boss work disproportionately in circumstances with profit sharing.

The BHPS contains a range of questions on respondent well-being of which we focus on the two most relevant for our investigation: the extent to which the respondent feels constant strain and the worker's overall happiness. Both are Likert Scale measures (1 to 4), the former indicates pressure in life of the sort that might come from, among other things, the pressure to produce at work, while the latter measures very general well-being. We estimate two ordered probit models with these as dependent variables following the specifications used in the earlier model IV of Table 2. As shown in column 2 of Table 4, profit sharing is associated with a significantly greater likelihood of workers feeling under constant strain, indicative of increased working pressure as a result of profit sharing.<sup>12</sup> On the other hand, there is no evidence of a statistical relationship between profit sharing and overall well-being, or even in unreported estimates, other negative well-being outcomes such as depression or loss of sleep. While we are circumspect in what we take from Table 4 we suggest that it is indicative of profit sharing being associated with greater monitoring pressure but not with reduced overall life satisfaction.

To this point all estimates have been from pooled models. As emphasized earlier, these may ignore the non-random sorting of workers into profit sharing jobs. Specifically, it could be that workers with a greater likelihood of being dissatisfied with their boss may sort into jobs with profit sharing arrangements. We investigate this possibility by re-estimating a fixed effect ordered probit version of model IV reported in Table 2.<sup>13</sup> The resulting estimate of profit sharing's effect on satisfaction with the boss is reported in Table 5. The point estimate remains of the same general magnitude as those reported in Table 2 and it remains statistically significant. In this estimate the identification comes from those who switch profit sharing status. Thus, the coefficients measure the change in satisfaction for individual workers as they move into and out of profit sharing regimes thus holding constant any inherent individual differences in the likelihood to report better or worse relations with the boss.<sup>14</sup>

The second column examines the sample from 1995 to 1997 in which the question about profit sharing is asked each year regardless of whether or not the worker changed jobs. The strong role for profit sharing remains. Moreover, this effect is substantially more negative than that for the full sample. This suggests that these full sample estimates of profit sharing on satisfaction with the boss may suffer from measurement error. We also investigate whether or not the influence of profit sharing on strain is robust to the inclusion of controls for worker fixed effects. This effect, when compared to that reported in Table 4, remains positive, statistically significant and of the same general magnitude.<sup>15</sup>

To this point we have demonstrated a negative relationship between profit sharing and satisfaction with the supervisor that is robust to controlling for overall job satisfaction and for worker fixed effects and which does not appear to carry over to satisfaction with other aspects of the job. This seems congruent with the results on strain and other measures of well-being. We recognize that it still remains possible that moving between profit sharing regimes could be endogenous. Unmeasured factors correlated with changing profit sharing regimes could also correlate with changes in satisfaction with the boss. Yet, given the apparent negative influence of profit sharing on satisfaction with the boss, the easiest stories of such selection seem less plausible. Had we found that workers in profit sharing were more satisfied with their boss, one might anticipate that unmeasured factors influenced them to select into workplaces with profit sharing in order to capture the utility gain.

We also emphasize that there exist a large number of status changes upon which to base the fixed effect estimates (2525). These status changes mainly occur through changes in profit share status within the same job: 2006 episodes within the same job as opposed to 519 occurrences of workers changing profit sharing status through changing job. As a test we divided the sample into those workers who didn't change status and those who did. The two resulting estimates of our final estimate in Table 2 both reveal a negative cross-sectional relationship between profit sharing and satisfaction with the boss,  $-0.055$  [0.027] for changers and  $-0.094$  [0.031] for non-changers. Thus, the effect across the samples of changers and non-changers seem broadly similar. Moreover, even among the changers, we could not detect meaningful differences with separate estimates for those workers who changed profit sharing status within and across job both revealing a negative effect of profit sharing on job satisfaction. Finally, we examined potential differences in the fixed effect estimates comparing within job and across job changes in profit sharing regimes for 1995–1997 (the only period when we observe both). We included a new variable that switches from zero to one when changing jobs results in newly receiving profit sharing. Similarly, it switches for one to zero when changing jobs results in newly losing profit sharing. The coefficient on this new variable emerges near zero and not statistically significant while the coefficient on the original profit sharing variable remains largely unchanged. Thus, while we cannot rule out influential omitted variables in the fixed effect estimates, we are hard pressed to imagine what they would be and remain reasonably confident in the apparently robust relationship between profit sharing and lower satisfaction with the boss.

We now examine variations across sub-groups to explore whether anticipated variations in supervisory pressure are reflected in differences in our fundamental relationship. We begin by dividing the sample by gender as shown in Table 6. The initial pooled estimates suggest that profit sharing has a more profound negative influence on satisfaction with the supervisor for women than for men. The male coefficient is substantially smaller and very far from significance. The female coefficient is large and easily passes conventional tests of statistical significance. The marginal effect of being in the most satisfied category is only one-half of one percentage point for males ( $-.005$ ) while the marginal effect for women is nearly three and one-half percentage points ( $-.034$ ). Controlling for worker fixed effects does little to alter the insignificant negative influence for men but causes the female estimate to increase in both size and precision. These estimations by gender strongly suggest it is women who are largely responsible for the overall results reported earlier that profit sharing is associated with reduced satisfaction with the supervisor. To the extent that women have greater non-market responsibilities, this would be consistent with a reduced ability to increase effort in response to supervisory pressure and the resulting deteriorating in relations with the boss. This finding of substantial gender differences replicates findings using a German cross-section that men's relationships with their boss and with co-workers fare better under profit sharing than do those of women (Heywood et al., 2005a,b). In addition, it could be consistent with recent

<sup>12</sup> Again, one might think that wages would adjust to compensate for any higher strain (stress) associated with profit sharing jobs. However, including controls for workers pay has essentially no effect on the estimated relationship between profit shares and strain.

<sup>13</sup> These estimates follow from a routine dedicated to this purpose in Limdep 8.0 and the full results are available from the authors upon request.

<sup>14</sup> We note again that leaving a profit sharing regime may be caused either by a worker no longer being in a profit sharing regime or by a regime simply paying out nothing in a particular year.

<sup>15</sup> In unreported estimates the effect of profit sharing on overall happiness remains unchanged once controls for fixed effects are included.

evidence that women respond with less effort and productivity to circumstances of pressure and competition (Gneezy et al., 2003) perhaps, in part, because of different preferences over the implied conflict (Croson and Gneezy, 2009). Nonetheless, it remains remarkable how large the influence is for women and that a significant influence cannot be confirmed for men.

The estimates separated by union status are perhaps even more dramatic. They conform to the logic suggested earlier in the paper. The influence of profit sharing on relations with the supervisor is very large and highly significant for the non-union members who make up the bulk of the sample. Yet, among the union members, the presence of profit sharing is associated with improved relations with the boss. The marginal effect of being in the most satisfied category is  $-.019$  for non-union members and is  $+.030$  for union members. This stark contrast exists in both the pooled estimates and the worker fixed effect estimates. It is suggestive that unions change the relationship with the boss sufficiently that the introduction of profit sharing generates a different reaction. Union members start from a base of more conflict (worse relations with the boss) but may see the profit sharing scheme as an explicit way to capture mutual gains and have sufficient faith in the scheme, perhaps because of the role of the union, to have it improve relations with the boss. Related to this, it may be that the mutual monitoring that adds stress to workers in general (non-union workers) is less prevalent in unions. It may be that the formalized structures of the union environment do not allow or reward the reporting of shirking to superiors. Alternatively it may be that such shirking is less likely in the first place or that supervisors cannot control it. While we cannot pinpoint the exact path of causation, the difference between union and non-union members is dramatic and in the direction largely expected from previous theory and evidence.

## 5. Conclusion

The method through which profit sharing influences productivity and effort remains in doubt. Two broad strands of not-mutually exclusive thought emphasize that the direct incentive effect is low but that profit sharing changes relationships among workers and between workers and the firm. Profit sharing may increase cooperation and helping effort. It may also increase monitoring and pressure. We have emphasized that much of either influence will flow through the supervisor. As a consequence, the way in which profit sharing changes relations between workers and supervisor helps identify which influence may be predominant.

Our initial evidence shows that those on profit sharing in the UK report lower satisfaction with their boss. This is corroborated by findings that they also report good relations with the boss as a less important job characteristic and that they report greater strain associated with profit sharing. Nonetheless, these findings are not a general reflection of workers on profit sharing reporting lower levels of overall satisfaction. This set of findings hints that it may well be the role of monitoring from the boss that workers perceiving negatively changing as a result of profit sharing. Importantly, there appear to be specific groups of workers that generate much of the overall finding. Women and non-unionized workers tend to generate the association of profit sharing with a lower level of satisfaction with the boss. We have suggested these groups may be those for whom supervisory pressure can less easily be translated into greater effort (and/or are those more subject to such pressure) and who may, therefore, have greater resentment toward their supervisor.

We recognize that neither profit sharing nor the existing workforce exogenously appear in a workplace. It is possible that worker selection or firm selection may be generating our results. While our individual data source provides us few reasonable instruments, we emphasize again that our core results are not of the sort that typically generates selection concerns. Moreover, our fixed effect estimates are based on a large sample of status changers and those changers do not look substantively different from the non-changers. Nonetheless, we highlight that

selection stands as a reasonable future research topic especially for those using matched employee–employer data that is likely to provide stronger identification.

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## Appendix A

**Table A1**

Sample statistics 1991–1997, private sector employees 20–65 years old. Source: BHPS, standard deviations in parentheses.

	No profit share	Profit share
Male	0.494 [0.500]	0.616 [0.486]
Age	37.920 [11.501]	36.549 [10.778]
Married	0.618 [0.486]	0.619 [0.485]
Dependent child	0.162 [0.368]	0.095 [0.291]
<A level	0.682 [0.466]	0.596 [0.491]
A level	0.171 [0.379]	0.213 [0.414]
Diploma	0.056 [0.229]	0.067 [0.249]
Degree or higher	0.094 [0.284]	0.132 [0.323]
Tenure (years)	10.636 [7.105]	10.890 [7.053]
Normal hours	33.742 [11.537]	37.173 [8.589]
Overtime hours	3.836 [6.506]	4.932 [6.809]
Foreman/Supervisor	0.165 [0.372]	0.163 [0.374]
Manager	0.157 [0.464]	0.276 [0.493]
Large firm	0.357 [0.322]	0.467 [0.499]
Union member	0.118 [0.322]	0.184 [0.388]
Observations	13,269	7714

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