When Labor Has a Voice
in Corporate Governance

Olubunmi Faleye,[a] Vikas Mehrotra[b] and Randall Morck[c]

a.   Assistant Professor of Finance, Northeastern University, Boston, Massachusetts.
b.   Associate Professor of Finance, The University of Alberta Business School, Edmonton, Alberta, Canada.
c.   Contact author:, Stephen A. Jarislowsky Distinguished Professor of Finance, The University of Alberta Business School, Edmonton, Alberta, Canada. Phone: (780) 492-5683. Fax (780) 492-3325.   E-mail: randall.morck@ualberta.ca.

Abstract

Labor has a large contractual claim on a firm's cash flow. Labor equity ownership gives employees both a fractional stake in the firm's residual cash flows and a voice in corporate governance. Relative to otherwise similar firms, labor-controlled publicly-traded firms invest less, take fewer risks, grow more slowly, create fewer new jobs, have worse free cash flow problems, and exhibit lower labor and total factor productivity. We therefore propose that labor uses its corporate governance voice to maximize the combined value of its contractual and residual claims, and that this often pushes corporate policies away from, rather than towards, shareholder value maximization.

1.   Introduction

On July 12, 1994, as shareholders approved the recapitalization that rendered United the largest majority employee-owned company in the world, UAL stock closed at $99.25. On December 9, 2002, UAL became a penny stock as, unable to sustain the industry's highest labor costs, it filed for bankruptcy protection. Other airlines vehemently opposed aid to UAL, arguing that it had brought on a crisis in the industry by relentlessly driving labor costs up. Robert Roach, Jr. the General Vice President for Transportation at the International Association of Machinists and Aerospace Workers, United's largest union responded, "Everybody is shocked and concerned that the federal government would not be there for American workers as they are for rebuilding Afghanistan."[1] Sam Buttrick, an airline analyst at PaineWebber summarized that "At the root of the problem is the simple fact that labor has excessive structural leverage".[2]

Employee owned equity blocks are surprisingly commonplace in the United States. According to the National Center for Employee Ownership, as of 2002, employees owned several hundred billion dollars worth of their employers' stock. This includes 11,000 Employee Stock Ownership Plans (ESOPs), stock bonus plans, and profit sharing plans through which 8.8 million workers have over $400 billion primarily invested in their employers' stocks. In addition, some 11 million employees hold over $160 billion of their employers' stocks through some 2,200 401(k) plans. In the past

---

[1] Quoted in "Unions Vow to Press Fight for Aid Reconsideration", by Matt Richtel and Steven Greenhouse, *New York Times*, December 5, 2002.

[2] The September 11, 2001 terrorist attacks on New York and Washington devastated the US airline industry. However most airlines analysts recognize that they accelerated an already looming industry financial crisis. See "Righting United Airlines: Nine Flight Plans", by Julie Edelson Halpert, *New York Times*, September 10, 2000.

1

decade, the biggest growth in employees stock ownership has been through broad based stock option plans and employee stock purchase plans. Some ten to 25 million employees own several hundred million dollars worth of their employers' stock through some 8,000 of these plans.

These figures translate into a significant tier of employee-owned stock in many large, publicly traded companies. Although employee ownership of public companies through ESOPs and 401(k) plans seldom exceeds ten percent, and that through broad based option and purchase plans seldom exceeds 30%, these stakes are nonetheless substantial enough blocks to matter at shareholder meetings. Since most ESOPs pass voting rights through to employees, and 401(k) plans, broad based stock option plans, and stock purchase plans usually give employees full voting rights, these stakes give employees a substantial voice in corporate governance in many large US publicly traded firms.

Proponents of employee equity ownership hold that these developments are desirable. Vanek (1965), Drucker (1978), and Aoki (1984) argue that employee equity ownership leads to a convergence of employees' interests with those of shareholders, empowers employees, and lengthens workers' time horizons. They propose that these effects lead to better overall corporate performance.

We use Jensen and Meckling (1979) as our starting point, and argue that employee equity block holdings have a dark side – they create an entrenched workforce with corporate governance power. Entrenched labor, like entrenched management, can

destroy value as it strives to maximize its utility. And like entrenched management, entrenched labor cannot be got rid of easily.

The core of our thesis is that employees, like creditors, primarily hold a contractual claim on the firm's cash flow. If a contractual claimant also has a voting equity stake, it also has a residual claim and a voice in corporate governance, which it uses to *maximize the total value of its two claims – the contractual, primarily salary-based, claim and the residual equity-based claim*.

The corporate strategies that lead to shareholder value maximization and those that maximize the value of employees expected future wages and benefits could differ markedly. Workers' equity claims are usually small compared to the largely contractual claims associated with their wages and benefits. Yet, in a widely held firm, labor's stake may give it a dominant voice in governance. We propose that this *imbalance* often leads labor to use its corporate governance voice to push corporate policies away from, rather than towards, shareholder value maximization.

Our objective in this paper is to empirically test for these competing hypotheses on the effects of labor ownership and control. We compare several dimensions of corporate decision-making by firms with labor equity ownership and other firms, controlling for exogenous firm characteristics. We find that publicly-traded firms that give employees a greater voice in corporate governance spend less on new capital, take fewer risks, grow more slowly, create fewer new jobs, deviate more from value maximization, show greater evidence of free cash flow problems, exhibit lower labor

productivity, and exhibit lower total factor productivity. These findings are highly robust.

Our results differ from other studies of the implications of labor ownership on corporate performance. We believe this is because we examine firms in which labor votes large equity blocks and drop firms in which labor owns stock, but does not vote it.

The remainder of the paper is organized as follows. In the next section, we discuss the behavior of labor as a corporate stakeholder and present an overview of the relevant literature. We describe our sample selection procedure in Section 3. We report our empirical results in Section 4. Section 5 contains a brief summary and concluding remarks.

2. Labor as a Corporate Stakeholder

Labor contractual wage is similar to risky debt in that it can be modeled as a combination of a fixed claim on the firm less a put option with an exercise price equal to the value of labor's wage. Anglo-American corporate governance law is based on the premise that since employees are contractual claimants, usually receiving a fixed wage, they need no voice in corporate governance. Consequently, the firms is, *de jure* at least, run in the shareholders' interests, with management choosing a governance structure to maximize shareholder value.

A hypothetical alternative legal regime would give complete corporate governance power to current labor, which would choose to maximize the *sum* of its fixed

contractual claims and the short position in the put option. Note that the short put position has implications for the types of investment policies favored by such a firm. Also suppose that labor has a horizon limitation beyond which it employs an infinite discount rate. Consider first a firm where labor has control but no equity stakes.

2.1   Labor Control with No Labor Equity Stake

Applying standard results in option pricing theory to the risky claim held by labor lets us predict how corporate governance in our hypothetical labor-controlled firm might differ from corporate governance in shareholder-controlled firms. First, labor will generally find projects with volatile cash flows undesirable, regardless of the project's NPV. As noted earlier, this is based on the short put portion of the total labor claim. Shareholders are then made to bear the resulting losses if labor's preferences are translated into policy.

Second, labor with a finite horizon will display a preference for projects with near-term cash flows, avoiding some long-term investments that a shareholder-controlled firm would undertake, as current workers have no claim to distant future returns. Efficient borrowing can alleviate this particular type of under-investment; however, note that borrowing for labor managed firms is subject to moral hazard problems because of labor's non-transferable rights.

It is unclear whether labor-controlled firms should exhibit higher or lower values of return on assets in current time windows because of two conflicting effects. Whereas lower funding of long-term investments should raise ROA relative to the values exhibited in comparable shareholder-controlled firms in the short-term, a sequence of under-

investment and risk avoidance will ultimately reduce ROA. This is because rejecting profitable long-term projects as a matter of policy will at some history affect cash flows. If shareholders do indeed lose in labor-controlled firms, we would find that Tobin's q ratios should be lower in our hypothetical labor-controlled firms than in shareholder-controlled firms. Indeed, we conjecture that labor-controlled firms exhibit both high short-term cash flows and low q-ratios relative to their non-labor controlled peers.

Finally, it makes sense to envision worker effort as a corporate governance variable in a worker-controlled firm, despite the obvious free-rider problem. Shareholder-controlled firms use a variety of incentive systems to encourage workers to work harder. These tools are also at the disposal of our hypothetical worker-managed firm. All else equal, labor is only concerned with generating enough returns to cover its wages. Any further increase in ROA is unimportant to labor.[3] These considerations suggest that labor-controlled firms might invest less than would shareholder-controlled firms in incentive schemes designed to increase productivity.

The closest empirical analog to a system where labor acquires control without equity ownership is the German corporate governance practice of *Mitbestimmung*, or codetermination. Under codetermination, a firm has a tricameral board of directors. A *Vorstand*, or *management board*, representing shareholders, makes day-to-day operating decisions, while an *Aufsichtsrat*, or *supervisory board*, makes strategic decisions. The *Aufsichtsrat* of a public corporation must include an equal number of representatives

---

[3] Lending excess cash via marketable securities will not solve this problem for labor with a fixed retirement age. Consider a labor member just about to retire. For her, generating any surplus cash is not worth the effort. By a process of reverse induction, we can see why younger labor members would also be unwilling to invest effort in creating surplus cash.

from the *Vorstand* and the firm's *Arbeitsrat*, or works council, which represents labor, if the firm has more than 2000 employees and one-third employee representatives if the firm employs between 500 and 2000 people.

Using a sample of co-determined firms around the time of German unification, Gorton and Schmid (2000) find that firms with co-determination generally have lower profitability and lower q-ratios. Benelli, Loderer, and Lys (1987), using a sample of 64 firms subject to Germany's codetermination laws, report weak evidence that codetermined firms tend to reduce dividend payments, leverage, profitability, and risk taking. Fitzroy and Kraft (1993) show that the 1976 change from one-third to almost-parity codetermination in Germany resulted in significant productivity reductions in large firms. Overall, the conclusion is that co-determination empowers labor, and that this is manifested in firm policies that protect labor's undiversified human capital.[4]

Using German results to understand US firms is problematic, for a key difference is that German co-determination is an externally imposed universal system, much like corporate law, whereas employee equity ownership is a *choice* made by labor. Capital contributors are free to exit labor owned firms, or to supply capital at differential rates, because other firms with no labor ownership are competing for the same capital. Under co-determination, the constraint is imposed as a part of an ambient legal regime. Nevertheless, our conclusions for US firms with a labor voice in corporate governance are broadly in line with those in the co-determination studies cited above.

---

[4] By contrast, Kaplan (1994) shows that the *Aufsichtsrat* does replace the chairman of the *Vorstand* subsequent to poor firm performance, so a degree of responsibility to shareholders seems evident.

2.2 Labor Control Associated with Equity Ownership by Labor

In the United States, labor does not assume corporate control rights without acquiring an equity stake. However, if other shareholders are small, it seems likely that equity ownership might give labor a corporate governance voice out of proportion to its equity block holding.

If share ownership is widely dispersed for the most part, the owner of a substantial block of shares can often dominate corporate governance decisions. Morck *et al*. (1988) argue that holding as little as a five percent block of stock lets top managers dominate corporate governance in large US firms. Other authors argue for a higher threshold of control, though there is broad agreement that a stake well below 50% can confer *de facto* complete control on the blockholder. Note that equity ownership increases the cost of pursuing policies that reduce the value of shareholders' claims, and to this extent serves to align the incentives of labor and shareholders.

These considerations suggest that labor equity ownership might lead to labor gaining a controlling voice in corporate governance for a small share of the firm's residual cash flows. In other words, the fixed wage contract dominates the equity-based income for labor. In such cases, labor's desire to protect its human capital, and its fixed wage contract with a finite horizon, will have a real effect on corporate policy. Specifically, we examine whether labor control, obtained with only a small labor ownership stake, will lead to reduced long-term investment, risk avoidance, slower growth, distorted near-term cash flows, less concern with share value maximization, and/or reduced productivity.

2.3   Previous Work

Much previous work has searched for the productivity and incentive effects of labor equity ownership. One approach consists of examining abnormal returns around labor's acquisition of equity blocks through ESOPs. An ESOP is a tax-qualified defined contribution retirement benefit plan established under the Employee Retirement Income Security Act (ERISA) of 1974. ESOPs invest most of their pension assets in the employers' stock. Thus, the creation of an ESOP can result in employees acquiring a significant block of shares. Results of ESOP announcement studies have been inconclusive. Chang (1990) finds positive abnormal returns. In contrast, Gordon and Pound (1990) document an insignificant average announcement period return.

ESOPs enjoyed special tax privileges and are subject to provisions not applicable to other ownership plans. This can create problems in interpreting empirical findings and may be partially responsible for the inconclusive results. For example, does a positive abnormal return upon an ESOP announcement reflect expectations of changed labor productivity or expectations of tax breaks? Scholes and Wolfson (1990), Chaplinsky and Niehaus (1990), and others argue that the tax effects of ESOPs are limited and not necessarily bigger than those provided by other employee compensation plans. However, Beatty (1995) documents contradictory evidence, showing that ESOP announcement abnormal return is significantly positively related to estimated tax benefits.

Since ESOPs often arise in connection with corporate takeover defenses, further interpretation problems arise. Gordon and Pound (1990) point out that the management of a potential takeover target can create an ESOP to modify the firm's ownership

structure in its favor by placing a block of shares in supposedly friendly hands; thus, ESOPs could be used as a managerial entrenchment tool. However, as shown by Stulz (1988) with respect to anti-takeover activities in general, it is also possible for management to use the ESOP as leverage in negotiating better terms for shareholders in a takeover contest. For these reasons, it is difficult to understand the incentive effects of labor ownership by analyzing ESOP announcement abnormal returns.

Another approach is to estimate the effect of employee ownership on labor productivity and accounting measures of corporate performance. Bloom (1986) utilizes a series of augmented Cobb-Douglas production functions to evaluate the effects of employee ownership on productivity at the firm level. He estimates the functions cross-sectionally and longitudinally for a large sample of ESOP and non-ESOP firms in manufacturing and non-manufacturing industries and concludes that employee ownership has little or no impact on corporate performance. In contrast, Beatty (1995) performs a similar analysis and reports that ESOPs increase sales per employee in the first two post ESOP-adoption years if the ESOP replaces no other retirement benefit plan. Park and Song (1995) report significant improvements in performance (as measured by return on assets, Tobin's q, and market-to-book ratio) in the three years following plan establishment. However, such improvements are contingent on the presence of an external blockholder. In a more recent study, Lougee (1999) investigates the long-term effects of ESOP adoption. She concludes that her tests provide no evidence that ESOPs improve firm performance.

A potential problem with studies that focus on the immediate post-ESOP years is that they can capture the residual effects of financial circumstances associated with

takeover threats. This matters since ESOPs can be created as takeover defenses or cost reduction programs in the presence of financial difficulties. In addition, given the stock allocation rules followed by most ownership plans, it apparently takes time for the effects of employee influence on management to filter through to the results of the corporation.

We address these difficulties in two ways. First, we consider all labor-owned equity blocks, not just those associated with ESOPs. Since much labor ownership in US publicly traded firms does not arise out of ESOPs, this provides us with a substantially larger sample and affords us the opportunity to examine possible differences arising as a result of the mode of labor ownership. Second, to avoid temporary or unusual financial circumstances associated with the events leading up to an ESOP, we require that blocks of labor ownership be in place for several years before we admit a firm to our sample of labor-controlled firms. By not including the immediately ensuing years, we examine results more likely to be subject to labor's governance influences. We thus focus on long-term steady state implications of labor equity ownership.

Another concern with labor ownership is that control does not automatically follow ownership. Chang and Mayers (1992) discuss how *de jure* labor equity blocks can become *de facto* management ownership. Indeed, corporate management, not labor or its representatives, explicitly votes many labor equity blocks. Including such blocks is appropriate in other contexts, but is not in this study. This is because control over voting shares translates into corporate governance clout, and hence into the strength with which labor's objectives become manifest in corporate policy.

Labor-voted equity stakes clearly give labor a voice in corporate governance decisions. McElrath and Rowan (1992) present empirical evidence suggesting that some unions view employee ownership as a useful tool to increase their role in strategic decision making and to restrict management's largely "unchecked independence" to run the business. We are therefore interested in firms where labor votes its stock, but not in firms where managers vote labor's shares.

3.   Empirical Framework

3.1   Sample Construction

We begin with all firms reporting financial data in COMPUSTAT in 1992. We examined 1992 proxy statements for these firms, and classify firms with at least 5% of their total voting stock in the hands of employees as subject to some degree of labor voice in corporate governance. In recognition of the subjectivity of a 5% cut-off point, we repeat all analysis with 10%, 15%, and 20% cut-off points. Unless otherwise noted, results are identical to those obtained with a 5% threshold. We are interested in the existence of a corporate control voice for labor, not simple *de jure* labor ownership. Consequently, we drop all firms in which the power to vote labor-owned shares is exercised by managers. A total of 291 firms satisfy the above requirements.

We then checked earlier proxy statements for each of these firms to determine the year in which the threshold level of 5% labor ownership was first reached, and denote this as the 'event year' for the firm in question. We exclude firms with event years later

than 1990. This is because we wish to examine the steady state effects of employee voice in corporate control, and employee stock ownership can sometimes result from corporate restructuring under financial distress. By requiring at least four years of labor corporate control voice prior to the empirical window we examine, we hope to mitigate the effects of any temporary financial problems that might have been associated with labor accumulating stock. We also exclude firms with event years earlier than 1981 (because of data limitations) as well as those with total assets less than five million dollars. Finally, we require that the financial reporting in COMPUSTAT be complete as regards key variables. We therefore eliminate firms whose sales, total assets, or net income are missing.

This yields a 'labor voice' sample consisting of 211 firms. Of these, 119 are firms in which labor acquired its stake through an ESOP. In 52 of the 211 firms, labor acquired its stake through other channels: profit sharing, stock bonuses, stock savings, stock purchases, or combinations of these and other retirement benefit plans. In 40 of our 'labor voice' firms, labor's equity stake was acquired through a combination of ESOPs and other channels.

Our control sample includes all firms in COMPUSTAT that report no labor ownership in any year up to 1998 and have assets totaling at least five million dollars. Firms for which sales, total assets or net income are missing over 1994 to 1998 are dropped, as are firms whose proxy statements were unavailable during the period. This results in a control sample containing 2804 firms.

3.2   Construction of Corporate Governance Variables

Our objective is to understand how corporate governance might differ in labor voice firms and other firms. This section describes the corporate governance variables used to compare the test and control samples. As indicated above, we wish to focus on steady state effects. We thus compare our labor voice firms to control firms over the five-year period 1994 to 1998. Since the latest event year is 1990, this ensures that labor in each test firm had a voice in corporate control for a minimum of four years before the comparison period. In this way, we allow the immediate effect of any triggering event, such as financial difficulties or a hostile takeover attempt, to fade.

Long-term Investment

We consider two sorts of long-term investments. The first, denoted *dK/K*, is capital expenditure on new property, plant and equipment. This is normalized by total net property, plant, and equipment and can thus be interpreted as an investment rate. The second is research and development spending, R&D. Where all other main financial variables (sales, assets, and net income) are reported, but R&D is not, we presume it to be negligible and set it to zero. We also normalized R&D spending by total net property, plant, and equipment, and denote it *R&D/K*.

Operating Risk

Our primary measure of operating risk is the three-year standard deviation of return on assets. We define return on assets as the ratio of operating income before

depreciation, interest, and taxes (EBDIT) to total assets. As a robustness check, we also consider the standard deviation of EBDIT scaled by total sales.

Growth

We define three measures of corporate growth, namely, sales growth, assets growth, and labor force growth. Sales growth is the three-year average growth rate of real sales defined as

$$\Delta Sales_t = \frac{\alpha_t Sales_t - \alpha_{t-3} Sales_{t-3}}{3 * \alpha_{t-3} Sales_{t-3}} \qquad [7]$$

for each year t, where α is the GDP deflator. The growth rates of real assets and labor force are constructed analogously.

Short-term Cash Flow

As an estimate of current cash flow, we use operating earnings and operating earnings plus depreciation, scaled by total assets.

Shareholder Value

We employ two measures of shareholder value creation. These are the firm's market-to-book ratio and a more sophisticated estimate of average Tobin's q, obtained from Morck and Yang (2001).

Productivity

To estimate total factor productivity (*TFP*), we assume that each firm's sales are generated by a Cobb-Douglas production function of the form

$$Y_{it} = AL_{it}^{\beta} K_{it}^{\alpha} \qquad\qquad [8]$$

where Y_{it} is net sales for firm i in period t, L_{it} is the number of employees, K_{it} is net property, plant, and equipment, and A, α, and β are parameters. Unlike Bloom (1986) and Beatty (1995), we do not assume a labor ownership augmentation parameter. Rather, we employ residuals from our estimation of the logarithmic transformation of [8] as a measure of firm-level *TFP*, and look for any effect associated with labor voice in these residuals. We control for industry factors by estimating a separate equation for each two-digit SIC industry group.

It is also of interest to compare labor productivity, rather than total factor productivity. We measure labor productivity by the simple ratio of real sales to the number of employees.

Table 1 presents simple univariate statistics for all the variables described in this section. For each firm, we calculate the average of each variable over the five-year period from 1994 to 1998 so that there is only one observation per firm. No statistical tests are reported in the table because all statistics are calculated for the full sample, that is, labor voice and control firms combined. The purpose of the table is to illustrate the variation in the variables of interest among the sample firms.

3.3 Statistical Tests

We begin each statistical analysis section by contrasting the means and medians of the key corporate governance variables defined in the previous section for labor voice and control firms. We recognize that these variables are often not entirely within management's control, and so may sometimes be misleading as indicators of managers' intentions, or corporate governance policies. We therefore follow simple comparisons of these variables across the two samples with matched pair and multiple regression analyses. Each of these methods of controlling for exogenous factors has strengths and weaknesses. We present both, so that each can be viewed as a robustness check on the other.

The matched pair analysis consists of univariate comparisons of the governance variables for labor voice firms and a size and industry matched set of control firms. For each labor voice firm, we select a control firm in the same three-digit SIC industry group having 1993 assets within 30% of the total assets for the labor voice firm. A match could not be found in the three-digit SIC group for 57 firms. For these firms, we select control firms from the two-digit SIC industry group.

Following the matched pair analysis, we estimate multiple regressions for each of the governance variables. The primary motivation for using a multiple regression framework in this context is that labor ownership may have resulted from past financial problems. For example, labor ownership can result from a bailout of the company using pension fund money to set up an ESOP, as at Morrison Knudsen Corp in September 1988. Labor ownership may also arise as a concession to unions in return for taking pay cuts, as at United Airlines. Establishing a labor-owned equity block can also serve as a

defensive move against an actual or feared hostile takeover, as in the well-known Polaroid case. Since Morck *et al*. (1989) and others show that hostile takeovers in this period were often preceded by poor financial performance, a spurious correlation problem is again possible, that is, past performance can result in labor control, as well as affect the dependent variable. To address this problem, we consider a number of variables to control for remaining aftereffects of past financial circumstances.

The first of these is average lagged return on assets ratios calculated over the years 1980 to 1989. Recall that we eliminate firms whose labor-controlled equity blocks were established after 1990 or before 1981. Including these lags should thus capture any financial problems that triggered the formation of the labor equity block. As a robustness check, we use an analogous set of average lagged return on sales ratios. Our results are not sensitive to the measure of past financial performance.

A second approach to controlling for past financial history is to include lagged liquidity variables. In this capacity, we use average lagged quick ratios, again covering the years 1989 back to 1980. As a robustness check, we also use an analogous set of lagged interest coverage ratios defined as the ratio of operating income before depreciation to interest expense.

We employ three-digit SIC code dummies to control for industry effects, and use the logarithm of total assets (in 1994 dollars) to control for firm size. As a robustness check, we repeat all our regressions using the logarithm of total sales to measure size. We also include leverage, defined as total long-term debt over total assets. As a robustness check, we also employ total debt over total assets.

Table 2 provides statistics on lagged measures of profitability, liquidity, size and leverage for both the labor voice and control samples. In the ten years spanning 1980 through 1989, labor voice firms show superior return on assets than their non-labor counterparts, although the return on sales measure is not significantly different. Labor voice firms display lower liquidity as measured by the quick ratio over the same time period. The median leverage ratio is higher for labor voice firms, as is the ability to cover interest. In terms of size, the median labor voice firm is larger than the median control firm. Overall, we note that in the ten years spanning 1980 through 1989, labor voice firms were more profitable, but have higher leverage and lower liquidity than their counterparts. Below we provide results on the subsequent comparative investment and profitability performance of these firms.

4. Empirical Results

In this section, we consider key dimensions of corporate governance and contrast the policies of labor voice firms with those of other firms in each of these dimensions. The issues we investigate are: long term corporate investment policy, corporate risk-taking, corporate growth, short-term financial performance, shareholder value creation, and general productivity. We consider each of these in turn.

4.1 Long-term Investment

Panel A of Table 3 displays capital investment rates, dK/K, and research and development spending, $R\&D/K$ for our labor voice and control firms. Both measures of

long-term investment are significantly lower in labor voice firms over the 1994 to 1998 period. Average long-term investment rate for labor voice firms is 6.4% compared to 13.7% for all other firms. Similarly, R&D expenditure for labor voice firms averaged 7.4% of net property, plant, and equipment, compared to 28.8% for control firms. In each instance, the difference is significant at the 1% level. Similar results hold with respect to median values.

Panel B of Table 3 compares capital spending and research and development expenditure by labor voice firms and size and industry matched control firms. For labor voice firms, average capital spending as a percentage of net property, plant, and equipment is 5.9%, compared to 12.0% for control firms. Median values are 3.5% and 7.5%, respectively. The differences are significant at the 1% confidence level. Similarly, average research and development expenditure as a proportion of net property, plant, and equipment is 7.9% for labor voice firms and 13.4% for control firms. The difference is not significant at conventional confidence levels (p-value = 0.11).

The matched pair comparison results suggest that labor voice firms invest less than similar firms in the same industry. A reasonable concern with these results is that some of the labor voice firms may have suffered from financial problems in the past, and that these lagged performance variables are driving the under-investment result reported above. To overcome this concern, we run regressions of our long-term investment policy variables on industry dummies, firm size controls, and collections of lagged financial variable (as described in Table 2) designed to control for any residual aftereffects of unusual past financial problems.

Results are shown in Table 4. Models I and III distinguish labor voice firms from control firms with a dummy variable set to one if labor-voted equity stake is at least five percent, and to zero otherwise.[5] Models II and IV measure labor voice by the percentage of equity voted by labor. Each regression includes three-digit industry dummies (not shown in table to conserve space), a firm size variable, a leverage measure, average lagged return on assets, and average lagged quick ratio.

Models I and II confirm the univariate and matched pair comparison results with respect to capital spending. The labor voice variable is negative and significant at less than the 5% level in each regression. The estimated coefficients imply that after controlling for possible residual effects of any unusual past financial circumstances, as well as size and industry factors, a labor voice in corporate governance is associated with a 5.29% reduction in long-term investment while a one percentage point increase in labor-controlled equity reduces capital spending by 25 basis points.

Model III and IV present results of regressions for research and development expenditure. Since considering disinvestments is problematic because we do not have real economic depreciation data, our dependent variable data are necessarily censored. We thus employ Tobit, rather than OLS, regressions. The labor voice variable is not significant in either regression, although it is negative in Model IV, which measures labor voice by the proportion of labor-voted equity. These results suggest that the labor voice effect found in the univariate and matched comparison tests for research and development expenditure is attenuated in a multiple regression framework.

---

[5] Results for labor stakes above 10% and 15% are similar and not reported in the table. Only 29 firms have labor stakes higher than 20%, and for this group, the labor voice dummy is not significant.

As robustness checks, we also rerun all of the above statistical procedures using alternative long-term investment measures normalized by total assets and by total sales. Using these variants does not qualitatively change our results. Further, if we partition the sample into ESOP firms and firms with other types of labor ownership, we find no significant differences in the effect of labor voice, that is, labor voice firms tend to reduce long-term investment, irrespective of the means through which labor acquired ownership.

These results are hard to reconcile with the hypothesis that labor equity ownership causes workers to advocate shareholders' interests. McConell and Muscarella (1985) show that stock prices rise when firms announce increases to their capital budgets. Chan *et al.* (1990) show that similar positive abnormal returns accompany announcements that firms are increasing their R&D budgets. These studies and others suggest that shareholders typically prefer firms to undertake more long-term investment than they do. It is of course possible that labor voice firms cut back on capital spending and R&D when it is optimal to do so. To examine whether scaling back capital investment is indeed in the interest of shareholders, we look at the record of labor voice firms in creating shareholders value in section 4.5.

4.2   Operating Risk

Panel A of Table 5 compares operating risk measured by the three-year standard deviation of return on assets averaged over 1994 to 1998. Mean and median operating risk for labor voice firms are 4.4% and 2.7%, respectively. In contrast, mean and median values for all other firms are 7.0% and 3.9%, respectively. The differences are significant

at the 1% level. Results are similar when we scale operating income by sales. Thus, operating risk during this period is significantly lower in labor voice firms.

We present size and industry matched-pair results in Panel B of Table 5. The mean standard deviation of return on assets for the test firms is 3.9%, compared to 4.9% for the size and industry matched control firms. Corresponding figures for average standard deviation of return on sales are 4.0% and 5.0%, respectively. In each case, the difference is statistically significant at the 10% level. However, median differences in operating risk across the two samples are not significant.

Table 6 presents results of regressions for operating risk analogous to those in Table 4 for long-term investment and R&D expenditure. The labor voice variable is negative in both regressions, but not significant at conventional levels.[6]

As a robustness check, we substitute the standard deviation of return on sales, estimated over the same period, as the measure of operating risk. Qualitatively similar results ensue. Next, we partition the sample into ESOP firms and firms with other types of labor ownership. We find some differences in the effect of labor voice based on the sample partition. The labor voice variable is negative and significant for ESOP firms. On the other hand, it is never significant in the regressions for firms with other types of labor ownership.

Our findings indicate that a labor voice in corporate governance is associated with a reduction in corporate risk taking. This is consistent with risk-averse employees

---

[6] The labor voice dummy is statistically significant for labor ownership greater than 15%, although this is not reported in Table 6.

biasing their firms' investment and other decisions to reduce risk. It is also consistent with our hypothesis that employee-owners would prefer lower operating risk to minimize the value of the option on the firm's cash flow implicitly written by labor. This provides further evidence that a labor influence in corporate governance does not ensure a convergence of interest between employees and outside shareholders. Overall, we view the evidence on operating risk as weakly consistent with the view that labor voice firms prefer less risky investments, consistent with labor shielding its non-diversifiable human capital.

4.3   Corporate Growth

Univariate statistics for real sales growth, $\Delta SALES$, real assets growth, $\Delta ASSETS$, and labor force growth, $\Delta STAFF$, are shown in Panel A of Table 7. Over the 1994 to 1998 period, labor voice firms achieved an average sales growth of 7.1%. During the same five-year period, real sales for all other firms grew by 19.5%. Median sales growth is 4.1% and 8.7%, respectively. The differences are significant at less than the 1% level. Results are similar for assets and labor force growth rates. We particularly note the significance of the difference between the growth in employees for labor voice firms and control firms: labor voice firms increase their staff at a rate that is a quarter of the staff growth rate for control firms, in both mean and median statistics. This is consistent with the hypothesis that labor voice firms are averse to bringing in new claimants in their control. The parallels to closely held firms are apparent: labor voice dilution is important to labor just as equity dilution is to controlling shareholders of closely held firms.

We also note that the *ratio* of the rate of sales growth to asset growth is very different for labor and control firms. For labor firms, mean and median sales growth is less than asset growth, whereas for the control firms, sales growth exceeds asset growth. This suggests that labor voice firms show lower productivity gains than their non-labor counterparts. We re-visit productivity issues in Section 4.6.

In Panel B of Table 7, we present size and industry matched-pair comparisons of sales growth, assets growth, and staff growth. The matched pair results are very similar to the full sample comparisons. Labor voice firms achieved an average real sales growth of 6.6%, as opposed to 15.1% for size and industry matched controls, over the five-year period 1994-1998. Median real sales growth rates are 3.9% and 9.7% respectively. The differences are significant at the 1% level. Similar results obtain with respect to the growth rate of real assets. Labor voice firms grew at an average rate of 8.1%, compared to 14.8% for size and industry matched pairs. Furthermore, employment at firms with labor voice in corporate governance grew at an average of 2.8% versus 10.6% for size and industry matched control firms. All differences are significant at the 1% confidence level. Median growth rates display similar patterns and statistical significance, confirming that the differences are not driven by outliers.

In table 8, we estimate regressions using control variables from Table 2. Models I, III, and V use a labor voice threshold of 5%, while Models II, IV, and VI use a continuous labor voice stake. The dependent variable in these regressions is real sales growth for Models I and II, asset growth for Models III and IV, and staff growth for Models V and VI.

The coefficients of the labor voice dummy variables in Table 8 are negative and significant (p-value < 0.01) for all regressions (Models I, III, and V). The parameter estimates suggest that real sales growth, asset growth and staff growth are each lower for labor voice firms by about 5%. These results confirm the univariate findings in Table 7. When labor voice is measured as a continuous variable, the coefficient is -0.24% for sales growth and -0.21% for asset growth, indicating that a one percentage point increase in labor-controlled votes reduces real sales growth by 0.24% and real asset growth by 0.21%. Similar results obtain with respect to staff growth as shown in Models V and VI; that is, labor ownership is associated with a significant reduction in employment growth. These results do not depend on the mode of labor ownership. When we partition the sample into ESOP firms and firms with other types of labor ownership, we obtain virtually identical results.

The evidence documented above strongly suggests that labor control is associated with significant reduction in various dimensions of corporate growth. This could be the result of a systematic avoidance of certain types of investments by labor voice firms, in particular, a bias towards lower capital expenditure, R&D spending, and corporate risk-taking, as noted in Sections 4.1 and 4.2. In addition, incentive problems created by labor ownership can also result in lower productivity, which, in turn, is reflected in lower growth rates. We report our findings on the productivity effects of labor influence in corporate governance in Section 4.6.

4.4   Shareholder Value

Table 9 provides univariate comparisons of measures of shareholder value creation for labor voice firms and the two control samples. Panel A shows that both market-to-book and Tobin's q ratios are significantly lower in labor voice firms compared to the full sample of COMPUSTAT firms with no labor control. Mean and median market-to-book ratios for labor voice firms are 1.45 and 1.28, respectively, compared to 1.78 and 1.41 for all other firms. Similarly, mean and median average Tobin's q for labor voice firms are 1.45 and 1.21, respectively. In comparison, corresponding values are 1.97 and 1.50 for control firms. All differences are significant at the 1% level.

It is possible that labor firms are over-represented in low growth industries. To address this concern, we also provide size and industry matched comparisons. Results are presented in Panel B of Table 9. Average market-to-book ratio for labor voice firms is 1.44, compared to 1.63 for size and industry matched control firms, lower by 11.66%. Median values are 1.24 and 1.34, respectively. Each difference is significant at the 1% level. Similarly, mean Tobin's q ratio is 1.47 for labor voice firms and 1.88 for control firms. The difference is significant at the 5% level. Thus, the differences cannot be attributed to industry and size factors.

In Table 10, we present results of regressions of market-to-book and Tobin's q ratios on labor voice measures and the standard control variables. The labor voice variable is negative and significant in all cases. For market-to-book ratio, when labor voice is measured by an indicator variable set equal to one when labor equity control

exceeds five percent (Model I), the coefficient is -0.145, implying that labor voice is associated with a 14.5% reduction in market-to-book ratios. When labor voice is measured as a continuous variable (Model III), the coefficient is -0.011, implying that a one percent increase in labor control is associated with a one basis point decrease in market-to-book ratio. Similar results obtain for Tobin's q ratio.

We also estimate separate regressions comparing ESOP firms and firms with other types of labor ownership with control firms. As in the full sample, ESOP firms significantly underperform control firms on both measures of shareholder value creation. For the subsample of firms with other types of labor ownership, the labor voice variable is not significant, although it is always negative. Overall, our results suggest that labor control of significant voting power does not ensure a convergence of interest between outside shareholders and employees. Rather, there is strong indication of a considerable deterioration in corporate value creation as measured by market-to-book and q ratios.

4.5   Short-term Cash Flow

High current cash flow is, by itself, an ambiguous measure of corporate performance. While high current earnings can signify financial health, they can also indicate free cash flow agency problems, as described by Jensen (1986). To meaningfully compare the cash flow levels of labor-voice firms with those of their counterparts, we follow Lang and Litzenberger (1989) and compare the fraction of labor-voice firms that show high cash flows but low q-ratios. We define high and low with respect to the median value of each variable across all firms in our sample. If labor-voice

firms indeed suffer disproportionately from free cash flow agency problems, we would expect them to be disproportionately high cash flow and low q-ratio firms.

Table 11 provides statistics on the incident of labor-voice firms exhibiting high cash flows and low q-ratios. Full sample comparisons are presented in Panel A. As seen in the table, approximately 37% of labor-voice firms fall into this category (the expected fraction is 25%) while only 22% of the control group of firms are high cash-flows and low q-ratio firms. The difference is statistically significant at the one percent level. The industry-adjusted fraction shows a similar pattern: approximately 37% of labor-voice firms are high cash-flow and low q-ratio firms, as compared to 20% of the control group. The difference has a p–value of 0.13.

We also note that after controlling for size, industry, prior performance and prior liquidity in a multivariate setting, labor voice firms are more likely to be firms with high cash flows and low q-ratios. Table 12 presents regressions where the dependent variable is 1 for high cash flow and low q-ratio firms, and zero otherwise. These regressions confirm that labor-voice firms tend to be those with high cash flows and low q-ratios.

4.6   Productivity

Univariate statistics for total factor productivity residuals and sales per employee are shown in Table 13. Panel A contains full sample comparison results. Average factor productivity residual for labor voice firms is -0.030, compared to 0.021 for all other firms. The difference is significant at the 10% level. Similarly, average sales per employee is lower for labor voice firms (p-value for difference = 0.04), although the difference in medians is not statistically significant.

Size and industry matched comparisons are provided in Panel B of Table 13. For control firms, mean and median total factor productivity residual are 0.096 and 0.021, respectively. In contrast, mean and median total factor productivity residuals for labor voice firms are both -0.045. The difference in both the means and medians is significant at the 1% level. Similar results obtain for labor productivity as measured by sales per employee. Average real sales per employee for labor voice firms is $215,000, compared to $275,000 for size and industry matched control firms. Median values are $159,000 and $184,000, respectively. Both the means and medians are significantly different from each other at less than the 5% level.

Table 14 presents regressions of total factor productivity and sales per employee on labor voice and control variables. In the total factor productivity regressions, labor voice is negative and significant (p-value = 0.03) when measured as an indicator variable, and negative but insignificant when measured as a continuous variable. Combined with the univariate and matched pair results, these findings suggest that total factor productivity is lower for labor voice firms.

A similar conclusion follows for labor productivity. Table 14 shows that the labor voice variable is negative and significant in both regressions for sales per employee. The coefficient estimates imply that, compared to other firms, real sales per employee is lower by about $18,000 in labor voice firms, while a one percentage point increase in the degree of labor control is associated with a reduction of $723 in real sales per employee.

The productivity results suggest that the decline in factor productivity and especially employee productivity in labor voice firms is non-trivial. This may be the

outcome of a standard free-rider problem. However, it is also possible that labor-controlled firms invest less in incentive schemes designed to increase productivity. This may be the case if, as suggested by Jensen and Meckling (1979), labor-managed firms are more concerned about current earnings. It should be noted that these explanations are not mutually exclusive.

Our productivity results contrast sharply with Beatty (1995) who reports positive effects for employee ownership acquired via an ESOP that does not replace an existing pension plan. Several factors could be responsible for this. First, her study focuses on sales per employee during the first two post-ESOP adoption years. In contrast, our study excludes the first three years following employee ownership to allow for the effects of any triggering events to wear out and for employees to acquire a governance voice. Thus, relative to the event year, the period studied by Beatty (1995) does not overlap our period and may help to explain the different findings. Also, since she documents positive effects only when the ESOP does not replace an existing benefit plan, it is possible that her result reflects the short-term incentive effects of increased employee benefits. This appears more probable given her finding of a negative effect when the ESOP replaces an existing benefit plan.

6.   Conclusions

This study investigates the effect of a significant labor voice in corporate governance on the policies and outcomes of the public corporation. Issues we analyze include investment policy, operating risk, corporate growth, shareholder value creation,

and labor and total factor productivity. Our sample includes firms with significant labor stakes acquired through several institutional arrangements and our methodology eliminates the confounding effects of the specific circumstances surrounding labor's acquisition of an ownership stake.

Our empirical findings cast a serious doubt on the simple premise that labor equity participation causes a convergence of interests between workers and shareholders. It appears that the increased governance role acquired by labor following an ownership stake allows employees to influence corporate policies in ways beneficial to their narrow interests. Firms with significant labor control under-invest in capital assets, tend to spend less on firm-specific investments (such as R&D), and have lower operating risk. In addition, they suffer from lower productivity and experience smaller growth in assets, sales, and labor force. They also under-perform in terms of short-term profitability and shareholder value creation. These results point to labor forcing employee horizon and portfolio diversification problems into the firm's objective function.

References

Addison, John T., Kornelius Kraft, and Joachim Wagner, 1997, German Works Councils and Firm Performance, in Kaufman, Bruce E. and Morris M. Kleiner, eds, *Employee Representation: Alternatives and Future Directions*, Madison, WI: Industrial Relations Research Association.

Addison, John T. and Joachim Wagner, 1997, The Impact of German Works Councils on Profitability and Innovation: New Evidence from Micro Data, *Jahrbücher für Nationalökonomie und Statistik* 216, 1-20.

Aoki, Masahiko. 1984. *The Cooperative Game Theory of the Firm*. Oxford University Press.

Beatty, Anne, 1995, The Cash Flow and Informational Effects of Employee Stock Ownership Plans, *Journal of Financial Economics* 38, 211-240.

Benelli, Giuseppe, Claudio Loderer, and Thomas Lys, 1987, Labor Participation in Corporate Policy-Making Decisions: West Germany's Experience with Codetermination. *Journal of Business* 60, 553-575.

Bloom, Steven, 1986, Employee Ownership and Firm Performance, Ph.D. Dissertation, Harvard University, Boston, MA.

Chan, Su Han, John D. Martin, and John W. Kensinger, 1990, Corporate Research and Development Expenditures and Share Value, *Journal of Financial Economics* 26, 255-276

Chang, Saeyoung, 1990, Employee Stock Ownership Plans and Shareholder Wealth: An Empirical Investigation, *Financial Management* 19, 48-58.

Chang, Saeyoung and David Mayers, 1992, Managerial Vote Ownership and Shareholder Wealth: Evidence from Employee Stock Ownership Plans, *Journal of Financial Economics* 32, 103-131.

Chaplinsky, Susan and Greg Niehaus, 1990, The Tax and Distributional Effects of Leveraged ESOPs, *Financial Management* 19, 29-38.

Gordon, Lilli and John Pound, 1990, ESOPs and Corporate Control, *Journal of Financial Economics* 27, 525-555.

Gorton, Gary and Frank Schmid, 2000, Class Struggle Inside the Firm: A Study of German Codetermination, NBER Working Paper 7945, Cambridge, MA.

Fitzroy, Felix R. and Kornelius Kraft, 1985, Unionization, Wages, and Efficiency: Theories and Evidence from the U.S. and West Germany, *Kyklos* 38, 537-554.

Fitzroy, Felix R. and Kornelius Kraft, 1987, Efficiency and Internal Organization: Works Councils in West Germany Firms, *Economica* 54, 493-504.

Fitzroy, Felix R. and Kornelius Kraft, 1990, Innovation, Rent-sharing and the Organization of Labour in the Federal Republic of Germany, *Small Business Economics* 2, 95-103.

Fitzroy, Felix R. and Kornelius Kraft, 1993, Economic Effects of Codetermination, *The Scandinavian Journal of Economics* 95, 365-375.

Freeman, Richard B. and Edward P. Lazear, 1995, An Economic Analysis of Works Councils, in Joel Rogers and Wolfgang Streeck, eds, *Works Councils: Consultation, Representation, and Cooperation in Industrial Relations*. Chicago, IL: University of Chicago Press.

Furlong, James, 1979, *Labor in the Boardroom: The Peaceful Revolution*, Princeton, NJ: Dow Jones Books

Jensen, Michael, 1986. Agency Costs of Free Cash Flows, Corporate Finance and Takeovers. *American Economic Review*. 76 323-329.

Jensen, Michael C. and William H. Meckling, 1976, Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics* 3, 305-360

Jensen, Michael C. and William H. Meckling, 1979, Rights and Production Functions: An Application to Labor-Managed Firms and Codetermination, *Journal of Business* 52, 469-506.

Kaplan, Steve, 1994, Top Executives, Turnover, and Firm Performance in Germany, *Journal of Law, Economics, and Organization* 10, 142-159.

Lang, Lary and Robert Litzenberger. 1989. Dividend Announcements: Cash Flow Signalling vs. Free Cash Flow Hypothesis? *Journal of Financial Economics* 24(1) 181-192.

Levine, David and Laura D'Andrea Tyson, 1990, Participation, Productivity and the Firm's Environment, in Blinder, Alan S., ed., *Paying for Productivity: A Look at the Evidence*, Washington, DC: Brookings Institution.

Lougee, Barbara., 1999, An Empirical Investigation of the Implications of Employee Ownership for the Agency Problem and the Information Content of Earnings. Ph.D. Dissertation, Cornell University, Ithaca, NY.

McElrath, Roger G. and Richard L. Rowan, 1992, The American Labor Movement and Employee Ownership: Objections to and Uses of Employee Stock Ownership Plans. *Journal of Labor Research* 13, 99-120.

Monissen, Hans, 1978, The Current Status of Labor Participation in the Management of Business Firms in Germany, in Pejovich, Svetozar, ed., *The Codetermination Movement in the West: Labor Participation in the Management of Business Firms*. Lexington, MA: Lexington Books.

Morck, Randall, Andrei Shleifer, and Robert Vishny, 1988, Managerial Ownership and Market Valuation: An Empirical Analysis, *Journal of Financial Economics* 20, 293-315.

Morck, Randall, Andrei Shleifer, and Robert Vishny, 1989, Alternative Mechanisms for Corporate Control, *American Economic Review* 89, 842-852.

Morck, Randall and Fan Yang, 2001, The Mysterious Growing Value of S&P 500 Membership, University of Alberta Working Paper, Edmonton, AB.

Park, Sangsoo and Moon H. Song, 1995, Employee Stock Ownership Plans, Firm Performance, and Monitoring by Outside Blockholders, *Financial Management* 24, 52-65.

Pejovich, Svetozar, 1978, Codetermination: A New Perspective for the West, in Pejovich, Svetozar, ed., *The Codetermination Movement in the West: Labor Participation in the Management of Business Firms*, Lexington, MA: Lexington Books.

Scholes, Myron and Mark Wolfson, 1990, Employee Stock Ownership Plans and Corporate Restructuring: Myths and Reality, *Financial Management* 19, 12-28.

Williamson, Oliver, 1985, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, New York, NY: Free Press.

Table 1: Univariate statistics for main variables.

LVOICE is the proportion of total equity voted by labor.

Our corporate governance variables are as follows: *dK/K* is net capital expenditure on property, plant and equipment, normalized by total net property, plant and equipment. *R&D/K* is research and development expenditure normalized by net property, plant and equipment. *ROA* is operating income before depreciation, interest, and taxes divided by total assets. *ROS* is operating income before depreciation, interest, and taxes divided by total sales. *VOLROA* is standard deviation of *ROA* over three years. *VOLROS* is standard deviation of *ROS* over three years. *MTB* is market-to-book ratio. *ΔSALES* is average three-year sales growth. *ΔASSETS* is average three-year assets growth. *ΔSTAFF* is average three-year labor force growth. *ALPHA* is the residual of industry-specific Cobb-Douglas production functions estimated for each two-digit SIC industry group. *SLE* is real sales per employee. All variables are averaged over 1994 to 1998.

The control variables in our multiple regressions are as follows: Past *ROA* is average return on assets over 1980 to 1989. Past *ROS* is average return on sales over 1980 to 1989. Past *quick ratio* is average quick ratio over 1980 to 1989. Past *interest coverage ratio* is average interest coverage ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998.

Statistics are for combined labor voice and full control samples.

Variable		Combined samples	Mean	Median	Standard deviation	Minimum	Maximum	percent zero
Labor Voting Control								
Labor voting stake	LVOICE	3015	1.0422	0.0000	4.6880	0.0000	75.3400	-
Corporate Governance Variables								
Capital investment rate	dK/K	2968	0.1321	0.0749	0.3010	-0.9428	3.7716	-
R&D investment rate	R&D/K	2965	0.2730	0.0000	0.8151	0.0000	9.4213	59.09
Standard deviation of return on assets	VOLROA	3015	0.0685	0.0382	0.0964	0.0005	1.3985	-
Standard deviation of return on sales	VOLROS	2996	0.1139	0.0337	0.3261	0.0006	4.2727	-
Sales growth rate	ΔSALES	3005	0.1861	0.0821	0.4190	-0.3318	7.1101	-
Assets growth rate	ΔASSETS	3014	0.1672	0.0783	0.3446	-0.2913	5.1109	-
Job creation rate	ΔSTAFF	2922	0.1319	0.0524	0.3619	-0.3254	5.4167	-
Return on assets	ROA	3015	0.0880	0.1170	0.1844	-2.0828	1.1023	-
Return on sales	ROS	2999	0.0886	0.1128	0.4012	-4.9030	2.8813	-
Market to book ratio	MTB	2968	1.7551	1.3908	1.0756	0.3070	8.7580	-
Average Tobin's q ratio	Q	2410	4.0733	2.8406	3.3440	0.7818	19.9926	-
Total factor productivity	ALPHA	2836	0.0174	-0.0060	0.5165	-1.9350	3.5885	-
Labor productivity	SLE	2943	288.530	158.770	1281.44	0.0560	56919.00	-
Control Variables								
Past ROA		2892	0.1223	0.1395	0.1508	-0.9260	0.7940	-
Past ROS		2787	0.1379	0.1205	0.1908	-0.9722	0.9940	-
Past quick ratio		2652	2.4573	1.3493	7.9468	0.0020	324.556	-
Past interest coverage ratio		2668	18.9933	5.8395	61.4610	-408.750	477.705	-
Size		3007	5.3398	5.1210	2.1232	1.6113	12.7465	-
Leverage		2999	0.1810	0.1480	0.1665	0.0000	0.9710	-

Table 2: Univariate statistics for multiple regression control variables.

Lagged ROA is average return on assets over 1980 to 1989. Lagged ROS is average return on sales over 1980 to 1989. Lagged quick ratio is average quick ratio over 1980 to 1989. Lagged interest coverage ratio is average interest coverage ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998.

| | Labor voice firms | | | Other firms | | | | Sign |
Variable	N	Mean	Median	N	Mean	Median	t-test	rank
Lagged ROA	211	0.141	0.146	2681	0.121	0.139	3.391 (0.00)	0.942 (0.35)
Lagged ROS	210	0.136	0.113	2577	0.138	0.121	-0.271 (0.79)	-0.654 (0.51)
Lagged quick ratio	179	1.470	1.148	2473	2.529	1.367	-5.573 (0.00)	-3.617 (0.00)
Lagged interest coverage ratio	186	15.704	7.084	2482	19.240	5.740	-1.375 (0.17)	2.894 (0.00)
Size	211	6.654	6.691	2796	5.241	4.996	9.586 (0.00)	9.224 (0.00)
Leverage	211	0.191	0.280	2788	0.180	0.147	0.976 (0.33)	2.152 (0.03)

Table 3: Comparison of long-term investment in labor voice and other firms.

'Labor voice' firms have five percent or more voting control exercised by employees. 'Other firms' in the 'full sample comparison' are all firms with no reported labor ownership. For each labor voice firm, we choose one control firm from the same three-digit SIC industry group with assets within 30% of the 'labor voice' firm's assets. A match could not be found in three-digit SIC for 57 firms. For these firms, we select control firms from the two-digit SIC industry group. These firms constitute the 'other firms' sample in the 'size and industry matched pair' comparisons. A firm's capital investment rate, *dK/K*, is net capital expenditure on property, plant and equipment, normalized by total net property, plant and equipment. Research and development investment rate, *R&D/K*, is research and development expenditure normalized by net property, plant and equipment. All variables are averages measured over 1994 to 1998.

Variable	Labor voice firms			Other firms			t-test	Sign rank
	N	Mean	Median	N	Mean	Median		
A. Full Sample Comparison								
Capital investment rate _dK/K_	211	0.064	0.039	2757	0.137	0.080	-5.322 (0.00)	-3.759 (0.00)
R&D investment rate _R&D/K_	211	0.074	0.000	2754	0.288	0.000	-10.322 (0.00)	-1.823 (0.07)
B. Size & Industry Matched Pairs								
Capital investment rate _dK/K_	189	0.059	0.035	189	0.120	0.075	-2.664 (0.01)	-3.511 (0.00)
R&D investment rate _R&D/K_	189	0.079	0.000	189	0.134	0.000	-1.609 (0.11)	0.514 (0.61)

Table 4: Results of OLS regressions relating net capital expenditure on property, plant and equipment (normalized by total net property, plant and equipment) and Tobit regressions relating R&D expenditure (normalized by total net property, plant and equipment) to labor voice and control variables.

Prior performance is average return on assets over 1980 to 1989. Prior liquidity is average quick ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998. Models I and III distinguish labor voice firms from control firms with a dummy variable, set to one if labor-voted equity stake is at least five percent and to zero otherwise. Models II and IV measure labor voice by the percentage of equity voted by labor. Each regression includes three-digit SIC industry dummies. The dependent variable is net capital expenditure for Models I and II, and R&D expenditure for Models III and IV. Both are averages over 1994 to 1998. P-values are shown in parentheses.

	Model I	Model II	Model III	Model IV
Dependent Variable:	*Net Capital Investment*	*Net Capital Investment*	*R&D Expenditure*	*R&D Expenditure*
Intercept	0.1120	0.1134	-6.3100	-6.3516
	(0.37)	(0.36)	(0.11)	(0.11)
Labor voice dummy	-0.0529		0.6481	
	(0.00)	---	(0.36)	---
Labor voice level		-0.0025		-0.0029
	---	(0.01)	---	(0.94)
Prior Performance	-0.0780	-0.0782	-4.2820	-4.2852
	(0.00)	(0.00)	(0.00)	(0.00)
Prior Liquidity	0.0006	0.0006	0.0056	0.0056
	(0.56)	(0.57)	(0.81)	(0.81)
Size	0.0137	0.0134	0.3991	0.4107
	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	-0.0479	-0.0492	-5.6153	-5.5875
	(0.13)	(0.12)	(0.00)	(0.00)
Sample Size	2580	2580	2620	2620
R-squared	0.150	0.149	---	---
Model F (p-value)	1.60	1.60	---	---
	(0.00)	(0.00)		

Table 5: Comparison of operating risk in labor voice and other firms.

'Labor voice' firms have five percent or more voting control exercised by employees. 'Other firms' in the 'full sample comparison' are all firms with no reported labor ownership. For each labor voice firm, we choose one control firm from the same three-digit SIC industry group with assets within 30% of the 'labor voice' firm's assets. A match could not be found in three-digit SIC for 57 firms. For these firms, we select control firms from the two-digit SIC industry group. These firms constitute the 'other firms' sample in the 'size and industry matched pair' comparisons. Our measures of operating risk are the standard deviation of a firm's return on assets, and the standard deviation of its return on sales. Both are three year standard deviations averaged over 1994 to 1998.

Variable	Labor voice firms			Other firms			t-test	Sign rank
	N	Mean	Median	N	Mean	Median		
A. Full Sample Comparison								
Standard Deviation of Return on assets	211	0.044	0.027	2804	0.070	0.039	-3.899 (0.00)	-6.175 (0.00)
Standard Deviation of Return on sales	211	0.042	0.026	2785	0.119	0.035	-9.380 (0.00)	-4.747 (0.00)
B. Size & Industry Matched Pairs								
Standard Deviation of Return on assets	189	0.039	0.029	189	0.049	0.027	-1.754 (0.08)	-0.164 (0.87)
Standard Deviation of Return on assets	188	0.040	0.028	188	0.050	0.027	-1.738 (0.08)	0.122 (0.90)

Table 6: Results of regressions relating average three-year standard deviation of return on assets over 1994 to 1998 to labor voice and control variables.

Prior performance is average return on assets over 1980 to 1989. Prior liquidity is average quick ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998. Model I distinguishes labor voice firms from control firms with a dummy variable set to one if labor-voted equity stake is at least five percent and to zero otherwise. Models II measures labor voice by the percentage of equity voted by labor. Each regression includes three-digit SIC industry dummies. P-values are shown in parentheses.

	Model I	Model II
Intercept	0.1405	0.1404
	(0.00)	(0.00)
Labor voice dummy	-0.0016	
	(0.63)	---
Labor voice level		-0.0002
	---	(0.27)
Prior performance	-0.0235	-0.0235
	(0.00)	(0.00)
Prior liquidity	-0.0001	-0.0001
	(0.35)	(0.35)
Size	-0.0071	-0.0071
	(0.00)	(0.00)
Leverage	0.0142	0.0142
	(0.02)	(0.02)
Sample size	2510	2510
R-squared	0.326	0.326
Probability level for model F statistic	4.31	4.32
	(0.00)	(0.00)

Table 7: Comparison of growth rates in labor voice and other firms.

'Labor voice' firms have five percent or more voting control exercised by employees. 'Other firms' in the 'full sample comparison' are all firms with no reported labor ownership. For each labor voice firm, we choose one control firm from the same three-digit SIC industry group with assets within 30% of the 'labor voice' firm's assets. A match could not be found in three-digit SIC for 57 firms. For these firms, we select control firms from the two-digit SIC industry group. These firms constitute the 'other firms' sample in the 'size and industry matched pair' comparisons. Sales growth rate, $\Delta SALES$, assets growth rate, $\Delta ASSETS$, and job creation rate, $\Delta STAFF$, are averages over 1994 to 1998.

Variable	Labor voice firms			Other firms			t-test	Sign rank
	N	Mean	Median	N	Mean	Median		
A: Full Sample Comparison								
Sales growth rate	211	0.071	0.041	2794	0.195	0.087	-10.449	-4.947
$\Delta SALES$							(0.00)	(0.00)
Assets growth rate	211	0.086	0.046	2803	0.173	0.082	-6.946	-3.445
$\Delta ASSETS$							(0.00)	(0.00)
Job growth rate	203	0.034	0.016	2719	0.139	0.058	-9.788	-5.523
$\Delta STAFF$							(0.00)	(0.00)
B: Size & Industry Matched Pairs								
Sales growth rate	190	0.066	0.039	190	0.151	0.097	-3.702	-4.179
$\Delta SALES$							(0.00)	(0.00)
Assets growth rate	190	0.081	0.040	190	0.148	0.097	-3.395	-3.716
$\Delta ASSETS$							(0.00)	(0.00)
Job growth rate	180	0.028	0.010	180	0.106	0.058	-4.157	-4.051
$\Delta STAFF$							(0.00)	(0.00)

Table 8: Results of regressions relating sales growth, asset growth, and labor force growth to labor voice and control variables.

Prior performance is average return on assets over 1980 to 1989. Prior liquidity is average quick ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998. Models I, III, and V distinguish labor voice firms from control firms with a dummy variable, set to one if labor-voted equity stake is at least five percent and to zero otherwise. Models II, IV, and VI measure labor voice by the percentage of equity voted by labor. Each regression includes three-digit SIC industry dummies. Dependent variables are averages over 1994 to 1998. P-values are shown in parentheses.

	Model I	Model II	Model III	Model IV	Model V	Model VI
Dependent Variable:	*Sales growth*	*Sales growth*	*Asset growth*	*Asset growth*	*Staff growth*	*Staff growth*
Intercept	-0.1865 (0.06)	-0.1852 (0.07)	-0.2217 (0.04)	-0.2204 (0.04)	-0.2842 (0.01)	-0.2825 (0.01)
Labor voice dummy	-0.0496 (0.00)	-	-0.0462 (0.00)	-	-0.0551 (0.00)	-
Labor voice level	-	-0.0024 (0.00)	-	-0.0021 (0.01)	-	-0.0024 (0.00)
Prior performance	-0.1831 (0.00)	-0.1832 (0.00)	-0.0709 (0.00)	-0.0710 (0.00)	-0.0482 (0.00)	-0.0485 (0.00)
Prior liquidity	0.0037 (0.00)	0.0037 (0.00)	-0.0001 (0.79)	-0.0001 (0.78)	0.0049 (0.00)	0.0049 (0.00)
Size	0.0173 (0.00)	0.0170 (0.00)	0.0163 (0.00)	0.0160 (0.00)	0.0120 (0.00)	0.0116 (0.00)
Leverage	-0.0131 (0.61)	-0.0143 (0.58)	0.0046 (0.86)	0.0035 (0.90)	0.0307 (0.23)	0.0291 (0.26)
Sample size	2543	2543	2573	2573	2554	2554
R-squared	0.217	0.216	0.173	0.172	0.183	0.182
Model F (p-value)	2.48 (0.00)	2.47 (0.00)	1.90 (0.00)	1.89 (0.00)	2.02 (0.00)	2.00 (0.00)

Table 9: Comparison of shareholder value creation in labor voice and other firms.

'Labor voice' firms have five percent or more voting control exercised by employees. 'Other firms' in the 'full sample comparison' are all firms with no reported labor ownership. For each labor voice firm, we choose one control firm from the same three-digit SIC industry group with assets within 30% of the 'labor voice' firm's assets. A match could not be found in three-digit SIC for 57 firms. For these firms, we select control firms from the two-digit SIC industry group. These firms constitute the 'other firms' sample in the 'size and industry matched pair' comparisons. We measure shareholder value creation using a simple market to book ratio, *MTB*, and a more sophisticated estimate of average Tobin's q, *Q*, taken from Morck and Yang (2001). Both are averages over 1994 to 1998.

Variable	Labor voice firms			Other firms			t-test	Sign rank
	N	Mean	Median	N	Mean	Median		
A: Full Sample Comparison								
Market to Book ratio MTB	208	1.446	1.282	2760	1.778	1.407	-7.113 (0.00)	-3.777 (0.00)
Average Tobin's q Q	161	1.449	1.213	2312	1.966	1.495	-6.345 (0.00)	-5.206 (0.00)
B: Size & Industry Matched Pairs								
Market to Book ratio MTB	183	1.437	1.243	183	1.629	1.344	-2.506 (0.01)	-2.561 (0.01)
Average Tobin's q Q	138	1.465	1.205	138	1.884	1.447	-2.413 (0.02)	-3.354 (0.00)

Table 10: Results of regressions relating average market-to-book ratio to labor voice and control variables.

Prior performance is average return on assets over 1980 to 1989. Prior liquidity is average quick ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998. Models I and III distinguish labor voice firms from control firms with a dummy variable, set to one if labor-voted equity stake is at least five percent and to zero otherwise. Models II and IV measures labor voice by the percentage of equity voted by labor. Each regression includes three-digit SIC industry dummies. P-values are shown in parentheses.

	Model I	Model II	Model III	Model IV
Dependent Variable:	*Market-to-book Ratio*	*Market-to-book Ratio*	*Tobin's Q Ratio*	*Tobin's Q Ratio*
Intercept	1.5084 (0.01)	1.5090 (0.01)	2.9453 (0.14)	2.9516 (0.14)
Labor voice dummy	-0.1452 (0.09)	-	-0.4904 (0.05)	-
Labor voice level	-	-0.0105 (0.03)	-	-0.0281 (0.04)
Prior Performance	-0.7319 (0.00)	-0.7327 (0.00)	-0.3621 (0.09)	-0.3654 (0.09)
Prior liquidity	0.0053 (0.04)	0.0053 (0.04)	0.0736 (0.00)	0.0734 (0.00)
Size	0.0864 (0.00)	0.0863 (0.00)	0.0476 (0.21)	0.0461 (0.22)
Leverage	-0.8577 (0.00)	-0.8589 (0.00)	-1.8838 (0.00)	-1.8905 (0.00)
Sample size	2595	2595	2310	2310
R-squared	0.314	0.314	0.349	0.349
Model F (p-value)	4.19 (0.00)	4.21 (0.00)	4.69 (0.00)	4.69 (0.00)

Table 11: Comparison of free cash flow in labor voice and other firms.

Free cash flow is a dummy variable which equals one for high cash flow and low q firms, zero for all others. High cash flow is cash flow from operations (divided by total assets) above the sample median while low q is q-ratio below the sample median. 'Labor voice' firms have five percent or more voting control exercised by employees. 'Other firms' in the 'full sample comparison' are all firms with no reported labor ownership. For each labor voice firm, we choose one control firm from the same three-digit SIC industry group with assets within 30% of the 'labor voice' firm's assets. A match could not be found in three-digit SIC for 57 firms. For these firms, we select control firms from the two-digit SIC industry group. These firms constitute the 'other firms' sample in the 'size and industry matched pair' comparisons.

Variable	Labor voice firms		Other firms		Test of difference in proportion
	N	Proportion	N	Proportion	
A: Full Sample Comparison					
Free Cash Flow	161	37.27%	2304	21.79%	4.53 (0.00)
B: Size & Industry Matched Pairs					
Free Cash Flow	138	37.68%	138	28.99	1.53 (0.13)

Table 12: Logistic regressions relating free cash flow to labor voice.

The dependent variable in these regressions is a dummy variable which equals one for high cash flow and low q firms, zero for all others. High cash flow is cash flow from operations (divided by total assets) above the sample median while low q is q-ratio below the sample median. Prior performance is average return on assets over 1980 to 1989. Prior liquidity is average quick ratio over 1980 to 1989. Size is average natural logarithm of real assets over 1994 to 1998. Leverage is average long-term debt to total assets over 1994 to 1998. Model I distinguishes labor voice firms from control firms with a dummy variable set to one if labor-voted equity stake is at least five percent and to zero otherwise. Model II measure labor voice by the percentage of equity voted by labor. Each regression includes three-digit SIC industry dummies. P-values are shown in parentheses.

	Model I	Model II
Dependent Variable:	***High Cash Low q***	***High Cash Low q***
Intercept	-3.7742 (0.96)	-3.7909 (0.96)
Labor voice dummy	0.5564 (0.01)	--
Labor voice level	--	0.0245 (0.03)
Prior Performance	0.0477 (0.84)	0.0549 (0.81)
Prior liquidity	-0.0635 (0.03)	-0.0629 (0.03)
Size	-0.0505 (0.17)	-0.0461 (0.21)
Leverage	-1.8021 (0.00)	-1.7918 (0.00)
Sample size	2224	2224
R-squared	0.214	0.213
Likelihood Ratio (p-value)	535.64 (0.00)	533.11 (0.00)

Table 13: Comparison of productivity in labor voice and other firms.

'Labor voice' firms have five percent or more voting control exercised by employees. 'Other firms' in the 'full sample comparison' are all firms with no reported labor ownership. For each labor voice firm, we choose one control firm from the same three-digit SIC industry group with assets within 30% of the 'labor voice' firm's assets. A match could not be found in three-digit SIC for 57 firms. For these firms, we select control firms from the two-digit SIC industry group. These firms constitute the 'other firms' sample in the 'size and industry matched pair' comparisons. We measure total factor productivity, *ALPHA*, as the residual of an industry-specific Cobb-Douglas production function of labor and total assets estimated for each two-digit SIC industry group over 1994 to 1998. Our measure of labor productivity, *SLE*, is sales per employee in thousands of 1994 dollars, and is also averaged over 1994 to 1998.

Variable	Labor voice firms			Other firms			t-test	Sign rank
	N	Mean	Median	N	Mean	Median		
A: Full Sample Comparison								
Total factor productivity ALPHA	204	-0.030	-0.040	2632	0.021	-0.001	-1.863 (0.06)	-1.501 (0.13)
Labor productivity SLE	204	230	159	2739	293	159	-2.077 (0.04)	0.861 (0.39)
B: Size & Industry Matched Pairs								
Total factor productivity ALPHA	175	-0.045	-0.045	175	0.096	0.021	-3.370 (0.00)	-2.868 (0.00)
Labor productivity SLE	181	215	159	181	275	184	-2.259 (0.02)	-2.454 (0.01)

Table 14: Results of regressions relating total factor and labor productivity to labor voice and control variables.

Total factor productivity (TFP) residuals were obtained from industry-specific Cobb-Douglas production functions estimated for each two-digit SIC industry group. Prior performance is average return on assets over 1980 to 1989. Prior liquidity is average quick ratio over 1980 to 1989. Size is average natural logarithm of real assets. Leverage is average long-term debt to total assets. Models I and III distinguish labor voice firms from control firms with a dummy variable, set to one if labor-voted equity stake is at least five percent and to zero otherwise. Models II and IV measure labor voice by the percentage of equity voted by labor. Each regression includes three-digit SIC industry dummies. P-values are shown in parentheses.

	Model I	Model II	Model III	Model IV
Dependent variable:	*TFP Residual*	*TFP Residual*	*Sales per employee*	*Sales per employee*
Intercept	-0.4110	-0.4086	85.9260	86.5909
	(0.11)	(0.11)	(0.09)	(0.09)
Labor voice dummy	-0.0675		-18.0213	
	(0.03)	---	(0.00)	---
Labor voice level		-0.0021		-0.7228
	---	(0.21)	---	(0.03)
Prior Performance	0.0894	0.0893	19.5389	19.4720
	(0.02)	(0.02)	(0.00)	(0.00)
Prior liquidity	0.0020	0.0020	0.0075	0.0055
	(0.05)	(0.06)	(0.97)	(0.98)
Size	0.0273	0.0266	10.0574	9.9212
	(0.00)	(0.00)	(0.00)	(0.00)
Leverage	-0.2380	-0.2406	-31.6439	-32.0819
	(0.00)	(0.00)	(0.00)	(0.00)
Sample size	2397	2397	2405	2405
R-squared	0.208	0.207	0.529	0.528
Model F (p-value)	2.24	2.23	9.54	9.51
	(0.00)	(0.00)	(0.00)	(0.00)