

# Motives for Multiple Board Memberships and Their Impact on Corporate Performance\*

First Draft, July 17<sup>th</sup> 2009

## Abstract

This Paper analyzes motives for multiple board memberships of executives and supervisory board members and their impact on firm performance using a sample of the biggest German companies between 1996 and 2006. Our empirical analysis reveals two key findings. Supervisory boards with external executives from comparable industries seem to have a positive impact on firm performance. Moreover multiple directorships of union representatives on the supervisory board are related with weaker firm performance. Several other forms of personal linkages between companies have no significant effect on firm performance, when we control for firm fixed-effects.

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\* The article reflects the views of the authors and not necessarily those of the Monopolies Commission or the German Council of Economic Experts.

## 1. Introduction

Personal linkages between the biggest German firms via management and supervisory board mandates have been subject to academic, political and public debate since many years. In particular, the presumed negative relationship between outside directorships of managers as well as supervisors and the quality of control is regularly seen as a sign for weak corporate governance.<sup>1</sup> As a respond to the existing deficits, the updated German Corporate Governance Codex recommends in its recent version a maximum number of three additional external supervisory board seats for incumbent managers (*German Corporate Governance Codex*, June, 18<sup>th</sup> 2009, para. 5.4.5).

Among experts and from the view of different stakeholders, opinions differ concerning the quality of single measures of effective monitoring by supervisory board members.<sup>2</sup> Compared to the existing literature for the United States, Germany faces a great lack of resilient empirical studies that disentangle relationships between different features of corporate governance, like multiple board mandates, and firm performance. The present investigation contributes to close the existing research gap.

Stating at the beginning of the 2000s almost all representatives of banks and insurance companies on supervisory boards of non-financial firms retired in Germany. However multiple board mandates of executives and supervisors of non-financial companies are regularly present to a large extend. Furthermore union representatives increase their number of board seats. The reasons for those linkages and their impact on corporate performance are still undiscovered.

Initially we consider if either multiple board seats could be judged as an indicator for insufficient monitoring or whether particular successful and skilled managers are able to allocate their superior expertise to outside boards (*Fama and Jensen*, 1983). A number of different approaches have been advanced in the literature to explain the presence of managers as outside directors in external supervisory boards. We test different

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<sup>1</sup> For a overview on the Coporate Governance discussion in general see *Bebchuk , Cohen and Ferrell* (2009), *Hermalin* (2005), *Bertrand and Mullainathan* (2003), *Denis* (2001), *Shleifer and Vishny* (1997).

<sup>2</sup> At this point, we exemplarily refer to a government's draft, which is controversially discussed in the press and among experts, and which recommends a two years cooling period for retiring managers before they could be elected to the supervisory board of their domestic company. See "Entwurf eines Gesetzes zur Angemessenheit der Vorstandsvergütung (VorstAG)", BT-Drs. 16/12278, March 17<sup>th</sup> 2009.

hypotheses concerning the reasons of outside director appointments and the expected impact of these appointments on the performance of the receiving firms. Moreover, we try to reveal, what causes a company to send their managers to external boards and in which way these companies may benefit from the provision.

We analyze the relationships between a manager's outside board seats and the performance of the sending as well as the receiving companies. Additionally we analyze the connection between different exclusive supervisory board linkages and firm performance. As an outstanding feature, the dataset allows us, furthermore, to analyze the relationship between multiple directorships of union representatives on German supervisory boards and the performance of the monitored firms.

The paper proceeds as follows. Section 2 provides a literature review and discusses alternative hypotheses. Section 3 describes the construction of our panel, main variable definitions and the descriptive statistics. In section 4 we discuss our empirical findings. Section 5 concludes.

## **2. Theoretical background and literature overview**

Between the biggest German corporations existed a close network of reciprocal shareholdings and personal linkages via management and supervisory board members. Since the peak of mutual bonds in the middle of the nineties of the last century, a continuous and, from the beginning of the new millennium accelerated decomposition can be observed. While the number of delegates of financial companies in the panel declined by 76 percent in the period from 1996 to 2006, the reduction of personal linkages between non-financial companies accounted for only 29 percent. The share of non-financial external managers in supervisory boards increased from 46 percent in the year 1996 to 71 percent in 2006. Since the year 2004, we actually observe a low rise of the absolute number of non-financial linkages (*Monopolkommission* (2008), para. 417 ff.). Despite the virtually entire decomposition of the network of reciprocal shareholdings and the withdrawal of the large financial companies from company network, the importance of personal linkages as a matter of fact persists.

While the stage and the development of personal linkages between German firms is regularly documented and commented, the motives and effects for the deployment of

managers and the reasons why supervisory boards may attract executives as outside monitors are so far unexplored. For German companies only one empirical study from *Beyer* (1996) is available, which did not find a direct relationship between personal company linkages and performance. *Bresser* and *Thiele* (2008) show for Germany, that retired executives, who rotate directly from the management to the supervisory board of the same firm, are associated with a more frequent CEO turnover in the future when the performance of the firm is weak.

*Balsmeier, Buchwald* and *Peters* (2009) detect a positive relation between the number of supervisory board seats of CEOs and corporate performance. Besides, chairmen of supervisory boards, who act as a manager in parallel, increase the performance of the monitored company. *Dittmann, Maug* and *Schneider* (2009) elaborate within a comprehensive examination the specific role of bankers on the boards of German non-financial companies. They find a negative causal effect of the presence of a banker on the firm's board on non-financial firm performance. Banks also benefit from increased debt sales to firms in industries where they sent agents to the supervisory boards. Bankers gain extensive information and industry expertise through these board memberships (*Dittmann, Maug and Schneider*, 2009, p. 20). As a consequence of the retirement of financial service providers one may question the reasons and effects of connections via personal linkages between non-financial firms.

## ***2.1 Motives for appointing outside executives on supervisory boards***

### ***2.1.1. Managerial and monitoring skills***

*Fama* and *Jensen* (1983) mention that successful managers are favored to be appointed to external boards. Above-average profits act as an indicator for the ability of the executive. Accordingly, many parallel mandates signal an outstanding competence of the respective manager that could be applied to the interest of a receiving company. *Fich* (2009) and *Brickley, Linck* and *Coles* (1999) show, that the likelihood of being appointed to an external board raises with the performance of the home company. *Fich* (2009) indicates that the performance of a manager's own firm proxies for his or her abilities. A negative effect of multiple board seats could be assumed if supervisors are prevented from an appropriate monitoring in the case of labor restrictions. According to the study of *Fich* and *Shivdasani* (2006), boards with a majority of outside board

members who simultaneously serve on three or more boards are associated with weaker profitability and lower sensitivity of CEO turnover to firm performance.

### **2.1.2. Industry expertise hypothesis**

Similar to the management skills argument, the gain in industry-specific functional knowledge could be a motive for companies within the industry to appoint external executives to their board as outside supervisors. These receiving companies benefit from the superior competence of its boards in different respects. Concerning the original judicial function in terms of § 111 AktG, the specific experience of an industry expert helps to ensure an effective supervision of the management board and the orderly exercise of the auditing duty of the supervisory board. A further positive effect could be expected, when an external industry representative uses his specific management expertise respecting his knowledge on similar technical and functional processes and his wide business connections, to provide valuable information for the receiving company. Following the findings of *Westphal* and *Zajac* (1997), managers are rather able and more likely to induce changes in external boards if they experienced such changes at their domestic firms. According to *Schonlau* and *Singh* (2009) outside supervising board mandates can provide valuable information for mergers and acquisitions (*Schonlau* and *Singh*, 2009). Personal connections between competitors within an industry can also be motivated by attempts to collude. Thus multiple board mandates could be seen as an indication for coordinated market behavior (*Monopolkommission*, 2008, para. 389).

A positive association between a firm's proportion of external managers from the same industry and its profitability compared to the industry average could therefore be interpreted as an indicator for collusion.<sup>3</sup>

### **2.1.3. Managerial power**

Following *Bebchuk's* managerial power approach, outside executives and supervisory board members with multiple mandates could be able to act as a counterbalance against the power of managers, resulting in reduced agency costs.<sup>4</sup> One may assume an increasing influence potential with the size of a sending company or a director's number

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<sup>3</sup> Indeed, there is little evidence that such personal links are an effective or necessary instrument to reduce competition, see *Mizruchi* (1996), p. 273 f.

<sup>4</sup> For a more detailed overview see *Bebchuk, Grinstein and Peyer* (2006a), *Bebchuk, Grinstein and Peyer* (2006b), *Bebchuk and Cohen* (2005), *Bebchuk and Fried* (2004) and *Bebchuk and Fried* (2003).

of contacts in the network.<sup>5</sup> An external manager with a funded industry expertise encourages the independence of the supervisory board and contributes to a balance of interest among shareholder and labor representatives in German boards. The managerial power criterion gains unique importance, if the free float is sufficiently high, particularly with the lack of a large parallel blockholder, who could exert influence on corporate policies.

#### **2.1.4. Social networks**

The appointment of an outside director could be linked with the fact, if prior to the appointment personal linkages via further boards already existed and multiple board members recruit themselves from such close circles. This hypothesis is not exclusive but in fact has to be investigated complementary to the managerial skills hypothesis. *Barnea and Guedj* (2009), for instance show, that with better connected directors, CEO compensation rises, their compensation and turnover are less sensitive to performance, and forced CEO turnover is less likely to occur. Moreover, already connected directors are more likely to be appointed to other directorships.

#### **2.2 Reasons for sending managers to external supervisory boards**

The argument of *Dittmann, Maug and Schneider* (2009) regarding information retrieval by the delegation of bankers may be assigned to different industries in such a manner, that outside managers in supervisory boards widen their horizon of experience by the exchange of specific knowledge to the benefit of all connected firms.<sup>6</sup> This positive impact should be more pronounced, if the interlinkage ranges over the same industry.

Recent studies support this information hypothesis as a reason for personal linkages between U.S. companies, even though these publications do not explicitly apply to linkages within industries. *Schonlau and Singh* (2009) indicate an effect between personal linkages and post-merger financial performance of acquiring firms in the course of mergers and acquisitions. Thus, well-connected boards are associated with significantly better performing acquisitions than less-connected firms. Empirical literature provides on the other hand evidence, that the exercise of external supervisory board mandates could negatively affect the performance of a sending firm, when the

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<sup>5</sup> *Fich* (2005) finds a positive relation between the size of a firm and the probability of an outside appointment.

<sup>6</sup> Similarly *Canyon and Read* (2006). Indeed, the authors show that, due to the potential individual benefits, executives have an incentive to serve on more external boards than is optimal for the home

respective manager is prevented from an appropriate monitoring (*Fich*, 2005, p. 1969). *Cohen, Frazzini* and *Maloy* (2008) detect an intensified information transfer between executives via shared education networks.

Furthermore, according to *Canyon* (2006) managers themselves benefit from the supplementary business contacts, experience and information and therefore have an incentive to accept further external control mandates. It is obvious, that monetary incentives do not appear to significantly attract highly compensated managers to seek outside board seats, whose perquisites are comparatively low. However, *Core, Holthausen* and *Larcker* (1999) find a positive effect between multiple board members on the board of directors and CEO compensation. *Balsmeier* and *Peters* (2009) document this positive relation between average management board compensation and the number of external supervisory mandates of the executives on outside boards of German companies. If therefore multiple board seats are primarily motivated by the pursuit of prestige and monetary compensation, one would expect, that managers tend to sit on the supervisory boards of successful and larger companies to raise their own profiles. In this case, the direction of causality would be reversed. In contrast to this assumption, *Fich* (2005) indicates a positive likelihood of the presence of outside monitors in smaller companies that have significant higher growth prospects.

### ***2.3 Importance of exclusive supervisory board connections***

The arguments concerning the supposable effects of company connections on corporate performance, that have been outlined in the previous sections can generally be transferred to exclusive supervisory board linkages in the German two-tier system. Focusing on this sort of connection, we may abstain from a distinction of sending and receiving companies. With regard to the German system of co-determination in supervisory boards, we distinguish between shareholder and labor representatives on the board.<sup>7</sup> Multiple board memberships are regularly confronted with similar challenges on the different boards and therefore establish specific knowledge. This positive effect should be more pronounced in the case of shareholder representatives, if the board member acquired industry-specific experience in the course of his education or his

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firm.

<sup>7</sup> The German Codetermination Act of 1976 applies to all corporations with more than 2,000 employees and stipulates equal representation of shareholders and employees on the supervisory board. The group of labor representatives consists of workers, one labor director and, dependent on the size of the board,

previous professional career. In this context, an outstanding advising expertise could be credited to monitors, who previously or currently hold a monitoring position within the same industry or another linked company.<sup>8</sup>

With regard to labor representatives we focus on outside board members that have been sent from a German union.<sup>9</sup> The effect of co-determination on corporate performance and loosely the role of union representatives have attracted grown attention in economics research studies over the past years. From a theoretical perspective one may suggest both positive and negative impacts of equal co-determination (Gerum and Wagner, 1998, *Fauver and Fuerst, 2006, Renaud, 2007*). Empirical studies also find positive (*FitzRoy and Kraft, 2005, Fauver and Fuerst, 2006, Renaud, 2007*) and negative effects (*Gorton and Schmid, 2004*). *Fauver and Fuerst (2006)* point out that employee representatives on supervisory boards can provide superior operational information and therefore, unlike union representatives, improve the board's decision-making. *Gorton and Schmid (2004)* point to converse objectives of employee and union representatives on the one hand and shareholder representatives otherwise, which may result, subject to the allocation of influence, in a reduced performance. One may expect that outside union representatives on a supervisory board advocate for the economic interests of the sending union. As a consequence, the influence of outside union representatives on corporate performance could be negative. We analyze if this relation is negative and if the effect rises with the number of supervisory board seats of union representatives.

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two or three external union representatives.

<sup>8</sup> *Brickley, Linck and Coles (1999)* measure a positive effect of former CEOs on firm performance in U.S. corporations, if the respective CEOs remain on the board of directors after their retirement. *Fich (2005)*, p. 1945 refers in this context to the superior competence of CEOs.

<sup>9</sup> Labor representatives in German boards who work for the firm are not relevant for connection facts.



### 3. Panel data set and summary statistics

Our panel is based on the hundred biggest firms in Germany covered by the German Monopolies Commission for the even years in the period 1996 to 2006. The Monopolies Commission announces the biggest German companies measured by their domestic economic value added. The Commission provides further information such as details on shareholders, personal linkages via management and supervisory boards among the 100 biggest companies and further domestic operating figures. The average share of 17.9 percent in the national economy during the 10-year period from 1996 to 2006 illustrates the macroeconomic weight of the reviewed companies. For each uneven year we interpolate missing values of shareholders and board members. Furthermore we match accounting data and the number of declared acquisitions at the Federal Cartel Office.<sup>10</sup> We dropped firms which are subsidiaries of a foreign home company, since for these firms, accounting data may be influenced largely by the home company, yielding incomparable performance measures. Moreover, board members of these firms are regularly bound to strategic guidelines of the home company and have, therefore, a comparatively weak position in the company hierarchy.<sup>11</sup> Since financial companies generate incomparable profit ratios, we exclude these companies. Due to fixed-effects panel regressions, we dropped all firms with less than two observations. Our final panel data set consists of 62 firms with 476 firm-year observations.

*[Insert Table I here]*

Table I presents the pooled summary statistics of our variables at the firm-level. We use industry-adjusted return on total assets and industry adjusted profit-margins as alternative performance measures. We cannot use stock-based performance measures such as earnings per share or Tobin's Q, because only about half the companies in the sample are traded on a stock exchange. 31 percent of the companies covered in our panel are listed on the DAX-30 stock exchange. As an indicator for diversification, we employ the number of business segments. We use the growth of sales and the number of declared acquisitions as a proxy for the dynamics and growth opportunities of the analyzed companies. The mean size of the management board is 6.4, as on the

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10 We obtain missing data from the *Hoppenstedt* publications „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“ and „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

11 By strictly focusing on the management and supervisory boards of parent companies, we prevent the problem of considering dual mandates within corporate groups.

supervisory board sit 17.4 persons on average. We differentiate between four groups of shareholdings: the proportion of free floats, shares held by other companies of 100 biggest and the proportion of shares that fall upon families or individuals and public authorities.

*[Insert Figure I here]*

Our connection variables are displayed in figure I. Generally personal linkages rise between 1996 and 2000. After the economic downturn, following the bust of the dotcom bubble, personal connections decline. From thereon we see a mixed picture of the evolution of multiple board mandates.

*[Insert Figure II here]*

Figure II illustrates the time series of exclusive supervisory board mandates. We observe a negative trend in the absolute number of multiple supervisory board seats between companies of different industries and for external financial mandates. The number of external supervisory mandates in comparable industries converges after an interim peak in the year 2002 to the level in the year 1996. Conversely, the number of average external supervisory board mandates of external union representatives double. The increase of the average number of external supervisory board mandates of the whole represented unions is caused by mergers of German unions.

*[Insert Figure III here]*

Figure III summarizes the average number of direct and second degree contacts of the executives in the network over the sample period. While the contacts of management boards as well as those of shareholder representatives on supervisory boards significantly dropped, union representatives on the boards solidly extended their networking, from 1.5 contacts in the year 1996 to approximately three contacts at the end of the sample period.

## **4. Empirical findings**

### ***4.1 When do firms appoint external managers to their supervisory board?***

We start our empirical analysis investigating which firms appoint external Managers to their supervisory boards. Therefore we run OLS and Tobit regressions with the number of external executives from non-financial firms on the supervisory board as our dependent variable. Since more than one third of our observations are clustered at 0

OLS regressions will lead inconsistent estimators and a Tobit model would be the more appropriate estimation method. On the other hand, fixed-effects Tobit model estimations are also biased so we have to rely on a random-effects approach here to capture unobserved firm heterogeneity. Consequently we report OLS with firm-fixed effects and Tobit results with random-effects in Table II, knowing that we have to interpret the results carefully since both estimations are biased to some extent. We further estimate a random-effects Probit model with a dummy as the dependent variable indicating whether the firm has one or more external executives on the board. The results are not markedly different from the Tobit regression, but with lower significance level of the coefficients, so we do not report them here.

*[Insert Table II here]*

Only the percentage stock held by other firms out the 100 biggest has a significantly positive effect on having external executives on the supervisory board. An explanation for this result could be that equity holders send their executives as monitoring agents to the boards of the companies they own. Alternatively companies could view external executives as good monitors and invest therefore more likely in those firms. Here we would measure a positive relation between firms as shareholders and executives on the supervisory board although the executives are not from the investing firm. In both cases we would expect a positive influence of executives on supervisory boards on the performance of the receiving firm. Due to data limitations we are unfortunately unable to identify which executives are equity monitors but we will follow up the executive performance relation in sections following 4.3.

The results do not confirm any other hypotheses about when firms attract external executives as supervisors. Fichs' (2005) finding that executives – due to their pursuit for prestige – accept more likely board seats in companies with better growth opportunities or performance cannot be replicated with our data. Executives seem not to attend a board more likely when performance of the receiving firm is currently high or the receiving firm has better growth opportunities measured by sales growth. Likewise neither more diversified firms nor firms with relative many activities in the M&A market appoint significantly more external executives. The argument that firms attract external supervisors to enhance their portfolio of experts in crucial fields like M&A is therefore not confirmed as well as the hypotheses that more external advise will be obtained in more complex firms, measured by the number of business segments, is not

verified. However that does not mean that the opposite direction of causality, that executives promote M&A activities or growth is wrong.

#### ***4.2 When do firms send their managers to external supervisory boards?***

Like we analyzed when firms attract executives as supervisors, we investigate which firm characteristics determines who sends executives to other boards. To explore the relationships between firm characteristics and external directorships of the management board we rerun the OLS and Tobit models from section 4.2 only changing the dependent variable to the number of external supervisory seats of the whole management board. Table III shows the results of estimations.

*[Insert Table III here]*

The OLS model gives some first hints on what is driving external supervisory board memberships of the management board. According to OLS estimation the percentage of the percentage of equity held by families and widely held stock have a positive effect on the number external directorships that is significant at the 5% and 10% level, respectively. Tobit estimations turn the relation of the free float variable insignificant. The positive effect of widely held shares could be attributed to an agency problem, where executives who are relatively weak monitored seek further board appointments. External board memberships are then interpreted as perquisites of the managers who own them. If this is true, we would expect a negative relation between the number of sent executives and firm performance. However this hypotheses is not in line with the finding, that also family blockholders enhance the acceptance of external supervisory board memberships. If there is an agency problem which managers exploit by seeking further board appointments, we would expect that monitoring by families would alleviate this problem.

Moreover the Tobit regression reveals a positive relation between the size of the firm, measured by log of total assets, and the number of external directorships of the management board. This result could be explained when executives of bigger companies have more power and prestige and are therefore more attractive supervisors. An alternative explanation is that executives of bigger companies are - due to a harder selection process – on average the better skilled managers and have thus better chances to receive further board appointments. If this theory is true we would expect a positive relation between executives on the supervisory board and performance of the receiving

firm.

#### ***4.3 Is it valuable for firms to send and receive executives?***

As explained in the previous sections, the relationship between sending executives to other supervisory boards and firm performance as well as the relationship between received executives for supervision and firm performance is theoretical unclear. Both forms of personal linkages are beneficial, when they provide channels for scarce information in both directions. We would also expect a positive relation, if only the best skilled managers are appointed to other boards. However, multiple board memberships can also be a form of perquisite consumption of the relevant managers, thus indicating weak corporate governance. In a similar sense managers with multiple mandates could be too busy to fulfill their duty at all firms where they held directorships. The more personal linkages one firm has, the smaller should be the performance then. According to the theoretical explanations we estimate different OLS regressions with industry adjusted return on assets (ROA) and industry adjusted profit margins as our dependent variables. First we regress ROA on the number of received non-financial and financial executives on the supervisory board. Second we include the number of external supervisory mandates in non-financial and financial companies of the management board and common controls as further explanatory variables (model 1 and 2). To incorporate the assumption that special managerial skills or knowledge are driving factors for beneficial use of personal linkages we finally divide the number of send and received executives in those who go to or come from comparable industries and those who do not go to or come from comparable industries (model 3 and 4). The results for ROA as dependent variable are shown in Table IV and the same regressions with profit margin as dependent variable are presented in Table V.

*[Insert Table IV and V here]*

All estimations provide clear evidence for a positive effect of having external non-financial executives from comparable industries on the supervisory board. Estimations of the slope coefficients are robust against variations between within and random-effects estimations but with a more pronounced effect in the random effects models. Since executives of non-comparable industries have no significant influence on performance, we conclude that special industry skills or knowledge is provided to the receiving companies by external executives. Nonetheless, information and knowledge seem to be transferred only to the receiving companies. Sending companies cannot take advantage

of the external directorships of their management board even in the same industry. One reason for this finding could be that accepting external directorships is a form of personal consumption or entrenchment of the relevant managers. However we do not discover a negative effect. So managers with more external board seats may be on average the better managers but the acceptance of a further seat weakens this positive effect, leading to no significant performance relation. After all it still remains a little bit puzzling why firms send their executives to other corporations, if they do not profit from this form of linkage building. Contrary to the findings of *Dittmann/Maug* and *Schneider* (2009) the number of bankers on the board offers in specification 1 of Table VI has a positive effect on performance. Given that this effect is only significant at the 10% level and not robust against model variations we do not interpret this result.

Referring to the controlling variables we see a stable positive relation between the solvency ratio and firm performance. Firms which rely more on equity perform better on average. The fraction of widely held shares is also positive related to firm performance. This could reflect a positive selection of firms in the sample which are traded at a stock exchange. All specifications in Table V reveal significant higher profit margins for firms who are listed under DAX30 which support this conjecture. Three random effects specifications (model 4 in Table IV and models 2 and 4 in Table V) show a negative relation between ownership of other companies out of the 100 biggest and firm performance. This can have two reasons. Either the results indicate that these blockholders exploit other shareholders by taking private benefits from their shareholdings or companies sell their stakes when performance declines. Referring to the other ownership variables, we find only weak evidence for significant relationships. Table V specification 3 suggests that corporations where public authorities held stakes can realize higher profit margins, which can be explained by the fact that public authorities usually held shares in firms which are former monopolists. Finally we see in specification 2 of Table IV and specifications 2 and 4 of Table V a positive relation between family ownership and performance, which is significant at the 10% and 5% level respectively. It seems that individuals and families can alleviate agency problems.

#### ***4.4 Valuable linkages between supervisory board members?***

Beside personal linkages between executives and supervisory boards we see quite a lot of directors holding multiple supervisory board memberships. Shareholder representatives

as well as union representatives on supervisory boards are regularly engaged in multiple firms as directors. The arguments for a positive or negative influence of directors with multiple board memberships on performance are similar to those arguments presented in the previous sections for the executives. Contrary to that, multiple board memberships of union representatives could follow a different logic. Union representatives generally give their remuneration from their board mandates to the sending union. Hence union representatives have no monetary incentives to seek further supervisory board engagements. If the sending union selects those representatives for multiple supervisory board memberships who best serve employee and union interests we would expect a clear negative relation of multiple supervisory board memberships of union representatives and firm performance.

Analogous to Tables IV and V we regress industry adjusted ROA and profit margins on the number of external supervisory mandates of the shareholder representatives in comparable industries, non comparable industries and financial companies respectively, to explore the relationship of multiple supervisory memberships and corporate performance. Additionally we include the number external supervisory mandates of the union representatives and the average of the whole supervisory mandates in the 100 biggest German companies of the represented unions as explanatory variables. At least we add the controls of the former specifications (model 1 and 2). Specifications 3 and 4 represent estimations with all executive linkage variables from section 4.3 added.

*[Insert Table VI and VII here]*

The full models 3 and 4 affirm the results in tables IV and V. According to the personal linkages between supervisory boards the estimations yield some new findings. Multiple supervisory board memberships of shareholder representatives have no effect on firm performance when we control for firm fixed effects. In the random effects model 4 in table VI and model 4 in table VII, however, the number of external supervisory board mandates in different industries correlates significantly negative with ROA and profit margin, respectively. Obviously the negative relationship holds only between firms but not within firms. It seems that from shareholders appointed directors with multiple supervisory mandates primarily try to enhance only their own wealth. At least we cannot find any evidence for a positive effect on firm performance.

Referring to multiple directorships of union representatives we find clear evidence for a

negative link to firm performance. All specifications indicate that firms lose value through better connected union representatives which is in line with our theoretical suggestions. The negative connection of union representatives on supervisory boards increases with additional mandates in other firms. Union representatives with multiple directorships have probably more influence, power and prestige which they use for other objectives than value maximization. Consistent with this result, also the power of the represented unions, proxied by the whole supervisory mandates in the 100 biggest German companies of the relevant union, shows a negative relationship with firm performance. Nevertheless, we have to interpret this finding carefully, because it is only present in the random-effects estimations. Since unions are highly correlated with special industries, we cannot exclude that we rely on an industry effect here.

#### ***4.5 Access to valuable manager networks?***

So far we have analyzed direct firm linkages through multiple board memberships of executives and supervisory board members. If personal linkages provide channels for scarce information, the more channels can be reached the more beneficial should a position be. We operationalize this hypothesis through calculations of all second degree linkages of each executive and supervisory board member. In this sense every external board mandate in a firm A is worth as much as the number of external mandates the relevant board of firm A has in other firms. The idea is that a manager who has a mandate in firm A gets automatically access to the special information provided by all other personal linkages of firm A. Hence, the manager can multiply the information effect of his external board membership. Table VIII shows results of OLS regressions of industry adjusted ROA and industry adjusted profit margins on the number of first and second degree personal linkages of the management board, the shareholder appointed supervisory board members and the union representatives on the supervisory board. For executives and shareholders directors we calculate only the connections to shareholder representatives and for the union representatives we calculate only the connections to other union representatives. Estimations with all connections regardless of group belongings reveal no markedly different results.

*[Insert Table VIII]*

From Table VIII we can reject the hypothesis that second degree personal linkages provide valuable information for the connected firms. Better connected union representatives however show a robust negative relation to firm performance. Perhaps



connectivity of union representatives is another proxy for power and influence of the unions' directors. The results support the findings from the previous section, where we already found a negative relationship between unions representatives' external mandates and firm performance.

## **5. Concluding remarks**

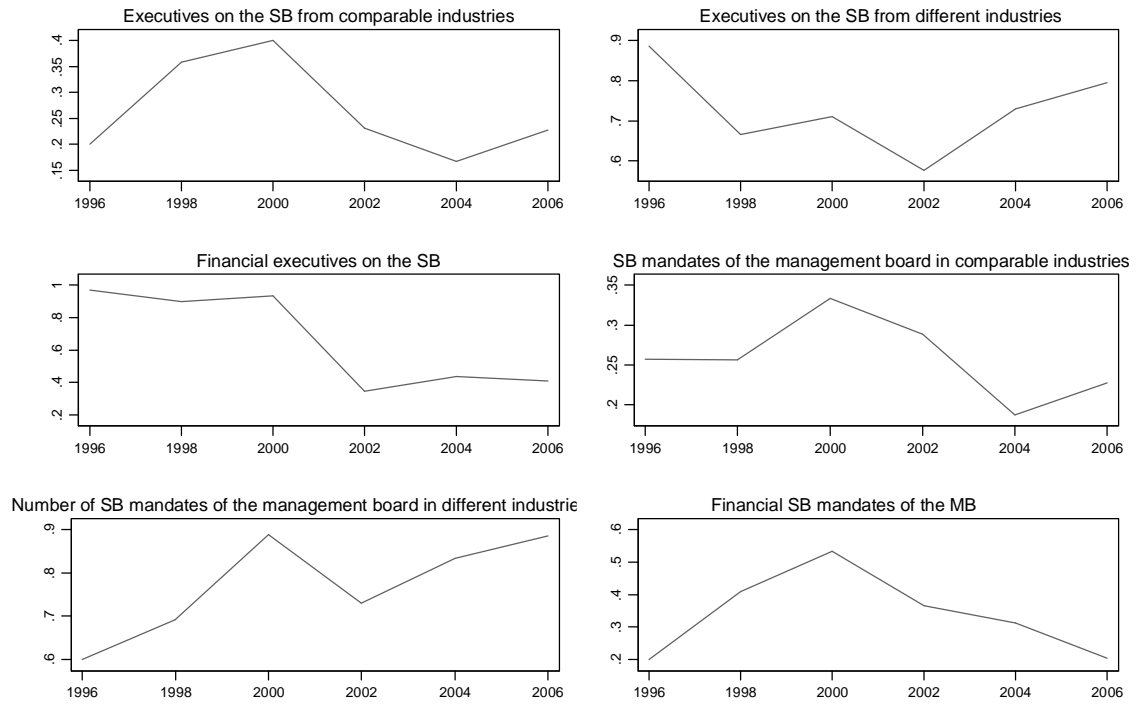
The main purpose of this paper was to investigate which firms attract outside executives as supervisory board members, which firms send executives to other supervisory boards and who profits from outside board memberships. Furthermore we analyze exclusive multiple board memberships of supervisory board members, who are appointed by shareholders and unions, respectively.

We find weak evidence for a positive relation between firms holding capital stakes in a firm and external executives on the supervisory board, which could be explained by firms sending their executives to supervisory boards for equity monitoring. Sending firms tend to have higher stakes of widely held shares and family blockholdings. Together with the fact that outside directorships of management boards have no significant effect on firm performance of the sending firm, these findings imply that executives hold extern directorships primarily for their own interest. On the other hand, having external executives on the supervisory board is beneficial for the receiving firms, especially if these executives come from comparable industries. This finding suggests that firms profit from special industry specific knowledge provided by external managers.

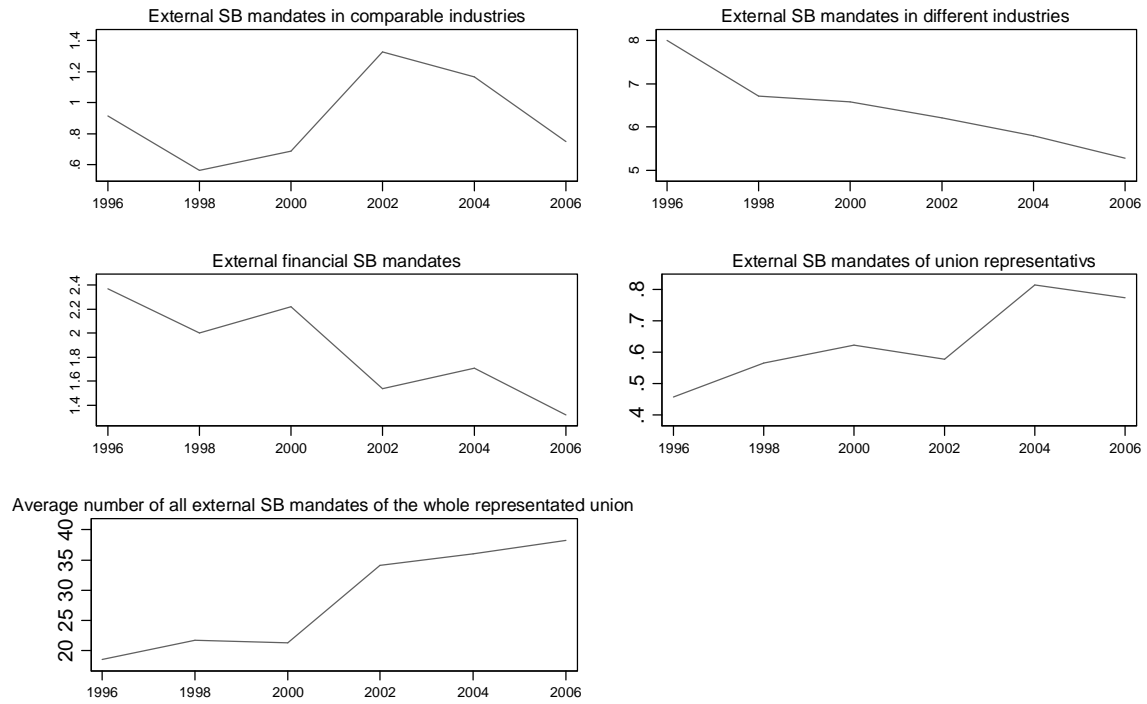
When we control for firm fixed effects, multiple board memberships of supervisory board members appointed by shareholders have no significant influence on firm performance regardless if the outside mandates are from comparable industries or not. Nevertheless some random-effects specifications indicate that directors with multiple mandates in different industries are related to less performing firms. Finally we find clear evidence for a negative relation between the number of supervisory board mandates of union representatives and firm performance. If multiple union representatives' board memberships are a proxy for power and influence of unions in firms, the results indicate that unions' attendance on supervisory boards could reduce firm performance.

## Appendices

**Figure I: Linkage variables for management and supervisory board members**

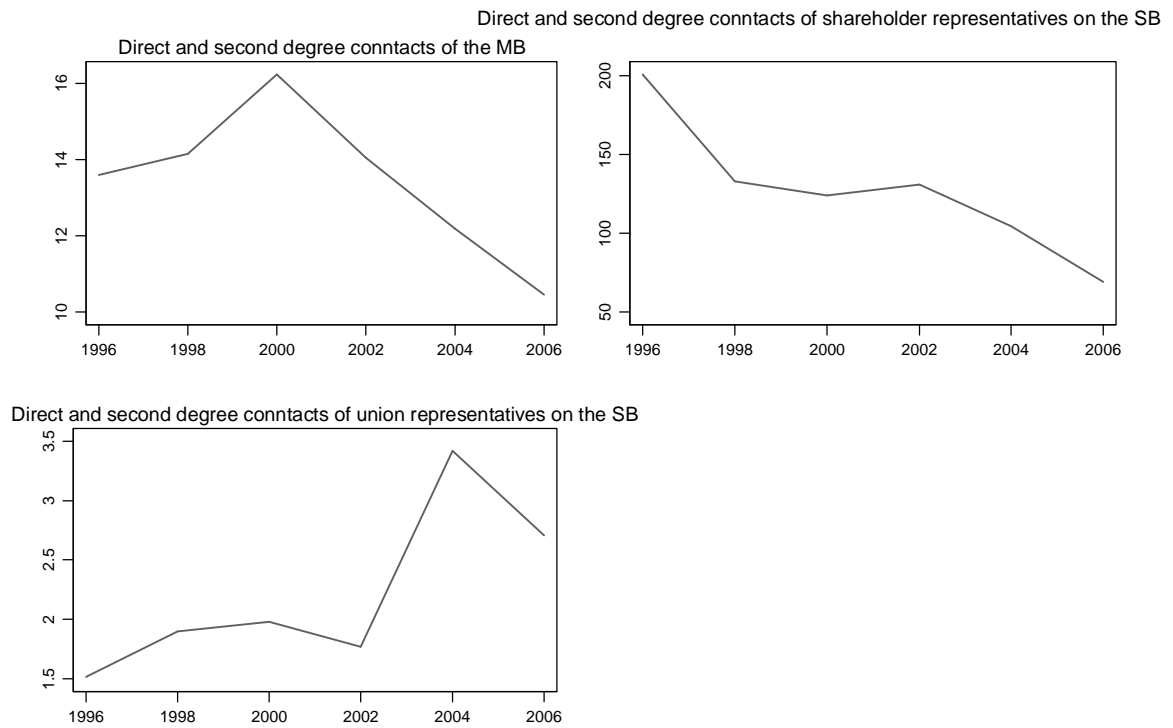


Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

**Figure II: Linkage variables for exclusive supervisory board members**

Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

### Figure III: Network linkages



Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

**Table I: Descriptive statistics**

	Minimum	Mean	Median	Maximum	Standard deviation
Number of business segments	1.00	2.51	2.00	9.00	1.69
Number of declared acquisitions at the Federal Cartel Office	0.00	0.21	0.09	5.49	0.43
Industry adjusted profit margins	-45.54	0.12	-1.02	51.52	9.69
Return on total assets [profit/loss after taxes/total assets]	-0.22	0.06	0.03	1.02	0.12
Industry adjusted return on total assets	-0.29	0.00	-0.01	0.91	0.12
Number of executives on the supervisory board from comparable industries	0.00	0.23	0.00	4.00	0.61
Number of executives on the supervisory board from different industries	0.00	0.70	0.00	5.00	1.05
Number of financial executives on the supervisory board	0.00	0.62	0.00	4.00	0.94
Number of supervisory board mandates of the management board in comparable industries	0.00	0.24	0.00	4.00	0.66
Number of supervisory board mandates of the management board in different industries	0.00	0.92	0.00	27.00	2.04
Number of financial supervisory board mandates of the management board	0.00	0.30	0.00	3.00	0.62
Number outside supervisory board mandates in comparable industries	0.00	0.86	0.00	17.00	1.96
Number outside supervisory board mandates in different industries	0.00	5.78	4.00	29.00	6.15
Number outside financial supervisory board mandates	0.00	1.58	1.00	12.00	1.96
Number outside supervisory board mandates of union representatives	0.00	0.58	0.00	5.00	0.96
Average number of all outside supervisory board mandates of the whole represented union	0.00	28.87	28.58	63.00	21.06
Number of direct and second degree contacts of the management board	0.00	15.80	0.00	500.00	36.82
Number of direct and second degree contacts of shareholder representatives on the supervisory board	0.00	112.30	41.50	829.00	143.90
Number of direct and second degree contacts of union representatives on the supervisory board	0.00	1.97	0.00	26.00	3.63
Shareholders funds/total assets	-36.28	31.71	31.58	90.83	14.73
Total assets	590290	21456007	6190000	235466000	37606248
Sales growth					

	Minimum	Mean	Median	Maximum	Standard deviation
	0.30	1.09	1.06	2.52	0.18
Number of management board members	0.00	6.44	6.00	26.00	3.20
Number of supervisory board members	3.00	17.37	20.00	38.00	4.57
Dummy indicating listing on the DAX30	0.00	0.31	0.00	1.00	0.46
Fraction of widely held shares	0.00	24.50	1.85	99.20	30.94
Fraction of shares held by 100 biggest companies	0.00	10.22	1.20	100.00	20.33
Fraction of shares held by individuals or families	0.00	19.95	0.00	100.00	34.26
Fraction of shares held by public authorities	0.00	13.04	0.00	100.00	30.47

Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

**Table II: Determinants of outside executives on the supervisory board**

The table reports estimations of OLS (1), Tobit (2) and Probit (3) regressions. Models (1) and (2) use the number of outside non-financial executives on the supervisory board as dependent variables. In model (3) we use a dummy variable as the dependent variable, which equals 1 if the firm has one or more non-financial executives on the supervisory board. Tobit and Probit regressions include random-effects at the firm level. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors of specification (1) are robust against heteroscedasticity and allow for clustering at the firm level. Calculations of the t-statistics of models (2) and (3) are based on bootstrapped standard errors with 500 replications. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)
Method	OLS	Tobit	Probit
Industry adjusted return on total assets	0.677 (1.54)	1.185 (1.25)	5.058 (0.93)
Shareholders funds/total assets	0.001 (0.16)	-0.004 (-0.31)	-0.001 (-0.03)
Number of business segments	-0.044 (-0.29)	-0.089 (-0.56)	-0.065 (-0.10)
Number of declared acquisitions at the Federal Cartel Office	-0.000 (-0.00)	0.019 (0.08)	0.133 (0.12)
log(Total assets )	-0.182 (-0.72)	0.046 (0.15)	-0.014 (-0.01)
Sales growth	0.423 (1.65)	0.369 (0.97)	-0.022 (-0.01)
Number of management board members	0.033 (0.58)	0.031 (0.42)	0.048 (0.20)
Number of supervisory board members	0.048* (1.82)	0.076 (1.40)	0.126 (0.65)
Dummy indicating listing on the DAX30	-0.647** (-2.33)	-0.473 (-0.93)	-0.192 (-0.07)
Fraction of widely held shares	-0.003 (-1.09)	-0.003 (-0.83)	-0.002 (-0.11)
Fraction of shares held by 100 biggest companies	0.012 (1.46)	0.023** (2.16)	0.082 (1.08)

	(1)	(2)	(3)
Method	OLS	Tobit	Probit
Fraction of shares held by individuals or families	-0.004 (-1.05)	-0.013* (-1.76)	-0.025 (-1.33)
Fraction of shares held by public authorities	-0.006 (-0.63)	-0.008 (-0.63)	-0.014 (-0.51)
Fixed Effects	year, firm	year	year
Observations	430	430	430
Number of companies	61	61	61
r2 within	0.128		
r2 overall	0.114		
r2 between	0.090		



**Table III: Determinants of outside directorships of the management board**

The table reports estimations of OLS (1), Tobit (2) and Probit (3) regressions. Models (1) and (2) use the number of outside supervisory board mandates of the management board in non-financial companies as dependent variables. In model (3) we use a dummy variable as the dependent variable, which equals 1 if the management board has one or more outside supervisory board mandates in non-financial companies. Tobit and Probit regressions include random-effects at the firm level. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors of specification (1) are robust against heteroscedasticity and allow for clustering at the firm level. Calculations of the t-statistics of models (2) and (3) are based on bootstrapped standard errors with 500 replications. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)
Method	OLS	Tobit	Probit
Industry adjusted return on total assets	-0.590 (-0.99)	-0.743 (-0.75)	1.764 (0.26)
Shareholders funds/total assets	-0.007 (-0.70)	-0.018 (-0.94)	-0.089 (-1.34)
Number of business segments	-0.200 (-1.45)	0.203 (1.21)	0.918 (0.96)
Number of declared acquisitions at the Federal Cartel Office	0.071 (0.43)	0.037 (0.08)	0.286 (0.16)
log(Total assets )	0.303 (1.18)	0.626* (1.84)	0.602 (0.47)
Sales growth	0.219 (1.24)	0.496 (1.14)	0.346 (0.14)
Number of management board members	0.075 (1.31)	0.074 (0.76)	0.035 (0.09)
Number of supervisory board members	0.002 (0.05)	0.080 (0.67)	0.221 (0.49)
Dummy indicating listing on the DAX30	0.446 (1.64)	1.107 (1.14)	3.602 (1.12)
Fraction of widely held shares	0.011* (1.76)	0.012 (1.56)	0.014 (0.51)
Fraction of shares held by 100 biggest companies	0.007 (0.98)	0.008 (0.64)	-0.001 (-0.01)

	(1)	(2)	(3)
Method	OLS	Tobit	Probit
Fraction of shares held by individuals or families	0.009** (2.19)	0.026** (2.09)	0.061 (1.21)
Fraction of shares held by public authorities	-0.003 (-0.35)	0.007 (0.57)	0.027 (0.41)
Fixed Effects	year, firm	year	year
Observations	430	430	430
Number of companies	61	61	61
r2 within	0.148		
r2 overall	0.199		
r2 between	0.213		

**Table IV: The value of outside board mandates of executives I**

The table displays estimations of OLS regressions with industry adjusted return on total assets as the dependent variable. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors are robust against heteroscedasticity and allow for clustering at the firm level. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)	(4)
Number of non-financial executives on the supervisory board	0.015*	0.009*		
	(1.77)	(1.94)		
Number of financial executives on the supervisory board	0.021**	0.009	0.017	0.008
	(2.01)	(1.23)	(1.33)	(1.04)
Number of non-financial supervisory board mandates of the management board	-0.010	-0.000		
	(-0.84)	(-0.01)		
Number of financial supervisory board mandates of the management board	0.002	0.001	0.003	0.001
	(0.16)	(0.10)	(0.15)	(0.06)
Number of executives on the supervisory board from comparable industries			0.046**	0.028***
			(2.64)	(3.31)
Number of executives on the supervisory board from different industries			0.010	0.006
			(1.11)	(1.01)
Number of supervisory board mandates of the management board in comparable industries			0.003	0.010
			(0.07)	(0.45)
Number of supervisory board mandates of the management board in different industries			-0.011	-0.002
			(-0.94)	(-0.25)
Shareholders funds/total assets	0.002*	0.002***	0.002**	0.002***
	(1.98)	(3.28)	(2.05)	(3.41)
Number of business segments	-0.023	0.001	-0.028	-0.002
	(-0.91)	(0.14)	(-1.11)	(-0.33)
log(Total assets )	0.027	-0.004	0.026	-0.005
	(0.96)	(-0.51)	(0.92)	(-0.52)
Number of management board members	0.007	0.004	0.008	0.004
	(0.89)	(1.32)	(0.94)	(1.41)

	(1)	(2)	(3)	(4)
Dummy indicating listing on the DAX30	0.072*	-0.001	0.062*	-0.002
	(1.93)	(-0.03)	(1.77)	(-0.09)
Fraction of widely held shares	0.001*	0.001**	0.001**	0.001**
	(1.80)	(2.11)	(2.02)	(2.29)
Fraction of shares held by 100 biggest companies	0.001	-0.000	0.000	-0.001**
	(0.59)	(-1.37)	(0.53)	(-1.99)
Fraction of shares held by individuals or families	0.000	0.000*	0.000	0.000
	(0.79)	(1.71)	(0.78)	(1.57)
Fraction of shares held by public authorities	0.001	-0.000	0.001	-0.000
	(1.23)	(-0.55)	(0.99)	(-0.57)
Fixed Effects	year, firm	year	year, firm	year
Observations	476	476	476	476
Number of companies	62	62	62	62
r2 within	0.087	0.052	0.106	0.070
r2 overall	0.011	0.117	0.011	0.113
r2 between	0.001	0.183	0.000	0.154

**Table V: The value of outside board mandates of executives II**

The table displays estimations of OLS regressions with industry adjusted profit margins as the dependent variable. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors are robust against heteroscedasticity and allow for clustering at the firm level. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)	(4)
Number of non-financial executives on the supervisory board	1.494 (1.65)	0.845* (1.72)		
Number of financial executives on the supervisory board	1.542 (1.65)	0.553 (0.82)	1.193 (1.16)	0.461 (0.70)
Number of non-financial supervisory board mandates of the management board	-0.714 (-0.62)	0.173 (0.21)		
Number of financial supervisory board mandates of the management board	0.489 (0.37)	0.388 (0.33)	0.656 (0.41)	0.612 (0.46)
Number of executives on the supervisory board from comparable industries			4.208** (2.45)	2.883*** (3.04)
Number of executives on the supervisory board from different industries			1.103 (1.16)	0.401 (0.70)
Number of supervisory board mandates of the management board in comparable industries			-0.381 (-0.10)	0.010 (0.00)
Number of supervisory board mandates of the management board in different industries			-0.638 (-0.63)	0.282 (0.41)
Shareholders funds/total assets	0.125 (1.56)	0.152*** (3.27)	0.132 (1.67)	0.160*** (3.39)
Number of business segments	-1.958 (-0.90)	0.164 (0.30)	-2.356 (-1.08)	-0.033 (-0.06)
log(Total assets )	4.680* (1.92)	-0.720 (-0.77)	4.668* (1.85)	-0.728 (-0.78)
Number of management board members	1.104 (1.43)	0.354 (1.14)	1.098 (1.47)	0.359 (1.20)

	(1)	(2)	(3)	(4)
Dummy indicating listing on the DAX30	7.237*** (3.68)	2.216 (1.32)	6.465*** (2.95)	2.055 (1.24)
Fraction of widely held shares	0.118** (2.10)	0.059** (2.17)	0.117** (2.46)	0.061** (2.51)
Fraction of shares held by 100 biggest companies	0.011 (0.14)	-0.064* (-1.86)	0.005 (0.07)	-0.085** (-2.54)
Fraction of shares held by individuals or families	0.034 (0.76)	0.044** (2.01)	0.034 (0.76)	0.042** (2.00)
Fraction of shares held by public authorities	0.190*** (3.04)	0.025 (1.02)	0.190*** (2.71)	0.026 (1.13)
Fixed Effects	year, firm	year	year, firm	year
Observations	476	476	476	476
Number of companies	62	62	62	62
r2 within	0.114	0.052	0.128	0.065
r2 overall	0.007	0.142	0.006	0.144
r2 between	0.002	0.215	0.000	0.210

**Table VI: The value of multiple supervisory board mandates I**

The table displays estimations of OLS regressions with industry adjusted return on total assets as the dependent variable. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors are robust against heteroscedasticity and allow for clustering at the firm level. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)	(4)
Number of financial executives on the supervisory board	0.461 (0.70)		0.017 (1.36)	0.015* (1.93)
Number of financial supervisory board mandates of the management board	0.612 (0.46)		0.006 (0.33)	0.007 (0.50)
Number of executives on the supervisory board from comparable industries	2.883*** (3.04)		0.050*** (3.11)	0.037*** (4.13)
Number of executives on the supervisory board from different industries	0.401 (0.70)		0.010 (1.24)	0.003 (0.59)
Number of supervisory board mandates of the management board in comparable industries	0.010 (0.00)		-0.007 (-0.20)	0.007 (0.36)
Number of supervisory board mandates of the management board in different industries	0.282 (0.41)		-0.012 (-1.06)	-0.001 (-0.23)
Number outside supervisory board mandates in comparable industries		0.006 (1.18)	0.010 (1.24)	0.005 (1.01)
Number outside supervisory board mandates in different industries		-0.003 (-1.56)	-0.000 (-0.06)	-0.004** (-2.19)
Number outside supervisory board mandates in financial companies		0.006 (0.98)	0.005 (0.54)	0.005 (0.81)
Number outside supervisory board mandates of union representatives		-0.017** (-2.44)	-0.033*** (-2.91)	-0.021*** (-2.89)
Average number of all outside supervisory board mandates of the whole represented union		-0.001** (-2.32)	0.000 (0.40)	-0.001*** (-2.91)
Shareholders funds/total assets	0.160*** (3.39)	0.002*** (3.21)	0.002** (2.53)	0.002*** (3.37)

	(1)	(2)	(3)	(4)
Number of business segments	-0.033 (-0.06)	0.002 (0.27)	-0.032 (-1.28)	-0.001 (-0.16)
log(Total assets )	-0.728 (-0.78)	-0.001 (-0.09)	0.020 (0.66)	-0.000 (-0.02)
Number of management board members	0.359 (1.20)	0.004 (1.32)	0.008 (1.00)	0.004 (1.40)
Dummy indicating listing on the DAX30	2.055 (1.24)	0.008 (0.43)	0.073 (1.49)	0.004 (0.21)
Fraction of widely held shares	0.061** (2.51)	0.001** (2.52)	0.001** (2.57)	0.001*** (3.22)
Fraction of shares held by 100 biggest companies	-0.085** (-2.54)	-0.000 (-0.12)	0.000 (0.45)	-0.001 (-1.62)
Fraction of shares held by individuals or families	0.042** (2.00)	0.000 (1.14)	0.000 (0.72)	0.000 (1.37)
Fraction of shares held by public authorities	0.026 (1.13)	-0.000 (-0.89)	0.001 (1.64)	-0.000 (-0.59)
Fixed Effects	year, firm	year	year, firm	year
Observations	476	476	476	476
Number of companies	62	62	62	62
r2 within	0.065	0.057	0.133	0.091
r2 overall	0.144	0.156	0.016	0.172
r2 between	0.210	0.303	0.001	0.283



**Table VII: The value of multiple supervisory board mandates I**

The table displays estimations of OLS regressions with industry adjusted profit margins as the dependent variable. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors are robust against heteroscedasticity and allow for clustering at the firm level. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)	(4)
Number of financial executives on the supervisory board			1.127 (1.13)	1.208* (1.70)
Number of financial supervisory board mandates of the management board			0.788 (0.43)	1.173 (0.94)
Number of executives on the supervisory board from comparable industries			4.830*** (3.03)	3.706*** (3.91)
Number of executives on the supervisory board from different industries			1.180 (1.26)	0.052 (0.09)
Number of supervisory board mandates of the management board in comparable industries			-1.224 (-0.38)	-0.251 (-0.14)
Number of supervisory board mandates of the management board in different industries			-0.847 (-0.85)	0.347 (0.57)
Number outside supervisory board mandates in comparable industries	0.300 (0.38)	0.399 (0.83)	0.214 (0.28)	0.345 (0.73)
Number outside supervisory board mandates in different industries	0.037 (0.13)	-0.337* (-1.90)	-0.047 (-0.21)	-0.448** (-2.45)
Number outside supervisory board mandates in financial companies	0.919 (0.99)	0.703 (1.22)	0.805 (0.95)	0.571 (1.03)
Number outside supervisory board mandates of union representatives	-2.669** (-2.37)	-1.476** (-2.12)	-3.332*** (-3.13)	-1.813*** (-2.60)
Average number of all outside supervisory board mandates of the whole represented union	0.010 (0.19)	-0.067** (-2.37)	0.025 (0.51)	-0.085*** (-3.08)
Shareholders funds/total assets	0.153* (1.78)	0.144*** (3.12)	0.170** (2.15)	0.150*** (3.22)

	(1)	(2)	(3)	(4)
Number of business segments	-2.177 (-0.95)	0.389 (0.65)	-2.657 (-1.23)	0.141 (0.23)
log(Total assets )	3.697 (1.61)	-0.286 (-0.34)	4.342* (1.72)	-0.399 (-0.43)
Number of management board members	1.144 (1.46)	0.337 (1.15)	1.136 (1.57)	0.306 (1.13)
Dummy indicating listing on the DAX30	6.340** (2.51)	3.195* (1.93)	7.982*** (3.29)	2.918* (1.73)
Fraction of widely held shares	0.110** (2.01)	0.078*** (2.71)	0.137*** (3.26)	0.090*** (3.59)
Fraction of shares held by 100 biggest companies	0.038 (0.52)	-0.018 (-0.67)	0.004 (0.06)	-0.068** (-2.00)
Fraction of shares held by individuals or families	0.020 (0.49)	0.031 (1.42)	0.032 (0.74)	0.036* (1.75)
Fraction of shares held by public authorities	0.199*** (3.11)	0.015 (0.62)	0.236*** (3.41)	0.024 (1.05)
Fixed Effects	year, firm	year	year, firm	year
Observations	476	476	476	476
Number of companies	62	62	62	62
r2 within	0.120	0.066	0.161	0.092
r2 overall	0.014	0.184	0.009	0.213
r2 between	0.006	0.296	0.001	0.330

**Table VIII: Multiple board memberships as information channels**

The table displays estimations of OLS regressions with industry adjusted return on total assets (specification (1) and (2)) and industry adjusted profit margins (specification (3) and (4)) as the dependent variable. For each explanatory variable, the table presents slope estimates and in parentheses the t-statistic of the two-sided test for zero slope. Standard errors are robust against heteroscedasticity and allow for clustering at the firm level. Star levels \*, \*\*, \*\*\* denote significance at the 10%, 5% and 1% level respectively. Source: Own calculations using data from the Monopolies Commission, *Hoppenstedt* „Handbuch der deutschen Aktiengesellschaften“, „Handbuch der Großunternehmen“, „Companies & Sectors“ (various issues), published annual reports of the companies and the “AMADEUS” database of the *Bureau van Dijk*.

	(1)	(2)	(3)	(4)
Average number of all outside supervisory board mandates of the whole represented union	0.000 (0.15)	-0.001** (-2.26)	0.016 (0.30)	-0.065** (-2.38)
Number of direct and second degree contacts of the management board	0.000 (0.03)	0.000 (0.87)	0.026 (0.32)	0.066 (1.41)
Number of direct and second degree contacts of shareholder representatives on the supervisory board	0.000 (0.75)	-0.000 (-0.05)	0.009 (0.64)	-0.002 (-0.25)
Number of direct and second degree contacts of union representatives on the supervisory board	-0.003** (-2.12)	-0.003** (-2.39)	-0.423*** (-2.98)	-0.292** (-2.40)
Shareholders funds/total assets	0.002* (1.70)	0.001*** (2.92)	0.123 (1.51)	0.128*** (2.79)
Number of business segments	-0.025 (-0.93)	0.002 (0.31)	-2.178 (-0.93)	0.270 (0.47)
log(Total assets )	0.017 (0.61)	-0.005 (-0.65)	3.802 (1.66)	-0.817 (-0.95)
Number of management board members	0.007 (0.83)	0.004 (1.21)	1.144 (1.42)	0.313 (1.03)
Dummy indicating listing on the DAX30	0.049 (1.05)	0.008 (0.40)	5.194*** (2.68)	2.893* (1.72)
Fraction of widely held shares	0.001 (1.38)	0.001** (2.13)	0.099 (1.64)	0.059** (2.14)
Fraction of shares held by 100 biggest companies	0.001 (0.90)	-0.000 (-0.07)	0.034 (0.47)	-0.018 (-0.69)
Fraction of shares held by individuals or families	0.000 (0.42)	0.000 (1.11)	0.015 (0.35)	0.028 (1.30)

	(1)	(2)	(3)	(4)
Fraction of shares held by public authorities				
	0.001	-0.000	0.202***	0.022
	(1.16)	(-0.67)	(3.39)	(0.90)
Fixed Effects	year, firm	year	year, firm	year
Observations	476	476	476	476
Number of companies	62	62	62	62
r2 within	0.071	0.045	0.110	0.056
r2 overall	0.016	0.142	0.010	0.176
r2 between	0.005	0.270	0.003	0.279

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