

Do Entrenched Managers Pay Their Workers More?*

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This draft: September 5, 2006

Abstract

We present evidence on whether managerial entrenchment affects workers' pay, using a large panel dataset that matches public firms with detailed data on their subsidiaries and workers. We find that CEOs with a stronger grip on control pay their workers higher wages, but CEO ownership of cash flow rights mitigates such behavior. Unionized workers and executives are found to get a larger share of the higher pay. These findings do not seem to be driven by productivity differences or reverse causality, and are robust to a series of robustness checks. Our evidence is consistent with an agency model in which entrenched managers pay higher wages because they come with direct private benefits for the manager, such as lower-effort wage bargaining and better CEO-employee relations, and suggests more broadly an important link between the corporate governance of large public firms and labor market outcomes.

JEL classification: G32; G34; J31

Keywords: Corporate governance; agency problems; private benefits; matched employer-employee data; wages

* We acknowledge helpful comments by Raj Aggarwal, Arturo Bris, François Degeorge, Rudi Fahlenbrach, Mariassunta Giannetti, Yaniv Grinstein, David Hirshleifer, Jean Helwege, Cliff Holderness, Andrew Karolyi, Assar Lindbeck, Angie Low, Marco Pagano, Pat Reagan, Kristian Rydqvist, Per Strömberg, Bruce Weinberg, Ingrid Werner, Fabrizio Zilibotti and seminar participants at the Zurich Conference on Alternative Views of Corporate Governance, Western Finance Association, European Finance Association, European Economic Association, Financial Management Association (European Meeting), Institute for International Economic Studies, Ohio State University (Department of Finance and Department of Economics), Research Institute of Industrial Economics, and Swedish Institute for Financial Research. The comments by René Stulz were particularly helpful. Excellent research assistance was provided by John Christensen. We are grateful to MM Partners for providing data. Finally, we thank the Family Owned Business Institute (Cronqvist and Nilsson) and the Jan Wallanders and Tom Hedelius Research Foundation (Svaleryd and Vlachos) for financial support. Any remaining errors are our own.

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1. Introduction

The long-recognized separation of ownership and control between shareholders and managers in the modern public corporation can play an important role in determining the level of pay both to a firm's manager (who we will interchangeably refer to as the CEO) and to the firm's workers.¹ Imagine an entrenched CEO who fails to experience pressure from the full range of corporate governance mechanisms. Such a CEO may be able to partly set his *own* pay.² However, there are several reasons to speculate that agency problems between shareholders and managers have an effect also on the pay of the firm's *other* employees, such as its janitors or engineers. This paper therefore presents evidence on the following question: do entrenched managers pay their workers more?

In standard economic models of workers' pay, agency problems between shareholders and managers play no role. Wages are set to maximize firm value. By contrast, in an agency model for workers' pay, the manager compares his *private* benefits from the range of feasible wage policies, and chooses the one that is in his own best interest, though it may not necessarily be in the interest of value-maximizing shareholders.

In principle, we can think of two types of private benefits to managers that may arise from higher employee compensation. First, higher wages may provide a direct benefit in that the manager's relations with workers are much easier and more enjoyable when workers are paid

¹ See Berle and Means (1932) for an early discussion of the effects of separation of ownership and control between shareholders and managers.

² Several studies have found that CEOs who seem to be entrenched from governance pressure are able to pay themselves higher levels of compensation. Holderness and Sheehan (1988) show that executives owning majority blocks receive larger salaries than executives in similar firms where shareholdings are more dispersed. Core, Holthausen and Larcker (1999) present evidence consistent with CEOs at firms with greater agency problems between shareholders and managers receiving higher pay. Bertrand and Mullainathan (2000, 2001) report evidence of a "skimming" model in which CEOs working for poorly governed firms are able to pay themselves higher wages. Fahlenbrach (2006) tests an entrenchment hypothesis for CEO pay, and finds that CEOs receive higher total compensation when the balance of power between shareholders and managers is tilted towards management.

more. For example, CEOs may want to pay more to blue-collar workers to avoid putting a lot of effort into negotiating with them, and in particular their unions. Managers may also want to pay more to workers whose relations – at or outside of work – they enjoy the most, such as other executive-level employees. However, only managers who lack financial incentives or who are entrenched against governance pressure can get these benefits of higher wages.

Second, higher wages may indirectly provide a benefit by protecting the manager's job (and other control benefits) against pressure from outside shareholders and potential raiders. For example, Hellwig (2000) talks about a “natural alliance” between managers and workers against hostile takeovers and proxy fights. Krupp's withdrawn tender offer for Thyssen is given as an example of workers and their unions assisting the incumbent CEO in resisting a takeover (though it eventually did go through). Pagano and Volpin (2005) present a formal model of how a manager, through a high-wage policy, can create a management-labor alliance as protection against control threats.

Data availability is a serious obstacle for any study of managerial entrenchment and workers' pay. Clean data on CEOs' control and financial incentives are difficult to obtain, and data on workers' pay and other characteristics are often not publicly available.³ We deal with these problems by combining several databases with detailed information on firms, subsidiaries, and workers in Sweden. Data on CEOs' control and incentives (measured by cash flow rights ownership) come from the Swedish Securities Register Center, which keeps a complete register of all shareholders of Swedish public companies. Data on workers' pay and other worker and subsidiary characteristics are from several of Statistics Sweden's register-based databases.

³ Consider for example data on wages. Compustat reports *firm-level* wage data (Item #42; “Labor and related expenses”) for only about 18% of all available firm-year observations during the period 1995-2005. More importantly, a crude analysis of these data suggests that companies reporting wages are not a random sample, with large, regulated, and financial firms being vastly overrepresented.

Matching these databases results in a large panel of more than two million firm-subsidary-worker-year observations which creates an opportunity to test predictions regarding managerial entrenchment and workers' pay.

Our main result can be easily summarized: entrenched managers pay their workers higher wages. More specifically, CEOs with a stronger grip on control pay their workers more, but CEO ownership of cash flow rights mitigates such behavior. This effect is larger for blue-collar workers than for white-collar workers, and largest for executives. These findings do not seem to be driven by reverse causality or differences in productivity, and are robust to a series of robustness checks. This evidence is consistent with a model in which CEOs value \$1 of compensation at a lower cost than value-maximizing shareholders do, because higher wages come with direct private benefits, such as lower-effort wage bargaining with unionized workers and better professional or personal relations with other executive-level employees.

More broadly, our results suggest a link between corporate governance and workers' pay. With a few important exceptions, such a link has been largely unexplored. Rosett (1990) finds that union employees suffer wage cuts after takeovers, and Lichtenberg and Siegel (1990) find significant drops in white collar workers' wages after ownership changes. Bertrand and Mullainathan (1999, 2003) show that there was a significantly larger increase in wages for firms incorporated in states that passed state-antitakeover laws in the U.S. in the 1980s than in a control group. While very informative about the effects of changes in ownership structures and pressure from anti-takeover laws, these studies provide no evidence on a link between CEOs' control and incentives and workers' pay. The contribution of this paper is to fill this gap in the literature.

The rest of the paper is organized as follows. Section 2 explains why agency problems between shareholders and managers can affect workers' pay. Section 3 reviews important institutional aspects of the wage-setting process in Sweden, and describes our matched employer-employee dataset. Section 4 presents our main results, and performs robustness checks. Section 5 reports further evidence on the link between corporate governance and workers' pay. Section 6 concludes the paper.

2. Agency theory and workers' pay

As mentioned in the Introduction, we can think of two types of private benefits to managers from higher workers' pay: easier and more enjoyable worker relations, and protection against control threats. We now elaborate on the theoretical foundations of such benefits.

2.1. Direct private benefits of higher wages: easier and more enjoyable labor relations

Higher wages can provide a direct benefit in that the manager's relations with the firm's workers are easier and more enjoyable when employees are paid more. For example, while the CEO bears the full personal cost of putting lots of effort into wage bargaining with workers and their unions, much of a cash flow gain from a lower wage bill goes to the firm's shareholders, not the manager. The manager may also benefit more than shareholders do from better CEO-employee relations, at or outside the workplace, in particular with the manager's own co-workers, such as other top-executives. In the words of Jensen and Meckling (1976), CEOs' non-pecuniary private benefits may include "the attractiveness of the secretarial staff, the level of employee discipline, ..., personal relations ("love", "respect", etc.) with employees" (p. 312). One way of enjoying such private benefits is to pay workers more.

On the other hand, CEOs are subject to incentives and pressure from governance mechanisms, including the ownership of cash flow rights in their firms (Jensen and Meckling (1976)), the market for corporate control (Jensen and Ruback (1983)), the managerial labor market (Fama (1980)), monitoring by large shareholders (Shleifer and Vishny (1986)), debt (Jensen (1986)), and product market competition (Hart (1983)). While many managers would probably want to enjoy the benefits of higher workers' pay, we predict that those who lack incentives or who are entrenched against governance pressure are actually able to do so.

The view that entrenched CEOs enjoy private benefits of easier and more enjoyable worker relations suggests that workers' pay is positively correlated with measures of managerial control and entrenchment, but negatively correlated with measures of CEO incentives and pressure from governance mechanisms.

2.2. Indirect private benefits of higher wages: protection against control threats

Higher workers' pay can indirectly provide a benefit in that it protects the manager's job (and other control benefits) against pressure from outside shareholders and potential raiders. This view has been formally modeled by Pagano and Volpin (2005). In particular, they show how an incentive-compatible management-labor alliance can arise. In their model, a manager who values his job, but controls a stake that is lower than the controlling stake, might pay higher wages. Through generous long-term wage contracts, managers can turn employees into a shark-repellent: the inability to renege their wages transforms the firm into an unattractive takeover target.⁴ Workers prefer the incumbent manager to a raider, and they can trust him, as the high-

⁴ A management-labor alliance may also arise from workers' ownership of employer stock, e.g., through ESOPs. See Rauh (2005) for evidence that employee ownership reduces the likelihood of a takeover.

wage policy is in the manager's own best interest. This view suggests that workers' pay is negatively correlated with measures of managerial control and entrenchment.

3. Institutional background and data

3.1. Institutional background

Like in many other European countries, centralized binding collective agreements between employers associations and cartels of unions were an integral part of the wage-setting process in Sweden after World War II, covering more than 90% of workers. However, over time bargaining has become increasingly decentralized.⁵ Panel A of Figure 1 shows that for blue-collar workers, the portion with firm- and combined firm/industry-level negotiations are 71-85% during the period that we study. Panel B shows that for white-collar workers, the numbers are even higher, 96-99%. In addition, the percentage of firm-level negotiations is probably even higher for our set of large public corporations than for the average firm in the population (for which these numbers apply). Given these numbers, we can argue that although Sweden historically has been characterized by a high degree of centralization in the wage-setting process, wages are largely determined at the firm level during the period we study.

3.2. Data sources and the matched employer-employee dataset

We combine data on firms (i.e., public corporations), their subsidiary companies and workers into a large matched employer-employee dataset. Figure 2 explains the structure of the dataset. Each worker has been linked to the subsidiary where he/she works through a unique

⁵ Iversen (1998) constructs an index of centralization of wage negotiations by combining a measure of union concentration with one of the prevalent level of negotiation. Prior to 1990, Sweden was oftentimes in the "centralized" category, but after 1990, Sweden is classified as "intermediary centralized" together with many other countries, such as Austria, Belgium, Denmark, Finland, Germany, the Netherlands, and Norway.

personnummer (corresponding to U.S. Social Security numbers). Each subsidiary and all its employees have in turn been linked to the public corporation to which it belongs via a unique *organisationsnummer* (which correspond to Employer Identification Numbers in the U.S.). This matching process has been done each year 1995-2002, so an observation in our dataset is a firm-subsidary-worker-year observation. We exclude banks and insurance companies as they are subject to special accounting rules and other regulations.

Data on workers and subsidiaries come from Statistics Sweden's databases, in turn compiled the financial statistics (FS), the regional labor market statistics (RAMS) and the wage statistics (LS) registers. Each year, the dataset contain a random sample of about two million workers (about 50%) of the labor force, which is representative of the population between 18 and 65 years. Since misreporting is prosecuted, and since these data have been subjected to quality controls by Statistics Sweden's statisticians, measurement errors should be very rare.

The dataset contains detailed information on worker characteristics such as compensation, work hours, gender, education, experience, and occupation. We define the variable *Wage* as the "gross real monthly full-time-equivalent compensation" for an employee. Gross monthly compensation is the sum of monthly net nominal earnings, i.e., wage/salary, bonus, overtime, supplementary allowance for unsocial hours and shift work, and payroll taxes. Nominal compensation has been deflated by the CPI to get real compensation as of the end of the 1995. We use the exchange rate as of 12/31/1995, i.e. 6.65 kronor per dollar, when converting to dollars to facilitate interpretations. The dataset also contains detailed information on a large number of accounting items together with a full description of subsidiary company characteristics (industry, region of location), plus other variables of economic interest usually not reported in accounting statements, such as employment variables.

Data on the degree of separation of ownership and control between shareholders and managers have been hand-collected from the annual book series *Owners and Power in Sweden's Listed Companies*.⁶ We define *CEO Control* to be one if the CEO owns more control rights (votes), than all other 5% blockholders together, and zero otherwise. There are several reasons why we use this variable as our main proxy for the strength of a manager's grip on the control of the firm. First, it involves ownership of votes as opposed to ownership of cash flow rights, allowing us to separate control and incentive effects. Second, it is a stringent definition of control. Finally, it takes into account that a CEO has to own more votes to be considered "in control" in case other large blockholders – the most likely control contestants – also own larger stakes. Thus, the level of votes needed to be "in control" is not arbitrarily set at, say, 25%, but it is determined for each firm-year observation depending on the firm's particular ownership structure. Since any empirical definition of managerial control is subject to the critique that it is simply one special proxy out of many possible ones, we perform several checks to ensure that all our results are robust to using some other reasonable proxies for CEO control.

We define *CEO Incentive* as the CEO's percentage cash flow rights ownership in the firm, and we use this variable as a proxy for the extent to which the manager bears the full cost of a high-wage policy. Data on other firm characteristics, such as company size and return on assets, come from MM Partners and SIX Findata, the main providers of accounting and stock market data for research purposes in Sweden. All our results are robust to employing standard

⁶ Starting in the early 1970s, the Swedish Securities Register Center, keeps a complete register of all shareholders of Swedish firms that are publicly traded. Swedish ownership data are therefore uniquely detailed in an international comparison. Since 1985, Sven-Ivan Sundqvist and Anneli Sundin compile raw data for each year in order to create "ownership coalitions," appropriately accounting for indirect shareholdings through public or private firms, ownership by family members and foundations, and so on. The particular dataset used in this paper was originally collected from Sundqvist and Sundin's publications *Owners and Power in Sweden's Listed Companies* by Cronqvist and Nilsson (2003), whose database has subsequently been used by several other researchers.

methods to deal with potential outliers in accounting and employment data, such as winsorizing at the 1% tails.

3.3. *Summary statistics*

Table 1 describes the dataset by year, industry, and region of location. Panel A shows that, each year, there is an average of about 135 firms, 460 subsidiary companies, and 245,000 workers. In total, there are 286 unique firms, 1,344 unique subsidiaries, and 585,311 unique workers. Panel B shows that about half of the employees work in manufacturing. The two most common industries are “Manufacturing of motor vehicles, trailers and semi-trailers” (12.7% of the observations), which includes subsidiaries of firms such as Volvo, and “Manufacturing of radio, television and communication equipment” (11.2%), which includes subsidiaries of e.g. Ericsson. Panel C shows that 42.1% work in the metropolitan Stockholm region.

Table 2 reports variable definitions and summary statistics for firms (Panel A), subsidiaries (Panel B), and workers (Panel C). The CEO control and incentive variables and the variable *Wage* are of particular interest. As can be seen in Panel A, 19.6% of the firms have a CEO with more control rights than all other 5% blockholders together. The mean ownership of votes (cash flow rights) is 45.7 (26.0) percent, given that the CEO is a vote blockholder (i.e., has at least 5% of the votes). Across all measures of control and incentives, the variation in CEO control and incentives is substantial. For example, for *CEO Votes (Incentive)*, the maximum is 92.0% (78.1%) while the minimum is 0% (0%). We see in Panel C that the mean annual wage is \$38,635, and the standard deviation is \$15,614 (converted into dollars as of the end of 1995).

4. Results

4.1. Empirical specification

Our primary empirical objective is to estimate the wage difference across firms with more and less entrenched managers. To do this, we use the following specification of an individual worker's pay:

$$\begin{aligned} \log Wage_{ijkt} = & \theta Year_t + \gamma Worker_{it} + \delta Subsidiary_{jt} \\ & + \beta_C (CEO Control)_{kt} + \beta_I (CEO Incentive)_{kt} + \varepsilon_{ijkt} \end{aligned} \quad (1)$$

where i indexes workers, j indexes subsidiaries, k indexes firms, and t indexes years. $Wage_{ijkt}$ is a worker's wage, $Year_t$ are year fixed effects, $Worker_{it}$ is a vector of worker characteristics, $Subsidiary_{jt}$ is a vector of subsidiary characteristics (including 42 industry and seven region dummies), $(CEO Control)_{kt}$ and $(CEO Incentive)_{kt}$ measure the variation in the extent of the agency problem across observations, and ε_{ijkt} is an error term. Our specification controls for fixed differences between industries and regions. The year dummies also control for aggregate variation. The estimates of the effects of CEO control and incentives, β_C and β_I , are of particular interest in the following analysis.

Our empirical approach of controlling for as much observable worker- and subsidiary-level heterogeneity as possible may not be sufficient to completely eliminate all possible endogeneity concerns that one might have. However, as we will describe more carefully below, we attempt to use the degree of detail in our dataset in various ways to deal with some important remaining concerns of the endogeneity of managerial ownership.

4.2. *Effects of CEO control and incentives on workers' pay*

In Table 3, we report evidence on the effects of CEO control and incentives on workers' pay. In column (1), we estimate equation (1), controlling for industry, region, and year fixed effects only. In column (2), we include subsidiary-level controls, and in column (3) we include worker-level controls. In column (4), we then add both these large sets of control variables.

Before discussing the effects of managerial entrenchment, let us first briefly review other determinants of workers' wages. Consistent with a significant gender wage gap, we document that women are paid on average almost 14% less than men. More education and experience is associated with higher pay: those with an undergraduate college education are for example paid about 48% more than those with only an elementary school education, and 10 years of work experience is associated with about 21% higher pay. Higher-paying enterprises are also more capital intensive and more high-skilled-labor intensive, like in the study by Abowd, Kramarz and Margolis (1999). The coefficient on our proxy for size, log of number of employees, is positive, but unlike some other studies (e.g., Brown and Medoff (1989)) it is not statistically significant, perhaps because we are controlling for such an extensive set of other variables, or because there is no firm size wage premium in a sample of large public corporations.

We now turn our focus to the effects of managerial control. We find that a CEO with a stronger grip on the control of his firm pays higher wages to the firm's workers: the estimated coefficient on *CEO Control* is consistently large and statistically significant at all levels in columns (1) to (4). The estimated effect ranges from 0.072 to 0.057 and is economically large. For example, the estimate in column (4) implies that a CEO who controls more votes than all other blockholders together pay about 6%, or about \$2,200, higher wages, all else equal.

The table also provides estimates of the effects of managers' incentives, measured by the CEOs' cash flow rights ownership, *CEO Incentive*. As can be seen, managers who hold more capital in their firms pay lower wages. The estimated effect ranges from -0.295 to -0.198 . As for managerial control, the effect is economically large. The estimate in column (4) implies that an increase in *CEO Incentive* by one standard deviation (14.7 percentage points) is associated with 2.9% lower wages, *ceteris paribus*. Taken together, these results suggest that entrenched managers pay their workers higher wages: workers' pay is positively correlated with CEO control, but negatively correlated with CEO cash flow rights ownership.

For space reasons, we summarize without directly reporting some basic robustness checks that we have performed. (The results are available on request.) First, we control for mean industry wage, or use industry and region trends, rather than including industry fixed effects; the results are unaffected. Second, we exclude all part-time workers rather than calculating full-time equivalent wages; again, the results are unaffected. Finally, since a majority (51.8%) of the employees work in manufacturing we check the extent to which this single industry drives our results by excluding all manufacturing industry employees. Our results are robust to such a drastic change in sample composition and size.

4.3. *Evidence from alternative estimation methods*

There are at least two statistical concerns that one might have regarding the above results. First, if the cross-sectional and serial correlations among workers within a firm are high, then the reported t-statistics are inflated if each worker-year is treated as an independent observation. So far we have dealt with this concern using White's (1980) standard errors adjusted for clustering of the observations at the firm level. While many would probably consider this to be a

satisfactory remedy (see, e.g., the simulations in Petersen (2005)), below we consider alternative methods. Second, because the analysis so far has been done at the worker-level, we put a lot of weight on large firms, with many employees, and little weight on smaller firms. While this might be a relevant weighting scheme from a macroeconomic perspective, it may also imply that a few relatively large firms are driving the positive correlation between managerial entrenchment and workers' wages. Below, we also address this concern.

We deal with the issue of cross-sectional correlation across workers in a given year by re-estimating the coefficients and standard errors using the Fama and MacBeth (1973) procedure (based on the specification in column 4 in Table 3). The results are presented in column (1) of Table 4. However, the Fama and MacBeth procedure does not take into account the potential problem of putting a lot of weight on large firms. Nor does it address the problem of serial correlation of workers within a firm. In an attempt to deal with both these concerns at the same time, we next implement another two-step approach. First, we estimate the baseline specification but without the CEO variables. Next, we collapse the estimated worker-year residuals by firm-years and estimate the effect of CEO control and incentives in this collapsed dataset while adjusting the standard errors for clustering at the firm level. The result of this estimation is presented in column (2). As another alternative, we consider a similar approach. First, we estimate the basic wage regression without the CEO variables, but with firm fixed effects. Then, we regress the fixed firm effects on firm-average CEO control and incentives. These results are reported in column (3).

As can be seen in the table, our results are unaffected, or in some cases stronger, if we use any of these alternative estimation methods. Thus, our result on managerial entrenchment

and workers' pay do not seem to be driven by inflated t-statistics due to cross-sectional and serial correlation among workers in a firm, or by overweighting firms with many employees.⁷

4.4. Do CEOs use a high-wage policy as protection against control threats?

Recall that one view of managerial entrenchment and workers' pay predicts that wages are negatively correlated with measures of managerial control, because managers who are not entrenched use higher wages as protection against control threats. So far the evidence in Tables 3 and 4 goes in the opposite direction: workers' pay appears to be *positively* correlated with managerial entrenchment. In Table 5, we now replace the *CEO Control* variable with several alternative measures of managerial entrenchment to test if this conclusion was driven by a specific empirical definition of managerial control.

In column (1), we use *CEO Votes*, defined as the CEO's percentage of the votes. We see that CEOs with more votes pay higher wages to their workers. In column (2), we also add (*CEO Votes*)², showing that there is some, though weak, evidence that the marginal effect of CEO votes is decreasing in the degree of control. Taking the (insignificant) squared term into account, a one-standard-deviation increase in votes ownership is associated with 2.4% higher wages. Figure 3 summarizes and quantifies the economic effects of managerial control and cash flow rights ownership on workers' pay, in dollars per worker and year.

In column (3), we see that the CEO's log votes-to-capital ratio, another measure of the CEO's control wedge, is positively related to workers' pay. According to our estimates, a CEO with a V/C-ratio equal to the mean (1.86) pays 2.2%, or about \$850, higher wages compared to a CEO with no wedge, all else equal. The result for the V/C-ratio comes with the advantage that it

⁷ An alternative robustness check is to drop the largest firms from our sample. Our results are robust to dropping the 20% of firms with most employees.

applies to all firms and is continuous throughout the sample, though it is a less stringent measure than *CEO Control*.

Furthermore, column (4) reports 4.5% higher wages when the CEO is the largest owner. In column (5), we see that when a CEO has “practical” control, defined as having more than 25% of the firm’s votes, wages are 4.5% higher. Finally, in column (6), we find that CEOs with majority control pay their workers 3.9% higher wages. The evidence of a positive correlation between various CEO control proxies and wages seem inconsistent with the view that managers use their firms’ wage policy to protect themselves against control threats.⁸

4.5. Omitted variables: Firm and CEO characteristics

One concern with regard to our main results is that firms with more and less agency problems between shareholders and managers may differ also along other dimensions. As a result, comparing wages across firms with more and less entrenched managers may simply capture the effect of such differences rather than an effect of CEO entrenchment per se, and these omitted variables may bias the estimated coefficients on β_C and β_I . To address this concern we estimate equation (1) except that we now also add firm-level and CEO characteristics that may be related to both CEO entrenchment and wages:

$$\begin{aligned} \log Wage_{ijkt} = & \theta Year_t + \gamma Worker_{it} + \delta Subsidiary_{jt} + \lambda (Firm \text{ and } CEO)_{kt} \\ & + \beta_C (CEO \text{ Control})_{kt} + \beta_I (CEO \text{ Capital})_{kt} + \varepsilon_{ijkt} \end{aligned} \quad (2)$$

where $(Firm \text{ and } CEO)_{kt}$ is a vector of firm and CEO characteristics. As many of these characteristics may be endogenous to managerial ownership (see, e.g., Demsetz and Lehn

⁸ A more direct test of the Pagano and Volpin (2005) model would require us to identify firms that face takeover pressure, in which case a high-wage policy to create a management-labor alliance as protection against control threats should be more valuable.

(1985)), we prefer not to include them in our baseline specifications, but rather verify that our results do not change when we include them.

Table 6 reports our results. In column (1), we include return on assets as a proxy for firm-level profitability. In column (2), we add firm size, defined as the log of gross sales. In column (3), we add the firm's proportion of fixed assets. In column (4), we include the firm's market-to-book ratio as a proxy for growth opportunities as it may be argued that many firms with a large number of growth opportunities, such as high-tech firms, often have managers with considerable control and at the same time pay their workers high wages as compensation for their specialized skills. In column (5), we include the number of two-digit industries that a firm is operating in as a proxy for the level of diversification. We do so because entrenched CEOs have more discretion to engage in conglomerate-building, and because Schoar (2002) reports that workers in diversified firms are paid a wage premium. In column (6), we include CEO age. Older CEOs may have weaker incentives to work hard to keep down the total wage bill, and at the same time, older CEOs may have accumulated more voting rights in the firm. Finally, column (7) includes all the firm and CEO controls at the same time.

Our results are unaffected by including these additional firm-level and CEO characteristics. Thus, there is no evidence that such characteristics are responsible for the effects of managerial entrenchment on workers' pay. In unreported regressions, we have checked that our results are robust to including an even larger set of controls (e.g., the log of firm age), though we have a large number of missing observations on these variables, or lots of noise in the data

(e.g., firm age is truncated because all firms established prior to 1973 are assigned this year as their starting year).⁹

4.6. *Effects of productivity and employment risk*

The evidence that entrenched managers pay their workers more is consistent with agency problems between shareholders and managers affecting workers' pay. However, an alternative interpretation is that firms with entrenched CEOs are more productive and that workers share the profits; see, e.g., Blanchflower, Oswald and Sanfey (1996) for evidence on rent-sharing. Entrenched CEOs may provide more "stakeholder protection" (e.g., Shleifer and Summers (1988)). That is, CEO control may allow the manager to make long-term commitments to workers. As a result, workers are willing to make firm-specific human capital investments without fear of expropriation. In such an incomplete contracts setting, it can be optimal to let workers (who make the firm-specific investment) be the residual claimant. The relation between managerial entrenchment and workers' pay may thus be explained by a combination of higher profitability and rent-sharing in firms with entrenched CEOs.

We test this alternative explanation by controlling for productivity as carefully as our dataset allows. In column (1) of Table 7, as a measure of productivity, we include $\log(\text{Sales} / \text{Employee})$. Consistent with rent-sharing theories, the estimated coefficient on this measure is positive (0.032) and statistically significant at all levels. The change in magnitude of the estimate on *CEO Control* is fairly small; it drops from 0.057 to 0.049. That is, higher

⁹ The arguments by Titman (1984) and Berk, Stanton and Zechner (2006) suggest that workers may require a wage premium for human-capital investments in firms that are likely to go bankrupt. If firms with CEOs with more control for some reason are more likely to go bankrupt, then our result might be due to a bankruptcy premium in workers' wages. However, arguments along these lines are unlikely to explain the higher workers' pay in our sample of mostly large established public corporation.

productivity appears to be able to explain only a small fraction of the higher pay associated with entrenched CEOs.

While sales per employee is easily observable, and thus appropriate from a contracting and rent-sharing perspective, it has no real sense of profits in it. In column (2), we therefore add a possibly more precise proxy for productivity, $\log(\text{Value added} / \text{Employee})$, although we have a larger number of missing observations for this variable. When including this productivity measure, the estimate on *CEO Control* does not change. That is, controlling for value added per employee as a proxy for profitability does not change the effect that we have so far attributed to managerial entrenchment.

Another alternative explanation for our evidence is that the higher pay is a premium for greater risk of being (arbitrarily) fired by a powerful, entrenched CEO. We address this interpretation by controlling for “employment risk.” In column (3), we include *Employee turnover*, defined as the number of workers hired plus workers leaving divided by the average number of employees during the year. Adding this variable does not eliminate the effect of CEO entrenchment. In column (4), we include *Employees leaving*, defined as the number of workers leaving the firm divided by the average number of employees during the year. This is a more precise proxy for the probability of being fired, although there are of course many other reasons for why an employee may leave a company. Once again the CEO entrenchment effect remain unchanged. Thus, it appears unlikely that the higher pay is a premium for a higher risk of being fired by an entrenched CEO.

4.7. Addressing reverse causality: CEO tenure and founder-CEO status

So far we have argued that more managerial control is associated with higher wages, and not the reverse. However, suppose a corporate raider believes that a firm pays excessive compensation to its workers. As a result, the raider might be attracted to the company, acquire a substantial control stake, and become the CEO in an attempt to restructure the firm by reducing the wage bill to make a profit. Such cases might show up as a positive relation between managerial control and workers' pay in our regressions, at least *before* the raider is able to cut workers' pay, a process which is likely to take some time.

In column (1) of Table 8, we attempt to address reverse causality by re-estimating the baseline specification, but restricting our analysis to firms with CEOs with at least three years tenure. We choose three years because this corresponds roughly to the average employer-employee contract length in our sample, providing a CEO with a chance to actually reduce (relative) wages. If our results were driven by raiders who are about to reduce wages, we should find a smaller or no effect when restricting our analysis to CEOs with longer tenure. However, our finding that the estimated effect of *CEO Control* is larger for CEOs with more than three years tenure (7.9% vs. 5.9%) is inconsistent with reverse causality.

To further address reverse causality we focus on a category of CEOs for which this is less of a concern: founder-CEOs. In column (2), we find a significant effect for founder-CEOs, similar in magnitude to the one documented above for all managers (6.3%). The evidence of a significant positive effect among founder-CEOs is also inconsistent with a reverse causality interpretation of the link between CEO entrenchment and workers' pay.

Finally, in column (3), we again restrict our analysis to firms with CEOs with at least three years tenure. We find that the effect of managerial control is somewhat larger for non-

founder-CEOs than for founder-CEOs (7.8% vs. 6.0% higher pay). This evidence suggests that the link between CEO control and higher workers' pay is not the result of non-founder-CEOs, i.e., potential raiders, attempting to cut wages. In contrast, our results suggest that an effect of CEO control on workers' pay is not immediate, but arise over time as the CEO becomes more entrenched.¹⁰

4.8. *Fixed effects specifications*

One concern is that we have so far not appropriately controlled for industry, firm, and worker heterogeneity. An alternative specification could include firm fixed effects to absorb additional productivity differences. However, as managerial ownership change only gradually over time, such a specification is problematic; see, e.g., Zhou (2001) for a discussion of the firm fixed effects regressions employed by Himmelberg, Hubbard and Palia (1999) in another setting. We therefore attempt to further control for firm-level heterogeneity using two different sets of fixed effects, for which identification is not an issue.

First, in column (1) of Table 9, we include fixed effects corresponding to 14 different "collective bargaining agreement areas." This is a union-based, i.e. labor-economics-based, industry classification, rather than the standard product-market based industry classification. As such, it should better capture effects on workers' pay that are specific to a particular bargaining area, e.g., a particular union (or its president) being particularly powerful during the period we study. Second, in column (2), we replace the 42 two-digit fixed industry effects with 149 three-digit fixed effects. This specification may absorb additional industry-level variation. However,

¹⁰ To deal with reverse causality concerns in the rest of the paper, we focus on CEOs with at least three years tenure.

as can be seen, our results on CEO entrenchment are unaffected by controlling for union fixed effects and very detailed industry fixed effects.

For a worker fixed effects specification, we face a similar identification problem as the above. Several of the worker-level characteristics change only gradually, such as experience, or are generally constant over time (e.g., gender). In addition, with a short time-series, identification comes from few managerial ownership and worker changes. To illustrate this problem, only 2.4% of the firm-years change CEO control status, and only 1.8% of the worker-years change employment from a firm with one CEO control status to another.

To circumvent these problems as much as possible given our data limitations, but still try to control for sorting of workers across firms with more or less entrenched CEOs, we propose the inclusion of occupation fixed effects. Our dataset identifies 26 different occupations/professions; two examples being “engineering work” and “work that requires theoretical special competence in the area of computer science.” We see in column (3) that including these fixed effects significantly improves the model fit, measured by adjusted R-squared. Most importantly, however, consistent with entrenched managers paying their workers more, we find that CEO control (incentives) is positively (negatively) correlated with workers’ pay, even after controlling for worker-level heterogeneity by occupation fixed effects.

4.9. Addressing causality: Evidence from centralized vs. decentralized bargaining regimes

We want to argue that the above evidence suggests that entrenched managers pay their workers higher wages. Even after our attempts to deal with the endogeneity of managerial ownership, productivity differences, and reverse causality, a causal interpretation may not be fully convincing. We therefore propose an alternative approach to addressing causality. More

specifically, we compare the effects of managerial entrenchment on workers' pay under centralized and decentralized bargaining regimes.

Prior to 1990, wages were largely determined by centralized negotiations. When pay is set by centralized bargaining there is little room for wages to be affected by managerial entrenchment (there might have been some "wage drifting" at the firm level, e.g., aiming at reducing the gender wage gap). However, a major regime shift in labor relations took place in 1990: the Swedish Employers' Confederation decided to no longer participate in centralized negotiations. Since 1990, centralized agreements only concern non-wage issues, e.g., workers' safety. The 1990 regime shift provides exogenous variation in CEOs' ability to increase workers' pay, which we will now explore. In particular, we predict a stronger relation between managerial entrenchment and workers' wages under a decentralized regime, because entrenched CEOs then actually have the ability to pay their workers higher wages if they want to.

Table 10 reports our results. We find no significant relation between *CEO Control* and *CEO Incentive*, respectively, and workers' pay in 1990. We do not have worker-level data for 1990, restricting our analysis to the subsidiary company level, though, from our previous results, it seems reasonable to assume that not controlling for worker characteristics is likely to *overestimate* any effects of managerial entrenchment. The evidence from 1990 as a control year is very important. If we had found a similarly strong effect of managerial control and incentives for 1990 as we do for 1995-2002, that would suggest that the CEO control and incentive variables proxy for something other than managerial entrenchment. That is, the results from contrasting the effects of managerial entrenchment under centralized and decentralized bargaining regimes is perhaps the most direct evidence that entrenched CEOs pay their workers more.

5. Additional evidence on managerial entrenchment and workers' pay

So far we have shown that there is a robust association between managerial entrenchment and workers' pay. We now present some additional evidence on this link. We first examine who, i.e. which groups of employees, get a larger share of the higher wages. In an agency model for workers' pay, we would expect managers to give a relatively larger share to those who provide particularly large private benefits. Thereafter, we attempt to extend our analysis by presenting some evidence on the extent to which governance pressure (other than CEOs' cash flow rights ownership) also constrain managers from paying high wages.

5.1. *Effects on worker subgroups' pay*

One private benefit of higher wages is easier worker relations. Such gains might be particularly large when it comes to negotiating with unionized workers. Unfortunately, worker-level data on unionization are not available, as it is illegal to collect such data in Sweden. However, blue-collar workers are significantly more unionized than white-collar workers. Comparing the estimates in columns (1) and (2) of Table 11, we see that the effects of *CEO Control* and *CEO Incentive* are larger and statistically more significant for blue-collar than for white-collar workers (8.8% vs. 5.2%). This evidence is consistent with CEOs benefiting relatively more from paying higher wages to unionized workers, possibly because of lower-effort wage bargaining when they do so.

Another benefit from higher wages is more enjoyable CEO-employee relations, in particular with those who the CEO interacts with on a regular basis. While we do not have data on CEOs day-to-day calendars, managers of large public corporations interact most with their firms' executives. We define an "executive" as someone who is the CFO, COO, or a division

head or vice-president at the subsidiary level. (Unfortunately, we are unable to identify members of the CEO's secretarial staff.) In column (3), we find a sizeable effect of managerial control on executives' pay: CEOs in control pay their executives about 20% more.¹¹ The incentive effect is also strong. Figure 4 summarizes and quantifies the economic effects of CEO control on workers' pay for subgroups of workers. Additional (unreported) evidence shows that this effect is stronger when the geographical distance between the CEO and the other executive is relatively short, although that effect is not significant at the 10%-level. These results suggest that entrenched CEOs pay higher compensation to employees whose professional or personal relations they, themselves, enjoy or benefit from the most, at or outside of work.

5.2. *Other corporate governance mechanisms and workers' pay*

The analysis so far has focused on the role that CEOs' ownership of cash flow rights play in constraining managers from paying higher wages. However, cash flow rights ownership is not the only constraint that a manager may be subject to. We therefore extend our analysis by examining the extent to which governance mechanisms more broadly constrain managers from paying high wages. If our results indicate that managers that are subject to less governance pressure pay their workers more, then our overall conclusion of a significant link between corporate governance and workers' pay is strengthened.

We examine the link between corporate governance pressure and workers' pay by estimating equation (1) except that we also include proxies for some governance mechanisms:

¹¹ Very few of these 3,400 executives are on the board of directors, so it is unlikely that the higher compensation acts as a "bribe" to allow the CEO to pay himself more.

$$\begin{aligned} \log Wage_{ijkt} = & \theta Year_t + \gamma Worker_{it} + \delta Subsidiary_{jt} \\ & + \beta_C (CEO Control)_{kt} + \beta_I (CEO Incentive)_{kt} \\ & + \alpha Governance_{kt} + \varepsilon_{ijkt} \end{aligned} \quad (3)$$

where $Governance_{kt}$ is a vector of corporate governance mechanisms that may constrain a manager from paying higher wages.

Shleifer and Vishny (1986) argue that the presence of a large shareholder improves monitoring. We therefore conjecture that managers are likely to pay lower wages in the presence of a large outside shareholder. We define *Outside individual blockholder* as a dummy that is one if an individual (other than the CEO) has more than 5% of the votes, and zero otherwise. We define *Outside institutional blockholder* as a dummy that is one if an institution has more than 5% of the votes, and zero otherwise. This category includes banks, money managers, insurance companies, etc. Consistent with a large outside shareholder constraining managers, we find in Table 12 that an outside individual blockholder reduces workers' pay by about 3.5%.

Jensen's (1986) view that high debt levels constrain managers from diverting free cash flow (in this case through higher wages) underlies several important models, e.g. Stulz (1990), and Hart and Moore (1990).¹² We define *Leverage* as total liabilities divided by total assets at the firm level. Consistent with debt constraining managers, we find that firms with more debt pay their workers lower wages. A one standard-deviation-increase in leverage (0.171) is associated with 1.3% lower wages. This finding is qualitatively similar to Hanka (1998) evidence using firm-level U.S. data.

Hart (1983) argues that product market competition may reduce managerial discretion. Managers may be constrained from paying high wages when operating in more competitive

¹² Another view is that managers use debt strategically in bargaining with workers and their unions; see, e.g., Bronars and Deere (1991), Perotti and Spier (1993), and Matsa (2006).

industries. We define *Product market competition* as a Herfindahl index of three-digit industry sales. Since we lack data on sales for the population of corporations for 1995, we cannot construct this variable for that year. We see that firms in more competitive industries pay their workers lower wages. An increase in competition (i.e., a decrease in the Herfindahl index) by one standard deviation (0.077) amounts to 1.5% lower wages.

Overall the above evidence suggests that corporate governance play an important role for workers' pay in large public corporations.¹³

6. Conclusions

We present evidence on the extent to which managerial entrenchment affects workers' pay, based on a large panel dataset that matches public companies with detailed data on their workers. We find that CEOs with a stronger grip on control pay their workers higher wages. Because cash flow rights ownership by a CEO is negatively correlated with wages, we interpret the higher workers' pay as evidence of agency problems stemming from the separation of ownership and control: if it was optimal for managers with more control to pay higher wages, then they would pay even higher wages when they have more incentives to do so through more cash flow rights ownership in their firms.

Our evidence that entrenched CEOs prefer to pay higher wages rather than delivering larger residual cash flows to shareholders suggests that Bertrand and Mullainathan's (2000, 2001) notion of "skimming" in the pay-setting process goes way beyond the CEO's own pay.

¹³ One caveat is that a firm's capital structure decision is itself subject to the same managerial discretion as workers' pay. Managerial entrenchment may therefore also affect leverage; see, e.g., Stulz (1988), Harris and Raviv (1988), and Berger, Ofek and Yermack (1997). Another issue that naturally arises in this context is whether various governance mechanisms substitute or complement each other in constraining management. It is however beyond the scope of the current paper to explore these issues.

Entrenched and poorly governed CEOs who have captured the pay-setting process seem to give higher pay also to their firm's employees, in particular unionized workers and other top-executives. Effects of managerial entrenchment on compensation in public corporations may therefore be much larger in dollar terms than previously thought, because they disseminate down and out in the organization. As recognized by Shleifer and Summers (1988), this may be because "managers become 'addicted' to stakeholders who form such an important part of their life (in contrast to constantly changing shareholders)."

Several important questions regarding corporate governance and workers' pay remain unanswered. First, does it make a difference if we extend the analysis of this paper to other countries with different governance structures, where the ease with which entrenched managers can pay higher wages may be different?¹⁴ The private benefits from easier worker relations may be larger in countries (or industries within a particular country) with stronger unions and/or longer-term wage contracts. Second, does the separation of ownership and control between shareholders and managers affect other sources of compensation than wages, e.g. employee stock option grants, or even other labor market outcomes? Finally, to what extent are employees like janitors and engineers paid for "luck"? For example, when the world market price of oil goes up, and oil company profits soar for reasons beyond management's and employees' control, do workers then get paid more when the firm's CEO is entrenched?

¹⁴ To date, large matched employer-employee datasets for research purposes appear to be more readily available for civil-law countries such as France (e.g., Abowd, Kramarz and Margolis (1999)) and Italy (e.g., Guiso, Pistaferri and Schivardi (2005)) with weaker investor protection (La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998)), than for common-law countries, like the U.S.

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Table 1
The matched employer-employee dataset

The sample is the matched employer-employee dataset described in Section 3. The table decomposes the dataset by year, industry, and region of location. Panel A reports the number of workers, subsidiaries, and firms by year. Panel B reports the distribution of workers across the ten most common industries. There are 42 industries, based on EU's two-digit standard classification of economic activities, *Nomenclature des Activités Économiques dans la Communauté Européenne* (NACE). Panel C reports the distribution of workers across regions.

Panel A: Number of workers, subsidiaries, and firms by year			
Year	Workers	Subsidiaries	Firms
1995	215,816	632	109
1996	257,032	413	103
1997	284,821	448	123
1998	259,885	445	138
1999	236,122	416	144
2000	252,890	451	150
2001	229,310	418	149
2002	220,458	389	153
Total year-observations	1,956,334	3,612	1,069
Unique observations	585,311	1,344	286

Panel B: The distribution of workers across industries	
Industry	%
Manufacturing of motor vehicles, trailers and semi-trailers	12.8
Manufacturing of radio, television and communication equipment	11.2
Construction	11.0
Manufacturing of pulp, paper and paper products	8.3
Manufacturing of machinery and non-electric equipment	8.1
Manufacturing of basic metals	5.3
Computer services (including software production and other related activities)	4.8
Other business services (e.g., legal, accounting, consulting, advertising)	4.5
Manufacturing of other transport equipment	3.6
Manufacturing of fabricated metal products, except machinery and equipment	2.4
Manufacturing industry	51.8

Panel C: The distribution of workers across regions		
Region	Definition	%
Stockholm	Metropolitan Stockholm and suburbs	42.1
Other metropolitan areas	Other metropolitan areas than Stockholm	23.4
Major cities	Municipality population $\geq 90,000$ within 30 km radius from center	21.2
Mid-sized cities	$90,000 >$ Municipality population $\geq 27,000$ within 30 km radius from center, and population $\geq 300,000$ within 100 km radius	9.3
Smaller cities	$90,000 >$ Municipality population $\geq 27,000$ within 30 km radius from center, and population $< 300,000$ within 100 km radius	3.0
Rural districts	Municipality population $< 27,000$ within 30 km radius from center	0.9

Table 2
Summary statistics

The sample is the matched employer-employee dataset described in Section 3. The table reports variable definitions and summary statistics for firm/CEO (Panel A), subsidiary (Panel B), and worker (Panel C) characteristics.

Panel A: Firm and CEO characteristics (N=1,069)		Mean	St. dev.
<u>CEO control and incentives</u>			
CEO Control	1 if the CEO owns more of the firm's control rights (votes) than all other 5% blockholders together, 0 otherwise	0.196	0.397
CEO Incentive	CEO's percentage cash flow rights ownership	0.070	0.147
CEO Incentive (if CEO Votes $\geq 5\%$)	CEO's percentage cash flow rights ownership when the CEO is a 5% blockholder	0.261	0.176
CEO Votes	CEO's percentage of the votes	0.124	0.241
CEO Votes (if CEO Votes $\geq 5\%$)	CEO's percentage of the votes when the CEO is a 5% blockholder	0.458	0.249
CEO Largest Owner	1 if the CEO is the largest owner, 0 otherwise	0.220	0.414
CEO $\geq 25\%$ Votes	1 if the CEO owns $\geq 25\%$ of the firm's votes, 0 otherwise	0.197	0.398
CEO Majority Owner	1 if the CEO owns $\geq 50\%$ of the firm's votes, 0 otherwise	0.138	0.345
CEO V/C-Ratio (if CEO Votes $\geq 5\%$)	CEO's votes-to-capital ratio when the CEO is a 5% blockholder	2.103	1.146
Founder	1 if the CEO is the founder or belongs to the founder's family, 0 otherwise	0.178	0.382
<u>Other firm and CEO characteristics</u>			
Return on assets	Earnings before interest, taxes, depreciation, and amortization / Total assets (book value)	0.096	0.163
Sales	Total gross sales (billion kronor)	9.50	25.2
Total assets	Book value of total assets (billion kronor)	10.7	26.0
Fixed assets / Total assets	Net property, plant, and equipment / Total assets	0.256	0.231
Market-to-book ratio	(Market value of equity + Book value of debt) / (Book value of equity + Book value of debt)	1.876	2.044
CEO age (N=1,059)	CEO's age	50.2	6.73
Outside individual blockholder	1 if an outside individual owner controls $\geq 5\%$ of the votes, 0 otherwise	0.584	0.493
Outside institutional blockholder	1 if an institutional owner controls $\geq 5\%$ of the votes, 0 otherwise	0.331	0.471
Leverage	Total liabilities / Total assets	0.561	0.171
Diversification	Number of two-digit industries in which the firm is operating	3.402	3.832

Panel B: Subsidiary characteristics (N=3,612)			
		Mean	St. dev.
Fixed assets / Employees	(Net property, plant, and equipment) / Employees (million kronor)	1.036	5.571
Employees	Average number of employees during the year	606	1,467
Proportion high-skilled workers	Proportion of workers with at least undergraduate college education	0.276	0.245
Proportion low-skilled workers	Proportion of workers with at most elementary school education	0.222	0.151
Employee turnover (N=2,096)	(Number of employees hired + Number of employees leaving) / Average number of employees during the year	0.518	0.496
Employees leaving (N=2,096)	Number of employees leaving / Average number of employees during the year	0.300	0.402
Sales / Employee	Total gross Sales / Employee (million kronor)	2.181	3.643
Value added / Employee	(Sales – operational expenses excluding wages) / Employees (million kronor)	0.591	1.063
Product market competition (N=2,980)	Herfindahl index based on sales within the subsidiary's two-digit industry	0.042	0.077
Panel C: Worker characteristics (N=1,956,334)			
		Mean	St. dev.
Wage	Gross monthly full-time-equivalent compensation, where monthly compensation is the sum of monthly net nominal earnings, i.e., wage/salary, bonus, overtime, supplementary allowance for unsocial hours and shift work, and payroll taxes (in kronor)	21,410	8,653
Female	1 if the worker's gender is female, 0 otherwise	0.248	0.432
Education 1	1 if highest level of education is elementary school (<9 years), 0 otherwise	0.094	0.292
Education 2	1 if highest level of education is compulsory school (9 years), 0 otherwise	0.115	0.319
Education 3	1 if highest level of education is 2 years of upper secondary school, 0 otherwise	0.324	0.468
Education 4	1 if highest level of education is 3 years of upper secondary school, 0 otherwise	0.296	0.456
Education 5	1 if highest level of education is 4 years of upper secondary school, 0 otherwise	0.041	0.197
Education 6	1 if highest level of education is undergraduate or graduate college education, 0 otherwise	0.123	0.329
Education 7	1 if highest level of education is doctoral degree, 0 otherwise	0.007	0.083
Experience	Years since graduation from highest level of education	21.8	12.3

Table 3
Effects of CEO control and incentives on workers' pay

The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
CEO Control	0.072 (3.57)***	0.064 (3.59)***	0.057 (3.98)***	0.057 (4.07)***
CEO Incentive	-0.295 (4.69)***	-0.246 (4.82)***	-0.209 (4.77)***	-0.198 (4.70)***
<u>Subsidiary-level controls</u>				
Fixed assets / Employees		0.003 (3.40)***		0.003 (3.60)***
Log (Employees)		-0.000 (0.16)		0.002 (0.77)
Proportion high-skilled workers		0.490 (16.45)***		0.145 (4.37)***
Proportion low-skilled workers		-0.134 (1.86)*		-0.166 (3.03)***
<u>Worker-level controls</u>				
Female			-0.138 (22.11)***	-0.139 (22.58)***
Education 2			0.034 (7.97)***	0.033 (8.16)***
Education 3			0.075 (13.09)***	0.070 (13.00)***
Education 4			0.195 (15.41)***	0.185 (15.01)***
Education 5			0.253 (24.18)***	0.238 (22.43)***
Education 6			0.503 (36.71)***	0.482 (31.20)***
Education 7			0.711 (52.54)***	0.686 (45.85)***
Experience			0.026 (11.89)***	0.025 (11.57)***
(Experience) ² / 100			-0.040 (10.50)***	-0.040 (10.23)***
Industry, region, and year fixed effects	Yes	Yes	Yes	Yes
N	1,956,334	1,956,334	1,956,334	1,956,334
R-squared	0.19	0.22	0.49	0.49

Table 4
Evidence from alternative estimation methods

The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). The table reports second-stage estimates from alternative estimation methods. In column (1), we estimate the coefficients and standard errors using the Fama and MacBeth (1973) procedure. In column (2), we estimate the specification in column (4) in Table 3 without the CEO variables, and then we collapse the estimated worker-year residuals by firm-years and estimate the effect of CEO control and incentives in this collapsed dataset while adjusting the standard errors for clustering at the firm level. In column (3), we estimate the specification in column (4) in Table 3 without the CEO variables, but with firm fixed effects, and then we regress the fixed firm effects on firm-average CEO control and incentives. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	Fama-MacBeth (1)	Collapsing by firm-years (2)	Collapsing by firms (3)
CEO Control	0.058 (5.44)***	0.054 (2.99)***	0.068 (2.12)**
CEO Incentive	-0.161 (10.61)***	-0.131 (3.02)***	-0.177 (2.27)**
<u>Subsidiary-level controls</u>			
Fixed assets / Employees	0.006 (2.40)***		
Log (Employees)	0.002 (1.02)		
Proportion high-skilled workers	0.072 (1.83)*		
Proportion low-skilled workers	-0.254 (10.70)***		
<u>Worker-level controls</u>			
Female	-0.138 (184.33)***		
Education 2	0.031 (4.88)***		
Education 3	0.067 (8.32)***		
Education 4	0.183 (74.00)***		
Education 5	0.234 (61.99)***		
Education 6	0.480 (74.57)***		
Education 7	0.685 (69.85)***		
Experience	0.026 (33.97)***		
(Experience) ² / 100	-0.040 (22.45)***		
N	1,956,334	1,069	286

Table 7
Effects of productivity and employment risk

The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). Worker/Subsidiary controls refer to the control variables included in column (4) of Table 3. We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
CEO Control	0.049 (3.30)***	0.058 (4.07)***	0.046 (2.51)**	0.045 (2.50)**
CEO Incentive	-0.169 (3.65)***	-0.192 (4.48)***	-0.164 (2.71)***	-0.164 (2.72)***
<u>Productivity measures</u>				
Log (Sales / Employee)	0.032 (6.84)***			
Log (Value added / Employee)		0.014 (2.20)**		
<u>Employment risk measures</u>				
Employee turnover			0.003 (0.50)	
Employees leaving				0.007 (1.14)
Subsidiary controls	Yes	Yes	Yes	Yes
Worker controls	Yes	Yes	Yes	Yes
Industry, region, and year fixed effects	Yes	Yes	Yes	Yes
N	1,940,568	1,880,654	1,511,231	1,255,930
R-squared	0.49	0.48	0.48	0.46

Table 8
Addressing reverse causality: CEO tenure and founder-CEO status

The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). Worker/Subsidiary controls refer to the control variables included in column (4) of Table 3. We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	CEO tenure \geq 3 years (1)	Founder vs. Non-founder CEOs	
		All (2)	CEO tenure \geq 3 years (3)
CEO Control	0.076 (3.70)***		
CEO Incentive	-0.235 (4.83)***		
Founder \times CEO Control		0.061 (2.50)**	0.058 (2.15)**
Founder \times CEO Incentive		-0.214 (3.81)***	-0.211 (3.48)***
Non-founder \times CEO Control		0.037 (1.65)	0.075 (3.24)***
Non-founder \times CEO Incentive		-0.098 (0.94)	-0.159 (1.78)*
Subsidiary controls	Yes	Yes	Yes
Worker controls	Yes	Yes	Yes
Industry, region, and year fixed effects	Yes	Yes	Yes
N	1,463,937	1,956,334	1,463,937
R-squared	0.49	0.49	0.49

Table 9
Fixed effects specifications

The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). Worker/Subsidiary controls refer to the control variables included in column (4) of Table 3. In column (1), we replace the industry fixed effects with union fixed effects corresponding to 14 different collective bargaining agreement areas, i.e. a labor-economics-based industry classification. In column (2), we replace the 42 two-digit industry fixed effects with 149 three-digit industry fixed effects. In column (3), we add occupation fixed effects for 26 different occupations/professions. We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
CEO Control	0.073 (3.81)***	0.081 (3.79)***	0.074 (3.82)***
CEO Incentive	-0.195 (3.63)***	-0.248 (4.66)***	-0.232 (4.29)***
Subsidiary controls	Yes	Yes	Yes
Worker controls	Yes	Yes	Yes
Region, and year fixed effects	Yes	Yes	Yes
Industry (two-digit)fixed effects	Yes	No	Yes
Union fixed effects	Yes	No	No
Industry (three-digit) fixed effects	No	Yes	No
Occupation fixed effects	No	No	Yes
N	1,463,937	1,463,937	1,195,541
R-squared	0.47	0.50	0.56

Table 10**Addressing causality: Evidence from centralized vs. decentralized bargaining regimes**

In this table, we analyze 1990 as a control year because wage bargaining was largely centralized till 1990. As we do not have worker-level data for year 1990, this is a subsidiary-level analysis where the log of mean wage at the subsidiary level is the dependent variable. Variable definitions are in Table 2. We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	(1)
CEO Control	0.004 (0.07)
CEO Incentive	-0.105 (0.80)
Subsidiary controls	Yes
Worker controls	No
Industry, and region fixed effects	Yes
Year fixed effects	No
N	852
R-squared	0.37

Table 11
Effects on worker subgroups' pay

The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). Subsidiary/Worker controls refer to the subsidiary/worker-level control variables included in Table 3. Blue-collar workers are those with occupations that belong to the national cartel of blue-collar worker unions. White-collar workers are those with occupations that belong to the national cartel of white-collar worker unions. Executives are CFOs, COOs, or a division heads and vice-presidents at the subsidiary company level. We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	Blue-collar workers	White-collar workers	Executives
	(1)	(2)	(3)
CEO Control	0.088 (2.93)***	0.052 (2.35)**	0.197 (1.86)*
CEO Incentive	-0.260 (3.93)***	-0.156 (2.54)**	-0.831 (3.40)***
Subsidiary controls	Yes	Yes	Yes
Worker controls	Yes	Yes	Yes
Industry, region, and year fixed effects	Yes	Yes	Yes
N	779,769	684,168	3,400
R-squared	0.38	0.50	0.44

Table 12
Other corporate governance mechanisms and workers' pay

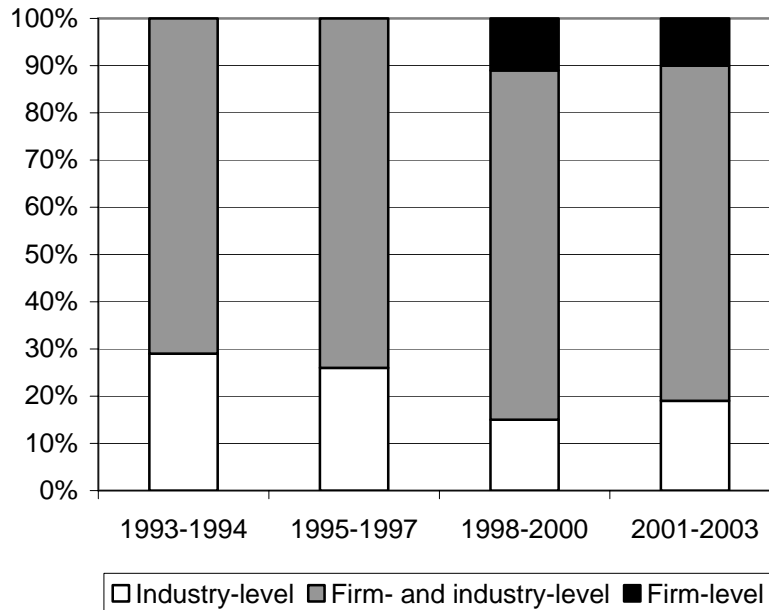
The sample is the matched employer-employee dataset described in Section 3. Variable definitions are in Table 2. The dependent variable is log (*Wage*). Worker/Subsidiary controls refer to the control variables included in column (4) of Table 3. We compute White's (1980) standard errors adjusted for clustering of the observations at the firm-level to account for the presence of cross-correlations in data. t-statistics are reported in parentheses. *, **, *** denote that the value is significantly different from zero at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
CEO Control	0.078 (3.49)***	0.082 (3.69)***	0.082 (3.74)***	0.089 (3.55)***
CEO Incentive	-0.258 (4.93)***	-0.266 (4.78)***	-0.247 (4.77)***	-0.309 (5.08)***
<u>Corporate governance mechanisms</u>				
Outside individual blockholder	-0.017 (1.69)*			-0.017 (1.76)*
Outside institutional blockholder	-0.007 (0.67)			-0.012 (1.34)
Leverage		-0.079 (2.58)**		-0.078 (2.41)**
Product market competition			0.192 (1.72)*	0.197 (1.96)*
Subsidiary controls	Yes	Yes	Yes	Yes
Worker controls	Yes	Yes	Yes	Yes
Industry, region, and year fixed effects	Yes	Yes	Yes	Yes
N	1,463,937	1,463,937	1,270,396	1,270,396
R-squared	0.49	0.49	0.47	0.47

Figure 1
The wage formation process in Sweden

The figure illustrates the fraction of workers for which wages are determined, respectively, at the industry-, combined firm/industry-, and firm-level during the period 1993-2003. The data come from the Confederation of Swedish Enterprise.

Panel A: Blue-collar worker negotiations



Panel B: White-collar worker negotiations

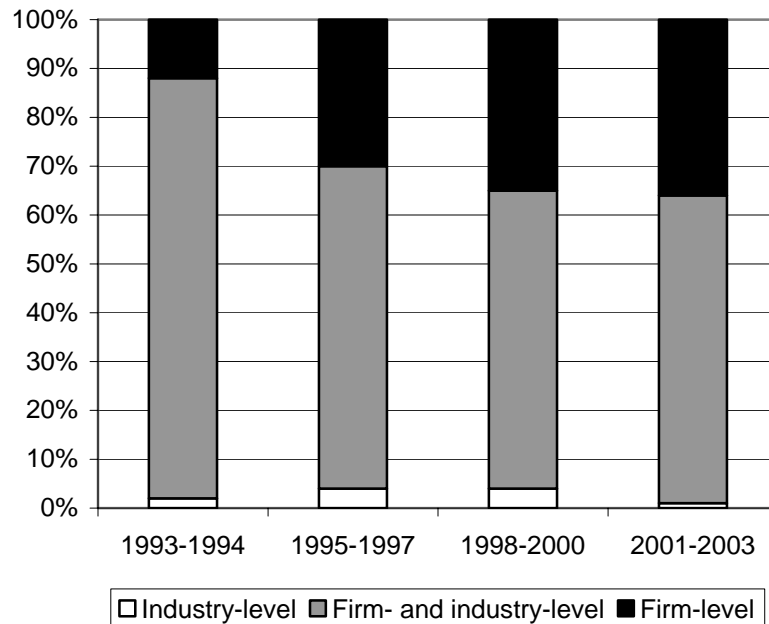
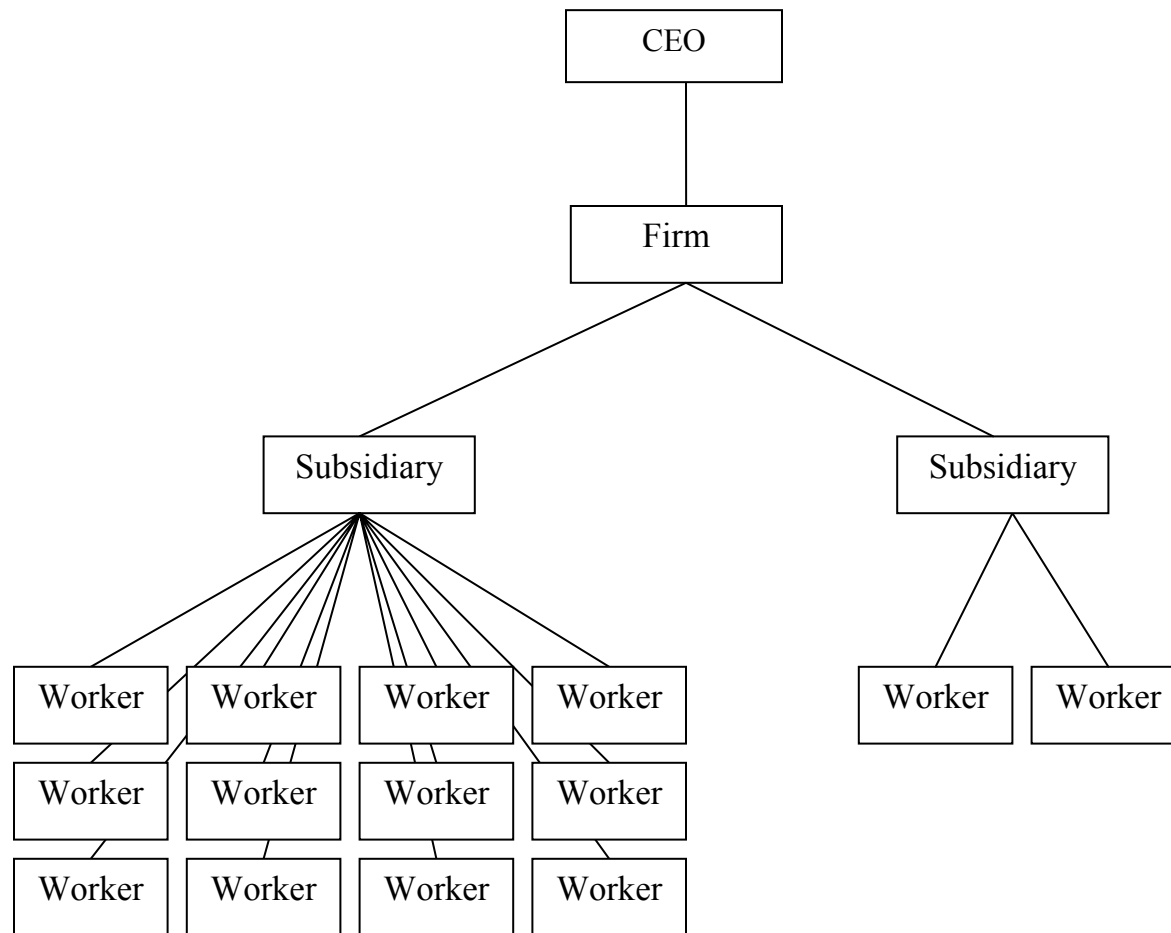


Figure 2
Structure of matched employer-employee dataset

Each worker has been linked to the subsidiaries where he/she works through unique *personnummer* (corresponding to U.S. Social Security numbers). Each subsidiary and all its employees have in turn been matched to the public firms to which they belong, via *organisationsnummer* (which correspond to Employer Identification Numbers in the U.S.).



CEO control and incentives:
 Data on managerial ownership
 of votes and cash flow rights

Firm-level data: firm
 characteristics such as firm
 size, profitability, corporate
 governance, financial
 leverage, etc.

Subsidiary-level data: e.g.,
 accounting items, industry,
 region of location,
 employment variables

Worker-level data: e.g.,
 wage, gender, education,
 experience

Figure 3
The economic effect of managerial entrenchment on workers' pay

The figure summarizes and quantifies the economic effects of managerial control and incentives on the average worker's pay, in dollars per year. *CEO Control* is a dummy variable that is one if the CEO owns more control rights (votes), than all other 5% blockholders together, and zero otherwise. *CEO Votes* is the CEO's percentage of votes in the firm. *CEO Incentive* is the CEO's percentage cash flow right ownership.

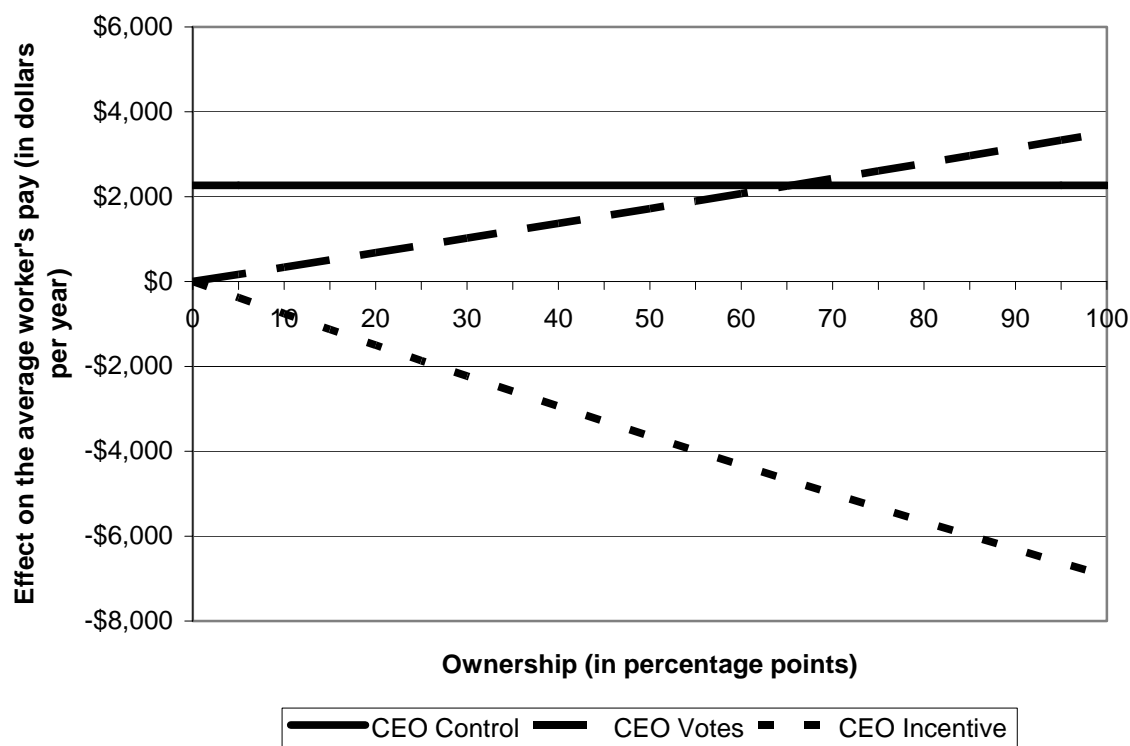


Figure 4
The economic effect of managerial entrenchment on worker subgroups' pay

The figure summarizes and quantifies the economic effects of managerial control for subgroups of employees. Blue-collar workers are those with occupations that belong to the national cartel of blue-collar worker unions. White-collar workers are those with occupations that belong to the national cartel of white-collar worker unions. Executives are CFOs, COOs, or a division heads and vice-presidents at the subsidiary company level.

