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# Shared Modes of Compensation and Firm Performance
## U.K. Evidence

Martin J. Conyon and Richard B. Freeman

Share ownership offers employees a real stake in their company . . . I want, through targeted reform, to reward long term commitment by employees. I want to encourage the new enterprise culture of team work in which everyone contributes and everyone benefits from success.
—U.K. Chancellor of the Exchequer Gordon Brown (Her Majesty's Treasury 1999)

### 3.1 Background and Motivation

Many analysts and decision makers in industry, labor, and government believe that the traditional wage-employment relationship is not appropriate for a modern competitive economy. In place of the historic capital-labor dichotomy in which employers pay a fixed wage for the right to tell employees what to do, a new system of work arrangements has developed in which employees share in the financial fortunes of the firm and make many of the decisions that determine firm performance. This shared capitalist model of work and compensation (Freeman 1999) dominates new information technology firms in the United States, but it is found in other sectors and countries as well.

For over two decades, the United Kingdom has tried to encourage shared capitalist practices by offering tax advantages to firms that link pay to profits, provide company shares to workers, encourage workers to save through stock options, or develop approved share-option plans. In 1999,

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the U.K. government issued draft legislation introducing two new plans: the All Employee Share Plan, through which employees will be able to buy "partnership" shares in their firm out of their pretax and pre–National Insurance contribution salary, and Enterprise Management Incentives intended to help smaller companies with the potential for growth to recruit and retain high-caliber employees by giving tax advantages to options granted to a small number of employees.[1] By contrast, the government has moved to eliminate tax advantages for profit-related pay, based on the notion that many firms used this to get tax advantages without really linking pay to profits. The 1998 Workplace Employment Relations Survey shows that 86 percent of the establishments that had profit-related pay were taking advantage of the tax break.

Behind the desire to increase shared compensation in the United Kingdom is the widespread belief, expressed by the Chancellor of the Exchequer, that shared capitalist arrangements will create a better work culture with improved productivity and commitment by employees. Existing studies on profit sharing, employee ownership, and employee participation lend general support to this proposition (Weitzman and Kruse 1990; OECD 1995; Doucouliagos 1995), but these studies also show considerable variability in the effects of practices on firm performance. In addition, the economic context in which the programs operate (e.g., whether information sharing takes place) and the details of the schemes seem to affect their success rate.

Our goals address the following two questions. How far has the United Kingdom moved from standard wage-employment contracts toward a shared mode of compensation? What effect has shared compensation had on economic outcomes?

This paper examines these questions using a 1999 survey of the shared compensation strategies used by a sample of U.K. listed companies between 1995 and 1998; the 1998 Workplace Employment Relations Survey (WERS) of some 2,000 U.K. establishments or workplaces; and the 1990–1998 longitudinal WERS panel survey of nearly 900 workplaces. We use these data to describe the growth and use of shared capitalist compensation practices and to assess the effects of these practices on productivity and related economic outcomes. We have three findings:

1. Shared-compensation practices are substantial and growing in the United Kingdom largely in response to Treasury policies designed to encourage them. Upwards of half of U.K. workplaces have some form of shared-compensation program and over one-third have something beyond profit-related pay (which the government abolished as of 2000). About half

1. The government introduced further new legislation in 2001 (see http://www.inlandrevenue.gov.uk/pbr2000/ir2.htm).

of the listed firms in our firm-based data also have some form of shared compensation.

2. Firms and establishments with shared compensation, particularly those with deferred profit sharing and employee share ownership, are more likely to establish formal communication and consultation channels with workers than other establishments.

3. Firms and establishments that use shared compensation tend to outperform other firms and establishments in productivity and financial performance. Moreover, the stock price of firms with shared-compensation practices has also performed better than those of other firms. But combining shared compensation and information or communication systems does not add extra productivity impact.

Overall, our findings are quite similar across firm and establishment data sets in that they tell a favorable story about shared-compensation modes of pay, including the share ownership schemes that have become a U.K. government priority. The one area where our two data sources tell a different story is the area of profit-related pay: Our firm analysis finds that profit-related pay has no effect on productivity, while our establishment data finds an effect.

The remainder of the paper is organized as follows. Section 3.2 deals with shared-compensation policies and practices in the United Kingdom. Section 3.3 asks how shared compensation arrangements should affect firm performance. Sections 3.4 and 3.5 provide the main evidence. Section 3.4 deals with the firm-level evidence using the company survey, and section 3.5 uses the WERS data. Finally, in section 3.6 we offer some concluding remarks.

## 3.2 Shared Compensation Policies and Practices in the United Kingdom

As noted, the United Kingdom has experimented with a rich variety of policies to encourage shared compensation. The following subsection provides a capsule summary of policies dating from the late 1970s to 2000 and is divided between schemes designed for all employees and schemes designed for top management and other special workers.

### 3.2.1 U.K. Programs to Encourage Shared Capitalism; All Employee Schemes

*Approved Profit-Related Pay*

In 1987, the scheme was introduced for employers to pay a profit-related compensation package. Initially, tax relief was given on half of the profit-related payments up to a limit of the lower of £3,000 or 20 percent of the employee's pay. The cash limit was increased to £4,000 in 1989. In 1991, the

tax relief was increased to the whole of the payment. In the Finance Act of 1997, the income tax relief was set to be phased out over a three- to four-year period. For profit periods beginning in 1998 the cash ceiling was reduced to £2,000, and for periods beginning in 1999 the ceiling was reduced to £1,000. As of January 2000, this scheme was no longer running.

*Approved Profit-Sharing Scheme*

The approved profit-sharing scheme is a vehicle for companies to provide free shares to employees that are free from tax liabilities. Profit-sharing schemes were introduced in the 1978 Finance Act. In 2000, there were about 950 approved profit-sharing schemes in operation with an estimated cost to the government in tax relief of £150 million. Profit-sharing schemes must be open to any employee who has been employed by the company for more than five years. There are about 1.25 million participants covered under these arrangements (data taken from http://www.proshare.org). However, the approved profit-sharing scheme is being phased out with the introduction of the new all-employee plan (see http://www.inlandrevenue.gov.uk).

*New All Employee Share Plan (2000)*

This plan stipulates that firms can give free shares tax free; employees buy shares out of pretax income, and firms can match employee purchases. Employees who leave the firm must withdraw shares. The firm has a flexible performance criterion for tax relief: Employees who keep shares in the employee share ownership plan trust for five years pay no income tax and pay capital gains only on an increase in value. Companies get relief for costs of providing shares for employees.

*Approved Save as You Earn Scheme*

The SAYE scheme, or savings-related option scheme, is an arrangement such that an employee has the right to buy shares at a future date at a prespecified purchase price. The company grants employees the option to buy the company's shares in three, five, or seven years' time. Either the price is the current market price or the option can be issued at a discount of up to 20 percent of that price. The scheme has to be open to all employees of the company with more than five years of service (see http://www.inland revenue.gov.uk). There are currently over 1,200 SAYE schemes in operation, with an estimated cost to the government in tax relief of £600 million. There are about 1.75 million participants covered under these arrangements (see http://www.proshare.org).

*Management and Special-Employee Schemes; Approved Company Share Option Plan*

The approved company share option plan (CSOP) is a scheme under which an employee has the right to purchase a fixed number of shares at a predetermined price at some date in the future. Under this scheme, options

may not be offered at a discount. The employee does not pay income tax on the grant of the option or any increase in the market value of shares before the option is exercised. Unlike SAYE schemes, discretion is given to the company as to which employees are eligible and are granted options. They tend to be granted to company directors. There are currently over 3,750 such approved CSOPs in operation, with an estimated cost to the government in tax relief of £130 million. There are about 450,000 participants covered under these arrangements (see http://www.proshare.org).

The most widely used system was profit-related pay, which gave income tax relief to workers for compensation related to profits. Profit-related pay schemes were widely adopted after the 1987 introduction of the tax break to the extent that by 1998 32 percent of British workplaces and 37 percent of workers were receiving part of their pay for profit-related reasons. However, the Treasury came to view the system as overly open to scam behavior because firms found ways to classify any sort of pay as profit related in order to take advantage of the tax break. It began phasing out the program in 1997. As of 2000, profit-related pay was history in the United Kingdom.

The U.K. government has programs that encourage firms to pay workers in shares or stock options or that encourage employees to invest in shares. One important U.K. plan is the Save as You Earn (SAYE) share option scheme, which gives tax relief to workers who enter a savings contract that puts money into an account to buy the shares when the period ends. The 1978 Finance Act introduced approved profit-sharing schemes as a vehicle for companies to provide free shares to employees that carry no tax liabilities. This plan is being phased out and replaced by the All Employee Share Plan, which allows firms to give free shares to workers without tax liability and also gives tax breaks to employees who buy shares that they hold for five years (with smaller tax breaks to workers who hold them for three years).

In addition to these schemes, the United Kingdom gives tax advantages to shared-compensation plans that go largely to top management. Company share option plans allow employees to purchase shares at a predetermined price at some future date, without paying income tax on the grant or on any increase in the market value of shares. In 2000, the government introduced an Enterprise Market Incentive option program to help smaller companies with potential for growth to recruit and to retain high-caliber employees.

### 3.2.2 Data on Shared Compensation in the United Kingdom

Our information on shared-compensation practices in the United Kingdom comes from two bodies of data: the WERS and a special survey of listed firms that Martin Conyon and Laura Read conducted in 1999 (Conyon and Read 2000). From the WERS, we use the 1998 cross-sectional survey, which contains information on compensation and employment practices at 2,191 workplaces in Britain with ten or more employees, and

the 1990–1998 WERS panel survey, which contains information on 882 surviving workplaces from the 1990 survey. The WERS surveys have extremely high response rates—80 percent for the 1998 cross section and 86 percent for the 1990–1998 longitudinal survey[2]—which make them particularly valuable for obtaining an accurate picture of shared-compensation practices at British workplaces. But the WERS is not perfect for our analysis. It has only categorical measures of establishment outcomes (whether productivity and financial performance are a lot above, somewhat above, or below average in a sector) and little information about the company as a whole. To obtain better data on firm-level compensation strategy and performance, we rely on the Conyon and Read 1999 survey of U.K. firms listed on the London Stock Exchange.[3] This survey contains 299 completed usable responses from a sample of 1,518, giving a response rate of 20 percent, which is good for surveys of this type. The sample is generally representative of the sampled population.[4] Because these are listed companies, we can measure actual value added and related variables as well as track share prices, which we cannot do with the WERS data. By combining information from the two sources, we provide more robust results about the effects of shared compensation than would otherwise be the case.

Table 3.1 contains statistics on shared-compensation practices in 1998 from the WERS and WERS panel surveys. The top section gives the percentage of firms with the specified compensation practice in 1998, weighted by the sample weights.[5] It shows that the most popular form of

2. Interviews were conducted with a manager in each workplace, and 950 worker representatives were also interviewed, representing 82 percent of cases in which an eligible representative was identified. Completed questionnaires were obtained from 28,323 employees, around two-thirds of those distributed.

3. Investment trusts were excluded from the sampling frame. A potential population of 1,505 companies was effectively identified on 11 April 1999. The survey questionnaire was sent to the human resources director or company secretary at each firm. Where possible, the individual human resources director was identified by name and the survey was personally addressed to him or her. We administered the survey as follows. There were three waves to the survey: The first was a fax survey, the second was a postal survey, and the third was another fax survey. The number of firms completing the survey in each wave was 157, 80, and 62, respectively. In addition, another 52 companies in total responded but declined to take part in the survey. The reasons for not completing the survey included (1) it was company policy not to complete surveys; (2) they do not hold relevant statistics; (3) they were too busy; and (4) the survey was not applicable to that company.

4. The procedure involved estimating a standard probit model in which the outcome variable was equal to 1 if the company was in the sample and 0 otherwise. The right-hand-side variables were log of market value, log of employment, log of capital, and ten sector dummies. The null hypothesis of no differences between the sample and nonsample firms in terms of these characteristics was tested. This would be confirmed by nonsignificant coefficients on each of the right-hand-side variables. In the event, it was found that companies with a high market value were about 4 percent more likely to respond and that companies with more employees were about 4 percent less likely to respond. Other control variables (capital intensity variable and sector dummies) were not significant.

5. Weighting by the establishment weights is very important for obtaining nationwide representative figures because of the WERS sampling design. Unweighted figures show much higher proportions with shared-capitalist forms of pay because the sample has disproportionately many large firms with such practices.

**Table 3.1** **Percentages of Employees with Shared Compensation in British Establishments, 1998 (%)**

| | No. of Establishments | Employees Sum |
|---|---|---|
| Any employees eligible for variable pay scheme[a] | | |
| Profit-related payments or bonuses | 31.8 | 37.4 |
| Deferred profit-sharing schemes | 5.8 | 6.4 |
| Employee share ownership schemes | 14.6 | 22.0 |
| Other cash bonus schemes | 21.2 | 24.7 |
| Any variable pay scheme | 53.0 | 63.8 |
| Nonmanagerial employees eligible for variable pay scheme[a] | | |
| Profit-related payments or bonuses | 27.9 | 34.5 |
| Employee share ownership schemes | 12.9 | 20.4 |
| Any group performance-related schemes | 11.5 | 17.3 |
| All employees[b] | | |
| Profit-related payments or bonuses | 41.1 | 40.3 |
| Deferred profit-sharing schemes | 7.8 | 8.5 |
| Nonexecutive employee share ownership | 7.9 | 6.1 |
| SAYE share options | 30.0 | 28.9 |
| Discretionary or executive share ownership schemes | 20.8 | 25.5 |

*Source:* 1998 WERS, WERS Panel 1990–1998.

[a]WERS 1998, weighted.

[b]WERS panel, 1990–1998, unweighted.

shared compensation was profit-related pay or bonuses, the vast majority of which were part of the approved Inland Revenue scheme. The second most important form of shared compensation was "other cash bonus" schemes. This was followed by employee share ownership schemes, covering 14.6 percent of workplaces and 22 percent of employees. Deferred profit-sharing schemes were the least frequently used form of shared compensation. The second section of table 3.1 gives figures for nonmanagerial workers. For the plans on which we have data for all workers and nonmanagerial workers, the percentages covered are modestly lower for the latter, indicating that the bulk of these plans are offered to the majority of the workforce. In fact, questions in the WERS on the proportion of covered nonmanagerial workers show a bimodal distribution, with most firms offering plans to 90 percent to 100 percent of the work force or to no one at all. Finally, 11.5 percent of establishments and 17.3 percent of workers have some form of group performance-related pay.

The bottom section of table 3.1 shows the pattern of shared compensation in the longitudinal WERS file in 1998. The questions on shared compensation in the longitudinal file relate specifically to the legal schemes and thus give a more precise link to the policies in subsection 3.2.1. We report the figures here without taking account of the sample weights because our

ensuing analysis focuses on each establishment as an independent observation, and the weights have less meaning given what ultimately turns out to be a relatively small sample of establishments that change their shared-compensation strategy. These data show that about 40 percent of establishments were covered by profit-related pay, about 30 percent covered by SAYE share options, 21 percent by discretionary or executive option schemes, and about 8 percent by deferred profit sharing or other share ownership schemes.

Turning to our firm-based survey, table 3.2 gives the prevalence of practices across the sample of listed firms for all employees and for managerial and nonmanagerial employees taken separately from 1995 to 1998. Consistent with the establishment results, the data show that firms in the sample increased their use of Inland Revenue–approved compensation practices over this period. For instance, 31.1 percent of firms report that use of SAYE schemes in 1995 increased to 45.8 percent in 1998; the 18.8 percent who used the (now defunct) approved profit-related pay schemes in 1995 increased to 25.1 percent in 1998; and so on. But the data also show increases in the use of nonapproved schemes. The proportion of firms with discretionary option schemes, which are directed at selected employees (such as directors), doubled over the period 1995–1998 from 22.9 percent to 42.8 percent. U.K. firms rarely use companywide bonus schemes related to improvements in productivity. Finally, conditional on having a particular scheme, the data also show that companies are more likely to use shared-compensation practices for managerial employees than for nonmanagerial employees, with one exception: the approved profit-related pay schemes (which were phased out as of the year 2000).

## 3.3 How Should Shared Compensation Affect Firm Performance?

### 3.3.1 Agency Considerations

In principle, shared compensation should motivate workers to work harder and to make decisions that are favorable to the firm, thereby improving corporate performance and ultimately the present discounted value of the enterprise. Shared compensation helps resolve the moral hazard problem between the owner of the firm and the employee when effort levels of the employee are not perfectly observed or verified. An optimal second-best shared-compensation contract motivates the employee to focus upon what the owner cares about while recognizing the trade-off between risk and incentives.

Agency theory predicts that the extent of shared compensation will depend on the characteristics of employees and the firm. The less risk-averse the employee, the higher is the optimal sharing rate between the owner and the employee, because the employee is more willing to bear the relevant

**Table 3.2** **Compensation Strategies in Firm-Based Data Set (%)**

| Compensation Strategy | Percent of Firms with Specified Strategy | | | | Percent of Management Employees with Specified Strategy | | | | Percent of Nonmanagement Employees with Specified Strategy | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1995 | 1996 | 1997 | 1998 | 1995 | 1996 | 1997 | 1998 | 1995 | 1996 | 1997 | 1998 |
| Approved profit-sharing scheme | 18.9 | 19.0 | 22.0 | 25.1 | 77.0 | 79.5 | 73.8 | 78.5 | 62.8 | 65.1 | 62.7 | 65.1 |
| Other share-based profit-sharing scheme | 4.3 | 5.9 | 8.8 | 10.4 | 40.6 | 44.6 | 51.5 | 43.2 | 17.0 | 11.3 | 21.8 | 17.7 |
| Cash-based profit-sharing scheme | 13.6 | 14.5 | 15.9 | 17.1 | 72.1 | 69.0 | 69.9 | 65.2 | 49.5 | 49.7 | 47.4 | 45.5 |
| Approved profit-related pay scheme | 27.6 | 34.7 | 38.1 | 36.9 | 87.1 | 89.0 | 90.2 | 87.3 | 85.7 | 86.9 | 88.1 | 86.5 |
| Gain-sharing scheme[a] | 3.2 | 3.5 | 4.4 | 4.7 | 80.0 | 82.5 | 76.8 | 78.8 | 61.4 | 53.8 | 53.4 | 58.1 |
| Approved SAYE share option scheme | 31.1 | 35.6 | 43.7 | 45.8 | 63.3 | 63.6 | 61.3 | 61.5 | 47.6 | 49.6 | 47.4 | 49.4 |
| Other all-employee share option scheme | 6.1 | 9.3 | 11.5 | 12.4 | 62.8 | 71.9 | 65.2 | 68.3 | 59.7 | 48.1 | 50.4 | 50.8 |
| Approved company share option plan | 41.2 | 45.8 | 54.6 | 56.6 | 52.0 | 54.8 | 56.0 | 56.3 | 13.2 | 16.5 | 18.7 | 18.6 |
| Other discretionary share option scheme | 22.9 | 31.1 | 40.7 | 42.8 | 39.2 | 38.0 | 40.9 | 44.2 | 10.6 | 9.9 | 11.5 | 10.8 |

*Source:* Based on a sample of 299 U.K. stock market firms surveyed in 1999.

*Notes:* Actual numbers of firms per cell may differ. The results in Management and Nonmanagement columns are conditional upon the firm's having the particular compensation strategy.

[a]Companywide bonus scheme related to improvements in productivity.

risk. Similarly, the less effort-averse the employee, the higher is the optimal sharing rate, since that employee will be more willing to put out the requisite effort. On the firm's side, the greater the likely impact of effort on profits, the bigger is the incentive to link employee income to performance. In addition, the more accurate the firm's signal of employee effort and activity, the higher is the optimal sharing rate. The firm should share more rewards when it is more certain that output results come from employee activity rather than from some exogenous factor. At the same time, the firm should not be able to monitor perfectly the effort or activity of the worker, for if management could do that, it would not need an incentive contract in the first place to induce appropriate employee actions.

This analysis has several implications for understanding shared capitalist arrangements. First, in general we would expect that, in the absence of the free-rider problems that are discussed later, shared-compensation systems are associated with improved performance. However, the analysis also suggests that firms with shared-compensation practices are likely to draw upon workers with different characteristics than those that choose other firms—workers with less risk aversion and less disutility from work—and will also themselves have different characteristics from other firms. This creates a problem in inferring causal relations from regressions based on cross-sectional comparisons. Our response is to rely largely on fixed effects models that contrast a firm before and after introduction of shared-compensation practices. This is not perfect, since the introduction of new shared arrangements is itself endogenous, but it does give an accurate picture of performance of the same firm or workplace under different conditions.

### 3.3.2 Decentralization of Decision-Making Rights

Second, the analysis suggests that shared compensation should be accompanied by shared decision making. The process of transforming inputs into outputs in capitalist firms increasingly relies on the performance of multiple tasks by employees. These tasks are bundled into jobs that vary by the number of tasks performed by the employee as well as the decision-making authority assigned to the worker. The trend in the 1990s has been toward jobs that have a wider variety of tasks and that allow employees to make more decisions. The benefits to the firm of decentralizing decision-making authority will depend on factors such as worker-specific (localized) knowledge in the performance of the tasks, the conservation of management time, and more effective motivation of workers. It pays the firm to give incentives to workers only when workers have discretion to vary what they do at workplaces, and it pays management to devolve decisions to employees only when employees have incentives to make decisions that raise the value of the firm. We examine this linkage in our empirical work.

Third, there are potentially important costs to decentralizing decision-

making rights. These include agency costs, coordination costs, and the inefficient use of central information by local decision makers. There are also important questions about the potential efficiency effects of all-employee stock option plans and other schemes that link worker pay to measures of aggregate company performance rather than to group or workplace performance. Chief executive officers (CEOs) and other top executives can affect share prices, so that options or share ownership can help resolve the principal-agent problem for them (see Conyon and Murphy 2000). But employees lower in the firm's hierarchy have little direct effect on the company stock price. They lack a clear "line of sight" to link their decisions to the share prices and company profit levels that would affect their pay. As a result, we would expect firms to use more narrowly defined performance targets—establishment, group, or workplace-related incentive pay systems—for these workers, and that those forms of shared compensation would be more effective in motivating workers than programs that link pay to more aggregate measures.

Core and Guay (2001), using U.S. data, show that the provision options to all employees are consistent with incentive theory. Firms with more monitoring costs, greater growth opportunities, and employees who have greater marginal products allocate greater amounts of option incentives to all employees.

### 3.3.3 The Free-Rider Problem

The classic problem with any group performance–related pay scheme is the free-rider problem (also known as the "$1/N$ problem," where $N$ is the total number of employees in the team or group). In most work situations, employees perform tasks that involve productive interactions with colleagues in which total output reflects the contribution of many individuals. Team production suggests that individual contribution to output cannot be easily identified and that compensation must be based on some aggregate measure of output, such as team or division output. But in such settings there is a potentially weak connection between individual effort and reward. If rewards are shared equally on the basis of team production (and rewards cannot exceed the revenues of the group), then each individual has the incentive to shirk because he or she will gain only $1/N$ of the combined gains from increased effort (Kruse 1993; Blasi, Conte, and Kruse 1996; Kandel and Lazear 1992). Each employee hopes that his or her colleague will put forth the effort to increase output so that he or she will not have to do so and will benefit from increased productivity without bearing the costs.

A number of potential solutions have been suggested to overcome the free-rider problem. One solution is for workers to self-monitor or act as de facto monitors themselves. Another is for firms to invest in policies that promote team culture and employee participation in which group incentives provide a substitute for monitoring through peer pressure. This hori-

zontal monitoring may help resolve the free-rider problem (Kandel and Lazear 1992; Lazear 1995). It is possible that firms that use all-employee stock options or other ownership schemes do so to help create a culture of teamwork and cooperative company spirit that overrides the free-rider problem.

### 3.3.4 Extant Evidence for the United Kingdom

There is considerable evidence on the relationship between employee ownership or profit sharing and corporate performance, but less on the relationship between all-employee stock options and performance or between individual ownership of shares, which U.K. legislation favors, and performance. The majority of the studies are of U.S. origin, but there have been some notable British studies and important studies in other countries as well. The first important analysis was the U.S. General Accounting Office study in 1987, which found that ESOPs had an inconclusive impact on outcomes. Since then, research findings have been more positive, so that a general summary is moderately favorable to shared compensation. The strongest results are for profit sharing (Kruse 1993; Doucouliagos 1995), whereas those for employee ownership are more problematic. Kruse and Blasi (1995) report on ten studies of U.S. ESOPs that have compared before-and-after implementation productivity effects using large databases. The majority of studies yield positive, but often insignificant, estimated effects of ESOP adoption on output.

We briefly summarize extant U.K. studies. In the 1980s, analysts looked at the impact of profit sharing and employee ownership through cooperatives on firm performance. Using the Workplace Industrial Relations Survey (WIRS), the predecessor to the WERS survey, Blanchflower and Oswald (1988) found no relationship between financial performance or the quality of industrial relations and measures of shared compensation (i.e., the existence of share ownership, a stock option plan, profit sharing, or bonus schemes). In a sample of about 100 U.K. companies between 1974 and 1982, Wadhwani and Wall (1990) found weak evidence that profit sharing boosted productivity. Cable and Wilson (1989) found a positive significant productivity effect for profit sharing in a sample of fifty-two British engineering firms; they also found that quality circles, briefing groups, or job rotation had a positive effect on productivity as well, and that having both profit sharing and employee involvement added most to productivity.

Studies in the 1990s have added to the general picture of a modest positive effect of shared compensation on outcomes. Estrin et al. (1997) report a productivity improvement of about 6 percent in cases where profit-sharing bonuses were of the order 5 percent to 10 percent of market wages. Robinson (1998) found that the SAYE scheme was associated with a productivity premium of 23 percent and that consultative and representative

forms of employee participation also raised productivity. McNabb and Whitfield (1998) used establishment data from WIRS and found that financial participation is positively related to financial performance, as is profit-related pay.

In short, the extant U.K. evidence paints a picture much like that in the U.S. studies: Profit sharing has larger effects than ownership on productivity, but neither is overwhelmingly powerful across studies.

### 3.4 Production Function Evidence: Firm-Level Results

We begin with our firm-based production function analysis. Appendix table 3A.1 shows the main characteristics of the data in our sample in addition to the shared-compensation characteristics previously shown in table 3.2. We have information on sales, employment, and capital that allows us to estimate production functions for 284 companies between 1995 and 1998. Trade union presence is constant across time at around 23 percent. Our measure of product market competition, the number of firms reporting more than five competitors, increased from 72 percent of firms in 1995 to 77 percent in 1999. Our measure of information sharing shows a more marked increase from 43 percent in 1995 to 61 percent in 1998. However, firms are much less likely to have a joint committee of managers and employees for the purposes of consultation.

To assess the productivity effects of different Inland Revenue–approved shared-compensation systems on firm-level performance, we used a Cobb-Douglas production function of the following form:

$$\begin{aligned}\text{Log}(Q_{it}) = \alpha_i + \beta_1 \ln(L_{it}) + \beta_2 \ln(K_{it}) + \beta_3(\text{Union}_{it}) + \beta_4(\text{Competition}_{it}) \\ + \beta_5(\text{Share Compensation}K_{it}) + \beta_t(\text{Year Dummies}) + e_{it},\end{aligned}$$

where $Q$ is real sales (Datastream item 104), $L$ is total employment (Datastream item 219), $K$ is an estimate of the current real capital stock (based on an accrual method), Union is a time-varying measure of trade union presence (available from the Conyon and Read [2000] survey data), and Competition is product market competition measure (a dummy variable = 1 if there are more than five competitors; available from the Conyon and Read [2000] survey data).

The key explanatory variables are the measures of shared compensation. They are dummy variables for (1) approved profit-sharing scheme, (2) approved profit-related pay scheme, (3) approved all-employee share scheme, and (4) approved company share option scheme.

The $\alpha_i$ terms are the company fixed effects. By including them we eliminate time-invariant firm factors, such as short-run managerial ability, risk, and so forth. But a fixed effects model does not resolve all problems with nonexperimental data. Issues about endogeneity and dynamics remain.

The endogeneity issue is straightforward: Employees in highly profitable firms may demand some form of their pay in the form of shared compensation. However, in the absence of suitable instruments (as in Blanchflower and Oswald 1988, 724), we estimated a single equation with fixed effects. The key dynamic issue relates to the timing of the shared-compensation practices. Ideally, we would have lagged the compensation practice variables to see whether the introduction of a scheme was subsequently associated with increased productivity or if costs of adjustment delayed its benefits, but the short time series precluded this strategy.

Table 3.3 contains our principal results on the relationship between firm-level productivity and shared modes of compensation. Columns (1) through (4) enter each of the schemes separately into the productivity equation, with year and firm dummies to control for the fixed effects of these variables. Column (5) enters each of the four schemes jointly. Finally, column (6) replaces the firm dummy variables with industry dummy variables, which changes the model from a fixed effects to a cross-sectional analysis. The estimated coefficients on the shared-compensation variables show a significant positive correlation between firm productivity and two of the Inland Revenue–approved schemes: the approved profit-sharing scheme and the company share option plan. In contrast, we find no evidence of a relationship between productivity and the approved profit-related pay scheme (no longer in operation as of 2000) or between productivity and the approved all-employee share option scheme. Column (6) shows that, absent the firm dummy variables, all the proxies for the shared capitalism and compensation variables are positive and significant. The difference between the results in columns (5) and (6) show that the cross-sectional relation between the approved profit-related pay scheme and the SAYE scheme and productivity is attributable to the unobserved characteristics of firm, whereas the relation between the approved profit-sharing scheme and the approved company share option scheme and productivity results from the actual adoption of those programs by particular firms.

The coefficient estimates imply large—seemingly implausibly large—productivity effects. For instance, from column (5), the point estimate on the approved profit-sharing scheme (0.173) implies an increase in productivity of 18.9 percent.[6] Similarly, the productivity effect associated with the approved company share option plan (coefficient estimate 0.121) is 12.2 percent.[7] Because of the $1/N$ problem, we expected the observed effects of the shared-compensation variables to have modest positive impacts on productivity, rather than such huge effects.[8] Various reasons may account

6. Calculated as $(e^{0.1733} - 1) \times 100$.

7. Calculated as $(e^{0.1213} - 1) \times 100$.

8. Lazear (2000) found large productivity effects in an econometric case study of the Safelite Glass Company. Moving from hourly wages to a piece-rate regime was associated with a 44 percent increase in productivity. This could be decomposed into an incentive effect (about 22 percent) and a sorting effect (the remainder).

**Table 3.3** **Firm-Level Productivity Regressions: The Impact of Shared Modes of Compensation in Listed U.K. Firms, 1995–1998**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| log(employment) | 0.6990*** | 0.6997*** | 0.7018*** | 0.7018*** | 0.6990*** | 0.6449*** |
| | (0.0885) | (0.0867) | (0.0888) | (0.0866) | (0.0855) | (0.0219) |
| log(capital) | 0.1707*** | 0.1690*** | 0.1690*** | 0.1833*** | 0.1870*** | 0.3311*** |
| | (0.0400) | (0.0398) | (0.0397) | (0.0471) | (0.0479) | (0.0180) |
| Union | –0.0444 | –0.0318 | –0.0279 | –0.0282 | –0.0593 | –0.0443 |
| | (0.0502) | (0.0460) | (0.0456) | (0.0441) | (0.0529) | (0.0623) |
| Competition | –0.1244 | –0.1667 | –0.1624 | –0.0061 | 0.0337 | 0.1012 |
| | (0.1818) | (0.1670) | (0.1680) | (0.1103) | (0.1305) | (0.0640) |
| Approved profit-sharing scheme | 0.1739*** | | | | 0.1733*** | 0.1731*** |
| | (0.0704) | | | | (0.0728) | (0.0603) |
| Approved profit-related pay scheme | | 0.0369 | | | 0.0446 | 0.2091*** |
| | | (0.0605) | | | (0.0625) | (0.0515) |
| Approved all-employee share option scheme SAYE | | | –0.0142 | | –0.0292 | 0.1003** |
| | | | (0.0396) | | (0.0409) | (0.0546) |
| Approved company share option scheme | | | | 0.1314*** | 0.1213*** | 0.1570*** |
| | | | | (0.0578) | (0.0594) | (0.0584) |
| No. of observations | 942 | 938 | 942 | 936 | 932 | 932 |
| Firms | 284 | 283 | 284 | 283 | 282 | 282 |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effects | Yes | Yes | Yes | Yes | Yes | No |
| Industry dummies | No | No | No | No | No | Yes |
| Time period | 1995–1998 | 1995–1998 | 1995–1998 | 1995–1998 | 1995–1998 | 1995–1998 |
| Adjusted $R^2$ | 0.9826 | 0.9824 | 0.9824 | 0.9824 | 0.9825 | 0.8711 |

*Notes:* Dependent variable in each column is log of total output. Robust standard errors reported in parentheses. All regressions contain an unreported arbitrary constant.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

for our high estimates. The firms that introduced these schemes may have simultaneously introduced other high-performance management practices that also contributed to productivity.[9] Without any measure of these other changes, our regression attributes the improvement in productivity solely to the compensation scheme rather than to the full set of changed practices.

We investigated our basic findings further by lagging the compensation scheme variables to see if there was any evidence of lagged effects in the link between having a shared capitalism arrangement and productivity. Lagging the shared-compensation variables by one period altered our results modestly. Reestimating the models in table 3.3, columns (1) through (5),

9. There is a range of estimates of the relationship between shared capitalism or profit-sharing arrangements and productivity that average around modest positive values. Our results may simply be the upper end of that range.

with the four compensation variables lagged one period produced the following estimates. The coefficient (standard error) on the approved profit-sharing scheme was 0.060 (0.083); on the approved profit-related pay scheme, it was –0.015 (0.066); and on the approved all-employee share option scheme (SAYE) it was significantly negative, –0.104 (0.058). However, on the approved company share option scheme, the estimate (standard error) was positive 0.096 (0.057) and significant at the 10 percent level. This suggests that the results in table 3.3 are sensitive to the specification of timing, which itself suggests that the firms introduced other changes as well. In sum, the firm-level results suggest that productivity is positively related to shared capitalism arrangements, but they do not conclusively establish that relation. For that, we would have to vary the compensation schemes (and other accompanying changes in labor practices) through an experimental design.

This said, we note that the differential effect of the alternative shared-compensation systems reported in table 3.3 broadly fits with our earlier discussion. Approved company share option schemes cover selected employees, typically directors, who can affect company performance in response to stock option incentives. The impact of the profit-sharing scheme is more difficult to account for: On the one hand, it is based on profits, which are more susceptible to employee effort than share prices, but the reward is shares, which are more risky than cash or profit-related bonuses would be. Since the new all-employee partnership share system is a close lineal descendent of the approved profit-sharing scheme, the results suggest that the new program will have positive effects. Finally, the negligible coefficient on the profit-related pay scheme (consistent with Blanchflower and Oswald 1988) indicates that the decision to terminate this program will have no adverse productivity effects (although it will hurt employee-owned firms that have used the program—such as John Lewis, among others—at least until they find substitute ways to reward staff).

Further experiments were carried out to test the robustness of our firm-level findings. We imposed constant returns to scale on the production function. The overall results remained unchanged. For example, the re-estimated full model contained in table 3.3, column (5), yielded labor and capital coefficients of 0.789 and 0.211, respectively. The qualitative effects of the shared-compensation indicator variables remained unaltered. The approved profit-related pay and SAYE dummies were insignificant. The point estimate (robust standard error) on the approved profit-sharing scheme was 0.176 (0.075), and for the approved company share option plan it was 0.106 (0.064). Both variables are significant, although the estimate on the company share option plan falls slightly.

Our firm-based survey also gathered data on whether or not the firm shared information with employees, consulted with employees, or communicated with them extensively. We use these data to develop an information-sharing dummy variable for firms that had at least one of the schemes, and

we added this variable to the equation and interacted it with the shared-compensation variables.[10] A positive interaction term indicates that a shared-compensation system is more effective in environments where information, consultation, and communication between employees and managers are also found. The results of this analysis (given in table 3A.2) indicate that information sharing is not associated with higher productivity, conditional on shared compensation, and that the interaction effects between the shared compensation variables and forms of information sharing, communication, and consultation between managers are by and large insignificant in this data set and so appear not to contribute to higher productivity.[11]

Table 3.4 further investigates the association between productivity and shared-compensation arrangements by differentiating the effect of our four compensation schemes between the type of employee covered by each scheme: managerial employees in column (1) and nonmanagerial employees in column (2). This distinction is motivated by the notion that company share option schemes ought to have a much greater effect among managerial employees, while approved profit-sharing schemes might have a more evenhanded impact. In addition, the data tell us the percentage of managerial employees and of nonmanagerial employees covered by each compensation arrangement. This contrasts with the 0-1 dummy variable for the presence of shared-compensation arrangements used in table 3.3.[12] Presumably, the more-refined percentage of employees covered by a scheme gives us a better indicator of the potential incentive effect of the scheme than the simple measure of the presence or absence of the scheme. The evidence in table 3.4 shows a positive, although not statistically significant, relation between share options and productivity for managers but no such relation for nonmanagers. By contrast, the estimates show a larger impact of approved profit-sharing schemes on productivity for nonmanagerial workers than for managerial workers. The different proportions of managers and nonmanagers covered by the schemes make it hard to reach a sharp conclusion, however, since the results may be partly driven by those proportions rather than any differences in behavior.

### 3.4.1 Stock Market Evidence

A different way to examine the effect of shared compensation on the performance of listed firms is to compare the development of the stock price of firms with shared compensation to the stock prices of other firms. If

10. The equation is $\log(Q_{it}) = \alpha_i + \beta_1 \ln(L_{it}) + \beta_2 \ln(K_{it}) + \beta_3(\text{Union}_{it}) + \beta_4(\text{Competition}_{it}) + \beta_5(\text{Share Compensation}K_{it}) + \beta_6(\text{Information Sharing}) + \beta_7(\text{Information Sharing} \times \text{Share Compensation}K_{it}) + \beta_t(\text{Year Dummies}) + e_{it}$.

11. Recall that the information-sharing variable is made up of three other variables (see tables 3.3 and 3.4). These component variables were tried separately to see whether this altered the results. They did not.

12. Where a company does not have a scheme the variable is coded zero.

**Table 3.4** **Firm-Level Productivity Regressions: Management and Nonmanagement Participation in Shared-Compensation Schemes**

| | Only Managerial Employees Are Covered (1) | Only Nonmanagerial Employees Are Covered (2) |
|---|---|---|
| log(employment) | 0.7015*** | 0.7039*** |
| | (0.0886) | (0.0905) |
| log(capital) | 0.1891*** | 0.1937*** |
| | (0.0491) | (0.0488) |
| Union | –0.0333 | –0.0404 |
| | (0.0517) | (0.0564) |
| Competition | –0.0306 | 0.0310 |
| | (0.1241) | (0.0970) |
| Employees participating (%) | | |
| Approved profit-sharing scheme | 0.1128*** | 0.1975*** |
| | (0.0625) | (0.0693) |
| Approved profit-related pay scheme | –0.0464 | –0.0643** |
| | (0.0382) | (0.0364) |
| Approved all employee share option scheme SAYE | –0.0066 | –0.0159 |
| | (0.0701) | (0.0833) |
| Approved company share option scheme | 0.1065 | –0.0356 |
| | (0.0913) | (0.0931) |
| No. of observations | 932 | 932 |
| Firms | 282 | 282 |
| Year dummies | Yes | Yes |
| Firm fixed effects | Yes | Yes |
| Time period | 1995–1998 | 1995–1998 |
| Adjusted $R^2$ | 0.9823 | 0.9823 |

*Notes:* Shared-compensation arrangement is measured as proportion of employees of given type participating in scheme. Dependent variable is log of total output. Robust standard errors reported in parentheses. All regressions contain an unreported arbitrary constant.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

firms with shared compensation make investments that raise sales in the future and thus raise the value of the firm, this could show up in the growth of their stock prices but not in current productivity figures.[13] Accordingly, we examined the association between stock prices and the extent of shared compensation. A London firm, Capital Strategies, produces an Employee Ownership Index (EOI) of the share prices of firms that have a "significant degree of employee share ownership," which it then compares to general movements in the London stock market. Figure 3.1 shows that the EOI

13. In equilibrium, the impact should be on price-earnings ratios, but in a period of increased use of shared compensation, such as the 1990s, it would be reflected in the growth of share prices.

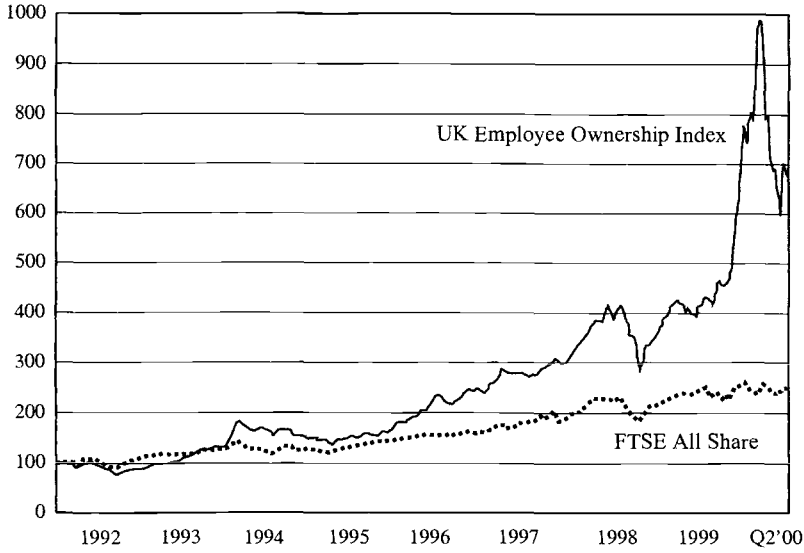


**Fig. 3.1 Stock returns 1992–2000: companies with all-employee share plans versus the FTSE All-Share Index**

*Source:* Capital Strategies ([http://www.esop.co.uk/press/210800.htm]).

outperformed the all-share index in the 1990s. An investment of £100 in the EOI in 1992 would be worth £667, while the same investment in the FTSE Group All-Share Index would be worth £244 (see http://www.esop.co.uk/press/210800.htm). Using our database of 299 listed firms, we identified companies that used approved profit sharing or all-employee share schemes and created an index of their share prices from 1991 to 1999. Figure 3.2 shows that £100 invested in the portfolio of companies that use share-based compensation plans grew to £350. However, the same £100 invested in the FTSE All-Share Index in 1990 is worth about £250 in 1999.

Since neither the Capital Strategies index nor our index controls for risk factors or for the concentration of these firms in particular sectors, it is possible that a more refined analysis might find that these (or other) factors explain the observed results. The consistency with our productivity results, however, lends weight to the overall conclusion that shared capitalism pays off for firms. To explore this issue further, we estimated stock returns equations similar to those advocated by Wadhwani and Wall (1990).[14] We regressed the estimated annual return to owning the firms' shares on a dummy variable that is equal to 1 whenever the shared-compensation

14. The stock return for a company was defined as the annual change in the company-return index to the 31 December end of the year. The return index was derived from Datastream item RI and captures capital appreciation and dividends reinvested on a continuous basis. The market return was calculated the same way for the FTSE All-Share Index.

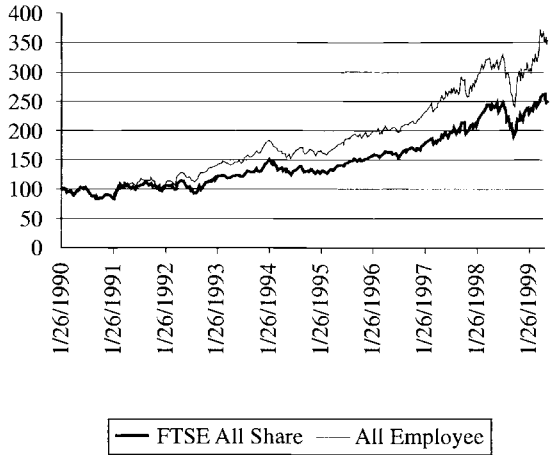


**Fig. 3.2 Stock returns 1990–1999: companies with all-employee share plans versus the FTSE All-Share Index**

*Source:* Datastream International.

*Note:* Stock returns calculated as the daily change in company market value.

scheme is in effect and a set of covariates to control for other factors that will affect the stock price: the return on the FTSE All-Share Index and industry dummies; year and industry dummies; year, industry, and industry × year interaction variables; and finally year and firm dummy variables. Although this analysis falls short of a typical event study,[15] because we only observe whether there is a scheme in place in a particular year, not the exact day the firm announced the adoption of the scheme, it should still cast some light onto the impact of the schemes on share prices.

Table 3.5 gives the results of our analysis. Column (1) records the regression coefficients on the four compensation variables with the aggregate market return and industry dummy variables as covariates. Column (2) records the regression coefficients on the four compensation variables, with the industry dummy variables and year dummies as covariates. Column (3) records the regression coefficients on the four compensation variables, with year dummies, industry dummies, and industry and year dummy interactions. In all of these calculations there is a statistically significant positive association between stock returns and two of the shared compensation variables: the all-employee profit-sharing scheme and the SAYE scheme. The positive effect of the all-employee profit-sharing scheme on stock returns mirrors the positive relation between all-employee profit sharing and productivity in our firm productivity regressions. But we do not find a pos-

15. In an event study, one compares the stock price immediately after an announcement of economically important information with the price immediately before the information became known.

**Table 3.5** **Firm-Level Stock Returns and Shared-Compensation Practices, 1995–1998**

| | Firms' Annual Stock Returns | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Approved profit-sharing scheme | 0.0910*** | 0.0935*** | 0.0832*** | 0.1598 |
| | (0.0314) | (0.0308) | (0.0315) | (0.1106) |
| Approved profit-related pay scheme | 0.0223 | 0.0157 | 0.0152 | 0.0393 |
| | (0.0293) | (0.0287) | (0.0292) | (0.0820) |
| Approved all-employee share option scheme SAYE | 0.0749*** | 0.0815*** | 0.0778*** | 0.0529 |
| | (0.0299) | (0.0292) | (0.0291) | (0.0546) |
| Approved company share option scheme | 0.0204 | 0.0308 | 0.0282 | 0.0769 |
| | (0.0312) | (0.0301) | (0.0295) | (0.1036) |
| Return on FTSE All-Share Index | Yes | No | No | No |
| Year dummies | No | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes | No |
| Industry × year dummies | No | No | Yes | No |
| Firm fixed effects | No | No | No | Yes |
| No. of observations | 913 | 913 | 913 | 913 |
| Time period | 1995–1998 | 1995–1998 | 1995–1998 | 1995–1998 |
| $R^2$ | 0.043 | 0.103 | 0.155 | 0.248 |

*Notes:* Dependent variable is firm shareholder return (defined as the annual percentage change in the Datastream return index for each company). Robust standard errors reported in parentheses. Compensation scheme variables are dummy variables equal to 1 if a scheme is in effect, 0 otherwise. All regressions estimated by ordinary least squares (OLS).

***Significant at the 1 percent level.

itive link between the approved company share option plan and the share price, perhaps because the option plan distributes some of the benefits of better performance to workers rather than to shareholders.

Column (4) of the table provides a stronger test of the effect of the introduction of the shared-compensation schemes on share prices. Here we regress the annual stock return on dummy variables for each firm and for the year. This effectively compares share prices of the same firm when it has a particular scheme in place and when it does not. All of the shared-compensation variables obtain positive coefficients in this regression, but only the approved profit-sharing scheme has an estimated coefficient greater than its standard error. We conclude that when a firm introduces an approved profit-sharing scheme its stock performs modestly better, but that much of the positive relation between share prices and shared compensation is due to unobserved firm characteristics that yield high firm returns.

### 3.4.2 Shared Compensation and Information and Decision Making: Firm-Level Effects

An important prediction from the theory of shared compensation is that there should be a complementarity between shared-compensation prac-

tices and the allocation of decision-making rights and information sharing with workers. To get at this issue we used questions from our firm-level survey that relate to consultation, communication, and information sharing. In particular, the survey asked firms to indicate whether they had "a joint committee of managers and employees primarily concerned with *consultation* rather than negotiation"; "a formal structure for *information sharing* with employees (e.g., provision of data on financial status, production and labor market position, and market strategy)"; and, finally, "a formal structure for *communication* between all levels of employees and management (e.g., quality circles, newsletters, and suggestion schemes)." In addition, we created an aggregate variable that represents the presence of any of these forms of information or decision.[16]

To see whether these forms of information and decision making are more likely in firms with shared-compensation modes of pay, we regressed the dichotomous variables indicating the presence of these four forms of information and decision sharing on the presence of the shared-compensation schemes in place at listed U.K. firms. We estimated simple probit models on the pooled data over the whole sample period. In addition to the experimental shared-compensation variables, we also included two other measures of pay practices. Specifically, firms were asked to indicate the existence of "team-based performance-related pay (related to the achievement of team objectives)" and the existence of "individual performance-related pay (merit pay or bonuses determined by agreed individual objectives)."

The results contained in table 3.6 report the marginal effects from the probit estimation. They show, as expected, a generally positive correlation between information sharing and decision rights and the use by firms of shared-compensation structures.[17] The general pattern of results, therefore, seems to fit with the prediction from incentive theory. Team-based pay increases the likelihood of firms' using consultation, information sharing, and communications systems. They are always positively correlated. Moreover, the incidence of some shared-compensation systems increases the likelihood of firms' adopting particular information-sharing and decision-making environments. For instance, approved profit sharing is generally positively related to consultation and communication systems but not to information sharing. Approved SAYE schemes increase the likelihood of all forms of information sharing and decision making. However, there is generally no relation between approved company share option plans

16. These questions are based upon and hence similar to the WIRS and WERS questions. See the establishment-level results that follow. The descriptive statistics for the firm-level questions are contained in table 3A.1.

17. We experimented with other estimation methods. For instance, a random-effects logit model yielded qualitative results similar to those presented in the paper.

**Table 3.6** **Relationship between Shared Compensation, Communication, and Consultation: Firm-Level Estimates**

| | Dependent Variables | | | |
|---|---|---|---|---|
| | Joint Consultation Committees | Information Sharing | Communication Structure | Any Consultation or Communication |
| Approved profit sharing (YN) | 0.097** | 0.043 | 0.152** | 0.186** |
| | (0.034) | (0.043) | (0.046) | (0.044) |
| Approved profit-related pay (YN) | −0.004 | −0.044 | 0.103** | 0.112** |
| | (0.026) | (0.037) | (0.038) | (0.038) |
| Approved SAYE (YN) | 0.072** | 0.101** | 0.107** | 0.138** |
| | (0.028) | (0.037) | (0.039) | (0.038) |
| Approved company share option plan (YN) | −0.086** | −0.035 | 0.011 | −0.046 |
| | (0.024) | (0.034) | (0.037) | (0.036) |
| Team-based pay (YN) | 0.087 | 0.121 | 0.275 | 0.239 |
| | (0.042) | (0.050) | (0.049) | (0.046) |
| Individual performance-related pay (YN) | 0.1556 | 0.019 | 0.047 | 0.022 |
| | (0.052) | (0.052) | (0.057) | (0.058) |
| log (real sales) | ✓ | ✓ | ✓ | ✓ |
| log (total employees) | ✓ | ✓ | ✓ | ✓ |
| Union recognized in workplace (YN) | ✓ | ✓ | ✓ | ✓ |
| Industry (YN)[a] | ✓ | ✓ | ✓ | ✓ |
| Year dummies (YN) | ✓ | ✓ | ✓ | ✓ |
| | ✓ | ✓ | ✓ | ✓ |
| Constant | ✓ | ✓ | ✓ | ✓ |
| No. of observations | 928 | 965 | 965 | 969 |
| Pseudo $R^2$ | 0.247 | 0.175 | 0.201 | 0.241 |

*Source:* Authors' survey.

*Notes:* Marginal effects reported; robust standard errors in parentheses. Y = yes; N = no. Checks indicate that variable is included.

[a]1-digit SE dummies.

**Significant at the 5 percent level.

and information sharing (except the negative impact observed for joint-consultation committees). Finally, we find little evidence of a relationship between approved profit-related pay schemes and decentralized decision making. This is consistent with the notion that many firms used this to get tax advantages without really linking pay to profits. We reconsider these issues using the establishment-level data in the following section.

### 3.5 Production Function Evidence: Establishment-Level Results

The WERS survey asks managers to rate the performance of their workplace relative to their industry on the basis of financial performance and

labor productivity.[18] The rating is on a five-point scale, according to which many more managers rate their establishment as better than average rather than below average. We analyze these data using an ordered probit analysis, with the outcomes ordered so that positive coefficients imply better outcomes. Our cross-sectional analysis links financial performance and productivity of each establishment to measures of shared compensation that are conditional on the number of employees, age of establishment, one-digit industry, and distribution of the workforce by skill and gender, along with dummy variables for the degree of competition in the sector.

Table 3.7 presents the results for the 1998 WERS cross section. In these calculations we use two different measures of shared compensation as independent variables: a 0/1 absence/presence measure of particular types of shared compensation and, in separate calculations, a continuous measure of the percentage of nonexecutive workers covered by the schemes. We examine the effects of each program and also examine the effect of a simple aggregate measure of all the programs within an establishment. Regardless of the particular measure, the results show a positive relationship between shared compensation and economic performance.

Consider first the results for financial performance. The calculations for the separate programs show that each of the measures of shared compensation is positively related to the financial performance of the firm. The largest and most significant coefficients are for employee share ownership and profit-related pay; the smallest and least significant coefficient is for deferred profit share. We are dubious about the interpretation of the profit-related pay variable, since firms that have profits are more likely to use profit-related pay, but there is no comparable reverse causality problem in the linkage between other shared-compensation schemes and performance. In the summary columns we report results when we aggregate the four shared compensation systems into a single "summated rating" (Bartholomew 1996). The summated rating simply adds together the 0/1 variables to obtain an index from 0 to 4, depending upon how many forms of shared compensation the firm used. In the calculation the coefficient is positive and over four times its standard error, indicating that, broadly speaking, establishments with shared compensation have better performance. The next columns repeat these calculations with the proportion of workers covered by each system (or the summation thereof) as the independent variables. They give modestly stronger results to those with the presence of program measures.

The calculations for labor productivity show that employee share ownership and profit-related pay are significantly positively linked to produc-

18. We have also examined the effect of shared compensation on two other variables—quality of goods or services and changes in productivity over the previous five years—and found weaker positive effects for the impact of shared compensation on quality and stronger effects for its impact on changes in productivity than the effects shown in the exhibit.

**Table 3.7** **Ordered Probit Estimates of the Link between Shared Compensation and Financial Performance and Labor Productivity**

| | Financial Performance (5-point scale) | | | | Labor Productivity (5-point scale) | | | |
|---|---|---|---|---|---|---|---|---|
| | Presence (YN) | | Coverage (%) | | Presence (YN) | | Coverage (%) | |
| | Separate | Summary | Separate | Summary | Separate | Summary | Separate | Summary |
| Profit-related pay (YN) | 0.18 | | 0.19 | | 0.14 | | 0.18 | |
| | (0.06) | | (0.07) | | (0.07) | | (0.07) | |
| Deferred profit sharing (YN) | 0.08 | | 0.10 | | 0.01 | | 0.04 | |
| | (0.10) | | (0.10) | | (0.10) | | (0.10) | |
| Employee share ownership (YN) | 0.21 | | 0.23 | | 0.25 | | 0.23 | |
| | (0.07) | | (0.08) | | (0.07) | | (0.08) | |
| Any group performance-related pay (YN) | 0.11 | | 0.08 | | 0.04 | | 0.12 | |
| | (0.07) | | (0.10) | | (0.08) | | (0.10) | |
| Number of group variable pay schemes | | 0.14 | | | | 0.12 | | |
| | | (0.03) | | | | (0.03) | | |
| Sum % eligible for group variable pay | | | | 0.19 | | | | 0.19 |
| | | | | (0.04) | | | | (0.04) |
| Individual performance-related pay only (YN) | 0.07 | 0.07 | 0.10 | 0.12 | 0.07 | 0.09 | 0.31 | 0.32 |
| | (0.12) | (0.12) | (0.19) | (0.19) | (0.12) | (0.12) | (0.20) | (0.20) |
| Union recognized in workplace (YN) | –0.13 | –0.12 | –0.14 | –0.13 | –0.06 | –0.05 | –0.06 | –0.05 |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |

(*continued*)

**Table 3.7** (continued)

| | Financial Performance (5-point scale) | | | | Labor Productivity (5-point scale) | | | |
|---|---|---|---|---|---|---|---|---|
| | Presence (YN) | | Coverage (%) | | Presence (YN) | | Coverage (%) | |
| | Separate | Summary | Separate | Summary | Separate | Summary | Separate | Summary |
| Age of establishment (years) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Number of employees (N) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Women in the workplace (%) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Skilled—3 levels (%) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry—11 levels (YN) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Competition—5 levels (YN) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cut 1 | –2.35 | –2.35 | –2.36 | –2.35 | –2.26 | –2.27 | –2.27 | –2.27 |
| | (0.16) | (0.16) | (0.16) | (0.16) | (0.16) | (0.16) | (0.16) | (0.16) |
| Cut 2 | –1.37 | –1.38 | –1.39 | –1.38 | –1.34 | –1.34 | –1.34 | –1.34 |
| | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) |
| Cut 3 | –0.07 | –0.08 | –0.09 | –0.09 | 0.26 | 0.25 | 0.25 | 0.26 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.13) | (0.12) | (0.13) | (0.13) |
| Cut 4 | 1.13 | 1.11 | 1.10 | 1.11 | 1.52 | 1.50 | 1.52 | 1.52 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.13) | (0.13) | (0.13) | (0.13) |
| No. of observations | 1,772 | 1,773 | 1,767 | 1,767 | 1,691 | 1,692 | 1,685 | 1,685 |
| Pseudo $R^2$ | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.01 | 0.014 |

*Source:* 1998 WERS cross section.

*Notes:* Standard errors in parentheses. Y = yes; N = no. Checks indicate that the variable is included.

tivity, while deferred profit-sharing schemes and group performance-related pay are not. Again, the summated rating measure of programs yields a positive, highly significant coefficient. In the last two columns, which use the proportion of nonmanagerial workers covered by the schemes as the independent variables, we obtain comparable results, with employee share ownership and profit-related pay most strongly related to productivity among the individual programs. The summated rating statistic has the same strong impact on labor productivity that it did on financial performance.

In addition to the shared-compensation variables, we included two other human resource–related measures: whether or not the firm has some form of individual performance-related pay and no group performance pay (i.e., piece rates or commissions), and union recognition. The individual pay measures are weakly positively related to financial performance and productivity, while unionism is negatively related to financial performance and obtains an insignificant negative coefficient in the productivity equation.[19]

Finally, table 3.8 considers two other outcome measures: the quality of product and services and changes in labor productivity. The relationship between the experimental shared-compensation variables and changes in labor productivity are qualitatively similar to those established so far—namely, a positive relationship between shared compensation and economic performance (in this case, productivity growth). On the other hand, we are unable to identify a relationship between the shared-compensation system and the quality of products and service produced.

### 3.5.1 Shared Compensation and Information, and Decision Making: Establishment Effects

As noted, a key prediction of the theory of shared compensation is that establishments with shared-compensation practices should also share information and decision making with workers. The 1998 WERS contains a module on consultation and communication that allows us to examine this prediction at the establishment level. Specifically, the WERS asks managers whether their workplace has "a system of briefings for any section or sections of the workforce"; "committees of managers and employees . . . primarily concerned with consultation, rather than negotiation"; "groups at this workplace that solve specific problems or discuss aspects of performance or quality . . . sometimes known as quality circles"; and "consultative committees of managers and employees in your organization that operates at a higher level than this establishment."

To see whether these forms of information and decision making are more likely in firms with shared-compensation modes of pay, we regressed

19. Metcalf finds that this effect occurs exclusively in establishments where competition is low, which suggests that unions are redistributing rents.

**Table 3.8** **Ordered Probit Estimates of the Link between Shared Compensation and Quality of Product and Services and Changes in Labor Productivity**

| | Quality of Product and Services (5-point scale) | | | | Changes in Labor Productivity (5-point scale) | | | |
|---|---|---|---|---|---|---|---|---|
| | Presence (YN) | | Coverage (%) | | Presence (YN) | | Coverage (%) | |
| | Separate | Summary | Separate | Summary | Separate | Summary | Separate | Summary |
| Profit-related pay (YN) | 0.08 | | 0.17 | | 0.19 | | 0.25 | |
| | (0.06) | | (0.07) | | (0.07) | | (0.08) | |
| Deferred profit sharing (YN) | –0.04 | | –0.03 | | –0.08 | | –0.06 | |
| | (0.10) | | (0.10) | | (0.11) | | (0.11) | |
| Employee share ownership (YN) | 0.07 | | 0.02 | | 0.14 | | 0.13 | |
| | (0.07) | | (0.08) | | (0.08) | | (0.08) | |
| Any group performance-related pay (YN) | 0.06 | | 0.10 | | 0.30 | | 0.35 | |
| | (0.07) | | (0.10) | | (0.08) | | (0.10) | |
| Number of group variable pay schemes | | 0.04 | | | | 0.14 | | |
| | | (0.03) | | | | (0.03) | | |
| Sum % eligible for group variable pay | | | | 0.10 | | | | 0.22 |
| | | | | (0.04) | | | | (0.04) |
| Individual performance-related pay only (YN) | –0.19 | –0.19 | –0.13 | –0.12 | 0.29 | 0.24 | 0.23 | 0.21 |
| | (0.11) | (0.11) | (0.17) | (0.17) | (0.12) | (0.12) | (0.19) | (0.19) |
| Union recognized in workplace (YN) | –0.26 | –0.26 | –0.26 | –0.27 | 0.22 | 0.22 | 0.22 | 0.20 |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Age of establishment (years) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Number of employees (N) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Women in the workplace (%) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Skilled—3 levels (%) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Industry—11 levels (YN) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Competition—5 levels (YN) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cut 1 | –3.14 | –3.16 | –3.13 | –3.14 | –2.11 | –2.12 | –2.12 | –2.12 |
| | (0.24) | (0.24) | (0.24) | (0.24) | (0.16) | (0.15) | (0.16) | (0.15) |
| Cut 2 | –2.02 | –2.03 | –2.00 | –2.01 | –1.33 | –1.35 | –1.34 | –1.35 |
| | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) |
| Cut 3 | –0.60 | –0.61 | –0.59 | –0.60 | –0.49 | –0.51 | –0.51 | –0.51 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) |
| Cut 4 | 0.83 | 0.82 | 0.85 | 0.83 | 0.59 | 0.57 | 0.58 | 0.57 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) |
| No. of observations | 1,878 | 1,879 | 1,872 | 1,872 | 1,830 | 1,831 | 1,823 | 1,823 |
| Pseudo $R^2$ | 0.03 | 0.03 | 0.03 | 0.03 | 0.02 | 0.02 | 0.02 | 0.02 |

*Source:* 1998 WERS cross section.

*Notes:* Standard errors in parentheses. Y = yes; N = no. Checks indicate that the variable is included.

0/1 variables for the presence of these four forms of information and decision sharing on the absence or presence of the shared-compensation schemes for nonmanagerial workers at the establishment. For simplicity, we used a linear probability regression format for these computations. The results in table 3.9 show the expected complementarity, with share ownership and (the relatively rare) deferred profit-sharing having the most substantial link to the various forms of communication and consultation. Once again, profit-related pay shows the weakest link to the various communication and consultation groups—indeed, it is negatively related to joint consultation committees and substantially related to higher-level committees. The pattern fits broadly, moreover, with what we might reasonably expect from incentive theory. Group-related pay is linked to brief-

**Table 3.9** **Regression Estimates of the Relationship between Shared Compensation for Nonmanagerial Employees and Communication and Consultation**

| | Dependent Variables | | | |
|---|---|---|---|---|
| | Briefings | Joint Consultation Committees | Quality Circles | High-Level Joint Consultation Committees |
| Profit-related pay (YN) | 0.03 | 0.05 | 0.09 | 0.06 |
| | (0.02) | (0.03) | (0.03) | (0.03) |
| Deferred profit sharing (YN) | 0.06 | 0.15 | 0.15 | 0.14 |
| | (0.03) | (0.04) | (0.04) | (0.04) |
| Employee share ownership (YN) | 0.04 | 0.06 | 0.08 | 0.09 |
| | (0.02) | (0.03) | (0.03) | (0.03) |
| Any group performance-related pay (YN) | 0.06 | 0.06 | 0.07 | 0.02 |
| | (0.02) | (0.03) | (0.03) | (0.03) |
| Individual performance-related pay only (YN) | 0.05 | 0.08 | 0.04 | 0.04 |
| | (0.03) | (0.05) | (0.05) | (0.05) |
| Union recognized in workplace (YN) | 0.09 | 0.19 | 0.13 | 0.27 |
| | (0.02) | (0.02) | (0.03) | (0.02) |
| Age of establishment (years) | ✓ | ✓ | ✓ | ✓ |
| Number of employees (N) | ✓ | ✓ | ✓ | ✓ |
| Women in the workplace (%) | ✓ | ✓ | ✓ | ✓ |
| Skilled—3 levels (%) | ✓ | ✓ | ✓ | ✓ |
| Industry—11 levels (YN) | ✓ | ✓ | ✓ | ✓ |
| Competition—5 levels (YN) | ✓ | ✓ | ✓ | ✓ |
| Constant | 0.72 | 0.28 | 0.26 | 0.19 |
| | (0.03) | (0.05) | (0.05) | (0.05) |
| No. of observations | 2,075 | 2,075 | 2,074 | 2,031 |
| $R^2$ | 0.08 | 0.15 | 0.09 | 0.18 |
| Adjusted $R^2$ | 0.06 | 0.14 | 0.79 | 0.17 |
| Standard error of the estimate | 0.30 | 0.46 | 0.48 | 0.46 |

*Source:* WERS 1998 (available at [http://www.dti.gov.uk/cr/emar/1998wers.htm]).

*Notes:* Standard errors in parentheses. Y = yes; N = no. Checks indicate that the variable is included.

ings, consultation committees, and quality circles, but not to higher-level committees, while employee ownership and deferred profit sharing are relatively strongly related to higher-level committees, as well as to the lower-level forms of communication and consultation. But the strongest single variable that increases the probability of communication and consultation is the recognition of a union at the workplace (see Gregg and Machin 1988).

In addition, following the same procedures that we used for analyzing our firm-based data set, we examined whether the existence of consultation and communication channels affected the link between shared compensation and outcomes. We found no evidence that it did and no evidence that the presence of both shared compensation and more communication raised productivity more than did the separate impact of each.[20]

### 3.5.2 Longitudinal Analyses

The cross-relation patterns in the WERS in tables 3.7, 3.8, and 3.9 are consistent with the notion that shared-compensation systems have beneficial economic effects and are associated with greater communication and consultation with employees. But they leave the door open to alternative interpretations of the positive relationships. One interpretation is that the data reflect unobserved differences among firms: "Good firms" use shared compensation systems, consult or communicate more with employees, and have higher productivity. To examine the unobservable good-firm effect, we use a fixed effects longitudinal analysis that compares the same firm before and after a given change in shared-compensation modes of pay. As noted earlier, fixed effects models do not resolve all questions about causality in nonexperimental data—in particular, there are issues relating to the endogeneity of policy—but they do take us one step closer to the ideal experimental design, particularly if changes in policies reflect factors that are themselves uncorrelated with ensuing performance.

The WERS files permit two types of before-and-after comparisons. First, the 1998 WERS "change in the workplace" module asked managers about changes in the past five years (1993–1998) in the establishment's labor practices and economic outcomes, including, which is critical to us, whether the firm increased or decreased (by a lot or a little) the proportion of nonmanual workers covered by variable pay or instead kept the proportion constant. By relating changes in the proportion of workers covered by variable pay to changes in other key economic measures—such as information provided to workers, employee decision making, and productivity—we have a fixed effects analysis, albeit one based on questions of a retrospective nature.

20. We entered the consultation and communication variables into the ordered probit calculations in table 3.6 and found they did not affect the results substantively; nor did various forms of interaction between composites of the variables and shared-compensation variables.

Table 3.10 shows the link between the change in variable pay, which is given in the rows, and changes in other variables, given in the columns. The first panel shows that firms that increased the proportion of workers receiving variable pay also increased information flows to employees, while firms that decreased variable pay disproportionately reduced the information provided. The second panel shows that changes in variable pay and changes in employees' influence over their job also moved in the same direction, while the third and fourth panels show the relation for employee

**Table 3.10** **Change in the Proportion of Variable Pay for Nonmanagerial Workers by Changes in Workplace Activities over a Five-Year Period, 1993–1998 (%)**

| Change in Proportion of Variable Pay for Nonmanagerial Employees | Up a Lot | Up a Little | No Change | Gone Down | Total |
|---|---|---|---|---|---|
| *Change in Information Provided to Employees by Employers* | | | | | |
| Up a lot | 67.8 | 24.6 | 6.2 | 1.4 | 100.0 |
| Up a little | 53.1 | 30.7 | 16.0 | .2 | 100.0 |
| No change | 41.3 | 37.6 | 19.9 | 1.3 | 100.0 |
| Gone down | 36.7 | 38.8 | 22.4 | 2.0 | 100.0 |
| Total | 47.0 | 34.5 | 17.5 | 1.0 | 100.0 |
| *Change in Employees' Influence over Job by Employers* | | | | | |
| Up a lot | 31.3 | 50.2 | 17.1 | 1.4 | 100.0 |
| Up a little | 21.3 | 48.8 | 28.1 | 1.7 | 100.0 |
| No change | 12.6 | 44.2 | 38.4 | 4.8 | 100.0 |
| Gone down | 18.4 | 36.7 | 36.7 | 8.2 | 100.0 |
| Total | 16.9 | 45.8 | 33.5 | 3.8 | 100.0 |
| *Change in How Hard People Work by Employers* | | | | | |
| Up a lot | 55.0 | 33.2 | 10.9 | .9 | 100.0 |
| Up a little | 43.7 | 42.4 | 12.2 | 1.7 | 100.0 |
| No change | 39.8 | 37.3 | 21.3 | 1.6 | 100.0 |
| Gone down | 39.6 | 29.2 | 22.9 | 8.3 | 100.0 |
| Total | 42.4 | 37.9 | 18.0 | 1.7 | 100.0 |
| *Change in Employee Influence over Managerial Decision Making by Employers* | | | | | |
| Up a lot | 20.9 | 48.3 | 28.9 | 1.9 | 100.0 |
| Up a little | 10.2 | 49.7 | 37.7 | 2.3 | 100.0 |
| No change | 7.6 | 39.6 | 50.5 | 2.3 | 100.0 |
| Gone down | 8.0 | 24.0 | 52.0 | 16.0 | 100.0 |
| Total | 9.7 | 42.6 | 45.0 | 2.6 | 100.0 |
| *Change in Labor Productivity by Employers* | | | | | |
| Up a lot | 62.1 | 28.2 | 5.8 | 3.9 | 100.0 |
| Up a little | 47.1 | 39.1 | 9.7 | 4.1 | 100.0 |
| No change | 40.4 | 38.4 | 17.1 | 4.2 | 100.0 |
| Gone down | 37.5 | 31.3 | 18.8 | 12.5 | 100.0 |
| Total | 44.4 | 37.2 | 14.0 | 4.3 | 100.0 |

*Source:* WERS 1998 (available at [http://www.dti.gov.uk/er/emar/1998wers.htm]).

influence over managerial decision making and "how hard people work." In all of these cases, changes in variable pay are positively related to changes in employee involvement in the workplace, and this is impressive and supportive of the incentive-based model of shared-compensation systems that we sketched out earlier.

Regarding our bottom-line measure of the effect of shared compensation—labor productivity—the last panel records the link between changes in variable pay and changes in labor productivity. This can be viewed as a longitudinal test of the cross-sectional productivity calculations in tables 3.7 and 3.8. The results are striking. Sixty-two percent of managers in firms that increased variable pay a lot reported that productivity went up a lot, compared to much lower proportions of managers in firms where variable pay increased only a little, didn't change, or went down. At the other end of the spectrum, proportionately fewer managers in firms that increased variable pay a lot reported worsened productivity performance than did managers in firms with other changes in the proportion of workers covered by variable pay.

### 3.5.3 Workplace Employment Relations Survey 1990–1998 Panel

The WERS panel data identify establishments that changed their system of shared-compensation between 1990 and 1998. Some establishments in the panel survey added nonexecutive stock ownership plans or profit-sharing plans, while a small number withdrew such plans. If these forms of shared compensation in fact contribute to financial performance or labor productivity, we would expect to see that proportionately more managers in establishments adopting plans would see an improvement in outcomes than in other establishments and that the converse would hold for managers in establishments discarding such plans. However, given that establishments that changed their policies in any direction presumably did so in the expectation of improving outcomes, the endogeneity of the choice to change plans presumably operates against our finding such an effect. Table 3.11 compares the results for establishments that changed their profit-sharing or nonexecutive ownership schemes between the 1990 and 1998 WERS surveys. It records the number that changed their programs according to their financial performance or labor productivity in the two years. The number of firms covered is smaller than the number of changers given in the 1998 WERS panel because we deleted observations for establishments that did not respond to the 1990 survey question about profit sharing or ownership even though the 1998 WERS panel reported a change from 1990. We were not sure this was an accurate change.

As a crude summary of the direction of change in productivity and financial performance, we have coded the responses to these questions according to a simple numeric scheme. We give a 0 to establishments that reported doing about average; 1 to those that did somewhat above average; 2

**Table 3.11** **Number of Establishments with Varying Levels of Financial Performance and Labor Productivity in 1990 and 1997, by Change in Shared-Compensation Systems, 1990–1997**

| | Profit Sharing | | | | Nonexecutive Share Ownership | | | |
|---|---|---|---|---|---|---|---|---|
| | Added | | Removed | | Added | | Removed | |
| | 1990 | 1997 | 1990 | 1997 | 1990 | 1997 | 1990 | 1997 |
| Financial performance relative to average | | | | | | | | |
| A lot below | 4 | 2 | 2 | 0 | 0 | 0 | 2 | 1 |
| Below | 7 | 4 | 1 | 1 | 0 | 3 | 3 | 3 |
| Average | 35 | 26 | 7 | 12 | 17 | 15 | 9 | 11 |
| Above average | 16 | 32 | 9 | 6 | 14 | 9 | 8 | 9 |
| A lot above | 24 | 22 | 4 | 4 | 9 | 13 | 8 | 6 |
| Total | 86 | 86 | 23 | 23 | 40 | 40 | 30 | 30 |
| Average score | .57 | .79 | .52 | .57 | .80 | .80 | .57 | .53 |
| Change, 1997–1990 | .22 | | .05 | | .00 | | .04 | |
| Difference in difference | .17 | | | | −.04 | | | |
| Labor productivity relative to average | | | | | | | | |
| A lot below | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 2 |
| Below | 12 | 11 | 0 | 0 | 2 | 3 | 2 | 4 |
| Average | 36 | 33 | 8 | 15 | 22 | 19 | 18 | 11 |
| Above average | 33 | 33 | 16 | 6 | 13 | 12 | 9 | 13 |
| A lot above | 12 | 14 | 5 | 8 | 5 | 8 | 5 | 5 |
| Total | 94 | 94 | 29 | 29 | 42 | 42 | 35 | 35 |
| Average score | .46 | .47 | .90 | .76 | .50 | .60 | .43 | .43 |
| Change, 1997–1990 | .01 | | −.14 | | .10 | | .00 | |
| Difference in difference | .15 | | | | .10 | | | |

*Source:* Calculated from 1990–1998 WERS panel, with average scores based on assigning 0 to average, 1 to above average, 2 to a lot above average, −1 to below average, and −2 to a lot below average.

to those that did a lot above average; and −1 and −2 for the corresponding groups that did somewhat and a lot below average, respectively. We then calculated the score for each group. For instance, the number 0.57 in the 1990 column under profit sharing added means that the eighty-six establishments that added a profit-sharing system had a financial performance that was modestly above average in 1990. Because managers tend to overreport their performance, this performance is, in fact, about average. The number 0.79 in the 1997 column shows that establishments that added profit sharing had that score for their financial performance in 1997. The change from 1990 to 1997 was 0.22, so establishments that added a profit-sharing scheme improved their financial performance by that amount on our scale. Similarly, we calculated the change in performance for the

twenty-three establishments that removed a profit-sharing scheme in the period. This is 0.05. The difference-in-difference calculation for the establishments is obtained by comparing the change in the summary statistic for establishments that added a program and the change in the summary statistic for establishments that removed the program. Positive differences in differences imply that the shared-compensation system improved an outcome, while negative differences imply that it made matters worse. In our case, this is 0.17, which means that firms that added profit sharing improved their performance relative to firms that reduced profit sharing.

The results in table 3.11 show that, in three of the four of the comparisons, the differences in differences are positive, implying that, with this simple scale, firms that introduced programs had improved performance relative to firms that removed programs. The small samples, however, make this at best a suggestive result.

## 3.6 Conclusions

The use of shared compensation arrangements by companies increased considerably in the 1990s, with the biggest growth occurring among employee ownership schemes. Our firm-level survey indicates that companies were more likely to use profit-sharing schemes, SAYE schemes, and company share option plans in 1998 than in 1995. Our establishment-level panel data showed an increase in the proportion of establishments with profit sharing and with nonexecutive ownership schemes.

In part, the growth of shared compensation can be attributed to government policies that introduced tax incentives to encourage shared-compensation systems in an attempt to enhance corporate productivity. In this respect, the policies of the United Kingdom to encourage shared compensation differ noticeably from those of the United States. The United Kingdom encourages individual ownership, while the United States encourages collective ownership through ESOPs. The market, rather than the state, has spurred the growth of options and individual share ownership in the United States.

Shared capitalist modes of pay should improve the economy in two ways. They should increase communication and consultation with workers, which spurs economic democracy. Our evidence shows that shared compensation is indeed linked to various forms of communication and consultation. They also should ideally induce employees to think and act like owners, making decisions that increase corporate value. Our evidence shows that shared-compensation systems in the United Kingdom are positively associated with productivity, although, as in other studies, we find that the effect of the systems varies across data sets and measures of outcomes.

# Appendix

**Table 3A.1 Descriptive Statistics on the Firm-Level Data**

| Variable | Year | | | |
|---|---|---|---|---|
| | 1995 | 1996 | 1997 | 1998 |
| log(real output) | 10.84 | 10.66 | 10.65 | 10.75 |
| log(employment) | 6.04 | 5.90 | 5.86 | 5.96 |
| log(capital) | 10.47 | 10.29 | 10.31 | 10.41 |
| Trade unions or staff associations recognized by management for negotiating pay and conditions | 24.3% | 23.5% | 23.4% | 23.4% |
| Competition (greater than five product-market competitors) | 71.9% | 73.6% | 75.6% | 76.9% |
| Information sharing (which is an indicator variable if the firm has any one of the following three practices) | 43.1% | 48.4% | 56.5% | 61.2% |
| Consultation[a] | 13.6% | 15.2% | 18.0% | 18.7% |
| Information sharing[b] | 27.6% | 32.9% | 37.6% | 41.5% |
| Communication[c] | 39.6% | 43.3% | 48.8% | 53.2% |

*Source:* Based on a sample of 299 U.K. stock market firms surveyed in 1999.

*Note:* Actual numbers of firms per cell may differ.

[a]A joint committee of managers and employees primarily concerned with consultation rather than negotiation.

[b]A formal structure for information sharing with employees (e.g., position of data on financial status, production and labor-market position, and market strategy.

[c]A formal structure for communication between all levels of employees and management (e.g., quality circles, newsletters, and suggestion schemes).

**Table 3A.2** **Firm-Level Productivity Regressions (fixed effects): The Impact of Shared-Compensation Systems in Listed U.K. Firms, 1995–1998**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| log (employment) | 0.6990*** | 0.6995*** | 0.7030*** | 0.7028*** | 0.7016*** |
| | (0.0886) | (0.0851) | (0.0890) | (0.0855) | (0.0834) |
| log (capital) | 0.1679*** | 0.1625*** | 0.1691*** | 0.1785*** | 0.1783*** |
| | (0.0405) | (0.0392) | (0.0402) | (0.0462) | (0.0484) |
| Union | –0.0520 | –0.0081 | –0.0244 | –0.0346 | –0.0378 |
| | (0.0509) | (0.0405) | (0.0451) | (0.0454) | (0.0503) |
| Competition | –0.1264 | –0.1688 | –0.1612 | –0.0059 | 0.0384 |
| | (0.1784) | (0.1649) | (0.1661) | (0.1077) | (0.1277) |
| Information sharing | –0.0288 | –0.0036 | –0.0481 | 0.0046 | 0.0034 |
| | (0.0785) | (0.0742) | (0.0809) | (0.0544) | (0.0826) |
| Approved profit-sharing scheme | 0.2459*** | | | | 0.2206*** |
| | (0.0968) | | | | (0.1048) |
| Approved profit-sharing scheme × information sharing | –0.0936 | | | | –0.0540 |
| | (0.0988) | | | | (0.1050) |
| Approved profit-related pay scheme | | 0.1646 | | | 0.1320 |
| | | (0.1370) | | | (0.1377) |
| Approved profit-related pay scheme × information sharing | | –0.1828 | | | –0.1221 |
| | | (0.1258) | | | (0.1279) |
| Approved all-employee share option scheme SAYE | | | –0.0344 | | –0.0764 |
| | | | (0.0759) | | (0.0889) |
| Approved all-employee share option scheme SAYE × information sharing | | | 0.0335 | | 0.0765 |
| | | | (0.0805) | | (0.0940) |
| Approved company share option scheme | | | | 0.2278*** | 0.2182*** |
| | | | | (0.1140) | (0.1188) |
| Approved company share option scheme × information sharing | | | | –0.1512 | –0.1495 |
| | | | | (0.1143) | (0.1214) |
| No. of observations | 942 | 938 | 942 | 936 | 936 |
| Firms | 284 | 283 | 284 | 283 | 283 |
| Years | Yes | Yes | Yes | Yes | Yes |
| Time period | 1995–1998 | 1995–1998 | 1995–1998 | 1995–1998 | 1995–1998 |
| Overall $R^2$ | 0.9826 | 0.9825 | 0.2929 | 0.9825 | 0.9826 |

*Notes:* Interaction effects between information sharing included. Dependent variable in each column is log of total output. Robust standard errors reported in parentheses.

***Significant at the 1 percent level.

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