

The Disappearing “Deutschland AG” – An Analysis of Blockholdings in German Large Caps*

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The German corporate governance system changed substantially over the last 10 years. Simultaneously, ownership structures of German firms changed significantly. We examine the phenomenon of changing ownership structures by studying blockholdings of German large caps between 1997 and 2006. After presenting some descriptive statistics, we examine the dynamics of blockholdings by analyzing the evolution of free float and block trades of blockholders, where at least 5% of voting rights change hands.

Two findings emerge. First, in our descriptive analysis we find that free float increased from 65% in 1997 to 75% in 2006. This was mainly driven by German financials and the German government. In parallel we observe a surprisingly high number of block trades: On average our data show some 1.6 block trades per firm from 1997 to 2006. Second, we find that in particular individuals and German industrials are guarantors for a stable ownership structure. In particular, we find that having German financials or German government entities as blockowners increases the likelihood of block trades and an increasing free float. Moreover, block trades are more likely to occur in firms having foreign investors as owners. Our findings are of interest with respect to the evolution of the so-called *Deutschland AG* but also with respect to the current *Ankeraktionär* discussion.

JEL classification: G30 · G32 · G34

Key words: free float · block trades · ownership · Germany

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1. Introduction

OWNERSHIP STRUCTURES OF GERMAN FIRMS changed significantly over the last 10 years (Kengelbach & Roos (2006), Kaserer & Moldenhauer (2008)). This phenomenon became known as the erosion of the so-called *Deutschland AG* (Höpner & Krempel (2004) and Höpner & Krempel (2005)) and received significant public attention. The public awareness of these activities is by no means surprising, since the determinants of ownership structures and the impact of large shareholders are two essential topics in the on-going discussion about effective corporate governance (e.g. Shleifer & Vishny (1997), Dlugosz et al. (2006), Gillan (2006)). And in fact, these changes in the ownership structures were accompanied by substantial changes in the corporate governance environment in Germany (see Goergen et al. (2008)).

From a theoretical perspective, the concentration of firm’s ownership structure is supposed to be determined by the trade-off resulting from benefits and costs of blockholders.¹ While large shareholders may serve as monitors that discipline management (e.g. Shleifer & Vishny (1986) and La Porta et al. (1998)), they may enjoy private benefits of control (e.g. Grossman & Hart (1988) or Bebchuk (1999)). Now, Franks & Mayer (2001) report that there is an active market for blocks of shares in Germany meaning that control blocks are traded rather frequently.² This naturally leads to the question what determines the dynamics of ownership structures. For instance, under which circumstances will we observe a change in the level of a firm’s free float? Or even more specifically, given a certain ownership structure when will the ownership structure remains stable and under which conditions is it supposed to change.

Interested in these question, one has to keep in mind, that a change in a firm’s ownership structure may come in three shapes. First, a blockholder may sell a substantial stake in the firm to dispersed shareholders. Such a *block sale* is accompanied by an increase in the firm’s free float. Second, two existing blockholder may trade a stake in the firm or an existing blockholder may sell a stake to a new emerging blockholder. Such a *block trade* does not affect the free float of a firm. Third, a new investor may enter the scene and acquire a substantial stake of the firm from small shareholder. Such a *block acquisition* results in a decreasing free float for the firm.

In this paper we examine the dynamics of blockholdings (and its complement free float) in German large caps. Based on a hand collected data set with ownership data from 1997 to 2006 we addresses the following three questions: (i) How did blockholdings evolve over time? (ii) What determines the change in a firm’s free float? (iii) What determines the probability

¹A blockholder is generally defined as an individual or an entity holding at least 5% of voting rights of a publicly traded company (e.g. Mehran (1995)). This threshold is in line with current SEC and (former) German regulations (Gesetz über den Wertpapierhandel, WpHG). Note, that since January 2007, German legislation is even stricter requiring disclosure of shareholding when exceeding 3% of voting rights (see Section 21(1) WpHG in its version as of January 5th, 2007). Demsetz (1983) is one of the first to suggest that ownership structure of a firm might be an endogenous variable.

²Trading of large blocks of shares is always an important event. It may result in a significant change in ownership structure which may be followed by changes in board composition, governance, or even an attempt to takeover.

of a block trade, i.e. a trade of more than 5% of voting rights? Therefore, we collect ownership data for DAX firms from various sources and examine the evolution of free float and block trades, where at least 5% of voting rights change hands. After presenting some descriptive, we use regression analysis (OLS and probit models) to examine the behavior of blockholdings. Thereby, we use two classes of explanatory variables: ownership structures and firm characteristics a year prior to the (possible) change in ownership structure. To our best knowledge this paper is the first to investigate changes in free float and the probability of block trades of German firms with respect to ownership structure.

Two findings emerge from our analysis. First, we find that free float of German large caps increased from 65% in 1997 to 75% in 2006. This was mainly driven by German financials and the German government, where the former reduced their average stake from 4.69% in 1997 to 0.62% in 2006. Moreover, we observe a surprisingly high number of block trades: on average our data show some 1.6 block trades per firm from 1997 to 2006. Put it the other way, the (unconditional) probability for a block trade in a German large cap over the next year is some 17%. Second, we find that having German financials or German government entities as blockowners increases the likelihood of block trades and an increasing free float. Moreover, block trades are more likely to occur in firms having foreign investors as owners. Thus, we find that only individuals and German industrials are guarantors for a stable ownership structure. This finding is of interest with respect to the evolution of the so-called *Deutschland AG* but also with respect to the current *Ankeraktionär* discussion.

We challenge our findings in two ways. First we add various measures of firm characteristics as explanatory variables to our regression models. Firm characteristics are important according to theory. For instance, acquiring blocks of bigger firms should be more difficult. Further, for firms who are heavily committed to research and development (R&D) informational asymmetries between incumbents and outsiders should be more severe. Similarly, shortly after a firm’s IPO it might not be possible to sell block of share without heavy punishment by the market. Finally, poor past performance might make it more likely that someone tries to acquire a firm. Second, we redo the analysis on a different set of ownership data. The rationale here is that ownership structures are often characterized by substantial cross-holdings and the use of indirect means of control. Thus, while most of our analysis relies on direct ownership data we challenge all our findings by analyses based on ultimate ownership data following Faccio & Lang (2002).

The paper proceeds as follows. In Section 2 we briefly discuss the literature on ownership structures, emphasizing the impact of blockholders on corporate governance. In Section 3 we present our research design, the data set and descriptive statistics. The regression analysis examining the dynamics of blockholdings in German large caps is presented in Section 4. We conclude in Section 5.

2. Ownership structures, blockholders, and block trades

The study of Berle & Means (1932) marks the beginning of discussion of principal agent problems in large firms. In a way, it can be seen as the beginning of a scientific discussion about corporate ownership structures as well. One prediction of the authors is that modern corporations in economies with well developed capital markets will not be run by its owners but by specialized managers.³ These specialized managers report to dispersed (or atomistic) shareholders who only give their capital but do not participate in any day-to-day business. Hence, Berle & Means (1932) predict that the modern corporation will be widely held.

This hypothesis remained untested for a long time and it was not clear whether the widely held company is rather the exception or the rule before the 1980s. Shleifer & Vishny (1986) and Holderness & Sheehan (1988) were among the first who provide evidence on ownership structures for the United States. Shleifer & Vishny (1986) find that more than three quarter of their sample firms do have at least one shareholder owning more than 5% of voting rights. Similar, Holderness & Sheehan (1988) do not confirm the existence of the widely held firm in general: they find that about 13% of their sample firms trading at the NYSE or AMEX do have a majority shareholder, i.e. a shareholder owning at east 50.1% (but less than 95%). Rather unsurprisingly concentration of ownership is generally even higher in countries with less developed capital markets. Evidence for this claim is found in La Porta et al. (1999), where the authors examine ownership structures in 27 countries worldwide. Similar results are found in Faccio & Lang (2002) and Thomsen et al. (2006) where the authors examine the European landscape. Berglöf & Perotti (1994) investigate corporate governance structures in Japan and find that it seems to be standard that large stakes of equity of the members are held within the keiretsu.

In contrast to the United States, Germany yields some special characteristics. The market for equity is rather small compared to its equivalents in the United States or the UK, countries that are prototypes of capital market-based economies. Moreover, there is considerable concentration of ownership even for the largest firms in Germany whereas corporate ownership in Anglo-Saxon countries tends to be more dispersed (e.g. La Porta et al. (1999)). One of the reasons for that might be that corporate governance, and thereby shareholder protection, is perceived to be weaker. Studies examining ownership structures of German firms are among others Adams (1999), Gorton & Schmid (2000), Franks & Mayer (2001), Faccio & Lang (2002), Köke (2004), Heiss & Köke (2004), Franks et al. (2005), Kaserer & Moldenhauer (2008), Andres (2008). Gorton & Schmid (2000), for example, find that merely 35% of all German firms in their sample are widely held. Using an ultimate owner specification Faccio & Lang (2002) find that only some 10% of German firms are widely held. Qualitatively similar results are found in Köke (2004) and Heiss & Köke (2004). Franks et al. (2005) investigate the historical development of ownership structures in Germany and present reasons for the current concentration of ownership structures in Germany. A com-

³There are even earlier studies mentioning problems between owners and management (see e.g. Smith (1776)), however, without making a direct connection to what is today known as principle agent theory.

mon theme of all studies is the fact that ownership structures of German firms seem to be dominated by large blockholdings with families, other firms and banks representing the dominant type of owners.

Given this evidence, the effect of blockholders becomes an important issue that is examined in several studies. While we will only revisit the important arguments, Holderness (2003) contains a nice survey of the blockholder literature. In an early study, Shleifer & Vishny (1986) point out that the existence of a blockholder helps to overcome the free riding problem of monitoring, which is due to the well known problem that while the cost of monitoring the management of the firm is fixed the benefits of monitoring are a function of the cash flow right. Thus, for small shareholders the monitoring costs are prohibitively high, since they would only reap a (very) small fraction of the corresponding benefits. Therefore, it is usually assumed that small shareholders will not monitor management. This is also known as *rational apathy* (see e.g. Pagano & Roell (1998)). In contrast to that blockholders do have the critical mass of voting and cash flow rights so the costs of monitoring are outweighed by the benefits.⁴ Small shareholders obviously also benefit from the monitoring activity of blockholders. These benefits are sometimes called *shared benefits from blockholding* in the literature.⁵ However, there are also benefits that blockholders do not share with all other shareholders. The phenomenon that (controlling) blockholders use their power in order to transfer resources out of the firm into their own pockets is often called *tunneling* (see Grossman & Hart (1988), Bebchuk (1999) and Johnson et al. (2000)). In the best case, these *non-shared benefits* may be interpreted as an extra compensation for their monitoring effort. Dittmann (2004), for instance, argues that blockholders form coalitions in order to extract private benefits. In an empirical study Thomsen et al. (2006) document that there is a negative association between blockholders and firm performance in Europe. The authors argue that one reason for this may be fact that due to weak corporate governance blockholders are able to tunnel resources efficiently out of the firm. For the German case the evidence is mixed. Nenova (2003) finds that for German firms voting rights have a considerable value (approx. 9.5% of firm value) and concludes that there seems to be significant private benefits for corporate control. In contrast Edwards & Weichenrieder (2004), Kaserer & Moldenhauer (2008) find that the effect of blockholders for corporate performance is generally positive. The study of Andres (2008), however, indicates that this effect is mainly driven by founding families, i.e. entrepreneurs and their descendants.

Given that there are benefits and costs of blockholders the next issue of interest is the question under which circumstances we will observe a reallocation of large blocks of a firm’s voting rights. Interestingly, this question did not receive much attention so far. There

⁴A special group of blockholders are (founding) families. See Franks et al. (2008) for an analysis of the evolution of family firms. In general, families seem to be good monitors, since family controlled firms exhibit superior performance (e.g. Anderson & Reeb (2003) and Andres (2008)). Nevertheless, the dark side of this family ownership is that under certain circumstances there may be conflicts between them and minority shareholders (see Maury (2006)).

⁵Nonetheless, when large shareholders hold the reins too tightly, management might not extract maximum effort since investment in specific human capital is no longer desirable for them (see Burkart et al. (1997)).

are some studies the effect of asymmetric information and monitor behavior. Díaz Díaz & García Olalla (2004) for instance investigate block trades in Spain. They find a higher probability of trading by insiders and conclude that insiders benefit from a superior set of information. Other studies examine the premium to be paid for block trades. Mikkelsen & Regassa (1991), for instance, find an average premium of 10% for cash offers. Gregoric & Vespro (2003) document that transaction premia are relatively high in the Czech Republic and conclude that there are considerable private (non-shared) benefits connected to large blocks of Czech firms. In a recent study Albuquerque & Schroth (2008) find that in the US transaction premia are affected by the controlling shareholder’s ability to fight off potential tender offers. However, there seems to be no study examining the issue in the German context, which given the above mentioned peculiarities provides a particularly interesting setting. With the subsequent analysis we aim at narrowing this gap.

3. Research Design, Sample Construction, and Descriptive Statistics

This section explains our research approach and the sample construction. Moreover, it presents descriptive statistics of our data.

3.1. Research Approach and Sample

Research Approach. We aim at analyzing the dynamics of blockholdings of German large caps. Thus, we look at ownership data for German corporations listed in the DAX30. We identify blockholdings and define free float as the residual (for details see below). For each firm, we compare its the ownership structure in time t with its ownership structure one year before, i.e. in $t - 1$.

We identify three scenarios that are of interest. We illustrate them in figure 1 below. In the *stable ownership structure* scenario (scenario 1 in the figure), all blockholders keep to their stakes and no new blockholder emerges. In the *change in free float* scenario (scenario 2a and 2b in the figure), the firm’s free float changes. This may either be due to the fact that one blockholder reduces its position, or due to the fact that a new blockholder enters the scene. In the *block trade* scenario (scenario 3a and 3b in the figure) we distinguish two sub-scenarios. In the *block trade between incumbents* scenario one blockholder reduces its holdings for at least 5%, while simultaneously a second blockholder increases its holding for the same amount. In the *entering block trade* scenario, an existing blockholder reduces its holdings for at least 5%, while simultaneously a new blockholder enters the scene.

We use direct ownership of voting rights in our sample. Note, however, that German ownership structures are often characterized by substantial cross-holdings and the use of indirect means of control. Therefore, we also collected ultimate ownership data according to Faccio & Lang (2002) with a 10% treshold.⁶ We use these ultimate ownership data to challenge our findings that we obtain based on direct ownership.

⁶See appendix A for a brief review of the ultimate ownership concept and details on how we calculated ultimate owner stake.

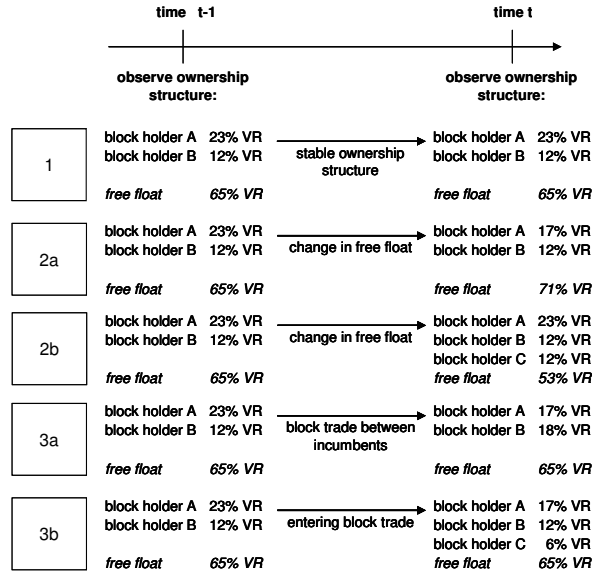


Figure 1: Time Line and Research Approach

Sample. Our initial sample consists of all firms listed in the DAX30 between 01. January 1997 and 31. December 2006. Since the composition of DAX30 changes over time according to a specific set of rules, we dynamically adjusted the index and the composition at the end of each year was relevant for determining firms to be included for the next year. The information about index composition we obtain from Deutsche Börse (2006). We remove financial firms (SIC 6000 – 6999) from the sample since most of the commonly used control variables do not work well with these industries. This leaves us a sample of 254 firm years.⁷

3.2. Ownership Data

Data sources. Collecting ownership data for German firms is always an operose task, since it involves several steps to be accomplished by hand. We proceeded in three steps, where we used three different data sources. First, we try to find information about ownership of each firm year in the November editions of Commerzbank’s ‘Wer gehört zu wem? – Beteiligungsverhältnisse in Deutschland’ CD-ROMs. In the case that we are unable to find a certain firm year, we try to get the information in the CD-ROM editions of Hoppenstedt’s ‘Aktienführer’. When Hoppenstedt’s CD-ROMs are unavailable, we take the information from hard copy editions of Hoppenstedt’s ‘Aktienführer’.

Blockholdings. Blockholdings as packages of voting rights owned by a single individual or entity. Following Mehran (1995) and others we use 5% of voting rights as threshold for an

⁷In our regression analysis we controll for various effects by using a set of controll variables. Missing data in the controll variables which we obtain from Thomson WorldScope further reduces our sample for 23 firms.

owner to be included. This definition is in line with legislation effective during the observed period. German disclosure law (*Gesetz über den Wertpapierhandel*, abbr. WpHG) requires to disclose ownership of voting rights if exceeding 5%. Since the average participation at the shareholder assembly is only between 40% to 60% of all voting rights, blockholders owning even only 5% might be able to have a decisive impact on the outcome of a poll.

Free float. We define a firm’s free float as the residual holdings of voting rights after taking blockholders into account:

$$FF = 100 - \sum_{i=0}^n VR_i \quad (1)$$

where FF is the percentage of voting right in free float and VR_i are voting rights in the hands of blockholder i .⁸

Since we want to investigate what determines the changes in free float, we look at relative changes in free float for each firm year. We define relative changes in free float ($RELFF$) the following way:

$$RELFF_t = \frac{FF_t - FF_{t-1}}{FF_{t-1}}. \quad (2)$$

Relative changes in free float given in Equation 2 have the nice feature that they better reflect the changes of voting power of one share in the hands blockholders than absolute changes in free float.

For robustness test we also look at absolute changes in free float which we define as

$$DFF_t = DFF_t - DFF_{t-1}. \quad (3)$$

Our general results are confirmed when using this definition and are shown in Appendix B.

Block trades. After collecting the ownership data, we compared ownership structure for each firm in year t and $t + 1$ to identify block trades as described above. To challenge our findings, we used two different definitions of block trades. The first definition comprises all block trades while the second all block trades between incumbents and outsiders. For the first definition we identify each change of at least 5% of voting rights from year t to $t + 1$ a block trade by looking at corresponding changes in ownership structure, i.e. either incumbent blockholders trade blocks of voting rights among each other or an incumbent sells at least 5% of voting rights to an outside shareholder. For the second definition we only include trades between incumbents and outsiders. This gives us two overlapping samples of block trades. The results for our sample on entering block trades generally confirm our findings and are shown in Appendix C. Figure 1 illustrates the way we construct the sample with regard to free float and block trades.

Type of owners. We categorize blockholders into six different groups. The first group is called individuals (INDIVID). This group comprises individuals, groups of individuals,

⁸Note that there might be discrepancies to the free float figure provided by Deutsche Börse AG for some firm years.

and non-corporate, unlimited liability companies directly controlled by individuals. In contrast to the United States, there are numerous non-corporate firms (*Personengesellschaften*) holding shares of listed firms in Germany. A special treatment in terms of taxation might be the reason for it. This fact tends to make research on German ownership structures more difficult. We use private liability of their owners to proxy for their owner group: the German legal forms GbR (non-trading partnership), OHG (trading partnership), as well as KG (limited partnership) are directly linked to individuals since their owners are fully liable. We, therefore, assume that there is a strong link between ‘company’ and individual-owner and treat them like individuals. Most blockholders in this category are founding families which still control a significant share of equity. The second group are German non-financial or industrial firms (GERIND). Even though suspected otherwise for a long time, cross-holdings and pyramiding among German industrials are rather low (see Appendix A for a discussion of conflicting results for ownership structures in Germany). Most of the times equity holdings are rooted in business relationship or, more likely, come from spin-off decisions. German financial firms (GERFIN) are the third group of owners. It comprises banks, insurances, and financial service firms as well as mutual funds. Until the mid-1990s there have been considerable cross-holdings among these firms as we will show later on. German government sector entities and the state of Germany are the fourth group (GERGOV). Governments are prone not to maximize the value of assets under their control since entities owned by the government are more likely to be subject to the political decision-making process. Therefore, we consider banks that are owned by the government such as WestLB or Kreditanstalt für Wiederaufbau as government sector entities. Foreign investors are the fifth group of blockholders (FOREIGN). It is made up of all non-German investors. The last group is called undisclosed (UNDIS) for all investors that do not fit into another group are comprised here. This is especially important for investors whose identity cannot be determined because disclosure rules of owners using legal forms KGaA (exchange traded limited partnerships), GmbH (limited liability company), and GmbH & Co. KG are not as strict as for exchange-trades entities.⁹

3.3. Control Variables

From a theoretical point of view several firm characteristics may have an impact on free float as well as on the probability of block trades. We discuss these variables and their impact briefly. The data from which we constructed the control variables is obtained from Datasream and WorldScope data bases. We give the corresponding data items in parenthesis:

1. *Firm Size*: The relation between size and informational asymmetries between blockholders and outside shareholders is ambiguous. Larger firms might be better monitored by institutional shareholders. Nevertheless, coordination costs of monitoring

⁹Actually, owners can be found in the local commercial register. Nevertheless, the resources needed to do this are prohibitively high. For these companies we are unable to find out whether they are owned by an individual or a firm. When determining ultimate ownership, we stop if we find such a firm in a control chain for these reasons.

might become prohibitively high for small shareholders. Trades among blockholders may be more likely whereas trade between blockholders and outside shareholders are less likely. The sign of size is therefore undetermined. We proxy size by the natural logarithm of net sales or revenues (WorldScope data item WC01001). In a robustness test, we also proxy size by the natural logarithm of total assets (WorldScope item WC02999). The results are available upon request.

2. *Research & Development*: A firm with high R&D expenditures might exhibit higher information asymmetries between blockholders and outside shareholders. Outsiders may not be able to evaluate the prospects of research projects correctly or do not get the necessary information to do that in the first place. Besides controlling for R&D expenses which we proxied by the WorldScope data items R&D expenses (WC01201) over net sales or revenues (WC01001), we included a R&D dummy which is one if the firm has positive R&D expenses and zero otherwise. Following the approach of Helwege et al. (2007) we do this to check whether firms conducting R&D are fundamentally different from non-R&D firms. Again, we expect that block trades are less likely when firms are committed in R&D. Finally, we checked our results for its robustness by using R&D expenses over total assets instead of net sales or revenues.
3. *Initial Public Offerings*: We want to take into account that there is a strong decrease in (inside) ownership during ten years after IPO (see Harjoto & Garen (2005) or Helwege et al. (2007)). However, it is not clear whether a strong decline in inside ownership documented by them is caused by block trades or frequent sales of small packages of shares to the market. Since it is not unusual that firms enter the DAX30 one or two years after IPO it is necessary to control for this influence. We put the IPO Dummy equal one if the firm’s IPO is less than ten years ago. Nevertheless, we expect the sign of IPO to be positive.
4. *Performance*: Poor past performance is one of the most important reasons why firms are taken over by a raider who possesses superior management or supervisory skills (see e.g. Grossman & Hart (1980) and for a survey on the topic of takeovers see Burkart & Panunzu (2006)). However, Franks & Mayer (2001) conclude that gains from change of control are rather limited in Germany. Therefore, we consider the impact of past performance as being rather ambiguous. We took the annual total return (annual changes in total return index / Datastream item RI) of the previous year in order to proxy for past performance.

3.4. Descriptive Statistics

In Table 1, we provide summary statistics for our data set on ownership (Panel A) and for the control variables used in the regression models (Panel B). The owner group individuals is the most important group of blockholders in German firms (in terms of voting rights) with an average stake of 9.48%. It is followed by the German government entities which hold on average over all firm years about 6.11%. The reason for the comparable high stake

are formerly state owned companies. Some of their equity is still owned by government sector entities. The average stakes of German financials, German non-financials, and foreign investors are roughly the same. However, it should be noted that maximum stake as well as the standard deviation is much lower for German financials than for the other two owner groups.

Table 1: Summary Statistics for Ownership Data and Control Variables *The sample consists of 221 observations for firms listed in the DAX30 between 01.January 1997 to 31.December 2006. We excluded all financial firms since commonly used control variables do not work well with them. Further, all non-financial firms are removed for which we are not able to find either ownership data or for which WorldScope does not contain data in a sufficiently well quality. We calculate certain firm characteristics and aggregate ownership structure. In Panel A we provide the data for on the aggregate direct ownership structure: INDIVID describes the aggregated percentage of owners who are individuals, families, groups of people, or unlimited liability companies. GERIND is the percentage of voting rights owned by German non-financial firms. GERFIN is the percentage of voting rights owned by German financial firms. GERGOV is the percentage of voting rights owned by German government or German government sector entities. FOREIGN is the percentage of voting rights owned by foreign investors. UNDIS is the percentage of voting rights owned by undisclosed owners. In Panel B we show summary statistics on firm characteristics: SIZE is firm size proxied by the natural logarithm of net sales or revenues. RD/SALES is ratio of research and development expenses and net sales or revenues. RDEX is a research and development dummy. It is 1 if the firm has positive research and development expenses and 0 otherwise. IPO is the IPO dummy. It is 1 if the firm had its IPO within the last ten years and 0 otherwise. PERF is the total return for the previous year on firm’s common stock. Max. VIF reports the maximum variance inflation factor (VIF) for the controll variable over all subsequently examined regression specifications.*

Panel A: Summary Statistics of Aggregate Ownership Structure (from Commerzbank’s ‘Wer gehört zum wem? – Beteiligungsverhältnisse in Deutschland’)						
	INDIVID	GERIND	GERFIN	GERGOV	FOREIGN	UNDIS
Mean	9.48	3.41	3.51	6.11	3.43	4.69
Median	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	90.00	71.87	31.30	74.00	64.00	45.73
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Std. Dev.	20.75	12.61	6.75	15.84	9.64	8.96
Max. VIF	1.34	1.47	1.15	1.24	1.47	1.27
Observations	221	221	221	221	221	221

Panel B: Summary Statistics of Firm Characteristics (from WorldScope)					
	SIZE	RD/SALES	RDEX	IPO	PERF
Mean	16.81	4.19	0.85	0.16	14.15
Median	16.98	2.31	1.00	0.00	8.40
Maximum	18.90	20.97	1.00	1.00	162.71
Minimum	13.35	0.00	0.00	0.00	-70.21
Std. Dev.	1.08	5.25	0.36	0.36	39.63
Max. VIF	1.65	1.58	1.42	1.75	1.06
Observations	218	205	205	205	198

Concerning the control variables it can be said that the average net sales or revenues is about EUR 19.97 bn. In 85% of the firm years, the R&D expenditures are positive and 16% of all firm years exhibit a positive IPO dummy. The reason is that formerly state owned companies and spin offs/joint ventures of large German non-financials entered the DAX30

shortly after their IPO. The most prominent examples are the initial public offerings of Deutsche Telekom AG in 1996 and Deutsche Post AG in 1996 in the case of formerly state owned companies, Infineon AG which went public in 2000 after being spun off from Siemens AG, and EPCOS AG which began as a joint venture between Siemens AG and the Japanese Matsushita Electronic Industrial Co., Ltd. in 1999 and went public soon after.

The development of ownership concentration over the years is shown in Table 2. The aggregate stake of individuals fluctuates only slightly over time. The aggregate stake of German industrials peaks in 2000 and 2001. During these years, there have been the IPOs of two Siemens spin-offs/joint ventures. Apart from that, there are hardly any noteworthy developments with his owner group. However, the aggregate stake held by German financials decreases sharply from 4.69% in 1997 to 0.62% in 2006. We take this as evidence that the role of German financials as major shareholders in German firms diminishes over time. Nonetheless, we can say little about the influence of German financials since representation on boards did not decrease in a similar magnitude (see Dittmann et al. (2008)). The stake of German government also decreases strongly over time since by now a large fraction of equity in formerly state owned companies has been sold. The average stake of the blockholder group undisclosed remains fairly constant over time. However, we are conservative in grouping owners. Therefore, it might be that limited liability investment companies which are owned by other companies ended up in the group undisclosed (see Section 3.2) so the average stake of all other groups of owners might be too low.

Table 2: Development of Ownership Structure Over the Years We calculated the (un-weighted) average stake of blockholders in our sample. We excluded financial institutions since they do not appear in our sample. *INDIVID* describes the aggregated percentage of owners who are individuals, families, groups of people, or unlimited liability companies. *GERIND* is the percentage of voting rights owned by German non-financial firms. *GERFIN* is the percentage of voting rights owned by German financial firms. *GERGOV* is the percentage of voting rights owned by German government or German government sector entities. *FOREIGN* is the percentage of voting rights owned by foreign investors. *UNDIS* is the percentage of voting rights owned by undisclosed owners.

Year	INDIVID	GERIND	GERFIN	GERGOV	FOREIGN	UNDIS	SUM
1997	10.93	1.94	4.69	8.37	4.30	5.46	35.96
1998	10.74	1.84	4.45	6.03	4.26	4.76	32.08
1999	10.02	4.51	5.27	6.15	3.03	4.52	33.50
2000	10.31	7.04	4.04	4.52	3.53	4.20	33.64
2001	9.33	7.62	2.44	6.50	1.65	4.91	32.45
2002	9.44	2.88	4.33	6.03	2.42	5.38	30.48
2003	8.18	2.41	2.62	6.39	3.12	5.42	28.14
2004	8.46	1.95	2.48	6.16	3.56	4.52	27.13
2005	8.44	3.35	0.59	4.14	5.56	3.97	26.05
2006	8.78	3.08	0.62	3.59	5.15	3.61	24.83
Average	9.46	3.66	3.15	5.79	3.66	4.67	30.39

Generally, the average stake held by blockholders decreases strongly over the 10 years of our sample. On average, blockholders own 35.96% of voting rights in 1997. In 2006, however, their stake is only 24.83%. Arguing that block holding may serve as substitute for good corporate governance (see among others Shleifer & Vishny (1986)). This result might be an indicator that the quality of German corporate governance has improved over time. This result is in line with Goergen et al. (2008) who show that the German corporate governance system is converging against the Anglo-American, which is considered qualitatively better.

For our sample period we identify 40 block trades.¹⁰ Table 3 lists the distribution of block trades over the years. Although there is no significant clustering of block trade activity over time there are three peaks in our sample: the first peak are 6 block trades in 2000 which we attribute to increased merger activity at the height of the so-called ‘Internet Bubble’. The 2002 peak (7 block trades) might be caused by the 2001/02 change of the tax code which virtually tax exempts capital gains on corporate level. The last peak in 2006 (6 block trades) might also be caused by increased M&A activity due to industry consolidation.

Table 3: Sample Distribution by Number of Block Trades Each Year We identify each trade of at least 5% of voting rights as a blocktrade, i.e. either incumbent blockholders trade blocks of voting rights among each other or an incumbent sells at least 5% of voting rights to an outside shareholder. For the period between 01. January 1997 to 31. December 2006, we identify 40 cases in which more than 5% of voting rights were traded. We list the distribution of firms among the years of our sample in this table.

Year	Number of Block Trades (all BT)	Percentage of Firm	Number of Firms
1997	N/A	N/A	—
1998	2	8.00	25
1999	3	12.00	25
2000	6	24.00	25
2001	4	15.38	26
2002	7	26.92	26
2003	4	15.38	26
2004	3	11.54	26
2005	5	19.23	26
2006	6	24.00	25
Total	40	17.39	230

4. Regression Analysis

For regressing the changes in free float on ownership data and firm characteristics we use OLS regression models. We control for heteroskedasticity by using robust standard errors. We use probit models for regressing block trade activity on ownership structure and control variables (see Hoetker (2007) for a discussion of the use of probit models in management research). In this case we correct standard errors using Huber/White adjustments.

¹⁰For our analysis of entering block trades (EBT) we find 35 trades. See Appendix C

We use five different specifications for our regressions. In the first specification we only include the six different owner group variables and the constant term. In the following specifications we add one control variable at a time. Only in the case of R&D we include two variables at the same time. We also run regressions with models in which we let each of the two variables enter separately. However, our results hold and are available upon request. Note, that table 1 provides maximum variance inflation factors (VIFs) for all our control variables over all subsequently examined regression specifications. All VIFs are far below 2 indicating that we are not faced with the problem of multicollinearity.

First, we present the results of relative changes in free float. After that our results for block trades are shown. Third, we critically examine our results, we discuss short comings of our study and possible impacts on our results.

4.1. Regression Results for Relative Changes in Free Float

In the regression of relative changes in free float, we find that having German financials and the German government as owners does have a positive impact on relative changes in free float. These effects are highly statistically significant in most of the cases (see Table 4). Surprisingly, the coefficients are nearly the same throughout all model specifications (0.004 in most cases). Foreign investors exhibit statistically significant influence only in specification (1.) and (2.) while German industrials are weakly statistically significant in three cases. Our results do have ample implications with respect to the stability of ownership structure. Having individuals or German industrials as owners seems to lead to a stable ownership structure (with respect to blockholders) while German financials or the German government lead to a rather unstable structure. Unfortunately, we cannot make any predictions about foreign investors since the statistical significance of their impact is unsettled.

Our control variables do not have statistical significant impact on free float at all. This is rather surprising but might be a hint that changes of free float can be best explained by looking at ownership structure. Concerning the model quality we can state that except for the R&D dummy we have not sign changes in the specification (with exception of the constant). Further, the adjusted R^2 is rather stable among all model specifications. It has its lowest value in specification (4.) while the highest value in (1). The number of observations decreases when introducing more control variables which is caused by poor data quality.

Table 4: Relative Changes in Free Float We use an OLS regression in order to estimate the relative changes in free float (see Formula 2) between t and $t+1$ given ownership structures and firm characteristics in t . Individuals describes the cumulative voting rights held by blockholders who are individuals, family members, or groups of individuals. German Industrials includes all cumulative shareholding by blockholders that are non-financial corporations. German Financials contains all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German Government. Foreign Investors includes all block holdings by any investors who are not German. Undisclosed comprehends all other significant shareholders including those whose identity is undisclosed. Firm Size is prozied by the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. Performance is the annual total return on firm's common stock during the year before ($t-1$). For each model specification we present regression coefficients (corresponding heteroskedasticity consistent standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-0.061**	0.092	0.050	0.004	-0.008
Individuals	0.005	0.005	0.005	0.005	0.005
German Industrials	0.002*	0.003*	0.003*	0.003	0.001
German Financials	0.004**	0.004**	0.004***	0.004***	0.005***
German Government	0.004***	0.004***	0.004***	0.004***	0.004***
Foreign Investors	0.003**	0.003***	0.002*	0.002	0.001
Undisclosed	0.002	0.002*	0.002	0.002	0.002
Firm Size		-0.009	-0.005	-0.003	-0.003
RD/Sales			0.000	0.000	-0.002
RDEX-Dummy			-0.024	-0.024	-0.010
IPO-Dummy				0.031	0.045
Performance					0.000
Number of Observations	222	219	206	206	198
Adj. R^2	0.098	0.097	0.089	0.085	0.097

4.2. Regression Results on Block Trades

In the regression of all block trades, we find that having German financial firms and foreign investors as owners does have a positive impact on the probability of a block trade that is highly statistically significant (see Table 5). This strong influence can be found in all five model specifications (one exception is the influence of foreign investors in specification (3.) which only exhibits weak statistical significance). In the case of German financials, this impact might be caused by the effects of the 2001 corporate tax reform. In its aftermath, many German financials sold significant parts of their equity in German firms. There is a statistically significant positive impact on the probability of a block trade when German government owns stakes. This effect stays stable for all model specifications. The reason for this influence may be that there are quite a number of formerly state owned companies in the DAX30. During the 1990s, German government was only able to sell equity of state owned firms in certain tranches due to liquidity restrictions at the German stock market.

Surprisingly, size does not have an statistically significant influence in model specifications (2.)-(4.) and only becomes statistically significant when controlling for past performance in specification (5.). However, firms that are committed to R&D seem to be fundamentally different since the R&D dummy does have a highly significant negative impact. This might be caused by additional information asymmetries between blockholders and outside shareholders who might not be able to estimate the correct value of research project without having access to insider information. R&D/Sales, on the contrary, does not have any statistical significance on block trades. Past performance which we controlled for in model specification (5.) does not have any statistically significant influence. However, when controlling for past performance the IPO dummy becomes statistically significant and negative. It might be the case that shortly after an IPO it is harder to sell large fractions of share perhaps due to liquidity reasons. Again, the number of observations decreases slightly when introducing more control variables due to poor data quality.

Table 5: Regression of All Block Trades on Ownership Data We use a probit regression in order to estimate the probability of a block trade between t and $t+1$ given ownership structures and firm characteristics in t . Individuals describes the cumulative voting rights held by blockholders who are individuals, family members, or groups of individuals. German Industrials includes all cumulative shareholding by blockholders that are non-financial corporations. German Financials contains all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German Government. Foreign Investors includes all block holdings by any investors who are not German. Undisclosed comprehends all other significant shareholders including those whose identity is undisclosed. Firm Size is proxied by the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. Performance is the annual total return on firm's common stock during the last year before the possible block trade ($t-1$). For each model specification we present regression coefficients (corresponding Huber/White adjusted standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-1.488*** (0.199)	1.217 (1.866)	1.708 (2.303)	2.619 (2.427)	3.455 (2.488)
Individuals	0.004 (0.005)	0.002 (0.005)	0.000 (0.006)	0.000 (0.006)	0.001 (0.006)
German Industrials	0.018** (0.007)	0.009 (0.008)	0.012 (0.008)	0.028* (0.014)	0.013 (0.015)
German Financials	0.039*** (0.014)	0.040*** (0.015)	0.053*** (0.016)	0.054*** (0.016)	0.052*** (0.016)
German Government	0.014** (0.006)	0.016** (0.006)	0.023*** (0.007)	0.025*** (0.008)	0.021** (0.009)
Foreign Investors	0.028*** (0.010)	0.030*** (0.010)	0.023* (0.011)	0.04*** (0.015)	0.048*** (0.016)
Undisclosed	0.020* (0.010)	0.022** (0.010)	0.017 (0.011)	0.028** (0.013)	0.023* (0.012)
Firm Size		-0.163 (0.111)	-0.161 (0.136)	-0.215 (0.143)	-0.258* (0.147)
RD/Sales		0.016 (0.021)	0.016 (0.021)	0.02 (0.023)	-0.007 (0.026)
RDEX-Dummy		-0.800** (0.350)	-0.800** (0.350)	-0.882** (0.349)	-0.770** (0.351)
IPO-Dummy				-1.039 (0.649)	-1.074* (0.651)
Performance					-0.004 (0.002)
Number of Observations	221	218	205	205	197
McFadden R^2	0.076	0.086	0.142	0.167	0.184

4.3. Critical Examination

Even though the results explain some of the circumstances surrounding block trades, there are at least some issues to be considered when looking at the results: one problem is poor quality of German ownership data. Even though we used data from two prominent sources, Commerzbank’s ‘Wer gehört zu wem? – Beteiligungsverhältnisse in Deutschland’ and Hoppenstedt’s ‘Aktienführer’, there are still some gaps in our sample, especially for the early years of the sample. It is not clear if they can ever be closed since even for Germany’s largest firms disclosure requirements were not very strict during these years. One possibility to at least partly overcome this problem would be collecting ownership data for a larger scope of firms. However, for the early years of the study, problems regarding disclosure of ownership data are even more serious for smaller firms.

Further, one should be cautious when transferring our results to firms not listed in the DAX30. Liquidity in these market segments tends to be rather low. Generally, the number of German firms that are traded at the stock exchange is small compared to the U.S. or UK. We would expect results to be different for these economies.

The third issue is that we cannot control for interaction between blockholders or coalitions of them. Actually, we would like to do this since theory suggests that is matters. However, our sample is too small to conduct such an analysis.

5. Conclusion

We aim at analyzing the dynamics of blockholdings of German large caps. Therefore, we note that a change in a firm’s ownership structure may come in three shapes. First, a blockholder may sell a substantial stake in the firm to dispersed shareholders, which increases the firm’s free float. Second, a block trade may happen. This does not affect the free float of a firm. Third, a new investor may emerge and acquire a substantial stake of the firm from small shareholder resulting in a decreasing free float for the firm.

To examine the issue we collect ownership data for DAX firms from various sources. After presenting some descriptive, we use regression analysis (ols and probit models) to examine the behavior of blockholdings. Two findings emerge from our analysis. First, we find that free float of German large caps substantially increased from 1997 to 2006. A fact that was mainly driven by German financials and the German government. Moreover, we document that the (unconditional) probability for a block trade in a German large cap over the next year is some 17%. Second, we find that having German financials or German government entities as blockowners increases the likelihood of block trades and an increasing free float. Moreover, block trades are more likely to occur in firms having foreign investors as owners. Thus, we find that only individuals and German industrials are guarantors for a stable ownership structure. This finding is of interest with respect to the evolution of the so-called *Deutschland AG* but also with respect to the current *Ankeraktionär* discussion.

We challenge our findings in two ways. First we add various measures of firm character-

istics as explanatory variables to our regression models. Second, we redo the analysis on a different set of ownership data. These analyses reinforce our findings. An interesting next step for this line of research would be to analyze the interaction among blockholders and the agendas of different owner groups with respect to their persistence in a particular firm. Moreover, the question who is actually leaving seems to provide a fruitful field for further research.

References

- Adams, M. (1999), ‘Cross holdings in Germany’, *Journal of Institutional and Theoretical Economics*, **155**(1), pp. 80–109.
- Anderson R. C. & Reeb, D. M.. (2003), ‘Founding-family ownership and firm performance: evidence from the S&P 500’, *Journal of Finance*, **58**(5), pp. 1301–1328.
- Andres, C. (2008), ‘Large shareholders and firm performance – An empirical examination of founding-family ownership’, *Journal of Corporate Finance*, **14**(4), pp. 431–445.
- Albuquerque, R. A. & Schroth, E. J. (2008), ‘The determinants of the block premium and of private benefits of control’ (March 2008), *ECGI - Finance Working Paper No. 202/2008*, Available at SSRN: <http://ssrn.com/abstract=1099901>.
- Bebchuk, L. (1999), ‘A rent-protection theory of corporate ownership and control’, *NBER working paper 7203*, National Bureau of Economic Research, Cambridge, MA.
- Berglöf, E. & Perotti, E. (1994), ‘The governance structure of the Japanese financial keiretsu’, *Journal of Financial Economics*, **36**(2), pp. 259–284.
- Berle, A. A. & Means, G. C. (1932), ‘The modern corporation and private property’, McMillan, New York, NY.
- Burkart, M. & Panunzi, F. (2006), ‘Takeovers’ (January 2006), *ECGI - Finance Working Paper No. 118/2006*, Available at SSRN: <http://ssrn.com/abstract=884080>.
- Burkart, M., Gromb, D. & Panunzi, F. (1997), ‘Large shareholders, monitoring, and the value of the firm’, *Quarterly Journal of Economics*, **112**(3), pp. 693–728.
- Claessens, S., Djankov, S. & Lang, L. H. P. (2000), ‘The separation of ownership and control in East Asian corporations’, *Journal of Financial Economics*, **58**(1/2), pp. 81–112.
- Demsetz, H. (1983), ‘The structure of ownership and the theory of the firm’ (09. September 2004), *Journal of Law and Economics*, **26**(2), pp. 375–390.
- Deutsche Börse AG (2006), ‘Historical index compositions equity- and strategy indices of Deutsche Börse’, Version 2.6 (June 2007).
- Díaz Díaz, B. & García Olalla, M. (2004), ‘Asymmetric information and monitoring behaviour in block trades: an empirical analysis for Spain’, *Journal of Corporate Ownership and Control*, **2**(1), pp. 25–37.
- Dittmann, I. (2004), ‘Block trading, ownership, and the value of corporate votes’, *EFA 2004 Maastricht Meeting Paper No. 4338*, Available at SSRN: <http://ssrn.com/abstract=521482>.
- Dittmann, I., Maug, E. & Schneider, Ch. (2008), ‘Bankers on the boards of German firms: what they do, what they are worth, and why they are (still) there’ (February 2008), *ECGI - Finance Working Paper No. 196/2008*, Available at SSRN: <http://ssrn.com/abstract=1093899>.
- Dlugosz, J., Fahlenbrach, R., Gompers, P. & Metrick, A. (2006), ‘Large blocks of stock: prevalence, size, and measurement’, *Journal of Corporate Finance*, **12**(3), pp. 594–618.
- Edwards, J. S. & Nibler, M. (2000), ‘Corporate governance – banks versus ownership concentration in Germany’, *Economic Policy*, **15**(31), pp. 238–267.

- Edwards, J. S. & Weichenrieder, A. J. (2004), ‘Ownership Concentration and Share Valuation’, *German Economic Review*, **5**(2), pp. 143–171.
- Faccio, M. & Lang, L. H. P. (2002), ‘The ultimate ownership of Western European corporations’, *Journal of Financial Economics*, **65**(3), pp. 365–395.
- Franks, J. & Mayer, C. (2001), ‘Ownership and control of German corporations’, *The Review of Financial Studies*, **14**(4), pp. 943–977.
- Franks, J., Mayer, C. & Wagner, H. F. (2005), ‘The origins of the German corporation – finance, ownership and control’ (30. August 2005), *ECGI Finance Working Paper No. 110/2005*, Available at SSRN: <http://ssrn.com/abstract=798347>.
- Franks, J., Mayer, C., Volpin, P. & Wagner, H. F. (2008), ‘Evolution of family capitalism: a comparative study of France, Germany, Italy and the UK’ (18. March 2008), *SSRN eLibrary*, Available at SSRN: <http://ssrn.com/abstract=1102475>.
- Gillan, S. L. (2006), ‘Recent developments in corporate governance: an overview’, *Journal of Corporate Finance*, **12**(3), pp. 381–402.
- Goergen, M., Manjon, M. & Renneboog, L. (2008), ‘Is the German system of corporate governance converging towards the Anglo-American model?’, *Journal of Management and Governance*, **12**(1), pp. 37–71.
- Gorton, G. & Schmid, F. A. (2000), ‘Universal banking and the performance of German firms’, *Journal of Financial Economics*, **58**(1/2), pp. 29–80.
- Gregoric, A. & Vespro, C. (2003), ‘Block trades and the benefits of control in Slovenia’ (September 2003), *ECGI - Finance Working Paper No. 29/2003*, Available at SSRN: <http://ssrn.com/abstract=444500>.
- Grossman, S. J. & Hart, O. D. (1980), ‘Takeover bids, the free-rider problem, and the theory of the corporation’, *The Bell Journal of Economics*, **11**(1), pp. 42–64.
- Grossman, S. J. & Hart, O. D. (1988), ‘One share-one vote and the market for corporate control’, *Journal of Financial Economics*, **20**(1/2), pp. 175–202.
- Harjoto, M. & Garen, J. (2005), ‘Inside ownership beyond the IPO: the evolution of corporate ownership concentration’, *Journal of Corporate Finance*, **11**(4), pp. 661–679.
- Heiss, F. & Köke, J. (2004), ‘Dynamics in ownership and firm survival: evidence from corporate Germany’, *European Financial Management*, **10**(1), pp. 167–195.
- Helwege, P., Pirinsky, C. & Stulz, R. (2007), ‘How do firms become widely held? An analysis of the dynamics of corporate ownership’, *Journal of Finance*, **62**(3), pp. 995–1028.
- Hoetker, G. (2007), ‘The use of logit and probit models in strategic management research: critical issues’, *Strategic Management Journal*, **28**(3), pp. 331–343.
- Holderness, C. G. (2003), ‘A survey of blockholders and corporate control’, *Economic Policy Review*, April 2003.
- Holderness, C. G. & Sheehan, D. P. (1988), ‘The role of majority shareholders in publicly held corporations: an exploratory analysis’, *Journal of Financial Economics*, **20**(1/2), pp. 317–346.
- Höpner, M. & Krempel, L. (2004), ‘Ein Netzwerk in Auflösung: Wie die Deutschland AG zerfällt’, *MPIfG-Jahrbuch 2003/04*. Köln: Max-Planck-Institut für Gesellschafts-

- forschung, pp. 9–14.
- Höpner, M. & Krempel, L. (2004), ‘The Politics of the German Company Network’, *Competition & Change*, **8**(4), pp. 339–356.
- Johnson, S., La Porta, R., Lopez-de-Silanes, F. & Shliefer, A. (2000), ‘Tunneling’, *American Economic Review Papers and Proceedings*, **XC**(2000), pp. 22–27.
- Kaserer, C. & Moldenhauer, B. (2008), ‘Insider ownership and corporate performance: evidence from Germany’, *Review of Managerial Science*, **2**(1), pp. 1–35.
- Kengelbach, J. & Roos, A. (2006), ‘Entflechtung der Deutschland AG – Empirische Untersuchung der Reduktion von Kapital- und Personalverflechtungen zwischen deutschen börsennotierten Gesellschaften’, *M&A Review*, **2006**(1), pp. 12–21.
- Köke, J. (2004), ‘The market for corporate control in a bank-based economy: a governance device?’, *Journal of Corporate Finance*, **10**(1), pp. 53–80.
- La Porta, R., Lopez-De-Silanes, F. & Shleifer, A. (1999), ‘Corporate ownership around the world’, *The Journal of Finance*, **54**(2), pp. 471–517.
- La Porta, R., Lopez-De-Silanes, F., Shleifer, A. & Vishny, R. W. (1998), ‘Law and finance’, *Journal of Political Economy*, **106**(6), pp. 1113–1154.
- Maury, B. (2006), ‘Family ownership and firm performance: empirical evidence from Western European corporations’, *Journal of Corporate Finance*, **12**(2), pp. 321–341.
- Mehran, H. (1995), ‘Executive compensation structure, ownership, and firm performance’, *Journal of Financial Economics*, **38**(2), pp. 163–184.
- Mikkelsen, W. H. & Regassa, H. (1991), ‘Premiums paid in block transactions’, *Managerial and Decision Economics*, **12**(6), pp. 511–517.
- Nenova, T. (2003), ‘The value of corporate voting rights and control: A cross-country analysis’, *Journal of Financial Economics*, **63**(3), pp. 325–351.
- Pagano, M. & Roell, A. (1998), ‘The choice of stock ownership structure: agency costs, monitoring, and the decision to go public’, *Quarterly Journal of Economics*, **113**(1), pp. 187–225.
- Shleifer, A. & Vishny, R. W. (1986), ‘Large shareholders and corporate control’, *Journal of Political Economy*, **94**(3), pp. 461–488.
- Shleifer, A. & Vishny, R. W. (1997), ‘A survey of corporate governance’, *Journal of Finance*, **52**(2), pp. 737–783.
- Smith, A. (1776), ‘An inquiry into the nature and causes of the wealth of nations’, The Modern Library, New York, NY.
- Thomsen, S., Pedersen, T. & Kvist, H. K. (2006), ‘Blockholder ownership: effects on firm value in market and control based governance systems’, *Journal of Corporate Finance*, **12**(2), pp. 246–269.

Appendix

A. Ultimate Ownership

In Appendix A we review the concept of ultimate ownership. Further, we include a description on how we calculated ultimate ownership stakes. The stream of ultimate ownership literature begin with La Porta et al. (1999) who find that in many economies some shareholders do have control rights that exceeds their proportion of cash flow rights by far and in most cases control is either exercised over pyramids or by participation in management. The main idea of ultimate ownership is that direct shareholders do not necessarily have the control over a firm. There are several indirect ways to get a majority of voting rights which we will discuss later on. There are several definitions of ultimate ownership e.g. La Porta et al. (1999), Faccio & Lang (2002), or Köke (2004) which mostly differ in the way of how means of indirect control are accounted for.

Since we determine ultimate ownership very similar to Faccio & Lang (2002) we will only briefly review means necessary to get control over a firm. We use 10% of voting rights as thresholds for control. Some researchers suggest that 29.9% of voting rights is more appropriate. However, we consider it as too restrictive in the case of Germany since owning more 30% of common stock inevitably commits the owner to a mandatory takeover offer under German Security Exchange law (*Pflichtangebot*). In this context, we call deviation from one share-one vote excess control. One share-one vote is considered optimal when monitoring is costly (see Grossman & Hart (1988)). The first way to get excess control is to buy shares with multiple voting rights. These kind of shares are not very common in Germany today, however, until the end of the last century, it was not uncommon even for major companies listed in the DAX30 to have multiple classes of shares. Quite a few firms in our sample have (at least for a couple of firm years) common stock (*Stammaktien*) as well as preferred stock (*Vorzugsaktien*) outstanding. We control for that by determining cash flow and voting rights separately.

The second means is pyramiding, i.e. using a chain of companies in order to get control in a certain firm. As shown in Figure 2, individual *A* who is the controlling shareholder of firm *B* also gains control over firm *C* through a pyramid for firm *B* owns a controlling share of firm *c*. Cash flow rights in the ultimately controlled firm CF_{UO} are the product of fractions of cash flow rights CF_i of N firms along the control chain:

$$CF_{UO} = \prod_{i=1}^N CF_i. \quad (4)$$

In contrast to that voting rights in ultimately controlled firms VR_{VR} are the minimum of voting rights in the N individual firms VR_i along the the control chain:

$$VR_{UO} = \min\{VR_1, \dots, VR_N\}. \quad (5)$$

Therefore, pyramiding can lead to divergence between cash flow and voting rights. It should be noted that pyramiding is a way to gain control over many firms quite inexpensively (see e.g. Faccio & Lang (2002, p. 372)). In the example shown in Figure 2, *A* owns 20% of voting rights of firm *C* but only 4% of *C*’s cash flow rights.

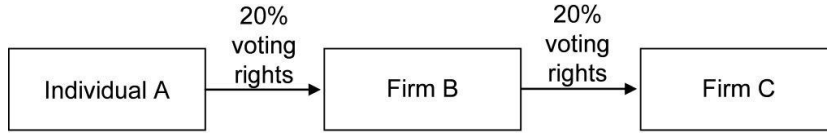


Figure 2: Control over Pyramid Structures

Control can also be exercised over a multitude of control chains. La Porta et al. (1999) do not consider a multitude of control chains which is a major difference to Faccio & Lang (2002). Figure 3 depicts that individual *A* is controlling shareholder of firm *B*. In contrast to the case of pyramiding (see Figure 2), firm *B* does not control firm *C*. Nevertheless, *A* is ultimate owner of firm *C* using a multitude of control ways. In this example, *A* owns 20% of voting rights of firm *C* and 9.84% of cash flow rights. Note that the cut-off point for multiple control links is 5%, i.e. if *A* owns only 4% of voting right of firm *C*, we would not count this link.

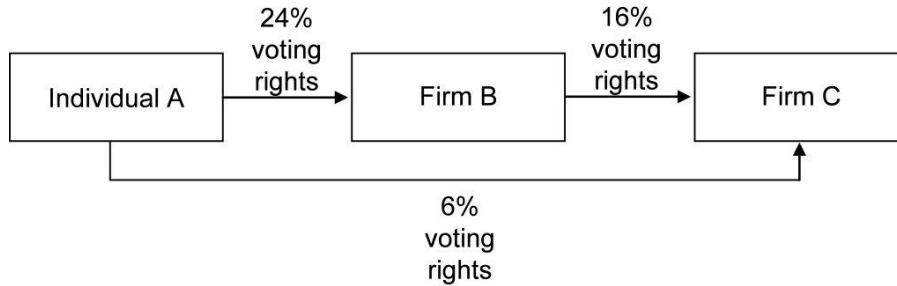


Figure 3: Control over Multiple Control Links

The last indirect way to gain control are cross-holdings of equity among firms. If a firm *A* owns 20% of voting rights of firm *B* that again owns 20% of voting rights of firm *A*, we call this a cross-holding (see Figure 4). This is equivalent to the definition of Faccio & Lang (2002). Note that there exist not only different definitions of cross-holdings; sometimes even the wording may be overlapping or contradicting, e.g. Claessens et al. (2000) define holdings through a multitude of control chains as cross-holdings. However, our definition is less restrictive as it seems to be since cross-holdings might also appear when there are more than two companies that own control stakes in each other which is vividly described by Adams (1999, pp. 81–82). In the course of determining the ultimate owner, we deal with cross-holdings the following way: voting rights cancel each other out if each firm owns at least 10% of voting rights of the other firm which is the case in Figure 4. The reason for this is that if managers control each other it is similar to a stand-off situation. Nobody will

vote against motions brought up by someone who in turn could retaliate. The cut-off point for cross-holdings is 10% of voting rights.

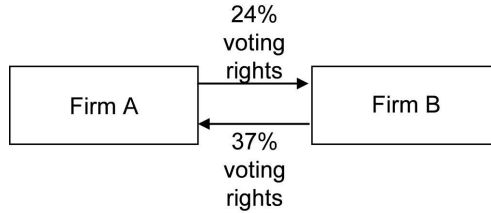


Figure 4: Cross Holdings between Two Firms That Does Influence Corporate Control

Germany’s largest companies were known to be heavily interlinked by cross-holdings which was pointed out by La Porta et al. (1999, p. 500). Unfortunately, there is no general agreement in literature about this because Faccio & Lang (2002, p. 378) find that cross-holdings appear only in 2.62% of all observed cases. Franks & Mayer (2001, p. 950–952) even state that they do not find any significant cross-holdings at all. Reasons for the discrepancy might be that the different authors look at the ownership structure at different points of time and disclosure rules were changed in the meantime. Further, they used different sources of data. La Porta et al. (1999) used WorldScope data collect for the years 1995 to 1997. Faccio & Lang (2002) use WorldScope data for the year 1996 for their sample on German firms as well. However, they amend it, if possible, with data taken from Commerzbank’s ‘Wer gehört zu wem? – Beteiligungsverhältnisse in Deutschland’ since they find some shortcomings in WorldScope data. In contrast to this, Franks & Mayer (2001) who do only look at direct ownership conduct their analysis for 1990 using data from Hoppenstedt Aktienführer. In Figure 5 voting rights of firm A remain valid since firm B owns less than 10% of voting rights of firm A.

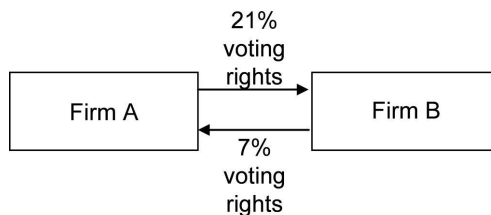
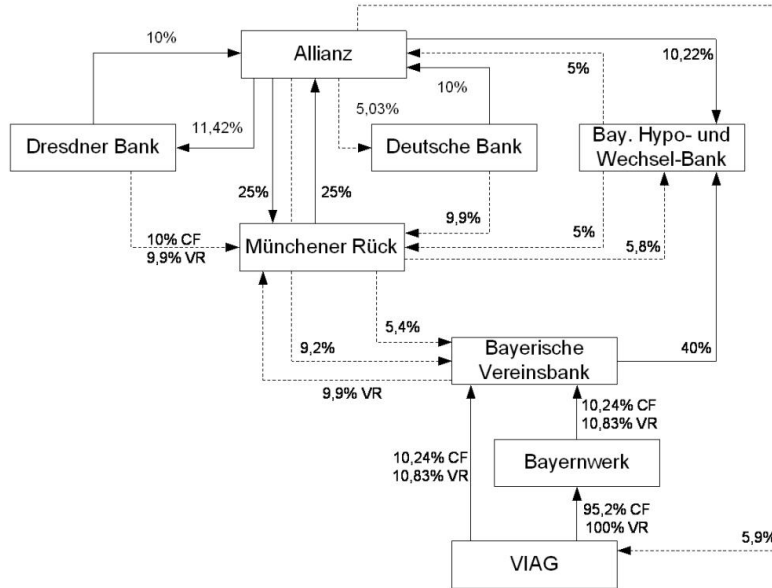


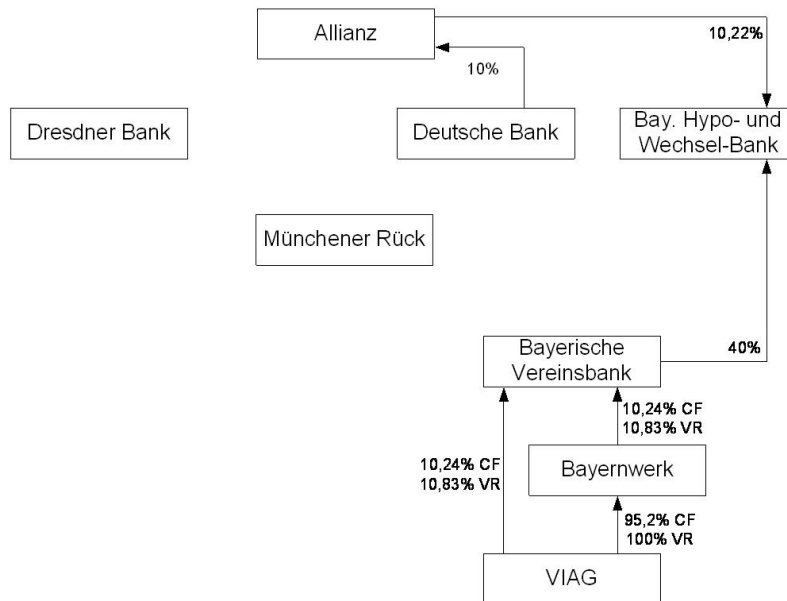
Figure 5: Cross Holdings between Two Firms That Does Not Influence Corporate Control

We encounter cross-holdings mainly clustered around German financial firms like Münchener Rückversicherungs AG, Allianz AG as well as Bayerische Vereinsbank AG, especially in the early years of our study (see Figure 6). The firms involved in this net are heavily interlinked on direct ownership level. But when looking at ultimate owners, we find that most of them are widely held. However, direct ownership interconnections disappear within five year as depicted in Figure 7. Allianz AG took over Dresdner Bank AG in 2001. Due

to this fact they own 77.33% of voting rights. One of the main reasons might be the 2001 change in corporate tax regime which allowed firms to sell off equity without being taxed for accumulated capital gains.

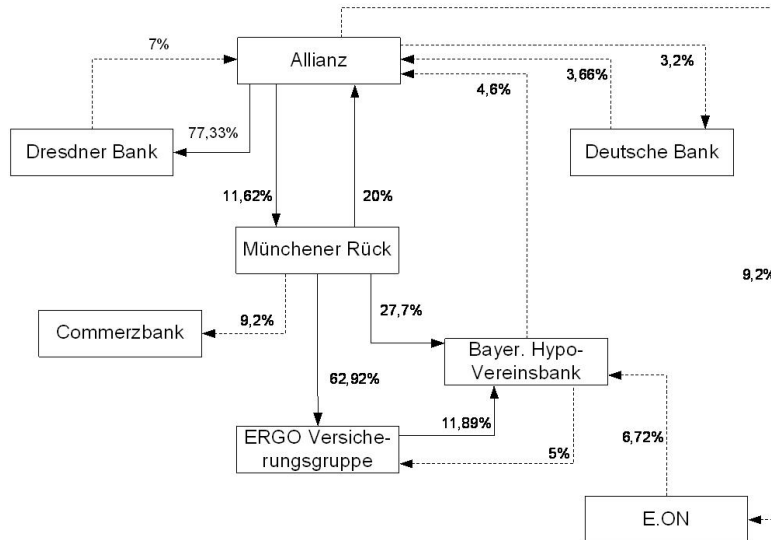


(a) Structure on Direct Ownership

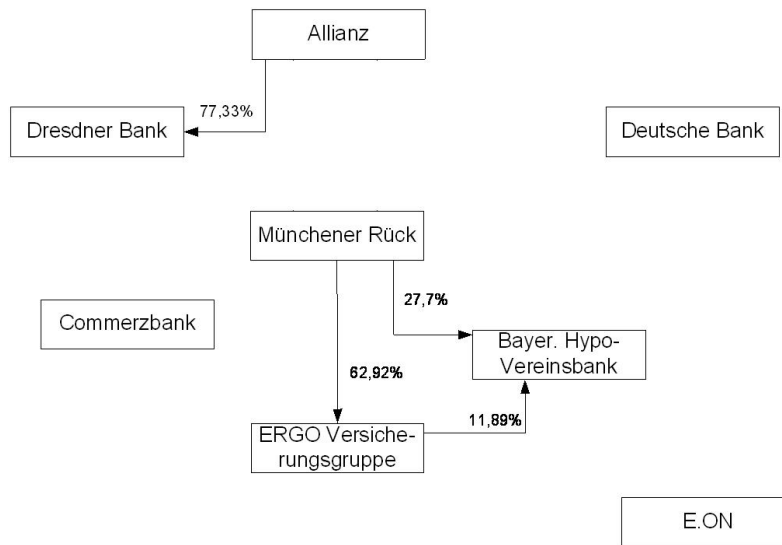


(b) Structure on Ultimate Ownership

Figure 6: Direct and Ultimate Ownership Structure among Major German Banks and Insurances in 1997 – Significant Cash Flow (CF) and Voting Rights (VR) Are Marked



(a) Structure on Direct Ownership



(b) Structure on Ultimate Layer

Figure 7: Direct and Ultimate Ownership Structure among Major German Banks and Insurances in 2002
 – Significant Cash Flow (CF) and Voting Rights (VR) Are Marked

B. Absolute Free Float

In Appendix B we show results of the OLS regressions of absolute changes in free float on ownership structures and firm characteristics. There are highly statistically significant impacts of German Financials and German Government having the same sign as in the regressions on relative changes. All control variables are statistically insignificant and we experience no sign changes. However, Individuals are statistically significant throughout all model specifications suggesting that they might have an impact on changes in free float. German Industrials and Foreign Investors are statistically insignificant in most specifications. Generally, our findings from the regression of relative changes are confirmed by this robustness test.

Table 6: Absolute Changes in Free Float We use an OLS regression in order to estimate the absolute changes in free float (see Formula 3) between t and $t+1$ given ownership structures and firm characteristics in t . Individuals describes the cumulative voting rights held by blockholders who are individuals, family members, or groups of individuals. German Industrials includes all cumulative shareholding by blockholders that are non-financial corporations. German Financials contains all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German Government. Foreign Investors includes all block holdings by any investors who are not German. Undisclosed comprehends all other significant shareholders including those whose identity is undisclosed. Firm Size is prozied by the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. Performance is the annual total return on firm's common stock during the year before ($t-1$). For each model specification we present regression coefficients (corresponding heteroskedasticity consistent standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-2.184*** (0.797)	9.194 (9.419)	7.542 (10.58)	6.112 (12.14)	2.602 (11.68)
Individuals	0.102*** (0.034)	0.092*** (0.035)	0.095** (0.037)	0.097** (0.038)	0.111*** (0.040)
German Industrials	0.075 (0.045)	0.088* (0.048)	0.097** (0.048)	0.083 (0.052)	0.049 (0.041)
German Financials	0.212*** (0.075)	0.205** (0.079)	0.237*** (0.085)	0.241*** (0.085)	0.251*** (0.085)
German Government	0.143*** (0.038)	0.149*** (0.039)	0.146*** (0.047)	0.147*** (0.047)	0.174*** (0.054)
Foreign Investors	0.117*** (0.044)	0.118*** (0.043)	0.100** (0.048)	0.086 (0.057)	0.074 (0.070)
Undisclosed	0.084 (0.063)	0.086 (0.063)	0.085 (0.064)	0.079 (0.064)	0.083 (0.065)
Firm Size		-0.669 (0.549)	-0.529 (0.597)	-0.449 (0.686)	-0.257 (0.658)
RD/Sales			0.082 (0.106)	0.087 (0.109)	0.050 (0.106)
RDEX-Dummy			-1.401 (2.150)	-1.403 (2.169)	-1.371 (2.146)
IPO-Dummy				0.979 (2.006)	1.452 (2.090)
Performance					0.005 (0.014)
Number of Observations	222	219	206	206	198
Adj. R^2	0.082	0.091	0.081	0.077	0.083

C. Entering Block Trades

In Appendix C we show our results for entering block trades, i.e. block trades between an incumbent and an outsider. The distribution of entering block trades over time is shown in Table 7. The results of our regressions are exhibited in Table 8. Most of the effects are stable even though the statistical significances are weaker in most cases than in the regressions on all block trades. German Government loses its impacts and the effects of German Industrials is only weak. However, the results confirm our findings in general.

Table 7: Sample Distribution by Number of Entering Block Trades Each Year Blocktrades are only included if they are between an incumbent and an outside shareholder. For the period between 01. January 1997 to 31. December 2006, we identify 35 cases in which more than 5% of voting rights were traded. We list the distribution of firms among the years of our sample in this table.

Year	Number of Block Trades (EBT)	Percentage of Firms	Number of Firms
1997	N/A	N/A	—
1998	1	4.00	25
1999	2	8.00	25
2000	5	20.00	25
2001	4	15.38	26
2002	7	26.92	26
2003	4	15.38	26
2004	2	7.69	26
2005	4	15.38	26
2006	6	24.00	25
Total	35	15.22	230

Table 8: Regression of Entering Block Trades on Ownership Data *The sample we investigate entering block trades. The incumbent blockholder either exits or stays in the firm. We use a probit regression in order to estimate the probability of a block trade between t and $t+1$ given firm characteristics in t . Individuals describes the cumulative shares by blockholders who are individuals, family members, or groups of individuals. German industrials includes all individual shareholding by blockholders that are non-financial corporations. German financials contains all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German government. Foreign investors includes all block holdings by any investors who are not German. Undisclosed comprehends all other significant shareholders including those whose identity is undisclosed. Firm size is proxied by the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. Performance is the total return on firm's common stock during the last year before the possible block trade. For each model specification we present regression coefficients (corresponding standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.*

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-1.378*** (0.193)	1.190 (1.899)	1.603 (2.311)	2.615 (2.428)	3.471 (2.508)
Individuals	0.001 (0.005)	-0.001 (0.006)	-0.003 (0.006)	-0.003 (0.007)	-0.003 (0.007)
German Industrials	0.016** (0.007)	0.007 (0.008)	0.010 (0.008)	0.027* (0.014)	0.012 (0.015)
German Financials	0.031** (0.014)	0.033** (0.015)	0.044*** (0.016)	0.044*** (0.016)	0.043*** (0.016)
German Government	-0.012 (0.009)	-0.009 (0.009)	-0.013 (0.011)	-0.014 (0.012)	-0.016 (0.013)
Foreign Investors	0.026** (0.010)	0.028*** (0.010)	0.022* (0.011)	0.040*** (0.015)	0.047*** (0.016)
Undisclosed	0.018* (0.010)	0.020** (0.010)	0.016 (0.011)	0.027** (0.013)	0.023* (0.013)
Firm Size		-0.155 (0.113)	-0.154 (0.136)	-0.214 (0.143)	-0.260* (0.148)
RD/Sales			0.011 (0.021)	0.015 (0.023)	-0.012 (0.026)
RDEX-Dummy			-0.654* (0.350)	-0.736** (0.347)	-0.617* (0.347)
IPO-Dummy				-1.065* (0.643)	-1.088* (0.640)
Performance					-0.003 (0.002)
Number of Observations	221	218	205	205	197
McFadden R^2	0.094	0.100	0.149	0.178	0.191

D. Results on Ultimate Ownership Sample

Appendix D contains the results of the regression models using ultimate ownership data (for the concept and the way we constructed the data set see Appendix A).

Note that we determine ultimate ownership only for firms listed in Commerzbank’s ‘Wer gehört zu wem? – Beteiligungsverhältnisse in Deutschland’. Unfortunately, this is necessary since there are (albeit small) discrepancies between the two sources of data which would introduce rather strong inconsistencies into our sample when these discrepancies are taken in over multiple layers. However, it is impossible to collect ultimate ownership data for eight firm years of which we determine direct ownership structures. We end up with a sample of 268 firm year from we we have to deduct 45 firm years of financial firms. This leaves us an initial sample of 223 firm year. Problems with data quality are especially significant for the early years since German disclosure legislation was less strict during mid to late 1990s.

In Table 9, we provide descriptive statistics for ultimate ownership data. The stakes of German financials are much lower when looking at ultimate owners than at direct owners. The reason is that in many cases these firms cancel out as ultimate owners due to cross-holdings. Further, the ownership stake of foreign investors is only 1.06% ultimate owner level. This is partly due to technical reasons: many foreign owners hold stakes between 5% which qualifies them as blockholders in the direct ownership specification and 10% which is required to be an ultimate owner. Subsequently, they appear as direct blockholders but drop out as ultimate owners. Note also that the average stake of individuals is higher on 10% ultimate owner level than on in the direct ownership specification. We take this as evidence that individuals also exercise control indirectly.

The results of relative changes in free float can be found in Table 10. Generally the regressions confirm our previous results even if the statistical significance is weaker in most cases. Individuals 10 are the exception since the variable is statistically significant throughout all model specifications. However, the magnitude of the coefficient is rather low (in four of five cases 0.001). The effect of foreign investors completely vanishes and the control variables are, except for two cases, all statistically insignificant. There are no sign changes when comparing the results of these regressions with the results when using direct owners as independent variables.

In Table 3 are the results for the regression of absolute changes in free float on ultimate ownership data. Compared to the regressions using direct ownership the effects are weaker for almost all model specifications. Only in three of five model specifications there is an effect on German Financials 10. Nevertheless, we consider the results in line with our previous findings.

The results on the regressions of all block trades on ultimate ownership data (see Table 12) confirm, again, our previous finding (see Table 5). Having German industrials as owners has a positive impact on the probability of a block trade throughout all model specifications. The effect is at least statistically significant and for specifications (3.) and (4.) it exhibits high statistical significance. Furthermore, having German government as an owner does no longer

have a positive impact on the probability of a block trade. This is fascinating since German government owns significant stakes of equity in the sample of ultimate owners level. Foreign investors and German financials do exhibit the same impact on block trade probability as in the regression using direct ownership. For the control variables some previously weak effects vanish although. The R&D dummy stays statistically significant in specifications (3.) and (4.). The negative impact of R&D on the probability of block trades remains when using this sample of ownership data.

Table 13 contains the results of the regressions of entering blockholders on ultimate ownership data. The results are quite similar to the other regression models. However, there is one exception: German non-financials do not longer have any statistical impact on the probability of a block trade. This may suggest that block trades are more likely to happen between incumbents when German non-financials are within the ownership structure. Moreover, we are unable to compute the regression since we get a binary response failure for German Industrials 10 for model specification (5.).

Table 9: Summary Statistics for Ultimate Ownership Data *The table provides the data on aggregate ultimate ownership structure using a 10% threshold. The variables are defined as follows: INDIVID describes the aggregated percentage of owners who are individuals, families, groups of people, or unlimited liability companies. GERIND is the percentage of voting rights owned by German non-financial firms. GERFIN is the percentage of voting rights owned by German financial firms. GERGOV is the percentage of voting rights owned by German government or German government sector entities. FOREIGN is the percentage of voting rights owned by foreign investors. UNDIS is the percentage of voting rights owned by undisclosed owners.*

	INDIVID	GERIND	GERFIN	GERGOV	FOREIGN	UNDIS
Mean	9.61	1.34	2.65	5.49	1.06	4.72
Median	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	90.00	71.87	30.30	74.00	27.74	67.35
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Std. Dev.	20.59	9.85	6.20	15.41	4.32	10.12
Observations	193	193	193	193	193	193

Table 10: Relative Changes in Free Float on Ultimate Ownership Data We use an OLS regression in order to estimate the relative changes in free float (see Formula 2) between t and $t+1$ given ultimate ownership structures and firm characteristics in t . All aggregate ownership stakes are on ultimate ownership using a 10% threshold. Individuals 10 describes the cumulative voting rights held by blockholders who are individuals, family members, or groups of individuals. German Industrials 10 includes all cumulative shareholding by blockholders that are non-financial corporations. German Financials 10 contains all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German Government 10. Foreign Investors 10 includes all block holdings by any investors who are not German. Undisclosed 10 comprehends all other significant shareholders including those whose identity is undisclosed. Firm Size is proxied by the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. Performance is the annual total return on firm's common stock during the year before ($t-1$). For each model specification we present regression coefficients (corresponding heteroskedasticity consistent standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-0.016*	0.273	0.263	0.134	0.064
Individuals 10	0.001**	0.001**	0.001**	0.001**	0.002**
German Industrials 10	0.004**	0.004*	0.004**	0.004*	0.002
German Financials 10	0.002	0.002	0.003*	0.003*	0.004**
German Government 10	0.003***	0.003***	0.003**	0.003**	0.004**
Foreign Investors 10	0.003	0.003	0.003	0.002	0.003
Undisclosed 10	0.001	0.001	0.001	0.001	0.001
Firm Size		-0.017	-0.013	-0.005	-0.002
RD/Sales			0.001	0.002	0.001
RDEX-Dummy			-0.072	-0.086*	-0.088*
IPO-Dummy				0.06	0.063
Performance					0
Number of Observations	194	191	181	181	174
Adj. R^2	0.148	0.160	0.159	0.166	0.137

Table 11: Absolute Changes in Free Float on Ultimate Ownership Data We use an OLS regression in order to estimate the absolute changes in free float (see Formula 3) between t and $t+1$ given ultimate ownership structures and firm characteristics in t . All aggregate ownership stakes are on ultimate ownership using a 10% threshold. *Individuals 10* describes the cumulative voting rights held by blockholders who are individuals, family members, or groups of individuals. *German Industrials 10* includes all cumulative shareholding by blockholders that are non-financial corporations. *German Financials 10* contains all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in *German Government 10*. *Foreign Investors 10* includes all block holdings by any investors who are not German. *Undisclosed 10* comprehends all other significant shareholders including those whose identity is undisclosed. *Firm Size* is proxied by the natural logarithm of net sales or revenues. *RD/Sales* is expenditures of research and development of net sales or revenues. *RDEX-Dummy* is one if the firm has positive R&D expenditures and zero otherwise. *IPO-Dummy* is one if the firms initial public offering is not longer than 10 years ago. *Performance* is the annual total return on firm's common stock during the year before ($t-1$). For each model specification we present regression coefficients (corresponding heteroskedasticity consistent standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-0.978	8.863	8.473	2.456	-4.828
Individuals 10	0.062**	0.050**	0.055**	0.062**	0.079***
German Industrials 10	0.140**	0.130**	0.138**	0.114*	0.063
German Financials 10	0.109	0.121	0.176*	0.193**	0.221**
German Government 10	0.122***	0.125***	0.118**	0.123**	0.163**
Foreign Investors 10	0.228	0.204	0.232	0.182	0.160
Undisclosed 10	0.079	0.064	0.078	0.075	0.092
Firm Size		-0.571	-0.411	-0.047	0.376
RD/Sales			0.035	0.063	0.097
RDEX-Dummy			-3.246	-3.859	-4.458
IPO-Dummy				2.811	3.532*
Performance					0.004
Number of Observations	194	191	181	181	174
Adj. R^2	0.074	0.075	0.071	0.076	0.071

Table 12: Regression of All Block Trades on Ultimate Ownership Data (10% threshold) We use a probit regression in order to estimate the probability of a block trade between t and $t+1$ given ultimate ownership structures and firm characteristics in t . All aggregate ownership stakes are on ultimate ownership using a 10% threshold. Individuals 10 describes the cumulative shares by blockholders who are individuals, family members, or groups of individuals. German Industrials 10 includes all cumulative shareholding by blockholders that are non-financial corporations. German Financials 10 subsumes all blockholdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German Government 10. Foreign Investors 10 includes all block holdings by any investors who are not German. Undisclosed 10 comprehends all other significant shareholders including those whose identity is undisclosed. Firm Size is the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. For each model specification we present regression coefficients (corresponding Huber/White adjusted standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-1.197*** (0.182)	-0.350 (1.979)	0.709 (2.515)	1.533 (2.765)	2.456 (2.925)
Individuals 10	0.001 (0.005)	0.001 (0.006)	0.001 (0.006)	0.000 (0.006)	0.000 (0.007)
German Industrials 10	0.022** (0.010)	0.022** (0.010)	0.030*** (0.010)	0.034*** (0.011)	0.023* (0.011)
German Financials 10	0.046*** (0.017)	0.042** (0.017)	0.066*** (0.017)	0.064*** (0.020)	0.060*** (0.020)
German Government 10	0.009 (0.007)	0.010 (0.007)	0.017** (0.008)	0.016* (0.008)	0.012 (0.010)
Foreign Investors 10	0.046** (0.023)	0.047** (0.023)	0.069*** (0.026)	0.077*** (0.026)	0.084*** (0.030)
Undisclosed 10	-0.003 (0.010)	-0.001 (0.010)	0.001 (0.011)	0.001 (0.012)	-0.003 (0.012)
Firm Size		-0.053 (0.115)	-0.072 (0.149)	-0.122 (0.164)	-0.173 (0.174)
RD/Sales			-0.026 (0.027)	-0.025 (0.026)	-0.039 (0.029)
RDEX-Dummy			-1.000*** (0.368)	-0.945** (0.380)	-0.813** (0.379)
IPO-Dummy				-0.469 (0.517)	-0.694 (0.588)
Performance					-0.004 (0.003)
Number of Observations	193	190	180	180	173
McFadden R^2	0.088	0.088	0.188	0.192	0.184

Table 13: Regression of Entering Block Trades on Ultimate Ownership Data (10% threshold) *The sample we investigate entering block trades. The incumbent blockholder either exits or stays in the firm. We use a probit regression in order to estimate the probability of a block trade between t and $t+1$ given ultimate ownership structures and firm characteristics in t . All aggregate ownership stakes are on ultimate ownership using a 10% threshold. Individuals 10 describes the cumulative shares by blockholders who are individuals, family members, or groups of individuals. German Industrials 10 includes all cumulative shareholding by blockholders that are non-financial corporations. German Financials 10 subsumes all block holdings by financial firms, i.e. banks, insurances, and fund. Block holdings by the federal government of Germany, German state, or cities are included in German Government 10. Foreign investors 10 includes all block holdings by any investors who are not German. Undisclosed 10 comprehends all other significant shareholders including those whose identity is undisclosed. Firm Size is proxied by the natural logarithm of net sales or revenues. RD/Sales is expenditures of research and development of net sales or revenues. RDEX-Dummy is one if the firm has positive R&D expenditures and zero otherwise. IPO-Dummy is one if the firms initial public offering is not longer than 10 years ago. Performance is the total return on firm's common stock during the last year before the possible block trade. For each model specification we present regression coefficients (corresponding Huber/White adjusted standard errors in parenthesis). * (**, ***) denotes statistical significance on a 10% (5%, 1%) level.*

Independent Variables	(1.)	(2.)	(3.)	(4.)	(5.)
Intercept	-1.145*** (0.179)	0.177 (2.012)	0.918 (2.548)	1.487 (2.806)	N/A (N/A)
Individuals 10	-0.001 (0.006)	-0.001 (0.006)	-0.001 (0.007)	-0.002 (0.007)	N/A (N/A)
German Industrials 10	0.009 (0.011)	0.009 (0.011)	0.015 (0.011)	0.018 (0.012)	N/A (N/A)
German Financials 10	0.040** (0.017)	0.036** (0.017)	0.058*** (0.020)	0.056*** (0.020)	N/A (N/A)
German Government 10	-0.013 (0.010)	-0.011 (0.009)	-0.019 (0.014)	-0.020 (0.014)	N/A (N/A)
Foreign Investors 10	0.050** (0.023)	0.050** (0.024)	0.069*** (0.026)	0.074*** (0.027)	N/A (N/A)
Undisclosed 10	-0.004 (0.011)	-0.002 (0.010)	0.001 (0.011)	0.001 (0.012)	N/A (N/A)
Firm Size		-0.081 (0.118)	-0.087 (0.151)	-0.122 (0.167)	N/A (N/A)
RD/Sales			-0.014 (0.025)	-0.014 (0.025)	N/A (N/A)
RDEX-Dummy			-0.911** (0.372)	-0.870** (0.385)	N/A (N/A)
IPO-Dummy				-0.309 (0.460)	N/A (N/A)
Performance					N/A (N/A)
Number of Observations	193	190	180	180	N/A
McFadden R^2	0.092	0.091	0.180	0.182	N/A