Ownership and pay in Britain

Andrew Pendleton

Alex Bryson

Howard Gospel

Authors' affiliations

Andrew Pendleton is at Durham University Business School

Alex Bryson is at University College London – Institute of Education, IZA Bonn, and the National Institute of Economic and Social Research.

Howard Gospel is at King's College London, Said Business School, Oxford, and LUISS Rome.

Address for correspondence

Professor Andrew Pendleton, Durham University Business School, Mill Hill Lane, Durham, DG1 3LB. Tel. 0191 334 5141. E-mail Andrew.pendleton@durham.ac.uk

Abstract

Drawing on principal-agent perspectives on corporate governance, the paper examines whether employees' hourly pay is related to ownership dispersion. Using linked employee-workplace data

from the British Workplace Employment Relations Survey (WERS) 2011, and using a variety of techniques including interval regression and propensity score matching, average hourly pay is found to be higher in dispersed ownership workplaces. The premium is broadly constant across most of the wage distribution, but falls at the 95th percentile to become statistically non-significant. This contrasts with earlier papers which indicate that higher level employees are the primary beneficiaries of higher pay from dispersed ownership. The findings are not supportive of efficiency wages explanations but are consistent with a managerial desire for a 'quiet life'

Word count: 11,198

Accepted on 2017-Mar-10

1. Introduction

Industrial relations scholars have recently highlighted the potential for ownership and corporate governance to influence a range of human resource management and industrial relations characteristics (Black *et al.* 2007; Gospel and Pendleton 2003, 2005; Kim and Kim 2014; Konzelmann *et al.* 2008; Liu *et al.* 2014). In this vein, this paper considers whether employee pay differs between workplaces where ownership is dispersed and those where it is more concentrated. Drawing on agency theory, the starting point is that managers have greater discretion (vis-à-vis owners) in wage-setting when ownership is widely-held, because dispersed owners have weaker incentives to monitor managers than those with more concentrated ownership. For various reasons managers may exploit this discretion to pay their workforces (and themselves) more than in those workplaces with concentrated ownership.

Matched employee and establishment data from the Workplace Employment Relations Survey (WERS), conducted in Great Britain in 2011, are used to examine this question. The main result is clear and consistent: dispersed ownership is associated with higher hourly pay, even after the inclusion of an extensive range of demographic, job, and workplace controls. Log hourly average pay differs by about 0.30 log points. However, workers in dispersed ownership workplaces have several characteristics typically associated with higher pay: in particular there is a greater proportion of higher level occupations with an accompanying higher level of qualifications. But even after taking these and other compositional factors into account, there is a pay gap of around 0.07 log points. This ownership premium is similar in magnitude to that found in one of the few other studies of this topic (Cronqvist *et al.* 2009).

A striking and original feature of our results is that a pay differential is found across most of the wage distribution. The raw gap in average hourly pay rises across most of the distribution but

falls somewhat at the top end. Once worker and workplace characteristics are added, the ownership premium settles at around 0.07 log points across most of the pay distribution except at the 95th percentile where the premium is smaller and non-significant. In fact, a comparison of managers and other occupations finds that the dispersed ownership premium for managers is lower than for other occupations and is non-significant. This finding contrasts with the rest of the literature, where top managers are found to be the primary beneficiaries of dispersed ownership.

These results contribute to a growing literature in Labour Economics, Industrial Relations (IR), and Human Resource Management (HRM) which relates variations in employee remuneration to ownership and governance characteristics (Bertrand and Mullainathan 2003; Cronqvist *et al.* 2009; Gorton and Schmidt 1999; Kim and Kim 2014; Konzelmann *et al.* 2008; Kreuger 1991; Liu *et al.* 2014; Werner *et al.* 2005). The results are also consistent with a longer tradition highlighting pay differentials between firms for otherwise similar employees (reviewed below), though our focus on ownership dispersion is a novel one. This study is also notable for using employee rather than enterprise-level pay data. This gives us two advantages over nearly all other studies of ownership and pay. First, we are able to quantify the role of worker and workplace characteristics to a much greater extent. Second, we can examine pay differences across the pay distribution and thus evaluate the extent to which any pay premium extends beyond managers.

The reasons for the pay premium in dispersed ownership workplaces are considered in the paper. Some have argued or implied that differential application of efficiency wages is responsible for pay differences between dispersed and concentrated ownership (Harrell-Cook and Ferris 1997; Gorton and Schmidt 1999; Liu *et al.*. 2014). We are inclined to discount this explanation because the pay gap persists after worker quality is controlled for, some of our results seem to be inconsistent with efficiency wages, and moreover there is no clear theoretical reason why dispersed

ownership workplaces are more likely to pay efficiency wages. An important alternative explanation found in the literature (Bertrand and Mullanaithan 2003; Cronqvist *et al.* 2009) proposes that self-interested managers will opportunistically seek a 'quiet life' where there is weak monitoring by principals (as in principal agent theory) and they will pay their workers more to secure this. We incline towards this view and, in conjunction with the absence of a significant premium for managers, suggest that the benefit to managers of high pay for workers where there is dispersed ownership takes a non-pecuniary form.

The paper begins by discussing perspectives on the impact of ownership dispersion on employees' pay. A review of the limited empirical literature indicates that managerial discretion, emanating from ownership structure, tends to be associated with higher pay, especially for top managers. The paper then provides information on the WERS survey data and our analytical approach. Results are presented for a series of models where ownership dispersion is the key independent variable, followed by a set of quantile models and occupational comparisons. Our main finding is that the dispersed ownership premium persists after controlling for an extensive set of controls, that it is robust to workplace matching, and that it is constant across most of the pay distribution except at the top end. The conclusion considers the implications of this finding, discusses potential limitations, and suggests some areas for further research.

2. Background

There is increasing interest in the relationship between company ownership, governance, and employment outcomes (Black *et al.* 2007; Gospel *et al.* 2014; Gospel and Pendleton 2005; Jacoby 2005; Kim and Kim 2014; Liu *et al.* 2014; Pagano and Volpin 2005). Much of the evidence has centred on the relationships between ownership or governance and job tenure and skill formation,

typically adopting a comparative perspective (Black *et al.* 2007; Felstead 2016; Hall and Gingerich 2009). The relationship between ownership and workers' pay has attracted less attention, though there is a rich stream of research on ownership, governance, and executive compensation, especially stock options, in the Corporate Governance (CG) literature (Murphy 1999; Tosi and Gomez-Mejia 1989; Tosi *et al.*. 1999; Bebchuk and Fried 2004).

Standard economic theory suggests that corporate ownership and control should have no influence on pay. In competitive theory, workers' pay is a function of labour supply and demand and will therefore be determined exogenously. According to the 'law of one price', workers are paid according to their marginal product, homogeneous workers are paid the same wage, and firms cannot persistently pay more than the market rate. However, over many years, research has shown how managerial policies can influence pay levels and that some firms pay higher wages than others for the same class of labour (Abowd *et al.* 1999; Barth 1994; Groshen 1991; Krueger and Summers 1988; Lazear 1999; Lester 1952). For example, efficiency wage theories suggest that some firms pay wages above market-clearing levels to provide incentives and raise shirking costs, thereby boosting labour productivity (Akerlof 1982; Krueger 1991; Lazear 1999). There is also evidence that wage levels are related to employers' ability to pay and that rent-sharing may explain variation in wages between firms for otherwise similar work (Blanchflower *et al.* 1996).

However, one possible influence on managerial readiness to pay higher wages could be ownership structure (Krueger 1991). A key difference may be posited between 'strong' and 'weak' owners, arising from ownership concentration, with the former able to monitor managers more closely than the latter (Roe 1994). All things being equal, owners with large, concentrated ownership stakes will have (a) greater incentives and (b) lower costs to control managerial policies. By contrast, dispersed owners have weaker incentives and more limited ability to monitor

managerial behaviour, leaving managers with more discretion (Shleifer and Vishny 1997). The costs incurred by any dispersed owner seeking to monitor and discipline managers may well exceed their fraction of any gains. Since wage costs are often a substantial proportion of firm costs, strong owners have a clear interest in expending effort to control wages and to ensure that owner interests are protected in the distribution of returns (Harrell-Cook and Ferris 1997).

In a principal-agent setting, less constrained managers with weak owners may pursue private benefits such as high pay for themselves, as highlighted by recent studies of top executive pay (Bebchuk and Fried 2004; Tosi *et al.* 1999). But why should managers pay high wages to other workers? The literature highlights several possibilities. One, less constrained managers may pursue 'empire-building' policies (Baumol 1959; Marris 1964; Williamson 1964) which may benefit workers' pay, given that organizational size typically correlates with employees' wages (Brown and Medoff 1989). Two, high pay for workers may legitimise high managerial salaries (Wade *et al.* 1997). Three, 'lazy' managers (Aghion *et al.* 2013) may pay other workers high wages to secure a 'quiet life' (Hicks 1969: 57-9). Well-paid workers are likely to be more cooperative with managers and less likely to quit (Bertrand and Mullainathan 2003; Cronqvist *et al.* 2009), thereby providing non-pecuniary benefits to managers. Four, highly-paid workers may form alliances with managers, acting as 'white squires' in support of incumbent managers in the event of unwelcome takeovers. High pay and benefits can also function as 'shark repellents' by making it costly for potential acquirers to buy-out high wage contracts (Pagano and Volpin 2005).

Over the years a small number of studies have generated relevant evidence, finding that managers are the primary, but not the only, pay beneficiaries of dispersed ownership. Krueger (1991) compared pay levels between franchisee (i.e. concentrated ownership) and company-owned fast-food outlets. The former paid lower wages due to stronger owner involvement in wage-setting

and more powerful incentives. More recently, Cronqvist *et al.* (2009), using matched Swedish employer-employee data, found that CEOs who own more voting rights than all other block-holders combined pay their workers higher wages. The pay premium ranges from about 5 to 8 per cent depending on model specification.[1] They also found that employees who are close to the CEO in the organisational hierarchy benefit more than other workers. They attribute the premium to a managerial desire for a quiet life, on the grounds that the premium is larger in industries organised by what they term 'aggressive' trade unions. They argue that the premium is higher in these circumstances because this is where it is most costly for the CEO to exert effort to secure a lower wage bill. However, cash flow rights from executive stock ownership provide a counter-incentive and attenuate the positive effects on workers' pay.

Werner *et al.* (2005), using Compustat data, compared changes in average pay in owner-controlled, owner-managed, and management-controlled (i.e. dispersed ownership) firms, where managerial control is defined as the absence of any external block-holders with 5 per cent or more of outstanding stock.[2] Managerial control is associated with a de-coupling of pay increases from firm performance and a closer linkage between pay increases and firm growth, findings which the authors argue are consistent with empire building.[3] Although their study differentiates between changes in executive pay and average worker pay, it is not clear that managers benefit from higher pay increases more than workers as a whole in managerially-controlled firms, though they do in the sample as a whole. In an earlier study using different data, Werner and Tosi (1995) found that managers in management-controlled firms had higher base and total salaries than those in owner-controlled or owner-managed firms and that differences were most pronounced for higher-level managers. These data also showed that non-managerial employees were not beneficiaries of higher salaries in management-controlled firms (Tosi *et al.*, 1999).

In an alternative approach using a measure of management discretion not directly linked to ownership, Bertrand and Mullainathan (1999, 2003) show that protection from takeovers is associated with higher levels of employee pay. They argue that protection from takeovers provides managers with greater discretion which they use to raise wages. They investigated this by comparing wages in US states with strong and weak anti-takeover legislation. After the passage of legislation raising the barriers to takeovers (thereby entrenching managers), production workers' wages rise by about 1 per cent and white collar wages by about 4 per cent compared with companies in states without such legislation. They argue that managers use their greater discretion to pursue a quiet life rather than empire-building because there is no evidence that managers exploit their discretion to open new plants.

Drawing from a different body of literature on 'strategic' HRM, with an emphasis on resources and stewardship, Liu *et al.* (2013) explore the impact of various dimensions of ownership, including concentration, on a range of HRM policies. They use a measure of 'typical' pay in the workplace rather than employee-level data, incorporating salary (gross annual earnings including bonuses) and various benefits into a scale to measure investment in 'long-term commitment'. Greater shareholder concentration is found to be negatively associated with such commitment. Similarly Gorton and Schmidt (1999) examine ownership dispersion in Austrian banks, finding that ownership dispersion is associated with higher average pay. They attribute this to efficiency wages strategies.

There are several limitations in the research to date. With the exception of Cronqvist *et al.* (2009), most studies use a company or workplace-based measure of average pay rather than employee-level data. This has two limitations. First, worker characteristics cannot be fully controlled for, making it difficult to determine whether workers receive higher pay because of an

ownership premium, because they are better qualified, or because they are in better-paying occupations. Second, the distribution of higher pay cannot be ascertained when an average measure of pay across the workplace is used – making it impossible to determine whether any pay premium is distributed equally or concentrated in parts of the pay distribution. Even where individual-level data are used, there are limitations. Whilst Cronqvist *et al.* (2009) are able to incorporate data on education and tenure into their analysis (finding that together they reduce the CEO discretion effect by 1-2 percentage points), they do not utilise data on occupations to explore compositional effects.[4]

Ideally, examination of ownership effects on pay will use both employee-level and workplace or company-level data to enable evaluation of compositional factors and distributional issues. We are fortunate that the WERS survey has rich information on worker characteristics in the employee questionnaire, including pay, whilst the workplace questionnaire has extensive information on workplace and organisational characteristics. This enables us to evaluate the role of worker and workplace characteristics in the relationship between ownership dispersion and pay differences.

In the remainder of the paper, we report the findings of our analysis of the relationship between ownership concentration / dispersion and wages. To guide the empirical component, we pose three questions.

1. Is there a difference in hourly pay between employees in concentrated and dispersed ownership workplaces and, if so, how large is the premium?
2. How far do pay differences between these two sets of workplaces persist once worker characteristics, workforce composition, and workplace characteristics are controlled for?
3. Are managers the main beneficiaries of any pay premium and what is the distribution of any pay premium across the pay spectrum?

3. Data and Methods

The data source is the Workplace Employment Relations Survey (WERS) 2011, a nationally representative survey of British public and private sector workplaces with 5 or more employees in all sectors except agriculture and primary industries (Department of Business, Innovation, and Skills 2013; van Wanrooy *et al*. 2013). The WERS population accounts for one-third of all British workplaces and around 90 per cent of employees in 2011. Earlier versions of this survey have been used on a number of occasions to identify influences on employee remuneration (e.g. Forth and Millward 2004; McNabb and Whitfield 2000; Pendleton *et al*. 2009).

The workplace data are stratified by size category and industry sector, and comprise data from 989 workplaces that had also participated in the 2004 survey supplemented by data from 1691 workplaces selected randomly within each stratum (Deepchand *et al*. 2013). The overall response rate was 46 per cent. Data were collected by interview with the most senior manager with responsibility for employment relations and personnel in each workplace, and they comprise detailed information on workplace employment institutions and practices, along with some information on corporate-level characteristics such as organisational size, stock market listing, and ownership structure. These data were supplemented by a questionnaire administered randomly to up to 25 employees in each participating workplace (the Employee Questionnaire), with a total number of 21,981 respondents. The latter contains information on weekly pay, hours of work, occupation, and personal information on gender, age, education, and tenure.

The two surveys are linked to examine how corporate and workplace-level phenomena affect individual worker pay. Ownership dispersion is not a relevant consideration in the public sector so we drop workers and workplaces in this sector. The final useable sample of employee respondents

is then achieved in several steps. The number of employees in the non-public sector component of the Employee Survey is 13,657, reduced to 12,612 after 1,045 cases with missing values are removed. From the private sector sample we retain those employees in workplaces which are either private or public limited companies or limited by guarantee[5]: 3,037 employees in workplaces belonging to partnerships, charities, and cooperatives are removed. With the removal of employees belonging to those workplaces with missing values, the final useable sample is 8,727 employees and 915 workplaces (an average of 9.5 employees per workplace).[6] The data are weighted to correct for sample selection and non-response biases using weights supplied with the WERS data.

Dependent variable

The dependent variable is a measure of gross hourly pay derived from the Employee Survey. Employees are asked 'How much do you get paid for your job here before tax and other deductions? If your pay before tax changes from week to week because of overtime, or because you work different hours each week, think about what you earn on average'. Respondents tick one of 14 boxes containing banded annual pay and its weekly equivalent. In the descriptive statistics, ordinary least squares (OLS), propensity score matching (PSM), and quantile analyses, we divide the mid-point of each category by the usual hours of work to generate hourly pay. We set an upper bound of 1.5 times the lower bound in the top, open-ended category. In accordance with usual practice, the pay figure is then converted into log form. The reliability of our approach is supported by recent work showing very high correlations (0.99) between WERS salary mid-points and means derived from actual wage records in the official UK Annual Survey of Hours and Earnings (Bryson et al., 2016). Since actual pay within the categories is unknown, and there is right censoring, we use interval regression procedures (Stewart 1983), whereby the lower and upper bounds of each

category are divided by hours of work and then converted to log form. Hourly pay is likely to include individual and group incentive pay as these are typically paid as part of weekly or monthly earnings. Although the composition of hourly pay is not observed in the survey, whether individuals receive individual or group incentive pay is recorded.[7]

Independent variable

The independent variable of primary interest is ownership dispersion. In the Management Questionnaire, respondents are asked whether a single individual, family, or investment institution owns at least 25 per cent of the company to which the workplace belongs. If the answer to this is no, the variable is coded as 1 = dispersed; if yes, 0 = concentrated ownership. Table 1 provides details on the proportion of employees in each category and average pay for each of them. Overall, 44 per cent of employees are employed in workplaces with dispersed ownership. The raw pay differential between employees in dispersed and concentrated workplaces is 0.3 log points.

- Table 1 about here -

Our choice of ownership measure is driven by the design of the questionnaire. Nevertheless, the 25 per cent dividing line has a good basis in several features of corporate law and actual patterns of ownership. Although the disclosure threshold for ownership of stock market-listed firms is 3 per cent in the UK, and is therefore sometimes taken to signify block-holding, 25 per cent is an important control threshold in corporate law (bearing in mind also that our interest is not relatively large shareholdings as such but the capacity to exercise effective control). Certain control rights come into play at 25 per cent, such as the power to block special resolutions and changes to the

constitution of a company. Other legislation (e.g. that relating to executive and employee share ownership schemes) defines 25 per cent ownership as a 'material interest' which gives *de facto* powers of control. Arguably, effective control might be secured at lower levels of ownership, as argued in Cubbin and Leach (1983), but in practice 25 per cent appears to be an approximation to the point at which effective control is often realised. Faccio and Lang's survey of ownership patterns in European companies identifies 20 per cent as giving effective control (2002: 369). However, for the UK they note that the average ownership of the largest ultimate controlling shareholder is 25.1 per cent. In our sample most stock market listed firms are to be found in the dispersed ownership category (Faccio and Lang find that 61 per cent of listed firms have no individual block-holders with above 20 per cent ownership), though there is a sizeable minority with a 25 per cent plus holding (as also noted in La Porta *et al.* 1999). To take account of these compositional factors we control for stock market listing in our regressions. Ideally, other measures of capital and ownership structure might also be used, but unfortunately these are not available in WERS.

Control variables

As in previous studies using WERS linked workplace-employee data, an extensive range of controls can be included for demographic, job, and workplace characteristics (e.g. Bryson *et al*. 2004). The demographic controls include dummies for gender, age, ethnicity[8], marital status, dependent children, qualifications, and trade union membership. Whether individual employees receive individual performance-pay, group performance pay, and/or profit sharing is also recorded. Given that individual and group performance pay are typically paid regularly as a supplement to base pay, payments from these schemes are likely to be incorporated in employees' reports of their wages or

salaries (i.e. the dependent variable). By contrast, profit sharing is typically paid annually and hence is unlikely to be incorporated in the main pay measure.[9] Unfortunately, WERS reports only the receipt of payments from these schemes, not the actual amounts. Thus, these controls take the form of dummies, taking the value 1 where employees receive such payments. Corporate governance theory suggests that incentive pay may be determined by the ownership structure, but this applies mainly to owner-executive relationships rather than manager-worker pay-setting. It is true that the various forms of incentives are more common for workers where ownership is dispersed (see Table 2), but we control for performance pay in our regression and matching estimates.

Dummies are also included for occupation (based on the 2000 Standard Occupational Classification), tenure, and the permanence of the employment contract. Workplace controls include a set of dummies for organizational size, a continuous measure for workplace employee numbers, dummies for industry sector (based on the 2007 Standard Industrial Classification), and dummies for geographic region. Controls are also included for stock market listing (see above) and foreign ownership. Finally, the regressions incorporate a dummy for whether workplace productivity is better than that in similar workplaces: the question, widely used in studies of performance using WERS (e.g. Addison and Belfield 2001) asks whether productivity is better or worse than in similar workplaces in the same industry, with answers ranging from 'a lot below' to 'a lot above'. This variable is coded as 1 if the respondent answers 'above' or 'a lot above', 0 otherwise.

- Table 2 about here -

Analytical strategy

Workplace and individual data are linked, and analysis conducted using the complex surveys procedures in Stata. We use the employee weights supplied with the WERS data. We conduct a series of Interval Regression analyses, supplemented by an OLS analysis for comparator purposes, with log hourly pay as the dependent variable. Robust standard errors adjusted for clustering at workplace level are used to control for cross-correlation between workers in the same workplace. In these procedures, we first generate a raw correlation coefficient for the relationship between ownership dispersion and pay without any other variables in the model (Table 3, Model 1). Then we present a Mincerian-type wage equation conditioning on a set of human capital characteristics, such as education, age, and experience (Model 2). Next, a range of workplace and company characteristics are added (Model 3). Separate models are subsequently run for men and women (Models 4 and 5). Model 6 utilises OLS to provide a comparison.

We supplement these regression-based estimates with propensity score matching (PSM) using the kernel estimator. Like regression techniques, PSM assumes that non-random exposure to dispersed ownership is accounted for by observable features of the worker and workplace which capture the selection process. However, PSM matches employees exposed to dispersed ownership with observationally equivalent employees exposed to concentrated ownership via a matching weight which establishes the distance between 'treated' cases - in our case, those exposed to dispersed ownership - and 'control' cases which are not. With these weights PSM ensures 'control' cases are observationally similar in their mean characteristics to 'treated' cases. Where 'treated' cases lack similar counterfactuals, they are said to be 'off common support' and, as such, are dropped from the analysis (Rosenbaum and Rubin, 1983). This procedure then reports the Average Treatment effect on the Treated (ATT) i.e. the effect of dispersed ownership on the wages of those who are exposed to dispersed ownership, compared with counterfactual employees who are not.

The matching weights are derived from probit regressions estimating the likelihood of being exposed to dispersed ownership. These can be found in Appendix A, whilst the ATT coefficients and bootstrapped standard errors are reported in Table 4 (see Bryson *et al.* 2002 for more details on implementing matching procedures).

Finally, we conduct a quantile regression to analyse the dispersed ownership premium across the pay distribution. This enables us to determine whether any pay premium is higher at the upper end of the wage distribution, as shown by other studies. To provide robustness checks, we compare the effect of ownership dispersion on managerial pay against that of other occupations and also restrict the analysis to the top two pay categories.

4. Results

Ownership and average hourly pay

Table 3 shows the results where hourly pay is regressed against dispersed ownership, with the addition consecutively of demographic, job, and workplace characteristics. The key result is that there are strong positive relationships between ownership dispersion and employee remuneration, even after the insertion of an extensive set of controls.

- Table 3 about here -

In Model 1 only the measure for dispersed ownership is included. The coefficient is positive, sizeable (0.30), and statistically significant (at $p < 0.01$per cent). Table 1 has already shown that the mean of log hourly pay in dispersed ownership workplaces is 2.54 compared with 2.24 in

concentrated ownership workplaces. The difference in log hourly wages equates to a 35 percent difference in average hourly pay.

Model 2 adds demographic and job characteristics. The dispersed ownership coefficient reduces in magnitude, but remains sizeable and significant, indicating that dispersed ownership increases hourly wages by 0.13 log points once controls are added. Worker and job characteristics account for about 60 per cent of the overall difference in average hourly pay between employees in these two sets of workplaces. Other variables behave as expected. Age has a strong negative effect for younger workers compared with the reference category (30-39 years). Longer tenure has a significant positive effect. The various dummies for qualifications also have significant positive effects, with effect size tending to increase with qualification level (apart from at the lower end). For occupational type (managers is the reference category), all but one of the coefficients on the occupational dummies are negative and significant. Receipt of various forms of performance pay is associated with higher hourly earnings, as found in Bryson *et al.* (2016), though we cannot determine the precise contribution of performance pay to the ownership pay premium because of data limitations.

Model 3 adds workplace and organisational controls, including industry and location dummies. Although the size of the dispersed coefficient reduces, it nevertheless continues to exert a positive and significant effect on hourly wages (just under 8 per cent at $p < 0.01$). Most of these organisational variables have the expected signs. Establishment size is associated with higher pay, as is typically found in the literature (Brown and Medoff 1989), though the effect is very small. However, company size has no significant independent effect on wages, other than for the lowest size above the reference category. Foreign ownership has a significant positive effect, consistent with prior literature (Conyon *et al.* 2002). Stock market listing, however, does not. This may reflect

two opposing forces. On the one hand, the tendency for stock market firms to have dispersed ownership may favour higher pay, for the reasons outlined in this paper. On the other, the market for corporate control (to which listed firms have greater exposure) may depress employee pay, as suggested by Bertrand and Mullainathan (2003) and Gospel and Pendleton (2003). Results were unaffected by the removal of workplaces in firms with a stock market listing: the dispersed ownership coefficient for this sub-group of non-listed workplaces was 0.085 (standard error = 0.026). Finally, one might be concerned that workplace productivity and incentive pay schemes might remove some of the effect of dispersed ownership. We tested the sensitivity of our estimates to their removal: once excluded, the dispersed ownership coefficient remains very similar (0.084, standard error = 0.025).

Models 4 and 5 restrict the sample to women and men respectively, whilst controlling for all of the demographic, job, and workplace characteristics in Model 3. Differences between the sexes are small, with the dispersed coefficient being just 7.1 in the case of men and 5.9 per cent in that of women. Whilst women on average are paid less than men, as shown by the significant negative coefficients in Models 2 and 3, dispersed ownership has similar effects on the hourly pay of both sexes. Finally, Model 6 adds an OLS model as a check on the interval regression estimates. The dispersed ownership coefficient is almost identical to that in Model 3. The explanatory power of the full model with all controls is shown by the change in model fit from an adjusted r^2 of 0.058 in Model 1 to 0.496 in Model 6.

To summarise, there is a sizeable difference in average hourly pay between dispersed and concentrated workplaces. Much of this is explained by differences in workforce composition, worker quality (qualifications, tenure, occupational type), receipt of performance pay, and workplace characteristics (establishment size, foreign ownership). Nevertheless, there is an

unexplained element (just under one-quarter) of the pay difference between workers employed in dispersed and concentrated workplaces. Prevailing explanations in the literature for this premium emphasise managers' exploitation of weak owner control to pursue their own interests. Cronqvist *et al.* (2009) use an association between the presence of unions judged to be strong and aggressive and the dispersed ownership premium to argue that managers use their discretion to have a quiet life by 'buying off' these unions with higher pay. Although being a union member is associated with a significantly higher probability of being in a dispersed ownership workplace (see Appendix A1), the coefficients for union membership in Table 3 are uniformly insignificant. We pursue this further by re-running Model 3 with a further dummy for union recognition for pay determination (not shown, but available on request). This, however, has an almost nil effect on the pay premium. Further exploration using an interaction of union recognition and dispersed ownership also generates a tiny and insignificant coefficient, suggesting that securing a quiet life in relation to unions is not a factor explaining the ownership premium.

In Table 4 we match employees in dispersed ownership workplaces with those in concentrated ownership workplaces using matching weights as discussed in Section 3. This procedure is used for the sample as a whole and for the male and female sub-samples. The probits generated during the matching process can be found in Appendix A whilst the ATT results are in Table 4

- Table 4 about here -

The matching estimates are a little larger than those obtained from the regression analyses in Table 3: the ATT coefficient is just over 10 per cent compared with just under 8 per cent for the full

model in Table 3. The ATT coefficients are of a similar magnitude in the male and female sub-samples.

Who benefits from dispersed ownership?

We turn next to the important issue of whether the pay premium is found across the pay distribution. Who are the beneficiaries of higher pay in dispersed ownership workplaces? Is it those at the top or are the benefits spread to other groups of employees? This is in the context of the fact that previous research has shown that higher level employees, especially those at the top of corporate hierarchies, benefit more from managerial discretion than other employees (Cronqvist *et al.* 2009; Tosi *et al.* 1999).

To examine this, Table 5 presents results for a quantile regression, using the same model specification as in column 3 of Table 3, with results reported for the 25th, 50th, and 75th quantiles, supplemented with those for the 5th and 95th percentile.

- Table 5 about here -

The results in Table 5, Panel A are striking. When we enter only the dispersed ownership dummy with no controls, there is a wage gap between those in dispersed ownership workplaces relative to those who are not across most of the pay distribution, but the effect halves between the 75th and 95th percentiles. However, once we condition on the full range of controls, the coefficients on dispersed ownership fall markedly, but are roughly constant across most of the pay distribution, ranging from 0.076 log points at the 5th percentile to 0.071 at the 75th. The coefficient is significant at p<0.001 in each case. At the 95th percentile, however, the coefficient is somewhat smaller (0.053)

and not significant. It should be noted that the model fit at the 95th percentile drops, and some other variables that are significant lower down the distribution are also non-significant at the 95th percentile, including worker qualifications, job tenure, and establishment size. It is therefore harder to identify influences on pay at the highest point in the wage distribution. Nevertheless, those at the top, whether in dispersed or concentrated workplaces, benefit from substantially higher hourly pay: note that there is a larger proportional increase in the constant between the 75^{th} and 95^{th} percentile compared with those between other quantiles (except the 5^{th} and 25^{th}).

As a robustness check on these results, we split the sample between managers, who are likely to be more concentrated at the upper end of the pay distribution, and other employees. The results are reported in Table 5, Panel B. Although managers in dispersed ownership workplaces have a raw pay premium that is similar to non-managers, the coefficient becomes half the size of that for non-managers and is not significant at $p< 0.05$ once the full range of controls are included. Ideally, occupational-level analysis would be developed further, but small sample sizes severely limit the value of this. As a further check, we restrict the sample to the top two pay categories and re-run the interval regression with the full range of controls. Here again, the coefficient on dispersed ownership is non-significant, indicating that those at the upper end of the pay distribution do not benefit from a dispersed ownership pay premium.

Thus, contrary to the previous literature, the pecuniary returns to dispersed ownership accrue more to workers other than managers and the highest paid. Our results therefore contrast with those other studies which find that managers exploit discretion to benefit themselves more than other employees (Cronqvist *et al*. 2009; Tosi *et al.* 1999).

5. Discussion and Conclusions

This paper has compared pay in concentrated and dispersed ownership workplaces. As in Cronqvist *et al.* (2009), it finds that ownership dispersion is associated with higher levels of pay. Even after controlling for demographic, job, and workplace characteristics, ownership dispersion correlates with higher hourly pay. Around three-quarters of the 0.3 log point raw pay difference between employees in dispersed and concentrated ownership workplaces is explained by employee characteristics (e.g. qualifications), job characteristics (e.g. occupation and tenure), and workplace characteristics (e.g. size). Even so, around a quarter of the pay differential is unexplained by these other characteristics. After inclusion of these controls, the ownership dispersion premium is around 0.07 log points, similar to other recent work (Cronqvist *et al.* 2009). The pay differential is even higher when any selection bias is controlled for by workplace matching.

A novelty of the paper is that we examine pay differences at various points of the pay distribution. Earlier research has been limited in this respect. Surprisingly, given the prevailing finding in the literature that top managers benefit more than others from ownership dispersion, the size of the pay differential is more or less the same across most of the distribution, but with a smaller and insignificant ownership coefficient at the 95^{th} percentile (where many managers are found). A direct comparison of the pay premia for managers and non-managers also finds that the dispersed ownership pay gap is smaller and insignificant for managers.

Several explanations for a dispersed ownership premium were mooted earlier in the paper. One possibility raised in the literature is that high wages are an indirect effect of 'empire building' where ownership is dispersed. Bertrand and Mullainathan (2003) discount this explanation based on data on plant births and deaths over several years. Unfortunately, we are not able to mount a similar test for data availability reasons. It is undoubtedly true that dispersed ownership is associated with larger organisational size (see the probits in Appendix A) but we cannot assess whether this is the

outcome of 'empire building'. Another posited explanation suggests that high pay may help to insulate managers from takeovers. Once again, we cannot fully test this explanation due to data limitations, but it is worth noting that the coefficient for the listed companies' dummy (i.e. those workplaces which are most exposed to the market for corporate control) has an insignificant relationship with pay levels. Moreover, interacting dispersed ownership with listed company status generates an insignificant interaction term, whilst leaving the base coefficients more or less unchanged. We conclude therefore that the dispersed ownership effect is not moderated by a listed company effect and, on the basis of this, that protection from takeovers is unlikely to be a reason for higher wages.

A major issue concerns whether managers with discretion from owners will pursue self-interested or enlightened managerial policies. A principal-agent perspective highlights the pursuit of self-interest where monitoring is weak, whereas the implication of 'strategic' or 'enlightened' HRM perspectives is that managers will implement policies for the good of the firm and its employees when given the opportunity to do so. One of the problems here is that it is not possible to determine whether managerial motives are influenced by a self-interested desire for a quiet life, or altruism, or possibly both, because WERS lacks data on managerial intentionality. The absence of a significant pay premium for managers could be consistent with both altruism and an opportunistic pursuit of non-pecuniary benefits such as a quiet life.

In line with more 'enlightened' motives, some earlier accounts have proposed an efficiency wages explanation for pay differences (e.g. Gorton and Schmidt 1999). However, our evidence does not support this. Workplace productivity does not affect the pay premium, and the probits show that the productivity differences between dispersed and concentrated ownership workplaces are negligible. Furthermore, we find no evidence that workplace productivity moderates the dispersed

ownership effect on pay. Whilst there is some evidence of a higher level of qualifications amongst employees in dispersed ownership workplaces, this effect is fully controlled for in the main regressions in Table 3. Meanwhile, there is no difference in tenure between employees in the two types of workplace (see Appendix A). Given the absence of empirical support for efficiency explanations of the pay premium, corporate governance theory inclines us towards the more self-interested explanations associated with the 'quiet life' perspective (as found in Cronqvist *et al.* (2009) and Bertrand and Mullanaithan 2003). However, unlike Cronqvist *et al*., we find no evidence that union pressure is a factor behind the observed pay premia and therefore conclude that a desire for an easy time in dealings with unions is not an important motive for higher pay.

That pay differs between workplaces and firms for otherwise similar jobs is a very well-established finding in Industrial Relations and Labour Economics, as noted earlier in the paper. For the most part, earlier work has emphasized the role of labour or product markets and their imperfections. The novelty of our paper is that it shows that ownership structure is a highly relevant factor for understanding how variations in workers' pay come to be realised, and that ownership should therefore be added to product and labour market forces as influences upon managerial decisions. Where managers have more discretion to run the firm or workplace, relative to owners, pay outcomes tend to be better for workers. Our findings support the contention, therefore, that an understanding of corporate ownership and governance has much to offer the study of work and employment. The demise of firms that typically have dispersed ownership (Davis 2016), and the emergence of new forms of concentrated ownership, such as private equity (see Gospel *et al.* 2014) may not bode well for workers' pay.

We note several limitations in our study. First, the measure of ownership dispersion in WERS is blunt: some may question whether 25 per cent is an appropriate separation point between

concentrated and dispersed ownership. Data availability drives our usage of this particular measure. Nevertheless, as argued earlier, it has a basis in the literature on ownership structure, where 20-25 per cent appears to be a key threshold for control. A related limitation is that we know little about the characteristics of owners. Recent studies have drawn attention to differences between 'committed' and 'transient' owners, finding that pay dispersion between managers and workers is higher where owners have a short-term orientation (Connelly *et al*. 2013). Unfortunately, limited information on owner identity in WERS does not allow us to pursue this line of analysis. Nor can we explore the role of other dimensions of ownership and governance since the data-set lacks the relevant information and it is not feasible to link it to other relevant data sources.

Second, the cross-sectional character of the study is an obvious limitation. A longitudinal panel would enable greater attention to selection, causality, and the potential endogeneity of ownership. Unfortunately, the WERS panel does not contain an ownership measure, and the ownership question in earlier versions of WERS is not comparable to that used here[10]. However, the evidence in the paper suggests that endogeneity is not a major problem. The most obvious factor relating to selection effects and endogeneity is organisational size given that larger companies are more likely to pay high wages (Brown and Medoff 1989) and to select into dispersed ownership. However, we are struck by the insignificance of most of the organisational size dummies. Even if high wage workplaces 'select' into dispersed ownership because concentrated owners wish to avoid obligations to pay high wages, this is consistent with our primary argument that ownership dispersion is associated with differential wage levels. Within the constraints of cross-sectional data, the PSM analysis shows that the ownership premium persists when we match workers according to their individual and workplace characteristics. Nevertheless, it would be interesting to consider cases where concentrated owners (e.g. private equity) acquire high wage workplaces with a view to

bringing managers and pay under greater control. Unfortunately, WERS does not have the relevant data to consider this particular issue.

Third, we lack data on managerial motivations, something we share with every other study on this topic. Is the unexplained pay gap due to management self-interest, as in principal-agent perspectives, or more altruistic conceptions of organisational stewardship (as in Donaldson and Davis 1991), or perhaps even both? The explained part of the pay gap may arise from enlightened managerial practices, such as a concern to develop high levels of human capital or to share profits with employees, but it is also true that more qualified workers facilitate a quieter life. The emphasis on 'objective' features of employment and industrial relations practices in WERS precludes questioning on these more 'subjective' aspects of management practice. Unfortunately, to develop robust measures of managerial intentionality would require major changes in the design of WERS.

Notwithstanding these limitations, this paper has demonstrated links between ownership and employee pay. It is clear that pay is higher in dispersed workplaces, even after controlling for an extensive range of worker and workplace characteristics. Moreover, the pay premium is found across most of the pay distribution.

The results suggest a number of opportunities for further research. First, using the WERS data, it would be interesting to explore other possible labour outcomes of ownership concentration / dispersion, such as effects on work organization and voice arrangements. Second, it would be useful to identify other data sources, public and private, which might provide more data on ownership and pay. Ideally such data should also be longitudinal so as to shed more light on causality. However, the ability to match these with WERS will be limited and such sources will not have the detail on employment matters contained in WERS. Third, it would be useful to examine the situation in other countries, in so far as similar data exist. Thus, it is well known that there is

more concentrated ownership in much of continental Europe and it would be interesting to see whether this has the same restraining effect on pay.

Table 1. Proportion of employees and pay levels in each ownership category

	Dispersed ownership	Concentrated ownership
Proportion of employees (% of survey weighted sample)	43.42	56.58
Proportion of workplaces (% of survey weighted sample)	25.87	74.13
Average gross hourly pay	£15.94	£11.84
Mean of log hourly pay	2.54	2.24
Mean of log hourly pay: males	2.63	2.36
Mean of log hourly pay: females	2.39	2.11

n = 8727

Table 2. Variable descriptions and summary statistics

Variable name	Variable description	Means			Correla-tion with hourly pay
		All	Dispe-rsed	Concen-trated	
Dependent variable					
Hourly pay	Log of average weekly pay divided by usual hours of work (using mid-points of 14 pay bands).	2.372	2.543	2.241	1
Independent variables					
Dispersed ownership	= 1 if employed in a workplace that does not have an owner with a >25% stake.	0.434	1	0	0.242
Demographic characteristics					
Male	= 1 if male	0.449	0.404	0.480	-0.181
Age under 20	= 1 if aged under 20.	0.028	0.011	0.040	-0.216
Age 20-29	= 1 if aged 20-29	0.228	0.220	0.233	-0.174
Age 30-39	= 0 if aged 30-39. *Reference category*	0.240	0.248	0.234	-
Age 40-49	= 1 if aged 40-49	0.244	0.263	0.230	0.125
Age 50-59	= 1 if aged 50-59	0.193	0.201	0.189	0.026
Age 60+	= 1 if age 60 and over	0.067	0.057	0.074	-0.036
Ethnicity	= 1 if white British	0.962	0.939	0.980	-0.011
Married	= 1 if married	0.668	0.686	0.654	0.206
Dependents	= 1 if any dependent children	0.348	0.368	0.332	0.160
Disabled	= 1 if has long-term limiting health problem or disability	0.078	0.075	0.080	-0.048
Qualification: none	= 0 if no academic qualifications. *Reference category*	0.184	0.147	0.212	-
Qualification: Other	= 1 if 'other' is highest academic Qualification	0.037	0.040	0.035	-0.066
Qualification: CSE	= 1 if CSE or equivalent is highest academic Qualification	0.101	0.088	0.111	-0.066
Qualification: O-Level	= 1 if O-Level or equivalent is highest qualification	0.270	0.227	0.304	-0.067
Qualification: 1 A-Level	= 1 if 1 A-Level or equivalent is highest qualification	0.037	0.031	0.041	-0.023
Qualification: 2 A-Levels	= 1 if 2 or more A-Levels is highest qualification	0.082	0.084	0.080	-0.029
Qualification: degree	= 1 if degree or equivalent is highest qualification	0.213	0.271	0.169	0.246
Qualification: postgraduate	= 1 if highest qualification is post-graduate or equivalent	0.076	0.112	0.048	0.213

Union	= 1 if employee is a member of a trade union	0.165	0.228	0.116	0.017
Job characteristics					
Manager	= 0 if employee is a manager or senior official *Reference category*	0.127	0.123	0.132	-
Professional	=1 if employee is a professional	0.141	0193	0.100	0.301
Associate Professional	=1 if employee is in an associate professional or technical occupation	0.167	0.206	0.138	0.215
Administration	=1 if employee is in an administrative or secretarial occupation	0.134	0.125	0.141	-0.074
Skilled	= 1 if employee is in a skilled trade	0.086	0.071	0.097	-0.025
Caring	= 1 if employee is in a personal service occupation	0.048	0.041	0.052	-0.184
Sales	= 1 if employee is in a sales or customer service occupation	0.099	0.057	0.132	-0.236
Operative	= 1 if employee is a process, plant or machine operative	0.089	0.089	0.089	-0.105
Routine	= 1 if employee is in a routine occupation	0.109	0.095	0.119	-0.247
Tenure <1 years	= 0 if tenure is under 1 year. *Reference category*				-
Tenure >1 year	= 1 if tenure is one year or more but less than two years	0.121	0.118	0.123	-0.050
Tenure >2 years	= 1 if tenure is two or more years but less than five years	0.262	0.240	0.278	-0.051
Tenure >5 years	= 1 if tenure is five or more years but less than ten years	0.238	0.244	0.234	0.060
Tenure >10 years	= 1 if tenure is 10 years or more	0.230	0.249	0.215	0.119
Temporary contract	= 1 if on temporary contract	0.034	0.024	0.042	-0.154
Fixed-term contract	= 1 if on fixed term contract	0.019	0.027	0.012	-0.034
Individual PBR	= 1 if receives individual payment by results	0.169	0.208	0.139	0.237
Group PBR	= 1 if receives group payment by results	0.109	0.150	0.077	0.205
Profit sharing	= 1 if receives profit sharing	0.161	0.224	0.113	0.335
Workplace characteristics					
Stock market	= 1 if belongs to stock market listed company	0.213	0.310	0.139	0.030
Foreign	= 1 if owned by foreign company	0.218	0.322	0.137	0.214
Size	= 0 if company has less than 100 employees. *Reference category*	0.304	0.146	0.425	-
Size (100-999)	= 1 if company has 100 - 999 employees	0.230	0.211	0.244	0.056
Size (1,000 – 9,999)	= 1 if company has 1,000 – 9,999 employees	0.268	0.369	0.192	0.094
Size (10,000 +)	= 1 if company has 10,000 or more employees	0.198	0.274	0.139	-0.079
Establishment size	Number of employees in establishment (continuous)	477	853	188	0.180
Productivity	= 1 if workplace productivity is better than	0.618	0.663	0.584	-0.008

	average for similar workplaces in the same industry				

Table 3: The influence of ownership dispersion on hourly pay
Interval regressions: coefficients (linearized standard errors)

	Hourly pay Model 1 (OLS)	Hourly pay Model 2	Hourly pay Model 3	Hourly pay: women Model 4	Hourly pay: men Model 5	Hourly pay Model 6 (OLS)
Dispersed ownership	0.301 (0.043)***	0.125 (0.025)***	0.079 (0.024)***	0.059 (0.024)**	0.071 (0.030)*	0.075 (0.022)***
Demographic characteristics						
Male		-0.153 (0.020)***	-0.126 (0.021)***	-	-	-0.115 (0.018)***
Age under 20		-0.410 (0.048)***	-0.371 (0.052)***	-0.314 (0.055)***	-0.473 (0.072)***	-0.309 (0.052)***
Age 20-29		-0.175 (0.025)***	-0.153 (0.021)***	-0.151 (0.026)***	-0.173 (0.035)***	-0.159 (0.022)***
Age 40-49		0.052 (0.026)	0.060 (0.028)*	0.010 (0.031)	0.079 (0.036)	0.041 (0.024)
Age 50-59		0.029 (0.025)	0.023 (0.027)	-0.041 (0.036)	0.058 (0.033)	0.011 (0.024)
Age 60+		0.025 (0.035)	0.022 (0.038)	-0.041 (0.042)	0.078 (0.047)	0.016 (0.034)
Ethnicity		0.035 (0.031)	0.109 (0.030)***	0.045 (0.041)	0.120 (0.035)**	0.076 (0.026)**
Married		0.074 (0.017)***	0.074 (0.018)***	0.050 (0.020)*	0.078 (0.022)***	0.067 (0.016)***
Dependents		0.020 (0.017)	0.003 (0.017)	-0.004 (0.023)	0.028 (0.021)	0.015 (0.015)
Disabled		-0.027 (0.023)	-0.033 (0.023)	0.003 (0.030)	-0.058 (0.033)	-0.023 (0.022)
Qualification: others		0.032 (0.042)	0.034 (0.038)	-0.033 (0.047)	0.079 (0.048)	0.024 (0.037)
Qualification: CSE		0.137 (0.029)***	0.146 (0.029)***	0.128 (0.040)**	0.139 (0.035)***	0.131 (0.028)***
Qualification: O-Level		0.121 (0.023)***	0.125 (0.025)***	0.095 (0.028)***	0.119 (0.033)***	0.106 (0.023)***
Qualification: 1 A-Level		0.113 (0.038**	0.120 (0.036)***	0.101 (0.064)	0.145 (0.044)**	0.119 (0.035**
Qualification: 2 A-Levels		0.165 (0.031)***	0.164 (0.032)***	0.136 (0.040)**	0.151 (0.043)***	0.140 (0.030)***
Qualification: degree7		0.282 (0.032)***	0.280 (0.032)***	0.209 (0.033)***	0.275 (0.043)***	0.235 (0.030)***
Qualification: postgraduate		0.367 (0.053)***	0.356 (0.054)***	0.308 (0.062)***	0.329 (0.072)***	0.287 (0.046)***
Union		0.022 (0.020)	0.004 (0.023)	0.057 (0.034)	0.003 (0.026)	0.023 (0.021)
Job characteristics						

Professional		0.010 (0.051)	-0.065 (0.049)	0.013 (0.057)	-0.085 (0.062)	-0.040 (0.042)
Associate Professional		-0.079 (0.046)	-0.126 (0.045)***	-0.131 (0.048)**	-0.128 (0.053)*	-0.115 (0.038)**
Administration		-0.309 (0.047)***	-0.369 (0.045)***	-0.273 (0.053)***	-0.458 (0.056)***	-0.342 (0.040)***
Skilled		-0.321 (0.046)***	-0.303 (0.043)***	-0.383 (0.075)***	-0.328 (0.049)***	-0.304 (0.039)***
Caring		-0.598 (0.050)***	-0.607 (0.052)***	-0.547 (0.059)***	-0.653 (0.068)***	-0.579 (0.048)***
Sales		-0.540 (0.049)***	-0.529 (0.050)***	-0.471 (0.052)***	-0.476 (0.076)***	-0.497 (0.047)***
Operative		-0.468 (0.049)***	-0.476 (0.048)***	-0.502 (0.065)***	-0.487 (0.053)***	-0.459 (0.043)***
Routine		-0.573 (0.046)***	-0.560 (0.045)***	-0.480 (0.052)***	-0.580 (0.053)***	-0.537 (0.041)***
Tenure > 1 years		0.048 (0.033)	0.068 (0.033)*	0.024 (0.033)	0.049 (0.045)	0.050 (0.030)
Tenure > 2 years		0.043 (0.030)	0.069 (0.032)*	0.009 (0.027)	0.074 (0.044)	0.058 (0.030)*
Tenure > 5 years		0.073 (0.033)*	0.097 (0.032)**	0.027 (0.029)	0.102 (0.045)**	0.085 (0.030)**
Tenure > 10 years		0.138 (0.034)***	0.161 (0.033)***	0.110 (0.036)**	0.148 (0.044)***	0.135 (0.030)***
Temporary contract		-0.169 (0.043)***	-0.153 (0.044)***	-0.171 (0.052)**	-0.097 (0.054)*	-0.107 (0.037)**
Fixed term contract		-0.091 (0.041)*	-0.104 (0.033)**	-0.078 (0.045)*	-0.096 (0.046)*	-0.092 (0.033)**
Individual PBR		0.155 (0.029)***	0.127 (0.025)***	0.120 (0.033)***	0.124) (0.030)***	0.101 (0.022)***
Group PBR		0.098 (0.033)**	0.078 (0.036)*	0.128 (0.039)***	0.035 (0.047)	0.058 (0.028)*
Profit sharing		0.195 (0.032)***	0.168 (0.031)***	0.076 (0.045)	0.203 (0.039)***	0.144 (0.028)***
Workplace characteristics						
Stock market			0.020 (0.026)	-0.004 (0.031)	0.050 (0.031)	0.031 (0.023)
Foreign			0.119 (0.029)***	0.124 (0.032)***	0.091 (0.031)**	0.102 (0.025)***
Size (100 – 999)			0.051 (0.030)	0.019 (0.031)	0.073 (0.038)*	0.047 (0.027)
Size (1,000 – 9,999)			0.032 (0.031)	-0.013 (0.031)	0.068 (0.037)	0.023 (0.027)
Size (10,000+)			-0.017 (0.037)	-0.051 (0.038)	0.024 (0.047)	-0.024 (0.033)
Establishment size			0.000 (0.000)**	0.000 (0.000)***	0.000 (0.000)*	0.000 (0.000)***

Productivity			0.005 (0.020)	-0.036 (0.022)	0.024 (0.026)	-0.001 (0.018)
Industry dummies	No	No	Yes	Yes	Yes	Yes
Location dummies	No	No	Yes	Yes	Yes	Yes
Constant		2.329 (0.066)***	2.224 (0.075)***	2.292 (0.092)***	1.988 (0.097)***	2.239 (0.073)***
N	8727	8727	8727	3924	4831	8727
PSU	915	915	915	813	787	915
R^2	0.058					0.496
LR chi square		58.97***	40.85***	29.10***	31.38***	

Notes: * = significant at 95 per cent: ** = significant at 99 per cent; *** = significant at 99.9 per cent

The Stata output includes regression results for missing values of various variables so as to maintain sample size. These are not reported above.

Table 4 Average Treatment Effect on the Treated

Propensity Score Matching using Kernel matching

	Whole sample	Males only	Females only
ATT coefficient	0.103	0.100	0.085
Bootstrapped standard errors	0.017***	0.017***	0.027**
N	8694	4815	3907
Cases off-support	54	58	26

Notes: * = significant at 95 per cent; *** = significant at 99.9 per cent.
Kernel uses a normal distribution: bandwidth = 0.06.

Table 5. Dispersed ownership and pay across the pay distribution

Panel A Quantile regression

	5%	25%	50%	75%	95%
Dispersed ownership (no controls)	0.170 (0.028)***	0.250 (0.011)***	0.294 (0.019)***	0.377 (0.022)***	0.198 (0.033)***
Constant	1.459***	1.848***	2.167***	2.535***	3.269***
N	8478	8478	8478	8478	8478
Pseudo R^2	0.013	0.029	0.030	0.032	0.007
Dispersed ownership (with full controls)	0.076 (0.019)***	0.067 (0.011)***	0.073 (0.001)***	0.071 (0.011)***	0.053 (0.039)
Constant	1.491 (0.077)***	1.888 (0.044)***	2.120 (0.050)***	2.343 (0.055)***	3.405 (0.183)***
N	8478	8478	8478	8478	8478
Pseudo R^2	0.329	0.370	0.388	0.369	0.173

Notes: *** = significant at 99.9 per cent.

Quantiles are estimated simultaneously using the STATA routine sqreg. The full model contains the full set of demographic, job, workplace, industry and location controls as in Table 3. Dependent variable = log hourly pay. Coefficients (with bootstrapped standard errors) are reported

Panel B Comparison of managers and non-managers

Interval regressions

	Managers	Non-managers	Top 2 pay categories
Dispersed ownership (no controls)	0.229*	0.313***	0.027
Dispersed ownership (with full controls)	0.042	0.081***	0.014
N	806	7921	1103

Notes: * = significant at 95 per cent; *** = significant at 99.9 per cent.

Acknowledgements
The authors acknowledge the Department for Business, Innovation and Skills, the Economic and Social Research Council, the UK Commission for Employment and Skills, the Advisory, Conciliation and Arbitration Service and the National Institute of Economic and Social Research as the originators of the 2011 Workplace Employment Relations Study data, and the UK Data Archive at the University of Essex as the distributor of the data. The National Centre for Social Research was commissioned to conduct the survey fieldwork on behalf of the sponsors. None of these organisations bears any responsibility for the author's analysis and interpretations of the data.

An earlier version was presented at the Colloquium on Personnel Economics in Vienna and the Society for the Advancement of Socio-Economics in London, both in 2015. We are grateful to participants for their comments on the paper.

References

Abowd, J., Francis, F. and Margolis, D. (1999). 'High wage workers and high wage firms.' *Econometrica*, 67: 251-333.

Addison, J. and Belfield, C. (2001). 'Updating the determinants of firm performance: estimation using the 1998 UK Workplace Employee Relations Survey'. *British Journal of Industrial Relations*, 39 (3), 341-366.

Aghion, P, van Reenen, J. and Zingales, L. (2013). 'Innovation and institutional investors.' *American Economic Review*, 103 (1): 277-304.

Akerlof, G. (1982). 'Labor contracts as partial gift exchange.' *Quarterly Journal of Economics*, 97: 543-569

Barth, E. (1994). 'Wages and organisational factors: why do some establishments pay more?' *Acta Sociologica*, 37: 253-268.

Baumol, W. (1959). *Business Behaviour, Value, and Growth*. New York: Macmillan

Bebchuk, L. and Fried, J. (2004). *Pay Without Performance: The Unfulfilled Promise of Executive Compensation*. Cambridge, MA: Harvard University Press.

Bertrand, M. and Mullainathan, S. (1999). 'Is there discretion in wage setting? A test using takeover legislations.' *Rand Journal of* Economics, 30 (3): 535-554.

Bertrand, M. and Mullainathan, S. (2003). 'Enjoying the quiet life? Corporate governance and managerial preferences.' *Quarterly Journal of Economics,* 111 (5): 1043-1075.

Black, B., Gospel, H. and Pendleton, A. (2007). 'Finance, corporate governance, and the employment relationship.' *Industrial Relations,* 46 (3): 643-650

Blanchflower, D., Oswald, A. and Sanfey, P. (1996). 'Wages, profits, and rent-sharing.' *Quarterly Journal of Economics,* 111 (1): 227-251.

Brown, C. and Medoff, J. (1989). 'The employer size-wage effect.' *Journal of Political Economy,* 97: 1027-1059.

Bryson, A., Cappellari, L., and Lucifora, C. (2004). Does union membership really reduce job satisfaction? *British Journal of Industrial Relations*, *42*(3), 439-459.

Bryson, A., Dorsett, R. and Purdon, S. (2002) *The use of propensity score matching in the evaluation of active labour market policies.* Leeds: Department for Work and Pensions, Working Paper No.4

Bryson, A., Forth, J. and Stokes, L. (2016). 'The performance pay premium and wage dispersion in Britain', *The Manchester School*, doi: 10.1111/manc.12174

Connelly, B., Takacs Haynes, K., Tihanyi, L., Gamache, D. and Devers, C. (2013) 'Minding the gap: antecedents and consequences of top management-to-worker pay dispersion.' *Journal of* Management, 20 (10): 1-20.

Conyon, M., Girma, S., Thompson, S. and Wright, P. (2002). 'The impact of foreign acquisition on wages and productivity in the United Kingdom.' *Journal of Industrial Economics,* 50: 85-102.

Cronqvist, H., Heyman, F., Nilsson, M., Svaleryd, H. and Vlachos, J. (2009). 'Do entrenched managers pay their workers more? *Journal of Finance,* 64: 309-339.

Cubbin, J. and Leech, D. (1983). 'The effect of shareholding dispersion on the degree of control in British companies: theory and measurement.' *Economic Journal*, 93: 351-369.

Davis, G. (2016). *The Vanishing American Corporation: Navigating the Hazards of a New Economy*. Oakland, CA: Berrett-Koehler Publishers.

Deepchand, K., Drever, E., Gilby, N., Prestage, Y., Purdon, S., Tipping, S., and Wood, M. (2013). *Workplace Employment Relations Study (WERS) 2011/12: Technical Report*. London: National Centre for Social Research

Department for Business, Innovation and Skills (2013). *Workplace Employee Relations Survey, 2011* [computer file]. Colchester, Essex: UK Data Archive [distributor], February 2013. SN: 7226 , http://dx.doi.org/10.5255/UKDA-SN-7226-1

Donaldson, L. and Davis, J. (1991). 'Stewardship theory or agency theory? CEO governance and shareholder returns.' *Australian Journal of Management*, 16 (1): 49-65.

Faccio, M. and Lang, L. (2002). 'The ultimate ownership of Western European corporations.' *Journal of Financial Economics*, 65: 365-395.

Felstead, A. (2016). 'Tracing the connections: short-termism, training and recession'. *International Journal of Human Resource Management* DOI: 10.1080/09585192.2016.1184176.

Forth, J. and Millward, N. (2004). 'High involvement management and pay in Britain.' *Industrial Relations*, 43 (1): 98-119.

Gorton, G. and Schmid, F. (1999). 'Corporate governance, ownership dispersion and efficiency: empirical evidence from Austrian cooperative banking.' *Journal of Corporate* Finance, 5: 119-140.

Gospel, H. and Pendleton, A. (2003). Finance, corporate governance and the management of labour: A conceptual and comparative analysis. *British Journal of Industrial Relations*, 41: 557-582.

Gospel, H. and Pendleton, A. (2005). *Corporate Governance and Labour Management*. Oxford: Oxford University Press

Gospel, H., Pendleton, A. and Vitols.S. (2014). *Financialisation, New Investment Funds, and Labour*. Oxford: Oxford University Press.

Groshen, E. (1991). 'Five reasons why wages vary amongst employers.' *Industrial Relations*, 30 (3): 350-381.

Hall, P. and Gingerich, N. (2009) 'Varieties of capitalism and institutional complementarity in the political economy: an empirical analysis'. *British Journal of Political Science*, 39: 449-482

Harrell-Cook, G. and Ferris, G. (1997). 'Competing pressures for human resource investments.' *Human Resource Management Review*, 7 (3): 317-340.

Hicks, J. (1969). *A Theory of Economic History*, Oxford: Oxford University Press.

Jacoby, S. (2005). *The Embedded Corporation: Corporate Governance and Employment Relations in Japan and the United States*. Princeton: Princeton University Press.

Kim, D. and Kim, D. (2014). 'The impact of corporate governance on employment relations in Korea.' *International Journal of Human Resource Management*,

Konzelmann, S., Conway, N., Deakin, S., Petit, H., Reberioux, A. and Wilkinson, F. (2008). 'The influence of stock market listing on human resource management: evidence for France and Britain.' *British Journal of Industrial Relations*, 46(4): 631-73.

Krueger, A. (1991). 'Ownership, agency, and wages: an examination of franchising in the fast food Industry.' Q*uarterly Journal of Economics*, 106 (1): 75-102.

Krueger, A. and Summers, L. (1988). 'Efficiency wages and the inter-industry wage structure.' *Econometrica*, 56: 259-293.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (1999). 'Corporate ownership around the world.' *Journal of Finance*, 54: 471-518.

Lazear, E. (1999). *Personnel Economics*. Cambridge, Mass.: MIT Press.

Lester, R. (1952). 'A range theory of wage differentials.' *Industrial and Labor Relations Review*, 5: 483-500

Liu, X., van Jarsveld, D., Batt, R. and Frost, A. (2013). 'The influence of capital structure on strategic human capital: evidence from US and Canadian firms.' *Journal of Management*, 40 (2): 423-448.

Marris, R. (1964). *The Economic Theory of Managerial Capitalism*. London: Macmillan

McNabb, R. and Whitfield, K. (2000) ''Worth so appallingly little': a workplace-level analysis of low pay' *British Journal of Industrial Relations* 38 (4): 585-609.

Murphy, K. (1999). 'Executive compensation', in *Handbook of Labor Economics*, Volume 3B, edited by Orley Ashenfelter and David Card, New York: Elsevier, 2485-2556.

Office for National Statistics. (2000). *Standard Occupational Classification, Volume 1*. London: Stationery Office.

Pagano, M. and Volpin, P. (2005). 'Managers, workers, and corporate control.' *Journal of Finance*, 60 (2): 841-868.

Pendleton, A., Whitfield, K. and Bryson, A. (2009) 'The changing use of contingent pay in the British workplace' in *The Evolution of the Modern Workplace*, edited by William Brown,

Alex Bryson, John Forth, and Keith Whitfield, Cambridge: Cambridge University Press, 256-284.

Penrose, E. (1959). *The Theory of the Growth of the Firm*. Oxford: Blackwell.

Roe, M. (1994).*Strong Managers, Weak Owners: the Political Roots of American Corporate Finance*. Princeton, NJ: Princeton University Press.

Shleifer, A. and Vishny. R. (1997). 'Survey of corporate governance.' *Journal of Finance*, 52: 737-83.

Soljberg, O. (2009). 'Corporate governance and earnings inequality in the OECD countries 1979-2000.' *European Sociological Review*, 25: 519-532.

Stewart, M. (1983). 'On least squares estimation when the dependent variable is grouped.' *Review of Economic Studies*, 50: 737-753.

Tosi Jr, H. and Gomez-Mejia, L. (1989). The decoupling of CEO pay and performance: An agency theory perspective. *Administrative Science Quarterly*, 34: 169-189.

Tosi, H., Gomez-Meija, L., Loughry, M., Werner, S., Banning, K., Katz, J., Harris, R. and Silva, P. (1999). 'Managerial discretion, compensation strategy, and firm performance: the case for ownership structure.' In Ferris, D. (ed.) *Research in Personnel and Human Resources Management*. Stamford, CT: JAI Press.

van Wanrooy, B., Bewley, H., Bryson, A., Forth, J., Freeth, S., Stokes, L., and Wood, S. (2013). *Employment Relations in the Shadow of the Recession: Findings from the 2011 Workplace Employment Relations Survey.* Basingstoke: Palgrave Macmillan.

Wade, J., Porac, J., and Pollock, T. (1997). 'Worth, words, and the justification of executive pay.' *Journal of Organizational Behavior*, 19: 641-664.

Werner, S. and Tosi, H. (1995). 'Other people's money: the effects of ownership on compensation strategy and managerial pay.' *Academy of Management Journal*, 38 (6): 1672-1691.

Werner, S., Tosi, H. and Gomez-Mejia, L. (2005). 'Organisational governance and employee pay: how ownership structure affects the firm's compensation strategy.' *Strategic Management Journal*, 36: 377-384.

Williamson, O. (1964). *The Economics of Discretionary Behaviour: Managerial Objectives in a Theory of the Firm*. Englewood Cliffs, N.J.: Prentice-Hall.

Appendix A Probit estimations used in the PSM procedures

	Dispersed ownership	Dispersed ownership (males only)	Dispersed ownership (females only)
Female	-0.058	-	-
Age under 20	-0.249*	-0.364*	-0.160
Age 20-29	-0.078	-0.003	-0.123
Age 40-49	0.080	0.108	0.036
Age 50-59	0.114*	0.131*	0.081
Age 60+	0.065	0.095	0.014
Ethnicity	0.133*	0.178*	0.062
Married	0.051	0.072	0.043
Dependents	0.047	0.049	0.042
Disabled	-0.032	0.036	-0.088
Qualification: other	0.188*	0.185	0.230
Qualification: CSE	0.103	0.083	0.119
Qualification: O-Level	0.067	0.060	0.059
Qualification: 1 A-Level	0.118	0.028	0.166
Qualification: 2 A-Levels	0.136*	0.172	0.091
Qualification: degree	0.248***	0.253***	0.248**
Qualification: postgraduate	0.373***	0.340***	0.441***
Union	0.296*	0.261***	0.362***
Professional	0.146*	0.259**	-0.041
Associate Professional	0.197**	0.168*	0.225*
Administration	0.197**	0.217*	0.141
Skilled	0.018	0.065	0.092
Caring	-0.090	0.154	-0.206
Sales	-0.083	0.013	-0.097
Operative	-0.000	0.072	-0.415*
Routine	-0.076	-0.106	-0.067
Tenure > 1 year	-0.029	-0.052	0.023
Tenure > 2 years	-0.028	-0.056	0.020
Tenure >5 years	0.006	-0.31	0.060
Tenure > 10 years	0.062	0.050	0.119
Temporary contract	0.018	0.111	-0.114
Fixed-term contract	0.556***	0.718***	0.443**
Individual PBR	-0.030	-0.037	-0.004
Group PBR	0.225***	0.193**	0.273**
Profit sharing	0.150**	0.175**	0.109
Stock market	0.562***	0.581***	0.564***
Foreign	0.621***	0.634***	0.655***
Size (100-999)	0.336***	0.343***	0.342***
Size (1,000-9,999)	0.673***	0.772***	0.574***
Size (10,000+)	0.949***	1.038***	0.887***
Establishment size	0.000***	0.000***	0.000***
Productivity	0.004	0.015	-0.009
N	8694	4815	3907
Pseudo R^2	0.213	0.241	0.199

Notes: * = significant at 95 per cent: ** = significant at 99 per cent; *** = significant at 99.9 per cent
Industry and location dummies included

Endnotes

[1] CEO control relative to shareholder control is defined as a greater share of the votes than that of the combined stake of blockholders with more than 5 per cent. The authors use other measures of managerial / owner control, such as the presence of a controlling owner other than the CEO, individual blockholders, and institutional blockholders, with similar results. A novelty of the Swedish case is widespread use of dual-class shares. Depending on which class of shares are held, share-owning CEOs may have more control rights than cash-flow rights.

[2] Owner-control is the obverse of this, whilst owner-managed firms are those where a manager holds 5 per cent or more stock.

[3] By contrast, in owner-controlled firms changes in pay are linked to changes in performance rather than changes in company size. Owner-managed firms have pay arrangements which link employee pay closely to both performance and growth.

[4] In addition, they use a measure of gross monthly wages that is not corrected for hours worked.

[5] In Britain a company limited by guarantee is one that has members rather than shareholders, with the members acting as guarantors in the event of a winding-up of the company.

[6]There are 81 employees who are the sole respondent in their workplace

[7] This may overstate somewhat the earnings of some of those in the top category (the ASHE survey finds that earnings at the top of the distribution are more bunched than the WERS procedure assumes).

[8] Respondents can choose one from seventeen categories to indicate which ethnic group they consider themselves to belong to.

[9] Thus, profit sharing could add to the ownership premium, given the more widespread use of profit sharing for employees in dispersed ownership workplaces.

[10] Previous version of WERS use a 50 rather than 25 per cent ownership threshold. The way the question is phrased in WERS 2004 can mean that some concentrated ownership workplaces are coded as dispersed.