

# **GIVING A VOICE TO EMPLOYEES AND FIRM BEHAVIOR DURING CRISES<sup>1</sup>**

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## Abstract

*We provide novel evidence on how the inclusion of employees in corporate decision making (i.e. codetermination) affects companies' behavior and their responses to the 2008-2009 financial crisis. We study a model of Scandinavian codetermination where—differently from the well-known German model—employees of large and medium-sized firms have the right but not an obligation to elect a minority share of the supervisory board's members from among the firm's workers. We find that, apart for larger firms, the likelihood of observing employee directors is higher in firms operating outside the capital region, in more research-intensive and less capital-intensive firms. Comparing these firms with a matched group of companies without codetermination, we next observe that the former are more reluctant to large reductions in workforce, are less risky, and have somewhat slower employment growth. They are however no different from other firms in terms of investments, salary growth, and equity values. Although firms with employee directors showed stronger employment concerns during the 2008- 2009 crisis, they did not experience a stronger fall in equity values. We show that this could be due to wage adjustments being made in these firms during the crisis, and their less risky pre-crisis behavior that probably rendered them less exposed to the shock. Finally, we find no association between dismissals during the crisis and the dual class ownership, as a proxy for long-term oriented owners, or gender board diversity. This suggests that the employment security ensured through codetermination cannot be entirely replicated by other governance mechanisms.*

*JEL: G32, G34*

## 1. INTRODUCTION

The globalization of financial and product markets has slowly begun to narrow the divide between the more stakeholder-oriented Continental European model of corporate governance and the shareholder-oriented Anglo-Saxon governance model, to the benefit of the latter. The last credit crisis, however, cast doubt on the shareholder supremacy, motivating new studies of corporations whose governance processes include other stakeholders, such as employees (e.g. Aguilera and Jackson, 2010). These corporations have received little attention in the academic literature (in support of this and new theoretical insights, see for example Aguilera and Jackson, 2010; Allen et al., 2014). To address this gap, we provide new empirical evidence in this paper on how the inclusion of employees in companies' decision making affects the companies' behavior and their responses to the last economic downturn.

Previous evidence on the labor influence on the decisions in capitalist corporations tells of the impact of labor unions and union laws (e.g. Atanasov and Kim, 2009; Chen et al., 2012), employee share ownership (e.g. Faleye et al., 2006; Ginglinger et al., 2011), and the legally sanctioned labor participation (i.e. codetermination) on the supervisory boards of the largest German corporations (e.g. Fauver and Fuerst, 2006; Gorton and Schmid, 2004; Kim et al., 2014). Among the latter group, scholars have generally confined the workers' ability to influence corporate decisions to cases of equal board representation of employees and shareholders. We advance this stream of research by providing evidence on a more flexible model of codetermination seen among Scandinavian firms, where employees have a right but not an obligation to demand their representation on the board of directors (supervisory board). When this right is exercised, the employee-elected directors generally hold a minority of board seats<sup>2</sup>. Therefore, rather than showing how the powerful labor can restrain the shareholders in maximizing the returns on their investments, thereby reducing equity values, we view the minority employee representation as a proxy for a greater internalization of workers' interests by the managers and shareholders. We study both the antecedents of employee board representation and the implications of the employee-friendly governance for firm risk, employment, investments, and equity value during normal times and during crisis. We also contrast the role of

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<sup>2</sup> The terms employee director and employee-elected director are used interchangeably in this paper and indicate a member of the board of directors elected by the employees based on codetermination law. The term board of directors and supervisory board are also used interchangeably to indicate the body with the ultimate decision-making authority in the corporation. In the Nordic countries, as in Germany, the board of directors (supervisory board) is formally separated from the management board. However, the law allows for one member of the management board (i.e. the CEO) to hold a seat on the supervisory board. By law, the supervisory board has an important role both in setting a firm's strategy and in supervising the management's implementation of that strategy (Hansen, 2003).

employee directors with other governance structures viewed as more considerate of employees' interests, such as the dual class ownership and female board representation<sup>3</sup>.

Differently from previous studies on codetermination, we therefore analyze a large spectrum of corporate decisions, from employment to investments and dividends. Relying on the event of the 2008-2009 financial crisis, we further advance the current literature by studying company responses to an external shock that jeopardizes firm rents. Theoretically, the gap between employee and shareholder interests could shrink in the case of such a threat to the firm's existence, meaning that companies with employee participation might behave differently in times of crisis than in normal times.

Scandinavia offers a unique setting for investigating these issues. Employee directors are elected entirely from among the employees and cannot be outsiders, as is the case for union representatives in Germany. Nordic countries<sup>4</sup> are, at the same time, known for high union density and strong legal protection of both shareholders and employees (e.g. Jackson, 2005); this applies to all firms, regardless of the organization of their boards. Consequently, any differences between corporations with codetermination and other firms from the same region offer, we believe, neater evidence of an employee-friendly governance model, rather than being a reflection of the influence of the labor unions. Also, the absence of codetermination in the companies operating in neighboring Finland, which otherwise share the Nordic legal environment and business culture, allows us to construct a comparable control group of firms without codetermination. The non-mandatory nature of Scandinavian codetermination moreover permits us to investigate the firm-specific antecedents of employees' decision to demand

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<sup>3</sup> Scholars have proposed that firms controlled by families or other long-term oriented owners may be more prone to internalize employee welfare due to implicit promises that these firms issue to workers (e.g. Allen et al., 2014; Lins et al., 2013). For evidence on female directors and labor costs, see for example Matsa and Miller (2013).

<sup>4</sup> The term "Scandinavian countries" refers to Denmark, Sweden, and Norway. The term "Nordic countries" refers to the Scandinavian countries plus Finland.

representation on the supervisory board. Uncovering what factors underlie the cross-sectional variation in employee board representation may offer additional support of the relevance of such representation, and corroborate the conclusions derived from our analyses of firm behavior and equity values. Finally, by looking at Scandinavian codetermination, we disclose a model of labor participation that is, in many aspects, different from the known German model. As argued by Furubotn (1988), even if a legally imposed codetermination might not be efficient, the potential of labor participation cannot be judged solely on the basis of the German case (Furubotn, 1988, p.166).

Governance scholars have primarily viewed employees as stakeholders who—within a limited time horizon—aim to maximize the value of their fixed claims in the firms (e.g. Jensen and Meckling, 1979). When holding control rights, workers are therefore expected to press for a change in firm policy, away from riskier investments and growth, and towards higher wages and job security (e.g. Chen Chen et al., 2012; Faleye et al., 2006; Freeman and Lazear, 1995). However, Furubotn (1988), among others, underlines that sharing control rights with the employees may be justified when the employees are required to develop firm-specific human capital during their employment contracts, and thereby join the shareholders in bearing the risk of losing their investments should the firm default. Giving the employees “voice” and a possibility to secure their employment may, in these cases, be necessary for ensuring their investments in firm-specific human capital (e.g. Aoki, 1984; Freeman and Lazear, 1995). While Furubotn (1988) conditions the positive effects of workers’ participation on matching their investment in human capital with a corresponding participation in ownership, other scholars argue for some general benefits of workers’ participation in firms’ decision making. Specifically, codetermination should improve workers’ commitment to the corporation, their identification

with it, thereby reducing employee turnover and enhancing the accumulation of firm-specific human capital (e.g. Addison et al., 2001; Pfeifer, 2010). Employee directors can contribute to the sharing of information between employees and firm managers (Fauver and Fuerst, 2006; Freeman and Lazear, 1995) and improve managerial decisions by reducing the problems of information revelation (Smith, 1991).

Extending these arguments, we can conjecture on employees' influence when companies are threatened by an external shock, such as the 2008-2009 financial crisis. A decline in the total firm rents due to a crisis might intensify the conflict between employees and shareholders, thereby causing stronger reductions in firms' equity value (compared to firms without codetermination). However, a firm's default also jeopardizes the workers' accumulated firm-specific human capital. Considering this, the employees might actually be willing to cooperate with the shareholders to keep the firm alive (e.g. Chen et al., 2012). Such cooperation should be more likely when employees hold seats on the board. As argued by Freeman and Lazear (1995) and Aoki (1984), employee directors ensure the credibility of the management's actions under the threat of bankruptcy, increasing the likelihood of the two groups reaching a cooperative agreement. Without such credibility, workers may be reluctant to moderate their demands, make concessions, and cooperate with the management.

We test these theoretical propositions using a sample of 307 non-financial public firms, which were listed on the Scandinavian (and Nordic) stock exchanges during 2001-2009. We observe labor representatives in about half of these firms. Companies with employee directors are larger, more likely to be headquartered outside of the capital region, more research oriented and less capital intensive. We next analyze the behavior of the firms with employee directors, with reference to the theoretical propositions outlined above. We rely on propensity score

matching and comparable companies from neighboring Finland, and perform a number of robustness checks to account for the non-random assignment of employee board representation. We find that companies with employee directors are indeed more employee friendly than other firms; the likelihood of a 20 percent or greater reduction in employment following a large decline in an individual firm's performance is significantly lower when employee representatives are present on the board. While firms with employee board representation are somewhat more stable and grow more slowly, we observe no significant differences in terms of their investments, wages, or equity value.

In relation to the 2008-2009 financial crisis, the sensitivity of employment to firm performance is substantially reduced in these (but not other) firms; this result, however, seems to be driven by the sub-sample of more research-oriented firms. Despite stronger employment security, the corporations with codetermination did not experience a greater fall in equity value during 2008-2009. We show this to be due partly to an adjustment in wages during the crisis, and partly to more stable (less risky) pre-crisis behavior that probably rendered these firms less exposed to the crisis. Interestingly, the dual class ownership, with which we aim to capture the influence of long-term oriented Scandinavian owners, and the presence of female directors on board do not associate with superior employment protection during the crisis. The former result is consistent with Lins et al.'s (2013) findings for family firms, and suggests that employment security ensured through codetermination cannot be entirely replicated by other governance mechanisms.

The remainder of the paper is organized as follows. We describe the sample and institutional setting in the next section. Section 3 depicts the methodology and empirical results. Section 4 concludes.

## 2. SAMPLE CHARACTERISTICS

The sample of firms in this study is drawn from the population of all publicly listed non-financial firms in Denmark, Norway, and Sweden over the period 2001-2009. For each of these firms, we hand-collected biographical information on the board members, namely: (i) director's name and surname, (ii) gender and nationality, (iii) tenure (whether on the board for more than one four-year mandate), and (iv) role on the board (i.e. employee/shareholder representative). The main sources of director data were corporate web sites and annual reports. When in doubt, the information was re-checked using other sources (internet) or by contacting the companies directly. We obtained board information for 483 non-financial firms in Scandinavia (3,600 firm-year units). Merging the board data with financial data from Wordscope and Bureau van Dijk information on company age and the geographic position of the headquarters further reduced the sample to 441 firms (2,991 firm-year observations). Finally, we supplemented the directors' and financial data with ownership data. The merger with ownership data reduced our sample by approximately a third, resulting in a final sample of 1,981 firm-year observations (307 unique Scandinavian firms; the number of firms per year varies across 2001-2009).

The companies that were dropped from the analysis—due to lack of financial or/and ownership information—are small firms (i.e. total assets of 149.6 million Euros in comparison to 1,886.56 million Euro for the firms remaining in the sample). They are younger (average age 24 years in comparison to 34 years for the firms remaining in the sample) and less likely to have employee representatives on their boards. Employee directors are found in about 60 percent of the firms in our final sample, and in just 1 percent of the excluded firms. The excluded firms also have smaller and less international boards, but we observe no differences between them and the sample firms in terms of female board representation, Tobin's Q or other firm-specific



characteristics. The distributions of the excluded and remaining firms by country are also very similar, with about 25 percent of firms Danish, 30 percent Norwegian, and the rest Swedish.

As noted in the introduction, the employees of Scandinavian firms of a certain minimum size can demand (but are not obliged) to elect their representatives to the board. In Denmark, this possibility applies to all firms for which the average number of employees exceeded 35 over the preceding 3 years; the proposal for exercising that right can be put forward by one tenth of employees or a trade union representing such a percentage (Hansen, 2003). When exercised, the number of employee directors should be at least half of the number elected by the shareholders, but in any case not fewer than two. In Norwegian firms employing at least 30 workers, the employees can elect one representative to the board of directors. In firms with at least 50 employees, they have the right to elect one third of the board (and not less than two members), while in firms with 200 or more employees the board members are nominated through a representatives assembly consisting of 12 members, among which one third are employee representatives. These members can decide that one third of the board shall be elected from among the employees<sup>5</sup>. In Sweden, the local trade unions can require the establishment of codetermination. In this case, two board representatives (and two substitutes) should be elected from among the employees to the boards of companies with at least 25 workers, and (since 1987) three board members should be elected in companies with at least 1,000 employees (for more, see Hansen, 2003).

The average share of employee directors on the boards of companies with codetermination varies across the countries, with the highest being in Denmark (34 percent on average), followed by Norway (32 percent) and Sweden (22.5 percent). Most commonly,

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<sup>5</sup> If agreed with the employees and the trade unions, the company can refrain from setting up such an assembly. In this case, the employees have the right to elect one additional member on top of the existing representation rights triggered by the 50-employee threshold.

employees hold between one fourth and one third of board seats. The observed cross-country variation in employee representation reflects the content and the strictness of the individual countries' legal requirements on the number of board seats that employee directors should hold. In Sweden, for instance, firms can decrease the weight of employee representation by increasing the board size. This is not possible in Denmark, however, where the number of employee representatives is linked to the number of shareholder-elected members on the board (see above). The distribution of employee representation is presented in Figure 1. The information is shown separately for each of the Scandinavian countries and refers only to the companies with at least one employee elected member.

Insert Figure 1

Since the main aim of this paper is to compare the firms with and without employee directors on their boards, we define an indicator variable taking the value 1 when at least one employee-elected director is present on the board, and 0 otherwise (*EmployeeDir*). We measure firm size by the total firm assets (*Assets*) or, in selected specifications, the number of firm employees (*Employees*). Firm assets are expressed in 2005 Euro prices, and enter the regression as a logarithm (*lnAssets*). Firm debt is the share of short and long-term bank debt in total firm assets (*Debt*). Investments in capital are measured by the percentage of capital expenditure in total firm assets (*Capex/Assets, in %*). Investment in research and development is measured as the share of expenditure on research and development in total firm assets (*R&D/Assets, in %*). The share of tangible assets in total assets (*Asset tangibility*) is defined as  $(1 - \text{the book value of intangible assets} / \text{the book value of firm assets, in \%})$ .

Based on Faleye et al. (2006), we define operating risk (*Risk*) as the standard deviation of earnings before depreciation, interest and taxes (EBITDA) divided by the average of current and lagged total assets (both the nominator and denominator are expressed in 2005 Euro prices), in percentage terms. For each year  $t$ , we calculate the standard deviation of this ratio over the current year and the three preceding years, i.e.  $t$ ,  $t-1$ ,  $t-2$ , and  $t-3$ . As an alternative, we measure the total firm risk by the volatility of the stock returns over the three-year period (*3-year stock volatility*). As measures of sales growth, employment growth, and growth in salaries, we use the average annual growth in their values across the preceding three years (*SalesGrowth*; *EmplGrowth*; *SalariesGrowth*), where sales and salaries are expressed in 2005 Euro prices (i.e. *RealSales*, *RealSalaries*). For example, the yearly growth in sales is defined as  $(RealSales_t - RealSales_{t-3}) / (3 \times RealSales_{t-3})$ . *Tobin's Q* is the market value of firm equity plus the book value of firm assets less the book value of firm common stock, divided by the book value of firm assets. *ROA* (as a percentage) is earnings before interest and taxes (*EBIT*) divided by the average of current and lagged total assets (both nominator and denominator are in 2005 Euro prices). We define the dividend payout (*Div\_payout*) as the ratio of the dividend to earnings per share; we set the dividend payout to 1 in cases where a firm pays dividends despite generating a negative net income, and in cases where the dividend per share is higher than the earnings per share. Due to extreme values of financial variables, the values of all stated variables are winsorized at the 1 percent level.

To account for the influence of female directors who—as shown in Matsa and Miller (2013)—may be more concerned for employees, in all our regressions we include the percentage of shareholder-elected females on the board (*Femaledir*). As is common in the corporate governance literature, we also control for board size, measured by the number of shareholder-

elected board members (*Board size*), and firm ownership structure, captured by the percentage of shares not held in blocks (*Free float*). We further include a dummy variable (*Dual class*), taking the value 1 in all firms that in 2007 reported a dual class ownership structure and 0 otherwise. This variable is a proxy for the presence of strategic long-term oriented owners of Scandinavian firms, such as families or industrial foundations, who might be also more inclined to acknowledge employees' interests. All our regressions also comprise firm age (*Firm age*), measured as the logarithm of firm age (plus 1). We further include a dummy taking the value 1 if the firm headquarters is located in the capital region of the country, and 0 otherwise (*Capital*). In selected specifications, we control for the percentage of foreign sales in total firm sales (*Foreign sales %*) and for firm diversification, measured by an indicator variable that takes the value 1 in all firms with less than 90 percent of sales in a single business segment (*Diversif*) and 0 otherwise. All our regressions include country and industry effects (unless indicated otherwise), time dummies, and industry-specific time trends. The sample summary statistics for the main variables as of 2007 are presented in Table 1 below.

Insert Table 1

As of 2007, the median firm in our sample operated with a value of total assets of 351.88 million Euros (measured in 2005 Euro prices) and 1,324 employees (mean values: 1,886.56 million Euros and 7,019 employees). About 60 percent of the median firm's capital was not held in blocks, and 13 percent of its liabilities were in the form of bank debt. In that year, firms in our sample spent, on average, 3 percent of their asset value on research and development (median value = 0), and 6.6 percent of their asset value on investments in fixed capital (median value = 4 percent). The median return on assets for the firms in our sample in the year 2007 was 13.2

percent (when measured as EBITDA over total assets) and 9.13 percent (when measured as EBIT over total assets). The median firm in our sample was 19 years old, had an eight-member board of directors (among which six were shareholder-elected), and 20 percent of its shareholder directors were female. Fourteen percent of the firms in our sample used dual-class shares; 56 percent of them were headquartered in the capital region.

Employee directors in our sample held 17 percent of board seats. When restricted to the companies with codetermination (about 61 percent), this percentage rises to 28 percent. Comparing the average firm with and without employee directors, we observe the former to be more profitable (in terms of ROA), less risky and to trade at a slightly lower market value (i.e. Tobin's Q). Companies with codetermination appear to invest slightly less (on average) and grow more slowly than other firms. These differences could, however, be due to age and size differences between the two groups. The former group was, on average, 20 years older than the latter (the difference in the median firms' ages was smaller, at 6 years). An average firm with codetermination was about five times larger (in terms of total assets) than an average Scandinavian company without employee directors. Note, however, that this large difference is in part due to a few very large firms within the group of corporations with employee elected directors. In fact, the median firm with codetermination was only 2.8 times larger than the median Scandinavian firm without codetermination. The firm at the 75<sup>th</sup> percentile of firms with employee directors was 3.9 times larger than the firm in the corresponding percentile of firms without employee directors; the differences increase substantially beyond this threshold. Similarly, firms with codetermination employed eight times more employees, on average, than other Scandinavian firms. The difference in the median sizes was, again, smaller, with 2,540 employees for firms with employee directors and 463 for those without.

The observed size differences were expected since the employees' right to appoint their representatives to the board is, by law, triggered by a minimum threshold in terms of employment. Yet, in comparison to Germany, where this threshold applies to firms with at least 500 employees, the minimum size in Scandinavian countries is much lower. In the Scandinavian sample, consequently, we find employee directors in the firms with a small number of employees as well. Specifically, the smallest firm with employee representation in our sample employed 40 employees in the year 2007. The smallest firm in the group of firms without codetermination in the same year employed only a few individuals. Yet, small and medium-sized firms (<100 employees) constituted only 20 percent of the firms without codetermination.

More of the firms with employee-elected board members than other firms had a dual-class ownership, while we observe no significant differences in terms of ownership concentration and debt levels. On average, the companies with employee directors had only slightly larger boards, and a higher share of females among all company directors. Firms with codetermination tend to keep the shareholder-elected members on their boards slightly longer (on average). No significant differences between codetermined and other firms are observed in terms of age and nationality of their shareholder-elected directors (not tabulated). Therefore, it does not seem like Scandinavian shareholders would try to counterbalance the employees' influence by further concentrating their ownership or by altering the composition of their own representatives on the boards of directors. In 2007, an employee board member was on average 48.5 years old, while a typical shareholder-elected director was 55 years old. Nearly 24 percent of the employee-elected directors in our sample were women, in comparison to 22 percent of shareholder-elected board members. This difference increases when we exclude Norway, where female board

representation is regulated by the (2006) quota law, becoming 23 percent for employee directors and 15 percent for shareholder directors.

### **3. METHOD AND EMPIRICAL ANALYSIS**

#### **3.1 Method**

The main issue in estimating the effect of employee directors on firm behavior relates to the fact that employee board representation is endogenous, being correlated with several firm-specific characteristics that are also likely to influence firm behavior. As we have seen above, the companies with employee board representation are, among others, generally larger than other firms. Thus, these two firm groups are likely to differ in a number of other dimensions that are difficult to capture fully in our regression models. Omitting some of these factors will therefore lead to biased and inconsistent coefficients. We adopt a number of steps to mitigate this issue.

First, we carefully consider the various firm characteristics associated with employee representation on boards, such as firm age, assets' and liabilities' structure, ownership structure, industry, and country characteristics, and include them in the regression model. All our regressions include country and industry effects (unless indicated otherwise), time dummies, and industry-specific time trends. Second, we expand our sample to include Finnish publicly listed non-financial corporations—which do not have employee representatives but otherwise follow a similar business culture and the Nordic corporate law—and use propensity score matching to construct a comparable control group of firms. In other words, we match each of the Scandinavian firms with codetermination with a similar Scandinavian or Finnish company

without codetermination. Specifically, we first predict the probability of a firm having codetermination (i.e. being a treated firm) in the initial year of our study, using firm size (average value during 2000-2009), firm size squared, and 12 Fama-French industry dummies as covariates (*pscore.ado* and common support in Stata). We test the balancing hypothesis and, in the second step, match the treated and control units by relying on the nearest-neighbor matching approach (*attnd.do* in Stata). This method identifies the control unit as the unit with the closest propensity score to the treated unit, while allowing each control unit to be the best match for more than one treated unit. We then re-estimate all our regressions on the sample of treated units and their nearest-neighbor matches (i.e. matched sample). The representation of each of the Scandinavian countries (Denmark, Norway and Sweden) in the matched sample is similar to that in the sample of Scandinavian firms.

Third, we inspect all the changes in employee board representation during the period of our analysis. In most cases, our firms either have or do not have employee directors on their board for the entire period.<sup>6</sup> We, however, do observe some minor changes in the share of employee directors on board in about 27 percent of all firm-year observations. Nearly 97 percent of these changes are associated with a change in board size. We next estimate a fixed effects regression using the percentage of employee directors on the board as the dependent variable. Specifically, we want to test whether employee board representation increases following, for example, poor firm performance or some other change in firm behavior. Our results (not tabulated) reduce such concerns. Apart from the positive and significant association with the number of shareholder-elected directors on the board, we observe no significant relation between the share of employee representation and any other firm-level characteristic. Neither did changes

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<sup>6</sup> A change in the codetermination dummy, i.e. from 0 to some positive number of employee directors, is found in about 2 percent of firm-year observations. In a separate test, we check whether these changes relate to significant decline in firm performance. We find no support of this.



in employee representation during the period of our analysis follow declines in firm performance. This is so irrespective of whether we measure firm performance by market value, return on assets or a dummy indicating a major fall in the operating performance of the firm (as defined in Section 3.3).

Other explanatory variables in our model might also be correlated with the error term. Given that we have longitudinal data, a firm fixed effects model would generally be preferred for estimating the coefficients of these variables. However, applying a linear fixed effects estimator to our main equations would prevent us from estimating the coefficient of any variable that did not vary or varied little over time, such as our main variable of interest (i.e. the dummy for employee board representation). We can, however, control for firm fixed effects when analyzing firm behavior during the 2008-2009 financial crisis (see also Lins et al., 2013 for a similar analysis of family firms). In this case, the main variable of interest is the interaction term between the dummy capturing employee codetermination and the time dummy capturing the crisis period. Consequently, we estimate a difference-in-differences model with firm fixed effects, thereby comparing the effects of the 2008-2009 financial crisis on the firms with codetermination (treated group) and without codetermination (control group). We use matched firm samples and implement robustness checks to further account for the non-random assignment of firms into the treated and control groups.

### **3.2 Determinants of employee representation on the board of directors**

We start the analysis by looking at the antecedents of employee representation on the supervisory board. While providing us with some indication of the “nature” of the endogeneity issues faced

in our main analysis, portraying the firm-specific characteristics that are associated with the presence of employee directors on a board offers a first insight into the role these representatives play in their firms. Such an analysis can be applied in our case since—unlike in Germany—employees in large and medium-sized Scandinavian firms have the right (but not the obligation) to demand their representation on the board of directors. We estimate a simple probit model, thereby regressing a dummy for the presence of at least one employee director on the board (*Employeeedir*) on a set of covariates. The estimates refer to the year 2007; using other years does not significantly alter our results. We report the results in Table 2, models (1)-(5). Model (1) is our baseline model. In model (2), we use a more detailed industry classification. Model (3) replicates model (2) using a matched sample of firms. In model (4), we use the percentage of employee-elected directors on the board as the dependent variable (*% Employeeedir*), the Tobit estimator, and the matched sample of companies. In model (5), we include a variable capturing the share of other firms in the same industry that have employee directors on their boards (*Other\_INDshare*). Moreover, all explanatory variables in model (5) are measured at (t-1).

#### Insert Table 2

As shown in Table 2, models (1) and (2), the likelihood of employee board representation is positively associated with the number of employees (in logarithms) and with board size. The probability of observing employee directors is also higher for firms whose headquarters are not in the capital region of the country, for more research-intensive firms and for firms with a higher share of intangible assets. The presence of employee directors is positively associated with firm age, although the relationship is not significant for the matched samples. We observe no

significant relationship between codetermination, firms' ownership structure and debt. In addition to the results reported in Table 2, we controlled for firm internationalization (i.e. the share of foreign sales in total firm sales), diversification of firm operations, and for selected characteristics of the shareholder-elected board members, such as the share of directors holding their positions for more than 4 years, directors' age, and the CEO presence on the supervisory board. None of these variables was significantly associated with our dependent variable. Neither did adding them to our regressions alter the coefficients of the other explanatory variables (results not tabulated for the sake of space). Industry effects are also found relevant for employee board representation. To investigate this further, in model (5) we include—as an additional regressor—the average share of employee directors in other firms within the same industry (*Other\_INDshare*). As anticipated, the likelihood of observing at least one employee director is higher, the higher is the share of such directors in other firms in the same industry.

### **3.3 Codetermination and firm behavior**

The results tabulated in Table 2 show that the strength of the employees' voice varies with firm characteristics, such as size, research intensity, capital intensity, industry, and the region in which a firm operates. This distribution of employee directors corresponds to the perceived cost of a job loss and, consequently, to the workers' need to protect their employment. As theory suggests, these costs will be higher in firms or industries that demand high investments in firm-specific human capital, such as R&D-intensive firms. Given the lower opportunities for alternative employment in the non-capital regions of the country, we could also expect these costs to increase outside of the capital region. Thus, based on the observed distribution of

employee representation, we could conclude that these directors indeed contribute to securing the interests of the firm's employees. To provide further evidence on this and other specifics of the decision making of corporations with codetermination, we next inspect various elements of corporate behavior. Following Faleye et al. (2006) and others' theoretical propositions, we focus on corporate risk, growth, and investments<sup>7</sup>. We also test whether the presence of employee directors is associated with the probability of major reductions in the workforce. Except in the latter case (see below), we exclude the two crisis years (2008 and 2009) from the analysis, that period being addressed in the next section. We present the results in Tables 3 and 4 below.

The dependent variable in models (1)-(3), Table 3, is the standard deviation of *EBITDA/total assets* (as a percentage), calculated over a four-year period (from *t* to *t-3*), as for example in Faleye et al. (2006). The firms with employee directors have an operating risk approximately 1.3 percentage points lower than that of other firms. Note, however, that the size of the coefficient for employee directors (*Employeeedir*) and its significance drop substantially once we account for the differences in size and industry distribution (see models (2) and (3)). For robustness, in models (4) and (5) we re-estimate the regression using the three-year volatility of stock returns as the measure of total firm risk. As shown in the table, the companies with employee directors are associated with a significantly lower volatility of stock returns; the parameter remains statistically significant when we estimate the regression model on the matched sample (model (5)).

### Insert Table 3

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<sup>7</sup> Faleye et al. (2006) study labor influence derived from workers' beneficial holdings (+5 percent) in firms' equity, in the form of employee stock ownership plans, stock bonus plans, and profit-sharing plans. Their study concerns US corporations with dispersed ownership and control, where minority ownership shares provide the employees with the power to influence corporate decisions.

We also observe that companies with employee directors grow more slowly in terms of employment. The negative association between employee representation and employment growth persists when we use matched samples, and when we include additional controls, such as the share of foreign sales and the indicator for the dual-class ownership (see model (7), Table 3). Similarly, employee board representation is associated with lower sales growth, although the coefficient for the employee directors' dummy drops significantly when we use matched samples (results not tabulated). No significant association is observed in relation to growth in salaries or firm's total investment (sum of capital and R&D investment). Employee directors are positively associated with R&D investment (although only at a marginal, 10 percent significance level), while we observe no significant association with capital investment (matched samples; results not tabulated for the sake of conserving space).

We next explore whether the companies with codetermination show a lower likelihood of workforce reductions following a substantial fall in an individual firm's performance. Due to the small number of firms that experienced significant performance declines during 2001-2007, this analysis covers all Nordic companies and is spread over 2001-2009. We proceed in two steps. We first identify poorly performing firms following Kang and Shivdasani (1997) and Atanasov and Kim (2009). In order to be classified as poorly performing, we require that—in the year ( $t-1$ )—the company has a positive, above-industry median (*EBITDA/total assets*), and then in year  $t$  experiences a drop in EBITDA that is higher than the median drop across the years (20 percent) or, alternatively, is greater than or equal to 50 percent. We use an accounting rather than a stock-based measure of firm performance since the accounting measures do not reflect the likelihood of the firm undertaking restructuring (Atanasov and Kim, 2009). This selection procedure yields 331 (for the 20 percent threshold) or, alternatively, 164 (for the 50 percent threshold) Nordic

companies. The proportion of poorly performing (or distressed firms) across the years varies, with peaks in 2001, 2002, 2008, and 2009. For example, 15 percent of the firms in the sample experienced more than a 50 percent decline in the *EBITDA* in the year 2009. During 2003-2007, however, this share was smaller than 6 percent. Having identified the poorly performing firms we then—in the second step—define a dummy for large-scale layoffs (*Layoff*) that is equal to 1 whenever a firm decreases its total employment between the years (t-1) and (t+1) by more than 20 percent (or 15 percent), and zero otherwise.

The results of probit regressions are tabulated in Table 4. In models (1)-(3), we use the 20 percent fall in *EBITDA* to identify poorly performing firms, while model (4) uses the 50 percent fall in *EBITDA* as the benchmark. In model (2) we additionally control for the number of employees, firm internationalization (measured by the share of foreign sales in total sales), and the share of R&D in the firms' total assets. In model (3), we use a more detailed industry classification. Regardless of the specification used, we observe that the presence of employee directors is associated with a significantly lower likelihood of these firms experiencing a 20 percent (or 15 percent) reduction in their workforce following a substantial fall in performance. The probability of such reductions is also negatively correlated with dual-class ownership structure, the share of female directors, board size and, surprisingly, the capital region dummy, although for some of these variables the coefficients are not significant across all specifications. Larger firms and firms with a higher share of tangible assets are more likely to reduce employment when performing poorly.

Insert Table 4

### **3.4 Scandinavian codetermination and firm behavior during the recent crisis**

The conduct of companies with employee directors, as described in Section 3.3, is partially in accordance with the theoretical predictions about employees' impact on corporate decisions. Companies with employee representatives offer stronger employment security; in support of this, we also observe that the cross-sectional variation of employee representation varies with the presumed value that a job security has for the employees. As theoretically anticipated for companies whose decisions internalize the interests of employees as holders of fixed claims, the corporations with board codetermination pursue more stable, less risky operations than other firms. However, contrary to some of the more skeptical views on employees' incentives to expropriate rents when in control, we find no major differences in terms of companies' investments or wages, meaning that a stronger employment protection observed in the firms with employee-elected directors probably does not come at a major expense of the company or its shareholders. With the aim of looking further into this issue and into the costs that employee involvement may create for the firm, we next explore how firms with and without employee directors responded to the 2008-2009 financial shock. Specifically, we argued that if employees only aim to extract higher rents, and if their interests completely conflict with those of the shareholders, then these conflicts should become even more evident in the case of a crisis. However, from a more positive perspective, we could expect that employees actually care about the continuation of the firm, due to their investment in their own, firm-specific human capital or other benefits that they might derive from maintaining their current employment (e.g. Chen et al., 2012). As noted by the advocates of codetermination, the presence of employee directors should, in this case, facilitate the achievement of cooperative solutions,

thereby increasing the probability of workers' concessions (Aoki, 1984; Freeman and Lazear, 1995). This could, eventually, lead to superior outcomes during crisis.

We first look at the reductions in employment of at least 5 percent in the companies with and without codetermination during the crisis. This is simply a generalization of the layoff model presented in the previous section, but the focus now is on the changes in employment during 2008-2009<sup>8</sup>. The results of this analysis are shown in Table 5. The dependent variable takes the value 1 in cases where there is a decrease in the number of employees from (t+1) to (t) greater than or equal to 5 percent and 0 otherwise (as for example in Matsa and Miller, 2013). Models (1) and (2) show the basic probit estimates for the Scandinavian sample and for the matched sample. In models (3)–(8) we add the interaction term  $ROA \times Crisis$ , and the triple interaction terms capturing differential responses to crisis shocks by the firms with codetermination ( $ROA \times Employee_{dir2006} \times Crisis$ ) and other similarly performing firms. Since other governance characteristics may be associated with a firm's attitude towards its employees, we further include the interaction term for dual-class ownership ( $ROA \times Dual\ class \times Crisis$ ) and for the share of female directors on the board ( $ROA \times Female_{dir2006} \times Crisis$ ). Both the employee directors' dummy and the share of women on the board refer to the board structure as of year 2006 as we do not want to capture eventual changes in firm governance driven by the crisis.

Models (4)–(8) report the estimates of the linear probability model with firm fixed effects. Model (4) is estimated over the matched sample of firms, the entire period (2001-2009), and with standard errors clustered by firm. In model (5), we use country-level clustering (e.g. Lins et al., 2013) and restrict our sample to 2006-2009, i.e. comparing the two years of crisis with the two years just preceding it. Given our results from Table 2, we also check whether the impact of

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<sup>8</sup> Due to small number of poorly performing firms, we here adopt a more general specification instead of simply re-estimating the layoff regression from Section 3.3 with an interaction term for the crisis.



codetermination varies with firm-specific characteristics and the relevance of human capital to the firm, thus comparing the sub-sample of firms with above- and below-median shares of R&D in total assets (as of the year 2006). Model (8) is a robustness check; we replicate model (5) including an additional interaction term to isolate the effects of firm age (i.e.  $ROA \times \ln(\text{Firm age}) \times \text{Crisis}$ ). All models include the common country, industry effects, time effects, and industry-specific time trends.

#### Insert Table 5

Table 5 shows that (in normal times) worse-performing firms (in terms of ROA) are more likely to experience at least 5 percent reduction in employment. This sensitivity of employment to firms' operating performance does not vary with dual class ownership or the presence of employee directors on the board (see interaction terms  $ROA \times \text{Dual class}$  and  $ROA \times \text{Employee dir}$  in models (1) and (2)). In the companies without employee directors, the sensitivity did not change during the crisis (see insignificant term for  $ROA \times \text{Crisis}$  in model (3)). However, the positive and statistically significant coefficient on the triple-interaction term ( $ROA \times \text{Employee dir}_{2006} \times \text{Crisis}$ ) indicates a decline in the sensitivity of employment cuts to firm performance in the firms with codetermination, during the crisis. The triple-interaction term keeps its positive and statistically significant coefficient (at least at the 10% level) when we control for firm fixed effects, when we use country-level clustering in model (4), and when we restrict the period to 2006-2009, while including additional controls and interactions terms (marginally significant coefficient; models (5) and (6)). The results from models (7) and (8) further suggest that the codetermination effects on employment are mainly concentrated in the sub-sample of research-intensive firms. Finally, contrary to our expectations, other governance

characteristics did not play a role in relation to employment during the crisis; the triple interaction terms for dual class ownership and the share of women directors on board are not statistically significant regardless of the model specification.

Thus, companies with employee directors seemed to care more for employment during the crisis than other corporations in the region. These effects somewhat concentrated in the firms where preserving employment may actually be beneficial for the firms. So, what are the implications of these policies for firms' performance and growth? In other words, who is carrying the costs for the preserving of employment in hard times? In Table 6, we compare wages, investments, and dividends, again focusing on the changes in these variables during the last crisis. In models (1)-(4), we look at labor costs, measured as the ratio of salaries to total firm assets, as for example in Lins et al. (2013). Since we are interested in the change in labor costs that is not due to changes in employment, we control for the number of employees per unit of firm assets (*Employees/Assets*). Regardless of the specification, we observe a larger decrease in labor costs in the firms with codetermination during the crisis period. These estimates suggest that greater job security during the last crisis was partly guaranteed through wage adjustments in these firms.

In models (5)-(7), we inspect companies' investments. We report the investments as the sum of capital expenditure (*Capex/Assets*) and research and development (*R&D/Assets*), both in percentage terms. We separate the two types of investment in subsequent columns (models (8)-(11)). The dependent variable in models (12) and (13) is the dividend payout ratio, as defined above.

Insert Table 6

We observe no differences in terms of capital expenditure and dividend payouts between firms with employee directors and other firms; for both dependent variables (see models (10)-(13)), the coefficient for the interaction term ( $EmployeeDir_{2006} \times Crisis$ ) is positive but not statistically significant. On the other hand, R&D investments in the companies with codetermination decreased more during the crisis period. However, the coefficient for the interaction term denoting the firms with employee directors is negative and significant only when we compare these companies with all other companies in the sample (model (9)). The coefficient becomes insignificant, however, when we compare them to the firms without dual class ownership (by adding an additional interaction term for the firms with dual-class ownership).

In sum, we found some indication that the concerns over job security during the crisis were stronger in the companies where employee representatives were present on the board but also that the protection of jobs in these companies did not come only at the costs of shareholders. Moreover, the relevance of codetermination for employment was concentrated in research-intensive firms. Given the importance of firm-specific human capital, protecting jobs in these firms may not necessarily contradict the interests of the corporation or its shareholders. We also observed that firms with higher R&D are more likely to have codetermination in the first place. Theoretically, the benefits of employee board representation, in terms of motivating firm-specific investments in human capital, employee commitment etc. should be in fact the strongest in such firms. Related studies on boards of directors have previously suggested that the contribution of company insiders (e.g. executive directors) is more valuable in R&D-intensive firms (e.g. Coles et al., 2008). If employees' voice across firms distributes in accordance with the net benefits of such representation, there should in principle be no difference in the equity values of firms with

employee directors and other firms. We address the relationship between employee representation and firm market value in the following section.

### 3.5 Scandinavian codetermination and firms' market value

Table 7, model (1) reports the results of a dynamic OLS, where we regress Tobin's Q (in logarithms) on the dummy indicating the presence of employee directors on the board (*Employeeedir*), the lagged value of Tobin's Q, and a set controls. By adding the lagged value of the dependent variable, we partially account for dynamic relation between governance or other firm characteristics, and firm performance (e.g. Wintoki et al., 2012). Models (2) and (3) include the dividend payout and the capital investment as a share of total assets (as an alternative measure of growth opportunities). The models are estimated on the matched sample of firms over the entire period of analysis (model (2)), or during the years preceding the 2008 crisis (model (3)).

Overall, we observe no difference in the equity value of firms with employee directors and that of other firms; the coefficient of the *Employeeedir* dummy is positive but statistically insignificant. The coefficients of the control variables are consistent with other studies (e.g. Bennedsen and Nielsen, 2010; Faleye et al., 2006). Firm value is positively associated with the firms' operating performance, asset tangibility, and growth opportunities, and negatively with firm size, firm debt, and ownership concentration. The emphasis in models (4)-(7) is the companies' value during the last crisis. Specifically, we are interested in the parameter of the interaction term  $Employeeedir_{2006} \times Crisis$ , which captures the difference in the change in Tobin's Q for firms with and without codetermination during the crisis. All regressions include

the standard set of controls, firm and time effects, and industry specific time trends. Model (4) is estimated on the Scandinavian sample with the standard errors clustered at the firm level; model (5) replicates model (4) using the matched sample. Model (6) replicates model (5) with the clustering of the standard errors at the country level; model (7) replicates model (6) using the matched sample of firms over the 2006-2009 period. The 2008-2009 financial crisis resulted in a significant decrease in firm value. For example, as shown in model (7), equity values decreased by 18 percent on average in comparison to the two years preceding the crisis. The fall the firm value is, however, no different for the companies with and without employee directors. Regardless of the specification used, the parameter of the interaction term ( $Employee_{dir_{2006}} \times Crisis$ ) is positive and mostly not significant. We observe no different results even if we further isolate R&D-intensive firms among the companies with employee directors (results not tabulated for the sake of conserving space).

Insert Table 7

### 3.6 Robustness

As noted by Lins et al. (2013), if firms with a specific governance structure are fundamentally different from other firms and if these differences make them less susceptible to financial shocks, they may still outperform other firms regardless of the actions undertaken during the crisis. Specifically, for our case, if the policies pursued by our firms with codetermination prior to the crisis made these firms less vulnerable to the external shocks, then these factors may explain why we find no significant differences in the equity values during the crisis. As shown in Section 3.3,

the companies with codetermination pursue less risky policies and a more stable, slower growth. Such stability may pay off in the case of unexpected shocks.

We therefore replicate the model from Table 7, adding further controls to disentangle the impact of codetermination from the impacts of risk or other factors that could be correlated with it and with the companies' exposure to external shocks. The results are tabulated in Table 8. In model (1), we include the lagged value of the three-year average volatility of stock returns ( $Volatility_{t-1}$ ), and add the corresponding interaction term ( $Volatility_{t-1} \times Crisis$ ). In model (2), we repeat the analysis using the 2006-2009 period. We find that, indeed, firms with a higher pre-crisis stock volatility experienced a larger drop in equity values during the crisis. The positive coefficient for the interaction term ( $EmployeeDir_{2006} \times Crisis$ ) drops when we control for firm risk, indicating that the lower pre-crisis risk of companies with codetermination might have in part contributed to their performance in crisis. Even after controlling for these additional factors, however, we observe no significant differences between the equity values of the firms with employee directors relative to other firms. For completeness, in models (3)-(5) we include the interaction terms for firm age and dual-class ownership. Not surprisingly, we find that older firms experienced a smaller fall in market value during the crisis (see positive and significant coefficient for  $\ln(Firm\ Age) \times Crisis$  in models (3)-(5)). Finally, the firms with more dispersed ownership seemed to have performed worse during the crisis, although the coefficient is not significant across all specifications.

#### Inset Table 8

We next check whether our results are driven by different time trends in the value of firms with and without employee elected directors before the crisis. Consequently, in place of the interaction term between the employees' dummy and the crisis (see Table 7), we include separate yearly interaction terms, i.e. interacting the employee directors' dummy with each of the years in our analysis (using the year 2001 as a reference). These additional tests (results not tabulated) do not change our conclusion; the interaction terms for the employee directors' indicators and the years of the crisis (2008-2009) remain positive but not statistically significant.

## **5. Conclusion**

Building on the economic theories of labor participation, we have analyzed the consequences of employee participation in corporate decision making, focusing specifically on firms' responses during the 2008-2009 financial crisis. Our empirical analysis, based on a sample of publicly listed corporations in Scandinavia and Finland during 2001-2009, portrays a rather positive picture of employee-shareholder interaction in Scandinavian corporations. In line with the theory, we observe that companies with employee directors are more concerned with maintaining employment in hard times. These effects, and the employee directors in the first place, are concentrated in the more R&D-intensive industries, where the benefits of employee representation and employment security should be higher for both employees and shareholders. Accordingly, we observe no significant differences in the equity values of companies with employee directors and comparable companies without employee representation on their boards. The evidence from the 2008-2009 crisis is also more supportive of a cooperative view of the interaction between employees and shareholders. Although firms with employee directors were

less likely to reduce employment during the crisis, their equity values did not decrease more than those of other firms. We show that this is partly due to an adjustment in wages during the crisis and partly to their more stable (less risky) pre-crisis behavior, which probably made these firms less vulnerable to the external shock.

To further verify our conclusions, we surveyed a random sample of about 100 shareholder-elected and employee-elected directors of Danish publicly listed corporations. The average impression arising from their responses is that—while supporting job security and employees’ development in their firms—the main concern and perceived responsibility of employee directors in Scandinavian firms is long-term company performance. Our findings are also in accordance with the nature of the agreement that led to the adoption of codetermination legislation in Scandinavia in the seventies. As reported by Jackson (2005), codetermination in Scandinavia emerged as a contractual solution between the representatives of capital and labor, for the purpose of ensuring employment stability as well as the long-term prosperity of Scandinavian corporations. This process was different from that in Germany, which followed a more conservative path to codetermination, characterized by weaker unions and a left-wing party but also weaker investor protection. In Scandinavia, on the other hand, strong unions and left-wing parties created a political compromise with the highly concentrated owners, which led to the constitution of codetermination but also higher investor protection (Jackson, 2005).

Considering the characteristics of the Nordic economies (i.e. high union density, a high level of economic development with the State providing substantial support in the case of unemployment, small-sized economies with high internationalization of firm activities etc.), caution will be necessary in generalizing our results to other countries. At a minimum, our paper shows that, under certain conditions, achieving higher benefits for employees is possible without



destroying shareholder value. Although more research is needed to establish this, our findings also suggest that more stakeholder-oriented policies may eventually pay off in the case of shocks, such as the 2008-2009 financial crisis. Finally, other governance characteristics, such as dual class ownership (as a proxy for a control by long term oriented owners) or female directors were not associated with stronger employment protection during the last crisis. This suggests that the employment security ensured through codetermination cannot in fact be entirely replicated by other governance mechanisms.

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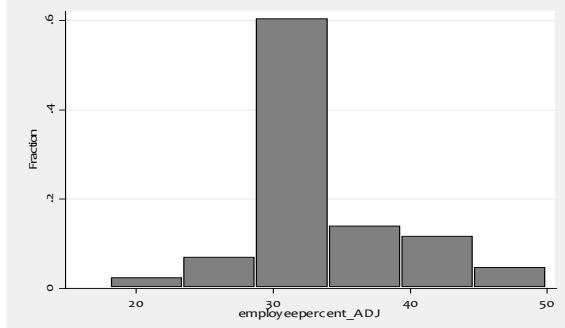
Wintoki, M. B., Linck, J. S. and J. M. Netter (2012) Endogeneity and the dynamics of internal corporate governance, *Journal of Financial Economics*, 105, 581-606.

**Table 1: Descriptive statistics**

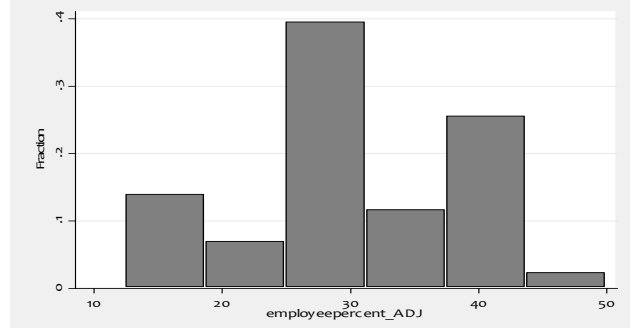
Variable name	Variable label	Mean (Sd)	Median
Share of firms with employee-elected directors	<i>Employeeedir</i>	0.61	
Assets, in 2005 million Euro	<i>Assets</i>	1886.6(5224.1)	351.9
Number of employees	<i>Employees</i>	7019 (20109)	1324
Share of ownership not held in blocks (%)	<i>Free float</i>	61.6(23.04)	61.9
Share of debt in total firm assets (%)	<i>Debt</i>	17.55(16.35)	13.64
Share of tangible assets in total firm assets (%)	<i>Asset tangibility</i>	80.87 (18.01)	84.99
Share of research and development in total firm assets (%)	<i>R&amp;D/Assets</i>	2.84 (6.89)	0.00
Capital investments as a share of firm total assets (%)	<i>Capex/Assets</i>	6.57 (7.72)	4.10
Dummy for dual-class ownership	<i>Dual class</i>	0.14	0
Share of female directors among shareholder-elected directors (%)	<i>Femaledir</i>	22.13 (16.74)	20.00
Share of firms headquartered in the capital region	<i>Capital</i>	0.56	
Firm age	<i>Firm age</i>	33.94 (29.65)	19.00
Number of shareholder-elected board members	<i>Board size</i>	6.15 (1.56)	
EBIT as percentage of total firm assets	<i>ROA</i>	8.17 (15.50)	13.21
Standard deviation of (EBITDA/Assets) over the last three years (%)	<i>Risk</i>	6.25 (6.02)	4.39
Three-year average growth in sales	<i>SalesGrowth</i>	0.49 (1.60)	0.12
Three-year average growth in employment	<i>EmplGrowth</i>	0.32(0.95)	0.08
Tobin's Q	<i>Tobin's Q</i>	1.99 (1.29)	1.58

**Figure 1: Distribution of employee representation by country**

Share of employee-directors in Denmark



Share of employee-elected directors in Norway



Share of employee directors in Sweden

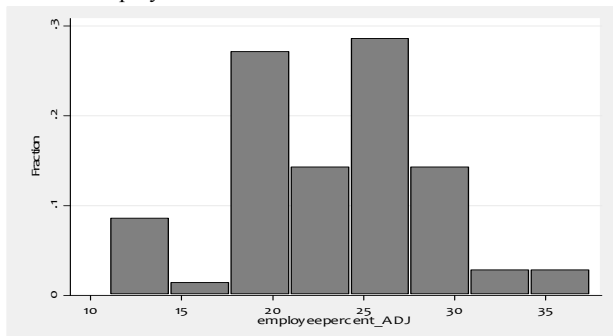


Table 2: Determinants of employee codetermination in 2007 (robust z-statistics)

	Probit			Tobit	Probit
	<i>Employee dir</i>			<i>% Employee dir</i>	<i>Employee dir</i>
	Scandinavia	Scandinavia	Matched	Matched	Scandinavia
	(1)	(2)	(3)	(4)	(5)
Capital	-0.419** [-2.012]	-0.502** [-2.257]	-0.589** [-2.187]	-5.291** [-2.283]	-0.497** [-2.336]
ln(Firm age)	0.375*** [2.729]	0.374*** [2.640]	0.050 [0.313]	-0.269 [-0.192]	0.339** [2.525]
Free Float	0.002 [0.311]	0.002 [0.429]	0.003 [0.496]	-0.055 [-1.141]	0.001 [0.252]
Dual class	-0.445 [-1.226]	-0.533 [-1.370]			
Board size	0.139* [1.703]	0.178** [2.171]	0.295*** [2.881]	-0.649 [-0.623]	0.109 [1.268]
Ln(Employees)	0.373*** [5.380]	0.395*** [5.185]	0.351*** [4.372]	4.181*** [5.858]	0.382*** [5.700]
R&D/Assets	0.036** [2.351]	0.039** [2.447]	0.057*** [2.981]	0.433*** [2.887]	0.034** [2.172]
Asset tangibility	-0.012* [-1.913]	-0.013* [-1.945]	-0.018** [-2.367]	-0.128* [-1.694]	-0.013** [-2.147]
Debt	-0.006 [-0.876]	-0.006 [-0.752]	-0.008 [-0.974]	-0.104 [-1.311]	-0.007 [-1.020]
Other_INDshare					0.011** [2.344]
Country effects	Yes	Yes	Yes	Yes	Yes
Industry effects (N)	12	30	30	30	12
Observations	238	220	236	250	229

Note: The standard errors in models (1)-(4) are clustered by country. Standard errors in models (5) are clustered by firm. All explanatory variables in model (5) are measured at (t-1). Constant not reported. Model (4) reports the estimates of the Tobit regression (with robust t-statistics in brackets). Other models report the estimates of the probit regression (with robust z-statistics in brackets).

\*\*\* represent significance at 1% level

\*\* represents significance at 5% level

\* represents significance at 10% level

Table 3: Codetermination and firm risk (pre-crisis period)

	Scandinavia	Matched sample		Scandinavia	Matched sample		Scandinavia	Matched sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)		
Dependent variable	<i>Risk</i>	<i>Risk</i>	<i>Risk</i>	<i>Three-year stock volatility</i>		<i>EmplGrowth</i>			
Employeeedir	-1.282**	-0.025	-0.288	-0.031**	-0.036**	-0.121***	-0.123***		
	[-2.530]	[-0.045]	[-0.497]	[-2.522]	[-2.436]	[-3.837]	[-2.796]		
Femaleidir	-0.001	0.001	0.021	-0.001**	-0.001**	-0.002**	-0.001		
	[-0.027]	[0.057]	[1.343]	[-2.335]	[-2.329]	[-2.189]	[-1.239]		
Board size	0.442**	0.449**	0.320**	0.016***	0.007	-0.017	-0.024**		
	[2.186]	[2.413]	[2.253]	[3.635]	[1.575]	[-1.430]	[-2.239]		
R&D/Assets	0.126***	0.121***	0.114**	-0.001	-0.002**	0.002	0.000		
	[2.628]	[2.684]	[2.150]	[-1.269]	[-2.186]	[0.943]	[0.225]		
Ln(Firm age)	0.174	0.109	0.264	-0.005	-0.017***	-0.045***	-0.039***		
	[0.613]	[0.560]	[1.274]	[-0.769]	[-2.645]	[-2.748]	[-3.494]		
Ln(Assets)	-1.500***	-1.490***	-1.140***	-0.035***	-0.026***	0.038***	0.015		
	[-9.160]	[-9.221]	[-8.912]	[-7.886]	[-5.870]	[3.265]	[1.407]		
Free float	0.054***	0.029***	0.021**	0.001***	0.001**	-0.001	0.000		
	[5.417]	[3.582]	[2.284]	[3.323]	[2.526]	[-1.116]	[0.181]		
Asset tangibility	0.013	0.013	0.004	-0.001**	-0.001***	-0.004***	-0.003***		
	[0.837]	[0.881]	[0.272]	[-2.377]	[-2.729]	[-3.057]	[-2.859]		
Debt	0.000	0.026	0.001	-0.001*	-0.001	0.000	0.001*		
	[0.022]	[1.339]	[0.046]	[-1.709]	[-1.596]	[0.468]	[1.675]		
Dual class			-0.244				0.032		
			[-0.618]				[1.138]		
Foreign sales (%)			0.015*	0.001***	0.001***		0.000		
			[1.920]	[4.049]	[3.128]		[0.783]		
Historical performance						0.000	0.002***		
						[0.181]	[3.846]		
Capex/Assets						0.001	0.003		
						[0.425]	[0.910]		
Industry and country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Industry effects × Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	1,258	1,320	1,088	1,235	1,316	1,299	1,143		
R-squared	0.321	0.308	0.304	0.440	0.353	0.171	0.172		

Note: Robust t-statistics reported in brackets. Constant not reported. \*\*\*, \*\* and \* represent significance at 1, 5 and 10% levels

Table 4: Employee co-determination and layoffs (probit regression)

	<i>Fall in EBITDA by 20%</i>			<i>Fall in EBITDA by 50%</i>
	Layoffs of 20% or more employees			Layoffs of 15% or more
	(1)	(2)	(3)	(4)
Employeeid <sub>it</sub>	-0.725*** [-3.023]	-0.744** [-2.505]	-0.937*** [-3.670]	-0.583* [-1.690]
Dual class	-1.009*** [-3.120]	-0.968*** [-2.800]	-1.069*** [-3.244]	-2.452*** [-3.683]
Debt <sub>(t-1)</sub>	-0.010 [-1.366]	0.001 [0.125]	-0.017** [-2.001]	-0.029** [-2.056]
Free float <sub>(t-1)</sub>	0.000 [0.019]	-0.007 [-1.240]	0.001 [0.244]	-0.014* [-1.785]
Ln (Firm age)	-0.060 [-0.525]	-0.108 [-0.793]	-0.166 [-1.280]	0.103 [0.469]
Capital	-0.368* [-1.786]	-0.374 [-1.613]	-0.440* [-1.887]	-1.015*** [-2.895]
Femaleid <sub>it</sub>	-0.019* [-1.774]	-0.018 [-1.466]	-0.020* [-1.773]	-0.020 [-1.409]
Board size	-0.211** [-2.447]	-0.258** [-2.424]	-0.220** [-2.383]	-0.293** [-2.375]
Asset tangibility <sub>(t-1)</sub>	0.027*** [3.096]	0.032*** [2.728]	0.022** [2.494]	0.036*** [2.795]
Ln(Assets) <sub>(t-1)</sub>	0.352*** [3.982]	0.405*** [2.806]	0.415*** [4.414]	0.787*** [4.674]
Ln(Employees) <sub>(t-1)</sub>		0.017 [0.119]		
(R&D/Assets) <sub>(t-1)</sub>		0.065*** [2.930]	0.044** [2.114]	0.053** [2.289]
Foreign sales (%) <sub>(t-1)</sub>		0.007 [1.521]		
Country and time effects	Yes	Yes	Yes	Yes
Industry effects	Yes (12)	Yes (12)	Yes (30)	Yes (12)
Observations	290	251	285	138

Note: Probit regression. Robust z-statistics in brackets. Constant not reported. \*\*\*, \*\* and \* represent significance at 1, 5 and 10% levels



Table 5: Determinants of an at least 5% reduction in employment (from t+1 to t); probit and linear probability models

	Probit with robust standard errors		Country-level clustering	Firm-level clustering	Country-level clustering			
	Scandinavia		Matched sample		Matched sample 2006-2009		Above-median R&D Scandinavia	Below-median R&D Scandinavia
	(1)	(2)	(3)	(4)	(5)	(-6)	(7)	(8)
Employee <sub>dir</sub> 2006			0.123 [0.921]					
Dual class	-0.384** [-2.159]	-0.133 [-0.761]	-0.193 [-1.090]					
ROA × Employee <sub>dir</sub> 2006	-0.008 [-1.391]	-0.003 [-0.347]						
ROA × Dual class	-0.006 [-0.490]	-0.008 [-0.583]						
Employee <sub>dir</sub>	0.088 [0.869]	0.098 [0.782]						
ROA × Crisis			-0.007 [-0.420]	-0.007 [-1.358]	-0.003 [-0.678]	-0.016* [-2.851]	-0.018 [-2.172]	0.009 [0.974]
ROA × Employee <sub>dir</sub> 2006 × Crisis			0.032** [2.485]	0.013** [2.494]	0.009 [2.002]	0.010* [2.573]	0.024* [3.810]	0.000 [0.016]
ROA × Dual class × Crisis			0.001 [0.102]	-0.000 [-0.045]	-0.003 [-0.499]	-0.003 [-0.594]	-0.005 [-0.600]	0.004 [1.417]
ROA × Female <sub>dir</sub> 2006 × Crisis			-0.000 [-0.284]	0.000 [0.177]	0.000 [0.226]	0.000 [0.199]	0.000 [1.578]	-0.000 [-0.900]
ROA × ln(Firm age) 2006 × Crisis						0.004 [1.388]		
ROA	-0.017*** [-4.030]	-0.024*** [-3.167]	-0.028*** [-3.348]	-0.008*** [-6.047]	-0.006 [-1.823]	-0.009*** [-12.367]	-0.008 [-2.095]	-0.007*** [-53.818]
Capital	0.109 [1.281]	0.191** [2.108]	0.187* [1.677]					
R&D/Assets	-0.004 [-0.632]	-0.008 [-1.250]	-0.008 [-0.714]	0.002 [0.421]	0.002 [0.439]	0.008 [1.335]		
ln(Firm age)	0.048 [0.821]	0.002 [0.038]	0.003 [0.066]	0.002 [0.020]	-0.153 [-1.249]	0.064 [0.650]	0.355 [2.488]	0.079 [1.546]

Femaledir	0.003 [0.867]	0.002 [0.503]	0.002 [0.570]	0.000 [0.235]	-0.005 [-0.993]	-0.002 [-0.831]	0.003 [0.700]	0.001 [0.361]
Board size	-0.066* [-1.906]	-0.055* [-1.725]	-0.058*** [-4.160]	-0.001 [-0.089]	-0.034 [-2.045]	-0.006 [-0.296]	-0.020 [-0.381]	0.008 [0.640]
Free float	0.000 [0.016]	-0.001 [-0.297]	-0.000 [-0.156]	-0.000 [-0.422]	-0.001 [-0.280]	-0.001 [-0.425]	0.000 [0.119]	-0.000 [-0.350]
Debt	0.002 [0.517]	0.005 [1.590]	0.005 [1.542]	0.002 [1.300]	0.002 [0.907]	0.000 [0.265]	0.002 [0.398]	0.001* [3.524]
Asset tangibility	0.005 [1.629]	0.007** [2.262]	0.008*** [3.986]	-0.003 [-1.364]	-0.008** [-3.848]	-0.006* [-2.834]	-0.000 [-0.057]	-0.001 [-0.941]
Ln (Assets)	0.038 [1.004]	0.024 [0.655]	0.024** [1.963]	0.102*** [2.680]	0.132* [3.033]	0.111 [2.174]	0.200 [2.068]	0.124 [1.782]
Industry and country effects	Yes	Yes	Yes	-	-	-	-	-
Time × industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	-	-	-	Yes	Yes	Yes	Yes	Yes
Observations	1,597	1,655	1,649	1,698	690	931	371	1,282

Note: Robust z-statistics or t-statistics in brackets. Constant not reported. \*\*\*, \*\* and \* represent significance at 1, 5 and 10% levels

Table 6: Salaries, investments and dividends (firm fixed effects regression)

Dependent variable	Salaries/Assets (%)				Total investments/Assets (%)			R&D/Assets (%)		Capex/Assets (%)		Div_payout	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Period	2001-2009	2006-2009	2006-2009	2001-2009		2006-2009		2006-2009		2006-2009		2001-2009	
Sample	Matched	Matched	Matched	Matched	Scand.	Matched		Matched	Matched	Matched	Matched	Matched	
Clustering of S.E.		country		firm		country		country		country		country	
Crisis × Employee <sub>dir 2006</sub>	-1.136 [-1.741]	-1.257*** [-7.490]	-1.279*** [-7.076]	-1.279* [-1.805]	-0.709 [-1.922]	-0.462 [-1.602]	-0.624** [-3.230]	-0.390 [-1.118]	-0.588* [-2.856]	0.144 [0.506]	0.123 [0.385]	-0.036 [-0.550]	-0.050 [-0.578]
Crisis × Dual class	2.122* [2.545]	0.932 [0.825]	1.112 [1.077]	1.112 [1.247]	0.866 [1.289]	0.488 [0.880]		0.323 [1.261]		-0.028 [-0.077]		0.062 [0.684]	0.046 [0.382]
Crisis × ln(Firm age)	-0.319 [-0.824]	-0.377 [-1.493]	-0.417 [-1.290]	-0.417 [-0.846]									
Employee/Assets	2.464** [3.941]	2.318*** [9.767]	2.291*** [9.825]	2.291*** [5.291]									
ln(Firm age)	1.845 [1.555]	-0.998 [-1.313]	-2.181 [-1.939]	-2.181 [-0.559]	6.121* [3.189]	-0.136 [-0.065]	-0.433 [-0.292]	-0.401 [-0.736]	-1.007* [-2.364]	0.521 [0.291]	0.878 [0.638]	0.082 [0.951]	0.012 [0.157]
Female <sub>dir</sub>	0.002 [0.127]	-0.100** [-3.547]	-0.087* [-2.657]	-0.087* [-1.834]	-0.031 [-0.579]	0.023 [1.965]	0.021 [1.626]	0.013 [0.965]	0.012 [0.915]	0.017 [0.938]	0.015 [0.839]	0.001 [0.927]	0.000 [0.300]
Board size	-0.075 [-0.308]	-0.822** [-4.283]	-0.801** [-4.012]	-0.801*** [-2.656]	-0.373** [-4.348]	-0.143 [-0.623]	0.087 [0.306]	-0.166 [-0.735]	0.066 [0.202]	0.066 [0.555]	0.036 [0.289]	0.010 [1.164]	0.016 [1.386]
Free float	0.020 [1.116]	0.003 [0.099]	0.004 [0.127]	0.004 [0.197]	0.008 [1.651]	-0.004 [-0.230]	-0.015 [-0.948]	0.000 [0.017]	-0.020 [-1.087]	-0.011 [-0.918]	-0.002 [-0.235]	-0.000 [-0.091]	-0.001 [-0.607]
ROA	-0.188* [-2.546]	0.061 [2.257]			0.077 [1.366]	0.094* [2.407]	0.098* [2.616]	0.060** [3.492]	0.061** [3.840]	0.010 [0.415]	0.014 [0.655]	0.001 [0.796]	0.001 [0.799]
Tobin's Q			-0.167 [-0.438]	-0.167 [-0.460]									
Sales growth (t; t-1)					0.956 [1.803]	-0.226 [-0.448]	-0.254 [-0.512]	0.426*** [5.991]	0.382** [3.414]	-0.243 [-0.890]	-0.224 [-0.848]	-0.000 [-0.551]	
Debt	-0.062** [-3.426]	0.005 [0.145]	-0.004 [-0.110]	-0.004 [-0.160]	-0.035 [-1.073]	-0.057 [-2.255]	-0.085 [-1.890]	0.023** [3.432]	-0.015 [-0.367]	-0.079* [-3.133]	-0.068** [-3.603]	-0.002*** [-6.144]	-0.004*** [-6.959]
Asset tangibility	0.046 [1.776]	-0.078*** [-9.467]	-0.061** [-5.151]	-0.061* [-1.765]	0.027 [0.517]	0.038 [1.837]	0.038 [1.568]	0.061** [4.630]	0.058* [2.535]	-0.026* [-2.582]	-0.023 [-1.841]	0.000 [0.181]	-0.002 [-1.164]
ln(Assets)	-0.839 [-0.767]	-3.719 [-1.678]	-3.662 [-1.846]	-3.662** [-2.292]	0.851 [0.914]	0.148 [0.143]	0.507 [0.712]	-0.593 [-0.557]	-0.048 [-0.052]	-0.139 [-0.432]	-0.296 [-0.869]	0.037 [1.645]	0.067 [1.933]
Capital/Assets								0.018 [0.577]	0.010 [0.303]				

R&D/Assets										0.025	0.010		
										[0.611]	[0.294]		
Cash/Assets													0.264*
													[2.891]
Three-year stock volatility													-0.073
													[-0.986]
Foreign sales (% sales)	-0.033	-0.029	-0.029	-0.029	0.020**								-0.002**
	[-2.299]	[-1.114]	[-1.116]	[-1.224]	[9.490]								[-3.220]
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects × industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,602	785	783	783	734	913	950	913	950	913	950	1,893	1,528
R-squared	0.472	0.348	0.340	0.340	0.229	0.112	0.119	0.109	0.100	0.108	0.103	0.094	0.122

Note: Robust t-statistics in brackets. Constant not reported. \*\*\*, \*\* and \* represent significance at 1, 5 and 10% levels

Table 7: Codetermination and firm value

	Ln(Tobin's Q)						
	Dynamic OLS			Firm fixed effects regression			
	Scandinavia	Matched sample		Scandinavia	Matched sample	Matched sample	Matched sample
	2001-2009	Pre-crisis				Country-level clustering	2006-2009 Country-level clustering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Ln(Tobin's Q) <sub>t-1</sub>	0.755*** [31.252]	0.721*** [27.107]	0.732*** [25.536]				
Crisis × Employee <sub>dir</sub> 2006				0.073* [1.673]	0.037 [1.121]	0.037 [0.507]	0.034 [0.718]
Crisis				-0.326*** [-5.424]	-0.329*** [-6.665]	-0.329*** [-6.529]	-0.184** [-5.394]
Employee <sub>dir</sub>	0.023 [1.496]	0.011 [0.657]	0.002 [0.083]				
Dual class	0.007 [0.406]	0.001 [0.067]	-0.007 [-0.388]				
Div_payout		0.060*** [2.987]	0.027 [1.198]				
Total investments/Assets		0.005*** [3.693]	0.004*** [3.229]				
Capital	0.023* [1.687]	0.018 [1.354]	0.020 [1.389]				
ln(Firm age)	-0.010 [-1.050]	-0.009 [-1.088]	-0.009 [-1.143]	-0.040 [-0.527]	0.009 [0.147]	0.009 [0.213]	-0.078 [-1.808]
Female <sub>dir</sub>	0.000 [0.376]	0.000 [0.593]	0.000 [0.421]	-0.002* [-1.734]	-0.002 [-1.508]	-0.002 [-1.349]	-0.001 [-0.496]
Board size	0.010* [1.677]	0.006 [1.017]	0.003 [0.558]	0.015 [1.435]	0.019* [1.844]	0.019 [1.496]	0.011 [0.581]
Free float	0.000 [1.167]	0.001** [2.030]	0.001** [2.064]	0.000 [0.429]	0.000 [0.839]	0.000 [1.338]	-0.002* [-2.950]
Debt	-0.001 [-1.010]	-0.001** [-2.314]	-0.001*** [-2.615]	0.000 [0.156]	0.001 [0.456]	0.001 [0.480]	0.001 [0.515]
ROA	0.000 [0.576]	0.003*** [2.879]	0.003*** [3.022]	0.004*** [3.481]	0.004*** [3.504]	0.004** [3.863]	0.004*** [6.662]

Asset tangibility	0.002*** [3.413]	0.001* [1.738]	0.001 [1.210]	0.003* [1.854]	0.003* [1.883]	0.003 [1.865]	0.005** [4.707]
Ln(Assets)	-0.014** [-2.562]	-0.016*** [-3.795]	-0.013*** [-2.830]	-0.164*** [-4.920]	-0.157*** [-5.061]	-0.157*** [-9.952]	-0.302*** [-9.842]
Industry and country effects	Yes	Yes	Yes	-	-	-	
Industry effects × time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,860	1,890	1,463	1,944	2,009	2,009	958
R-squared	0.761	0.777	0.780	0.488	0.488	0.488	0.683

*Note: If not indicated otherwise, the standard errors are clustered by firm. Robust t-statistics reported in the brackets. Constant not reported. \*\*\*, \*\* and \* represent significance at the 1, 5 and 10% levels*

Table 8: Robustness: Firm value and employee codetermination

	Matched sample	Matched sample 2006-2009	Scandinavia	Matched sample	Matched sample 2006-2009
	(1)	(2)	(3)	(4)	(5)
	S.E. clustered by country		S.E. clustered by firm		S.E. clustered by country
Crisis $\times$ ln(Assets)			0.002 [0.129]		
Crisis $\times$ Free Float			-0.001 [-1.022]	-0.002** [-2.479]	-0.001 [-2.232]
Crisis $\times$ Dual class			0.005 [0.090]	-0.008 [-0.206]	0.031 [1.750]
Crisis $\times$ ln(Firm age)			0.052** [2.038]	0.061*** [2.833]	0.080* [2.950]
Crisis $\times$ Employeeedir <sub>2006</sub>	0.033 [0.461]	0.020 [0.503]	0.059 [1.298]	0.020 [0.592]	
Crisis $\times$ (Employeeedir in %) <sub>2006</sub>					0.001 [0.574]
Crisis $\times$ (Volatility) <sub>t-1</sub>	-0.202 [-1.491]	-0.343** [-3.313]			
Ln(Firm age)	0.004 [0.051]	-0.045 [-0.637]	0.044 [0.481]	0.094 [1.347]	0.316 [2.143]
SalesGrowth	0.032 [1.077]	0.051* [2.977]	0.024 [1.367]	0.010 [0.590]	0.055** [3.832]
Femaleidir	-0.001 [-1.045]	-0.000 [-0.142]	-0.002** [-1.976]	-0.002* [-1.701]	-0.001 [-1.091]
Board size	0.024 [2.139]	0.016 [0.904]	0.016 [1.421]	0.015 [1.481]	0.010 [0.458]
Free float	0.000 [0.813]	-0.002* [-2.777]	0.000 [0.852]	0.001 [1.615]	-0.001 [-1.598]
Debt	0.001 [0.542]	0.001 [0.353]	0.000 [0.292]	0.000 [0.345]	-0.001 [-1.739]
ROA	0.005** [5.415]	0.004** [5.355]	0.004*** [3.459]	0.006*** [4.397]	0.003*** [8.174]
Asset tangibility	0.002 [1.106]	0.005*** [7.248]	0.002 [1.386]	0.002 [1.202]	0.004** [3.948]
Ln (Assets)	-0.150***	-0.274***	-0.175***	-0.161***	-0.309***

Volatility <sub>t-1</sub>	[-9.393] 0.169 [2.240]	[-8.708] 0.311* [2.521]	[-5.298]	[-5.166]	[-10.999]
Firm effects	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes
Industry effects × Time effects	Yes	Yes	Yes	Yes	Yes
Observations	1,900	895	1,884	1,920	921
R-squared	0.484	0.675	0.494	0.502	0.699

*Note: Robust t-statistics reported in brackets. Constant not reported. \*\*\*, \*\* and \* represent significance at the 1, 5 and 10% levels*