

Business groups, bank control, and large shareholders: An analysis of German takeovers

Ekkehart Boehmer¹

boehmer@wiwi.hu-berlin.de
<http://www.wiwi.hu-berlin.de/~boehmer>

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Abstract

I analyze the effect of ownership structure and bank control on performance. I employ a unique data set of 715 German takeovers to test whether group structure, large shareholders, and bank control affect their value to shareholders. First, I find that takeovers increase bidder value, but generally not that of the business group surrounding it. Second, majority owners provide no clear benefit. Third, bank control is only beneficial if it is counter-balanced by another large shareholder. Fourth, the worst takeovers are completed by firms that are majority-controlled by financial institutions.

¹Humboldt University, Spandauer Str. 1, 10178 Berlin, Germany. Telephone: +49 (30) 2093-5661. Fax: +49 (30) 2093-5666. I thank the German Science Foundation (DFG) for financial support, the Bundeskartellamt and in particular Mr. Lehmann-Stanislawski for access to their data, and Sabine Becker, Nina Bohn, Bodo Kuester, and Yvonne Loeffler for data collection. Theodor Baums, Julian Franks, Jose Guedes, Beatrice Kuehn, Alexander Ljungqvist, Yvonne Loeffler, Juergen Maier, Eric Nowak, Stefan Sperlich, Christian Wulff, and participants at the DFG-Colloquium in Berlin, the 1996 annual meeting of the German Finance Association, the 1996 conference on Money, Finance, Banking, and Insurance in Karlsruhe, the CEPR corporate finance workshop in Lisbon, the 1997 EFA, EFMA, and FMA meetings, and the finance workshops at Frankfurt University, HEC Lausanne, Humboldt University, Tilburg University, and Vienna University provided helpful comments.

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Extended abstract

This paper empirically analyzes the effect of ownership structure and bank control on performance. I employ a unique data set of 715 German takeovers between 1984 and 1995 obtained from the Bundeskartellamt (BKartA), the German federal antitrust agency. I analyze changes in market value due to acquisitions of other companies. Using detailed ownership information I test the hypothesis that group structure, the presence and type of large shareholders, and the degree of bank control affects the quality of the takeover decisions.

First, I find that on average takeovers increase the value of the acquiring firm, but generally not that of the whole pyramidal business group surrounding the acquiror. I interpret this finding as evidence that takeovers are often used to provide internal subsidies to members of the bidder group. Second, majority owners provide no clear-cut benefit to bidders in that the quality of takeover decisions is not better for majority-owned companies. Third, large blockholders controlling less than 50% appear to play an important monitoring role, especially if banks are involved. Specifically, bidders where banks potentially control a large fraction of the voting power via proxy votes clearly benefit from minority blockholders. Additionally, banks are beneficial to bidder firms when they own the second or third largest stake, but not when they own the largest stake. Therefore, it seems that only if there is a force independent of the bank that decision quality is improved (in the sense of increasing shareholder wealth). Fourth, the most value-reducing takeovers are completed by firms that are majority-controlled by financial institutions. This result is not consistent with the presumption that German banks provide an efficient monitoring function to corporations and is robust with respect to various specifications of the test.

Business groups, bank control, and large shareholders: An analysis of German takeovers

The efficiency of different corporate governance systems has attracted great academic and political interest during the past decade.² Of particular interest has been the question whether capital markets in the U. S. and the UK, or strong blockholders and universal banks (as, for example, in Germany and Japan) are better suited to monitor corporate management. Especially the German system is characterized by highly concentrated ownership and several authors have performed cross-sectional studies of how ownership structure and strong banks affect firm performance. Unfortunately, their results are inconsistent with each other and depend strongly on the data set employed, the time period, and the methodology.³ In these studies, firm performance is modeled as a (possibly nonlinear) function of ownership structure. The empirical tests typically use a cross-section of firms and regress performance on variables measuring ownership structure, bank control, and a set of control variables. Most studies use performance measures based on financial-statement data to avoid the forward-looking nature of stock prices. The reason is that even if market-based data was better suited to capture changes in value they cannot be employed in such a cross-sectional approach, because any effect of ownership structure would be impounded into the stock price once the market becomes aware of a change. Thus, during any period after the change there should be no further relation between ownership structure and market returns. Therefore, in cross-sectional studies performance must be measured using backward-looking variables such as financial-statement data.

In this paper, I contribute to the discussion about the effectiveness of different governance systems by analyzing the relation between ownership structure and performance based on market-based measures. In place of a cross-sectional analysis, I employ an event-based method designed to measure the effect of ownership structure and bank control on the net present value of major corporate investment decisions: the acquisition of companies. This approach overcomes three problems associated with the previously used cross-sectional one. First, I can use market-based performance measures, because I can precisely identify the date when information about a pending takeover becomes public. If blockholders and banks monitor bidder management

² See Kojima (1995), Shleifer and Vishny (1997), and Zingales (1997) for surveys.

³ While Cable (1985) and Gorton and Schmid (1998) find a positive relation between bank influence and firm performance, Chirinko and Elston (1996) find no effect, and Nibler (1995), Perlitz and Seger (1994), and Schmid (1996a) find a negative effect. See also Edwards and Fischer (1995) and Boehmer (1998a) for a survey and additional references.

effectively, the announcement return should be related to the gain realized by bidder shareholders. Second, to isolate and measure the effect of ownership in a cross-sectional study, it is necessary to control for all other factors that might affect performance. Since these factors are not always known or measurable, this is often difficult. In contrast, the event-based approach does not require to control for other variables affecting performance. Third, the causal relation between ownership structure and performance is ambiguous in cross-sectional studies. For example, Perlitz and Seger (1994) interpret the negative effect of bank control on performance as evidence that bank influence reduces profitability. On the other hand, such a result would also materialize if banks often take control of poorly performing companies and reduce their involvement after improving profitability. The event-based approach also resolves this issue, because I only measure performance over very short time spans.

In the empirical analysis, I employ a unique data set of 715 German takeovers obtained from the *Bundeskartellamt* (BKartA), the German federal antitrust agency.⁴ While there are no general publication requirements at the time a takeover is initiated, all but the smallest bidders must register with the BKartA and provide details on their group structure when their stake in the target company crosses 25, 50, or 75 per cent of the voting rights. My sample is based on these filings, official and unofficial correspondence surrounding them, and related material such as press releases. Because large blockholdings by various types of shareholders are the rule in German companies, they provide an ideal setting for testing the role of ownership structure. The basic idea is that if effective monitoring by shareholder representatives can discipline management, I should observe 'better' acquisitions by firms with 'better' monitors. Specifically, I focus on large shareholders and banks, measure their influence on acquiring firms, and analyze if their presence affects the quality (net present value) of takeover decisions. Takeovers are typically important investment decisions where a substantial fraction of a firm's resources is committed to a specific project. Nevertheless, on average, they result in small abnormal returns to the shareholders of bidding firms.⁵ Therefore, the average takeover does not substantially change the bidders' market value. Many empirical studies, however, show that several cross-sectional factors systematically affect the value of the transaction. These studies typically justify value-decreasing deals by arguing that managers' interests diverge from those of shareholders, or by eluding to managerial incompetence in valuing target firms and potential synergies. In this

⁴ In the context of this paper, I define a takeover as the acquisition of voting rights associated with common stock where the acquirer purchases at least 50% of outstanding votes.

⁵ For German takeovers, see Gerke, Garz, and Oerke (1995) and Boehmer and Loeffler (1998); Jensen and Ruback (1983) and Jarrell, Brickley, and Netter (1988) provide surveys of literature on U.S. takeovers.

paper, I build on these ideas and ask to what extent the bidders' ownership structure determines the value of takeovers to its shareholders.

Additionally, this paper sheds some light on the motives behind takeovers in Germany, which have been largely ignored by research in financial economics. This is mostly due to a shortage of data. While Germany is the world's third largest economy and its corporate governance structure attracts substantial interest, the activities of its business sector have not been characterized by widespread transparency in the past. This study uses previously untapped data to enhance our understanding of an important economy.

The remainder of this paper is organized as follows. In the next two sections, I briefly discuss previous related studies and present my hypotheses. In section III, I outline the institutional and legal environment in Germany. I describe the sample and define basic variables in section IV, analyze the ownership structure and the degree of bank control in section V, and discuss the empirical methodology in section VI. Section VII contains the empirical results and several plausibility tests to assess the robustness of my results. The final section concludes the paper.

I. Motives for acquisitions and the role of large shareholders

In the presence of operational, financial, or other synergies takeovers can increase the value of the bidding firm. For example, Asquith (1983) and Bradley, Desai, and Kim (1988) view market power and a more efficient management as potential sources of synergies, while Ravenscraft and Scherer (1987) also incorporate tax savings. Jensen and Ruback (1983) argue that synergies primarily derive from cost savings, especially related to distribution and production cost. These savings can be realized through vertical integration, economies of scale, the pooling of resources, or the elimination of repeated efforts.

Increases in the bidder's market value can only be realized if the consideration paid does not exceed the NPV of the target if controlled by the bidder. Such an overpayment may occur due to agency problems (Jensen 1986) or due to managerial incompetence (Roll 1986). The separation of ownership and control gives rise to conflicts of interest between management and shareholders (Jensen and Meckling 1976) that potentially lead to value-reducing takeovers.

While shareholders only gain from deals with positive NPV, other factors such as increased firm size or diversification may increase management's pecuniary and non-pecuniary benefits. If these private benefits are sufficiently large, value-reducing takeovers may be in the interest of management.

Evaluating several takeover cases, Ravenscraft and Scherer (1987) view management interests as the motive for many acquisitions. Increasing firm size often increases power, prestige, and income of management. Firth (1991) documents that top managers in the UK can significantly increase their income subsequent to acquisitions, even if the deal reduces the market value of the bidder. Even after subtracting management's loss on shareholdings in their firm, it gains from initiating such acquisitions.

Roll (1986) argues that even without egocentric management decisions value-reducing acquisitions can result from incompetence or arrogance (hubris) on part of management. Mørck, Shleifer, and Vishny (1990) propose that managers who were particularly successful in the past in increasing market value are most likely to overestimate their decision-making ability. The authors, however, do not find empirical support for their hypothesis. Successful bidders, as measured by industry-adjusted earnings and returns over three years prior to the acquisition, make better acquisitions than other acquirors. This result is corroborated by those in Lang, Stulz, and Walkling (1989, 1991), who document a positive relation between abnormal returns to acquiring firms and their proxy for Tobin's q . In line with these results, Shleifer and Vishny (1988) argue that overpayment in acquisitions is not due to hubris, but rather reflects private benefits to bidder management. Since shareholders must pay for, but do not gain from these benefits, this argument can explain value-reducing acquisitions.

The problem is potentially exacerbated in the case of German takeovers, because German managers neither hold significant equity investments in their firms, nor is their compensation tied to their firm's market value.⁶ Therefore, if acquisitions increase private benefits to management, it is even more likely that they profit from value-reducing deals. I hypothesize that the stronger managerial control and the weaker shareholder incentives to provide effective monitoring, the more value-reducing acquisitions occur. For example, Amihud and Lev (1981) document that manager-controlled bidders initiate significantly more conglomerate mergers than other firms. To the extent that conglomerate mergers have a lower potential for synergies, this would be consistent with the hypothesis above.

In this paper, I relate the success of acquisitions to the unique ownership structure of German corporations, which is characterized by closely tied industrial groups as a result of substantial cross-holdings and thus the dominance of large shareholders in about 80% of all exchange-listed corporations (see section V below). This allows me to address the above hypothesis in a

straightforward way and potentially yields important implications for financial economics and policy.

II. Previous studies of German takeovers

Only few studies analyze the consequences of German takeovers for the bidder's market value. Gerke, Garz, and Oerke (1995) analyze 105 takeovers between 1987 and 1992 for which they can obtain public press releases. They document small positive abnormal returns over longer event periods, but do not detect abnormal performance in the month surrounding the event date. Furthermore, they do not consider the effect of legal filing requirements with the BKartA on the informational content of the analyzed event. In Germany, the largest bidders are required to request the BKartA's approval prior to the takeover. Boehmer and Loeffler (1998) document that completed-deal filings do not lead to market reactions if bidders are required to file their takeover intentions earlier. Franks and Mayer (1996) also analyze the German market for corporate control. Their focus, however, is not on takeovers but rather on sales of large stakes of shares. They show that Germany is characterized by an active market for control in that control is more likely to change after periods of unusually poor performance.

This study extends the former in several ways. I use a large sample of 715 takeovers (by 127 acquiring firms) between 1984 and 1995. From the BKartA correspondence I obtain precise event dates and detailed information on the individual transactions. More importantly, I use extensive information on bidders' ownership structures and bank control to assess the effect of external monitoring on the ex-ante NPV of completed takeovers. In particular this second issue extends the insights gained from studying U. S. takeovers. While large shareholdings (exceeding 25%) are very rare in the U. S., they are widespread in Germany. This paper is the first attempt to isolate the effect of the structure of industrial groups and the identity of shareholders on the quality of major investment decisions by management.

III. Legal and institutional environment in Germany

During the sampling period, German bidders were not required to immediately and publicly announce their intent to acquire another company. Responding to the European Union Transparency Directive, such a requirement was first instituted in January 1995 for firms listed

⁶ Schwalbach and Graßhoff (1997) have analyzed the relation between managerial pay and performance and found little evidence of positive sensitivity. Schmid (1996b) obtains a marginally significant positive relation and Knoll, Knoesel, and Probst (1997) find no sensitivity for the remuneration of supervisory board members.

in the German official stock market.⁷ Before this legislation, there were three legal provisions relating to the provision of information about takeovers that are discussed below.

A. Ex-post publication requirements

§21 AktG (corporate law) specifies that target management must be notified immediately if another corporation's engagement exceeds 25% or 50% of the target's voting rights. In addition, §313 HGB (commercial law) stipulates that shareholdings exceeding 20% of target capital must generally be published in the annual report of the shareholding company. It is not required that a public announcement be made, nor that bidder shareholders be notified of the transaction immediately. Neither provision applies to shareholders that are not incorporated. Therefore, the notification of target management is likely to remain private information until the annual financial statements are published.

B. Publication requirements based on antitrust legislation

The German antitrust legislation *Gesetz gegen Wettbewerbsbeschränkungen* (GWB) contains the most stringent publication requirements for bidding firms in §§22, 23, 24, and 24a. Bidders are classified into three groups based on their consolidated sales, market share, and in certain circumstances on the combined figures of bidder and target. Only the smallest bidders (less than DM 500 million in sales) are exempt from control by the BKartA, the German antitrust agency, but must still provide a post-acquisition filing to inform the agency about the deal. The second smallest bidders are also required to provide a post-transaction filing containing details on the transaction. Within one year of the filing, the BKartA has the authority to require these bidder to either undo the acquisition or to impose restrictions, such as the sale of certain assets. The largest bidders are required to provide a pre-acquisition filing detailing the planned takeover. If the BKartA does not respond to the filing within 30 days, it cannot at any later point in time oppose the deal. The BKartA can request a maximum period of 4 months to evaluate the deal. If companies required to file pre-transaction requests are allowed to complete the deal, they must provide a post-transaction filing as well. In addition to the required filings, some bidders file voluntary (pre-acquisition) requests. These filings are intended to resolve uncertainties if bidders expect the BKartA to oppose the deal or if bidders are not sure into which size category they will be assigned.

⁷ Directive 88/627/EEC. See Becht and Boehmer (1997) for a critical discussion of Germany's implementation of the EU Transparency Directive.

Post-acquisition filings are published monthly in BKartA reports and are publicly accessible in the BKartA before publication. Therefore, this category of filings can be considered public information on the day of the filing. On the other hand, it is somewhat ambiguous whether and when pre-transaction filings become public information. While these filings are not published, the BKartA generally provides information on pending deals if requested. In personal conversations, BKartA officials stated that only in politically or otherwise most sensitive cases when additionally bidders explicitly request that information remain classified the BKartA may not provide information on pending deals. Similarly, the BKartA is generally reluctant to provide detailed information on deals it is currently investigating.

In summary, for firms that only need to file post-transaction reports, it is not likely that earlier information becomes available (unless the bidder voluntarily announces the takeover intent publicly). For firms that are required to provide pre-acquisition filings, information about the pending deal most likely becomes available earlier, although not necessarily immediately on the filing date. This view is supported by the empirical results in Boehmer and Loeffler (1998) and provides the basis for selecting appropriate event dates (discussed in detail in section VI.A below).

IV. Data

A. Sample selection and the treatment of groups

The basic sample consists of all corporations that are listed in the Frankfurt official market segment (*amtlicher Handel*) between 1980 and 1995. The *Deutsche Finanzdatenbank* (DFDB) contains daily share prices and distributions for these firms, and I use the 300 companies that have at least one class of shares traded during that period. The official market segment includes the largest and most actively traded German corporations. Despite their size, the market depth is often limited and especially firms with more than one class of shares have only one class actively traded.⁸

Next, I identify all acquisitions by these firms from BKartA filings. The BKartA organizes filings according to group structure. Specifically, each acquisition is registered under the name of the firm at the top of a business group, or, equivalently, the top-level company in a chain of

⁸ To calculate returns, I always use the most actively traded class. I have calculated returns using different methods: (1) Exclusively based on actual transactions or trade orders. If no trade orders were given on a particular day, prices are estimated by specialists and are treated as if no price was available. (2) Using all available price information. (3) Compounding returns discretely. (4) Compounding returns continuously. Since none of these variations qualitatively alters the results, I report only discretely compounded returns based on all available price information.

voting majorities. These majorities can be attained through direct or indirect shareholdings or other contractual arrangements. To use this information, I first identify the groups around the sample firms based on information in *Wer gehört zu wem?* and various annual editions of Hoppenstedt's *Handbuch der Aktiengesellschaften*. Then I consider each filing a relevant acquisition, if the filing company is either an exchange-listed sample firm or a lower-level group member. Thus, the actual acquiror can be the listed firm itself or one of its subsidiaries, but not one of its parent companies. If companies on two different levels of a group are exchange listed, I assign the acquisition to the listed firm that lies closest to (and above) the actual acquiror in the group hierarchy.

I do not collect data for deals that meet the following conditions:

- The acquisition is an internal group restructuring. For example, if direct holdings are transformed into indirect holdings (or vice versa), the GWB requires a filing to the BKartA. However, neither legally nor economically are these transactions takeovers and no change in control is involved.
- The acquisition of the target firm is a joint venture (*Gemeinschaftsunternehmen* according to §23 II GWB). First, in these deals it is difficult to identify a unique bidder-target pair. Second, closer examination reveals that these cases are no 'typical' acquisitions, but rather strategic reorganizations of the target firm's ownership structure often not involving a change in control.
- The acquisition was not approved by the BKartA. I do incorporate acquisitions that were allowed subject to restrictions, such as the sale of certain assets.

The resulting data set contains 836 takeovers by 144 exchange-listed firms or their subsidiaries. For inclusion in the final sample, I further impose the following restrictions:

- The bidder acquires at least 50% of the target's equity. This requirement selects acquisitions associated with a significant change in control.
- At least fifty daily returns are available during the market-model estimation period for the acquiring firms.

These additional exclusions leave 715 takeovers by 127 listed firms for the empirical analysis.

B. Definition of variables and descriptive statistics on bidder firms

I retrieve information on several variables that potentially affect the consequences of the acquisition for the bidder's market value. I obtain the bidder's group structure, the size of its

stake in the target before and after the acquisition, the industry classifications of the target firm, and individual special circumstances from the official BKartA filings and related correspondence between bidder and BKartA. Following §23 V GWB, the filings must contain standardized information relating to these variables. In 77% of the sample deals (549 takeovers) the bidder had to provide pre-acquisition filings. The remaining 23% furnished only post-acquisition filings (166 takeovers). 290 firms are acquired directly by the listed sample firm, while 425 are bought indirectly via a subsidiary. Out of those, 287 were bought by a direct subsidiary of the listed firm, while the remaining ones were acquired by subsidiaries further down the hierarchy.

I supplement data gathered from filings with information from various other sources. I construct the bidder's shareholder structure and the surrounding group composition from the 1985 to 1994 editions of the triennial Commerzbank publication *Wer gehört zu wem?* And various annual editions of Hoppenstedt's *Handbuch der Aktiengesellschaften*. All financial-statement data come from *Hoppenstedt's Bilanzdatenbank*. I collect the bidders' industry classifications from the 1984/85 edition of *Hoppenstedt's Handbuch der Aktiengesellschaften*, which contains a comprehensive listing of the major activities and subsidiaries. From several annual editions of the same source I identify all changes in bidders' equity capital.

For each variable, I have cross-checked information from the primary source with others to minimize data errors and to increase its reliability. I code the information either as discrete (Table I contains a summary) or as continuous variables (Table II) that are discussed in the following sections. These variables are used as classification variables, to conduct sensitivity tests, and to describe the composition of the sample.

B.1. Direction of the takeover

To facilitate an industry classification of bidders and targets, I use an extended SIC code. The extensions are necessary to incorporate certain German industries, such as real-estate savings banks. I classify all major activities of bidders and their subsidiaries. Based on this classification, I determine the direction of the takeover. I distinguish between the mutually exclusive cases described below. Each of these classifications should be treated with great caution, because the bidders' industries can generally not be identified unambiguously. Most sample firms are large companies with several lines of business, and different sources often provide different 'primary' industries. I provide summary statistics on the direction of the takeover mainly to shed more light on the composition of the sample.

Horizontal takeovers (39% of the sample acquisitions). The main activities of bidder and target are identical. Generally, I assume a horizontal direction if the two-digit SIC codes match. The

not related to the bidder's, but has a horizontal or vertical relation to one of the bidder's subsidiaries.

Purely conglomerate takeovers (14%). Target and bidder activities are unrelated. This group contains all transactions that are not classified into one of the categories above.

In addition, I separately analyze acquisitions of diversified bidders. I classify a firm as diversified if it operates in several different industries. Specifically, I first group all industries into thirteen categories such that each is homogenous with respect to inputs. Then I define all companies that operate in five or more of these categories (including their subsidiaries) as diversified. Their acquisitions correspond to 35% of the sample.

B.2. Relative size of bidder and target

Since only 46 out of 715 target firms in my sample are exchange listed, I cannot use market values to determine firm size. Sales figures are similarly scarce. They are always available for bidders, but not for privately held targets. Only in 1989 the BkartA started to systematically record target sales. The average ratio of target sales to bidder sales is about 10.11% for this subsample. A third alternative is using the book value of equity as a size proxy. To the extent possible, I determine the book value shortly before the takeover, because several target firms increase their equity capital in the course of the acquisition. The average relative size of target and bidder based on book values is 7.72%. This implies that targets are small compared to their acquirors, but several factors tend to bias this measure downwards. First, book-to-market ratios differ substantially across firm size and industries. In particular, if targets are more likely to be growth firms than bidders, their relative size based on the book value of equity will be underestimated. In addition, several targets have off-balance sheet equity in the form of

unlimited-liability partners or ‘quiet’ stakes held by outside investors. The latter usually have equity-like characteristics but appear as debt on the balance sheets. Unfortunately it is difficult to quantify the relative size more precisely.

B.3. Size of the bidder’s stake in the target firm

To determine the bidder’s stake in the target before and after the acquisition, I consider direct and indirect stakes. I assume that a stake larger than 50% allows the owner to effectively control a firm. This assumption makes it substantially easier to compute indirect holdings: the ownership is the sum of all stakes that are either held directly or by subsidiaries that are linked to the bidder through a chain of majority stakes. I compute these stakes before and after the acquisition to infer the change in ownership due to the takeover. In about 85% of the acquisitions, bidders hold less than 25% in the target before the transaction. In 87% of the deals, bidders hold more than 75% afterwards. The average bidder acquires 86% of the target, and half the deals are a purchase of 100% of the equity.

B.4. Number of acquisitions per bidder

The number of deals per bidder ranges from 1 to 83, with a mean of 6. Including the most frequent acquirors in the sample could affect my conclusions, if these acquisitions are part of a publicly known expansion program. In section VII.F.3 I perform various tests to isolate the effect of (partially) anticipated deals on the results.

B.5. Bidder performance and risk

To assess the plausibility of the results, I analyze the relation between bidder performance before and after the acquisition and the market reaction to the transaction. To this end I employ the market-model intercept (alpha) as a performance proxy, estimated separately during the year before and after the acquisition. I calculate systematic and unsystematic bidder risk during the year preceding and following the acquisition as the market-model slope coefficient and mean-squared error, respectively. Since these are very crude estimates, however, I only use these estimates to perform sensitivity tests in section VII.F.2 below.

V. Ownership structure and bank control of bidder firms

I argue that ownership structure is important, because efficient monitoring should improve the quality of major investment decisions such as acquisitions of other firms. Especially blockholders and banks may have substantial influence on bidder management. I test below whether this influence is beneficial for the shareholders of the acquiring firms. For each sample

firm I determine all blockholders who control a stake in excess of 25% in the period preceding the takeover. In some cases, but not systematically, I can additionally identify smaller stakes. For firms that have a majority shareholder I also analyze its shareholder structure. I follow majority stakes (considering direct, indirect, and cross-held stakes) until the top of the pyramidal business group is reached and determine the identity of the top company's owners, who ultimately control the bidder firm. This information allows me to classify bidders in several ways according to their ownership structure. To quantify the identity of blockholders I use the categories family, government, financial institution, foreign owner, other large owners (foundations and cooperatives), and widely held. To compute family or government stakes, I add holdings by all family members or government institutions, respectively. Financial institutions include banks, insurance companies, and investment firms they control. Widely held shares are computed as the residual after considering all known blockholdings. Since stakes below 25% are not systematically reported, this measure is possibly biased upwards.

A. Shareholder structure of the bidder

Table III contains descriptive statistics on discrete variables describing the ownership of bidders in my sample for the period preceding their most recent acquisition (the overall picture does not change when ownership characteristics are grouped by year). To investigate potential differences to other listed firms, I have compared bidder ownership to that of other exchange-listed firms (in the official Frankfurt market) during the same period. This comparison reveals only very few significant differences between sample firms and others and is not reported here.

The first panel of Table III shows ownership information for the listed firm itself, i. e. on blocks held directly in the listed sample firm. Out of 127 bidders, 33 firms have minority stakes between 25% and 50%. This corresponds to 26% of all bidders (second column) and accounts for 40% of all acquisitions (third column). Thus, firms with minority stakes are more likely to be acquirors. An additional 77 bidders (61%) have a majority shareholder, accounting for 35% of all sample deals. Consistent with the ownership structure of Franks and Mayer's (1996) companies, 110 firms (87%) have a large shareholder controlling a stake of 25% or more. Out of those, the most frequent blockholders are another company (40 cases), family (28), financial institutions (17), government (12), and foreign owners (11). The remaining two blocks are held by a foundation and a cooperative, respectively.

For the 77 bidders with a majority stake, panel B reports the ownership structure of the highest level. This could be the holder of the majority stake in the sample firm itself, if no party controls a further majority in this firm. Otherwise it refers to the ownership of the highest level in a

potential chain of majority stakes. On the top level, a widely held majority and financial institutions as blockholders are much scarcer than on the first level. On the first level, 33% have a majority widely held; on the top level, this is true for only 13 out of 77 firms, or 17%. Analogously, the relative frequency of stakes controlled by foreign holders, family, and government is about twice as large on the top level. Here the category ‘largest owner other company’ has residual character, because in these cases information on the owner of this top-tier firm was not available.

Panel C combines the information on listed firms and, if a majority shareholder is present, on top tiers and presents ownership information for the complete group including the listed firm. In 13% of all cases (‘largest owner other company’), the ultimate largest owner cannot be inferred from publicly available sources or data from the BKartA. Families are the most important group of shareholders, but account for relatively few takeovers. Firms that are widely held or have a block controlled by a financial institution have the greatest propensity for acquiring other companies.

Table IV summarizes continuous ownership variables. Panel A shows that most firms are controlled by a single party, because on average the largest stake has almost eleven times the size of the second largest. For the 30 bidders that actually report two or more different blockholders, the largest stake has about 2.5 times the size of the second largest. Both for the first level (panel A) and the group (panel C), on average about half the shares are widely held and half are controlled by large shareholders.

B. Bank control over bidders

I employ several measures of bank control over bidders to assess whether monitoring by banks has a positive effect on the bidder’s market value when acquiring other firms. Bank control refers to influence exerted by either banks, insurance companies, or associated investment firms.⁹ The first measure in panel D of Table III is very general and assumes bank control if either the bank has a direct stake in excess of 25% in some group level, or on the highest group level more than 50% of shares are widely held. This measure reflects two ways banks can use to exert control over listed firms: first by direct holdings, second by using proxy votes. Among others, Baums and Fraune (1995) show that banks control about 60% of the votes associated with

⁹ Substantial links of ownership and control exist between the insurance and banking industries in Germany. For example, the largest insurer (Allianz) has substantial stakes in the two largest banks (Deutsche Bank and Dresdner Bank), and vice versa (see Boehmer 1998b). Similarly, most investment funds are directly owned by banks. Therefore, it is difficult to separate the influence of banks from that of insurance firms and funds.

widely held shares. This is due to the German proxy-voting system, where shareholders usually deposit their shares with banks and grant general power of attorney to the bank to vote all shares in the portfolio. According to this definition, about 58% of the firms are bank controlled, accounting for 76% of all takeovers. The second measure considers only direct stakes and assumes bank control if a bank owns between 25% and 50% in some group level. This applies to 20% of the bidders (18% of takeovers). The third measure is similar to the second, but based on majority stakes (4% of bidders and 5% of takeovers).

Fourth, I use both direct holdings and proxy votes in the top tier of the group to categorize firms into three groups with varying degrees of bank control. Specifically, I assume (1) weak bank control if the top tier has a majority shareholder who is not a financial institution and has less than 50% of its shares widely held (46% of bidders, 26% of takeovers); (2) strong bank control if a financial institution either holds a majority stake in the top tier or its stake plus the fraction widely held exceeds 75% (34% of bidders, 49% of takeovers). The residual group ('medium bank control') consequently has no majority shareholders, less than 75% free float, and one or more non-bank minority blockholders in its top tier and accounts for 25% of all acquisitions.

The last two rows of each panel in Table IV present direct stakes held by banks and a last measure of bank control, which is simply the sum of bank votes from own shareholdings and the fraction of shares widely held. The former is a lower bound on bank control, while the latter represents an upper bound, overstating true bank influence to the extent that banks cannot vote all shares deposited with them. I find that banks can control up to 55% of the votes in the listed firms (panel A) and that banks have at least some votes in 123 out of 127 bidders. Out of these, only about 7% of the votes derive from direct holdings (present in 29 bidders). On the top tier of the group structure (panel C), direct bank holdings are only about 4%, but the maximum share of votes under bank control is 58%.

VI. Methodology

In this paper, I analyze the cross-section of market reactions to takeovers. First, I use event-study methodology to calculate market-and-risk adjusted abnormal returns around the acquisition date. Second, I relate abnormal returns to the variables discussed above. The following two sections describe the selection of the event date and the design of the statistical tests below.

A. Selection of the event date

An absolutely essential condition for conducting an event study is to determine the event date as precisely as possible. Up to five events can potentially relay takeover-related information to

investors: the first press release and the BKartA dates for the pre-acquisition filing, the approval (if applicable), the deal completion, and the post-acquisition filing. I obtain all these dates from BKartA files and supplement press releases on record at the BKartA with stories contained in Reuter's *Textline* database.

I use the date of the press releases for all acquisitions that were publicly announced in the press before the respective filing date. Overall 271 takeovers were reported in the press, but for only 113 the publication date precedes the earliest BKartA date (see Table I). If no press release was published before the BKartA date, I distinguish between bidders that must file pre-acquisition forms and those that are only required to file post-acquisition forms. For the former, I use the first available date from the BKartA correspondence. For the latter, I use the date of the post-acquisition filing as the event date. Boehmer and Loeffler (1998) show that this approach considers the events having the largest information content. In particular, for firms not required to file pre-acquisition forms the completion date is not publicly known and thus no information is systematically conveyed to investors at that time.

B. Design of the empirical tests

To calculate abnormal returns, I first estimate market models from day -250 to day -51 relative to the earliest date related to the event (independent of the definition of the event date). I repeated all estimations using the adjustment for infrequent trading suggested by Scholes and Williams (1977). Since this procedure does not qualitatively alter the results below, I report only estimates based on the simple market model. The dependent variables are bidder returns adjusted for dividends and capital changes. The independent variable is the DAFOX index, a value-weighted performance index including all shares listed in the official Frankfurt market (see Goepl and Schuetz 1992). Then I compute cumulative abnormal returns (CARs) based on discrete and continuously compounded returns. Since the results do not differ materially, I report only estimates based on discrete compounding.

In the tables below I compute means, medians, and the fraction of positive CARs. To determine statistical significance, I compute various test statistics, including the traditional test from Brown and Warner (1985), the standardized test (Patell (1976)), the standardized cross-sectional test Boehmer, Musumeci, and Poulsen (1991), and a cross-sectional test.¹⁰ To determine the effect of

¹⁰ I use the following notation: N = number of firms in the sample, A_{iE} = security i 's cumulative abnormal over L days surrounding the event day, A_{it} = security i 's abnormal return on day t , T_i = number of days in security i 's estimation period (I omit the subscript i when there is no possible confusion), s_i = security i 's estimated standard

outliers on my results, I also compute simple sign and rank-sum tests. Since the results for different test statistics are qualitatively similar, the asterisks in the means column in Table V to Table IX correspond to the traditional test, those in the medians column to the rank-sum test, and those in the fraction-positive column to the sign test.

deviation of abnormal returns during the estimation period, SR_{iE} = security i 's standardized residual during the event period = $A_{iE} / \sqrt{L_i} s_i$.

The traditional method implicitly assumes that security residuals are uncorrelated and that event-induced variance is insignificant. Its test statistic equals

$$\frac{\frac{1}{N} \sum_{i=1}^N A_{iE}}{\frac{1}{N} \sqrt{\sum_{i=1}^N \frac{L}{T-1} \sum_{t=1}^T \left(A_{it} - \sum_{t=1}^T \frac{A_{it}}{T} \right)^2}}.$$

The standardized residual method (Patell 1976 and Brown and Warner 1980, Appendix A.3) normalizes the residuals before forming portfolios. Its test statistic equals

$$\frac{\sum_{i=1}^N SR_{iE}}{\sqrt{\sum_{i=1}^N \frac{T_i - 2}{T_i - 4}}}.$$

The sign test is a simple binomial test of whether the frequency of positive residuals equals one half. For the two-sided test, its test statistic equals

$$|P - \frac{1}{2}| \left[\frac{\left(\frac{1}{2}\right)^2}{N} \right]^{\frac{1}{2}}.$$

where P is the frequency of positive residuals.

The ordinary cross-sectional method ignores estimation-period estimates of variance and uses the event-day cross-sectional standard deviation for its t-test. The resulting t-statistic is

$$\frac{\frac{1}{N} \sum_{i=1}^N A_{iE}}{\sqrt{\frac{1}{N(N-1)} \sum_{i=1}^N \left(A_{iE} - \sum_{i=1}^N \frac{A_{iE}}{N} \right)^2}}.$$

The standardized cross-sectional test suggested by Boehmer, Musumeci, and Poulsen (1991) is a hybrid of the standardized residual and the ordinary cross-sectional approach. It first finds standardized residuals as Patell did, then applies the ordinary cross-sectional technique just described. The test statistic is

$$\frac{\frac{1}{N} \sum_{i=1}^N SR_{iE}}{\sqrt{\frac{1}{N(N-1)} \sum_{i=1}^N \left(SR_{iE} - \sum_{i=1}^N \frac{SR_{iE}}{N} \right)^2}}.$$

For the univariate cross-sectional analysis of CARs, I test the hypothesis that means and medians are equal across groups. For means, I apply a t-test to CARs standardized by their estimation-period standard deviation (assuming unequal variances if the null of equal variance is rejected at the 10%-level), and for medians I apply a rank-sum test. The corresponding t and χ^2 -values are listed below the respective panels. In addition, I employ multivariate WLS regressions, where all observations are divided by the estimation-period variance of abnormal returns to reduce heteroscedasticity. I have repeated all regression tests using OLS on CARs as well as on CARs divided by their estimation-period standard deviation. Since these alternative procedures do not qualitatively alter the results, I report only WLS estimates in this paper.

C. Taking into account the value changes of parent companies

Most sample firms have a shareholder owning more than 50% of their equity (parent companies). Any value-relevant event affecting the sample firm should also affect the value of its parent. On one hand, the parent bears part of the sample firm's cash-flow risk through its direct equity stake. On the other hand, the group may have direct or indirect profit-sharing agreements affecting the precise distribution of cash flow and risk. Consequently, the abnormal return associated with the acquisition is shared between the sample firm and its parent(s). The precise distribution of wealth effects is unclear, because the rules determining how the bidder's profits are distributed between its owners and those of the parent company are not publicly known. Even though formal profit sharing contracts are publicly accessible, internal arrangements such as the specifics of transfer-pricing systems are not. A further complication arises because not all parent companies are publicly traded. Thus, in an attempt to capture most of the true market reaction without misstating it, I use the following definition for group abnormal return in addition to bidder-firm abnormal returns:

$$CAR_{Group} = \frac{\sum_{i=1}^M CARMV_i \left(1 - \sum_{j \neq i}^M x_{j,i}\right)}{\sum_{i=1}^M MV_i \left(1 - \sum_{j \neq i}^M x_{j,i}\right)},$$

where

$$CAR_i = \sum_{t=-10}^{+2} AR_{i,t}, i \in \{Bidder, Parent1, Parent2\},$$

$$CARMV_i = CAR_i * MV_i,$$

$$MV_i = \text{market value of equity of firm } i, i \in \{Bidder, Parent1, Parent2\},$$

$$x_{j,i} = \text{net ownership stake of group level } j \text{ in group level } i, \forall j > i,$$

$M = \text{number of group levels} .$

The market value is measured at the end of the month preceding the first takeover-related announcement and includes all classes of equity. In 24 out of 77 majority-controlled bidders (69 acquisitions), the parent is publicly traded in the official market. In two instances, the parent's parent is also traded. The numerator is the adjusted sum of abnormal value changes, the denominator the adjusted sum of market values of each group level. The adjustment is necessary because the parent by definition owns at least 50% of the bidder's equity and participates accordingly if the bidder's equity experiences changes in its market value. To avoid double counting in summing up value changes across group firms, I subtract out the parent's value increase deriving from its stake in the bidder. The sum of market values is adjusted accordingly, because simply adding market values across group firms would double count the value of the parent's stake in the bidder.

If the acquisition does not affect parent value directly or through transfers, the group CAR equals the bidder CAR. Otherwise, bidder CARs are a biased estimate of the aggregate market reaction to the acquisition announcement. In contrast, group CARs incorporate the total reaction without requiring knowledge of the rules on how profits are shared between bidder and parent. The most obvious problem with this measure is, however, that most higher-level group companies (parents) are not publicly traded. Therefore, the group CAR represents an unbalanced measure of total abnormal returns because it cannot be observed for firms that are majority controlled by a non-listed company.

Both bidder CARs and group CARs have merits as a measure of wealth effects. Group CARs tend to measure aggregate wealth effects (if they were observable for all firms). Bidder CARs provide a less complete picture, but are nevertheless a relevant measure of wealth changes accruing to shareholders who hold shares in the bidder, but not in the remaining listed group companies. One important difference between the two measures is the immunity of group CARs to wealth transfers within the group. If the acquisition leads to a wealth transfer, say, from the bidder to its parent company, the group CAR will still reflect the true value of the transaction. Bidder CARs, in contrast, will reflect the value of the transaction plus the value of incremental cash flows due to transfers between bidder and parent. In the following section, I report both performance measures and interpret differences as evidence of group-internal wealth transfers.

VII. Results

In this section I first present abnormal returns to bidders and their parent companies. Next I stratify the sample by ownership characteristics and investigate potential cross-sectional

differences in abnormal returns. For this comparison, I use both univariate and regression tests. Finally, I investigate the plausibility of the results by performing several robustness tests.

A. Abnormal returns to bidder firms

Table V presents cumulative abnormal returns (CARs) for the whole sample for several event windows. In panel A all observations are weighted equally and I obtain significantly positive CARs for the longer periods. For example, the CAR from day -10 to $+2$ relative to the event date has a mean of 0.46% and a median of 0.23% (53% positive). Shorter periods yield CARs that are still significantly different from zero, but somewhat smaller in magnitude. While the economic significance in shorter windows is questionable, two factors contribute to making observed CARs small.

First, in addition to the price run-up effects of potential rumors and insider trading (which was not illegal in Germany during the sampling period), there is substantial event-date uncertainty associated with the lack of immediate publication requirements in Germany. Press publications generally appear in more than one newspaper. While I am confident that I have captured all published events, there is no guarantee that I have identified the first publication in the sense that another newspaper may have published the same story a couple of days earlier. In addition, the processing procedures within the BKartA are not standardized in the sense that, for example, news are released exactly when filings are received. Thus, I have confidence in the validity of the assigned event dates, but I cannot identify the exact date with a precision greater than about one week. In the following cross-sectional analysis, I employ $(-10, +2)$ CARs to represent the effects of the takeover on bidders' market values. This choice minimizes the influence of other unrelated events without relying on noisy (insignificant) estimates. Second, the target firms are generally small relative to their acquirors, which are typically large, diversified companies. I will address this issue in section F.1 below.

To check the robustness of the estimates, I also average CARs for each bidder and then estimate statistics across bidders. This procedure gives less weight to takeovers of frequent acquirors, who often buy a series of small firms within a short time span. The results in panel B show that this exercise does not attenuate the results. In contrast, CARs are substantially larger across all event windows, although less significant due to the smaller number of observations.

B. Abnormal returns to bidder groups

Table VI reports abnormal returns accruing jointly to the bidder and its listed parents. In addition, the last two columns list the sum of the abnormal changes in market value over all

sample firms, both for the bidders and the bidder groups. In contrast to bidder CARs, group CARs are not significantly different from zero for windows shorter than the $(-20, +1)$ period. Moreover, medians and averages frequently have opposing signs, indicating no systematic abnormal performance. Therefore, the positive effect of acquisitions on bidders tends to be compensated by negative effects to their parent companies. This is corroborated by the absolute abnormal wealth changes reported in the last two columns of Table VI. The group gain is systematically below the gain to the bidder firm. For example, for the event window $(-10, +2)$ the 715 takeovers increase the value of all bidders taken together by DM 11.8 billion. The value increase considering groups is only DM 4.2 billion. Alternative tests (not reported here) further show that this result is not changed if (1) only direct parent firms are considered and (2) only firms are considered that actually have listed parent firms. According to these results, acquisitions in the aggregate have little economic value and are rather used to shift wealth between different group levels.

In the following sections the stratifications according to ownership structure are applied to both bidder and group CARs. Analogously to the discussion above, differences in group CARs are interpreted as differences in the economic value of transactions, while differences in bidder CARs also include differences in internal wealth transfers among group firms.

C. The role of bidders' shareholder structure

Recent literature gives particular attention to the monitoring role performed by banks and large shareholders. If conflicts of interest arise between management and shareholders, CARs to management-controlled bidders (i. e., poorly monitored firms) should be smaller than CARs to firms with effective incentive or monitoring systems. In the following two sections I investigate this hypothesis. The corresponding tables consist of two panels each. The first panel reports results based on the abnormal returns of only the bidder firms and the second panel uses group CARs as defined in the previous section. For each subsample I present the average, the median, and the percentage of positive abnormal returns.

Table VII first isolates firms that have a listed parent company. In panel A, the 69 deals by firms that have a listed parent elicit a significantly positive CAR of 1.44% (median 0.59%). Panel B shows, however, that by additionally considering the CAR of the listed parents the positive result accruing to the bidder firm is completely mitigated. The average group CAR is not statistically different from zero, while the median is significantly negative at -0.68% . This pronounced difference between bidder and group CARs implies that this subset of firms uses takeovers to shift wealth from the parent to the subsidiary acquiring the target. How this apparent internal

cross-subsidy is practically achieved is not revealed by publicly available documents, although one possibility would be for the parent to provide financing at below-market conditions.

Whatever the purpose of this transfer, it represents an inefficient use of the parent's resources, because on average its loss in value is not compensated by the bidder's gain.

The next row shows that bidders having any type of shareholder owning at least 25, but less than 50% of the bidder's equity (henceforth: a minority shareholder) make better acquisitions on average. This result holds for both bidder and group CARs. To further investigate the effects of block ownership, I now stratify the sample into three categories depending on ownership of the majority of shares. Bidders in the resulting mutually exclusive categories have either a majority widely held (415 deals), are owned by one large shareholder (247 deals), or by more than one large shareholder (53 deals). Widely held bidders make acquisitions associated with a significantly positive CAR of 0.48%, while majority owned bidders have a CAR of 0.51% that is not statistically different from zero. The remaining deals are not associated with abnormal performance. Among the widely-held firms, bidders that have a minority blockholder make significantly better acquisitions than those that have no blockholder (resulting in CARs of 0.81% and 0.28%, respectively). The signs and magnitudes of estimated group CARs in panel B largely corroborate the inferences from bidder CARs with the exception that widely-held majority owners experience significantly negative group CARs. Unfortunately, the overall statistical reliability of this stratification is very low for both measures of abnormal performance and may partially be due to the small sample sizes.

In sum, the univariate tests in Table VII are consistent with the hypothesis that large shareholders are beneficial, but show that majority ownership imposes a cost as well. The clearest result is that bidders with minority blockholders, whether the majority of shares is widely held or not, make better acquisitions. This inference is based on direct ownership in the bidder firm and I next investigate the role of ultimate ownership independent of ownership at the bidder level. Ultimate ownership is defined as ownership of the highest group level that is not majority controlled by a single shareholder.

The first row of Table VIII presents abnormal performance for acquisitions by firms that ultimately have a majority of shares widely held. Out of 715 deals, 468 satisfy this condition. In the context of Table VII, these are the 415 deals where bidders directly have their majority widely held, plus the 53 deals where bidders have a chain of majority owners that ultimately have a majority widely held. The mean CAR is 0.60% and highly significant. Group CARs, however, show no significant abnormal performance with a mean of 0.37% and a median of –

0.02%. This implies that widely-held groups use acquisitions to transfer wealth within their organization, and do not increase their aggregate value by acquiring other companies.

The next row separates bidders according to the identity of the largest blockholder in the highest group level. Positive CARs accrue to bidders ultimately controlled by a foundation or a family. The respective estimates of 4.36% and 0.88% are significantly positive on the bidder level in panel A as well as on the group level in panel B. Acquisitions by firms with other types of ultimate blockholders are not associated with abnormal performance on either level.

While a more detailed analysis of bank influence is provided in the following sections, Table VIII provides initial evidence that bank ownership has little value with respect to the quality of takeover decisions of bidder firms. Whenever the largest ultimate blockholder is a financial institution, bidder and group CARs are negative, although not significantly different from zero. Finally, the last row in Table VIII investigates the hypothesis that two large shareholders competing for control are beneficial to the firm. Most of the deals (493 out of 715) are made by bidders where only one large shareholder is present in the highest group level. They are associated with a significantly positive CAR of 0.62%. On the group level, however, this gain is largely wiped out by a negative CAR to the parent. Thus, this simple test provides no clear evidence to address the benefit of competition for control.

D. The role of bank control

First, the results on widely-held firms in Table VII partially apply to financial institutions. Baums and Fraune (1995) show that due to the German proxy-voting system banks on average exercise more than 80% of the votes in widely-held firms although on average only 13% derive from direct equity holdings by these banks. Therefore, simultaneously holding debt and equity, banks do not necessarily have incentives to use the additional votes in shareholders' interests. This problem is exacerbated by the fact that the typical bank's debt interest substantially exceeds its equity interest for most firms.¹¹ The adverse effects of this potential conflict of interest would be less pronounced if the widely-held firm had a large shareholder (owning more than 25%).

¹¹ No publicly available figures provide information on the precise composition of banks' interest in equity and debt to German listed corporations. A back-of-the-envelope calculation proceeds as follows. In 1996, the DAI reports that the equity-to-capital ratio of listed corporations is 39% (DAI Fact Book 1996). Own calculations reveal that banks own about 8% of these firms' equity. Since German firms very rarely use public bonds, it is safe to assume that most long-term debt consists of bank loans. Thus, the portfolio of a typical bank can be described as a function of the ratio of bank loans to total corporate liabilities. For example, if all corporate debt were from banks, the banks finance $8\% \cdot 39\% = 3.12\%$ of listed firms' total assets in the form of equity shares, and 61% in the form of loans. Using the cautious assumption that corporate liabilities consist to only one third of bank loans, banks still finance about 20% of the corporations' total assets using loans. Therefore, for the typical bank the value of its loan portfolio to a typical listed corporation exceeds the equity interest in the same firm by a factor between 7 and 20.

With an average presence on annual meetings of around 57% of all votes (see Baums and Fraune 1995), a 25% stake provides a very powerful voice supporting shareholders' interests.

Panel A of Table VII shows that widely-held firms experience positive CARs on average.

However, firms where shareholders' interests are represented by a large minority shareholder realize almost three times the value increase compared to firms without large shareholders.

Group CARs in panel B lead to virtually identical results. Thus, takeovers have the largest value to widely-held bidders when a large shareholder counter-balances bank influence. The results in Table VIII show that negative abnormal returns accrue to firms where a financial institution is the largest blockholder. These CARs, however, are not statistically significant and therefore have little explanatory power.

Table IX contains bidder CARs separated by the bank-control measures discussed in section V.B above. While most bank-control variables have little explanatory power and in some cases yield ambiguous results, none of the estimates is consistent with a special monitoring function performed by banks. Specifically, the first row shows significantly positive CARs if banks control a minority interest at some group level. While this result would be evidence of a positive effect of bank presence, the CARs to other bidders are not significant, but larger both in terms of the mean and the median. Thus, the explanatory power of this test is limited.

The second row provides similarly ambiguous evidence. Analyzing the mean CARs, acquisitions are associated with the lowest return if bank control is weak and the highest return when it is medium. Analyzing median CARs, the lowest returns are achieved when bank control is strong, and the highest when bank control is weak. If anything, this finding corroborates the result that minority blockholders (medium bank control) perform an important monitoring role, but does not hint at a special monitoring role of banks.

The third row shows that bidders with direct bank ownership below 50% in some group level have lower CARs than those without any bank involvement, but again this result lacks statistical significance. The most pronounced evidence is presented in the fourth row for bidders where banks hold majority stakes in some group level. The 38 takeovers by bank-controlled firms yield an average CAR -1.82% (the median CAR is -0.95%) and is statistically significant. Using group CARs in panel B this result is even more pronounced.

Overall, acquisitions do not increase the bidders' firm value more when financial institutions have partial control over the bidder group, but decrease firm value when they have full control. Combined with the earlier result that takeovers by widely-held firms do not increase value except when a minority blockholder provides a counterweight to bank influence due to proxy

votes, there is little empirical support for the widespread contention that German banks provide efficient monitoring. Next, I perform a regression analysis to test the robustness of the results from the previous two sections.

E. Regression analysis of minority blockholders and bank control

Two basic findings have emerged from the analysis so far: minority blockholders are beneficial for bidder shareholders and bank control lacks the positive effects often attributed to it. In this section I use a WLS (each observation is divided by the estimation-period abnormal return variance) regression analysis to obtain some insights into the robustness of these findings.

The dependent variable is always the bidder CAR from -10 to $+2$ relative to the event day. All regressions were repeated using group CARs without any qualitative changes to the results. I analyze two groups of variables describing bank control and other ownership information. An additional group of variables is used to control for deal-specific characteristics. To measure bank control, I first use two dummy variables indicating that financial institutions own a majority or a minority stake, respectively, in some level of the bidder group. Next, I construct three different continuous variables representing bank stakes depending on whether the bank owns the largest, the second, or third largest stake. In addition to these variables, I have used other bank control variables. Since they have no significant explanatory power for CARs, I do not report those additional regressions. The lack of explanatory power, however, again does not support the presumption that banks perform an important monitoring role.

Other ownership variables are the percentage of widely held shares in the bidder and on the top level of the associated group, respectively. Finally, two dummy variables indicate the presence of majority and minority blockholders in the bidder firm. In addition, I employ four control dummy variables indicating indirect acquisitions, frequent acquirors, horizontal, and purely conglomerate acquisitions. I have repeated all regressions using several different sets of continuous and discrete control variables. Since none of these alternatives alters the main conclusions, they are not reported in the paper.

The regression results are presented in Table X. The first column uses only the four control variables as regressors and each enters with plausible signs. Indirect acquisitions, deals by frequent acquirors, and conglomerate acquisitions have lower CARs, while horizontal acquisitions have larger CARs. The first two variables are discussed in more detail in section F below. The latter coefficients are consistent with the results obtained by Morck, Shleifer, and Vishny (1990) for U.S. takeovers. Since the dummy for indirect acquisitions is not significant it is dropped from most other regressions in the table.

The next four regressions test the effect of widely held shares and direct block ownership on abnormal performance. Consistent with the univariate tests above, majority ownership has a negative and minority ownership a positive coefficient, although neither is statistically significant. Neither are those for the percentage of widely held shares. Thus, the multivariate analysis provides only limited support for the conclusions from the univariate tests on ownership structure.

The remaining four regressions use the bank-control variables defined above and yield more pronounced results. First, bidders that are majority-owned by banks make significantly worse acquisitions than other bidders. Second, abnormal performance decreases with bank ownership if the financial institution owns the largest stake, but increases significantly if another party owns the largest stake. These estimates are robust in the sense that they do not change in sign or magnitude as other variables are added to the model. For example, the last regression shows that the bank-control variables become even more significant as the other analysis variables are included in the estimation.

These results are consistent with the univariate analysis above in that they corroborate the lack of benefits to bidders from having financial institutions as shareholders, unless there is a counterbalancing large non-bank shareholder. When bank stakes are dominated by the voting power of another blockholder, bank involvement is beneficial to bidder firms. In contrast, majority control by banks is clearly to the detriment of shareholders.

F. Assessing the plausibility of the results

Several problems are associated with an analysis like the one presented above. Specifically, German equity markets may not be sufficiently deep to efficiently respond to new information. The consequence would be that stock returns do not react quickly to new information and inferences based on event studies are misleading. In addition, the lack of immediate publication requirements increases event-date uncertainty, which in turn reduces the power of the tests. In this section I make an attempt to address these issues in some detail. To reduce heteroscedasticity, all regressions below are weighted by the estimation-period variance of abnormal returns. Where appropriate, the magnitudes of CARs are reported in the text.

F.1. The role of deal size and group structure

If the net present value of acquisitions is indeed reflected in the estimated CARs, the latter should be positively related to the relative size of the transactions (*ceteris paribus*). By the same token, CARs should be more pronounced for direct acquisitions (the exchange-listed firm itself

purchases the target) than for indirect acquisitions (a subsidiary purchases the target). Since market values are only available for 46 out of 715 targets, I use sales and the book value of equity as a size proxy.

The regression results in Table XI are consistent with a positive relation between abnormal performance and relative deal size. The first two regressions yield coefficients on relative book value and relative sales that have the expected signs, but only the former is significant. The third regression shows that CARs increase significantly in the (logarithm of) target size when (the logarithm of) bidder size is held constant (not transforming bidder and target size does not alter this result). The fourth regression shows that indirect acquisitions are associated with lower abnormal returns than direct acquisitions. The corresponding CARs for direct acquisitions have a highly significant mean of 1.04% (median: 0.36%), while the mean CAR of indirect acquisitions is only 0.06% (median: 0.05%) and not significant. Adding the size variables to the model, however, eliminates the explanatory power of the indirect-purchase dummy. Nevertheless, I have repeated the complete analysis of the effects of ownership structure and bank control above using only direct acquisitions. While this increases significance levels for virtually all tests, none of the results and conclusions are altered. Therefore I do not report these results and retain the larger sample including direct and indirect acquisitions.

F.2. The role of takeover-related performance and risk changes

In Table XII I investigate whether (1) investors can anticipate the takeover's subsequent effect on performance and risk at the time the deal is first publicly announced, *and* (2) this anticipation is reflected in abnormal returns. To this end I calculate the takeover-induced changes in the market-model intercept (a performance proxy), the market-model β , and its root mean squared error (proxies for systematic and unsystematic risk, respectively). I estimate each measure during the year preceding the first takeover-related event minus one month and during the year following the post-acquisition filing plus one month. From these estimates, I compute percentage and absolute changes from before to after the takeover.

While subsequent performance and risk changes are not known at the time of the takeover, the tests provide evidence on the plausibility of my CAR estimates. The estimation yields significantly positive coefficients on absolute changes of the performance proxy and significantly negative coefficients on both absolute and relative changes in unsystematic risk. The signs of the coefficients are consistent with a correct anticipation by market participants: takeovers associated with larger increases in performance and larger decreases in systematic and unsystematic risk yield larger CARs.

F.3. The role of the acquisition timing

Since several firms in my sample acquire more than one firm, the frequency of takeovers should be related to the announcement effect associated with acquisitions. To the extent that a series of acquisitions is anticipated by the market, the first takeover should result in more pronounced CARs.¹² Alternatively, frequent acquirors should have lower CARs on average.

The regressions in Table XIII provide some support for these arguments. First deals are associated with larger CARs, although the effect is not significantly different from zero. Univariate estimations show, however, that the mean CAR for first acquisitions is 1.12% and highly significant, while subsequent deals have a mean of 0.34% (the corresponding medians are 1.15% and 0.20%, respectively). The number of deals per bidder has also a significantly negative effect using the regression model. The latter result holds both for a dummy variable representing frequent acquirors, a continuous variable representing the logarithm of the number of acquisitions, and models additionally incorporating the first-deal dummy variable. On average, frequent acquirors achieve significant CARs of 0.85% (median: 0.50%), while infrequent bidders have CARs of only 0.05% (-0.11%).

F.4. Target-firm abnormal performance

To validate the event-date selection, I estimate abnormal performance for the 46 publicly traded target firms in the sample, using the same event dates applied to the bidder estimations. The target sample experiences a significant CAR of about 15% over the period (-10, +2) relative to the earliest deal announcement. This result is below, but comparable to target returns in the U.S. and would be unlikely if the selected dates did not reflect new information about the pending acquisition.

F.5. Summary of plausibility tests

The estimated CARs for German bidder firms are small, but show plausible correlations with variables representing the relative size, acquisition-induced risk and performance changes, and the timing of the transactions. Moreover, publicly traded target firms show substantial abnormal performance around the event dates selected for the bidder firms.

¹² Malatesta and Thompson (1985) analyze the effect of partially anticipated events on abnormal returns.

VIII. Conclusions

In an attempt to establish a link between ownership structure and performance, I analyze the effect of German takeovers on the market value of bidding firms. I identify the pyramidal business groups around listed German corporations, their respective owners, and the degree of bank control and document that most exchange-listed German firms are controlled by large shareholders and financial institutions. The empirical analysis reveals several interesting features of German corporate governance.

- On average takeovers increase the value of the acquiring firm, but generally not that of the whole pyramidal group surrounding the acquirer. I interpret this finding as evidence that takeovers are often used to provide internal subsidies to members of the bidder group. Such transfers may increase the value of the bidder firm, but are detrimental from a social point of view.
- Majority owners provide no clear-cut benefit to bidder firms in that the quality of takeover decisions is not better for majority-owned companies, unless the parent is publicly traded. But even for the latter the gain at the bidder level is wiped out by a loss at the parent level.
- Large blockholders controlling less than 50% appear to play an important monitoring role, especially if banks are involved. Specifically, bidders where banks potentially control a large fraction of the voting power via proxy votes clearly benefit from minority blockholders. Bank involvement is beneficial if it holds the second or third largest stake, but not if it holds the largest stake. Therefore, it seems that only if there is a force independent of the bank that decision quality is improved (in the sense of increasing shareholder wealth).
- The most value-reducing takeovers are completed by bidders whose groups include firms that are majority-controlled by financial institutions. This result is not consistent with the presumption that German banks provide an efficient monitoring function to corporations and is robust with respect to various specifications of the test. Even if these acquisitions were part of an efficiency-enhancing restructuring program, bidder shareholders lose wealth as a result.

In sum, I show that both highly concentrated ownership and substantial bank control *per se* have only a modest cross-sectional effect on German corporations. I have also documented that business groups are used to reallocate resources between affiliated firms and that the balance of power among large shareholders seems to play an important role. A deeper analysis of these issues would help understanding the real consequences of concentration and bank control.

Table I: Descriptive statistics for discrete deal characteristics for 715 German takeovers by 127 bidders between 1984 and 1995

Variable	N	Percentage of sample
Type of control by the BKartA		
Bidders that must provide pre-acquisition filings	549	76.8
...of which have news publications before filings	80	11.2
Bidders that must provide post-acquisition filings	166	23.2
...of which have new publications before filings	33	4.6
Total number of news publications before filings	113	15.8
Type of acquisition		
Direct acquisition by listed sample firm	290	40.6
Indirect acquisition by a subsidiary of the listed sample firm	425	59.4
...of which have no layer between actual acquiror and listed sample firm	287	40.1
...of which have one layer between actual acquiror and listed sample firm	109	15.2
...of which have two layers between actual acquiror and listed sample firm	28	3.9
...of which have three layers between actual acquiror and listed sample firm	1	0.1
Bidder stake in the target prior to the acquisition		
Less than 25%	610	85.3
25% up to 50%	105	14.7
Bidder stake in the target following the acquisition		
Less than 75%	90	12.6
75% up to 100%	625	87.4
Bidder stake increases from <25% to >75%	520	72.7
Direction of the acquisition		
Horizontal	280	39.2
Vertical	61	8.5
Conglomerate acquisition with similar products	50	7.0
Conglomerate relative to the listed sample firm, but horizontal or vertical relative to a subsidiary	227	31.7
Purely conglomerate acquisition	97	13.6
Acquisitions by highly diversified bidders	253	35.4
Acquisitions by less diversified bidders	462	64.6

Table II: Descriptive statistics for continuous deal characteristics for 715 German takeovers by 127 bidders between 1984 and 1995

Variable	N	Mean	Percentiles				
			Minimum	25%	50%	75%	Maximum
Percentage of target acquired	715	85.68	50.00	73.93	100.00	100.00	100.00
Bidder ownership before takeover	715	0.08	0.00	0.00	0.00	0.00	50.00
Bidder ownership after takeover	715	92.52	0.50	95.00	100.00	100.00	100.00
Number of deals per bidder	127	6.43	1.00	1.00	3.00	7.00	83.00

Table III: Discrete variables describing the ownership structure of 127 bidders at the time of the most recent takeover between 1984 and 1995

	Number of bidders	Percentage of 127 bidders	Percentage of 715 takeovers
A. Stakes directly in listed firm			
Majority widely held	42	33.07	58.04
Firms with blockholders:			
25% <= Stake < 50%	33	25.98	40.28
50% <= Stake	77	60.63	34.55
Largest owner foreign	11	8.66	6.29
Largest owner family	28	22.05	15.38
Largest owner other company	40	31.50	24.06
Largest owner government	12	9.45	9.65
Largest owner financial institution	17	13.39	18.74
Other largest owner	2	1.57	0.41
B. Ultimate stakes in 77 majority owners of listed firm (corresponding to 247 takeovers)			
Majority widely held	13	10.24	7.41
Largest owner foreign	13	10.24	3.36
Largest owner family	28	22.05	10.91
Largest owner other company	9	7.09	4.62
Largest owner government	12	9.45	7.27
Largest owner financial institution	4	3.15	2.38
Other largest owner	5	3.94	1.68
C. Ultimate stake in top tier of group			
Majority widely held	55	43.31	65.45
Largest owner foreign	16	12.60	7.13
Largest owner family	34	26.77	17.76
Largest owner other company	17	13.39	15.66
Largest owner government	17	13.39	11.75
Largest owner financial institution	15	11.81	16.50
Other largest owner	5	3.94	1.68
D. Bank control			
Some group level has a bank stake > 25% or > 50% widely held	74	58.27	75.94
Bank holds direct stake < 50% in some group level	25	19.69	17.76
Bank holds direct stake >= 50% in some group level	5	3.94	5.31
Weak bank control (other majority block present in top tier)	58	45.68	25.58
Strong bank control (direct holding in top tier > 50% or direct holding + free float > 75%)	43	33.90	49.22
Medium bank control (remaining cases)	26	20.43	25.20

Table IV: Continuous variables describing the ownership structure across 127 exchange-listed bidders at the time of the most recent takeover between 1984 and 1995

	Number not equal to zero	Mean in %	Median in %
A. Stakes directly in listed firm (127 bidders, 715 acquisitions)			
Widely held	122	47.48	50.00
Largest stake	110	47.41	50.00
2 nd largest stake	30	4.23	0.00
3 rd largest stake	7	0.84	0.00
Sum of large stakes	110	52.48	50.00
Number of different shareholder categories	110	1.16	1.00
Direct bank holdings	29	7.03	0.00
Bank votes (direct stake + free float)	123	54.52	50.00
B. Ultimate stakes in majority owner of listed firm (77 bidders, 247 acquisitions)			
Widely held	65	39.56	47.00
Largest stake	71	57.36	50.00
Total blockholdings	71	60.44	53.00
Direct bank holdings	4	1.38	0.00
Bank votes (direct stake + free float)	65	41.10	47.00
C. Ultimate stake in top tier of group(127 bidders,715 acquisitions)			
Widely held	115	53.77	50.00
Largest stake	104	42.00	40.00
Total blockholdings	104	46.19	50.00
Direct bank holdings	20	4.21	0.00
Bank votes (direct stake + free float)	115	58.07	50.00

Table V: Bidder CARs for German takeovers between 1984 and 1988

CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Event window	Number of acquisitions	Average CAR %	Median CAR %	Percentage of CAR>0
A. Statistics on 715 takeovers weighted equally				
(- 30, + 1)	715	0.77***	0.12	50.91
(- 20, +1)	715	0.82***	0.04	50.35
(- 10, +1)	715	0.43**	0.09	50.91
(- 10, + 5)	715	0.43**	0.44*	53.01
(-10, + 2)	715	0.46**	0.23*	52.45
(- 3, + 1)	715	0.23**	0.07	51.47
(-1, + 1)	714	0.15*	0.06	51.68
B. Statistics on 127 bidder averages				
(- 30, + 1)	127	1.07	0.70*	55.12
(- 20, +1)	127	1.16	0.44**	56.69
(- 10, +1)	127	0.72	0.63*	59.84**
(- 10, + 5)	127	0.52	0.47*	56.69
(-10, + 2)	127	0.73	0.51*	56.69
(- 3, + 1)	127	0.53*	0.28*	55.91
(-1, + 1)	127	0.22	0.10	52.76

Significance levels: *** 1% level, ** 5% level, * 10% level. The significance levels refer to a traditional t-test in the averages column, a rank-sum test in the medians column, and a simple sign test in the percent-positive column.

Table VI: CARs for German takeovers between 1984 and 1988 after considering exchange-listed parent firms

CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns. Abnormal changes in market value are the product of the respective CAR and the market value fifty days before the first announcement related to the takeover.

Event window	Number of acquisitions	Average group CAR %	Median group CAR %	Percent group CARs > 0	Aggregate abnormal gain in DM mn to bidder firm	Aggregate abnormal gain in DM mn to bidder group
(- 30, + 1)	706	0.61**	-0.27	48.87	-264	-6990
(- 20, +1)	706	0.65**	-0.25	48.44	4201	-5523
(- 10, +1)	706	0.25	-0.17	49.29	7801	1002
(- 10, + 5)	706	0.30	0.21	51.70	21634	13350
(-10, + 2)	706	0.32	0.11	50.85	11778	4192
(- 3, + 1)	706	0.10	-0.08	48.87	14448	8858
(-1, + 1)	705	0.08	-0.03	49.50	11743	8460

Significance levels: *** 1% level, ** 5% level, * 10% level. The significance levels refer to a cross-sectional t-test in the averages column, a rank-sum test in the medians column and the aggregate-gain columns, and a sign test for the percentage of positive CARs. Nine takeovers by seven bidder firms are lost because no data on their market values was available.

Table VII: CARs for German takeovers between 1984 and 1995 separated by the bidder's direct ownership

CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Subsample	N	Average CAR %	Median CAR %	Percentage of CAR>0
A. Calculations based on bidder firms only				
Bidders without listed parent company	646	0.35*	0.23	52.32
Bidders with listed parent company	69	1.44**	0.59	53.62
p-value t-statistic: 0.37, p-value χ^2 -statistic: 0.52				
Bidder with blockholder owning between 25% and less than 50%	288	0.60**	0.20	52.43
Bidder without minority blockholder	427	0.36	0.24	52.46
p-value t-statistic: 0.99, p-value χ^2 -statistic: 0.41				
Majority of shares of the listed sample firm is widely held	415	0.48**	0.11	50.60
...of which without large shareholder ($\geq 25\%$)	256	0.28	0.03	50.39
...of which with large shareholder ($\geq 25\%$)	159	0.81*	0.11	50.94
p-value t-statistic: 0.30, p-value χ^2 -statistic: 0.48				
Majority is not widely held and not by one shareholder	53	0.03	0.20	54.72
Listed firm has majority shareholder ($>50\%$)	247	0.51	0.48	55.06
B. Calculations based on bidder firms and listed parents				
Bidders without listed parent company	639	0.36*	0.20	52.27
Bidders with listed parent company	67	-0.05	-0.68**	37.31**
Bidder with blockholder owning between 25% and less than 50%	286	0.55	0.20	52.45
Bidder without minority blockholder	420	0.15	-0.05	49.76
Majority of shares of the listed sample firm is widely held	413	0.45*	0.11	50.61
...of which without large shareholder ($\geq 25\%$)	255	0.26	0.01	50.20
...of which with large shareholder ($\geq 25\%$)	158	0.75	0.11	51.27
Majority is not widely held and not by one shareholder	53	0.03	0.20	54.72
Listed firm has majority shareholder ($>50\%$)	240	0.15	0.05	50.42

Significance levels: *** 1% level, ** 5% level, * 10% level. The significance levels in panel A refer to a traditional t-test in the averages column, a rank-sum test in the medians column, and a simple sign test in the percent-positive column. Panel B uses the same tests except for the column 'average CAR,' which employs a cross-sectional t-test.

Table VIII: CARs for 715 German takeovers between 1984 and 1995 separated by the bidder's ultimate ownership

CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Subsample	N	Average CAR %	Median CAR %	Percentage of CAR>0
A. Calculations based on bidder firms only				
Majority widely held	468	0.60***	0.23*	52.14
Less than majority widely held	247	0.18	0.35	53.04
p-value t-statistic: 0.36, p-value χ^2 -statistic: 0.85				
Largest block is held by				
foreign company	51	1.00	0.06	50.98
Family	127	0.88*	0.70*	59.06**
domestic company	112	0.56	0.61	58.04*
government agency	84	1.06*	-0.22	47.62
bank or insurance company	118	-0.07	-0.58	45.76
foundation	3	4.36*	4.27	100.00
cooperative	9	-2.44	0.45	55.56
p-value χ^2 -statistic: 0.67				
One large shareholder	493	0.62***	0.23*	52.33
More than one large shareholder	222	0.09	0.29	52.70
p-value t-statistic: 0.31, p-value χ^2 -statistic: 0.76				
B. Calculations based on bidder firms and listed parents				
Majority widely held	462	0.37	-0.02	49.78
Less than majority widely held	244	0.22	0.21	52.87
Largest block is held by				
foreign company	51	1.28	0.15	52.94
Family	125	0.66	0.70	57.60*
domestic company	107	-0.12	0.20	53.27
government agency	84	1.56*	-0.10	48.81
bank or insurance company	117	-0.39	-0.71	44.44
foundation	3	4.36**	4.27	100.00
cooperative	9	-2.44	0.45	55.56
One large shareholder	485	0.34	-0.04	49.90
More than one large shareholder	221	0.26	0.25	52.94

Significance levels: *** 1% level, ** 5% level, * 10% level. The significance levels in panel A refer to a traditional t-test in the averages column, a rank-sum test in the medians column, and a simple sign test in the percent-positive column. Panel B uses the same tests except for the column 'average CAR,' which employs a cross-sectional t-test.

Table IX: CARs for 715 German takeovers between 1984 and 1995 separated by the degree of bank control over the bidder

CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Subsample	N	Average CAR	Median CAR	Percentage of CAR>0
A. Calculations based on bidder firms only				
Some group level has a bank stake > 25% or > 50% widely held	543	0.42**	0.16	51.38
Others	172	0.58	0.38	55.81
p-value t-statistic: 0.83; p-value χ^2 -statistic: 0.64				
Weak bank control (other majority block present in top tier)	184	0.26	0.38	53.80
Strong bank control (direct holding in top tier >50% or direct holding + free float >75%)	351	0.40*	0.16	51.85
Medium bank control (remaining cases)	180	0.77*	0.22	52.22
p-value χ^2 -statistic: 0.94				
Bank holds direct stake < 50% in some group level	127	0.42	0.25	52.76
No group level has a bank stake > 25% or > 50% widely held	172	0.58	0.38	55.81
Others	416	0.42*	0.11	50.96
p-value χ^2 -statistic: 0.93				
Bank holds direct stake >= 50% in some group level	38	-1.82**	-0.95	44.74
No group level has a bank stake > 25% or > 50% widely held	172	0.58	0.38	55.81
Others	505	0.59***	0.23*	51.88
p-value χ^2 -statistic: 0.08				
B. Calculations based on bidder firms and listed parents				
Some group level has a bank stake > 25% or > 50% widely held	536	0.20	-0.08	49.25
Others	170	0.68	0.38	55.88
Weak bank control (other majority block present in top tier)	181	0.39	0.38	53.59
Strong bank control (direct holding in top tier >50% or direct holding + free float >75%)	349	0.30	0.01	50.14
Medium bank control (remaining cases)	176	0.28	-0.21	49.43
Bank holds direct stake < 50% in some group level	125	0.21	0.16	52.00
No group level has a bank stake > 25% or > 50% widely held	170	0.68	0.38	55.88
Others	411	0.20	-0.22	48.42
Bank holds direct stake >= 50% in some group level	37	-2.11**	-0.79**	37.84
No group level has a bank stake > 25% or > 50% widely held	170	0.68	0.38	55.88
Others	499	0.37	0.01	50.10

Significance levels: *** 1% level, ** 5% level, * 10% level. The significance levels in panel A refer to a traditional t-test in the averages column, a rank-sum test in the medians column, and a simple sign test in the percent-positive column. Panel B uses the same tests except for the column 'average CAR,' which employs a cross-sectional t-test.

Table X: Regression results of bank control and ownership for German acquisition between 1984 and 1995

The dependent variable is the (-10,+2) bidder CAR. Each cell contains the WLS parameter estimate (each observation is divided by the estimation-period abnormal return variance) and the corresponding t-statistic. The number of observations is 715. CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Intercept	0.0078 2.182	0.0054 1.239	0.0033 0.668	0.0069 1.905	0.0045 1.406	0.0047 1.460	0.0047 1.454	0.0045 1.405	-0.0012 -0.121
Bank owns >= 50% in some level of bidder group						-0.0169 -1.782			-0.0182 -1.833
Bank owns <50% in some level of bidder group								0.0051 1.143	
% bank votes if bank holds largest block						-0.0000 -0.011	-0.0001 -1.160		0.0000 0.296
% bank votes if bank holds second largest block						0.0005 1.895	0.0005 1.820		0.0007 2.196
% bank votes if bank holds third largest block						0.0024 1.784	0.0024 1.799		0.0028 2.003
% widely held in listed bidder firm		-0.0000 -0.021							
% widely held on top level of bidder group			0.0000 0.534						0.0001 1.174
Dummy variable indicating majority ownership in bidder				-0.0032 -0.825					0.0020 0.314
Dummy variable indicating minority ownership in bidder					0.0029 0.933				0.0016 0.361
Dummy variable indicating indirect acquisitions	-0.0047 -1.366								-0.0056 -1.593
Dummy variable indicating frequent acquirors	-0.0056 -1.639	-0.0069 -1.961	-0.0075 -2.211	-0.0081 -2.304	-0.0076 -2.295	-0.0070 -2.154	-0.0066 -2.046	-0.0066 -2.033	-0.0067 -1.791
Dummy variable indicating horizontal acquisitions	0.0067 1.893	0.0072 2.045	0.0074 2.086	0.0072 2.042	0.0071 2.005	0.0075 2.129	0.0074 2.094	0.0070 1.974	0.0073 2.051
Dummy variable indicating conglomerate acquisitions	-0.0077 -1.750	-0.0072 -1.652	-0.0072 -1.640	-0.0074 -1.690	-0.0074 -1.696	-0.0064 -1.477	-0.0068 -1.566	-0.0071 -1.633	-0.0067 -1.515
Adjusted R ²	0.018	0.016	0.016	0.017	0.017	0.027	0.024	0.017	0.028
p-value F-statistic	0.002	0.004	0.004	0.003	0.003	0.000	0.001	0.002	0.001

Table XI. Regression results of relative transaction size for German acquisition between 1984 and 1995

The dependent variable is the (-10,+2) bidder CAR. Each cell contains the WLS parameter estimate (each observation is divided by the estimation-period abnormal return variance) and the corresponding t-statistic. CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Intercept	0.002 0.817	0.001 0.766	0.028 0.909	0.006 2.438	0.003 1.079	0.026 0.814
Ratio of book value of equity of target firm to bidder firm	0.026 2.283				0.025 2.127	
Ratio of sales of target firm to bidder firm		0.010 1.525				
ln (Book value of target equity in DM billion)			0.002 2.679			0.002 2.638
ln (Book value of bidder equity in DM billion)			-0.003 -1.880			-0.003 -1.674
Dummy variable: 0 for direct acquisitions, 1 for indirect acquisitions				-0.007 -2.155	-0.003 -0.727	-0.002 -0.491
Number of observations	486	422	486	715	486	486
Adjusted R ²	0.009	0.003	0.017	0.005	0.008	0.015
p-value F-statistic	0.023	0.128	0.007	0.032	0.058	0.017

Table XII. Regression results of takeover-related performance and risk changes for German acquisition between 1984 and 1995

All regressions use 715 observations. The dependent variable is the (-10,+2) bidder CAR. CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns. Each cell contains the WLS parameter estimate (each observation is divided by the estimation-period abnormal return variance) and the corresponding t-statistic. To estimate changes in risk and performance, the market model before the takeover is estimated over the year preceding the earliest related announcement minus 20 trading days; the market model afterwards is estimated over the year following the latest related announcement plus 20 trading days.

Intercept	0.003 1.666	0.011 2.304
Absolute change in the market-model intercept from the year before to the year after the takeover	3.704 2.492	
Absolute change in systematic risk from the year before to the year after the takeover	0.000 0.037	
Absolute change in the market-model root MSE from the year before to the year after the takeover	-0.472 -1.801	
Relative change in the market-model intercept from the year before to the year after the takeover		0.000 1.150
Relative change in systematic risk from the year before to the year after the takeover		-0.002 -0.936
Absolute change in the market-model root MSE from the year before to the year after the takeover		-0.006 -1.775
Adjusted R ²	0.010	0.005
p-value F-statistic	0.019	0.100

Table XIII. Regression results of transaction timing and frequency for 715 German acquisition between 1984 and 1995

The dependent variable is the (-10,+2) bidder CAR. Each cell contains the WLS parameter estimate (each observation is divided by the estimation-period abnormal return variance) and the corresponding t-statistic. The number of observations is 715. CARs are estimated from a market model over the period from day -250 to -51 relative to the earliest date related to the takeover. A value-weighted index (DAFOX) is used to approximate market returns.

Intercept	0.001 0.875	0.007 2.610	0.009 2.142	0.007 2.382	0.009 1.913
Dummy variable: 1 for first acquisition of bidder, 0 for subsequent acquisitions	0.003 0.675			-0.001 -0.139	-0.001 -0.175
Dummy variable: 1 for bidders with more than the median number of acquisitions, 0 otherwise		-0.008 -2.376		-0.008 -2.280	
Natural logarithm of the number of acquisitions for each bidder firm			-0.002 -1.841		-0.003 -1.720
Adjusted R ²	0.000	0.007	0.003	0.005	0.002
p-value F-statistic	0.500	0.018	0.066	0.060	0.182

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