BUSY BOARDS IN A TWO-TIER SYSTEM: OLD-BOYS NETWORK OR EFFICIENT MONITORING TECHNOLOGY?

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Abstract. With respect to monitoring of a firms management there are two competing systems known: the one-tier system grounded in the Anglo-Saxon tradition or the two-tier system stemming from the German tradition. Due to the recent series of corporate scandals a heated discussion emerged about whether one system dominates the other. We contribute to this discussion by examining the effect of busy boards in Germany, a paradigm of the two-tier system. The fundamental difference between the one-tier and two-tier system is the strict separation of management (executive board) and control (supervisory board) in the two-tier system. Accordingly, one might assume that the time load for a member of the supervisory board is much lower than the one of its one-tier equivalent, the outside director. Thus, one would expect a lower impact of the busyness of supervisory board member on firm performance in the German case. We examine this hypothesis based on a hand-collected panel data-set consisting of some 1,110 firm year observations between 2004 and 2007 containing more than 5,600 supervisory board members with characteristics like their number of additional directorships and their background. However, using pooled-OLS, random effect and firm fixed effects models we find -- similar to the one-tier evidence -- a strong negative relation between busyness of the supervisory board members and firm performance. In challenging our findings we observe that it is neither board members' background nor the appointment policy of firms that drives this result. We conclude that the negative performance relation is not only caused by the timely overloading of the board member, but also by the negative network effects, the Deutschland AG (Germany's Inc.), that Germany is famous for.

Keywords: Board of directors, Busyness, Corporate Governance, Two-tier system.

1. Introduction

Driven by corporate scandals like the famous Enron, Tyco International, Worldcom and Xerco cases but also their continental European equivalents at Volkswagen, Parmalat and the recent corruption case at Siemens the discussion about outside directors as effective controllers of companies' management came to the fore again. Within this discussion the question how directors with many additional directorships (so called busy directors) are able to exercise their duties plays an important role. The corporate governance literature offers two different theories: the reputation theory and the busyness theory. Supporters of the reputation theory argue that the number of additional directorships is an indicator of the directors' quality (e.g. Ferris et al., 2003). The busy directors are supposed to be more experienced, and they benefit from the positive effects of their network. Contrariwise supporters of the busyness hypothesis bring forward the argument that from a specific number of additional directorships on the members of the board do not have enough time to fulfil their task of effectively controlling the management (e.g. Fich and Shivdasani, 2006). There are a number of empirical papers investigating these theories, most of the recent ones finding support for the busyness hypothesis. However, nearly all these investigations focus on countries with one-tier corporate governance systems like the US. Since in a number of big economies like Germany or Japan companies corporate governance is organized in a two-tier system the question comes up if, regarding the particularities of the system, the results of the one-tier busyness research can be translated and extended.

The main specialty of the two-tier corporate governance system like in Germany is the separation of management und monitoring. In Germany the supervisory board is even fixed in the business legislation for listed companies in order to assure the separation of the controlling from the managing instance: According to § 105 AktG[1] it is interdicted to be CEO (or another member of the management board) and member of the supervisory board of the same company simultaneously. German supervisory board members are responsible for the appointment and dismissal of members of the management board, they have to approve every annual report and permit the proposed appropriation of profits. No important decision can be reached without the approval of the supervisory board. By contrast US-American outside directors sit in the board among their colleagues, the inside directors, they are actually supposed to control. This main difference entails the following two consequences: a lower time load and a significantly lower compensation of supervisory board members in a two-tier system. Concerning the different time load, we will show in our descriptive analysis that a member of the

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[1] AktG=Aktiengesetz (German business legislation for listed companies).

supervisory board is supposed to attend on average 3.8 meetings per year whereas Fich and Shivdasani (2006) report 7.56 as the average number of board meetings of US-American outside directors per year. To compare the compensation we found some numbers in the study on the remuneration of supervisory board members in Germany of Andreas et al. (2009). According to their study, the average compensation for the years 2005 till 2007 of members of supervisory boards of German Prime Standard companies is round about $50,000 (€38,000) per year. In comparison the remuneration of an American outside director already added up to an average of $70,000 for the years 1994 until 1996 (Yermack, 2004).

Especially because of the essentially lower time and work load for supervisory board members the question can be asked if the busyness findings are still vindicable in a two-tier system. Our paper is the first-time substantial empirical investigation of this question. Therefore, we hand collect information on extra directorships and the board members' background for between 263 and 287 companies for 4 year. This sums up to 1,110 firm years and a number of 5,669 board members we consider. During the analysis of this data we come to the following results: Basically we find the same relation of busyness and performance like most researches for a one-tier system: the impact of busyness is negative and problems of endogenity can be excluded. This means we generally support the busyness hypothesis empirically. However, we also show that time cannot be the (only) reason for the negative impact since it does not matter if the observed board member is a full time board member or if he has an additional fulltime job like being in the management board of another company (what is probably much more time-consuming). We use this as an indicator that not only time restrictions but also negative network effects that the German corporate Governance system is well known for can cause this effect. Within their personal networks supervisory board members do not only focus on shareholders interests anymore (Dittmann et al., 2008).[2] We see the fact that not even a board member who is appointed due to his networking advantages, like a consultant or a private equity investor, can affect the performance positively if he is busy as additional evidence for negative network effects. In summary we detect the same effects like in a one-tier system but this is not only caused by degree of the time load.

The upcoming part of the paper is structured as following. Chapter two features an overview on existing literature on busy boards and discusses the perspectives of busy boards in Germany. Our sample

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[2] This effect is often called Germany's Inc. and refers to the "old-boys" network that one can find between board members of German companies (Heinze 2004) and that is the reason for the too often used "one hand washes the other" approach between German decision makers.

and the used variables will be explained in chapter three. In chapter four we will test the impacts of busy German boards on companies' performance empirically. Chapter five refines the model of chapter four by testing the impact of busy full- and busy part-time supervisory board members on the performance. Chapter six confirms the supposed direction of causality. Chapter seven concludes.

2.   Discussion of busy directors

We pursue three objectives by this chapter. First, we want to provide an overview on international (primarily US-American) supporters of the two different academic hypotheses on busy boards: the busyness and the reputation hypothesis (Adams et al., 2008; Jiraporn et al., 2008). Second, we will deduce our expectations for the hypotheses in the two-tier case from these mainly one-tier investigations. Third, we want to point out the narrowness of the research that has already been done on busy boards in a two-tier system – especially in Germany.

The origin of the reputation hypothesis can be found in the early papers of Fama and Jensen (Fama, 1980; Fama and Jensen, 1983). They describe outside directors as decision agents who signal their ability as decision managers via their number of directorships. Pioneers testing the reputation hypothesis empirically were Kaplan und Reishus (1990). They detect that directors of poorly performing companies are less likely to be nominated as outside directors in other companies. This result approves the idea of a market for outside directors in the US. But they also recognize that there is no strong punishment by this market: directors of poor performing companies do not loose their outside directorships more often than directors of better performing companies. Ferris et al. (2003) also approve the reputation idea. They recognize that directors of large companies with large boards are more likely to be nominated into additional boards. They do not find any evidence in favour of the business hypothesis: their empirical work does not show any relation of the busyness of boards with the company's performance or the probability of securities fraud litigation. Though Perry and Peyer (2005) find some evidence that obtaining additional outside board memberships can be punished by the capital market under certain conditions, they fully support the reputation hypothesis as well. They discover that whenever a director is nominated for an additional directorship, and there is no threat of additional agency problems occurring with this directorship the company will perform better. They interpret their results by learning and networking opportunities and signalling of managerial quality. Like it is the case in nearly every US-American publication on corporate governance the results are difficult to interpret in the German context. Main reasons are in this context that the authors either focus on both, inside as well as outside directors or concentrate only on outside directors, which both

can not be compared to the German supervisory board (*Aufsichtsrat*). Additionally for a member of a two-tier supervisory board more evident signals for managerial skills or networking capability exist. For example a fulltime CEO might be a good and experienced manager, whereas a consultant or a venture capitalist profits from a highly developed business network. Additionally, having a look at the compensation of German supervisory board members (Wenger und Kaserer, 1998) one cannot seriously call the situation in Germany a "market for supervisory board members". In summary, we can state that there are fewer arguments for the reputation hypothesis in Germany than in the one-tier system.

Now we want to focus on the international advocacies of the busyness hypothesis. Core et al. (1999) affirm that busy boards (besides some characteristics of the ownership structure) are a sign of weak corporate governance. They show empirically that this weak structure results in a higher CEO compensation which itself indicates greater agency problems and ends in worse performance. Fich and Shivdasani (2006) base their work on the paper of Ferris et al. (2003) and disagree with their results because of misleading econometric specifications. Fich and Shivdasani detect a negative effect of busy boards on several performance ratios like market-to-book and ROA. Additionally, they claim that only not busy boards punish a CEO for poor performance. As a reason they put forward the increasing distraction of a board member that is originated by multiple positions. Jiraporn et al. (2008) find conceptual explanations for both hypotheses and detect empirical evidence for the busyness theory. They discover a negative impact of busy boards on the firm value originated by deeper diversification discount. They explain this implication by the board members' time shortage. Since they are too overstretched to monitor their managers they overlook empire building tendencies. For a German supervisory board member one should expect that time is not his scarcest resource compared to US outside directors who have to attend much more meetings. Therefore, the arguments for the busyness theory should be weaker in the two-tier system. Nevertheless, we expect the busyness hypothesis to apply to Germany because of negative network effects that busy German board members are blamed for often (Prinz 2006). Though theoretically the German management board is supposed to be an independent control-committee we will display that the reality looks different. Because of the multiple and to some extent reciprocal directorships in German supervisory boards the corporate control in Germany is "embedded in a network form or organization and not in a market structure" (Heinze, 2004). Goergen et al. (2008) confirm that these characteristics of the so called *Deutschland AG (Germany's Inc.)* are still a

valid and serious problem for the market of control in Germany.[3] In this paper we will show that it is exactly this "old-boys-network" that needs to be disintegrated to make a company more successful. To draw this conclusion we divide our empirical work into two steps. First, we detect that there is a significantly negative impact of the number of directorships, that members of the supervisory board are holding, on the companies' performance and support the busyness hypothesis empirically by this result. One could argue now that this fact is caused by the time restriction that occurs, the busier a director is. But as we can see in the second step of our analysis it does not make any difference if the board member is a fulltime member of supervisory boards or if he has another additional fulltime occupation next to his multiple directorships. In both cases the negative impact of the number of positions on the company performance persists.

There are only very few papers that tried to answer these questions for the German corporate governance so far. Due to limitations of their samples or the fact that they only focus on the existence of multiple directorships disregarding the impact on the performance, these papers can not be compared to the American equivalents. Most of the time, when the role of German supervisory boards is analysed the authors focus on the network of interlocking directorates which the German corporate governance system is famous for. Heinze (2004) generally discusses whether the German corporate governance system is converging towards the Anglo-Saxon system. One way of doing this is a long-term analysis of interlocking directorates. He can detect some partial changes in this network of interlocking directorates but they are not really "of structural nature". He recognizes no reason to interpret these little changes as sign of convergence. Pfannschmidt (1995) and Prinz (2006) also investigate the impact of these interlocking on firm performance, but Pfannschmidt focuses on all different kinds of personnel links. He analyses members of the management board that are member of the supervisory board of another company, the reverse, as well as cases of the membership in two separate supervisory boards. He discovers a positive impact of these personnel interlockings and interprets this as evidence for the reputation hypothesis. However, the impact of pure supervisory links is not significant. And he recognizes himself, that by analysing correlation coefficients only he cannot support any statement concerning endogenity: there is no proof if personnel links are the reason for a better performance or the other way around. On the contrary to Pfannschmidt, Prinz (2006) is a German supporter of the busyness hypothesis. He investigates interlocking directorates and their impact on management compensation and financial performance. Conceptually he supports the busyness hypothesis since he expects

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[3] For them the characteristic for the Deutschland AG or Germanys Inc. is generally the concentration of control, originated by legally entrenched boards, a more concentrated ownership structure and more.

increasing agency costs in case of more interlocking directorates. He also finds some empirical evidence for this theory. However, interpreting his results we have to keep in mind that he is only looking at the 30 biggest companies in Germany in his analysis.

As we can see, most academic work that has been done on busy boards concentrates on US-American companies. The research that is conducted on the board structure of German companies is very rudimentary so far. And there are no publications giving a clear evidence for either the busyness or the reputation hypothesis and its interpretation for the case of a two-tier system on a serious sample.

3.   Sample and data

This section describes our sample selection procedure and the way we derive our dataset.

3.1.   Sample definition

Interested in the effect of board business in a two-tier system, we choose Germany as one of the most prominent economies having established a two-tier system.[4] Our initial sample consists of all firms listed in the German Prime Standard between 2004 and 2007.[5] We remove all companies with foreign ISINs, since most of them have their origin in countries with a one-tier corporate governance system. Moreover, as standard we also remove all financial companies including banks, insurance and real-estate companies since their financials are not comparable to the ones of firms operating in the industrial and service sector. We end up with between 279 and 313 companies per year. Due to the fact that there exists no database containing defined characteristics of supervisory board members like e.g. their background the number of their additional directorships or the structure of their compensation all this information is hand collected from annual reports or by request to the investor relationship departments. This way we can obtain data for the board busyness and background of 1,110 firm years. This yields a success rate of round about 94 %: We achieved to hand collect the data for 1,110 out of

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[4] According to IMF, the Worldbank and the CIA Factbook Germany is currently the fifth largest economy in terms of GDP (compared via PPP) after the US, China, Japan and India.

[5] In Europe firms generally can choose between two different points of access to equity capital markets. Beside an EU-regulated market most exchanges offer a market regulated by themselves. The two markets differ with respect to legal basis and status but also with respect to differences in transparency requirements. Within the EU-regulated market the Frankfurt Stock Exchange (FWB - Frankfurter Wertpapierbörse), which is the most relevant German stock exchange, allows firms to list in one of two different market segments. While firms willing to fulfill the EU-regulated minimum transparency level only have to list in the General Standard, firms opting for a listing in the Prime Standard have to fulfill additional transparency requirements. Accordingly, the Prime Standard is the market segment with the highest reporting and disclosure level at the most important German stock exchange. Since our analysis requires detailed analysis of firm and board characteristics, we restrict our sample to firms opting for Prime Standard. Herein all companies of the German stock exchange segments DAX, MDAX, SDAX and TecDAX are included.

1,181 firm years. Due to limitations in financial data availability our regression analyses are based on 881 to 918 firm years.[6]

3.2. *Measuring busyness of directors*

Analyses of supervisory board characteristics of German firms face a major challenge: There is no database offering access to that kind of information. Accordingly, we set up a unique database containing hand-collected data on characteristics of supervisory board members. Therefore we consulted various sources, in particular annual reports, *Hoppensted Aktienführer*, *Lexis-Nexis database* and requests to investor relation departments. The database in particular contains information on additional directorships of a firm's supervisory board members outside the firm. This is the basic information for common approaches to identify busy boards in the literature (e.g. Fich and Shivdasani, 2006; Ferris et al., 2003). For our sample the database contains information on additional directorships for 5,669 directors.

Gathering the data, a speciality of the German supervisory boards had to be considered: the possibility of employee representatives within the board. The different regulations in respect to the size of a German company can be found in the Appendix. It is important to be aware that we are not including these employee representatives to our sample. That is, we are only considering the shareholder representatives when saying "board of supervisory".[7]

To identify busy directors various different approaches can be found in literature: average number of additional directorship per director (DIRECTORSHIPS PER DIRECTOR), the fraction of directors holding a specific number of additional directorships (PERCENTAGE OF BUSY DIRECTORS) or a dummy variable which equals one if 50% or more of the board members are busy (BUSY BOARD) (e.g. Fich and Shivdasani, 2006; Ferris et al., 2003)[8]. Within our analyses we focus on the busyness measure PERCENTAGE OF BUSY DIRECTORS defining a board member to be *busy*, when she holds three or more additional directorships. We use this measure, because it is less susceptible to outliers (Fich and Shivdasani, 2006). Especially for the average measure we would expect a strong bias caused

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[6] Main reason for the decrease in relevant firm years is the availability of the return on equity three years in advance, which constitutes the basis for our operative risk measure.

[7] Busyness is not a problem for employee representatives since they never hold additional directorships. Including them would result in some bias.

[8] Additionally Ferris et al. (2003) are using outside and inside director specific measurements. Since we focus on the supervisory board (the "German outside directors") this separation is not necessary or even possible in our analysis.

by board members with an exceptional high number of directorships. Nevertheless, to challenge our analysis for robustness we first redefine our definition of a busy director: A supervisory board member is considered busy if she holds four or more directorships. Second, we include the other two measures DIRECTORSHIPS PER DIRECTOR and BUSY BOARD to our robustness test.

In table 1 we report annual statistics of our busyness measures. We report the number of firms we found information about their supervisory boards on, the number of all directors we analyse and the total number of their additional positions. In total we find 12,075 additional directorships. Additionally we report the yearly means of our three busyness measures. The "average number of additional directorships" is the mean of DIRECTORSHIPS PER DIRECTOR, "average percentage of Busy directors" for PERCENTAGE OF BUSY DIRECTORS and "fraction of busy boards" for BUSY BOARDS:

"Table 1 goes about here"

Concerning the development of our sample over time we can see that both the average number of all directors and the average number of shareholders' representatives stay very stable. We constantly observe approximately five directors per company in average. The average number of additional directorships increases from 1.73 in 2004 to 2.46 in 2007. Of course also the fraction of busy boards and the fraction of busy directors are increasing. It is a good sign that these both numbers comport oneself nearly equivalent since they both measure the same phenomenon – busyness.

3.3. *Additional variables*

Beside the above mentioned busyness measures, we use several additional variables in our analysis: measures of firm performance, other board characteristics, measures of ownership structure and firm characteristics. Table 6 in the appendix gives detailed definitions on all variables and their sources.

Measures of firm performance: In our analysis we focus on operative performance proxied by return on asset (ROA). In the course of robustness analyses we replace the return on asset by both, a different operative performance measure, the return an invested capital (ROIC) and a capital market measure, total shareholder return (TSR). Moreover, in the endogeneity analysis we use an industry-adjusted performance measure: ROA_ADJUSTED is the industry adjusted return on asset, which we calculate as the firm's return on assets minus its industry median. All data used to calculate performance measures are collected from Thomson Financial Worlscope and Datastream.

Other board characteristics: Beside various busyness measures, we use other supervisory board characteristics as control variables. BOARD SIZE is the number of supervisory board members including

employee representatives. The variable CODETERMINATION can take the values zero (in case of no codetermination), one (in case of one-third codetermination) and two (in case of parity codetermination). NUMBER OF MEETINGS represents the number of meetings supervisory board members have to attend per year. NUMBER OF COMMITTEES is the number of voluntary committees the board members are organized in (i.e. the number of committees does not contain the conciliation committee which has to be created in case of codetermination). VARIABLE COMPENSATION is a dummy variable that equals one if there is a variable compensation element, e.g. stock options or annual bonuses, for supervisory board members.

Moreover, we make allowance for the outstanding role of the chairman. CLOSENESS OF CHAIRMAN is a dummy variable that equals one if the chairman is a former employee of the firm (most of the time a member of the management board). TENURE OF CHAIRMAN represents the chairman's tenure in years.

Measures of ownership structures: To control for effects of different ownership structures, we collected ownership data for the firms in our sample and distinguish between inside ownership an outside extern blockholders. More precisely, we analyse the largest shareholder in each firm and define two dummy variables: INTERNAL BLOCKHOLDER (EXTERNAL BLOCKHOLDER) takes the value of 1 in case that the largest blockholder holds more than 25 % of the shares and is (not) a member of the firm's management board. Information on ownership is originated in the Hoppenstedt Aktienführer and some further investigation in annual reports and the Lexis-Nexis database.

Firm characteristics: We use several firm characteristics as control variables in our analyses. For SIZE we use the natural logarithm of total assets. LEVERAGE is measured by the debt-equity ratio. DIVERSIFICATION is the number of business segment the companies are operating in. OPERATIONAL RISK is the coefficient of variation of return on equity over the previous three years. Following Fich and Shivdasani (2006) we calculate a firm's GROWTH as depreciation divided by sales.

Table 2 sums up the descriptive statistics for all the control variables and their correlation with PERCENTAGE OF BUSY DIRECTORS.

"Table 2 goes about here"

4. Busy directors and firm performance

4.1. Empirical design

As we already mentioned in chapter 2 we expect a negative impact of the supervisory board member busyness on company performance. To check this relation empirically we analyse various variants of the following model specification

PERFORMANCE

$$= f(busyness, board\ characteristics, ownership\ structure, firm\ characteristics) \quad (1)$$

where busyness is measured as the PERCENTAGE OF BUSY DIRECTORS, the board characteristics are the number of meetings per year, the number of committees, the dummy for variable compensation of board members, the dummy for the chairman's closeness and his tenure, ownership structure is represented by a dummy for an internal and a dummy for an external blockholder and the firm characteristics are size, leverage, diversification, operational risk and growth. We include fixed time and industry effects. Since we do not expect the within-variance of the corporate governance measures of the cross-sections to be very high we use the random effects method (e.g. Andres 2008). For example the chairman changes very seldom since the average tenure is 4.2 years as we can see in table 2. So, using fixed effects, the coefficients would be calculated only on basis of a very few "within-company"-changes what would result in a high bias (e.g. Zhou, 2001). Due to robustness requirements we compare our results with the pooled OLS regression, and though we see limitations of the method in our context we report the results of fixed effects model among our robustness tests (e.g. Anderson and Reeb, 2003). In model 1.2 and 2.2 we also control for board size and codetermination. Since they are highly correlated with the companies' size (by German law) we add the square of size as control variable to these models.

4.2. Regressions results

The results of our regression can be withdrawn from table 3.

"Table 3 goes about here"

The most we are interested in the relation of the busyness and performance: As we can see, no matter if we are using a pooled OLS or random firm effects, there is a negative impact of busyness on the companies' performance. With a p-value of 0.0004 this relation can be called highly significant. Since the value is negative our results correspond to the results of (Fich and Shivdasani, 2006) and we can

validate with our regression analysis the busyness hypothesis for a two-tier corporate governance system. However, looking at the coefficients a little bit closer we see that our analysis discloses a much higher impact of the board members busyness than it does in the work of Fich and Shivdasni. We have to keep this result in mind when we discuss the reasons for the negative impact of the busyness on the performance in a later stage of this paper. To get a first impression of the robustness of our results, we can compare the coefficients and significances for the OLS and the panel models. Though the coefficient ranges from 5.4 to 7.4 the results are always highly significant and signature is always in the same direction no matter which method we choose and no matter if we include codetermination and board size or not.

Concerning the relations between the other supervisory board characteristics and performance we come to the following results: There is a significantly negative effect of the number of meetings on the firm performance. Though this could mean that the efficiency of meetings is important and too many meetings seem to damage the monitoring ability, it is highly questionable if this is the right direction of causality to interpret this result. It seems to be more obvious to assume that more poorly performing companies call more supervisory board meetings. The number of committees also has a significant negative effect on the firm performance. This shows that a board is more effectively controlling when they decide more problems within the whole group than bringing the problem down to smaller committees which enhance the possibility to build up coalitions and are a perfect "nutrient medium for nepotism". The impact of the tenure of the chairman of the supervisory board is significantly positive. It shows that the effectiveness of a supervisory board strongly relies on the experience of its chairman. It also means that we can not find any support for the idea that a long term in office harms his monitoring capability since his network within the company gets narrower and his relationship to management board members closer. This idea is supported by the fact, that the impact of the chairman's closeness to the company on the performance is not significant at all which means that the negative effect of former CEOs many corporate governance regulators are scared of cannot be affirmed. Concerning the remunerations of the board members we can see that there is no significant connection of the variable incentives and the performance. This is not surprising because these are relatively small amount compared to what most of directors earn in their fulltime-jobs (or used to earn). Since all other effects are at least qualitatively the same comparing OLS and Panel we interpret the switch of the effect of codetermination as sign for no systematic connection.

Within the additional corporate governance control variables we can recognize the positive impact of blockholders on firm performance. For both inside and outside blockholders this effect is highly sig-

nificant with p-values of 0.01 and 0.02. This result is consistent with the findings of many researchers as for example Core et al. (1999) who discover that a either a non-CEO internal board member or an external blockholder owning more than 5 % of the shares result in a lower CEO compensation which shows the blockholders' impact as control mechanism. Although the statistical relation seems to be pretty clear one has to be very careful to interpret this result. A logical interpretation could be that blockholders, no matter if they are internal or external, have lower agency costs of controlling the management and inside blockholders are intensified to a higher extend to increase the firm value by managing the company (e.g. Jensen and Meckling, 1976). But what if the blockholder only holds that many shares because he recognizes that the company is high performing (Holderness 2003)? This question is one of the most famous endogenity problems in corporate governance and definitely represents an area for further research.

4.3.   *Robustness tests*

We see the following four opportunities for robustness checks of our results: performance measures, busyness measures, the comparison of random and fixed effects and multi-collinearity. This chapter only represents a summary of the robustness tests. All the results will be reported in the appendix in detail.

To show that our results are robust against the choice of performance measure we conduct the same regressions for return on invested capital (ROIC) as well as for the capital market performance measure total shareholder return (TSR). Though changing the endogenous variable, our detected negative impact of busyness on performance stays robust.

We can achieve the same robust results when we change the measures of busyness. First we apply a related variation of our actual measure by changing the limit of busyness from three to four. Now busyness displays the fraction of supervisory board members who hold four or more additional directorships. We call this variable PERCENTAGE OF BUSY DIRECTORS (extended). Second we calculate the two additional different measures of busyness: the average number of extra directorships per board (DIRECTORSHIPS PER DIRECTOR) (Ferris et al., 2003) and a dummy variable to signal if more than 50 % of the board members are considered busy (BUSY BOARD) (Fich and Shivdasani, 2006).

Though we see limitations of the method in our model we apply the firm fixed effects method to show that our results are even robust to the method at all. We find that no matter which panel method we use the conclusion of our analysis stay same. [9]

We also calculate the variance inflation factors and recognize that there is no multi-collinearity.

5. Does the professional background drive the problem?

We know so far, that there is a negative impact of the busyness of the outside board members on the companies' performance. Now we want to see if this relation only holds for a specific type of board members. For this reason we build two new models.

In model 3.1 we replace the busyness by two busyness measures displaying the busyness of so called full-time board members and part-time board members. A full-time board member is a person who does not have an additional occupation next to his positions in supervisory boards whereas a part-time board member also holds a regular occupation like for example being a venture capitalist or holding a position in the management board of a bank. The idea to separate board members by full and part-time goes back to Core et al. (1999) who distinguishes between full-time board member who he considers to be busy with three or more directorate and retired directors whose busyness starts with six additional positions.

In model 3.2 we split up the part-time busyness even more: we analyse the impact of the busyness of members of other management boards and of "networkers" separately. By "networkers" we refer to occupations with specific network opportunities like venture capitalists, private equity investors or consultants. For both models we need additional information on the background of our supervisory board members. We hand collected the information on the occupation of every board member from annual reports or contacted the investor relationship departments. It is important to keep in mind that now only the average way of measuring busyness (DIRECTORSHIPS PER DIRECTOR) is feasible. This means that busyness is displayed as the average number of additional directorships per member group per board for the following.

Table 4 represents the regression results for the estimation of model 3.1 and 3.2 with random firm effects. Concerning firm and corporate governance characteristics there are no changes comparing the results of model one. But within the impact of busyness we can see that both full-time and part-time

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[9] Andreson and Reeb (2003) proceed in the same way. They also include Fama-McBeth regression, which is according to Petersen (2008) "biased in exactly the same way" as the OLS.

busyness has a significantly negative impact on performance. The expectation that the negative impact of busyness is only driven by overstrained full-time managers who hold additional directors and cannot effectively control the firm anymore because they run out of time cannot be approved. [10] This means that in the case of Germany's two-tier system the negative impact of the high number of additional directorships of supervisory board member must have at least one other origin: the nepotism within the network of the few big decision makers of the German economy who, by not harming each other, strongly harm their companies' share- and stakeholders.

"Table 4 goes about here"

One could argue that networking is something good. But as we can see in model 3.2 in table 4, it is not. The results of this regression show that the effect of busy networkers on the companies' performance is highly negative as well. Though companies appoint these directors to their supervisory board because of their networking skills their network itself has a negative impact on the company. This is an additional way of showing that companies do not benefit from network within and between their supervisory boards.

6.   Appointments of busy directors

An often asked question within the research on busy boards and performance is: What implies what? So far we did not answer this question for endogenity: We do not really know if it is really the busyness of the board members that implies the worse performance or if a company wants to appoint busier supervisory board members when it is performing poorly. This could be the case because the company expects the busier board member to be more experienced and helpful. Heretofore, we cannot exclude the possibility that poorly performing companies actively choose busy directors for their supervisory boards. Fich and Shivdasani (2006) use a logit-regression to explain the determinants of the appointment of busy board members. The fact that poor performance does not cause the appointment of a busy director is interpreted as an indication for the nonexistence of endogenity. From our perspective this approach has one weakness: it does not explain the conscious and active decision to appoint a busier board member. That's what we will do: compared to them, we want to analyze what affects the appointment of busier boards. For this reason we construct a dummy variable that equals one if existing board members are replaced by busier ones. In the case of the replacement of only one

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[10] Sure, the impact of the busyness of part-time board members is stronger, but that somebody who only has 3.8 meetings per direction and per year cannot be busy because of the time restriction.

board member, this is pretty easy since we only must compare the number of his additional director-ships, with the one of the former board member. If this is higher, our dummy is one. If more than one director is new in the supervisory board we do not exactly know who is replacing whom. But we can still state if the replacement results in a higher busyness by comparing the average number of additional directorships of old and new board members.

Only comparing the average number of directorships from one year to the other would not allow for the separation of the effect that one of the existing board members is increasing the number of his directorships from the effect that the company is actively choosing new board members with higher busyness. Among others, we use performance as exogenous variable. The used performance measure is the industry adjusted return on asset (ROA): For every year, we calculate the industry median of ROAs (the average would be too susceptible to outliers) and substract it from the companies' ROA. In model 4.1 we use the same-year variable, in model 4.2 the one year lagged variable and in model 4.3 the average of the one und two years lagged ROA to identify poorly performing companies.

As we can see in table 5 the impact of the companies' performance on the choice of busier board members is even positive (and not significant). For this reason we can be sure that busy board members are causing the low performance and not the vice versa.

"Table 5 goes about here"

Apart from the companies' size the effect of no other exogenous variable in this model is significant. Therefore we can answer the question for the direction of causality but still do not know what is driving the appointment of busier directors. Probably the reasons can be found in the personal characteristics of board members like for example the number of shares they are holding, their academic degree or their age. Since there is no database for information like this on German supervisory board members the gathering is much more difficult and was not possible so far. Another desirable improvement of this model would be the one-to-one comparison of the busyness of the original and the replacing board member. Due to non-existence of this information in databases this enhancement is neither possible so far.

7.   Conclusion

Whereas US-American shareholders are still waiting for a legally limitation of the number of outside directorships of their board members (Jiraporn et al. 2008, Ferris et al. 2003) Germany came up with § 100 AktG in 1965 as a "weapon" against the busy members of the supervisory board. This Paragraph

of the German business legislation for listed companies allows a member of the supervisory board of a German listed company to hold no more than nine additional directorships in other companies. [11] Does this imply that the German corporate legislation is just more advanced and smarter since they already figured out the importance of a law like this? Or are there perhaps stronger reasons to introduce this law in countries with a two-tier corporate governance system like in Germany than the reasons existing in the US?

With our paper we did a major step answering these questions. As our empirical investigation showed, German legislation did a good job by introducing a law for the restriction of the number of additional directorates of members of the supervisory board and should even think about limiting the number further. With the old-boys-network and all its implications of nepotism busy directors in Germany really actively harm the companies, whereas in the US the negative impact of busy outside-directors (if it exists) is more driven by distraction and less consequent monitoring caused by the lack of time.

In detail we could make four findings by this paper. First, we showed that there is a negative effect of busy members of the supervisory board on the performance of a company. By this we could generally support the busyness hypothesis for a two-tier corporate governance system as many authors did for the US-American one-tier system (e.g. Fich and Shivdasani, 2006). However, the coefficients showing the impact of busyness on performance in our analysis are much higher than in US-American findings. Though for many reasons the results are not one-to-one comparable this difference implies that there must be additional drivers for this effect in Germany. We doubted that the reasons for this circumstance are the same as in the US-American one-tier corporate governance system and refined our analysis model. The availability of free time deviates strongly between members of the supervisory board in a two-tier system. Some of them hold active positions in the management board of banks or big public industry companies and others are full-time supervisory board members with no other occupation than visiting 3.8 board meetings per directorate holding and year. If timely constraints were the reason for the bad impact, we would expect it to be driven mainly by the extra directorships of the highly busy part-time supervisory board members. But our second finding is that both full- and part-time supervisory board members' additional directorships cause a worse performance. As additional reason for the negative effect we suspected the negative network effects between important

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[11] More specified in other listed companies, whereat being supervisory board chairman is counted as two positions. Additionally the number of positions in subsidiaries of the respective companies is limited to five.

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German decision makers. Our third finding supports this idea. Even the busyness of networkers like consultants or private equity investors has a significantly negative impact on performance. The "one hand washes the other"-mentality overrules any positive network effect. All these findings disagree with the reputation hypothesis (e.g. Ferris et al. 2003). With our forth finding we answered the question of the direction of causality of the busyness effect. We found out that the appointment of busier supervisory board members is not caused by poor performance.

An additional finding with potential for further research was the influence of blockholders on firm performance. Though we could detect a positive impact still at least two interpretations are possible. The question if bigger shares of blockholdings, for example by managers, reducing the agency costs of controlling and hereby result in a higher performance or if the managers know about the over-average performance and buy more shares for this reason (Holderness 2003) is one of the most famous endogenity problems in corporate governance research.

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A   Tables

		Number of directors		Average number of directors		Number of additional directorships	Analysis of busy directors (shareholder represantive)		
Year	Number of firms	All directors	Shareholders representative	All directors	Shareholders representative		Average number of additional directorships	Average percentage of busy directors	Fraction of busy boards
2004	263	2007	1343	7.63	5.11	2323	1.73	0.27	0.23
2005	273	2078	1393	7.61	5.10	2953	2.12	0.34	0.36
2006	287	2154	1465	7.51	5.10	3164	2.16	0.35	0.33
2007	287	2153	1468	7.50	5.11	3611	2.46	0.39	0.44
All	1110	8392	5669	7.56	5.11	12075	2.13	0.34	0.34

Table 1 provides general information on the sample. The number of firms bases on all companies being listed at the Prime Standard of the German stock exchange for the specific year excluding all double listings (common and preferred shares of a company are both listed), foreign ISINs, and financial institutions .It is 94 % of these companies we find Board information on (1,110 out of 1,181). All directors include all members of the supervisory board, disregarding if they are employees or shareholders representatives. Number of additional directorships is the sum of directorships of al shareholders representatives per year. Average number of additional directorships is the sum of additional directorships per board, divided by the number of board members. Percentage of busy directors is the fraction of supervisory board members holding three or more additional directorates. Fraction of busy boards is the fraction of supervisory boards with more then 50% of the board members being busy.

Table 1: Sample description

Variable	Mean	Median	SD	Correlation with "Busy directors"
Board Characteristics				
Directorships per director	2.1262	2.0000	1.4291	0.88 ***
Percentage of busy directors	0.3397	0.3333	0.2698	1.00
Busy board (0,1)	0.3423	0.0000	0.4747	0.84 ***
Directorships per part-time director	1.9544	1.6667	1.4274	0.78 ***
Directorships per full-time director	1.5877	0.0000	2.1334	0.46 ***
Directorships per active board member	1.3321	0.0000	2.2954	0.43 ***
Directorships per networkers	0.9052	0.0000	1.7406	0.25 ***
Board size	7.9652	6.0000	5.4809	0.40 ***
Number of Meeting/year	5.4863	5.0000	2.0144	-0.04
Number of commitees	1.2844	1.0000	1.3022	0.28 ***
Variable compensation (0,1)	0.5643	1.0000	0.4961	0.22 ***
Closeness of Chairman (0,1)	0.2278	0.0000	0.4197	0.05
Tenure of Chairman	4.2387	3.9972	2.8475	-0.06 *
Codetermination (0,1,2)	0.7764	0.0000	0.8783	0.32 ***
Ownership Structure				
Internal blockholder (0, 1)	0.2516	0.0000	0.4332	-0.10 ***
External blockholder (0, 1)	0.3581	0.0000	0.4794	0.08 **
Firm Characteristics				
Size	5.7952	5.3198	2.1958	0.27
Leverage	0.1303	0.0811	0.2113	0.05
Diversification	2.7278	3.0000	1.2638	0.18 ***
Operational risk	0.3656	0.2107	25.3397	-0.03
Growth	0.0609	0.0375	0.1168	0.00 **

*Table 2 provides descriptive statistics for the companies in our sample. The initial sample consists of 1,110 firm years for between 263 and 287 companies for the years 2004 to 2007, whereas the descriptive statistics for the single variables base on individual numbers of firm years, depending on the availability, between 1,110 and 881 firm years. Companies are included when they are listed at the Prime Standard of the German stock exchange for the specific year excluding all double listings (common and preferred shares of a company are both listed), foreign ISINs, and financial institutions .The table represents mean, median and standard deviation (SD) for each measure of our regression model. Additionally it represents the correlation coefficients between all variables and the busyness variable. ***, ** and *indicate significance on the 1%-, 5%- and 10%-level respectively.*

Table 2: Data description

	Model 1.1		Model 1.2		Model 2.1		Model 2.2	
Dependent variable	ROA		ROA		ROA		ROA	
Method	Pooled OLS		Pooled OLS		Random Firm Effects		Random Firm Effects	
Board Characteristics								
Percentage of busy directors	-7.3960***	(-4.5505)	-6.7655***	(-4.3386)	-5.8350***	(-3.5600)	-5.4476***	(-3.4190)
Board size			-0.4408**	(-2.5729)			-0.4468**	(-1.9769)
Number of Meeting/year	-0.6846**	(-2.5160)	-0.7148**	(-2.7361)	-0.5858**	(-2.1848)	-0.5880**	(-2.2482)
Number of commitees	-0.9799**	(-2.2879)	-1.2676**	(-2.6539)	-1.057**	(-2.1676)	-1.0931**	(-2.0736)
Variable compensation (0,1)	0.9504	(1.2272)	0.4631	(0.6192)	0.73213	(0.7799)	0.4161	(0.45764)
Closeness of Chairman (0,1)	-0.4516	(-0.4317)	0.2058	(0.2063)	0.5188	(0.3843)	1.0690	(0.8222)
Tenure of Chairman	0.2880**	(2.0312)	0.1765	(1.3256)	0.3445**	(2.2755)	0.2831*	(1.9308)
Codetermination (0,1,2)			1.9908**	(2.2121)			1.6357	(1.5047)
Ownership Structure								
Internal blockholder (0, 1)	2.9010**	(2.6075)	2.1282*	(2.0025)	3.8517**	(2.5631)	3.1637**	(2.1962)
External blockholder (0, 1)	3.6537***	(4.2058)	2.5886***	(3.0653)	2.3642**	(2.3369)	1.757*	(1.7868)
Firm Characteristics								
Size	1.7572***	(4.5114)	7.603***	(5.0646)	2.1323***	(3.9821)	7.8856***	(3.8824)
Size^2			-0.4074***	(-4.4902)			-0.4083***	(-3.2407)
Leverage	-10.9232**	(-2.4163)	-11.5232**	(-2.7351)	-20.6133***	(-3.6139)	-20.3281***	(-3.7661)
Diversification	0.1753	(0.5390)	0.5787*	(1.7549)	-0.2561	(-0.5504)	0.0660	(0.1445)
Operational risk	0.0018	(0.1336)	0.0006	(0.0438)	0.0049	(0.3590)	0.0049	(0.3474)
Growth	-2.5131	(-0.1442)	-1.1110	(-0.0674)	5.6954	(0.3535)	5.5275	(0.3515)
Industry dummies	yes		yes		yes		yes	
Year dummies	yes		yes		yes		yes	
No. of observations	917		917		917		917	
Adj. R2	0.1643		0.2292		0.1207		0.1447	

Table 3 represents pooled OLS and random firm effect regressions of firm performance and busy supervisory board members. Model 1.2 and 2.2 include board size and codetermination as additional control variables. Since they are "by German law" highly correlated with the firm size, we control in these models for the square of size as well. All used variables are self-explanatory or are described in the main text. The sample is described in table 1. We report White diagonal heteroskedaticity-robust t-values in parentheses. ***, ** and *indicate significance on the 1%-, 5%- and 10%-level respectively.

Table 3: Busy Supervisory Board Members and Firm Performance

	Model 3.1		Model 3.2	
Dependent variable	ROA		ROA	
Method	Random Firm Effects		Random Firm Effects	
Board Characteristics				
Directorships per "full-time" director	-0.4745***	(-2.6827)	-0.4509**	(-2.4983)
Directorships per "part-time" director	-0.7092**	(-2.0899)		
Directorships per manager			0.1037	(0.6836)
Directorships per "networker"			-0.5170*	(-1.7764)
Number of Meeting/year	-0.5281**	(-1.9907)	-0.5277**	(-1.9877)
Number of commitees	-1.0489**	(-2.2316)	-0.9372**	(-2.0754)
Variable compensation (0,1)	0.6547	(0.7084)	0.5461	(0.5989)
Closeness of Chairman (0,1)	0.8910	(0.6723)	0.8616	(0.6351)
Tenure of Chairman	0.3617**	(2.4377)	0.3640**	(2.4357)
Ownership Structure				
Internal blockholder (0, 1)	3.7916**	(2.5532)	3.7618**	(2.5647)
External blockholder (0, 1)	1.9568*	(1.9180)	1.8838*	(1.8518)
Firm Characteristics				
Size	2.2246***	(4.1816)	1.9343***	(3.9119)
Leverage	-20.7026***	(-3.6535)	-20.1838***	(-3.5465)
Diversification	-0.2908	(-0.6477)	-0.3232	(-0.7052)
Operational risk	0.0051	(0.3904)	0.0042	(0.3161)
Growth	4.9490	(0.3028)	4.8073	(0.2929)
Industry dummies	yes		yes	
Year dummies	yes		yes	
No. of observations	917		917	
Adj. R2	0.1408		0.1411	

Table 4 represents two refinements of Model 2.1 of table 3. All used variables are self-explanatory or are described in the main text. The sample is described in table 1. We report White diagonal heteroske-daticity-robust t-values in parentheses. ***, ** and *indicate significance on the 1%-, 5%- and 10%-level respectively.

Table 4: Busy Supervisory Board Members by Background and Firm Performance

	Model 4.1			Model 4.2			Model 4.3		
Dependent variable	Busy_Election			Busy_Election			Busy_Election		
Method	Logit			Logit			Logit		
	Coefficient	z-Statistic	Probability	Coefficient	z-Statistic	Probability	Coefficient	z-Statistic	Probability
Performance									
ROA_Adjusted	0.0021	0.3306	0.7409						
ROA_Adjusted_1				0.0006	0.1309	0.8958			
ROA_Adjusted_2							-0.0096	-0.8038	0.4215
Board Characteristics									
Closeness of Chairman (0,1)	0.0383	0.1253	0.9003	-0.0030	-0.0100	0.9920	0.0154	0.0499	0.9602
Tenure of Chairman	0.0101	0.2697	0.7874	0.0085	0.2250	0.8220	0.0095	0.2514	0.8015
Ownership Structure									
Internal blockholder (0, 1)	-0.4583	-1.2162	0.2239	-0.4744	-1.2406	0.2148	-0.5029	-1.3433	0.1792
External blockholder (0, 1)	0.2056	0.8738	0.3822	0.1848	0.7847	0.4326	0.1837	0.7741	0.4389
Firm Characteristics									
Size	0.1216	2.3470	0.0189	0.1244	2.3838	0.0171	0.1250	2.4745	0.0133
No. Of oberservations									
Total		385			383			376	
With "Busy_Election"=1		136			136			136	
With "Busy_Election"=0		249			247			240	
McFadden R2		0.0252			0.0246			0.0264	

In Table 5 we analyse the impact of performance on the appointment of busier board members with logit-regression. Model 4.1 uses the industry-adjusted ROA, whereas model 4.2 und 4.3 lagged variables: ROA_Adjusted_1 is lagged by one year and ROA_Adjusted_2 is the average of the by one and 2 years lagged variable. Within the number of observations total displays the total number of boards with replacements, With "busy_Election"= 1 signals if the original board members are replaced by busier ones. We report White diagonal heteroskedaticity-robust z-values in parentheses. Moreover, we separately report corresponding p-values in order to show how far away from significance the ROA impact is.

Table 5: Appointment of busier board members

B Appendix

B.1 Variables

Variable	Description	Source
Board Characteristics		
Directorships per director	Average number of additional directorships per director	Annual reports, IR requests
Percentage of busy directors	Fraction of directors holding three (four) additional directorships	Annual reports, IR requests
Busy Board	Dummy variable which equals one in case that 50% of the supervisory board members are busy	Annual reports, IR requests
Directorships per "full-time" director	Average number of additional directorships per director who does not have an additional occupation next to his positions in supervisory boards	Annual reports, IR requests
Directorships per "part-time" director	Average number of additional directorships per director who holds an additional occupation next to his positions in supervisory boards	Annual reports, IR requests
Directorships per manager	Average number of additional directorships per director who is member of another managment board next to his positions in supervisory boards	Annual reports, IR requests
Directorships per "networker"	Average number of additional directorships per director who holds an occupation with specific network opportunities like venture capitalists, private equity investors or consultants next to his positions in supervisory	Annual reports, IR requests
Busy_Election	Dummy variable that equals one if existing board members are replaced by busier ones	Annual reports, IR requests
Board size	Number of Supervisory board members	Annual reports, IR requests
Codetermination (0,1,2)	Variable that indicates the kind of codetermination existing in the company; equals zero in case of no codetermination, one in case of one-third codetermination and two in case of parity codetermination	Annual reports, IR requests
Number of Meeting/year	Number of meetings the supervisory board members have to atend per year	Annual reports, IR requests
Number of commitees	Number of voluntary committees the board members are organized in (i.e. the number of committees does not contain the conciliation committee which has to be created in case of codetermination)	Annual reports, IR requests
Variable compensation (0,1)	Dummy variable that equals one if there is a variable compensation element, e.g. stock options or annual bonuses, for supervisory board members	Annual reports, IR requests
Closeness of Chairman (0,1)	Dummy variable that equals one if the chairman is a former employee of the firm (most of the time a member of the management board)	Annual reports, IR requests
Tenure of Chairman	Chairman's tenure in years	Annual reports, IR requests

… to be continued on next page …

Ownership Structure		
Internal blockholder (0, 1)	Dummy variable that equals one if the largest shareholder holds more than 25% of the shares and is a member of the firm's management board	Hoppenstedt Aktienführer, annual reports
External blockholder (0, 1)	Dummy variable that equals one if the largest shareholder holds more than 25% of the shares and is not a member of the firm's management board	Hoppenstedt Aktienführer, annual reports
Measures of firm performance		
ROA	Return on asset	Thomson Datastream / Worldscope
ROIC	Return on invested capital	Thomson Datastream / Worldscope
TSR	Total shareholder return	Thomson Datastream / Worldscope
ROA_ADJUSTED	By industry median adjusted return on asset	Thomson Datastream / Worldscope
Firm Characteristics		
Size	Natural logarithm ot total asset	Thomson Datastream / Worldscope
Leverage	Debt-equity-ratio	Thomson Datastream / Worldscope
Diversification	Number of business segments the firm is operating in	Thomson Datastream / Worldscope
Operational risk	Coefficient of variation of return on equity over the previous three years	Thomson Datastream / Worldscope
Growth	Depreciation divided by sales	Thomson Datastream / Worldscope

Table 6 describes the set of variables we are using for our analyses. We retrieve accounting data from Thomson Financial Worldscope and Datastream and ownership data from Hoppenstedt Aktienfürhrer. All the other variables are hand-collected from annual reports und by request to Investor relationship departments.

Table 6: Definition of variables and data sources

B.2 Robustness

Dependent variable	Model 5.1 ROIC		Model 5.2 TSR	
Method	**Random Firm Effects**		**Random Firm Effects**	
Board Characteristics				
Percentage of busy directors	-9.5832***	(-3.1253)	-0.2581***	(-3.3298)
Number of Meeting/year	-1.1697**	(-2.5622)	-0.0268***	(-2.8286)
Number of commitees	-1.3089*	(-1.7839)	-0.0156	(-0.7474)
Variable compensation (0,1)	1.8637	(1.2730)	0.0648	(1.4560)
Closeness of Chairman (0,1)	0.1325	(0.0668)	-0.067*	(-1.6688)
Tenure of Chairman	0.4353*	(1.8811)	0.0013	(0.1997)
Ownership Structure				
Internal blockholder (0, 1)	5.2862**	(2.4362)	0.0339	(0.5664)
External blockholder (0, 1)	3.8748**	(2.4363)	0.0811*	(1.9292)
Firm Characteristics				
Size	3.1992***	(4.2702)	0.0268**	(2.0274)
Leverage	-35.8806***	(-3.8601)	-0.2107	(-1.360)
Diversification	0.3527	(0.4443)	0.0054	(0.3426)
Operational risk	0.0061	(0.2918)	-0.0004	(-0.9660)
Growth	0.7468	(0.0362)	-0.2506	(-1.1907)
Industry dummies	yes		yes	
Year dummies	yes		yes	
No.~of observations	917		881	
Adj.~R2	0.1265		0.0654	

Table 7 represents the results of the robustness test with different performance measures. The only difference between these models and model 2.1 is the measure of performance. Due to the lower availability of the TSR the number of observations decreases for model 5.2. We report White diagonal heteroskedaticity-robust t-values in parentheses. ***, ** and *indicate significance on the 1%-, 5%- and 10%-level respectively.

Table 7: Additional Performance measures

	Model 6.1		Model 6.2		Model 6.3	
Dependent variable	**ROA**		**ROA**		**ROA**	
Method	**Random Firm Effects**		**Random Firm Effects**		**Random Firm Effects**	
Board Characteristics						
Directorships per director	-0.9091***	(-2.9884)				
Percentage of busy directors (extended)			-5.1660**	(-2.5432)		
Busy board					-2.0872**	(-2.4550)
Number of Meeting/year	-0.5659**	(-2.0911)	-0.5720**	(-2.1107)	-0.5906**	(-2.1989)
Number of commitees	-0.9886**	(-2.0248)	-1.0537**	(-2.1511)	-0.9742**	(-2.012)
Variable compensation (0,1)	0.6987	(0.7479)	0.6568	(0.7052)	0.7193	(0.7678)
Closeness of Chairman (0,1)	0.5724	(0.4237)	0.5053	(0.3703)	0.6210	(0.4613)
Tenure of Chairman	0.3535**	(2.3057)	0.3530**	(2.3129)	0.3727**	(2.4131)
Ownership Structure						
Internal blockholder (0, 1)	3.7994**	(2.5277)	3.7330**	(2.4984)	3.7869**	(2.5160)
External blockholder (0, 1)	2.3925**	(2.3480)	2.2953**	(2.2649)	2.3061**	(2.2660)
Firm Characteristics						
Size	2.0371***	(3.8382)	2.0537***	(3.7555)	1.9482***	(3.7810)
Leverage	-20.7472***	(-3.6132)	-20.4741***	(-3.5946)	-20.2753***	(-3.5237)
Diversification	-0.2473	(-0.5274)	-0.2960	(-0.6272)	-0.2747	(-0.5820)
Operational risk	0.0058	(0.4260)	0.0059	(0.4347)	0.0042	(0.3179)
Growth	5.6276	(0.3457)	5.6721	(0.3481)	5.4147	(0.3333)
Industry dummies	yes		yes		yes	
Year dummies	yes		yes		yes	
No.~of observations	917		917		917	
Adj.~R2	0.1164		0.1158		0.1151	

Table 8 represents the results of the robustness test with different busyness measures. The only difference between these models and model 2.1 is the measure of busyness. We report White diagonal heteroskedaticity-robust t-values in parentheses. ***, ** and *indicate significance on the 1%-, 5%- and 10%-level respectively.

Table 8: Additional Business measures

	Model 7.1		Model 7.2	
Dependent variable	ROA		ROA	
Method	Firm Fixed Effects		Firm Fixed Effects	
Board Characteristics				
Percentage of busy directors	-4.128**	(-2.0028)	-4.1631**	(-1.9981)
Board size			-0.5197	(-0.9780)
Number of Meeting/year	-0.5519*	(-1.9059)	-0.5741**	(-1.996)
Number of commitees	-1.1140	(-1.1331)	-1.2883	(-1.2069)
Variable compensation (0,1)	0.9581	(0.6546)	1.1822	(0.8070)
Closeness of Chairman (0,1)	4.3978*	(1.8201)	4.6744*	(1.9265)
Tenure of Chairman	0.4428**	(2.2251)	0.4221**	(2.1064)
Codetermination (0,1,2)				
Ownership Structure				
Internal blockholder (0, 1)	6.0126**	(2.4344)	5.9677**	(2.3860)
External blockholder (0, 1)	0.2277	(0.1490)	0.1006	(0.0655)
Firm Characteristics				
Size	5.4177*	(2.3377)	1.8392	(0.2953)
Size^2			0.3543	(0.6550)
Leverage	-35.8751**	(-5.2992)	-36.4950***	(-5.277)
Diversification	-0.9461	(-0.7923)	-0.9304	(-0.7889)
Operational risk	0.0060	(0.4727)	0.0063	(0.4884)
Growth	11.1712	(0.7567)	11.0738	(0.7446)
Industry dummies	no		no	
Year dummies	yes		yes	
No.of observations	917		917	
Adj.~R2	0.5648		0.5640	

Table 9 represents the results of the robustness test with fixed firm effects. The difference between these models and model 2.1 is the application of fixed instead of random firm effects. We report White diagonal heteroskedaticity-robust t-values in parentheses. ***, ** and *indicate significance on the 1%-, 5%- and 10%-level respectively.

Table 9: Additional Business measures

	Model 1.1	Model 1.2
Board Characteristics		
Percentage of busy directors	1.3530	1.3601
Board size		8.8564
Number of Meeting/year	1.1547	1.1645
Number of commitees	1.7966	2.2835
Variable compensation (0,1)	1.2271	1.2566
Closeness of Chairman (0,1)	1.1597	1.1755
Tenure of Chairman	1.1071	1.1243
Codetermination (0,1,2)		4.6151
Ownership Structure		
Internal blockholder (0, 1)	1.3560	1.3828
External blockholder (0, 1)	1.2183	1.2568
Firm Characteristics		
Size	2.7977	36.6962
Size^2		36.7622
Leverage	1.1295	1.1324
Diversification	1.2173	1.2720
Operational risk	1.0132	1.0155
Growth	1.0961	1.1044

Table 10 provides the variance inflation factors for model 1.1 and 1.2. Since in the basic model 1.1 all factors are lower than 3, we can exclude the problem of multi-collinearity. Chatterjee and Price (1977) state that with numbers smaller than 10 non-multi-collinearity can be assumed. The outliners of model 1.2 do not surprise since size, square of size, board size and codetermination were expected to be highly correlated.

Table 10: Variance Inflation Factors

B.3 German peculiarities

German Prime Standard: Our sample consists of all firms listed in the German Prime Standard. Note, that in Europe firms generally can choose between two different points of access to equity capital markets. Beside an EU-regulated market most exchanges offer a market regulated by themselves. The two markets differ with respect to legal basis and status but also with respect to differences in transparency requirements. Within the EU-regulated market the Frankfurt Stock Exchange (FWB - Frankfurter Wertpapierbörse), which is the most relevant German stock exchange, allows firms to list in one of two different market segments. While firms willing to fulfill the EU-regulated minimum transparency level only have to list in the General Standard, firms opting for a listing in the Prime Standard have to fulfill additional transparency requirements. Accordingly, the Prime Standard is the market segment with the highest reporting and disclosure level at the most important German stock exchange. Since our analysis requires detailed analysis of firm and board characteristics, we restrict our sample to firms opting for Prime Standard.

Herein all companies of the German stock exchange segments DAX, MDAX, SDAX and TecDAX are included.

The German board system: It is well known that the German corporate governance system is characterized by a two-tier system with two boards: the supervisory board (*Aufsichtsrat*) and the management board (*Vorstand*). According to the German Stock Corporation Act (*Aktiengesetz - AktG*) the supervisory board supervises (§ 111 AktG) and appoints (§ 84 AktG) the management board.

Beside the pure fact of the two-tier system there are two more peculiarities of the German board system to be kept in mind. First, German Stock Corporation Act regulates the minimum and the maximum number of supervisory board members. Specifically, § 95 AktG says that the supervisory board has to consist of at least 3 members, must be a multiple of three with a maximum of 21 board members depending on firm size (measured in terms on subscribed capital). Second, the Co-determination Act of 1976 (*Mitbestimmungsgesetz-MitbestG*) regulates the possibility of mandatory employee representatives within the supervisory board depending on firm size and the sector the firm is operating in. More precisely, there are different status of co-determination regulation. The Co-determination Act of 1976 generally requires for firms with regularly more that 500 German employees (more that 2,000 employees) one third (onehalf) of supervisory board members to be employee representatives. Moreover, MitbestG also regulates the size of the supervisory board (12, 16 or 20 directors) depending on the number of regularly engaged employees. Moreover, there is a special act for mining companies,

the 1951 Coal, Iron and Steel Industry Co-Determination Act, that stipulation a fraction of one half disregarding the company's size. For more details on co-determination in Germany and the current political debate see (Michel 2007).

Thus, for firms operating under co-determination there are two types of supervisory board members: shareholder representatives and employee representatives. The German Stock Corporation Act regulates minimum qualification conditions for supervisory board members (§ 100 AktG) and how they can be recalled. For instance, supervisory board members representing the interest of shareholders (*Aufsichtsratsmitglieder der Aktionäre*) can be recalled by the general meeting with 75% of valid votes (§ 103 AktG).

Moreover, according to § 107 AktG the supervisory board has to elect a chairman (as well as a deputy) and a may organize its work in committees.

Except for the conciliation committee (*Vermittlungsausschuss* in accordance with § 27 of the Co-determination Act for disputes between shareholder and employee representatives), the size and structure of these committees is not regulated. However, it is commonly assumed that each committee has to consist of at least two directors and even three directors to be a quorum.