Universal Banks, Corporate Control, and Equity Carve-Outs in Germany

Ralf Elsas [a,1], Yvonne Löffler [b]

[a] *Corresponding author.*
Institute for Finance & Banking, LMU Munich,
Ludwigstr. 28 RG, 80539 München Germany.
Phone: (+49) 89-2180 2579, Fax: (+49) 89-2180 3608.

[b] *Humboldt-Universität zu Berlin, E-mail: yloeffler@yahoo.de*

Abstract

This paper analyzes value effects of changes in the governance structure of German firms due to equity carve-outs.

Our main conjecture is that the degree of pre-event corporate control affects market reactions to the announcement of carve-outs. We test two contradictory implications. If less control of management leads to less efficiently managed firms, in particular these firms will benefit the most from a change in the governance structure. On the other hand, if tight control of management ensures a more efficient use of the carve-out proceeds, firms more subject to corporate control will have higher abnormal returns.

Our evidence clearly supports the first prediction. We find that a higher degree of pre-event ownership concentration leads to lower abnormal returns. We find evidence consistent with an active role of banks in disciplining management, but this does not go beyond what non-financial blockholders achieve, although we explicitly take into account direct equity stakes, proxy-voting rights, and supervisory board representation of banks.

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Email address: elsas@bwl.uni-muenchen.de (Ralf Elsas).

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1 Introduction

If a firm sells a subsidiary to the public via an IPO this is called an equity carve-out. Carve-outs can be interpreted either as an instrument to raise funds, or as a way to restructure the firm. There are two issues that render them particularly interesting from a corporate control perspective. First, carve-outs are mainly conducted by large conglomerate firms, where agency problems due to the separation of ownership and control are likely to be severe. Second, a carve-out is an event where a firm's management raises funds at the expense of control rights in the subsidiary. As argued by Allen and McConnell (1998), although the parent often still holds significant stakes in the subsidiary after the IPO, management of the parent has lost significant control rights: The newly listed subsidiary has its own board of directors, is subject to disclosure requirements, and is directly subject to the mechanisms of the market for corporate control. [2] Hence, carve-outs always lead to a change in the governance structure, and a market evaluation of this change can be observed.

In this paper, we conjecture that abnormal returns of carve-out announcements depend on the pre-event control structure of the conglomerate firm. The underlying idea is simple: the more the management of a conglomerate firm is subject to control by a governance institution (in particular controlling shareholders, supervisory boards, and banks), the lower should be value gains from the change in the control structure associated with a carve-out.

To illustrate, suppose there are two firms going for a carve-out. One firm's management is subject to strong control and therefore the firm is efficiently managed. The other firm's management is loosely controlled and therefore the firm is inefficiently managed. Given that the carve-out always leads to a change in the governance structure of the subsidiary, any change that improves management control will be most valuable for the *less* efficient firm. Hence abnormal returns should be higher, the less firm management is disciplined by governance institutions before the carve-out. [3]

and Goethe-Universität Frankfurt for valuable comments. Of course, all remaining errors are ours.

[2] Allen and McConnell (1998) provide evidence that corporate control issues affect announcement effects.

[3] It is noteworthy that the change in the governance structure may not only affect the subsidiary. Loosing control over funds of the subsidiary might be reflected in the internal capital market of the conglomerate firm as well. If this, for example, leads to a reduction in free cash-flow available to the parent's management, a carve-out might also increase the value of the parent firm. Again, this effect should be more pronounced the weaker control over management before the event. For corresponding evidence with respect to spin-offs see Gertner, Powers, and Scharfstein (2002).

However, an alternative hypothesis is that tighter control of management ensures a more efficient use of proceeds generated by the carve-out.[4] The implied impact on abnormal returns would be exactly the other way around: firms with controlling shareholders should have higher abnormal returns.

The objective of this paper is to test these two contradictory hypotheses. To this end, we analyze the ownership structure (direct shareholdings and ultimate ownership) as well as the degree of bank influence rights as potential determinants of abnormal returns of carve-outs.

The analysis is based on all carve-outs over the period from 1984 to 2004 conducted by German exchange-listed firms. Using a firm sample from Germany is interesting in the context of corporate control issues. In the German financial system - as the prime example of bank-based financial systems like in Japan and many other countries in Europe - corporate control of large firms is based on inter- and intra-industry blockholdings. Also, banks have a strong monitoring role due to debt financing, direct equity holdings, proxy-votes, and representation in the supervisory board (*Aufsichtsrat*), see Edwards and Fischer (1994). Therefore, the German financial system is a unique place to learn about corporate control and the role of banks therein. Our study will explicitly take all of the aforementioned instruments of bank control into account. Until the end of 2004, 54 carve-outs occurred in Germany. This small sample size could be seen as a caveat to our analysis. But a small sample also offers the opportunity to collect and use data otherwise not available (or prohibitively costly) for large scale samples. We exploit this advantage in particular by collecting information on proxy-votes of banks which are hard and only manually to obtain. Further, we conduct a series of robustness tests to avoid any biases due to the small sample size problem. These include bootstrap-based inference to control for heteroscedasticity and event clustering without relying on large-sample asymptotics.

The main results of our empirical analysis are as follows. General characteristics of German carve-outs are similar to the international evidence. We find a positive and significant announcement effect of about 1% at the announce-

[4] For a theoretical discussion that of share blockholders improve managerial investment decisions due to strong monitoring incentives see for example by Shleifer and Vishny (1986) and Bolton and von Thadden (1998). For an overview, see Shleifer and Vishny (1997).

ment day and 3% at a [-5,+5] event window.[5] Further, increasing corporate focus and informational transparency increases abnormal returns.[6]

Most importantly, we find that a higher degree of shareholder concentration, or the existence of an ultimate owner before the event, leads to significantly lower abnormal returns. Decreasing returns in the pre-event degree of control of management is consistent with the idea that value gains are lower if less efficiency gains are to be expected ex ante. Finally, we do not find evidence for a "special" role of banks in control of management, although we examine explicitly all means of banks to exert influence on management. That is, we do find evidence that universal banks in Germany exert management control via direct shareholdings, but the degree of control does not go beyond control exerted by non-financial shareholders.

The remainder of the paper is organized as follows. In Section 2, we briefly describe the characteristics of the German system of corporate control, thereby identifying the major governance institutions to be included in our analysis. Section 3 describes our data selection and presents the univariate analysis of announcement effects. Section 4 describes the design of our cross-sectional analysis and provides descriptive statistics. Section 5 is the core of the analysis and reports cross-sectional regressions testing our governance conjecture. Section 6 summarizes and concludes.

2 Corporate Control by Shareholders and Banks in Germany

2.1 Blockholdings

Our conjecture that the degree of control over management affects firm value addresses the question whether management control by internal firm mechanisms (e.g. the supervisory board or blockholders) is a perfect substitute for external capital market control (e.g. takeovers). A carve-out transfers control of the subsidiary from the parent's management to the capital market. As a result, the subsidiary becomes directly subject to the market for corporate

[5] For Germany, only few studies analyze carve-outs. Pellens (1993) analyzes a sample of 11 events, and Kaserer and Ahlers (2000) use a sample of 23. Löffler (2001) analyzes announcement effects of all kinds of divestitures (private asset sales, spin-offs, and carve-outs) in Germany for the time period 1984 to 1996, including 19 carve-out observations. Brettel, Junker, and Pinker (2004) examine the long-run performance of carve-outs in Germany. Wagner (2005) analyzes announcement effects and the determinants of German carve-outs, using a similar sample to ours and additionally including financial firms and incompleted carve-out announcements.

[6] This finding is consistent with the idea that separating firm parts by a carve-out lowers potential opaqueness discounts in the market valuation, see Krishnaswami and Subramaniam (1999), Hulburt, Miles, and Woolridge (2002) and Vijh (2002).

control.[7] While Allen and McConnell (1998) and Vijh (1999) have shown that managerial discretion affects the market valuation of carve-outs in the U.S., our study extends the analysis to the shift in management control from inside firm mechanisms to capital markets.[8]

The bank-based German financial system features several distinct governance structures.[9] In particular monitoring by banks, monitoring by blockholders, and ultimate ownership of firms in the context of pyramids and cross-holdings occur quite frequently.

Unlike the U.S., it is common in Germany (and Western Europe in general, see Faccio and Lang (2002)) that there are significant blockholdings. Franks and Mayer (2001) and Boehmer (2000) provide evidence that over the period 1985 to 1997 roughly 85% of all listed German firms have a blockholder with a stake above 25%, and 57% one with a stake above 50%. These blockholders are from the financial sector but more often from the same or different industries. Hence, management control by "inside equity" is an important issue in the context of our analysis. With blockholders, free-rider problems are less relevant due to strong incentives to monitor a firm's management.

To measure ownership concentration, we collect data on equity holdings (voting rights) before the event date for each firm of our sample. The data are based on mandatory disclosures of firms (for stakes above 5%). Since before 1995 the mandatory minimum level for disclosure was only 25% we use additional sources to assess ownership structures for events before 1995.[10] The available lists of capital attendance at general meetings (see below) are used to cross-check our information on blockholdings. This robustness test indicates a high quality of our data.

Using this information, we construct a Herfindahl-index measuring concentration of voting rights. The Herfindahl-index is defined as the sum of squares of the blockholding fractions of each blockholder and takes values between 0 (perfectly dispersed) and 1 (fully concentrated). This variable is labeled CONCENT.

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[7] Hulburt (2003) shows that 16% of the newly-listed subsidiaries from U.S. carve-outs are taken over within six years.

[8] Ahn and Walker (2004) find evidence that spin-offs in the U.S. are more likely for firms with more effective corporate governance. However, they do not consider carve-outs and do not examine announcement effects depending on governance characteristics.

[9] See Boehmer (1999) and Edwards and Fischer (1994) for a detailed description of corporate governance structures in Germany.

[10] Voting rights have been collected from several issues of the handbooks *Hoppenstedt/Saling Aktienführer*, *Wer gehört zu wem* edited by *Commerzbank AG*, the filings list of the regulatory authority (*Bundesaufsichtsamt für den Wertpapierhandel*), and finally information from the IPO prospectuses or annual reports of firms.

In the context of large German firms, complex ownership structures such as pyramids with several layers of ownership and cross-ownership between firms have to be taken into account (see La Porta, Lopez-de Silanes, and Shleifer (1999), Boehmer (2000)). There is evidence that these pyramids are a frequent phenomenon for large German firms (see Boehmer (2000), Franks and Mayer (2001)). Hence, it might not be sufficient to look only at direct ownership structures. The question which shareholder ultimately controls a firm needs to be considered as well.

To identify the ultimate owner of a sample firm, we trace controlling shareholders through all layers of control chains. For example, a control chain arises if company A holds a large stake in company B and individual C holds a large stake in A. C is then the ultimate owner of company B. A control chain ends when either an individual is the controlling shareholder or the controlling shareholder at one layer does itself not have a controlling shareholder (is widely held). We use voting rights equal to or above 25% as the critical threshold for a controlling stake since this reflects a blocking minority under German law. [11]

The corresponding binary indicator variable, ULTIMATE, equals one in this case. It equals zero if either no direct shareholder with at least 25% of voting rights exist, [12] or if cross-holdings render the ownership structure indeterminate. Such cross-holdings occur if, for example, a company A is the controlling shareholder of company B, and B holds in return at least 25% of company A. [13]

Similar to the literature (e.g. Shleifer and Vishny (1997) or La Porta, Lopez-de Silanes, and Shleifer (1999)), we conjecture that the existence of an ultimate owner provides for a party with strong incentives to exert management control.

[11] Using 20% as the critical threshold, as La Porta, Lopez-de Silanes, and Shleifer (1999) do, leads to virtually the same measure. If a person or firm in the control chain has both direct and indirect holdings, we follow Faccio and Lang (2002) in measuring control rights by the weakest link in the control chain that exceeds the minimum threshold, summing direct and indirect holdings, if the indirect holdings qualify with respect to the minimum threshold.

[12] If more than one shareholder has at least 25% of direct voting rights on each layer, we follow the highest stake. This ensures that there is always at most one ultimate owner.

[13] See La Porta, Lopez-de Silanes, and Shleifer (1999) for a discussion and illustrative examples of complex ownership structures of European firms.

With respect to the role of banks, the issue of "inside debt" as a monitor of management is an important feature of German corporate governance.[14] Although bank debt accounts on average for less than 20% of large German firms total financing, there are several reasons why banks nevertheless can exert significant influence on management. Recent theoretical work by Holmström and Tirole (1997) suggests that only an incentive-compatible amount of bank loans is required to establish diligent bank monitoring. This implies that even a small proportion of bank debt may have on the margin significant effects on management behavior. Furthermore, German banks often have direct shareholdings and are represented in the supervisory board of firms.

Another prominent reason for a strong role of banks in corporate control is that deviations from share ownership and voting rights (i.e. control) occur easily under German law. The German proxy-voting system allows shareholders to deposit their shares with banks, and grant them general power of attorney. The resulting additional voting power for the banks is presumed to be significant. For example, Baums and Fraune (1995) provide evidence on large German firms with a dispersed ownership structure in 1992. In their sample, banks have on average 13% of effective voting rights at the general meeting due to direct equity holdings and 61% due to proxy-votes. Hence, if banks have mutual interest and act in coordination, their influence on management is potentially tremendous and can not be ignored within the context of our study. However, evidence on proxy-voting by banks is scarce since the data are not accessible in a centralized (or even electronic) way.[15] As will be discussed in more detail later on, we were able to collect this information for 66% of our sample firms.

We use three variables to control for management influence of banks. The first is BANKDEBT, the share of bank debt of total assets of firms. The second is EQBANK, a binary variable taking the value of one if at least one bank directly holds equity of a firm, and zero else. Finally, PROXY denotes the sum of proxy voting rights of all banks at the general meeting of the parent preceding the carve-out announcement.

If banks are both creditors and blockholders, this will increase management control, but the impact on carve-out announcement returns will depend on which general hypotheses is valid (i.e., whether announcement returns reflect

[14] The term "inside debt" is due to Rajan (1992), who analyzes close bank-borrower relationships theoretically.

[15] Exercised proxy-votes are documented publicly. However, there does not exist a centralized register or an electronic database for assessing this information. One has to address the local inferior counts at the registered seat of the firms to examine the mandatory minutes of the general meetings.

that there less to be gained from the change in governance versus a more efficient use of carve-out proceeds), and it will depend on whether banks exert their management influence to the benefit of debt holders or shareholders. [16] Generally, since most theory on financial intermediation suggests that banks are particularly good in monitoring, the effect on announcement returns might be stronger than in comparison to other blockholders. We test this effect explicitly in our cross-sectional regressions in Section 5.1.2, by measuring the impact of shareholder concentration on abnormal returns and interacting this variable with measures for bank influence on management (debt- and shareholdings).

3 Data and Announcement Returns

3.1 Sample Selection and Data

We use several sources to identify the sample of carve-outs. Identification is primarily based on a keyword search in the Lexis/Nexis-database, augmented by information taken from the Hoppenstedt IPO-list. In addition, the sample is matched with all previous studies on German carve-outs. Our observation period ends in 2004. However, after the end of the new-technology boom in 2000 the IPO market in Germany has been drastically slowed, so that no announcement occurred after 2000.

The primary selection criterion is that the parent is a German exchange-listed corporation with an equity stake in the subsidiary above 50% before the carve-out. Further it is mandated for the subsidiary not to be exchange-listed before the IPO of the carve-out. Finally, stock-price data has to be available for the parent either in Datastream or the scientific stock price database at the University of Karlsruhe.

This process identified 54 carve-out announcements from 1984 to December 2004. There were two cases where a single parent (*Löwenbräu AG* and *Deutsche Telekom*) announced the carve-out of more than one subsidiary at the same day. We treat these cases as one observation each, reducing the sample to 52 events. For two events, we were not able to find a precise announcement date in the Lexis/Nexis-database. Another six firms had to be excluded because of infrequent trading. These stocks had more than 50% of zero returns in a [-20,+20] window around (or even at) the event day. Finally, we exclude further three observations which are carve-outs from parents of the financial sector. [17]

[16] We thank an anonymous referee for suggesting this idea.

[17] These are the carve-outs conducted by *Aachen Münchner Lebensversicherung*, *Commerzbank* and *Hypovereinsbank*.

The final sample consists of 41 observations of carve-out announcements. For a subsample of 27 cases (66%) we have been able to collect the mandatory minutes of the general meetings (at the year or the year before the event), which contain an attendance list of capital and explicitly indicate proxy-votes. [18]

The identified events are quite dispersed over our observation period. The number of carve-outs increases dramatically after 1997, due to the launch of Germany's stock-market segment for young and innovative growth firms (*Neuer Markt*). [19]

3.2 Univariate Analysis of Announcement Effects

For the univariate analysis of carve-out announcements effects, we follow closely the design of Brown and Warner (1985). We estimate a market model for all firms over the pre-event estimation period [-250, -51] in event time. Using the estimated parameters we calculate "normal" returns for each firm in the event window. [20] Abnormal returns for any given point in time and firm are simply the difference between realized and normal returns.

Following Brown and Warner (1985), inference is based on the standard deviation of the residuals from the market model regressions. To test for robustness, we further test significance of average abnormal returns using the cross-sectional standard deviation and a non-parametric Wilcoxon signed rank test. [21]

In Figure 1, a plot of cumulated average abnormal returns (CAR) for the time period [-20,+20] in event time is depicted. Obviously, the announcement of carve-outs conveys a significant proportion of useful information for the market valuation of firms. Beginning roughly 5 days before the event day, the figure shows a dramatic increase in cumulated average abnormal returns.

[18] The smaller subsample results because some local inferior counts in charge at the registered seat of the firms did not respond to our information request, and sometimes the documents were not available anymore.

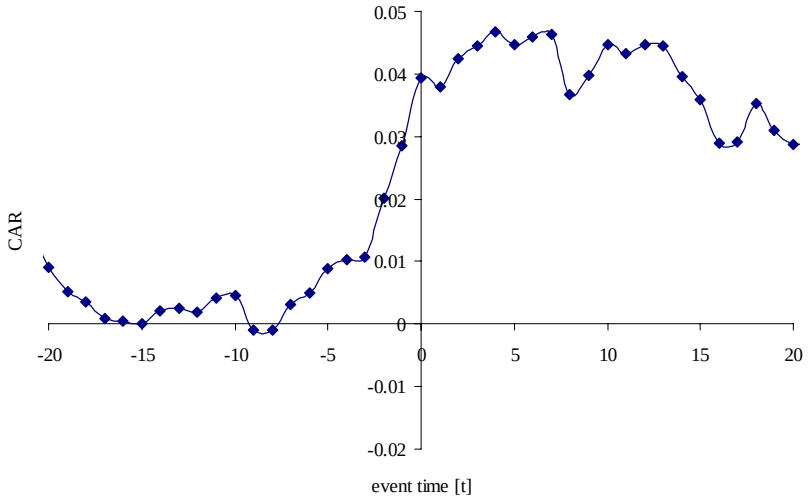
[19] Following the launch of Neuer Markt, from 1997 to the end of 2000 approximately 300 IPOs occurred only in this market segment. The extent of this increase becomes clear when noting that from 1949 to 1996 a total of only 356 companies went public in Germany, see Franzke (2001) and Stehle and Erhardt (1999) for more details.

[20] We use the value-weighted performance index CDAX as the proxy for the market portfolio. This index encompasses all domestic companies listed at Frankfurt Stock Exchange in the segments Prime and General Standard.

[21] All calculations are done for the full sample defined in the preceding section as well as the smaller sample for which data on bank proxy-votes is available. The results are qualitatively identical throughout.

Fig. 1. Cumulative Abnormal Returns

Plot of cumulative abnormal returns for carve-out announcements from event day -20 to +20. The abnormal returns are based on the full sample of 41 carve-out announcements.



This graphical result is confirmed by our significance tests shown in Table 1. There is a significant and positive average abnormal return of about 1% at the event day. As indicated by Figure 1, information processing and market revaluation happen before and after the event day. The average CAR in the interval [-5,+5] is higher than at day zero and significant.

Table 1

Announcement Effects of Carve-outs

Calculations are based on the full sample of 41 events. Abnormal returns are market risk adjusted. The p-value reported for the *Mean* is based on a simple t-test following Brown/Warner (1985). The p-value reported for *Median* is based on a non-parametric Wilcoxon signed rank test in the cross section. *Event Window* denotes the time-period in event time for which CARs are calculated. # indicates numbers of observations. *, **, *** indicates significance at the 10%-, 5%-, and 1%-level, respectively.

Event Window	Mean (p-value)	Median (p-value)	#>0
[0]	0.95% (0.03)**	0.50 % (0.11)	26
$[-5;+5]$	3.22% (0.03)**	3.05% (0.03)**	28
$[-5;+8]$	2.20% (0.17)	1.06% (0.01)**	29

Since most information processing seems to occur in the [-5,+5] window, we use [-5,+5]-CAR for the cross-sectional analysis.

4 Empirical Design and Descriptive Statisitics

4.1 Empirical Model

The empirical design to test our hypotheses on management control by inside equity and inside debt consists of running a cross-sectional regression of CAR on a set of explanatory variables. The general model is described by equation 1.

$$CAR_i = f(\text{control variables}, \text{ownership structure}, \text{bank dependence}) \quad (1)$$

To test our hypotheses, we include the variables CONCENT and ULTIMATE to reflect ownership structures in the cross section. Bank dependence is measured either by BANKDEBT, EQBANKS, or PROXY, our measures of the proportion of bank debt in total firm financing, the indicator variable whether banks hold direct equity stakes, and voting rights by banks due to proxy-voting, respectively.

With respect to inside equity, our management control conjecture implies that a higher degree of voting rights concentration before the carve-out, or the existence of an ultimate owner, decreases the announcement effect of carve-outs. Similarly, with respect to inside debt, a higher degree of bank control before the carve-out should decrease the announcement effect of carve-outs. The underlying idea of both hypotheses is that the higher management control before the event, the less efficiency gains are to be expected from the changes in the governance structure induced by the carve-out. Hence, we expect to find a negative coefficient for all measures of ownership structure and bank-dependence.

Under the alternative hypothesis that a higher degree of corporate control leads to a more efficient usage of carve-out proceeds, the aforementioned variables should have a positive coefficient.

Control variables comprise in particular measures for the main determinants of carve-out abnormal returns known from the literature. We do include these measures to avoid omitted variables biases, our focus is on issues of corporate control, however. Previous studies on carve-outs have established that (at least for U.S. firms) positive announcement effects can be explained by i) the elimination of negative synergies, ii) the decrease in informational opaqueness of firms, iii) and managerial discretion. [22]

[22] See Vijh (1999) and Krishnaswami and Subramaniam (1999). Schipper and Smith (1986) also suggest a carve-out allows to implement more efficient incentive-compatible compensation schemes for the subsidiary's managers.

Following the literature, we include two regressors with respect to synergies and opaqueness. We define a dummy variable, INDUSTRY, which equals one if parent and subsidiary belong to the same industry and zero if not. [23] The dummy is expected to have a negative sign, since it measures the mean difference to the reference group of parent and subsidiary belonging to different industries, where the existence of negative synergies is more likely (see Krishnaswami and Subramaniam (1999) for spin-offs and Vijh (2002) for carve-outs using a similar design).

Since the carve-out leads to two separately reporting entities, where the subsidiary now has to meet disclosure requirements on its own, a carve-out can mitigate informational opaqueness of firms. To control for opaqueness we include a regressor reflecting the degree of capital market uncertainty about the quality and value perspectives of the pre-event firm. This proxy, labeled OPAQUE, is defined as the standard deviation of the market model regression residuals of the estimation period. It reflects the idiosyncratic risk component of the firm before the event. [24]

If the separation of parent and subsidiary leads to more informational transparency a positive coefficient of OPAQUE is expected since more transparency is more valuable for opaque firms. [25]

Finally, we use the ratio of sales of the subsidiary to sales of the parent as regressor, labeled SIZE RATIO. This serves to control for the effect that relatively smaller subsidiaries may lead to smaller announcement effects because they contribute less to the overall value of the conglomerate firm.

Table 2 lists labels and definitions of the variables used in the analysis.

4.2 Descriptive Statistics

Table 3 provides some fundamental characteristics of German firms undertaking a carve-out. [26] These are comparable to the patterns documented for U.S. carve-outs. Parents are large and profitable firms. The subsidiary ac-

[23] The identification of the industry affiliation is based on the two-digit SIC-code of all main industries of the firms reported in the Hoppenstedt-database. To reduce inconsistencies from the SIC-classification, we double-checked all cases individually.
[24] We discuss the robustness of this measure in Section 5.2, where we use the dispersion of analysts forecasts as an alternative measure of informational opacity.
[25] See e.g. Allen and McConnell (1998) and Krishnaswami and Subramaniam (1999) for a similar design and corresponding evidence.
[26] Balance sheet information are from the Hoppenstedt balance sheet database, equity holdings of the parent are collected from the registration statement filings of the IPOs. All reported financial ratios are based on the annual statements of the fiscal year preceding the event.

Table 2
Definition of Variables

Regressor	Definition	Construction
INDUSTRY	Parent and subsidiary belong to the same industry	Dummy
OPAQUE	Degree of informational opaqueness	Standard deviation of market model residuals
PROFIT	Return on Assets	Earnings before taxes and extraordinary items over total assets
SIZE RATIO	Relative importance of subsidiary for pre-event conglomerate	Ratio of sales of subsidiary to sales of parent
CONCENT	Voting rights concentration of the pre-event firm	Herfindahl-index of blockholdings
ULTIMATE	Firm has ultimate owner	Dummy
BANKDEBT	Importance of bank debt financing as funding source	(Bank loans) / (Total Assets)
EQBANK	Banks hold direct equity stakes	Dummy
PROXY	Bank proxy voting rights at general meetings	(Bank proxy-votes) / (Total votes)

counts for about 21% of sales of the parent and in 46% of the events parent and subsidiary belong to different industries.

Also, firms significantly reduce their equity holdings via the carve-out. Average holdings before the carve-out are roughly 94% with a median of 100%. Afterwards these numbers decrease to roughly 57% on average with a median of 64%. In comparison, Allen and McConnell (1998) report average holdings after the event to be 69% with a median of 80% for U.S.-carve-outs.

The proxy variables for the governance structure shown in Panel B of the Table 3 correspond to the stylized facts about German governance described in Section 2. The degree of voting rights concentration (CONCENT) is on average 0.23 with a standard deviation of 0.17 and a maximum observation of 0.98. To provide some feeling for these numbers, suppose a firm has two blockholders, each with an equity stake of 34% (the remaining shareholdings are dispersed). This implies a Herfindahl-index of 0.23 ($2 \cdot 0.34^2$). Hence, as expected, blockholdings are a frequent phenomenon in our sample. This is also supported by the observation that 57% of the sample firms have an ultimate owner.

Table 3 also supports the importance of banks as financiers and investors of our sample firms. Bank debt accounts on average for 15.2% of total firm financing (BANKDEBT). Moreover, according to the mean value of the dummy EQBANK, banks hold direct equity stakes in our sample firms in 27% of the cases.

Table 3
Descriptive Statistics

Descriptive statistics for parent firms with a carve-out in Germany in the time period 1984 to 2004. Calculations are based on the full sample of 41 events. *Size* is total assets in millions of Euro, *Size Ratio* is the ratio of sales of the subsidiary to sales of the parent in the business year before the event, *Debt Ratio* is the ratio of liabilities to total assets, *Holdings before* [*after*] denotes the equity stake of the parent in the subsidiary before [after] the carve-out. *Total bank voting rights* is the sum of banks voting-rights from direct shareholdings and proxy-votes, aggregated over all banks. *Supervisory board representation* is a dummy variable, equal to one if a bank is represented in the supervisory board of the parent firm. For definitions of the other variables see Table 2. *Range* provides the minimum and maximum observation for a given variable. Information on proxy-votes of banks was available for 27 observations.

	Mean	Std.dev	Median	Range
Panel A: General Descriptives and Control Variables				
Size [mio. Euro]	10,783	16,209	2,976	[37; 60,177]
Size Ratio [%]	21.15	20.55	16.25	[0.07; 70.94]
Profit[%]	5.08	8.63	4.92	[-13.47; 36.10]
Debt Ratio [%]	44.76	19.35	45.16	[0.15; 90.81]
Holdings before [%]	93.48	12.64	100.00	[51.00; 100.00]
Holdings after [%]	56.99	23.15	63.70	[0; 96.70]
OPAQUE [%]	2.28	1.45	2.01	[0.44; 9.20]
INDUSTRY	0.548	0.504	1	[0; 1]
Panel B: Corporate Governance Variables				
CONCENT [%]	22.91	23.41	10.59	[0; 98.12]
ULTIMATE	0.57	0.50	1	[0; 1]
BANKDEBT [%]	15.18	15.22	12.45	[0; 60.78]
EQBANK	0.27	0.45	0	[0, 1]
PROXY [%]	43.56	30.77	40.75	[0; 87.72]
Total bank voting rights [%]	53.87	31.52	67.69	[0; 87.7]
Supervisory Board representation	0.83	0.38	1	[0; 1]

The variable PROXY measures proxy-votes of banks at general meetings in the year preceding the carve-out announcement (aggregated over all banks). As can be seen from Table 3, proxy votes are quantitatively the dominant source of voting rights, because overall voting rights of banks are on average 54% and proxy votes account for 44% percentage points of this number. However, proxy-voting rights reflect to some degree the dispersion of a firms shareholder structure.[27] This is reflected in the strong negative correlation

[27] Blockholders are not expected to systematically delegate their voting rights to banks, but small private shareholders - facing high fixed costs of exerting minor control rights - will probably do so.

between PROXY and the Herfindahl-index CONCENT with a correlation coefficient of -0.64 (not reported in the table).

Finally, the table shows the percentage of cases where a bank representative (typically a member of the banks management board) is member of the supervisory board of the parent firm. This is the case in about 83% of the observations and hence for most firms. Therefore, we use this information only for descriptive purposes. [28]

4.3 Are Firms with Less Control over Management less Efficient?

A first test of our assertion that firms with weaker governance before the carve-out announcement are less efficient can be based on a comparison of firms with and without ultimate owner. Firms that have an ultimate owner are viewed as firms with tighter control of management and therefore potentially more efficient. If this holds true, a comparison of the performance of both groups should at least not indicate that firms without ultimate owner have higher performance, where performance serves as a proxy for efficiency. [29] As can be seen from Table 4, this necessary condition is satisfied. Firms with an ultimate owner rather have a higher pre-event performance than firms without, with a p-value of 0.104.

The table also shows a univariate comparison of [-5;+5]-CARs of firms with and without ultimate owner. The t-test reveals that the average CAR between groups is significantly different. While for firms without ultimate owner average abnormal returns equal 6.67%, the CAR of firms with an ultimate owner is close to zero (and actually statistically not different from zero). This finding is first evidence consistent with our corporate control hypothesis.

5 Determinants of Abnormal Returns

5.1 Cross-Sectional Results

5.1.1 Baseline Results and Ownership Structure

Table 5 reports estimates of the cross-sectional regression of [-5,+5]-CAR on our set of explanatory variables. In what follows, it is important to keep

[28] Unreported robustness tests show that the variable has indeed no explanatory power for abnormal returns.

[29] This analysis examines cross-sectional differences between firms undertaking a carve-outs. Boone, Haushalter, and Mikkelson (2003) and Powers (2003) examine the change in operating performance following U.S. carve-outs.

Table 4

Performance of Firms With and Without Ultimate Owner

The table shows a univariate comparison of pre-event firm performance and CAR, based on the full sample (N=41). Performance is measured as return on assets by the variable PROFIT (see Table 2). Grouping according to the variable ULTIMATE, indicating whether a firm has an ultimate owner or not. *t-test* indicates the p-value of a simple test of differences in means between groups; *Sign-Test* indicates a corresponding non-parametric test. *: significance at the 10%-level.

Variable		Ultimate Owner	Without Ultimate Owner	t-Test	Sign-Test
PROFIT	Mean	7.38	3.17	0.104	—
	Std. Dev.	8.25	7.76		
	Median	5.32	4.35	—	0.176
CAR[-5;+5]	Mean	0.52	6.67	0.063*	—
	Std. Dev.	9.18	11.37		
	Median	2.75	5.24	—	0.22

in mind the small sample size underlying the regressions, which requires a parsimonious model specification.

We present three different models. Model I is the baseline specification and includes only those variables that have been shown to be systematic determinants in the literature. Models II and III expand the baseline to analyze issues of corporate control. The analysis of the impact of management control exerted by banks will be deferred until the next section.

Model I incorporates INDUSTRY as the proxy for potential negative synergies and OPAQUE as the proxy for informational opaqueness. Following Krishnaswami and Subramaniam (1999), we further include the interaction term of the two, which allows for different effects of opaqueness for cases with and without potential negative synergies. The estimated coefficients in column 3 are consistent with the findings of the previous literature on U.S. carve-outs. The coefficient on INDUSTRY is significantly different from zero and negative. The constant measures the announcement effect when parent and subsidiary are in different industries, i.e., where the existence of negative synergies is more likely. It is positive and significant. The coefficient on the dummy INDUSTRY measures the *difference* from this effect for firms where parent and subsidiary are in the same industry. It is negative and approximately of the same size. Hence the result is consistent with a positive impact of increased corporate focus.

Similar to Krishnaswami and Subramaniam (1999), informational opaqueness has different effects for the two sub-samples. Since we simultaneously include the interaction term between INDUSTRY and OPAQUE, the coef-

Table 5
Cross-sectional Regression of CARs

OLS of CAR [-5,+5] on a set of explanatory variables, based on the full sample of events. For variable definitions see Table 2. Values in parentheses are White (1980) heteroscedasticity consistent p-values. N is the number of observations, *p-value F-test* reports an F-test of a reduced model (only constant). *, **, ***: significance at the 10%-, 5%- and 1%-level, respectively.

Regressors	Expected sign	Model I	Model II	Model III
Constant	—	11.75 ***	14.92 ***	15.78 ***
		(0.000)	(0.000)	(0.000)
INDUSTRY	[-]	-12.65 **	-12.63 **	-13.81 ***
		(0.027)	(0.019)	(0.008)
OPAQUE	[-]	-3.61 ***	-3.02 ***	-3.56 ***
		(0.000)	(0.000)	(0.000)
INDUSTRY x OPAQUE	[+]	5.72 *	4.92 *	5.61**
		(0.051)	(0.077)	(0.024))
CONCENT	[-]	—	-17.16 ***	—
			(0.006)	
ULTIMATE	[-]	—	—	-6.08 *
				(0.053)
N	—	41	41	41
adj. R^2	—	0.17	0.25	0.23
p-value F-test	—	0.03	0.006	0.009

ficient on OPAQUE measures the marginal effect of opaqueness for the reference group of those events where parent and subsidiary are from different industries. The coefficient is statistically significant and negative. Hence more opaqueness decreases the positive value effect of increased corporate focus. The interaction term indicates that this is not true for events with parent and subsidiary from the same industry, i.e., events without value gains by focus improvement. Here, the positive and statistically significant coefficient of the interaction term (INDUSTRY x OPAQUE) shows that a higher degree of pre-event opaqueness leads to higher abnormal returns.

In what follows, we use Model I as the baseline model throughout and augment it by variables that test our main hypothesis on the relevance of pre-event management control. Notably, the effects of pre-event opaqueness and industry affiliation remain robust throughout all of our model extensions.

In Model II we control for the degree of voting rights concentration by the respective Herfindahl-index, CONCENT. The coefficient estimate is consistent with a monitoring role of blockholders. It is significantly different from zero and negative. Thus, a lower degree of pre-event management control by blockholders (lower concentration) leads to higher abnormal returns. This is

consistent with the idea that if management control were low before the event, more efficiency gains from the separation of the subsidiary (i.e. the change in the governance structure due to the carve-out) are to be expected.

Model III is a robustness test to this result by measuring the degree of management control through the existence of an ultimate owner. The results are similar to Model II. If a firm has an ultimate owner, abnormal returns are significantly lower.

The alternative hypothesis on the impact of the degree of management control is that abnormal returns increase in tighter control of management because carve-out proceeds will be used more efficiently. The negative coefficients on both ownership measures clearly contradict this hypothesis.

Overall, the strong impact of the ownership structure is consistent with the interpretation that for firms with a lower pre-event degree of management control more efficiency gains are expected. In the next subsection, we test whether banks are special as a monitor of management.

5.1.2 Are Banks "Special" in Disciplining Management?

The characteristics of the bank-based German financial system imply that banks may be pivotal in exerting management control for large German firms. In this section we will examine this issue by extending our empirical model accordingly.

As mentioned before, four mechanisms for banks to exert influence on firm management can be distinguished: i) bank debt, ii) direct equity stakes of the bank, iii) proxy-votes, and iv) supervisory board representation of the bank. Whether banks use their potential influence to exert management control will be tested by using these measures of bank dependence as regressors, augmenting the cross-sectional analysis of abnormal returns from the previous section.

We rerun the regression of [-5,+5]-CAR of Model II and III reported in Table 5 and include an interaction effect between our ownership proxies and a measure for the degree of bank dependence. Under the *inside debt* hypothesis we should find that banks exert at least the same degree of management control as non-bank blockholders. In this case, the coefficient of the interaction should be insignificant or significantly negative. If banks are really "special" as monitors of management (see for example Fama (1985), Gorton and Schmid (2000)), i.e., exert management control beyond what non-bank blockholders achieve, then the interaction should be significantly negative. If bank dependence contradicts management control by non-bank blockholders, the interaction effect should have a significantly positive coefficient.

In Model IV of Table 6, we measure bank dependence by the relative importance of bank debt for total firm financing (BANKDEBT) and management control by ownership concentration (CONCENT). As in Model II, the impact

Table 6
Cross-sectional Regressions for Bank Control

OLS of CAR [-5,+5] on a set of explanatory variables. All models extend the baseline Model I (see Table 5); the corresponding coefficients are qualitatively unchanged in terms of signs and significance and therefore omitted. Model IV, V and VI are based on the full sample, Model VII relies on observations where data on bank proxy-votes was available. For variable definitions see Table 2. Values in parentheses are White (1980) heteroscedasticity consistent p-values. N is the number of observations, *p-value F-test* reports an F-test of a reduced model (only constant). *, **, ***: significance at the 10%-, 5%-, and 1%-level, respectively.

Expl. Variables	Model IV	Model V	Model VI	Model VII
CONCENT	-18.75 ***	-15.51 **	—	-26.27
	(0.004)	(0.015)		(0.115)
CONCENT x BANKDEBT	0.10	—	—	—
	(0.600)			
CONCENT x EQBANK	—	15.21	—	—
		(0.132)		
ULTIMATE	—	—	-6.01 *	—
			(0.065)	
ULTIMATE x EQBANK	—	—	2.83	—
			(0.273)	
PROXY	—	—	—	-0.02
				(0.821)
N	41	40	40	27
adj. R^2	0.23	0.22	0.20	0.14
p-value F-test	0.013	0.019	0.025	0.148

of a higher pre-event ownership concentration (CONCENT) is significantly negative. The coefficient of the interaction between ownership concentration and bank dependence is insignificant. This suggests that bank dependence does not counteract management control exerted by blockholders, but it also does not add any significant impact beyond their effect. Model V shows that the same result follows when bank dependence is measured by the dummy EQBANK, indicating that banks hold direct equity stakes in the pre-event firms.[30] Again the coefficient of CONCENT is significantly negative but the interaction term is insignificant. Model VI shows that this result is robust when management control is measured by the existence of an ultimate owner.

Overall, the estimation results do not provide evidence for a special role of banks as monitors of management. Shareholder concentration is inversely

[30] We have also measured banks' shareholdings by the corresponding percentage-share rather than using the indicator variable EQBANK. The results do not depend on this choice.

related to announcement returns and there seems to be no aggravating or diminishing effect from bank control.

Finally, Model VII addresses the impact of proxy-votes of banks. This impact can be different from direct shareholdings, since any corresponding disciplining effect of management requires that banks exert proxy-votes in mutual interest and coordination. If this did not hold, the variable PROXY would only capture the effect of shareholder dispersion, which is simply the opposite to shareholder concentration, CONCENT. Model VII reported in Table 6 provides suggestive evidence that proxy-votes do not lead to increased management control. Rather they simply reflect ownership dispersion. The model includes shareholder concentration, CONCENT, as well as the aggregate share of proxy-votes of all banks at the general meeting as regressors. For both variables the estimated coefficient is insignificant. Hence the inclusion of proxy-votes cancels out the effect of shareholder concentration due to multicollinearity. This is consistent with the interpretation that proxy-votes are no means for management control. This interpretation is supported by the (unreported) exercise to rerun the regression of Model VII without the Herfindahl-index. The coefficient on PROXY is then just the opposite of CONCENT (positive and significant), again implying that proxy-votes are only an inverse measure of the degree of shareholder dispersion.

To summarize, our analysis of the role of banks in corporate control leads to two insights: First, we find evidence that blockholders exert control over management. Second, our evidence suggests that management control by banks does not go beyond what non-financial blockholders achieve. Finally, the evidence is also not consistent with an inside debt hypothesis in the sense that banks use proxy-votes in mutual interest and in coordination. That is, our results do not imply that proxy-votes are a means of management control.

5.2 Robustness

The preceding analysis could be affected by three issues:

- The homoscedasticity assumption of OLS.
- Clustering of events in calendar time.
- The sample size of 41 (27) observations.

It is in particular the small sample size problem which renders all of these problems potentially relevant. Inference in the last section was based on White (1980) heteroscedasticity consistent standard errors of the coefficients. Unfortunately, the White-correction - though asymptotically consistent - can have a small-sample bias, leading to too many type-I errors. Since there is no reason to expect homoscedasticity of abnormal returns, this is potentially a problem in our context.

Moreover, there is some event-clustering in our sample. If this problem is too severe, the resulting correlation structure of the CAR might lead to biased inferences since the distributional assumptions for the abnormal returns are misspecified (MacKinlay (1997)).

The natural solution in this context is to base inference on non-parametric bootstrap standard errors rather than asymptotic theory. Bootstrapping does not require distributional assumptions and is robust to heteroscedasticity. Furthermore, the bootstrap procedure can be adjusted to account for event-clustering. We discuss the details of the applied *bootstrap-t*-procedure as well as the corresponding results in Appendix A. The qualitative results of our analysis remain unchanged, however.

In an unreported further robustness exercise, we use the dispersion of analysts forecasts as an alternative proxy for informational opaqueness.[31] Analysts forecasts based on IBES data are available for a subset of 23 out of 41 firms in our sample. The regressions show that for this subset of firms the effect of informational opaqueness is no longer significant. However, even in this case all results with respect to the ownership structure are unaffected.

Finally, we have re-estimated the regressions of the first two models and included additional control variables. We used a proxy for the size of the subsidiary relative to the parent, a measure for th eparent's firm leverage, and a dummy that equals one if the parent does not receive funds from the IPO directly.[32] This serves to control for size heterogeneity and access to the IPO proceeds, which might be relevant under the problem of managerial discretion. All variables are insignificant throughout and do not alter any of our qualitative results regarding the governance variables.[33] Also, it turns out that controlling for the percentage of subsidiary shares sold by the parent, or whether the IPO occurred at the exchange segment Neuer Markt or not, again does not affect our results.

6 Conclusions

Previous literature has established that abnormal returns of equity carve-out announcements are affected by the issue of managerial discretion (see e.g. Allen and McConnell (1998)). In this paper, we adopt the view that agency problems

[31] Krishnaswami and Subramaniam (1999) do not find qualitative differences between the idiosyncratic risk of a firm and the analysts dispersion as proxies for opaqueness in their study.

[32] In a so-called "primary placement" the carve-out is conducted by an equity issuance of the subsidiary without participation of the parent. This limits the funds that go directly to the parent.

[33] Vijh (2002) analyzes how the allocation of the IPO proceeds affects abnormal returns for U.S. carve-outs.

like managerial discretion will be reflected in the market value adjustments following carve-out announcements. Our primary conjecture is, however, that the degree by which managerial discretion affects abnormal returns crucially depends on the pre-event control structure of the parent firm before the event.

We test this hypothesis for German carve-outs because the bank-based financial system of Germany allows to examine and compare the impact of different governance institutions; in particular blockholders and banks. Our main result is that a higher degree of pre-event shareholder concentration, or the existence of an ultimate owner of a firm, leads to *lower* abnormal returns. Clearly, the governance structure affects firm valuation. The negative relationship implies that weaker control of management leads to less efficiently managed firms. Abnormal returns at the announcement are higher for firms with a less disciplined management because these firms can benefit the most.

Finally, we do not find evidence consistent with a "special" role of banks in disciplining management, although we explicitly take into account equity holdings, proxy-votes and supervisory board representation of banks. Banks *do* exert management control as a direct shareholder, but their impact does not differ from that of non-financial investors.

A Heteroscedasticity and Event-Clustering

In this appendix, we test the robustness of our regression inference against heteroscedasticity and event clustering.

We define a cluster to be a group of events with overlapping windows around the respective event dates in the interval [-20,+20]. In general there are m clusters within the n observations with $m \leq n$. Hence the smallest cluster size is 1. [34]

A.1 Bootstrap Procedure

The basic concept of bootstrapping is to generate information on an unknown probability distribution F from an observed random sample x with size n of this distribution. [35] If the observations of the random sample are independent and identically distributed, one can generate new identically distributed samples by drawing a random sample with replacement from the original sample, x^*. Repeating this procedure many times leads to many so-called bootstrap-samples.

In the context of the carve-out analysis, we're interested in inference on regression parameters. Random resampling then occurs jointly for the vector of dependent variable observations y and the associated information matrix x, without destroying the association between the two. A bootstrap replicate is the (repeatedly calculated) estimate of the regression parameters based on the bootstrap samples. Inference will be based on confidence intervals. One possibility for this is the so-called *percentile*-method, which basically orders the bootstrap estimates and uses the resulting empirical distribution (around the initial sample estimate) to construct the confidence limits for a given coverage probability. Alternatively, one can calculate in each bootstrap replication a t-value centered at the initial (consistent) sample estimate. Based on the resulting *empirical* t-distribution (specific for a given initial sample) the confidence interval is

$$T^*(b) = \frac{\hat{\theta}^*(b) - \hat{\theta}}{\widehat{se}^*(b)} \Rightarrow \left[\hat{\theta} - \hat{t}^{*(1-\alpha/2)}\widehat{se}, \hat{\theta} - \hat{t}^{*(\alpha/2)}\widehat{se}\right] \tag{A.1}$$

where $T^*(b)$ denotes the t-value for the bootstrap replication $b \epsilon B$, $\widehat{se}^*(b)$ is the bootstrap standard error of the replication b and B denotes the number of bootstrap replications. As indicated by (A.1), from the resulting distribution of T^* values one can construct the confidence interval around the estimate

[34] In fact, there are 7 clusters containing more than one event in the full sample: four with only 2, two with 3 and one with 4 events.

[35] This brief presentation follows Efron and Tibshirani (1993) and Horowitz (1999).

of the initial sample statistic $\hat{\theta}$ using a consistent sample (not bootstrap) standard error $\widehat{se}$. Note that α denotes the chosen coverage probability of the confidence interval and $\hat{t}^{*(.)}$ the corresponding critical t-values (up and low) from the empirical t-distribution. This is the so-called *bootstrap-t*-method. [36]

This procedure has several advantages. Since inference is based only on the empirical distribution of the statistic (here: t-values), one does not have to care for heteroscedasticity. Second, if the resampling with replacement is conducted by drawing blocks of correlated event observations with equal probability for each, inference is robust to event-clustering as well. Finally, as a side issue, since the t-value is a pivotal statistic, its bias decreases faster with increasing sample size n as compared to an asymptotic statistic like the White(1980)-standard errors. That is, under some regularity conditions the confidence interval is more precise for a given number of observations (Horowitz (1999), p.31).

As a robustness test for the validity of inference in our cross-sectional regressions, we construct bootstrap-t confidence intervals for each of the estimated coefficients. The procedure is as follows:

(1) Draw a cluster-based bootstrap sample from the original sample with replacement, where the sample size is equal to the number of events.
(2) Run the regression on the bootstrap sample and store the regression coefficients and respective t-values.
(3) Repeat this procedure S times.
(4) Calculate the confidence interval according to equation (A.1).

Step one is the most crucial since it adjusts the inference for event-clustering. If a given event is drawn, generally all of the associated events within its cluster (and the respective information on the CAR and the explanatory variables) are put into the bootstrap sample. If the respective cluster contains more than one event, a second random draw with as many possible realisations is drawn. The full cluster enters the bootstrap sample for just one of these realisations, for the others the complete draw is repeated. This procedure ensures putting equal probability on any event of the initial sample, rather than on any cluster.

A.2 Robust Cross-Sectional Regressions

The bootstrap procedure results in confidence intervals for regression coefficients of Table 5 and 6. The significance test is to check whether the zero is an element of the confidence interval. The results are shown in Table A.1, where confidence intervals are based on 10,000 bootstrap-t simulation runs. [37]

[36] See Efron and Tibshirani (1993), Chapter 12.
[37] We also estimated bootstrap-t standard errors without calendar time clustering adjustments. The results are virtually identical.

It provides the coefficients from OLS (based on Table 5 and 6) as well as estimated confidence intervals from the *bootstrap-t*-procedure.

Table A.1
Robust Cross-Sectional Regressions

Robust inference for the OLS of CAR [-5,+5] on a set of explanatory variables, reported in Table 5 (Model I, II) and Table 6 (Model V). For variable definitions see Table 2. Values in parentheses are confidence intervals for the estimated coefficients based on 10,000 bootstrap-t simulations following Efron and Tibshirani (1993). The bootstrap procedure controls for event clustering by resampling blocks of event clusters and is robust to heteroscedasticity. The significance level is α=10%. Significant coefficients are marked with an asterisk (*).

Expl. Variables	Model I	Model II	Model V
Constant	11.75*	14.92*	13.73*
	[8.42, 19.03]	[12.56, 34.93]	[11.51, 36.73]
INDUSTRY	-12.65*	-12.63*	-10.98*
	[-23.77, -2.77]	[-31.37, -3.87]	[-33.38, -1.98]
OPAQUE	-3.61*	-3.02*	-2.93*
	[-4.96, -2.80]	[-5.49, -2.59]	[-5.63, -2.49]
INDUSTRY x OPAQUE	5.72*	4.92	4.50
	[0.07, 11.64]	[-0.53, 14.88]	[-1.32, 15.78]
CONCENT	—	-17.16*	-15.51*
		[-32.16, -9.59]	[-31.99, -7.70]
CONCENT x EQBANK	—	—	15.21
			[-7.66, 26.84]

For ease of exposition, we focus on CONCENT as the measure of ownership concentration and EQBANK as the measure of bank dependence. Consequently, we report robust regressions for Models I, II, V. Notably, however, robust inference for the other models would not affect the reported results.

As shown in Table A.1, robust inference for all models confirms our previous findings. Most importantly, bootstrap based inference does not change any of the results with respect to the significant impact of blockholder control as well as the role of banks. Robust inference for Model II and V shows that the coefficient of CONCENT remains significantly negative. Modell V still indicates no effect of bank control beyond the effect of non-bank blockholders since the coefficient of the interaction term between CONCENT and EQBANK remains insignificant.

In unreported further regressions we used the percentile bootstrap method and dispensed with the clustering adjustment, but none of these exercises changed our results.

B Sample Overview

Table B.1
Overview Full Sample

The table has a chronological order based on carve-out announcements. *Proxy-votes* indicates whether information on proxy-votes is available.

Parent	Subsidiary	Proxy-votes
Metallgesellschaft AG	Kolbenschmidt AG	no
PKI AG	Felten Guillaume	no
Rheinmetall AG	Jagenberg AG	yes
Metallgesellschaft AG	BUS Berzelius Umwelt-Service AG	yes
Kaufhof Holding AG	Kaufhalle AG	no
Berliner Elektro Holding AG	Signalbau Huber AG	yes
Herlitz AG	Herlitz International Trading AG	no
AGIV AG	Kraftanlagen Heidelberg AG	yes
Deutsche Babcock AG	A. Friedrich Flender AG	yes
AGIV AG	Barmag AG	yes
Berliner Elektro Holding AG	Schaltbau AG	yes
Wanderer Werke AG	Böwe Systec AG	no
Metallgesellschaft AG	Buderus	yes
Deutsche Babcock AG	Balcke-Dürr AG	yes
Viag AG	SKW Trostberg AG	yes
Hornbach Holding AG	Hornbach Baumarkt AG	no
AGIV AG	Wayss & Freytag AG	yes
Deutsche Babcock AG	Babcock BSH AG	yes
Asko Deutsche Kaufhaus AG	Praktiker Bau- und Heimwerkermärkte AG	no

Table B.10
continued

Parent	Subsidiary	Proxy-votes
Hoechst AG	SGL Carbon AG	yes
Siemens AG	Rofin Sinar	yes
RWE	Heidelberger Druckmaschinen AG	no
Veba AG	Stinnes AG	yes
Metro AG	Hawesko Holding AG	no
Berliner Elektro Holding AG	Euromicron AG	yes
WKM Terrain- und Beteiligungs AG	Bonifatius Hospital & Seniorenresidenzen AG	no
Bayer AG	Agfa Gevaert N.V.	no
Siemens AG	Infineon Technologies AG	yes
Metallgesellschaft AG	MG plc.	yes
Rheinmetall AG	Aditron AG	yes
Augusta Technologie AG	Pandatel AG	yes
Jenoptik AG	Tepla AG	yes
Siemens AG	Epcos AG	yes
Deutsche Telekom AG	T-online International AG	yes
Lintec Computer AG	PixelNet AG	yes
Mobilcom AG	freenet.de AG	yes
Jenoptik AG	Cybio AG	yes
Emprise Mgmt. Consulting AG	Broadnet Mediascape Communications AG	no
Jenoptik AG	Asclepion-Meditech AG	yes
SAP AG	SAP SI AG	no
Babcock Borsig AG	Nordex AG	no

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