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Does good corporate governance include employee representation? Evidence from German corporate boards ☆

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Abstract

Within the German corporate governance system, employee representation on the supervisory board is typically legally mandated. We propose that such representation of labor on corporate boards confers valuable first-hand operational knowledge to corporate board decision-making. Indeed, we find that labor representation provides a powerful means of monitoring and reduces agency costs within the firm. Moreover, we show that the greater the need for coordination within the firm, the greater the potential improvement there is in governance effectiveness through the judicious use of labor representation. These benefits do not appear to hold for union representatives.

JEL classifications: G3; G30

Keywords: Labor representation; Corporate governance; Firm value

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1. Introduction

Over the past decade, intense research interest has focused on the role of the corporate board in creating firm value and offsetting the agency costs caused by the separation of ownership and control. The goal of this research has generally been to identify the board structure and composition that best incentivizes directors to maximize value creation. For instance, a number of cross-country comparative studies of corporate governance systems offer insights about optimal corporate board design (see Denis and McConnell, 2003, for a summary of this literature) and the interplay between board structure and the legal environment in which a firm operates (LaPorta et al., 2000b). In this paper, we are interested in the role of employee representation on corporate boards; we examine this relation using the case of Germany.

In the Anglo-American *shareholder system*, the fundamental objective of corporate governance is the optimal design of incentives and control mechanisms to maximize the return on equity capital given the separation of ownership and control (Shleifer and Vishny, 1997). In *stakeholder system countries*—e.g., Germany, Japan, and France—a broader view of corporate governance is often taken; the interests of a firm's other stakeholders, including creditors, employees, customers, suppliers, and government, are also considered (Hoshi, 1998; Schmidt and Tyrell, 1997). While in stakeholder systems the existence of various agency conflicts is acknowledged, the success of the firm is ultimately regarded as in the best interest of all parties. In theoretical work, Allen and Gale (2002) argue that in incomplete, imperfect markets, a stakeholder system of corporate governance that stresses cooperation between management and employees may allocate resources more efficiently in the long run than a shareholder system.

In this paper, we do not take a normative position concerning the validity of the stakeholder efficiency view; instead, we ask whether more comprehensive stakeholder involvement in the governance of a firm can increase firm value. Specifically, we ask whether employee membership on a corporate board can increase firm value. That is, we ask whether employee representatives—while seeking to govern the firm in a manner that protects their own interests—indirectly protect the interests of minority shareholders and thereby increase firm value.

We formulate four main hypotheses regarding the relation between employee representation and firm value. First, prudent levels of employee representation on corporate boards should provide the highest levels of the firm superior operational information and improve the board's decision-making. Second, industries that require more intense coordination and information-sharing activities should benefit more from employee board representation. Third, labor seats on the board should enhance monitoring of managers who shirk, take perks, or receive excessive salaries and reduce private blockholder privileges in much the same way as bankers on corporate boards do. Finally, the employee-management communication benefits associated with employee board seats should be bidirectional, providing workers and unions credible information about strategy and profits, and in turn reducing work halts and strikes.

The German business environment is an ideal context in which to analyze the above hypotheses because, given the government policy known as the *Mitbestimmungsrecht* (*Right of Codetermination*), German firms extend decision-making rights to employees. Beginning with the *Montanmitbestimmungsgesetz* of 1951, Germany requires that mining, coal, and steel workers enjoy 50% representation on their company's boards, with the

remaining 50% allocated to shareholders. The *Mitbestimmungsgesetz* of 1976 extends this right to all firms with more than 2,000 employees. For public corporations with 500–2,000 employees, the *Betriebsverfassungsgesetz* of 1952 requires that labor receive one-third of the board seats. Exceptions to codetermination include firms of any size that are family controlled or firms whose primary business relates to the media or to religious, union, or political activities.[1,2]

A publicly held German company (*Aktiengesellschaft* or *AG*) has a two-tiered board structure. The *Aufsichtsrat*, or supervisory board, has a role similar to that of American and British boards of directors, with responsibilities that include shaping long-term strategic objectives, improving profitability, selecting a chief executive, and reviewing the executive's performance (Prigge, 1998). The *Vorstand*, or (executive) management board, is responsible for firm operations. The supervisory board appoints and removes members of the management board and sets the management board's salaries, and the management board reports to the supervisory board. Because a German supervisory board's responsibilities are effectively similar to those of an American or British board (and because the effect of employee representation on the supervisory board is the subject of this paper), many of the implications of this paper can be generalized to other countries.

The codetermination laws also specify board size and election procedures. The supervisory board typically has as few as three and as many as 21 board members based on statutory capital, number of employees, and the codetermination statute that applies. Average size ranges from approximately nine to 13 depending on the study cited (Prigge, 1998). For our sample, which includes small firms, mean board size is about seven (see Table 1) and the total number of board members ranges from one[3] to 25.

To date, studies that examine the financial benefits of labor involvement in corporate governance are few. Existing studies of the German system examine the effect of the 1976 legislation described above or focus on noneconomic measures of performance such as a firm's capacity to make decisions and implement change or the ability of employees to influence corporate policy (see Gerum and Wagner, 1998, for a summary). The study most similar to our own is that of Gorton and Schmid (2004), which analyzes the effects of codetermination on the 250 largest publicly held German corporations. Gorton and Schmid compare firms with one-third employee representation to firms with one-half representation and show that on average the equity of firms with equal representation

[1]The allocation of employees among affiliated firms is often complicated by the use of control agreements (*Beherrschungs- und Gewinnabführungsvertrag*) under § 291 Aktiengesetz (AktG) and the integration of firms under § 319 AktG. In addition, the German codetermination law does not apply to employees that work outside of Germany.

[2]While labor representation is not compulsory for firms that have 499 or fewer employees, publicly traded corporations established prior to August 10, 1994 (the effective date of the law known as the *Gesetz für kleine Aktiengesellschaften und zur Deregulierung des Aktienrects*) are required to have one-third labor representation regardless of the firm's size.

[3]Bloomberg, our source for board composition data, provides current-year supervisory board composition and, hence, the number of occupied board seats. Apparent exceptions to § 95 AktG, which requires a minimum of three supervisory board members, are attributable, for example, to the retirement, resignation, or death of supervisory board members who have not yet been replaced. Similarly, apparent violations of the maximum of 21 board seats (for firms with less than ten million of capital stock, the maximum is lower) are attributable to the inclusion of all board members serving that year, including retired/resigned/deceased representatives and their replacements. When we remove these firms from the sample, all the results and statistical inferences in the paper remain unchanged.

Table 1
Description of German boards

Note: Table 1 provides descriptive statistics of the supervisory board composition for a sample consisting of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. The board composition data in Table 1 is obtained from Bloomberg. In this table, observations for firms with employee representation, bank representation, and union representation do not sum to the number of observations for all firms because some firms have employee, bank, and union representatives and others have no employee, bank, or union representatives.

	Firms with employee representatives		Firms with bank representatives		Firms with union representatives		All firms
	Employee representatives	All representatives	Bank representatives	All representatives	Union representatives	All representatives	All representatives
Mean	3.618	9.963	2.031	11.044	1.775	15.145	7.029
Min	1	3	1	3	1	4	1
25th percentile	2	6	1	6	1	12	3
50th percentile	3	9	1	11	2	14	6
75th percentile	5	13	2	16	2	20	9
Max	10	25	11	25	8	25	25
Observations	400	400	225	225	138	138	786

trades at a relative discount. They conclude that employee representation on the board can alter a firm's objective function away from maximizing shareholder value and toward maximizing payroll. Using the 250 largest firms in our sample, we replicate the Gorton and Schmid analysis and obtain similar results (Section 6.2 draws on these inferences and integrates our research with that of Gorton and Schmid).

In contrast to Gorton and Schmid (2004), our sample consists of all publicly traded (AG) German corporations as of 2003, including firms with varying degrees of labor representation (from zero to more than one-half) and firms for which labor representation is both optional and mandatory. This sample allows us to test whether any employee representation is beneficial relative to no representation. In addition, our fuller sample allows us to more thoroughly analyze the benefits, if any, of employee representation and to discern to a greater extent the preferred level of this representation.

Using this sample, we find that the information that employee representatives bring to the board and the monitoring capability that this information affords significantly improves firm value. First, we find first that the Tobin's Q for firms in industries that demand high levels of coordination with workers significantly improves with employee representation; these results do not hold if the employee is a union representative (and the employee does not work directly for the firm). Second, we find that firms with employee representation are more likely to pay a dividend; following, Faccio (2001) and LaPorta et al., (2000a), we interpret dividend payments as evidence of dampened insider expropriation and hence more effective monitoring. Third, we find that Tobin's Q for firms in more concentrated industries—i.e., industries with fewer competing firms and hence a greater sales-based Herfindhal index—is higher when employees are present on the corporate board; the reduced competition and greater free cash flow of concentrated industries indicates that employee representatives in these industries provide information that reduces the ability of management to take perquisites or reap private benefits of control. Fourth, we some find evidence in support of Gorton and Schmid's (2004) result that labor representation demonstrates diminishing marginal returns after some threshold level (approximately, one-third). However, higher levels (above one-third) still improve firm value in complex industries that demand high levels of coordination. To summarize, our analysis suggests that the judicious use of labor representation can increase firm value.

We believe this research is especially timely. First, what constitutes good and effective corporate governance has recently become a major concern in free enterprise economies around the world. For instance, Dahya et al., (2002) examine the potential importance of codes of corporate governance using a sample of UK firms, and find a significant increase in management turnover and turnover sensitivity to firm performance following the adoption of the *U.K.'s Code of Best Practices*. With respect to Germany, Tüngler (2000) identifies a significant transition from the detached supervisory boards studied by Edwards and Fischer (1994) to boards that are engaged in the active monitoring of management and firm performance. Similar to the *Code of Best Practices* of the Cadbury Committee in the UK, the *German Corporate Governance Code* (*Deutscher Corporate Governance Kodex*) was promulgated in February 2002. This *Code* sets new standards for responsible corporate governance and specifies the tasks and responsibilities of both the supervisory and management boards.[4] Although the adoption of the German Code is voluntary, our

[4]For example, Section 3.4 states: "…The Management Board informs the Supervisory Board regularly, without delay and comprehensively, of all issues important to the enterprise with regard to planning, business

survey of websites and annual reports from 2002, which include reports of the supervisory board, indicates the widespread intention to comply—often with detailed statements of compliance with the *Corporate Governance Code*—and a surprisingly active role of the supervisory board in governance.[5]

In addition, the debate in Germany with respect to codetermination itself has been very lively recently. For example, between April 2, 2004, and April 1, 2005, one of Germany's most respected newspapers, *Frankfurter Allgemeine Zeitung*, published 255 articles that dealt with codetermination. This debate has strong advocates on all sides of the issue, including the abolition, weakening, strengthening (e.g., lowering the firm size threshold for representation from 500 to 20 employees[6]), and export (to the rest of the EU) of codetermination. Two events seem central to this activism: First, amendments to one of the cornerstone pieces of codetermination legislation, *Betriebsverfassungsgesetz*, have recently been considered, and second, cross-border mergers of German firms with firms of other EU countries have caused great political controversy with respect to which country's laws should prevail on the subject of codetermination.

Finally, our research is timely given corporate governance shows signs of convergence in the face of both mounting global competition in financial and product markets and the international standardization of accounting and legal systems. See, e.g., Schmidt and Tyrell (1997) for a discussion of the convergence of corporate governance systems globally, and Clark and Wójcik (2005) and Wójcik (2003) for recent changes in the corporate governance structure of German firms in particular. Because corporate governance is in a state of global flux, alternative corporate governance practices such as codetermination are presently very much the subject of debate.[7]

The rest of the paper is organized as follows. Section 2 summarizes the underlying economics of labor representation. Section 3 describes the data, and Section 4 discusses our methodology. Section 5 interprets the results, Section 6 verifies result robustness, and Section 7 concludes.

2. The economic setting

While the theoretical literature on optimal corporate governance mechanisms is very promising, it is still only emerging. The role of employee representation in governance is

(*footnote continued*)
development, risk situation and risk management. The Management Board points out deviations of the actual business development from previously formulated plans and targets, indicating the reasons therefor[e]." Section 5.1.1 continues: "…The task of the Supervisory Board is to advise regularly and supervise the Management Board in the management of the enterprise. It must be involved in decisions of fundamental importance to the enterprise."

[5]For example, Bayer AG's website, which discusses the cooperation between the management and supervisory boards, notes: "[The supervisory board] is directly involved in decisions on matters of fundamental importance to the company and confers with the Board of Management regarding the company's strategic alignment. It also holds regular discussions with the Board of Management on the business strategy and the status of its implementation." We find similar statements on the websites of Siemens AG and many other firms.

[6]"Mitbestimmung bei mehr als 20 beschäftigten," *Frankfurter Allgemeine Zeitung*, July 25, 2002, p.42.

[7]For example, see *Börsen-Zeitung*, January 2, 2002, p. B22, (translated) "Financial Market Reform of Corporate Governance, the Supervisory Board System, and the [Anglo-American Single] Board Model Converge."

even less developed. In this section, we discuss the field's nascent understanding of the underlying economics of employee representation.

2.1. Perspective from the literature[8]

From the underlying economics, it is by no means clear whether codetermination rights should increase or decrease firm value. In Alchian and Demsetz' (1972) classical analysis of the firm, the private firm is allocationally efficient when all control and property rights reside in one agent, the firm owner: The owner pays a competitive wage, monitors worker shirking, and—because the owner is the residual claimant—has efficient incentives. With the introduction of codetermination, however, this simple picture of efficiency is clearly disturbed as property rights are now split between two agent types, each pursuing a different agenda. Key elements of the firm are absent from the Alchian and Demsetz (1972) analysis, however. Specifically, while in the neoclassical firm employees have no firm-specific skills, it is now generally agreed that employees do develop firm-specific human capital and, like the firm owner, employees make "investments" in the firm. Because long-term employment contracts either do not exist or lack specificity and because these human capital investments are nontransferable, employees may fear future opportunism; indeed, returns on human capital investments (i.e., wages) commensurate with investment may never materialize (assuming asymmetry of information between the firm and new employees and ignoring the effects of owner reputation). Furubotn and Wiggins (1984) suggest that codetermination may intercede against such opportunism: By resolving the time inconsistency problem and ensuring future rewards for worker commitment, codetermination can promote human capital investment and thereby increase firm value.

A criticism of codetermination is that it interferes with natural economic forces in a competitive economy. As Jensen and Meckling (1979) observe,

> If co-determination is beneficial to both stockholders and labor, why do we need laws which force firms to engage in it? Surely, they would do so voluntarily. The fact that stockholders must be forced by laws to accept co-determination is the best evidence we have that they are adversely affected by it.

Moreover, according to the transaction-cost theory of Williamson (1975), competitive forces drive the firm to its lowest-cost organizational form. Because codetermination laws are exogenously imposed, it follows that natural and efficient governance is not achieved.

However, the above criticism does not take into account the observation, discussed in Levine and Tyson (1990), that coordination problems may impose substantial frictions on competitive forces. If these frictions are substantial, we would not observe the outcomes described by Jensen and Meckling (1979) or Williamson (1975). As in the standard prisoner's dilemma, the first-best outcome may not obtain in equilibrium without coordination. To see this, suppose that codetermination increases firm value and consider any single firm that implements codetermination on its own. The compensation differential between management and workers is likely to fall, and worker job security is likely to rise, as the bargaining power of labor capital improves. Consequently, this single firm is likely to lose its best management talent and attract the least productive workers. Thus, adverse selection induces a negative externality if codetermination is unilaterally introduced. With coordination, however, perhaps through legislation, the benefits of codetermination can be realized.

[8]This subsection benefits from Gerum and Wagner (1998).

As Freeman and Lazear (1995) discuss, codetermination provides for the credible exchange of information between the firm's board and workers. During times of poor firm performance, the employees will be well aware of the firm's problems and will be forthcoming with concessions. Conversely, during times of strong firm performance, labor will expect to benefit. At the very least, codetermination should decrease the probability of a costly strike when the firm truly cannot afford a wage increase. Moreover, the free and credible exchange of information that follows from codetermination should improve cooperation and lead to a team approach to management. Indeed, because codetermination provides workers with operational expertise a forum for sharing operational insights with the highest levels of management, this increased flow of information should result in efficiency gains. Therefore, employee representation creates an "information intermediary" between management and labor.

Importantly, labor representation introduces a highly informed monitor to the board that reduces managerial agency costs (such as shirking, perk-taking, and excessive salaries) and private benefits of blockholder control. The corporate governance literature provides a rich set of monitoring agents and mechanisms. For example, in contrast to the widely held firm, in which no one shareholder has the incentive to monitor, Stiglitz (1985) observes that concentrated share ownership incentivizes the holder of a large block of shares to monitor the firm and maximize its value. In the international corporate governance context, however, the relevant agency conflict is typically that between small and large shareholders (see Shleifer and Vishny, 1997; Denis and McConnell, 2003). Specifically, large blockholders can enjoy private benefits of control through the expropriation of smaller capital providers (through tunneling, which is defined as the unfair pricing of asset transfers among subsidiaries, and entrenchment, which includes the blocking of takeovers and proxy fights). As Bebchuk (1999) discusses, the separation of voting rights and cash flow rights can lead to this inefficient redistribution of wealth. Moreover, Lins (2003) finds that when ownership and cash flow rights are aligned, firm value increases (consistent with the findings of Stulz (1988) for U.S. firms). Consequently, a larger ownership stake may be necessary to increase a blockholder's cash flow claim and thereby realign his interests with those of minority shareholders.

Many researchers propose that banks with board seats provide an additional source of outside monitoring in both Japan and Germany (e.g., Kester, 1993). The conventional wisdom is that bank representation on German boards is widespread, and through regular meetings of the board, bank representatives monitor and influence corporate strategy. For example, Cosh et al. (1990), Grundfest (1990), and Hallett (1990) suggest that bank representatives provide a monitoring service that counters managerial myopia, preemptively reorganizes management before problems arise, and effects necessary changes in corporate strategy. This position is by no means unopposed, however. In a widely cited piece of literature, Edwards and Fischer (1994) argue that the conventional wisdom regarding the benefits of the German bank-based system with respect to economic growth and effective governance are overstated.[9] Tüngler (2000, p. 233) rationalizes these opposing views by writing:

> The focus of the supervisory board's work has begun to shift more and more towards advising and counselling the management board…controlling and supervising the

[9]We thank an anonymous referee for bringing this issue to our attention.

> management in time in order to prevent worse consequences… These duties and the appointment of a management board are the main tasks of the supervisory board.

Cable (1985) and Gorton and Schmid (2000) offer evidence that the value and performance of German firms improve as bank board representation and equity ownership rise. Bank representation may reduce the agency costs that stem from the separation of ownership and control. We draw a parallel between the role of employee representatives and bankers on the board. Like the banker who protects creditor interests, employees who protect labor interests indirectly protect the claims of small shareholders and increase firm value. Unlike the banker, however, labor representatives have potentially detailed knowledge of operations, new project feasibility, and the relative benefits of competing new technologies. Consequently, we propose that firms in industries that require coordination and special skills or knowledge, such as trade, transportation, computers, pharmaceuticals, other manufacturing, and construction, especially benefit from employee representation. Moreover, due to their human capital investment in the firm, labor representatives, unlike bankers, are in a sense residual claimants like the shareholders.

In the Anglo-American model of corporate governance, management nominates the members of the board, who the shareholders then elect. This process promotes close ties between management and the board. If project choices have imbedded in them private benefits for management and only management has the ear of the board, a situation arises in which investment decisions are based in part on the perks the project confers and the empire-building motives of management rather than purely on economic returns. In the German model, a large percentage of board members are nominated and elected by the employees of the firm and thus an informed labor presence on the board may reduce the likelihood that perk-based investments are proposed and funded. As we address in the next section, however, excessive labor representation may reintroduce a similar investment inefficiency.

2.2. *Employee representation's effect on firm value*

While the prudent use of labor in corporate governance can be value enhancing, the excessive influence of labor can create a firm that is a "country club" for workers. This view is consistent with the work by Gorton and Schmid (2004), who show that moving from one-third to one-half labor representation destroys firm value. Consequently, we postulate an inverted U-shaped relation between firm value and labor representation.

When on the left-hand side of the inverted U-curve, labor representation increases firm value by acting as a conduit for the flow of new information. Labor representatives on the board provide unique insight into project feasibility and therefore improve corporate decision-making. Anecdotal evidence supports this positive role for codetermination. For example, Jürgen Schrempp, chairman of the management board of Daimler–Chrysler, contends that cooperation with unions and workers is central to the efficient solution of problems, citing the cost- and job-savings package negotiated between Mercedes-Benz and the union in July 2004 as an example.[10] Hartmut Mehdorn, chairman of the management board of the German railway transportation system, shares Schrempp's view, claiming that the recent restructuring and cost reductions in the German railroads would not have been

[10]"Schrempp lobt die Mitbestimmung," *Frankfurter Allgemeine Zeitung*, March 21, 2005, p. 14.

possible without labor fully on board, and asserting that codetermination proved itself valuable during critical periods in which employees formed solutions to the problems at hand.[11]

Another form of labor representation in business decision-making in Germany is *Work Councils Codetermination*. Under these laws, plants must have councils that are elected by workers; firms with multiple plants must have aggregate councils, and holding companies (*Konzerne*) with multiple firms must have group councils. A clear benefit from this structure is the communication of acquired expertise throughout a plant and across plants within firms. Furthermore, in firms with over 100 permanent employees, employees must also establish a business and finance committee (*Wirtschaftsausschuss*). This committee is yet another mechanism through which information may be aggregated and analyzed. The firm must report in a timely fashion changes to the firm's financial position and any effect on the workforce. Vogel (1980) and Gerum et al., (1988) report that 74% (53%) of the employee representatives on supervisory boards of firms with a one-third (one-half) employee vote are chairmen, deputy chairmen, or ordinary members of the firms' various work councils. Prigge (1998, p. 1012) surmises:

> … at least as members of Wirtschaftsausschuss, work councilors can collect both a wide range of basic plant-level information as well as information on the business and financial situation. Conditions seem to be such that a works councilor sitting on the supervisory board has a solid information base at his disposal and, equally important, his information base most likely is highly complementary to the information the shareholder representatives have…from a mere informational perspective the makeup of the supervisory board…is a good starting point for management board monitoring… This may be one main reason why internal employee representatives are generally highly appreciated supervisory board members of the capital side.

Consistent with this assertion, we propose that the greater the need for coordination and the greater the complexity of the labor component of production, the greater is this potential benefit from employee representation.

Note that we would not expect this result to hold for union representatives, who do not work for the firm and hence do not have direct operational knowledge. An interesting difference between the one-third and one-half employee representation regimes compared by Gorton and Schmid (2004) is the greater likelihood of the involvement of union representatives as opposed to true employees on the supervisory board. According to Gerum et al., (1988), 29% of the "employee" representatives are external union representatives for firms with one-half representation. In contrast, Vogel (1980) reports that for firms with one-third representation, only 3% of the employee representatives come from trade unions. However, this distinction between employee representatives and union representatives is not examined by Gorton and Schmid (2004).

In the other direction, labor representation creates a credible vehicle through which information may be conveyed to the unions. While the Anglo-American model often leads to adversarial labor-firm relations, the basis for this tension is likely the asymmetry of information. We hypothesize that the greater degree of transparency that is achieved

[11]"Bahnchef lobt Mitbestimmung und fordert Gewerkschaften heraus/Mehdorn plädiert für längere Arbeitszeit und weniger Zulagen/Transnet droht mit Protesten,"*Frankfurter Allgemeine Zeitung*, November 8, 2004, p.13.

through direct board representation reduces labor-firm antagonism, engenders a team approach to problem solving, and allows natural synergies to emerge that ultimately benefit shareholder value. Johannes Huth, chief of the leveraged buy-out firm Kohlberg, Kravis, and Roberts's (KKR's) German operations, supports codetermination, stating that during difficult phases of a business restructuring, codetermination avoids the confrontation common in other countries: "we have been able to put decisions through more quickly with employees on board."[12] Moreover, Huth claims that employee codetermination brings energy into the enterprise as employees feel they are insiders and therefore are responsible for the success of the firm.

When the firm is on the left-hand side of the inverted U-curve, labor also acts as a monitor and check on the private control benefits of large shareholders and the perquisite-related abuses and excessive salaries of management. If only management proposes board members, then only management has access to the board, in which case it is likely that project choices are made in part due to benefits to large shareholders or management that do not improve firm value and hence shareholder wealth. Conversely, employees' detailed knowledge of operations allows them to act as a check on choices that are made for the benefit of large owners and management to the detriment of firm viability and hence labor interests. Thus, this whistle-blowing function of labor increases firm value and, indirectly, protects small shareholders. We therefore anticipate that a labor presence on the board should reduce asset stripping, management perk-taking, and management salaries, and increase the payout of cash flows in the form of shareholder dividends.

Turning to the right-hand side of our proposed inverted U-shaped function, excessive labor representation can reintroduce some of the agency problems that labor representation is meant to cure: The improved assessment of project feasibility may give way to the selection of technologies that maximize payroll rather than minimize the cost of production. That is, given excessive labor representation, project choice may be based in part on labor, rather than management, perquisites. Indeed, Roe (1998) proposes that excessive codetermination may diminish German supervisory board power as firms look for ways to circumvent the power of the employee representatives. Of the major sources of corporate governance (boards of directors, takeovers, product and capital market competition, and concentrated ownership), Roe believes that only concentrated ownership is effective in Germany. Franks and Mayer (2001) confirm high levels of concentration in Germany: in 85% of their sample of 171 publicly traded commercial and industrial firms, the largest shareholder owns at least 25% of the voting stock, and in 57% of their sample, the largest shareholder owns over 50% (also see Becht and Böhmer, 1997). In comparison, in our sample of 786 large and small firms, we find that in 53% the largest shareholders own at least 25% of the voting stock, and in 39% the largest shareholder owns over 50% of the voting stock. In addition, many large German firms remain family controlled, thereby avoiding subjection to codetermination laws, and in turn reducing the power of labor. Roe (1998) also notes that firms further circumvent employee representation by substituting an informal system of frequent out-of-the-boardroom meetings between management and the largest shareholder for formal governance by the board. To the extent that such governance and ownership structures are a response to a constraint

[12]"KKR plant 2005 weitere Börsengänge in Deutschland Johannes Huth, Deutschland-Chef von Kohlberg Kravis Roberts, über Private Equity, Mitbestimmung und das Duale System," *Frankfurter Allgemeine Zeitung*, November 16, 2004, p.15.

imposed by codetermination legislation on an otherwise efficient economy, firm value suffers. In light of both the costs and benefits associated with codetermination, the relation between firm value and employee representation is an empirical question.

3. Data

3.1. Data sources

Our data consist of all publicly held firms incorporated in Germany that traded on a German stock exchange in 2003. Sample firms must be jointly available on Bloomberg and Thomson Financial's Worldscope database as of August 2003. From Bloomberg we obtain the supervisory board composition and from Worldscope we obtain measures of accounting performance, market capitalization, and business and geographic segment data as of fiscal year-end 2002.[13] In total, this sample consists of 786 firms. In addition, we calculate measures of industry concentration using the sales-based Herfindhal index and the business segment data for all German firms included in the Worldscope database. This larger sample consists of 991 firms.

3.2. Summary of univariate results

Table 1 provides a description of the supervisory board for firms with employee representatives, bank representatives, and union representatives. Approximately 51% of the firms (400 out of 786 firms) have employee representation on their supervisory boards. Among firms with employee representatives, the mean (median) number of these representatives is 3.618 (3), and, as the median board size for these firms is nine, the median employee representation on boards with employees is one-third. In addition, 146 out of 400 firms, or 36.5%, have labor representation in excess of the statutory requirements. The mean (median) percentage of employee representation on the boards of these firms is 0.397 (0.348). When we classify these 146 firms into subgroups according to their minimum representation levels as required by the codetermination laws (see the Introduction), we find that 88 firms have more than zero and fewer than 500 employees and a mean (median) percentage of employee representation of 0.321 (0.333), 23 firms have 500–2,000 employees and a mean (median) percentage of employee representation of 0.422 (0.400), and 35 firms have more than 2,000 employees and a mean (median) percentage of employee representation of 0.571 (0.550).

The breakdown for bank representation is much different. Specifically, 29% of the firms (225 out of 786) have bank representation on the supervisory boards (almost half of the number with employee representatives). Roughly, 18% (138 out of 786) of the firms have a union representative, and among these, there is an average of 1.775 union representatives.

Table 2 compares firms based on whether they have employee representation on their boards and provides summary statistics of firm characteristics. The table also provides tests for the statistical differences in these measures. We see that firms with employee representation are significantly larger with respect to sales and assets and are relatively more profitable. Consistent with our supposition that employee representatives intervene against poor investment choices by management, we see that both capital expenditures and

[13]For 669 out of a total of 786 firms, this fiscal year-end is December 31, 2002.

Table 2
Accounting performance by employee representation

Note: Table 2 provides paired differences of the means (medians) of accounting performance for firms with and without labor representation on their supervisory boards. The total number of observations for R&D/Sales is slightly reduced due to missing values. Leverage Ratio is defined as total debt divided by total assets. Dividend Yield is defined as dividends per share over the year-end market price. Dividend payout ratio is defined as dividends per share divided by earnings per share. Ownership Concentration is obtained from Worldscope and is the sum of all blockholder ownership. Generally, blockholders are defined in Worldscope as owners of 5% or more of the firm's shares. A firm's industrial concentration measure is the sales-weighted average of the Herfindhal indexes for each of its business segments, where the segments are defined by their two-digit SICs and the Herfindhal index is calculated using all German firms found on Worldscope as of August 2003 with valid segment sales data (991 firms). Industrially Diversified is the percentage of firms with more than one business segment (defined by its four-digit SIC). A firm is industrially diversified when no business segment accounts for more than 90% of sales. Geographically Diversified is the percentage of firms with more than one geographic segment as defined in Worldscope. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Block Percent 25 equals one when the largest shareholder owns at least 25% of the shares; Block Percent 50 and Block Percent 75 are similarly defined. Family Ownership is an indicator that assumes a value of one if a family owns 5% or more of a firm's shares. Tobin's Q is defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. The p-values for differences in means are from a standard t-test; those for medians are from a Wilcoxon ranked sums test. Medians are not reported for indicator variables.

Firm characteristics	No employee representation mean (median)	Employee representation mean (median)	Difference p-value mean (median)
Sales (€ MM)	129.3	393.6	0.000
	(37.4)	(357.4)	(0.000)
Assets (€ MM)	222.6	1,320.0	0.000
	(49.2)	(370.5)	(0.000)
Operating income/sales	−0.352	−0.053	0.000
	(−0.068)	(0.009)	(0.000)
Capital expend/sales	0.208	0.067	0.160
	(0.030)	(0.034)	(0.572)
R&D/sales	0.033	0.011	0.007
	(0.000)	(0.000)	(0.126)
Leverage ratio	0.199	0.232	0.037
	(0.119)	(0.199)	(0.013)
Dividend yield	0.012	0.025	0.000
	(0.000)	(0.018)	(0.000)
Dividend payout ratio	0.089	0.229	0.000
	(0.000)	(0.000)	(0.000)
Ownership concentration	0.197	0.407	0.000
	(0.000)	(0.360)	(0.000)
Industry concentration	0.219	0.232	0.304
	(0.139)	(0.191)	(0.035)
Industrially diversified	0.236	0.358	0.000
Geographically diversified	0.223	0.363	0.000
Block percent 25	0.332	0.713	0.000
Block percent 50	0.205	0.563	0.000
Block percent 75	0.096	0.373	0.000
Family ownership	0.0803	0.0950	0.4669
	(0.000)	(0.000)	(0.4672)
Tobin's Q	1.419	1.349	0.344
	(1.038)	(1.126)	(0.000)
Number observations	386	400	

R&D as a ratio to sales are lower among firms with employee representatives. This result is also consistent with the signaling model of Bebchuk and Stole (1993) and our conjecture that, unopposed, management would inefficiently overinvest in long-term projects, such as equipment installation, plant construction, and R&D, that have uncertain productivity. Further, Table 2 provides evidence that dividend yields and payout ratios are significantly greater (more than double) for firms with employee representation. This result supports our contention that employee representatives reduce agency costs such as the agency cost of free cash flow discussed in Jensen (1986). We also find support for the hypothesis of Roe (1998), that ownership concentration is often higher in firms that have employee representation: The mean (median) value is 40.7% (36.0%) for firms with employee representation versus 19.7% (0.0%) for firms without employee representation. The indicators *Block Percent 25, Block Percent 50*, and *Block Percent 75*,[14] which equal one when the largest blockholder owns more that each respective percentage, are all greater among firms with employee representation. These differences are significant at the 1% level. Lastly and perhaps most interestingly, firms with employee representation have a significantly higher median value for Tobin's Q than do firms without employee representation (1.126 vs. 1.038).[15]

4. Methods

We present a series of cross-sectional multivariate regressions using Tobin's Q (the ratio of the market value of equity (MVE) plus the book value of assets (BVA) minus the book value of equity (BVE) all over the book value of assets (BVA))[16] as the dependent variable, an indicator for labor representation as an independent variable, and control variables that include measures of firm size, business segment and geographic diversification, ownership

[14]Franks and Mayer (2001) explain that these three levels are important thresholds for control in Germany: "A minority stake greater than 25% provides a blocking minority which may be used, for example, to prevent issues of new shares or the dismissal of members of the supervisory board, and when the company's constitution requires it, the removal of a voting restriction. A majority stake of less than 75% allows wide control over the management of the firm, but is subject to a blocking minority…A stake of 75% is not subject to a blocking minority." The use of these thresholds has become common; see, for example, Jenkinson and Ljungqvist (2001).

[15]An anonymous referee makes an interesting observation: if employee representatives limit the private benefits of control, then the size of the premiums paid in large block sales transactions should be lower when employees sit on the board. Dyck and Zingales (2004) study such transactions and measure the private benefits of control in 39 countries. We thank these authors for providing us their data for German firms. Of the 20 German firms, 14 have supervisory board data on Bloomberg: four have no employee representation whereas the remaining ten do. Unfortunately, the small sample size does not permit a statistically significant inference. We also select all block transactions between 1997 and 2004 for the firms in our sample with data available in the SDC Platinum database of equity transactions. Of the 63 transactions we find, 41 (22) of them involve firms with (without) employee representation. Consistent with our view that employee representation reduces private benefits of control, we find the control premium, measured as a percent increase over the post-announcement price, is 5.67% lower for firms with employee representation than for firms without. However, these results are not statistically significant ($p = 0.23$). (We would have liked to examine the differences in a second measure of private benefits of control used by Rydqvist (1987), Zingales (1994, 1995), and Nenova (2001), namely, the price differential between shares with the same cash flow rights but different voting rights. However, we note that *The Economist* ("What shareholder democracy?" March 23, 2005) reports that 97% of the German firms in the FTSE Eurofirst 300 index have one vote per share. In addition, Claussen (1996) notes that a maximum of 30 AGs in Germany—primarily utility firms—have shares with multiple voting rights.)

[16]This measure for Tobins's Q is used in Lins (2003) and Doidge et al., (2004). A similar measure is also used by Fama and French (1998), LaPorta et al., (2002), and Aggarwal and Samwick (2003).

concentration, bank board membership, industry concentration, industry classification, leverage, and several interaction terms. We select this set of control variables because of their importance in previous studies. As a robustness check, following LaPorta et al., (2002) and Lins (2003), we replace Tobin's Q and repeat our analyses using MVE to BVE and gross operating income (sales less cost of goods sold less depreciation) to BVA as two alternative dependent variables. Generally, our results hold for the alternative valuation measures.

4.1. Controls for known corporate governance factors

Prior research consistently shows that ownership concentration and business and geographic diversification have important implications for firm value. Controlling for these factors has therefore become common practice in research on corporate governance (see, for example, Gorton and Schmid, 2004, for ownership concentration and Ang et al., 2000, for diversification). Accordingly, we include these measures to allow for comparison with prior research and to evaluate more clearly the effect of employee representation.

In contrast to the US, for which studies find that blockholdings of shares rarely have a meaningful effect on firm value (see, e.g., Holderness, 2003), Gorton and Schmid (2000) and Lins and Servaes (1999) find that German firms with concentrated control rights trade at a premium as measured by Tobin's Q. In our sample, the mean total blockholder ownership is about 20% (40%) for firms without (with) employee representation. Generally, Worldscope defines blockholders as owners of 5% or more of the firm's shares. We control for this ownership concentration through three bins of continuous variables, namely, *OWN10, OWN10-30*, and *OWN30+*. This structure is similar to that of Morck et al., (1988), McConnell and Servaes (1990), and Lins and Servaes (2002) and allows for a nonlinear relation. The first variable assumes values between zero and 10%, the second between zero and 20%, and the third between zero and 70%. These variables are cumulative. For example, when blockholders control 75% of the firm, $OWN10 = 0.10$, $OWN10\text{-}30 = 0.20$, and $OWN30+ = 0.45$ $(0.10 + 0.20 + 0.45 = 0.75)$.[17]

A priori, allowing for nonlinearity in the effect of ownership on value is important because a blockholder may have very different incentives as his ownership stake varies. Sufficiently high levels of ownership should align his interests with those of minority shareholders and create an incentive to generate positive cash flow. Less of an ownership stake (while not adversely affecting the blockholder's effective control) may place cash flow from share ownership secondary to the private benefits of control, e.g., asset stripping, investor dilution, empire building or crony capitalism, and unfair transfer pricing. This suboptimal governance should lead to lower firm value. These benefits may be closely related to a diversification strategy. In fact, diversification may be a symptom of these problems. See Lins and Servaes (2002) for a study of these effects in emerging markets and Denis and McConnell (2003) and LaPorta et al., (2000b) for a general overview of these issues.

Lang and Stulz (1994) document that US firms diversified by business segment trade at a discount as measured by Tobin's Q. Berger and Ofek (1995) draw a similar conclusion using an excess value measure. While Lins and Servaes (1999) confirm this finding for Japan and the UK, they are unable to find a diversification discount in Germany.

[17]We try other ownership bins and obtain similar results.

Similar to Lins and Servaes, we define a firm as business-segment diversified when no more than 90% of a firm's sales can be attributed to one four-digit SIC segment. With respect to geographic diversification, we define a firm as geographically diversified when no more than 90% of its sales can be attributed to one geographic segment as defined by Worldscope.

The international corporate governance literature also proposes other factors that affect corporate governance through agency conflicts. For Germany, prominent among these, but not without controversy (as we discuss in Section 2), is the positive monitoring role that bank representatives play on the supervisory board. Because Cable (1985) and Gorton and Schmid (2000) show that firm value increases with bank supervisory board representation and equity control rights, we include a bank indicator variable that equals one if at least one board member is a bank representative.

Easterbrook (1984) and Jensen (1986) argue that unless excess cash is disgorged from the firm, it is wasted or diverted to activities that privately benefit insiders to the detriment of outsiders. In an international context, LaPorta et al., (2000b) conclude that dividends are paid in response to the demands of minority shareholders, who intervene against expropriation by insiders (when the legal system provides them adequate protection and power). Therefore, we include an indicator of whether a dividend is paid to capture a possible reduction in the expropriation of small, outside shareholders by controlling shareholders as suggested by Faccio et al., (2001). Similarly, to control for the disciplining effect of debt in a firm's capital structure (Jensen, 1986), we include leverage as an explanatory variable. In addition, to control for the effect of firm size, profitability, and growth opportunities, we include the natural logarithm of total assets, the ratio of operating profits to sales, and the ratio of capital expenditures to sales (Lang and Stulz, 1994; Berger and Ofek, 1995; Lins and Servaes, 1999).

4.2. New corporate governance factors

We argue that there may also be an interaction between product market competition and the effect of employee representation on firm value. We identify two opposing effects: First, competition should enhance the benefits of cooperation between employees and owners. On this account, board membership should provide a credible means to convey information such as the vulnerability of the firm's competitive position and profits. Consequently, labor-induced costs should fall. Second, and in the opposite direction, industry concentration should lead to higher profits and less incentive for management to perform, thereby creating an environment rife with cash flow agency costs and inefficient investment (see Dyck and Zingales, 2004, pp. 576–577, for a related discussion). Consequently, employee representatives equipped with detailed operations-level information should be vehicles for the communication of such inefficiency to the board, and employee representation should improve the monitoring effectiveness of the supervisory board and add value to firms in concentrated industries. Whether employee representation benefits firms in competitive or concentrated industries is an empirical question. Several of our regressions include a concentration measure; we calculate this measure as the sales-weighted average of the Herfindhal index values of the firm's business segments.

Importantly, we propose that firms in industries that demand intense coordination or involve specially skilled and knowledgeable workers should benefit most from employee representation: for these industries, the higher degree of information flow that board

representation provides should be more valuable. The literature has yet to establish which industries correspond to "high-coordination" industries. A search of the strategic management, operations management, and management science literature indicates that coordination and complex information flow are critical issues in industries that require supply chain management: "Supply chain management requires heavy emphasis on integration of activities, cooperation, coordination and information sharing throughout the entire supply chain, from suppliers to customers" (Lourenco, 2004, p. 1). Moreover, a major component of supply chain management is transportation and logistics management (Thomas and Griffin, 1996) and bidirectional flow of information (Cooper et al., 1997).[18] Consequently, we include SIC groupings for which, a priori, supply chains or, more generally, complex serial processing, are a central component of the industry's operations.

5. Discussion and implications

5.1. Regression results with employee representation and industry SIC classification

Univariate evidence appears to suggest that firms with employee representation have a higher Tobin's Q. However, we have not yet controlled for other factors that are known to affect this measure. Such variables include indicators for industry and geographic diversification, profitability, growth opportunities, size, leverage, dividend payout, and ownership concentration. In this section, we use several multivariate regression models to test whether firms in industries that are labor intensive, require specialized production knowledge, or demand high levels of coordination benefit from employee representation on their boards. To classify industries that benefit from higher information flow and greater skill in coordination, we use the firm's primary two-digit SIC. We define these industry classifications below and in Table 3.

Model 1 of Table 3 includes the employee representation indicator along with several firm characteristics. The analysis illustrates that employee representation neither significantly increases nor decreases firm value as measured by Tobin's Q. However, geographic and industry diversification clearly decreases firm value. The latter result contrasts with Lins and Servaes (1999), who examine a sample of larger German firms but do not observe an industry diversification discount.[19] Our results are consistent with the reasoning of LaPorta et al., (2000a) and the results of Lins and Servaes (1999) for the UK and Japan: diversification reflects an agency cost between blockholder(s) and minority shareholders and leads to a discount of approximately 16% to 33%. We also find that size, as measured by the log of assets, has a negative and significant effect on firm value, similar to the results of Fauver et al., (2004), Lins and Servaes (1999), and Lang and Stulz (1994). Note that firms that pay a dividend have a greater value than those that do not pay dividends, which suggests that dividends reduce the agency cost of free cash flow (Easterbrook, 1984; Faccio et al., 2001; Jensen, 1986; LaPorta et al., 2000b). In contrast, leverage appears to play no significant role in the analyses of Table 3. The coefficients are even negative, opposite to the free-cash-flow arguments of Jensen (1986).

Models 2 and 3 test whether firms benefit more from employee representation in industries that demand greater coordination, labor involvement, and more specialized

[18]See Duboisa et al. (2004) for a discussion of the supply chain literature.

[19]However, Lins and Servaes (1999) do not control for geographic diversification.

Table 3
Regression of Tobin's Q on employee representation, industry SIC classification, and ownership concentration

Note: Table 3 provides the results of regressions of Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. Employee (Bank) Representation Indicator assumes a value of one when the supervisory board has one or more employee (bank) representative and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend Indicator assumes a value of one if the firm pays a dividend and zero otherwise. Trade Industry Indicator takes on a value of one if any two-digit segment SIC is equal to 50–59, and zero otherwise. Transportation Industry Indicator takes on a value of one if any two-digit segment SIC is equal to 40–49. Manufacturing Industry Indicator takes on a value of one if the segment SIC is equal to 28–29, or 33–39. The interaction of Employee Representation Indicator with an industry indicator takes on a value of one when a firm has employee representation and does business in that specific industry. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) t-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	−0.183	−0.176	−0.161
	(−3.57)***	(−3.48)***	(−3.23)***
Geographic diversification indicator	−0.253	−0.237	−0.138
	(−5.16)***	(−4.80)***	(−2.29)**
Employee representation indicator	0.069	−0.072	−0.113
	(0.89)	(−0.67)	(−1.06)
Bank representation indicator	0.020	0.011	0.010
	(0.24)	(0.14)	(0.13)
Log (assets)	−0.062	−0.062	−0.053
	(−3.37)**	(−3.34)***	(−2.75)***
Operating income/sales	0.029	0.038	0.043
	(0.30)	(0.39)	(0.44)
Capital expenditures/sales	−0.000	0.002	0.004
	(−0.01)	(0.12)	(0.26)
Leverage ratio	−0.398	−0.367	−0.356
	(−1.55)	(−1.44)	(−1.40)
Dividend indicator	0.170	0.173	0.186
	(2.22)**	(2.26)**	(2.43)**
Trade industry indicator		−0.457	−0.446
		(−3.58)***	(−3.43)***
Employee representation × trade industry		0.453	0.453
		(3.00)***	(2.97)***
Transportation industry indicator		−0.372	−0.353
		(−2.32)**	(−2.23)**
Employee representation × transportation industry		0.491	0.447
		(2.56)**	(2.33)**
Manufacturing industry indicator		−0.218	−0.230
		(−1.89)*	(−1.97)**
Employee representation × manufacturing industry		0.303	0.319
		(2.16)**	(2.28)**

Table 3 (*continued*)

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
OWN10			−2.686
			(−2.23)**
OWN10–30			−0.486
			(−0.74)
OWN30+			0.615
			(3.40)***
Constant	2.259	2.345	2.288
	(10.63)***	(10.49)***	(10.44)***
Number observations	786	786	786
R^2	0.055	0.067	0.077

employee skill sets. The industry indicator variables for trade (SICs = 50–59), transportation (SICs = 40–49), and manufacturing (SICs = 28–29, 33–39) consistently and significantly negatively affect firm value.[20] Notwithstanding, the presence of employee representatives on the board alleviates these negative effects. When the employee representation indicator is interacted with each of these industry indicators, we observe a positive and significant effect on firm value. Moreover, the magnitudes of the interaction coefficients show that the benefits from employee representation substantially offset the ill effects of process complexity. For example, in Model 2, we see that the coefficient on the trade indicator is −0.457, but if employees are represented on the board, the industry effect is mitigated such that the net effect falls to −0.004 (= −0.457 + 0.453). We infer that employee board representation in complex, coordination-intensive industries increases firm value. In contrast to Cable (1985), but consistent with Edwards and Nibler (2000), we find little evidence in favor of a value-creating role for bank representation on the supervisory board. Although consistently positive in our analyses, the bank representation indicator is never significant.

Model 3 introduces ownership measures. The marginal effect of additional ownership concentration when blockholders own less than 10% of the firm's shares is negative and significant, while the marginal effect when ownership exceeds 30% is positive and significant. We infer that larger ownership concentration aligns blockholder interests with cash flow maximization and reduces blockholders' incentives to expropriate small shareholders' claims. This result also follows Roe's (1998) conjecture that only concentrated ownership is beneficial to firm value in Germany. As in Model 1, industrial diversification, geographic diversification, and size negatively affect firm value. In sum,

[20]We also analyze other industries that, a priori, involve complex tasks, such as the pharmaceutical industry (SIC = 28) and the computer industry (SIC = 35), interacting each with employee representation. We obtain similar results: both interactions have a positive effect on firm value. While construction also appears, a priori, to be an industry characterized by complex serial processing, the coefficient on the interaction between employee representation and the construction indicator is positive but not statistically significant. We note that the computer and pharmaceutical industries also fall within our manufacturing industry SICs, and the SICs included in our trade dummy are a subset of those used by Bodnar and Gentry (1993).

Table 3 lends support to the notion that employee representation adds value to firms involved in information- and labor-intensive industries.[21,22]

Recalling that 146 firms from our sample have employee representation above the statutory minimum (see Section 3.2 for a statistical discussion), we analyze the possible effect of voluntary employee representation. To do so, we repeat the analyses of Table 3, but this time we include an indicator variable that assumes a value of one when the firm has employee representation in excess of the statutory requirement. In all three models, we find (in untabulated results) a positive and significant coefficient on the optional representation indicator, supporting the view that firms that increase their employee representation above the statutory level benefit from the additional representation. An interesting interpretation of this result harkens back to Coase: if labor representation is beneficial, labor will have seats on the board irrespective of the legal system, assuming there are few of the coordination frictions discussed by Levine and Tyson (1990) and described in Section 2.1.[23] We find that both the numerical values and statistical significance of all the other estimated coefficients on the original explanatory variables remain similar to their original values except for the coefficient on the employee indicator in Model 3, which becomes negative and significant at the 10% level.[24] We also remove the 146 firms from the sample and repeat the analyses exactly as in Table 3 but with 640 firms and obtain similar results.

Next, we run analyses to test for the effect of a union representative and observe that union representation—unlike employee representation—does not significantly increase firm value. This result is consistent with the results of Faleye et al., (2005) on corporate governance and unions. We also run analyses to test for the effect of family ownership as these firms are often exempt from the codetermination laws. Both when we include an indicator for family ownership in the models of Table 3 and when we restrict the sample to the 717 firms that have no family ownership, we find no qualitative or quantitative changes in our results.[25] Lastly, we replace *Dividend Indicator* with a continuous dividend variable in the models of Table 3 and find no substantive differences in our results.

[21]Instead of using ownership bins as in Model 3 of Table 3, we also use indicators that equal one when the holdings of the largest shareholder equals or exceeds 25%, 50%, and 75% (*Block Percent 25, 50,* and *75*, respectively, as defined in Table 2). See footnote 13 for a discussion of the significance of these thresholds. When we run this modified version of Model 3, we find evidence consistent with private benefits of control: the coefficients on *Block Percent 25* and *Block Percent 75* are positive and significant. The coefficient on *Block Percent 50* is negative, though not significant. This nonlinear relation is parallel to the findings of Morck et al., (1988) for the US: Tobin's Q rises for increases in ownership concentration up to 5%, falls, and then rises again for ownership in excess of 25%.

[22]Similar to Himmelberg et al. (1999), we conduct regression analyses that include R&D-to-sales as an independent variable to control for discretionary spending by management. The coefficient is negative, but never significant. While all of our results remain qualitatively similar, our sample size declines due to missing observations for R&D.

[23]We thank an anonymous referee for making this observation.

[24]Publicly traded corporations established prior to August 10, 1994 are required to have one-third labor representation regardless of the number of employees (see footnote 2). Therefore, as a robustness check, we remove from the sample 28 firms with more than zero and less than 500 employees and with *exactly* one-third labor representation (as their representation may not be in excess of their statutory requirement) and repeat these analyses. The results are qualitatively and statistically very similar.

[25]LaPorta et al., (1999) show that family ownership in Germany is 10%. Similarly, we find family ownership in our data sample equals 8.8%.

5.2. Logit regression results of dividend payment on employee representation

A second benefit of employees on the supervisory board is their potential role as highly informed monitoring agents. In such a whistle-blowing capacity, employees can provide information about the economic feasibility of projects and curb investment in managerial perquisites, expropriation by large insiders seeking private benefits of control, and cronyism. To test this conjecture, we follow Faccio et al., (2001) and LaPorta et al., (2000b) and measure the reduction of perquisites and private benefits by the payment of dividends. Using logit regressions, we test whether firm dividend payout increases when employees sit on the supervisory board.

Table 4 provides the results of these logit regressions. Models 1–3 all show that a firm is significantly more likely to pay out cash as a dividend when employees are present on the board. These results are consistent with Faccio et al., (2001) who document that group-affiliated firms in Europe pay higher dividends to reduce expropriation by insiders. In addition, we observe that the interaction of the employee representation indicator with the operating-income-to-sales ratio is also positive and significant, providing more evidence that labor facilitates the payment of a cash dividend and mitigates expropriation by insiders and large shareholders. We interpret these results to mean that employee representatives bring to the table a knowledge base that complements that of the shareholder representatives. Thus, we infer that proposed investments are more thoroughly screened when employees sit on the board, and projects that do not benefit small shareholders are less likely to be funded.

5.3. Ownership concentration, industrial diversification, and industrial concentration

In this section, we extend the analyses in Table 3 and consider the interactive effect of employee representation with ownership concentration, industrial diversification, and industrial concentration. As in Table 3, ownership has an interesting relation with firm value in Tables 5 and 6. In Models 2 and 3 of both tables, for levels of ownership concentration no greater than 30% (*OWN10* and *OWN10–30*), we see evidence of the private benefit of control: additional ownership destroys firm value. At these moderate levels of ownership concentration, we infer that the benefits of control to larger shareholders through the expropriation of small shareholders dominate the accompanying losses from lower firm value. In contrast, we see that when ownership concentration exceeds 30% (*OWN30+*), the incentives of controlling shareholders are sufficiently aligned with firm value maximization (or, equivalently, control rights are aligned with cash flow rights), in which case there may arise a monitoring benefit from concentrated ownership as discussed by Stiglitz (1985). The latter results are consistent with Gorton and Schmid (2000) who report an increase in the value of German firms as ownership concentration rises.[26]

Interestingly, when the ownership concentration variables are interacted with employee representation in Model 3 of Tables 5 and 6, the coefficient for moderate levels of

[26]However, relative to studies of the effects of *managerial* ownership concentration in the US, the 30% threshold seems high. Morck et al., (1988) find that among US firms, the marginal entrenchment effects of managerial ownership dominate the incentive alignment effects when ownership exceeds 5%. In a similar study of US firms, Short and Keasey (1999) find that the entrenchment effects do not dominate until ownership exceeds 12%.

Table 4
Logit regression of dividend payment on employee representation

Note: Models 1–3 of Table 4 provide the results of logit regressions with the Dividend Indicator (this indicator assumes a value of one if the firm pays a dividend and zero otherwise) as the dependent variable on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. Employee (Bank) Representation Indicator assumes a value of one when the supervisory board has one or more employee (bank) representative and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. In addition, Models 1–3 of Table 4 include the interaction of Employee Representation Indicator with Operating Income/Sales, and Model 3 includes the interaction of Employee Representation Indicator with ownership bin OWN10–30 and ownership bin OWN30+. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) *t*-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: dividend indicator		
	(1)	(2)	(3)
Industrial diversification indicator	–0.581	–0.517	–0.511
	(–2.35)**	(–2.07)**	(–2.06)**
Geographic diversification indicator	0.287	0.281	0.284
	(1.26)	(1.04)	(1.05)
Employee representation indicator	0.965	1.046	1.120
	(4.15)***	(4.43)***	(3.71)***
Bank representation indicator	0.266	0.249	0.238
	(1.06)	(0.99)	(0.93)
Log (assets)	0.183	0.190	0.192
	(2.81)***	(2.81)***	(2.82)***
Operating income/sales	3.829	3.859	3.876
	(3.77)***	(3.79)***	(3.78)***
Capital expenditures/sales	–0.138	–0.151	–0.148
	(–0.57)	(–0.61)	(–0.59)
Leverage ratio	–1.007	–1.052	–1.045
	(–2.11)**	(–2.19)**	(–2.17)**
Employee representation × operating income/sales	12.147	12.555	12.598
	(4.57)***	(4.67)***	(4.66)***
OWN10		–4.827	–5.020
		(–0.78)	(–0.81)
OWN10–30		4.139	5.016
		(1.23)	(1.27)
OWN30+		−1.242	−1.452
		(−1.82)*	(−1.00)
Employee representation × OWN10–30			−1.337
			(−0.41)
Employee representation × OWN30+			0.331
			(0.20)
Constant	−3.521	−3.584	−3.649
	(−4.95)***	(−4.92)***	(−4.86)***
Number observations	786	786	786
R^2	0.298	0.302	0.302

Table 5
Regression of Tobin's Q on employee representation, industrial diversification, and ownership concentration

Note: Table 5 provides the results of regressions with Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. Employee (Bank) Representation Indicator assumes a value of one when the supervisory board has one or more employee (bank) representative and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend Indicator assumes a value of one if the firm pays a dividend and zero otherwise. The table includes an interaction of Employee Representation Indicator with Industrial Diversification Indicator. The interaction of Employee Representation Indicator with the Industrial Diversification Indicator takes on a value of one when a firm has employee representation and is industrially diversified. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. Model 3 includes the interaction of Employee Representation Indicator with ownership bin OWN10–30 and ownership bin OWN30+. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) t-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	−0.360	−0.320	–0.258
	(−3.91)***	(−3.71)***	(–3.20)***
Geographic diversification indicator	−0.264	−0.166	–0.164
	(−5.28)***	(−3.09)***	(–3.08)***
Employee representation indicator	−0.023	−0.048	–0.182
	(−0.23)	(−0.49)	(–1.48)
Bank representation indicator	0.028	0.025	0.046
	(0.35)	(0.31)	(0.58)
Log (assets)	−0.064	−0.055	–0.057
	(3.44)***	(−2.91)***	(–3.05)***
Operating income/sales	0.030	0.035	0.042
	(0.30)	(0.36)	(0.43)
Capital expenditures/sales	−0.002	0.001	0.005
	(−0.09)	(0.03)	(0.26)
Leverage ratio	−0.392	−0.382	–0.390
	(−1.54)	(−1.49)	(–1.53)
Dividend indicator	0.175	0.185	0.175
	(2.29)**	(2.44)**	(2.32)**
Employee representation × industrial diversification	0.320	0.270	0.140
	(2.82)***	(2.43)**	(1.36)
OWN10		−2.285	–1.979
		(−2.00)**	(–1.70)*
OWN10–30		−0.621	–1.618
		(−0.95)	(–2.31)**
OWN30+		0.595	0.466
		(3.36)***	(2.25)**
Employee representation × OWN10–30			2.080
			(2.46)**
Employee representation × OWN30+			−0.009
			(−0.03)
Constant	2.319	2.260	2.337
	(10.42)***	(10.37)***	(10.39)***
Number observations	786	786	786
R^2	0.060	0.069	0.077

Table 6
Regression of Tobin's Q on employee representation, industrial concentration, and ownership concentration

Note: Table 6 provides the results of regressions with Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. Employee (Bank) Representation Indicator assumes a value of one when the supervisory board has one or more employee (bank) representative and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend Indicator assumes a value of one if the firm pays a dividend and zero otherwise. The table includes an interaction of Employee Representation Indicator with Industrial Concentration. A firm's concentration is defined as the sales-weighted average of the Herfindhal indexes for each of its business segments, where business segments are defined based on their two-digit SICs. A Herfindhal index is calculated using all German firms found on Worldscope as of August 2003 with valid segment sales data (991 firms). Models 1–3 of Table 6 include the interaction of Employee Representation Indicator with the Industrial Concentration measure. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. Model 3 includes the interaction of employee representation indicator with ownership bin OWN10–30 and ownership bin OWN30+. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) t-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	–0.174	–0.159	–0.170
	(–3.40)***	(–3.15)***	(–3.26)**
Geographic diversification indicator	–0.259	–0.155	–0.161
	(–5.20)***	(–2.84)***	(–2.94)***
Employee representation indicator	–0.055	–0.117	–0.314
	(–0.47)	(–0.98)	(–2.09)**
Industrial concentration	–0.401	–0.407	–0.424
	(–1.26)	(–1.28)	(–1.33)
Bank representation indicator	0.018	0.016	0.042
	(0.22)	(0.20)	(0.54)
Log (assets)	–0.062	–0.053	–0.056
	(–3.37)***	(–2.78)***	(–2.98)***
Operating income/sales	0.029	0.035	0.043
	(0.30)	(0.37)	(0.44)
Capital expenditures/sales	–0.002	0.000	0.004
	(–0.10)	(0.01)	(0.22)
Leverage ratio	–0.403	–0.394	–0.402
	(–1.56)	(–1.52)	(–1.57)
Dividend indicator	0.172	0.183	0.173
	(2.23)**	(2.40)**	(2.29)**
Employee representation x industrial concentration	0.556	0.634	0.666
	(1.55)	(1.74)*	(1.82)*
OWN10		–2.630	–2.272
		(–2.17)**	(–1.85)*
OWN10–30		–0.595	–1.667
		(–0.88)	(–2.24)**
OWN30+		0.652	0.488
		(3.66)***	(2.32)**

Table 6 (*continued*)

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Employee representation × OWN30+			−0.021
			(−0.07)
Constant	2.350	2.293	2.412
	(10.12)***	(10.07)***	(10.02)***
Number observations	786	786	786
R^2	0.058	0.069	0.079

ownership is positive and significant. This result obtains whether *OWN10* or *OWN10–30* is interacted with employee representation or it is not.[27] Employees on the board appear to monitor and reduce the expropriation of small shareholders by powerful blockholders who would otherwise govern the firm to maximize their own private benefits of control rather than share value. We infer that actions such as asset stripping are more transparent to employee representatives familiar with firm operations than to outside board members.

As in Table 3, the negative coefficients on the diversification indicators are consistent with an agency cost between blockholder(s) and minority shareholders that leads to a discount. Table 5 provides additional insight, however. The interaction term between the industrial diversification indicator and employee representation is significant and positive in Models 1 and 2. Labor representation can significantly reduce the expropriation effects of a diversification strategy. This result is consistent with Lins and Servaes (1999), who find that among German firms, inside ownership and diversification jointly increase firm value. We interpret these results as evidence of labor's greater understanding of operational detail and additional insight into the possible synergies associated with a diversification strategy. That is, with employee involvement in supervisory board decisions, the likelihood that corporate diversification creates economic value increases, and the likelihood that the diversification strategy is a means to private benefits of control decreases.

The analyses in Table 6 address the impact of industrial concentration (i.e., industries with fewer competing firms and hence a greater sales-based Herfindhal index). We see that concentration alone has no significant effect on firm value. Yet, when interacted with employee representation, again we see a positive and significant effect in Models 2 and 3. As industrial concentration increases, the discipline of the product market competition lessens, free cash flow increases, and manager-owner agency conflicts arise. We suggest that the benefit of employee representation stems from the increased quality of the information available to the board: employee representatives reduce the costs of incomplete information by providing credible advice as to the feasibility of proposed projects and expenditures. In this way, the board as a whole may more easily identify potential agency costs.

[27]Only two of the ownership bins may be interacted with employee representation in any one regression as otherwise the regressor matrix is singular. We report the results for *OWN10–30*.

6. Extensions and robustness checks

6.1. Optimal labor representation

As we hypothesize in Section 2, the prudent use of labor may be a central issue to optimal corporate governance. Here we ask whether excessive labor representation has a negative effect on firm value as implied by the right-hand side of our hypothesized inverted U-curve. To test this conjecture, we return to the base case models of Table 3, but we add three additional indicator variables: *Employee Representation 0–33*, which replaces *Employee Representation*, assumes a value of one if employee representation strictly exceeds zero but is less than one-third, and zero otherwise; *Employee Representation 33–50* assumes a value of one if employee representation weakly exceeds one-third but is less than one-half; and, *Employee Representation 50+* assumes a value of one if employee representation weakly exceeds one-half, and zero otherwise. As in earlier analyses, these new indicators are interacted with the industry indicators.

Table 7 reports these results and shows that only *Employee Representation 33–50*, when interacted with the trade, transportation, and manufacturing indicators in Models 2 and 3, has a coefficient that is positive and significant. We therefore infer that it is not the mere presence of labor on the board that builds shareholder wealth, but rather a presence of between approximately one-third and one-half of the board seats. These results provide statistical support for our earlier conjecture that the judicious use of labor representation is crucial. In general, representation of less than one-third or in excess of one-half has little effect on firm value (i.e., the effect is generally positive but statistically insignificant).

6.2. Comparison with Gorton and Schmid

With the exception of Model 3, Table 6, *Employee Representation* is never both negative and significant. These results appear to contrast with those of Gorton and Schmid (2000, 2004), who find a negative and significant relation. However, the Gorton and Schmid (2000) study accounts for the effect of employee representation through an indicator that equals one when labor representation equals shareholder representation, and zero otherwise, and uses a sample that consists of the largest 100 firms based on sales (roughly speaking) drawn for the years 1975 and 1986. Similarly, the Gorton and Schmid (2004) study compares firms that are subject to one-third and one-half employee representation and uses a sample of the largest 250 nonfinancial firms based on market capitalization for the years 1989 to 1993. In contrast, our analyses consider all publicly traded German AGs as of 2003 that are subject to one-half, one-third, or no codetermination. In this section, we again show that the benefits of employee representation depend not only on the presence of labor on the board but also on the judicious use of labor in corporate governance.

We perform analyses similar to those in Table 5 of Gorton and Schmid (2004), where Tobin's Q is the dependent measure. First, we construct a sample parallel to that of Gorton and Schmid by only including the largest 250 nonfinancial firms in our data. Second, we replace our employee indicator variable with the Gorton and Schmid analog. Specifically, their indicator assumes a value of one if employee representatives constitute one-half of the board and zero otherwise. Third, we eliminate several control variables not used by Gorton and Schmid, such as our industry indicators and the associated interaction

Table 7
Regression of Tobin's Q on employee representation levels, industry SIC classification, and ownership concentration

Note: Table 7 provides the results of regressions of Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. Employee Representation 0–33 assumes a value of one if employee representation exceeds zero but is strictly less than one-third, and zero otherwise. Employee Representation 33–50 assumes a value of one if employee representation weakly exceeds one-third but is strictly less than one-half. Employee representation 50+ assumes a value of one if employee representation weakly exceeds one-half. Several interaction terms that include these new indicator variables are also included. Bank Representation Indicator assumes a value of one when the supervisory board has one or more bank representatives and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend Indicator assumes a value of one if the firm pays a dividend and zero otherwise. Trade industry Indicator takes on a value of one if any two-digit segment SIC is equal to 50–59, and zero otherwise. Transportation industry indicator takes on a value of one if any two-digit segment SIC is equal to 40–49. Manufacturing industry indicator takes on a value of one if the segment SIC is equal to 28–29, or 33–39. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) t-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	−0.183	−0.174	−0.158
	(−3.54)***	(−3.42)***	(−3.17)**
Geographic diversification indicator	−0.253	−0.243	−0.138
	(−5.12)***	(−4.91)***	(−2.32)**
Employee representation indicator 0–33	0.074	0.095	0.052
	(0.70)	(0.55)	(0.32)
Employee representation 33–50	0.058	−0.156	−0.204
	(0.70)	(−1.43)	(−1.88)*
Employee representation 50+	0.074	0.091	0.061
	(0.86)	(0.63)	(0.40)
Bank representation indicator	0.020	0.001	−0.003
	(0.24)	(0.01)	(−0.03)
Log (assets)	−0.062	−0.061	−0.052
	(−3.29)***	(−3.17)**	(−2.58)*
Operating income/sales	0.029	0.041	0.047
	(0.30)	(0.43)	(0.50)
Capital expenditures/sales	−0.000	0.002	0.004
	(−0.01)	(0.09)	(0.24)
Leverage ratio	−0.004	−0.004	−0.003
	(−1.54)	(−1.39)	(−1.35)
Dividend indicator	0.171	0.172	0.183
	(2.22)**	(2.21)**	(2.36)**
Trade industry indicator		−0.458	−0.446
		(−3.58)***	(−3.41)***
Employee representation 0–33 × trade industry		0.178	0.133
		(0.78)	(0.63)

Table 7 (*continued*)

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Employee representation 33–50 × trade industry		0.643	0.658
		(3.71)***	(3.71)***
Employee representation 50+ × trade industry		0.125	0.109
		(0.67)	(0.55)
Transportation industry indicator		−0.373	−0.355
		(−2.32)**	(−2.23)**
Employee representation 0–33 × transportation industry		0.348	0.272
		(1.31)	(1.00)
Employee representation 33–50 × transportation industry		0.686	0.671
		(2.51)**	(2.46)**
Employee representation 50+ × transportation industry		0.209	0.153
		(0.92)	(0.67)
Manufacturing industry indicator		−0.211	−0.227
		(−1.88)*	(−1.92)*
Employee representation 0–33 × manufacturing industry		−0.165	−0.191
		(−0.73)	(−0.91)
Employee representation 33–50 × manufacturing industry		0.458	0.489
		(2.90)**	(3.09)**
Employee representation 50+ × manufacturing industry		0.070	0.088
		(0.40)	(0.49)
OWN10			−3.147
			(−2.53)**
OWN10–30			−0.326
			(−0.49)
OWN30+			0.638
			(3.66)***
Constant	2.263	2.339	2.284
	(10.28)***	(10.09)***	(10.00)***
Number observations	786	786	786
R^2	0.056	0.073	0.084

terms with employee representation. Fourth, we add SIC indicators similar to those used by Gorton and Schmid.[28]

These robustness checks replicate the results of Gorton and Schmid very well. Specifically, we find that the coefficient on the equal representation indicator is −0.3636 with a t-statistic of −3.63 and an observed significance of less than 0.01, which compare well with the results reported by Gorton and Schmid (coefficient, *t*-statistic): (−0.3093, −5.157) in 1989, (−0.3364, −5.703) in 1990, (−0.2803, −5.315) in 1991, (−0.3064, −6.328) in 1992, and (−0.2786, −5.471) in 1993.

We infer that the difference between the results for our complete sample of 786 firms and those of Gorton and Schmid is that they restrict their sample to only the largest firms. Approximately half of their sample has firms with one-third employee representation and

[28]In our regression we have not included the percent ownership of insiders, banks, and government, as we do not have access to these variables.

the remaining half has 50% representation. Consequently, their analysis is not able to test whether one-third employee representation is beneficial relative to no representation, as all of their firms have employee representation. In contrast, our sample of German firms allows us to analyze the benefits of more levels of employee representation and to discern, to a greater extent, the preferred level of employee representation.

A second explanation for the difference between our results and those of Gorton and Schmid is the greater likelihood of the involvement of union representatives as opposed to true employees on the supervisory board for firms with one-half employee representation. Gorton and Schmid do not examine this distinction. A third reason that our results differ from those of Gorton and Schmid is that they do not examine the interaction of complex and high-coordination industries and employee board representation.

6.3. Endogeneity

An important question in many areas of empirical corporate governance is that of endogeneity. With respect to this paper, one might ask whether a higher Tobin's Q makes it more likely that a firm chooses to place employees on the supervisory board. Certainly, the German codetermination laws are predetermined and universal across firms (nevertheless, they provide only lower bounds to employee representation). While we feel this reverse causality is unlikely, we cannot rule it out. Consequently, in this section we implement an instrumental variables approach similar to that used by Campa and Kedia (2002) and Doidge et al., (2004).

German codetermination laws induce a strong, exogenous positive relation between the number of firm employees and the number of employee representatives on the supervisory board. Hence, we use employee count as an instrument for the employee representation indicator and we repeat the analyses reported in Tables 3, 5 and 6. Specifically, we employ a two-stage procedure. In the first stage, we fit the employee indicator to a logit model that includes all the regressor variables in each model, except that the firm's employee count replaces the employee representation indicator. In the second stage, we use this fitted value of the employee indicator in otherwise identical regressions to the original models in Tables 3, 5 and 6 and report these results in the Appendix in Tables A.1–A.3, respectively.

This approach creates a continuous variable over the [0, 1] interval that loses some of the power of the simple indicator. Nevertheless, we observe evidence in favor of our coordination argument. Comparing Table A.1 to Table 3, the signs are the same on the coefficients of the (fitted) employee representation-industry indicator interaction terms, and the coefficients remain statistically significant for the manufacturing industry in Model 3. Comparing Table A.2 to Table 5, the benefits to employee representation on a firm with low-to-moderate ownership concentration remain the same, with the coefficient on the (fitted) employee representation-$OWN10$–30 interaction term positive and significant. Interestingly, the coefficient on the employee representation-$OWN30+$ interaction term is now not only negative, as in Table 5, but also statistically significant. This result provides new evidence of an agency cost of excess labor representation—the right-hand side of our hypothesized inverse U-shaped relation. When ownership becomes sufficiently concentrated, the control rights of the firm become aligned with the cash flow rights and the monitoring incentives of the large ownership block largely supplant the monitoring benefits of labor. Only the self-serving effects of labor, such as the incentive for payroll maximization, remain.

Similar to Table 5, Table A.2 also shows that the coefficient on the interaction term between the industrial diversification indicator and employee representation is significant and positive in Models 1 and 2. Again, the results in Table 5 are robust to controls for endogeneity, and we see that labor representation can significantly reduce the expropriation effects of a diversification strategy. Lastly, Table A.3 shows that the coefficient on the interaction terms between industrial concentration and employee representation are positive though never significant. These results are qualitatively consistent with those in Table 6.

6.4. Direct tests of employee representative restraint of managerial agency costs

Our hypothesis is that employee representatives on the supervisory board reduce agency costs of outside management such as excessive management board salaries and perk-taking. While historically, salary data have generally not been available for German CEOs, they are now being collected as part of the corporate governance reforms initiated by the former Schröder government.[29] We therefore use the 2003 German management board salary study published in the July 2004 issue of the German periodical, *Manager Magazin*. The data include 59 publicly traded firms, all of which are in our sample and have employee representation on the supervisory board. To these data, we add a manually collected random sample from annual reports of 59 firms from our sample that have no labor representation. For all 118 firms, we calculate the average per-capita management board salary.

To test this hypothesis we run two classes of regression models. In the first, we regress average management board salary on a constant, our employee representation indicator variable, and the log of firm assets, where the latter two variables are as defined in Table 3. We find that the coefficient on the employee indicator is −131.51, with a (robust standard error) t-statistic of −1.80 and p-value of 0.074. In the second, we run the models of Table 3 with average management board salary as the dependent variable. For Model 1, for example, we find that the coefficient on the employee indicator is −229.35, with a (robust standard error) t-statistics of −2.98 and a p-value of 0.004. The results for the other models are similar. We infer that salaries are indeed lower for firms with labor representatives. Nevertheless, we recognize that the issue of compensation equity between labor and management, rather than excessive manager salaries, could explain these results.

Next, we turn to the role of employee representatives in agency cost reduction more generally. We are interested in measuring shirking and consumption of perquisites such as lavish office space, purchase of resort properties, and investment in unprofitable pet projects. To measure these agency costs we follow Ang et al., (2000) and use the operating expense to sales ratio.[30] Ang et al. reason that "excessive expense on perks and other nonessentials should be reflected in the operating expenses. Strictly speaking, agency costs that are measured by this ratio are those incurred at the firm level (i.e., shirking and perquisite consumption by managers)."

To test this hypothesis while controlling for other factors that affect profitability, we again run two classes of regression models. In the first, we regress the operating expense to

[29]Landler, M., "Pay-Disclosure Law Advances in Germany," *The New York Times*, May 19, 2005.

[30]Similar to Ang et al., (2000), we define operating expenses as total expenses less cost of goods sold, interest expenses, and managerial compensation.

sales ratio on a constant, our employee representative indicator variable, and the log of firm assets, where the latter two variables are as defined in Table 3. Using our sample of 106 firms with valid operating expense data (56 with employee board representation and 50 without), we find that the coefficient on the employee indicator is −0.293, with a (robust standard error) *t*-statistic of −2.29 and a *p*-value of 0.024. In the second, we run the models of Table 3 with the operating expense to sales ratio as the dependent variable. For Model 1, for example, we find that the coefficient on the employee indicator is −0.263, with a (robust standard error) *t*-statistic of −1.87 and a *p*-value of 0.065. All the models support the inference that perk-taking behavior is lower for firms with labor representatives.

7. Conclusion

We show that prudent levels of employee representation on corporate boards can increase firm efficiency and market value. This result contrasts with that of Gorton and Schmid (2004). Although the optimal representation is likely below 50%, the level often mandated by law for large German corporations, it is certainly positive. We interpret our results as implying that there is an inverse U-shaped relation between firm value and employee representation on German corporate boards. We propose that employee representation provides a credible channel for the flow of information to the highest levels of the firm. Consequently, this superior information improves decision-making by the board. Moreover, we find that industries that require more intense coordination, integration of activities, and information sharing, that is, industries such as trade, transportation, computers, pharmaceuticals, and other manufacturing, benefit more from employee board representation. For moderate levels of employee representation, inclusion of labor seats on the board also leads to additional monitoring of managers and a reduction in private blockholder privileges. For example, this better information makes clearer the underlying incentives of management and large shareholders that propose diversification strategies and other investments of free cash flow. Armed with better information, the supervisory board may more easily recognize and thwart investments and strategies that represent private control benefits to large shareholders or management through asset stripping, pyramiding, dilution of small investors, crony capitalism, and simple perquisites. Lastly, we propose that this communication channel may be bidirectional. Employee representation on the board provides workers and unions credible information about firm strategy and profits that should reduce work halts and strikes. Note that our results do not indicate that union representatives on the supervisory board increase firm value; this is not surprising, however, because unlike employee representatives, union representatives generally do not work for the firm.

As with banker representation on boards, however, the judicious use of the monitor is important. Excessive bank power on the board leads the firm to operate in the creditors interests and pass up risky though profitable investments (Macey and Miller, 1995, 1996).[31] In a similar fashion, when employee representation reaches an excessive level, it may be the case that labor itself becomes the source of an agency cost as employees seek their own perks, exert their influence to maximize payroll rather than stock price, and create a situation in which the monitors themselves need to be monitored.

[31]However, the German universal banking system permits equity ownership by banks and may reduce these ill effects.

Appendix. Instrumental variable regressions of Tobin's Q are given in Tables A.1–A.3

Table A.1
An instrumental variable regression of Tobin's Q on employee representation, industry SIC classification, and ownership concentration

Note: Table A.1 provides the results of regressions of Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. The employee representation indicator is replaced with the fitted value of a logit regression of the employee representation indicator on the number of employees as well as all other explanatory variables in the model. Hence, Employee Representation Instrument is calculated separately for each of the three models. Bank Representation Indicator assumes a value of one when the supervisory board has one or more bank representatives and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend Indicator assumes a value of one if the firm pays a dividend and zero otherwise. Trade Industry Indicator takes on a value of one if any two-digit segment SIC is equal to 50–59, and zero otherwise. Transportation Industry Indicator takes on a value of one if any two-digit segment SIC is equal to 40–49. Manufacturing Industry Indicator takes on a value of one if the segment SIC is equal to 28–29, or 33–39. The interaction of Employee Representation Instrument with an industry indicator takes on a strictly positive value when a firm has employee representation and does business in that specific industry. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) t-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	−0.157	−0.166	−0.182
	(−3.06)***	(−3.07)***	(−3.34)***
Geographic diversification indicator	−0.240	−0.247	−0.161
	(−4.94)***	(−5.06)***	(−2.71)***
Employee representation instrument	−0.320	−0.315	−0.064
	(−0.84)	(−0.73)	(−0.15)
Bank representation indicator	0.046	0.033	0.002
	(0.57)	(0.38)	(0.02)
Log (assets)	−0.031	−0.034	−0.052
	(−0.89)	(−0.92)	(−1.46)
Operating income/sales	0.043	0.043	0.037
	(0.44)	(0.45)	(0.38)
Capital expenditures/sales	−0.004	−0.001	0.007
	(−0.25)	(−0.07)	(0.40)
Leverage ratio	−0.373	−0.361	−0.356
	(−1.46)	(−1.41)	(−1.39)
Dividend indicator	0.242	0.230	0.177
	(2.87)***	(2.54)**	(1.96)*
Trade industry indicator		−0.198	−0.206
		(−0.67)	(−0.73)
Employee representation instrument × trade industry		0.139	0.085
		(0.36)	(0.24)
Transportation industry indicator		−0.069	−0.186
		(−0.23)	(−0.76)

Table A.1 (*continued*)

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Employee representation instrument × transportation industry		0.015	1.600
		(0.04)	(0.50)
Manufacturing industry indicator		−0.155	−0.311
		(−0.76)	(−1.90)*
Employee representation instrument × manufacturing industry		0.236	0.454
		(0.79)	(1.81)*
OWN10			−2.461
			(−2.08)**
OWN10–30			0.600
			(−0.74)
OWN30+			0.636
			(1.77)**
Constant	2.039	2.100	2.268
	(7.70)***	(6.81)***	(7.44)***
Number observations	786	786	786
R^2	0.056	0.058	0.071

Table A.2
An instrumental variable regression regression of Tobin's Q on employee representation, industrial diversification, and ownership concentration

Note: Table A.2 provides the results of regressions with Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. The employee representation indicator is replaced with the fitted value of a logit regression of the employee representative indicator on the number of employees as well as all other explanatory variables in the model. Hence, Employee Representation Instrument is calculated separately for each of the three models. Bank Representation Indicator assumes a value of one when the supervisory board has one or more bank representatives and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend Indicator assumes a value of one if the firm pays a dividend and zero otherwise. The interaction of Employee Representation Instrument with Industrial Diversification Indicator takes on a strictly positive value when a firm has employee representation and is industrially diversified. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. Model 3 includes the interaction of Employee Representation Instrument with ownership bin OWN10–30 and ownership bin OWN30+. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) t-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	−0.418	−0.392	–0.278
	(−3.03)***	(−3.27)***	(–2.44)**
Geographic diversification indicator	−0.253	−0.166	–0.161
	(−5.14)***	(−2.86)***	(–2.78)***

Table A.2 (*continued*)

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Employee representation instrument	−0.403	−0.081	–0.564
	(−1.01)	(−0.21)	(–1.38)
Bank representation indicator	0.040	0.014	0.040
	(0.49)	(0.17)	(0.48)
Log (assets)	−0.033	−0.053	–0.033
	(−0.96)	(−1.55)	(–0.92)
Operating income/sales	0.044	0.038	0.064
	(0.45)	(0.40)	(0.71)
Capital expenditures/sales	−0.006	−0.000	−0.000
	(−0.36)	(−0.00)	(−0.02)
Leverage ratio	−0.373	−0.380	–0.368
	(−1.47)	(−1.49)	(–1.45)
Dividend indicator	0.230	0.179	0.228
	(2.75)***	(2.14)**	(2.60)***
Employee representation instrument × industrial diversification	0.458	0.394	0.210
	(2.24)**	(2.25)**	(1.23)
OWN10		−2.263	–1.563
		(−1.96)**	(–1.34)
OWN10–30		−0.618	–4.056
		(−0.79)	(–3.48)***
OWN30+		0.594	1.790
		(1.84)*	(2.23)**
Employee representation instrument × OWN10–30			5.585
			(3.61)***
Employee representation instrument × OWN30+			−1.722
			(−2.09)**
Constant	2.111	2.251	2.205
	(7.95)***	(8.11)***	(7.29)***
Number observations	786	786	786
R^2	0.058	0.068	0.075

Table A.3
An instrumental variable regression of Tobin's Q on employee representation, industrial concentration, and ownership concentration

Note: Table A.3 provides the results of regressions with Tobin's Q (defined as the market value of equity plus the book value of assets minus the book value of equity divided by the book value of assets) on the ratio Operating Income/Sales, the ratio Capital Expenditures/Sales, the natural logarithm of firm assets, the Leverage Ratio (defined as total debt divided by total assets), and several indicator variables. The employee representation indicator is replaced with the fitted value of a logit regression of the employee representative indicator on the number of employees as well as all other explanatory variables in the model. Hence, Employee Representation Instrument is calculated separately for each of the three models. Bank Representation Indicator assumes a value of one when the supervisory board has one or more bank representative and zero otherwise. A firm is industrially diversified when no business segment (four-digit SIC) accounts for more than 90% of sales. A firm is geographically diversified when no geographic segment accounts for more than 90% of sales. Industrial Diversification Indicator (Geographic Diversification Indicator) assumes a value of one if the firm is industrially (geographically) diversified, and zero otherwise. Dividend indicator assumes a value of one if the firm pays a dividend and zero otherwise. A firm's concentration is defined as the sales-weighted average of the Herfindhal indexes for each of its business segments, where business segments are defined based on their two-digit SICs.

Table A.3 (*continued*)

A Herfindhal index is calculated using all German firms found on Worldscope as of August 2003 with valid segment sales data (991 firms). Models 1–3 of Table A.3 include the interaction of Employee Representation Instrument with Industrial Concentration. The ownership variables are bins of continuous variables such that a firm whose largest shareholder controls 25% of the firm has an OWN10 equal to 0.10, an OWN10–30 equal to 0.15, and an OWN30+ equal to zero. Model 3 includes the interaction of Employee Representation Instrument with ownership bin OWN10–30 and ownership bin OWN30+. The sample consists of all publicly traded German firms jointly available from Bloomberg and Thomson Financial's Worldscope database as of August 2003. Heteroskedasticity-consistent (White, 1980) *t*-values are in parentheses. *, **, and *** imply statistical significance at the 0.10, 0.05, and 0.01 levels, respectively.

	Dependent variable: Tobin's Q		
	(1)	(2)	(3)
Industrial diversification indicator	–0.157	–0.170	–0.161
	(–3.00)***	(–3.24)***	(–3.10)***
Geographic diversification indicator	–0.241	–0.155	–0.156
	(–4.89)***	(–2.54)**	(–2.58)***
Employee representation instrument	–0.347	–0.003	–0.584
	(–0.79)	(–0.01)	(–1.27)
Industrial concentration	–0.120	–0.245	–0.246
	(–0.30)	(–0.61)	(–0.61)
Bank representation indicator	0.047	0.017	0.041
	(0.57)	(0.20)	(0.50)
Log (assets)	–0.032	–0.057	–0.038
	(–0.87)	(–1.61)	(–1.02)
Operating income/sales	0.042	0.033	0.060
	(0.43)	(0.35)	(0.65)
Capital expenditures/sales	–0.005	0.002	0.002
	(–0.27)	(0.09)	(0.09)
Leverage ratio	–0.371	–0.384	–0.377
	(–1.45)	(–1.50)	(–1.48)
Dividend indicator	0.243	0.179	0.222
	(2.84)***	(2.13)**	(2.54)**
Employee representation instrument × industrial concentration	0.127	0.279	0.314
	(0.24)	(0.53)	(0.60)
OWN10		–2.368	–1.589
		(–1.94)*	(–1.29)
OWN10–30		–0.678	–4.295
		(–0.85)	(–3.51)***
OWN30+		0.630	1.731
		(1.86)*	(2.19)**
Employee representation instrument × OWN10–30			6.140
			(3.89)***
Employee representation instrument × OWN30+			−1.693
			(−2.12)**
Constant	2.074	2.291	2.294
	(6.91)***	(7.33)***	(6.77)***
Number observations	786	786	786
R^2	0.055	0.066	0.076

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