

Squeeze-outs in Germany: Determinants of the Announcement Effects

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Abstract

In this paper we analyze the response of stock returns to announcements of squeeze-outs on the German stock market from 2002-2003. In 2002 a squeeze-out right was incorporated into the German takeover regulations. Since its introduction more than 100 companies have used this instrument to buy out the remaining minority shareholders. Using event-study methodology we examine the abnormal performances on the day of as well as before and after the announcement and analyze the determinants of the stock market reaction. We find that a squeeze-out announcement conveys new information to the market, yielding positive abnormal returns of the target company. However, we also find that the market anticipates part of the positive effect. In a cross-sectional analysis we show that certain institutional characteristics determine the magnitude of the abnormal return. Apart from the economic implications, these findings admit inferences for the economic discussion about the role of the stock price in the determination of appropriate compensations in squeeze-outs.

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1. Introduction

Although a squeeze-out right exists in many countries, the specific regulation and the legal framework are different. In Germany, especially the regulations on how to determine the appropriate compensation to be granted to the minority shareholders cause extensive discussion. As the German Stock Corporation Act (*Aktiengesetz*, *AktG*) does not give an explicit rule on how to assess the amount of compensation, the minority shareholders frequently request legal verification. An issue often arising in this context is whether or not and in what way the stock price of the company should be a benchmark for the appropriateness of compensation. To contribute to this discussion, we use event-study methodology to examine the stock market reaction on the day of as well as before and after squeeze-out announcements. Moreover, we analyze whether certain legal, institutional and economic factors systematically influence abnormal performance.

The possibility to squeeze-out remaining minority shareholders of a company (target company) was incorporated into the *AktG* on January 1, 2002.¹ A principal (or majority) shareholder can force the minority shareholders to sell their shares to him at an appropriate price, provided he owns 95% of the share capital.² A squeeze-out option exists in many countries.³ In Germany it is not part of the Takeover Act but of the Stock Corporation Act (§§ 327 a-f *AktG*). Thus, it is not dependent on a preceding takeover offer or listing of the company. Between the introduction of the squeeze-out possibility and the end of 2003 125 listed companies announced a squeeze-out.

Before the implementation of the squeeze-out regulation, a complete delisting from a stock exchange by buying out the remaining minority shareholders was difficult to implement in Germany.⁴ Costs and risks associated with a small number of minority shareholders are used as justification for the introduction of a squeeze-out right. These costs and risks are: (1) the inability to exploit all synergies from a full integration of the acquired firm, (2) the requirement of maintaining the infrastructure of general meetings and disclosure/publications; (3) the risk of law suits against company transactions or the threat of jeopardizing planned transactions as minority shareholders may exploit (abusively) their rights.⁵

¹ Note that there is no standardized official English wording for the German legal wording and that thus different terms are used in English texts on the German Securities and Takeover Act.

² The principal shareholder can be a physical as well as a legal person. In our sample there are only transactions with a legal person as principal shareholder.

³ See Winter et al. (2002) for an examination of the squeeze-out rules in the member states of the European Union.

⁴ See Vetter (2002) for delisting possibilities before the introduction of the squeeze-out right.

⁵ See Burkart and Panunzi (2003).

This study refers to three strands of literature: the German (mostly) legal literature on squeeze-outs and especially the determination of the compensation,⁶ the empirical studies analyzing takeovers⁷ and the empirical studies, primarily from the US, examining going private transactions.⁸ Both studies on stock market reactions of target companies in takeovers as well as in going privates find significantly positive abnormal returns on the day of as well as before and after the event. As a squeeze-out can be seen as a very special case of a merger and going private transaction, this paper addresses the question of whether or not these findings hold true in this special case and what it is that determines the magnitude of the market reaction to a squeeze-out announcement. The squeeze-out is a special form of a takeover since 95% or more of the share capital are already held by the majority shareholder and because he can force the remaining minority shareholders to sell their shares to him. A going private transaction in its widest sense is the replacement of publicly owned stock in a company with complete equity ownership by a private group, so that the company is delisted from the stock exchange and can no longer be purchased in the open markets. A squeeze-out can thus be seen as one particular way of taking a company private, provided that 95% or more of the share capital are already held by the majority shareholder.

Whereas there are studies analyzing the relationship between shareholder compensation and stock prices in squeeze-outs,⁹ there is only one study – using a very small data basis of 20 announcements – testing for abnormal returns of the targets' shares because of the squeeze-out announcements.¹⁰ Our study thus contributes to the existing literature in that it shows, based on a broader data base, that squeeze-outs yield positive abnormal returns. Moreover, we analyze factors that potentially affect the abnormal return. Beyond the implications for market efficiency, this study also contributes to the legal discussion about appropriate compensations for minority shareholders in squeeze-outs by showing that a generalized rule for determining the cash compensation based on stock prices prior to the announcement date has to be reconsidered carefully. The specifics of the individual transaction matter.

Although the squeeze-out announcements contain heterogeneous information, we observe significant positive abnormal returns of the target company on the announcement day.

⁶ For a specific discussion of the appropriate compensation in squeeze-outs see for instance Beckmann (2004), Steinmeyer and Häger (2002), Fleischer (2002), Krieger (2002), Vetter (2002) and Eisolt (2002).

⁷ See Jarrell, Brickley and Netter (1988) or Campa and Hernando (2004) for the European Union; for the German takeover market see Bühner (1990) and Gerke, Garz and Oerke (1995). The event in Bühner (1990) is the notification of the Federal Cartel Office, whereas in Gerke, Garz and Oerke (1995) it is the first announcement of the planned takeover.

⁸ See Kim and Lyn (1991), Travlos and Cornett (1003), for the European markets see Andres, Betzer and Hoffmann (2004) and for Germany see Eisele and Walter (2003).

⁹ See Hecker and Kaserer (2003) and Helmig (2003), who also analyzes the stock price reaction of squeeze-out candidates to compensation announcements in squeeze-out transactions.

¹⁰ See Moser and Prüher (2002).

Our findings also reveal that the markets anticipate parts of the reaction. In the univariate analysis we find that a prior control and/or profit transfer agreement as well as the development of the ownership structure especially affect the abnormal performance. These findings are confirmed in a joint analysis.

This paper is organized as follows. Section 2 provides an overview of the regulation of squeeze-outs in Germany and describes the relevant institutional framework. Section 3 describes and explains the data set, the sample selection and the event study methodology. In section 4 hypotheses are evolved and univariate as well as multivariate results presented. Section 5 concludes the paper.

2. Regulation of squeeze-outs in Germany and institutional framework

Although many countries have regulations granting majority shareholders the right to buy out remaining minority shareholders, the specific regulations vary in many aspects.¹¹ The squeeze-out regulations that became effective in Germany on January 1, 2002 grant a majority shareholder holding more than 95% of the share capital in a German public limited company the right to squeeze-out minority shareholders.¹² Since the definition of majority is based on share capital, it may be comprised of ordinary shares as well as preferred shares. They can be owned either directly or indirectly by the majority shareholder but have to be deemed as owned according to §§ 16 (2) and 16 (4) *AktG*. The target company can be any German stock corporation (*Aktiengesellschaft*) or partnership limited by shares (*Kommanditgesellschaft auf Aktien*), regardless of whether it is listed on a stock exchange or not.

The squeeze-out process is initiated by a request (*Verlangen*) for the squeeze-out by the majority shareholder, which is submitted to the management board of the target company. No justification is necessary. The legal foundation is a decision of the general meeting, which has to be made by a simple majority. A vital requirement of a squeeze-out is the granting of adequate cash compensation (also referred to as consideration or cash settlement) for the minority shareholders. There is an extensive discussion in German legal literature about what “adequate” means in this context, especially concerning the relationship between cash compensation and the stock price.¹³ The cash compensation has to reflect the value of the company at the date of the general meeting and is to be calculated on the basis of a valuation of the target company. In general the stock price also has to be considered and sets a minimum for the

¹¹ See Winter et al. (2002).

¹² See <http://www.freshfields.com/practice/corporate/publications/pdfs/4343.pdf> or Peltzer and Voight (2002) for an English version of the Securities Acquisition and Takeover Act (*Wertpapierübernahmegesetz, WpÜG*), the *WpÜG Offer Ordinance (WpÜG-Angebotsverordnung)* as well as §§ 327a to 327f of the Stock Corporation Act.

¹³ See footnote 6.

compensation.¹⁴ Exceptions have to be made, if the stock price does not reflect the real value of the company, due to infrequent trading, for example.¹⁵ Once the amount of cash compensation has been fixed, the majority shareholder has to submit a bank guarantee to warrant the payment of the total amount. An auditor, who is suggested by the shareholder but appointed by the (regional) court, verifies the fairness of the compensation.

During the course of the squeeze-out, compliance with several information and reporting requirements has to be ensured. To prevent insider trading, it is necessary to inform the capital market of the squeeze-out decision and the cash compensation amount. Only in very rare circumstances is it compulsory to publish an ad-hoc announcement.¹⁶ No later than one month prior to the intended general meeting of the target, the management board has to call for the meeting and give notice to the shareholders that a squeeze-out is intended and that the prerequisites have been given. The invitation also has to contain the amount of the compensation and the bank-guarantee. To ensure that the minority shareholders have sufficient information, they are granted extensive rights of inspection prior to the general meeting. This includes the draft of the transfer resolution, the annual accounts and reports of the last three business years, the transfer report of the majority shareholder and the audit report. The majority shareholder's transfer report has to display the fulfillment of the prerequisites as well as the fairness of the compensation in detail. If the transfer resolution has been approved by the general meeting, it can be registered in the commercial register and thus becomes valid. From the day of the registration on, the stock only represents a claim for the cash compensation. After payment the shares will be transferred back to the main shareholder and the squeeze-out is realized.

To ensure compliance with minority rights, the minority shareholders are guaranteed legal protection in two ways. On the one hand they can request the verification of the fairness of the cash compensation, in a so called *Spruchstellenverfahren*, which will not impede or delay the registration of the resolution but can result in a potential increase of the compensation amount. The cash compensation can be opposed in this way if it is not considered fair and the plaintiff explains the reasons for this within a three-month period after the registration in the commercial register.¹⁷ This procedure may lead to an increase in compensation not only for

¹⁴ See the trend-setting decision of the German Federal Constitutional Court (*BVerfG*): BVerfGE 100, 289 (DAT/Altana) as well as the regulation in the *WpÜG* and the *WpÜG-Angebotsverordnung*.

¹⁵ See a decision of the German Federal Court (*BGH*), describing circumstances, when the stock price is not a reliable reference: BGHZ 147, 108 (DAT/Altana) as well as the *WpÜG-Angebotsverordnung*. This question is especially relevant for the squeeze-out transaction, as 95% of the share capital are already in the hand of the principal shareholder. For an economic view of the discussion about the stock price as basis for a compensation see Weber (2004).

¹⁶ For a justification see: BaFin (2002).

¹⁷ See the *Spruchverfahrensneuordnungsgesetz*. During the period under consideration in this analysis, the possibility of a *Spruchstellenverfahren* was regulated in § 327 f *AktG* and the relevant period was two months.

those who complained, but also for all minority shareholders. On the other hand the minority shareholders can try for an action of avoidance (*Anfechtungsklage*), given they can prove a deficiency in the proceedings of the squeeze-out. In this case the squeeze-out cannot be registered in the commercial register. It then delays or impedes the completion of the squeeze-out process. With respect to the initiated squeeze-outs so far, it can be observed that a request for verification of the fairness of compensation or an action of opposition were filed in many cases.¹⁸

Two further regulations in German law, in which compensations are granted to shareholders, are of importance for the hypotheses of the empirical analysis. The first concerns compensation in public offers according to the German Securities Acquisition and Takeover Act (*Wertpapierübernahmegesetz, WpÜG*). Regardless of the type of offer (Offer for the Acquisition of Securities, Takeover Offer or Mandatory Offer), the shareholders of the target company are generally offered a cash compensation. The *WpÜG-Angebotsverordnung* specifies the fairness of this consideration in relation to the stock price. The consideration at least has to equal the highest consideration paid or agreed upon by the offeror within the three months prior to the publication of the offer document. Given the stock is admitted for trading on a German stock exchange and liquidity can be assumed, the consideration must be at least equal to the volume - weighted average price within three months prior to the announcement. This consideration “shall be calculated separately for shares which are not of the same class”.¹⁹ Illiquidity is imputed if, during the three months prior to the announcement, prices for the target company were fixed on less than one third of the trading days and if several prices determined sequentially differ from each other by more than five per cent. Since the minority shareholders are free to not accept the offer, verification of the fairness of the consideration is not provided. The second relevant regulation concerns the compensations in control and/or profit transfer agreements (*Beherrschungs- und/oder Gewinnabführungsvertrag*), §291 *AktG*. In control as well as profit transfer agreements one company enters a relationship of dependence upon another company. For this reason the shareholders of the dependent company have to be granted a consideration (in cash or stocks) if they want to leave the dependent company as well as a regular payment for the forgone profits (*Ausgleich*) if they do not want to exit.

¹⁸ For an empirical analysis of the number of *Spruchstellenverfahren* and actions of opposition as well as the reasons see Rathauskay (2004).

¹⁹ See *WpÜG-Angebotsverordnung*, Section 4 (English version published by the BaFin: www.bafin.de/verordnungen/wpueg_angebotsvo_e.htm).

The stock price is also seen as a minimum amount for this consideration.²⁰ The possibility of verifying the fairness of the consideration is given in the same way as in the squeeze-out process in a *Spruchstellenverfahren*.

The way *Beherrschungs- und Gewinnabführungsverträge* are regulated in Germany influences the price generating process on the stock market in two ways. First, the amount of the *Ausgleich* affects the stock price as it forms a fix payment to the shareholders. Second, the compensation influences the stock price. On the one hand, it serves as a benchmark to the market signaling the value of the stock. On the other hand, the compensation economically serves as a lower bound to the stock price as long as it is granted and can be accepted by the stockholders.²¹

3. Description of the data set, sample selection and methodology

3.1. Data set and sample selection

For Germany we found information on 151 squeeze-out announcements of 151 listed and unlisted (at the time of the announcement) companies published between January 1, 2002 and December 31, 2003.²² The transactions were extracted from several databases (Bloomberg, Elektronischer Bundesanzeiger, HV-Info.de and lexis-nexis). However, not all of these squeeze-outs were also implemented due to either a change in the corporate strategy²³ or as consequence of an action of avoidance.²⁴

This study is based upon the squeeze-out announcements of listed companies²⁵ published in the period specified above. These transactions were first supplemented with relevant corporate information gathered from the “Hoppenstedt Aktienführer”, a database that gives detailed information on all listed German companies. This included ownership structure development (the ownership structure was evaluated semi-annually from December 2000 until the announcement), public offers according to the *WpÜG* and control and/or profit transfer agreements. Furthermore, we appended information on respective industries, the market values, the market-to-book values and the stock price data from Datastream, as well as the trading vol-

²⁰ Two recent sentences determine how this relevant stock price has to be calculated, see: BGHZ 147, 108 (DAT/Altana) and BverfGE 100, 289 (DAT/Altana), although there is major disagreement regarding the use of the date of the shareholders’ meeting as the last date of the relevant period for determining the relevant stock price.

²¹ This period where the compensation is a lower bound can last up to several years, especially in case of a *Spruchstellenverfahren*.

²² See detailed list in the Appendix.

²³ Jil Sander AG, Walter AG.

²⁴ E.g. Microlog Logistics AG. As actions of avoidance are filed in several cases and still in progress, the final number of implementations is not yet clear.

²⁵ We only included companies for which the squeeze-out was aimed at conventional shares (ordinary and preference shares).

ume data from Bloomberg. Secondly, information about the squeeze-out was added: date, type and content of relevant announcements (using the information from the databases previously mentioned). From our dataset we constructed two samples: one containing all shares affected by a squeeze-out (sample I), another one restricted according to certain criteria (sample II).

A total of 125 listed companies announced a squeeze-out in the period under consideration. Six of these companies had more than one class of shares.²⁶ These 133 shares form sample I. This sample is used for an overall analysis of squeeze-out announcements in Germany. For our more detailed analysis of the announcements, this sample had to be adjusted leaving out some observations for two reasons. (1) First, there were no press releases found for some squeeze-outs, thus we approximated the day the information became publicly available by taking the date one month and 10 trading days before the general meeting.²⁷ As this date is only an approximation, these observations are excluded from the dataset. (2) Secondly, shares that traded on less than 1/3 of the trading days in the event window²⁸ are excluded, as efficient information processing cannot be imputed.²⁹ Using these criteria all companies listed in more than one class of stocks are filtered out, except one for which the preferred shares were excluded manually.³⁰

This procedure leads to sample II which contains 70 companies, of 17 sectors.³¹ Table 1 gives information on the companies in samples I and II. Comparing the average market values for sample I and II, table 1 displays that primarily larger companies fulfill the criteria for sample II.

(insert table here)

²⁶ Two companies had three classes of shares, while four had two classes. These “double counts” were excluded in sample II.

²⁷ This period is an approximation of the period between the shareholders’ meeting and the day the invitation is conveyed. We derived this period using the data available from 2003, where the date of the invitation is posted electronically on the Elektronischer Bundesanzeiger.

²⁸ Event window: [90 trading days before until 40 trading days after the announcement]. For a detailed discussion of the event-study methodology see 3.2.

²⁹ Concerning trading frequency, this “liquidity assumption” is operated in the same way as in the *WpÜG-Angebotsverordnung*.

³⁰ For the Radeberger Gruppe AG preferred as well as common stock is frequently traded according to our criteria. Therefore, we excluded the preferred shares of Radeberger Gruppe AG from sample II. To prevent a bias towards the characteristics of one company in our study, two types of shares of the same company should not be included in the sample. As the preferred shares were less frequently traded (73 days with no trading activity in the event window as opposed to 8 for the common shares) in the event window and with less volume, they were excluded from the sample.

³¹ The sectors are: Automobile, Banks, Basic Resources, Chemicals, Construction, Consumer, Financial Services, Food & Beverages, Industrial, Insurance, Media, Retail, Software, Technology, Telecommunication, Transportation & Logistics and Utilities.

As we restrict the detailed analysis in section 4 on sample II, the further description of the dataset will also be restricted on this sample. There was an offer according to the *WpÜG* for 22 of these 70 companies not more than one year prior to the squeeze-out announcement.³² For another five companies there was an offer according to the takeover regulation prior to the *WpÜG* not more than one year before the squeeze-out announcement. As we are interested in the effect of a prior compensation, we added these five observations, so that we have 27 companies which we subsume under “offer according to the *WpÜG*”. A control and/or profit transfer agreement existed for 19 companies (one of these had also an offer according to the *WpÜG*) at the time of the squeeze-out announcement. To account for two economic impacts (meaning that the *Ausgleich* is reflected in the corresponding stock prices as well as the compensation serves as a benchmark) we consider the 11 agreements that were concluded no more than one year prior to the squeeze-out announcement.³³ For the remaining 8 companies the *Ausgleich* affected the price formation, but the compensation can not be seen as a benchmark for the compensation in the squeeze-out process because of a time gap of more than one year. The first announcements of the squeeze-outs contain different levels of information. While 28 announcements include the amount of the compensation, the others only announce the initiated squeeze-out in general.³⁴ For the empirical analysis the development of the ownership structure before the squeeze-out is subsumed into two categories: (1) the 95% limit was attained more than one year before the squeeze-out announcement, (2) the 95% limit was attained gradually (shortly) before the announcement.³⁵ To analyze the effect of different levels of trading volume around the event [-5;+5], we divided sample II into two sub-samples: 38 of the 70 companies had two or more than two days without trading in the given interval. The other 32 companies are assigned to the group with higher trading volume.

³² As initial point of the one-year period, the publication according to § 10 or § 35 *WpÜG* was chosen, because according to § 5 *WpÜG-Angebotsverordnung* this day is the reference date for the calculation of the three-month period. For the offers prior to 2002 the date of the first day of the acceptance period is used as a proxy for the day of publication.

³³ “One year” means that the general meeting that decided on the introduction of the *Beherrschungs- und/oder Gewinnabführungsvertrag* took place no more than one year prior to the squeeze-out announcement. As there is no further breakdown of the sample, we can not test for the role of the compensation as a limit to the compensation.

³⁴ We could not find information on whether the amount was included in the first announcement or not for three observations. Note also, that even if the exact amount was not announced, which was the criterion for this characteristic, the announcement in some cases still included indications of intervals for the consideration.

³⁵ Due to a limited number of observations a break down into further sub-samples is not possible. This classification is based on the information given in the Hoppenstedt Aktienführer, which is available semi-annually for historical data.

The associations between the relevant characteristics for the further analysis can be derived from table 2:

(insert table 2 here)

Table 2 shows that significant dependencies (at a 5% / 1% level) exist between certain pairs of characteristics. For eight of these pairs the hypothesis that the rows and columns are independent can be rejected at a 1% level. Four of these dependencies (A, B, C, F) can be seen as “technical” effects due to the sub-sample construction. By definition the 11 companies with “prior agreement < 1 year” are a subgroup of “prior compensation”. Also the 36 companies with “prior compensation” by definition have no “prior agreement > 1 year”. For the 29 companies with “increasing share” and “prior compensation” it can be reasonably assumed that the share was increased by the transaction for which the prior compensation was granted. Also by construction these 29 companies form a sub-group of “prior agreement > 1 year”. The other significant associations give additional descriptive information on sample II.

27 of the squeeze-outs were announced by using an ad-hoc announcement. Note that there are ad-hoc announcements made by the majority shareholder (if it is a stock corporation) as well as by the target company itself. Although, in general, there is no obligation to publish an ad-hoc announcement, it can be observed that if the majority shareholder is a stock corporation there generally is an ad-hoc announcement.

3.2. Event study methodology

In our empirical analysis, we follow the event study methodology by Brown and Warner (1980, 1985). The proceeding is described in figure 1:

(insert figure 1 here)

This figure shows the potential event days as well as other relevant dates, illustrated by one hypothetical example. Generally speaking, the event date is the date of the first publicly available announcement of the squeeze-out; thus signifying the day new information comes into the market.³⁶ The event date ($t=0$) is either defined by the ad-hoc announcement or by the

³⁶ Note however, that in many of the cases rumors or intentions of a potential squeeze-out were in the media before the event day. For our event study we used the day of the first official announcement (of a squeeze-out) after the 95% limit is reached as event day. However, these rumors in the market might influence the interpretation of the results in the pre-event period, as they might lead to a change of the stock price even before the event-window.

date of the first press release. The last possible event date is the day the invitation to the general meeting is forwarded.³⁷ The request from the majority shareholder cannot be seen as a potential event date, as it is delivered by the majority shareholder to the management board and can thus not be seen as publicly available information. The event window around the event date comprises the interval [90 trading days before until 40 trading days after the event]. This asymmetric structure is used for the following reasons: The interval starts in $t=-90$ to obtain a period which is longer than the one required by the *WpÜG-Angebotsverordnung*.³⁸ The interval ends in $t=+40$ to eliminate the effects of stock market reactions due to the general meeting.³⁹

The as above defined events for sample I are chronologically distributed as follows (a dot signifies the date of the announcement):⁴⁰

(insert figure 2 here)

As figure 2 illustrates, squeeze-outs are announced in the up- as well as the downturn of the stock market. Comparing the distribution of the events for the companies in samples I and II, we get the following table with the number of announcements in the quarters of the sample period:

(insert table 3 here)

This overview shows that the percentage of listed companies announcing a squeeze-out declines for both samples during the course of the sample period. For approximately 42 % of the companies in sample I the squeeze-out was announced in the first half of 2002. As 30 of these companies are not in sample II, they fulfill at least one of the two (company-) exclusion criteria: either the announcement day was approximated or the shares were traded on less than 1/3 of the trading days in the event window. This suggests that these first announcements are for

³⁷ For five companies the date that the invitation was signed is used as a proxy for the public availability of the squeeze-out announcement via invitation of the general meeting.

³⁸ Note, that for some observations the announcement day is less than 90 trading days after January 1, 2002 so that we might have effects on the stock prices on January 1, 2002 from the introduction of the regulation. However, as these effects occur on different event days, it does not lead to a systematic bias.

³⁹ The time between the announcement and the general meeting in sample II has a median of 68,5 days (approximately 50 trading days) and a mean of 85 days (approximately 61 trading days). Note, however, that some effects might be included in the stock prices, as the minimum time lag is approximately 25 trading days.

⁴⁰ One company of sample II drops out of the sample before $t=+40$, as the respective announcement date is less than 40 trading days before 31.12.2003 (ID 65, event: 5.11.2003).

companies that are infrequently traded and/or with little attention from the capital market; these are companies that gain little from a listing.

The different level of information disclosed in the announcements is problematic for the analysis of the announcement effects. While some publications only contain the announcement of the squeeze-out, some also contain other potentially stock price relevant information. However, since only in rare cases information other than the squeeze-out announcement is published at the event, this effect is not a systematic one. A more profound problem is the already mentioned difference between a general announcement of the squeeze-out and an announcement that also contains the amount of compensation.⁴¹

Having identified the event date, we calculate abnormal returns (also known as excess returns or prediction errors) for the whole event window for each company:

$$AR_{it} = R_{it} - E(R_{it}) \quad \text{where} \quad E(R_{it}) = \alpha_i + \beta_i R_{mt} \quad (\text{OLS Market Model}) \quad (1)$$

with AR_{it} : abnormal return for stock i on day t ,⁴² $E(R_{it})$: expected return for stock i on day t which is approximated using an OLS Market Model with: R_{mt} : stock market (performance) index return on day t . As index we use the CDAX performance index. Market model parameters α_i and β_i are estimated using daily returns in the estimation period $[-340;-91]$.⁴³ Note, that only 19 of the 69 companies in sample II have β_i significantly different from zero (at a 10% level), but three thereof show a negative β_i .⁴⁴ This fact indicates the special performance of these companies on the stock market, which might have been caused by other factors, e.g. rumors of a future consideration rather than the overall development of the market. According to MacKinlay (1997) “the market model represents a potential improvement over the constant mean return model. By removing the portion of the market’s return, the variance of the abnormal return is reduced. This in return can lead to increased ability to detect event effects. The benefit from using the market model will depend upon the R^2 of the market model regression.” To check the robustness of the abnormal performance of sample I and sample II, we therefore also adjust the raw stock returns using a constant mean return model, where $E(R_{it}) = \bar{R}_i$ in the estimation period $[-340;-91]$. The constant mean return model seems ap-

⁴¹ Due to the limited number of observations this effect cannot yet be controlled for in the sub-samples. The effect will be discussed in hypothesis 4.

⁴² We adjusted for dividend payments and changes in the capital stock by using an adjusted stock price.

⁴³ α_i and β_i could not be calculated for four shares, due to insufficient data (No. 25, 41, 50 and 111). Therefore we assume $\beta_i = 1$, which is, of course, a strong assumption. However, as these shares are not part of sample II this does not cause any further implications for sample II.

⁴⁴ As we have stock prices for every trading day regardless of the trading volume, there are no problems from an estimation point of view. However, the stock prices thus contain different levels of information.

appropriate to test the robustness due to the specific stock market performance of the companies, which can be derived from the β_i and the low R^2 of the respective regressions (not reported here).

In addition, cumulative abnormal stock returns (CARs) are calculated for varying intervals:

$$CAR_{v,w} = \sum_{t=v}^w AR_t \quad (2)$$

with: $(-90 \leq v < w \leq 40)$, $CAR_{v,w}$: CAR for stock i from $t=v$ to $t=w$. Average ARs (CARs) for the samples as well as for sub-samples are calculated as mean as well as median of the individual abnormal returns (cumulative abnormal returns).

To test whether the ARs / CARs are significantly different from zero, we apply cross-sectional t-tests, non-parametric Wilcoxon sign tests (binomial test) and Wilcoxon sign rank tests.⁴⁵ To test whether the ARs / CARs are from populations with the same distribution we use the Wilcoxon ranksum test which is also known as the Mann-Whitney two-sample statistic as well as the Kruskal-Wallis equality of populations rank test.

4. Abnormal returns around event dates

In this section we examine how stock prices react to squeeze-out announcements and how this reaction is affected by certain legal, institutional and economic factors. In the following we first present a general analysis of the information content of squeeze-out announcements. Second, we use a univariate analysis to test whether several factors influence the reaction of the capital market. Additionally, we analyze the abnormal performance depending on these factors. In a third step we conduct a cross sectional multivariate regression to test the joint influence of the institutional factors on the abnormal performance. With the exception of the first test we restrict our analysis to sample II where we have precise information on the announcement day and a minimum trading frequency. Depending on the hypothesis, we split the sample into two or three sub-samples. In order to analyze the pre- and post-event reactions we investigate the CARs within two intervals. First, the anticipation is examined using the period before the announcement date $[-90; -1]$. Second, the processing of the announcement information is analyzed using the period after the announcement date $[+2; +40]$.

⁴⁵ As the normality hypothesis has to be rejected for the ARs in $t=0$ according to a test for normality based jointly on skewness and kurtosis (normality test as described by D'Agostino et al. (1990) with the empirical correction developed by Royston (1991)), the significance-statements are based on the non-parametric tests, although the t-statistics give similar significance levels.

As the announcement information dated on event-day 0 may not be released until after the close of trading, the market reaction to some announcements might be observed on $t=+1$. Because we do not have the exact time of the announcements, it remains unclear whether the ARs in $t=+1$ still reflect the immediate reaction to the event (which should be reflected in $t=0$) or rather reactions to pricing information that follows the information of the event. We base the analysis thus on the ARs in $t=0$. To test the robustness of this model specification we will analyze the abnormal performance in the interval $[0;+1]$ in detail.

4.1. Univariate results: market reaction: overall as well as depending on legal, institutional and economic factors

Regarding all the squeeze-out announcements as one group, we analyze the first hypothesis.

H1: Markets do not anticipate but react directly after the announcement because it reveals new information.

If squeeze-out announcements reveal new information to the market, stock prices should react significantly. However, for some companies, the development of the target company in the run-up to the announcement might have already sent signals to the market, so that the actual announcement does not reveal new information to the market. In this case the abnormal performance will be observed in anticipation of the event. Helmig (2003) and Hekker/Kaserer (2003) indicate that the compensation in a squeeze-out yields on average a positive premium relative to the stock price prior to the announcement. Therefore, we will expect a positive reaction of the stock market to the squeeze-out announcement. This positive abnormal performance as a reaction to high compensation points out that the stock price after the announcement does not exclusively reflect the expectation of the future value of the company anymore but also, and perhaps even more so, the expectations about the amount of the compensation.⁴⁶

We find that the markets do show significantly⁴⁷ positive ARs in $t=0$ but also anticipation of the squeeze-out. A graphical representation of ARs and CARs in the event-window is given in figure 3. We also added the significance levels testing the null hypothesis $CAR=0$ for each point in time. To show that our results are robust if extended to sample I, we added the corresponding analysis in figure 3⁴⁸.

⁴⁶ The influence of a future compensation on the stock price is discussed for *Beherrschungs- und/oder Gewinnabführungsverträge* in Hecker (2000), p. 233ff.

⁴⁷ Significance levels are summarized in table 2 in the Appendix.

⁴⁸ The figures show the median of the individual ARs and CARs, which seems to be more appropriate in our setting, as it minimizes the effects of extreme observations. The same figures were generated using the mean and

(insert figure 3 here)

Thus, it can be concluded that the squeeze-out does reveal new and positive information to the market. On average [mean (median)] the announcement yields an abnormal return of 5,3964% (0,4206%) in $t=0$ for sample I respectively 4,4751 % (0,7470 %) in $t=0$ for sample II. However, the squeeze-out announcement is anticipated for the observations in sample II, with CARs significantly positive at a 10% level of 6,1623 % (3,9572 %) in $t=-1$. These observations suggest that the expectations of the market participants have changed before the squeeze-out is announced. The participants interpret some information that comes into the market before the event is definitely announced as a positive signal regarding the squeeze-out. Looking at the medians in sample II, we thus find a CAR of +3,9572% in $t=-1$ and a further AR of +0,7470% in $t=0$. Moreover, note that overall, the CARs do not continue to increase after the announcement, implying no further increase in the share value for the market participants. Coming back to what we stated in the hypothesis formation this signifies that overall, no positive expectations about the company or the level of compensation exist after the event.

To test for changes in the reactions of the capital market over time, sample II was divided into two sub-samples. As a breaking point we used October 10, 2002, which constitutes the first break in the downturn of the stock market in 2002. Although this breaking point is somehow arbitrary, it provides a split-up generating sub-samples of 38 (before October 10, 2002) and 32 (after October 10, 2002) shares. There might be a learning effect of the market participants, which is not obviously linked to the market development, but which potentially influences this result. However, we do not find any significant differences between the two groups (in $t=-1$, $t=0$ and $t=+40$) based on the Wilcoxon ranksum test.

The following two tables (tables 4 and 5) provide analyses of two model specifications: (1) the use of the market model and (2) the focus on the ARs in $t=0$. The median ARs in $t=0$ based on the Market Model (for samples I and II) and the Constant-Mean-Return Model (for sample II) with the respective p-values (based on the Wilcoxon signed-rank test) are given in table 5:

(insert table 4 here)

the conclusions that can be drawn from the graphical presentation are the same, only varying in magnitude. As the significance is tested using non-parametric tests, there is no difference in this respect.

The table shows that we get similar results with both models; even given the assumptions of sample I the ARs yield similar results. This comparison suggests that the findings will be robust to the choice of the model. In the following we therefore use the Market Model. As stated before, we can not control for the exact time of the release of the announcement. Therefore, we analyze the reaction on $t=0$ as well as $t=+1$. Also, the ARs on $t=-1$ might capture any early news leakages. Table 5 indicates that the ARs on this day are not significantly positive. Hence we include the analysis of the ARs on $t=-1$ in the analysis of the anticipation, i.e. the CARs [-90; -1].

(insert table 5 here)

As expected, the ARs in $t=+1$ are also positive, but smaller and with a different distribution of the individual ARs. Therefore, it appears that the major effect is in $t=0$. Considering the CAR [0;+1] we see that the median and the third quartile show substantially higher values than the ARs in $t=0$. In the following, we therefore analyze the ARs in $t=0$ and the CARs in [+2;+40], as the effects of $t=+1$ can not be allocated reliably. The ARs in the first quartile are (for all windows) slightly negative, showing that for several announcements the squeeze-out with its respective conditions seems to be bad news.

Considering the regulation of squeeze-outs in Germany and the institutional framework described before, the following five hypotheses (H2 to H6) are proposed and analyzed for sample II with the market model.

H2: The compensation in a prior corporate transaction serves as a benchmark for compensation in the squeeze-out process, reduces information asymmetry and thus changes the market reaction.

If a compensation has been set in a corporate transaction prior to the squeeze-out, either in a *Beherrschungs- und/oder Gewinnabführungsvertrag* or in an offer according to the *WpÜG*, a benchmark for the squeeze-out compensation has been set and thus the uncertainty about the compensation as well as information asymmetry between majority and minority shareholders is reduced. Thus, one would expect a minor reaction to these squeeze-out announcements as more precise information is already incorporated in the stock price. This hypothesis is supported, on the one hand, by the draft of the current regulation, which explicitly calls for orien-

tation towards a previous offer according to the *WpÜG* under certain circumstances.⁴⁹ On the other hand, legal literature also advises the majority shareholder to orient the compensation towards a prior offer according to the *WpÜG* if such an offer exists.⁵⁰ However, these advises are only suggestions and there are no required legal relations between the respective compensations. Note, that we do not control for the directions of the deviations from the benchmark, which might be increasing or decreasing. We therefore analyze the effect of the existence of a prior benchmark.

To ensure the relevance of this prior compensation as a benchmark we exclude the compensations that were decided upon more than one year before the squeeze-out announcement. For the determination of this period, we take the respective reference point for the calculation of the compensations.⁵¹ The considerations should give the shareholders the fair value of their share at this time. 37 of the 70 companies in sample II offered a compensation that could be seen as a relevant benchmark. Although we can not reject that the two sub-samples are from populations with the same distribution the difference between the two is as we expected, i.e. the median of the ARs in $t=0$ of the sub-sample without prior compensation is approximately +0,3 % higher than the median of the other sub-sample.

(insert figure 4 here)

Note also that the CARs start to increase earlier if there is no prior compensation.⁵² Although there is no significant difference between the two populations according to the Mann-Whitney two-sample statistic, the CARs in $t=-1$ are significantly positive only for the sub-sample without prior compensation. These findings suggest that there is a reduction of information asymmetry in case of a prior compensation, resulting in less abnormal performance.

⁴⁹ If the 95% level was achieved via an offer according to the *WpÜG*, which was accepted by 90% of the addressees of the offer, the consideration can be considered as being in line with the market and should be the basis of the compensation in the squeeze-out process. This regulation is equivalent to the regulation in Sect. 429 (1) of the UK Companies Act 1985. See Ehrke and Roth (2001).

⁵⁰ See Steinmeyer and Häger (2002).

⁵¹ For *Beherrschungs- und/oder Gewinnabführungsvertrag* this is the deciding general meeting, for the offer according to the *WpÜG* the day of the announcement. If the announcement day is not given, we take the first day of the acceptance period as a proxy.

⁵² There might also be a difference in the stock market reaction depending on the time-lag between the compensation (either in a control and/or profit transfer agreement or in an offer according to the *WpÜG*) and the squeeze-out announcement. The argument is also valid for H3. But this difference is not further analyzed.

H3: The regulations of *Beherrschungs- und Gewinnabführungsverträge* lead to systematic differences in the reaction of the capital market.

As stated before, a control and/or profit transfer agreement has different legal as well as economic impacts than an offer according to the *WpÜG*. Therefore we analyze the impact of these agreements on the abnormal performance. In addition to the role of the compensation, the *Ausgleich* is a further major impact on the stock price of companies with a *Beherrschungs- und/oder Gewinnabführungsvertrag*. It implies fix payments to the shareholders and is therefore reflected in the stock price. Furthermore, the compensation given in these agreements can be seen as more reliable benchmark in reflecting the fair value of the share in the sense that there is a possibility for verification in a *Spruchstellenverfahren*. Therefore, we suppose that the abnormal performance after the announcement should be less than in a situation with no such prior possibility of verification. The probability of an increase in the squeeze-out compensation as a consequence of a further legal verification of the amount should be smaller than in a previous verification. However, note that only relative statements can be made about the effects, since the level of compensation as well as the specific information content of the announcement is not taken into account. In this comparison we analyze the role of two specific impacts of control and/or profit transfer agreements on the abnormal performance: the *Ausgleich* and the benchmark.⁵³

To analyze this hypothesis we divide sample II into 3 sub-samples. For the 11 companies in sub-sample 1 both economic impacts influence the stock price, as the *Beherrschungs- und/oder Gewinnabführungsvertrag* is closed less than one year before the event.⁵⁴ For another 8 companies in sub-sample 2 only the *Ausgleich* effects the stock price. The 51 companies in sub-sample 3 have no prior agreements. For the sub-sample without prior agreements, we find significantly positive (C)ARs in $t=0$ and $t=-1$ as well as positive CARs in $t=+40$ [$+2;+40$]. Consistent with our expectations we do not find significantly positive ARs in $t=0$ and $t=-1$ for the companies that had a control and/or profit transfer agreement prior to the squeeze-out. We observe significantly negative CARs in $t=+40$ if the *Beherrschungs- und/oder Gewinnabführungsvertrag* is closed less than one year before the event. For $t=+40$ it can also be rejected that the three sub-samples are from the same populations based on a Kruskal-Wallis test. It can thus be observed that if both economic impacts of the *Beherrschungs- und/oder Gewinnabführungsvertrag* influence the stock price of a company, this

⁵³ We do not control for the role of the compensation in control and/or profit transfer agreements in setting a lower limit to the stock price.

⁵⁴ Although this limit is somewhat arbitrary it gives a conservative approximation of how long a consideration could be seen as a valid benchmark.

stock price reacts differently in comparison to the sub-sample without prior agreements on all event days analyzed in this study.

(insert figure 5 here)

H4: The market reaction depends on the information content of the announcement.

Squeeze-out announcements contain different amounts of disclosed information. While some announce the squeeze-out in general, some also reveal the amount of compensation. The latter yields, assuming efficient markets and rational investors, a lower bound of the future stock price, as the stock price after the announcement should not be lower than the announced compensation.⁵⁵ If the amount of the compensation reflected the “fair” compensation, no further stock price reactions would be expected. Thus, further stock price reactions would imply either that the compensation is not regarded as being fair by the minority shareholders and/or that an increase in a *Spruchstellenverfahren* is expected. Furthermore, the minority shareholders might trade strategically, basing their trades on the assumption of the other market participants’ higher stock price expectations. This behavior might also result in positive price reactions. Based on the positive premiums findings, higher positive CARs are expected in the post-event period for the companies that published a general announcement. Steinmeyer and Häger (2002) even predict a dramatic increase in the stock price if the amount of the compensation is not announced. Furthermore, the minority shareholders might boost the stock prices in the hope of increasing the compensation or entailing a possible right to demand an increase in compensation because of higher stock prices.⁵⁶ This effect might even occur if the amount is stated in the first announcement. If evidence of such speculative behavior by the minority shareholders were given, the stock price could no longer be seen as an appropriate measurement for a fair compensation.⁵⁷ In contrast, Hecker/Kaserer (2003) empirically find indications that the market reaction to a general announcement (where the amount is not given) does not yield an increase in the stock price to the level of the later on announced compensation. Although they do not give significance levels, they argue that this difference might be caused by the market participant’s allocation of a positive probability to the fact that the squeeze-out might not be implemented.

⁵⁵ We abstract from the probability that a squeeze-out might be appealed against and consequently not successfully carried out.

⁵⁶ See Steinmeyer and Häger (2002) and Sieger and Hasselbach (2002).

⁵⁷ See Sieger and Hasselbach (2002).

28 of the 70 companies did announce the amount of the compensation within the first announcement. For this sub-sample we find significantly positive ARs in $t=0$ with a median of +2,5733%, but also significantly negative returns of -2,0553% in $t=+40$ [+2;+40]. Confirming the findings of Hecker/Kaserer (2003) we observe smaller reactions in $t=0$ with a median of +0,5838% for the sub-sample without announcement of the amount. The CARs of this sub-sample in $t=+40$ that are not significantly different from zero:

(insert figure 6 here)

However, in contrast to what we anticipated, it can not be rejected that the two populations (in $t=0$ as well as in $t=+40$) are from the same distribution. This might imply that although the amount is not announced, market participants can assess the compensation equally accurately, which might be due to rumors and speculations in the market. Note, however, that even if the amount is not given within the first announcement, it might be released shortly afterwards. We did not control for this effect.

H5: The market reaction depends on the development of the ownership structure before the announcement.

The relationship between anticipated effects and effects on the announcement day might depend on whether the prerequisites of an announcement have been fulfilled for a longer period of time or recently (as the end of a process in which 95% of the shares were acquired). Two aspects are relevant for the reaction of the capital markets: first, the expected level of positive effects of the squeeze-out. Secondly, how the market views the probability of a squeeze-out and how this probability is already included in the stock prices. On the one hand, we would expect a minor reaction for the companies for which the relevant majority was acquired recently, as we assume that then the probability of a squeeze-out will be estimated as being higher. Thus a bigger part of this effect has already been anticipated. On the other hand, if 95% of the shares were in the hand of the majority owner for a substantial time before the squeeze-out, a major part of the synergies has already been realized and fully taken account of in the stock prices. This might yield smaller announcement effects.

While we get significantly positive ARs in $t=0$ for both sub-samples, the ARs for sub-sample (1) [where the 95% limit has been attained more than one year before the squeeze-out announcement] are +2,1793%, and thus approximately +1,8% higher than the ARs of (2) [where the 95% limit was attained gradually before the squeeze-out announcement was

made]. This finding suggests that probability estimation rather than the realized synergies influences the stock market reaction. The probability of a squeeze-out is regarded as being lower for the sub-sample where the squeeze-out could have been realized before. Thus the announcement effect is higher. However, since the two sub-samples are not significantly different at $t=+40$ [$+2;+40$], the reaction does not differ in the long run. Although we do not find significant differences for the CARs in $t=-1$, we find significantly (10% level) positive CARs for the sub-sample where the 95% limit has been attained more than one year before the squeeze-out announcement, while for the other sub-sample, we can not reject the hypothesis, that the CARs in $t=-1$ are zero. Note that the gradual acquisition of the shares might have already been completed by the time we start to accumulate the CARs in $t=-90$. We might, therefore, also take into consideration, that the higher probability of a squeeze-out was already incorporated into the stock prices before $t=-90$, as a consequence of the prior acquisition of the stocks by the majority shareholder. Furthermore, speculation in the prior acquisition of shares by the majority shareholder might have already forced the price up to a relatively higher level.

(insert figure 7 here)

Figure 7 illustrates the magnitude of the abnormal performance if the anticipation and the effects on $t=0$ are aggregated. While the median of the CARs in $t=-1$ of 8,6572% there is an additional (median) AR in $t=0$ of 2,1973%.

H6: The information processing will be faster for companies that are traded more frequently around the announcement day.

If the stocks of a company are traded more frequently, stock transactions can be concluded within a shorter period of time. Thus it takes less time for the market to absorb the information. Therefore, abnormal performance on the announcement date is expected to react stronger with more frequently traded stocks. With less frequently traded stocks the information gets into the market either gradually and/or is not reflected immediately. Furthermore, the risk of stock price manipulation is higher with less frequently traded stocks. Another aspect that might be associated with high trading volume is attention given to a company and its stock by investors, analysts and the press. Little attention leads to a more gradual processing of information.

To test this hypothesis we divide sample II into two sub-samples as described in 3.1. Figure 8 demonstrates the different developments of the CARs:

(insert figure 8 here)

Whereas both sub-samples yield significantly positive ARs in $t=0$, there is no statistical difference between the two populations. However, the two sub-samples accumulate a different level of abnormal return until $t=-1$ so that the populations are significantly different at an 11% level. For the sub-sample with higher trading volume we observe CARs of +11,5552 % compared to +2,6784%. Thus, the level of trading volume around the event seems to influence information processing. For the sub-sample with higher trading volume the probability of a squeeze-out seems to be assessed higher and/or more positive effects are expected. This result might be caused by a higher level of speculation but also by better information of the press before the announcements were made. Alternatively, we could conclude that the stock prices are forced up for the more frequently traded stocks resulting in this high level of CARs in $t=-1$. Since the two sub-samples are not significantly different in $t=+40$ [+2;+40], this characteristic does not contain explanatory power for the abnormal returns after the announcement. The negative median CARs in $t=+40$ [+2;+40] for the sub-sample with higher trading volume, might indicate that the stock prices were forced-up rather than rational expectations drove the prices up.

4.2. Multivariate results: joint analysis of potential determinants of the abnormal performance

Building on the univariate results, we finally analyze determinants of the stock market reaction jointly.⁵⁸ Therefore, we estimate cross sectional multivariate regressions on the AR in $t=0$ as well as the CARs in $t=-1$ and $t=+40$ [+2;+40]:

$$AR_{t,j} = \alpha_0 + \beta_i x_{ij} + \varepsilon_j \quad (3)$$

where AR_{tj} [CAR_{tj}] is the AR [CAR] of company j in t , x_{ij} are the determinants we want to test, with $i = 1-9$ and j standing for the 70 companies in sample II. ε_j is the firm specific zero mean disturbance term that is uncorrelated with the x 's. β_i are the coefficients to be estimated using heteroscedasticity-consistent cross sectional OLS-estimation. Therefore, we assume that the ε_j 's are cross-sectionally uncorrelated.

⁵⁸ See MacKinlay for Cross-Sectional Models (1997). The OLS-approach can be used for inferences and t-statistics, even if the regression residual is not uncorrelated with the regressors. This might occur "when investors rationally use the firm characteristic to forecast the likelihood of the event". The t-statistics then give the lower bounds on the true significance levels.

In addition to the test variables introduced so far, we include three control variables in the regression. The different reactions to the announcements might be caused by different amounts of information about the squeeze-out that is available to the market participants. In prior US studies⁵⁹ size correlated positively with the number of analysts dealing with the company. Thus we used the logarithm of the market value of the company as a proxy for size.⁶⁰ Note that this variable is positively correlated with VOLUME, which might display that high market value and also higher trading volume mean more information is available in the market. The second control variable “price to book value”⁶¹ is a proxy for over- or undervaluation of the company by the market. Due to potentially superior information of the majority shareholder over the minority shareholders, part of the economic literature argues that the majority shareholder will not announce the squeeze-out if the shares are perceived as overvalued by the majority shareholder.⁶² This argument of undervaluation is also frequently used in the Going Private literature as an argument of companies to go private and might thus contribute to the explanation of the announcement effects.⁶³ Thirdly we adjust for industry specific effects. The 70 target companies are from 17 different industries. Thus we summarize the 18 companies of the biggest sector, the financial sector (banks, financial services and insurance), into one dummy variable.

Using dummies for the variables to be tested, the following regression model is estimated for the AR in $t=0$ as well as the CARs in $t=-1$ and $t=+40$ [$+2$; $+40$]:

$$AR_0 = f(WBG, BG2, BG1, DOI, AMOUNT, VOLUME, size, ptb, industryFS) \quad (4)$$

where:

- WBG (0,1) 1, if a prior compensation either according to the *WpÜG* or in a prior *Beherrschungs- und/oder Gewinnabführungsvertrag* (not more than 1 year before the event) existed; 0 otherwise
- BG2 (0,1) 1, if a *Beherrschungs- und/oder Gewinnabführungsvertrag* was conducted (not more than 1 year before the event); 0 otherwise
- BG1 (0,1) 1, if a *Beherrschungs- und/oder Gewinnabführungsvertrag* was conducted (more than 1 year before the event) ; 0 otherwise

⁵⁹ See for example Brennan and Hughes (1991).

⁶⁰ Market value on Datastream is the share price multiplied by the number of ordinary shares in issue. The Market value is displayed in millions of units of local currency.

⁶¹ The “price to book value” relates the firm's market value per share to its book value (total owner's equity) per share.

⁶² For a discussion see Hecker and Kaserer (2003) or Bebchuk and Kahan (2000).

⁶³ Though undervaluation is measured differently, see Kim and Lyn (1991) and Travlos and Cornett (1993) for the argument.

DO1 (0,1)	1, if the development of ownership structure was such that the 95% limit was attained gradually; 0 otherwise
AMOUNT (0,1)	1, if the amount of the compensation is disclosed in the first announcement; 0 otherwise
VOLUME (0,1) size	1, if there was higher trading volume around the announcement; 0 otherwise approximated by the logarithm of the market value at the last trading day of the year prior to the squeeze-out (thus either 2001 or 2002)
ptb	price to book value at the last trading day of the year prior to the squeeze-out (thus either 2001 or 2002)
industryFS	company belongs to the financial sector (banks, financial services and insurance)

Although several significant associations occur between our test variables, variance inflation factor diagnostics do not indicate multicollinearity as a problem (all VIFs are less than 3).

Based on our univariate analysis we expect negative signs (relative to the base category, which is characteristic=0) for the following coefficients. Based on the results from the Kruskal-Wallis test we expect that the CARs in $t=+40$ are significantly smaller if a *Beherrschungs- und/oder Gewinnabführungsvertrag* exists. The reaction should be stronger for the coefficient of the agreement that is temporally closer to the event. The signs of the following coefficients are expected to be negative based on the results from the significance tests:

in $t=-1$: WBG, BG2, BG1, DO1

in $t=+40$: AMOUNT

For the coefficient of VOLUME in $t=-1$ we expect a positive sign.

We find that our univariate results are confirmed in the multivariate analyses.

(insert table 6)

We find that the existence of a *Beherrschungs- und/oder Gewinnabführungsvertrag* as well as the development of the ownership structure before the squeeze-out announcement influence the abnormal performance substantially, but to different extends on the 3 dates observed. Economically it can be stated that a *Beherrschungs- und/oder Gewinnabführungsvertrag* as well as a gradual attainment of the 95% limit have a negative impact on the abnormal performance. These effects of a *Beherrschungs- und/oder Gewinnabführungsvertrag* are also significant (10% level) on all three dates, if BG2 and BG1 are combined as one dummy vari-

able. In $t=0$ ARs are almost 6% less if such a contract (not more than 1 year before the event) exists. In addition, the CARs in the interval $[+2;+40]$ are approximately another 11% lower for the sub-sample with a *Beherrschungs- und/oder Gewinnabführungsvertrag* (not more than 1 year before the event). A gradual attainment of the 95% limit leads significantly smaller CARs in the pre- as well as post-event period.

These results suggest that the specific regulations of control and/or profit transfer agreements as well as the way the 95% limit is attained influence the abnormal performance significantly. This suggests that these factors have a substantial influence on the expectation formation of the market participants concerning the squeeze-out. Moreover, for the companies with *Beherrschungs- und/oder Gewinnabführungsvertrag* we might conclude that they are subject to a different price formation process that is reflected in the significantly different abnormal performance.

5. Conclusions

In this paper, we analyze the stock market response to squeeze-out announcements during 2002-2003. We find significant positive ARs on the announcement day overall as well as in the restricted sample. In the univariate analysis of the restricted sample we observe substantial differences for several economic and institutional factors. The directions of these influences are confirmed in the cross-sectional multivariate regression of the test as well as control variables on the ARs in $t=0$ and the CARs in $t=-1$ and $t=+40$ $[+2;+40]$. The results of this joint analysis suggest that the specific regulations of control and/or profit transfer agreements as well as the way the 95% limit is attained influence the abnormal performance significantly. The reaction of the companies with a more recently closed control and/or profit transfer agreement is stronger, resulting in more negative coefficients for this sub-sample compared to the other agreements.

In summary, we find that certain factors related to the company or squeeze-out process systematically influence the stock market reaction around the squeeze-out announcement. Beyond the economic conclusions, these findings also contribute to the legal discussion on the determination of an appropriate compensation. This shows that in some instances the stock price is not a suitable basis for compensation if the individual characteristics of the particular transaction are not taken into account. Especially the use of a simple weighted average before the day of the general meeting as partly suggested in the legal literature has to be challenged. If the reference point for the average and the first announcement day lie within the three month period, different levels of information are mixed. However, even if a situation existed,

in which the stock prices reflect the information of the announcement immediately (with no anticipation and no post-event reaction), the general decision still would have to be made whether the price with or without the entailed information of the squeeze-out should be the basis for a compensation. This has to be decided bearing in mind that the stock price after the announcement of the amount entails expectations regarding the value of the company as well as the compensation. However, the general statement that the markets are not reliable in the case of a squeeze-out cannot be supported.

Appendix 1: Composition of the dataset

	Target	Majority Shareholder	listed	
			in sample I	in sample II
1	Aachener & Münchner Versicherung AG	AMB Generali Holding AG	√	√
2	Aachener & Münchner Lebensversicherung AG	AMB Generali Holding AG	√	√
3	ABB AG	ABB Asea Brown Boveri AG	√	√
	ABN Amro Holding (Deutschland) AG	ABN Amro Bank N.V.		
4	Aditron AG	Rheinmetall AG	√	√
	AGIMA Aktiengesellschaft für Immobilien-Anlage	DGI Immobilien-Verwaltungsgesellschaft mbH		
5	Alcatel SEL AG	Alcatel Telecom Beteiligungsgesellschaft mbH, Stuttgart,	√	√
6	Allgemeine Privatkundenbank AG	Bankgesellschaft Berlin AG	√	
7	Allweiler AG	Constellation Verwaltungs GmbH & Co. Beteiligungen KG	√	
8	Alte Leipziger Versicherung AG	Alte Leipziger Holding AG	√	
9	Aqua Signal AG	Glamox Licht GmbH	√	
10	ATB Antriebstechnik AG	ATB Beteiligungs GmbH	√	
11	Baden-Württembergische Bank AG	Landesbank Baden-Württemberg	√	√
12	Barmag AG	W. Schlafhorst AG & Co.	√	√
13	Bayerische BrauHolding AG	Schörghuber Stiftung & Co. Holding KG	√	
14	Bayerische Immobilien AG	Schörghuber Stiftung & Co. Holding KG	√	√
15	BBG Beteiligungs-AG	Rudolf August Oetker	√	
16	Berliner Kindl Brauerei AG	Radeberger Gruppe AG	√	√
17	BHF-Bank AG	BHF Holding AG	√	√
18	Blaue Quellen Mineral- und Heilbrunnen AG	Nestle Deutschland AG	√	
	Blohm + Voss Holding AG	ThyssenKrupp AG		
19	Brainpool TV AG	Viva Media AG	√	√
	Brauhaus zur Garde AG	Lüticke & Tschirschnitz Gastronomie-Getränke GmbH		
20	Braunschweigische Kohle-Bergwerke AG	E.ON Kraftwerke GmbH	√	
	Buckau-Walther AG	ThyssenKrupp AG		
21	CAA AG	Harman Becker Automotive Systems (Becker Division) GmbH	√	√
	CENTRAL KRANKENVERSICHERUNG AG	AMB GENERALI HOLDING AG		
22	Christian Adalbert Kupferberg & Cie. KGaA	A. Racke GmbH & Co.	√	
	Citicorp Deutschland AG	Citigroup Inc		
23	Concept! AG	OgilvyOne worldwide GmbH & Co KG	√	√
24	Consort Discount-Broker AG	BNP Paribas	√	√
25	Converium Rückversicherung (Deutschland) AG	Converium AG	√	
	Dachziegelwerke Idunahall AG	Röben Tonbaustoffe GmbH		
26	Deutsche Bank Lübeck AG	Deutsche Bank AG	√	√
	Deutsche Bank Saar AG	Deutsche Bank AG		
	Deutsche Bausparkasse Badenia AG	AMB Generali Holding AG		
27	Dortmunder Actien-Brauerei AG	Radeberger Gruppe AG	√	√
28	Dresdner Bank AG	Allianz AG	√	√
29	DSL Holding AG	Deutsche Postbank AG	√	√
30	Duewag AG	Siemens AG	√	
31	E.ON Bayern AG	E.ON AG	√	√
32	EBV AG	RAG Immobilien AG	√	
33	edelstahlwerk Witten AG	THYSSENKRUPP AG	√	
34	Edscha AG	EdCar Beteiligungs GmbH & Co. KG	√	√
35	Elektra Beckum AG	Metabowerke GmbH	√	
36	Enrium Direct Bankers AG	Fineco Group S.p.A.	√	√
	Erlau AG	RUD-Kettenfabrik Rieger & Dietz GmbH u. Co.		
	Eternit AG	Eternit Management Holding GmbH		
37	EURAG Holding-AG	John Deere-Lanz Verwaltungs-AG	√	
38	FAG Kugelfischer Georg Schäfer AG	INA Vermögensverwaltungsgesellschaft mbH	√	√
39	Ford-Werke AG	Ford Deutschland Holding GmbH	√	√
40	Fränkisches Überlandwerk AG	N-Ergie AG	√	
41	Frankenluk AG	GAH Beteiligungs AG	√	
42	Friatec AG	GPS Holding Germany GmbH	√	
43	Gardena Holding AG	Green Holding AG	√	√
44	Gerresheimer Glas AG	Gerresheimer Holdings GmbH & Co. KG	√	√
45	Gilde-Brauerei AG	Interbrew Deutschland Holding GmbH	√	
46	Goldschmidt AG	Degussa AG	√	√
	Hag GF Ag	Kraft Foods Deutschland		
47	H.I.S. SPORTSWEAR AG	VF Corporation	√	√
48	Hagen Batterie AG	Deutsche Exide GmbH	√	
49	Hamburger Hochbahn AG	HGV Hamburger Gesellschaft für Vermögens- und Beteiligungsverwaltung mbH	√	√
50	Hapag-Lloyd AG	TUI AG	√	√
51	Hermes Kreditversicherungs-AG	Allianz AG	√	
52	Hilgers AG	DSD Dillinger Stahlbau GmbH	√	
53	Horten AG	Asset Immobilienbeteiligungen GmbH	√	
54	Hüttenwerke Kayser AG	Norddeutsche Affinerie AG	√	
55	HVB Real Estate Bank AG	DIA Vermögensverwaltungs-GmbH	√	√
56	ICN Immobilien Consult Nürnberg AG	Schickedanz-Holding AG & Co. KG	√	
57	ikon Aktiengesellschaft Präzisionstechnik	ASSA ABLOY Holding GmbH	√	
	Ingram Macrotron AG für Datenerfassungssysteme	Ingram Micro Europe GmbH	√	
58	Invensys Metering Systems AG	Invensys Metering Systems Holding AG	√	

59	Jil Sander AG	Jil Sander Holding GmbH		✓	✓
60	Jobpilot AG	Adecco SA		✓	✓
61	Joseph Vögele AG	Wirtgen Beteiligungsgesellschaft mbH		✓	
62	Kamps AG	Finba Bakery Europe AG		✓	✓
63	Kaufhalle AG	ADAGIO Grundstücksverwaltungsgesellschaft mbH		✓	✓
64	Kempinski AG	MCM Hotel Beteiligungsgesellschaft mbH		✓	✓
65	Kiekert AG	Kiekert Holding GmbH		✓	✓
	KM Europa Metal AG	SMI S.p.A.			
	Koeppe AG	Deutsche Vita Polymere GmbH			
	Komatsu Hanomag AG	Komatsu Ltd			
66	Kraftübertragungswerke Rheinfeldern AG	Kraftwerk Laufenburg (KWL)		✓	✓
67	Löwenbräu AG	Gabriel Sedlmayr Spaten-Franziskaner-Bräu KGaA		✓	
68	MAN Roland Druckmaschinen AG	MAN AG		✓	✓
69	Mainzer Aktien-Bierbrauerei AG	Radeberger Gruppe AG		✓	
70	Maschinenfabrik Esslingen AG	DC-Grund DaimlerChrysler Verwaltungsgesellschaft für Grundbesitz mbH		✓	✓
71	Massa AG	DIVACO Beteiligungs AG & Co. KG		✓	✓
72	mg vermögensverwaltungs-ag	mg technologies ag		✓	
73	MHM Mode Holding AG	Hucke AG		✓	
74	Michael Weinig AG	Weinig International AG		✓	✓
75	Microlog Logistics AG	THIEL LOGISTIK AG		✓	✓
76	MONACHIA Grundstücks-AG	Bayerische Städte- und Wohnungsbau GmbH		✓	✓
77	MSH International Service AG	Systematics AG		✓	
	NB Beteiligungs AG	WCM Beteiligungs- und Grundbesitz-Aktiengesellschaft			
78	Neckarwerke Stuttgart AG	Energie Baden-Württemberg AG		✓	
79	Nestle Deutschland AG	Nestle Unternehmungen Deutschland GmbH		✓	✓
	Nexans Deutschland AG	Nexans Participations S.A.			
80	O&K Orenstein & Koppel AG	CNH International S.A.		✓	
81	OTAVI Minen AG	IKO-Minerals GmbH		✓	
82	Otto Reichelt AG	EDEKA Minden-Hannover Beteiligungsgesellschaft mbH		✓	✓
83	Pirelli Deutschland AG	Pirelli SpA		✓	
84	PKV Vermögensverwaltung AG	Philips AG		✓	✓
85	Praktiker Bau- und Heimwerkermärkte AG	METRO AG		✓	✓
86	PSB AG für Programmierung und Systemberatung	Bechtle AG		✓	✓
87	Quante AG	Erste SuSe Verwaltungs GmbH		✓	
88	Radeberger Gruppe AG	Dr. August Oetker KG		✓	✓
89	Real Garant Versicherung AG	ADAC-Schutzbrief Versicherungs-AG		✓	
90	Reckitt Benckiser Deutschland AG	Reckitt Benckiser Detergents GmbH		✓	
	Revell Aktiengesellschaft	Revell-Monogram			
91	Rheinhold & Mahla AG	Bilfinger Berger AG		✓	✓
92	Rheinisch-Westfälische Kalkwerke AG	READYMIX AG		✓	
93	Rieter Ingolstadt Spinnereimaschinenbau AG	Rieter Deutschland GmbH & Co. OHG		✓	
94	RÜTGERS AG	RB Verwaltungsgesellschaft		✓	✓
95	SAI Automotive	Faurecia		✓	✓
96	Salamander AG	Energie Baden-Württemberg AG		✓	✓
97	Sappi Ehingen AG	Sappi Alfeld AG		✓	✓
98	Schleicher & Co. International AG	Martin Yale Industries, Inc.		✓	✓
99	Schmalbach-Lubeca AG	Schmalbach-Lubeca Holding GmbH		✓	✓
	SchmidtBank AG	Zweite Beteiligungsgesellschaft der SchmidtBank-Gruppe mbH			
100	Schoeller Eitorf AG	Albers & Co		✓	
101	Scholz & Friends AG	Scholz & Friends Holding GmbH		✓	✓
102	Schott Desag AG	SCHOTT Spezialglas GmbH		✓	
	Schott Zwiesel AG	Table Top Alliances AG			
	SCOR Deutschland Rückversicherungs-Actien-Gesellschaft	SCOR SA			
103	Solenhofer Aktien-Verein AG	Solenhofer Portland Zementwerke AG		✓	
104	Stahlwerke Bochum AG	ThyssenKrupp AG		✓	
105	STEFFEN AG	HGR Kapitalbeteiligungsgesellschaft mbH		✓	
106	Stelcon AG	Readymix Betonbauteile GmbH		✓	
107	Stinnes AG	Deutsche Bahn AG		✓	✓
108	Stollwerck AG	Barry Callebaut AG		✓	✓
109	Systematics AG	EDS Systematics Beteiligungs GmbH		✓	✓
110	tecis Holding AG	AWD Holding AG		✓	✓
111	terrain Gesellschaft	ABG Allgemeine Bauträgergesellschaft mbH & Co. KG		✓	
112	Texas Instruments Berlin AG	Texas Instruments Incorporated		✓	✓
113	Thuega AG	E.ON AG		✓	✓
	Thüga Beteiligungen AG	Thuega AG			
114	Thuringia Versicherungs-AG	AMB Generali Holding AG		✓	✓
	Unilog Integrata AG	Unilog SA			
115	Universitätsdruckerei H. Stürtz AG	Springer Beteiligungs GmbH		✓	
116	USU AG	USU Openshop AG		✓	✓
117	Vereinte Versicherung AG	Allianz AG		✓	
118	Verlag u. Druckerei G.J. Manz AG	Presse-, Druck- und Verlags GmbH		✓	
119	Verselidag AG	Gamma Holding N.V.		✓	
120	VICTORIA Versicherung AG	ERGO Versicherungsgruppe AG		✓	✓
121	Vodafone AG	Vodafone Deutschland GmbH		✓	✓
122	Volksfürsorge Holding AG	AMB Generali Holding AG		✓	✓
123	VTG-Lehnkering AG	VTG Vereinigte Tanklager und Transportmittel GmbH		✓	✓
124	Walter AG	Sandvik Holding GmbH		✓	✓
	Westfalenbank AG	Falke Bank AG			
	YTONG Deutschland AG	YTONG Holding AG			
125	ZANDERS Feinpapiere AG	M-real Deutsche Holding GmbH		✓	

Appendix 2: Table 2: Results and significance levels.

Hypothesis 1									
sample I sample II	sample I				sample II				
	t=0 median	mean	t=-1 median	mean	t=0 median	mean	t=-1 median	mean	
	AR (%)	0,4206%	5,3964%			0,7470%	4,4751%		
	CAR(%) ¹			2,3672%	1,5315%			3,9572%	6,1623%
	t-test p-val.		0,0000		0,598		0,0001		0,0371
	sign test p-val.	0,0001		0,1182		0,0001		0,0722	
	sign rank p-val.	0,0000		0,0511		0,0000		0,045	
	n		133			70			

Hypothesis 2						
sample II	With WPÜG or Control/Profit Transfer Agreement			Without WPÜG or Control/Profit Transfer Agreement		
	t=0 median	t=-1 median		t=0 median	t=-1 median	
	AR (%)	0,5860%		0,9080%		
	CAR(%) ¹		-1,8085%		4,6110%	
	sign test p-val.	0,0076	1,0000	0,0046	0,0046	
	sign rank p-val.	0,0011	0,3775	0,0007	0,0072	
	n		37	33	33	
	ranksum test p-val.	0,4693	0,4002	0,4693	0,4002	

Hypothesis 3									
sample II (for one company eventtime could not be calculated until t=+40, because of the eventtime, which is: 5 November 2003)	With Control/Profit Transfer Agreement < 1 year			With Control/Profit Transfer Agreement > 1 year			Without Control/Profit Transfer Agreement		
	t=0 median	t=-1 median	t=40 median	t=0 median	t=-1 median	t=40 median	t=0 median	t=-1 median	t=40 median
	AR (%)	0,4268%		1,7326%			1,2020%		
	CAR(%) ¹		-7,9325%	-6,8180%				6,9014%	1,1647%
	sign test p-val.	0,5488	0,5488	0,0010	0,2891	0,2891	0,0002	0,0489	0,8877
	sign rank p-val.	0,1549	0,5337	0,0033	0,1235	0,4008	0,0000	0,0123	0,2370
	n		11	11	8	8	51	51	50
	Kruskal-Wallis test	0,2407	0,2277	0,0036	0,2407	0,2277	0,0036		0,0036

Hypothesis 4						
sample II (for one company eventtime could not be calculated until t=40, for 3 companies the relevant information could not be extracted)	With announcement of the amount			Without announcement of the amount		
	t=0 median	t=40 median		t=0 median	t=40 median	
	AR (%)	2,5733%		0,5838%		
	CAR(%) ¹		-2,0553%		-0,0404%	
	sign test p-val.	0,0125	0,0192	0,0034	1,0000	
	sign rank p-val.	0,0010	0,1184	0,0007	0,6857	
	n		28	27	39	39
	ranksum test p-val.	0,2856	0,2379	0,2856	0,2379	

Hypothesis 5						
sample II	95% fulfilled longer			95% gradually acquired		
	t=0 median	t=-1 median		t=0 median	t=-1 median	
	AR (%)	2,1973%		0,3592%		
	CAR(%) ¹		8,6572%		2,0619%	
	sign test p-val.	0,0023	0,0241	0,0115	0,7552	
	sign rank p-val.	0,0003	0,0190	0,0013	0,3747	
	n		29	29	41	41
	ranksum test p-val.	0,1877	0,2549	0,1877	0,2549	

Hypothesis 6								
sample II (for one company eventtime could not be calculated until t=40)	high trading volume around event				low trading volume around event			
	t=0 median	t=-1 median	t=40 median		t=0 median	t=-1 median	t=40 median	
	AR (%)	0,4618%			1,4231%			
	CAR(%) ¹		11,5552%	-0,7876%		2,6784%	-1,0762%	
	sign test p-val.	0,0070	0,3771	0,5966	0,0051	0,1433	0,1877	
	n		32	32	38	38	37	
	ranksum test p-val.	0,4720	0,1406	0,4536	0,4720	0,1406	0,5636	

¹ CAR(%) in t=-1: last day of interval [-90;-1]; CAR(%) in t=+40: last day of interval [+2;+40].

Grey color signifies significance on a 10% level according to the respective test.

References

- Andres, C., Betzer, A., Hoffmann, M. (2005), Going private via LBO – shareholder gains in the European market, Working Paper.
- Bebchuk, L.A., Kahan, M. (2000), Adverse Selection and Gains to Controllers in Corporate Freezeouts, in: Morck, R.K. (editor), Concentrated Corporate Ownership, 247-259.
- Beckmann, K. (2004), Zur Relevanz des Börsenkurses bei der Ermittlung des Abfindungsanspruchs beim Ausschluss von Minderheitsaktionären gemäß §§ 327 a ff. AktG, Die Wirtschaftsprüfung, 620-625.
- Brennan, M., Hughes, P. (1991), Stock Prices and the Supply of Information, The Journal of Finance, 1665-1691.
- Brown, S.J., Warner, J.B. (1985), Using Daily Stock Returns – The Case of Event Studies, Journal of Financial Economics, 3-31.
- Brown, S.J., Warner, J.B. (1980), Measuring Security Price Performance, Journal of Financial Economics, 205-258.
- Bundesanstalt für Finanzdienstleistungsaufsicht (2002), Ad-hoc Publizität und neues Übernahmerecht.
- Burkart, M., Panunzi, F. (2003), Mandatory Bids, Squeeze-out, Sell-out and the Dynamics of the Tender Offer Process, Working Paper.
- Bühner, R. (1990), Reaktionen des Aktienmarktes auf Unternehmenszusammenschlüsse, Zeitschrift für betriebswirtschaftliche Forschung, 295-316.
- Campa, J. M., Hernando, I. (2004), Shareholder Value Creation in European M&As, European Financial Management, 47-81.
- Ehricke, U., Roth, M. (2001), Squeeze-out im geplanten deutschen Übernahmerecht, Deutsches Steuerrecht, 1120-1127.
- Eisele, F., Walter, A. (2003), Kurswertreaktionen auf die Ankündigung von Going Private-Transaktionen am deutschen Kapitalmarkt, Working Paper Tübinger Diskussionsbeiträge Nr. 274.
- Eisolt, D. (2002), Die Squeeze-out-Prüfung nach §327c Abs. 2 AktG, Deutsches Steuerrecht, 1145-1152.
- Fleischer, H. (2002), Das neue Recht des Squeeze out, Zeitschrift für Unternehmens- und Gesellschaftsrecht (ZGR), 31, 757-789.
- Gerke, W., Garz, H., Oerke, M. (1995), Die Bewertung von Unternehmensübernahmen auf dem deutschen Aktienmarkt, Zeitschrift für betriebswirtschaftliche Forschung, 805-820.

- Hecker, R. (2000), Regulierung von Unternehmensübernahmen und Konzernrecht, Wiesbaden.
- Hecker, R., Kaserer, C. (2003), Going Private im Wege des Minderheitenausschlusses: Eine empirisch orientierte Bestandsaufnahme, Betriebswirtschaftliche Forschung und Praxis, 137-162.
- Helmis, S. (2003), Der Ausschluss von Minderheitsaktionären: Empirische Erfahrungen der ersten zehn Monate nach Inkrafttreten der neuen Regelung, Zeitschrift für Bankrecht und Bankwirtschaft, 161-176.
- Jarrell, G.A., Brickley, J.A., Netter, J.M. (1988), The Market for Corporate Control: The Empirical Evidence since 1980, Journal of Economic Perspectives, 49-68.
- Kim, W.; Lyn, E. (1991), Going Private: Corporate Restructuring under Information Asymmetry and Agency Problems, Journal of Business Finance & Accounting, 637-648.
- Krieger, G. (2002), Squeeze-Out nach neuem Recht: Überblick und Zweifelsfragen, BetriebsBerater, 53-62.
- MacKinlay, A. C. (1997), Event Studies in Economics and Finance, Journal of Economic Literature, 13-39.
- Moser, U., Prüher, M. (2002), Vorteilhaftigkeit von Squeeze-outs am deutschen Markt, Finanz Betrieb, 361-366.
- Peltzer, M., Voight, E. (2002), Wertpapiererwerbs- und Übernahmegesetz : deutsch-englische Textausgabe, Köln 2002.
- Rathausky, U. (2004), Squeeze-out in Deutschland: Eine Empirische Untersuchung zu Anfechtungsklagen und Spruchverfahren, Die Aktiengesellschaft, R24-R26.
- Sieger, J., Hasselbach, K. (2002), Der Ausschluss von Minderheitsaktionären nach den neuen §§ 327a ff AktG, Zeitschrift für Unternehmens- und Gesellschaftsrecht, 121-162.
- Steinmeyer, R., Häger, M. (2002), WpÜG: Kommentar zum Wertpapiererwerbs- und Übernahmegesetz mit Erläuterungen zum Minderheitenausschluss nach §§327a ff. AktG, Berlin.
- Travlos, N., Cornett, M. (1993), Journal of Accounting, Auditing & Finance, 1-25.
- Vetter, E. (2002), Squeeze-out - Der Ausschluss der Minderheitsaktionäre aus der Aktiengesellschaft nach den §§ 327a-327f AktG, Die Aktiengesellschaft, 1347-1353.
- Weber, M. (2004), Börsenkursbestimmung aus ökonomischer Perspektive, Zeitschrift für Unternehmens- und Gesellschaftsrecht, 280-300.

Winter, J., Schans Christensen, J., Garrido Garcia, J., Hopt, K., Rickford, J., Rossi, G., Simon, J. (2002), Report of the High Level Group of Company Law Experts on Issues related to Takeover Bids, 10 January 2002.

Table 1: Information on the companies in samples I and II.

sample I	# of obs.*	mean	median	min	max
Price to Book Value**	127	4,58	2,63	0,52	70,09
Market Value***	131	824,85	186,66	1,23	22585,95
# of days without trading****	133	71	81	0	131

sample I - company level	# of obs.*	mean	median	min	max
Price to Book Value**	121	4,04	2,59	0,52	29,55
Market Value***	123	859,60	193,34	1,23	22585,95
# of days without trading****	125	68	79	0	131

sample II	# of obs.*	mean	median	min	max
Price to Book Value**	70	3,92	2,43	0,52	29,55
Market Value***	70	1337,57	375,50	5,34	22585,95
# of days without trading****	70	38	32	0	87

* for the missing observations we could not get this data

** relates the firm's market value per share to its book value (total owner's equity) per share

*** Market value on Datastream is the share price multiplied by the number of ordinary shares in issue.
Market value is displayed in millions of units of local currency.

****during the event-window [-90;+40]

Table 2: Associations between the characteristics of sample II

The measure of association used: Cramer's V (for 2x2: [-1;1], otherwise [0;1]; thus we added (-) if tables indicate a negative association); significance is based on Pearson's χ^2 for the hypothesis that the rows and columns in a two-way table are independent. * indicates significant at a 5% level; ** significant at a 1% level.

	prior compensation		prior agreement < 1year	prior agreement > 1year	increasing share (ownership structure)		higher trading volume around event		
	N	Y		N	Y	N	Y		
prior agreement < 1year	0,4078** 70		A						
	N	33	26						
	Y	0	11						
prior agreement > 1year	-0,3804** 70		B						
	N	25	37						
	Y	8	0						
increasing share (ownership structure)	0,4839** 70		C	-0,3360** 70		F			
	N	22	7	22	7				
	Y	11	30	40	1				
higher trading volume around event	0,3496** 70		D	-0,2395* 70		0,2478* 70			
	N	24	14	31	7	20	18		
	Y	9	23	31	1	9	23		
amount announced	(-) 0,4440** 70		E	0,3704** 70		G		(-) 0,3737** 70	
	N	11	28	35	4	15	24		
	Y	19	9	26	2	20	8		
	UC	3	0	1	2	3	0		

N: NO (0), Y: YES (1), UC: UNCLEAR (2)

Table 3: Distribution of the squeeze-out announcements of the companies in samples I and II.

	2002 - I	2002 - II	2003 - I	2003 - II	Σ
sample I	52 41,60%	34 27,20%	22 17,60%	17 13,60%	125
sample II	23 32,86%	22 31,43%	16 22,86%	9 12,86%	70

Table 4: Median Abnormal Returns based on the Market Model and the Constant-Mean-Return Model.

	Market Model		Constant-Mean-Return Model	
	sample I	sample II	sample I	sample II
AR(t=0)				
median	0,4206%	0,7470%	0,3645%	0,7667%
mean	5,3964%	4,4751%	5,4545%	4,4946%
p-value				
Wilcoxon signed-rank test	0,0000	0,0000	0,0000	0,0000

Table 5: Median (Cumulative) Abnormal Returns for the days before and after the event based on the Market Model (sample II).

eventtime	ARs			CAR
	-1	0	+1	[0, +1]
Mean	1,6250%	4,4751%	2,6864%	7,1616%
First quartile	-0,2714%	-0,0069%	-0,5305%	-0,0506%
Median	-0,0135%	0,7470%	0,4314%	3,3976%
Third quartile	0,9299%	7,2126%	3,2109%	12,4041%
p-value				
Wilcoxon signed-rank test	0,3816	0,0000	0,0094	0,0000

Table 6: Cross-sectional analyses of abnormal performance

Dependent variables are the CAR in $t=-1$, the AR in $t=0$ and the CAR in $t=+40$. Independent variables are dummies as well as control variables. WBG: prior compensation according either to the *WpÜG* or in a prior *Beherrschungs- und/oder Gewinnabführungsvertrag* (not more than 1 year before the event); BG2: *Beherrschungs- und/oder Gewinnabführungsvertrag* (not more than 1 year before the event); BG1: *Beherrschungs- und/oder Gewinnabführungsvertrag* (more than 1 year before the event); DO2: development of ownership structure: complex development; DO1: development of ownership structure: gradual attainment of the 95% limit; AMOUNT: the amount of the compensation was disclosed in the first announcement; VOLUME: frequent trading around the announcement; size: approximated by the logarithm of the market value at the last trading day of the year prior to the squeeze-out (thus either 2001 or 2002); industryFS: company belongs to the financial sector (banks, financial services and insurance); ptb: price to book value at the last trading day of the year prior to the squeeze-out (thus either 2001 or 2002). OLS-regressions are based on the Huber/White-sandwich estimator of variance that provides heteroscedasticity-consistent standard errors.

Regression on CAR in $t=-1$ [-90;-1]				Regression on AR in $t=0$				Regression on CAR in $t=+40$ [+2;+40]			
Variables	Coeff.	Robust st. Error	p-value	Variables	Coeff.	Robust st. Error	p-value	Variables	Coeff.	Robust st. Error	p-value
WBG	0,0090	0,0657	0,8910	WBG	0,0103	0,0292	0,7260	WBG	0,0052	0,0376	0,8900
BG2	-0,2607	0,1021	0,0130	BG2	-0,0563	0,0238	0,0210	BG2	-0,1223	0,0366	0,0010
BG1	-0,0881	0,1052	0,4060	BG1	-0,0459	0,0375	0,2250	BG1	-0,0474	0,0432	0,2770
DO1	-0,1488	0,0645	0,0250	DO1	-0,0432	0,0298	0,1520	DO1	-0,0672	0,0352	0,0620
AMOUNT	-0,0637	0,0448	0,1600	AMOUNT	0,0203	0,0202	0,3210	AMOUNT	-0,0294	0,0292	0,3170
VOLUME	0,0731	0,0720	0,3140	VOLUME	-0,0186	0,0225	0,4130	VOLUME	0,0405	0,0347	0,2490
size	-0,0055	0,0263	0,8350	size	-0,0013	0,0062	0,8390	size	-0,0157	0,0094	0,1020
ptb	0,0018	0,0039	0,6400	ptb	-0,0028	0,0022	0,1990	ptb	-0,0002	0,0019	0,9100
industryFS	0,0847	0,0794	0,2900	industryFS	-0,0039	0,0294	0,8950	industryFS	0,0286	0,0325	0,3820
_cons	0,1957	0,1195	0,1070	_cons	0,0969	0,0450	0,0350	_cons	0,1446	0,0747	0,0580
n		70		n		70		n		69	
R ²		0,1871		R ²		0,1358		R ²		0,2338	

Figure 1: Potentially relevant dates and implementation of the event study structure

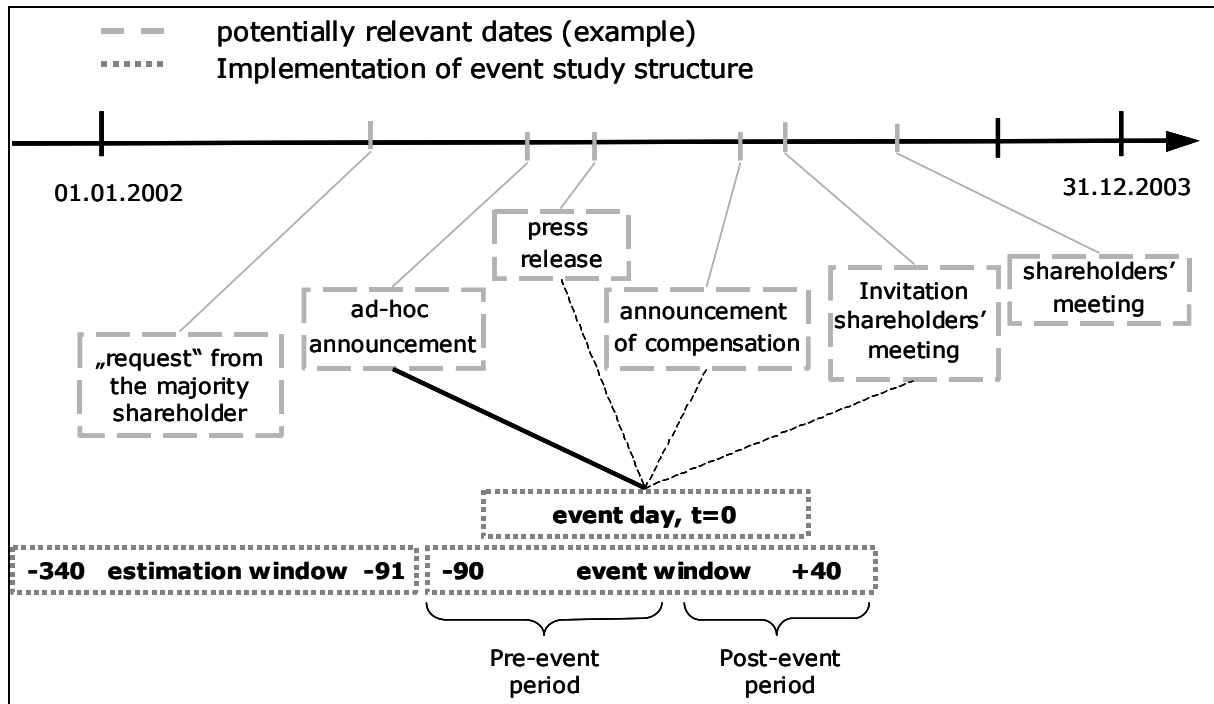


Figure 2: CDAX and distribution of events for sample II (vertical line: 01.01.2002, introduction of the squeeze-out possibility)

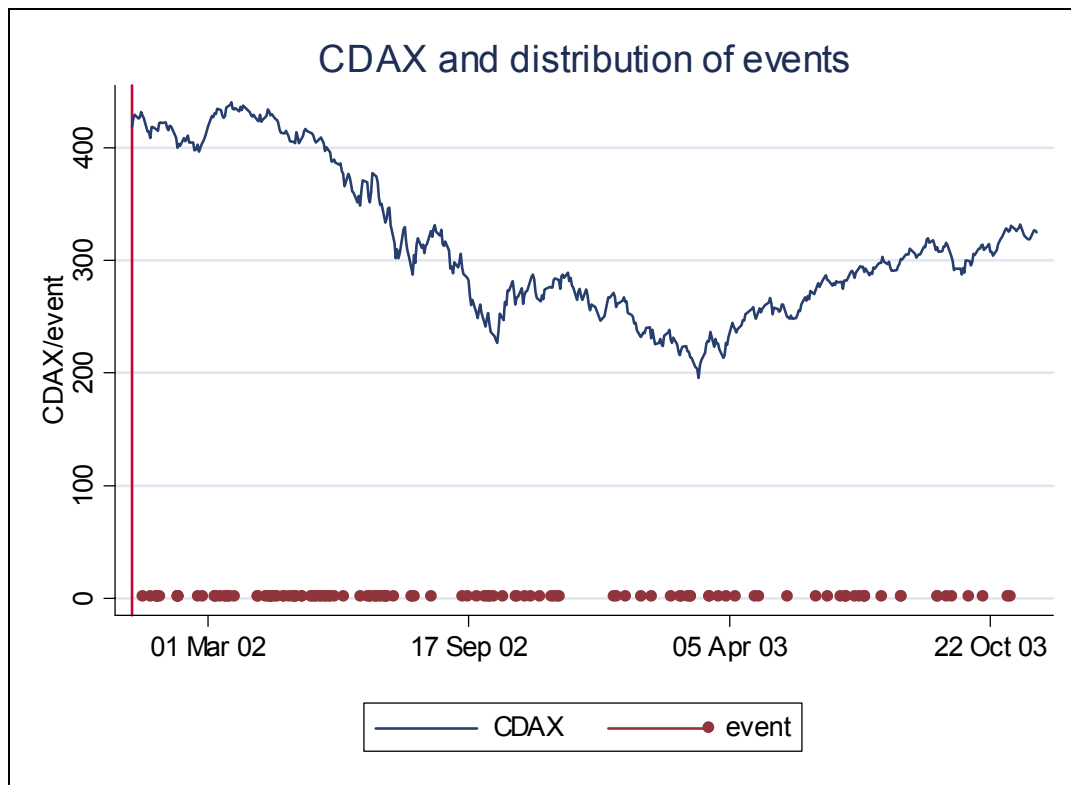


Figure 3: Median ARs and CARs for sample I and sample II (The null hypothesis under the Wilcoxon sign test is sign of median-CAR =0)

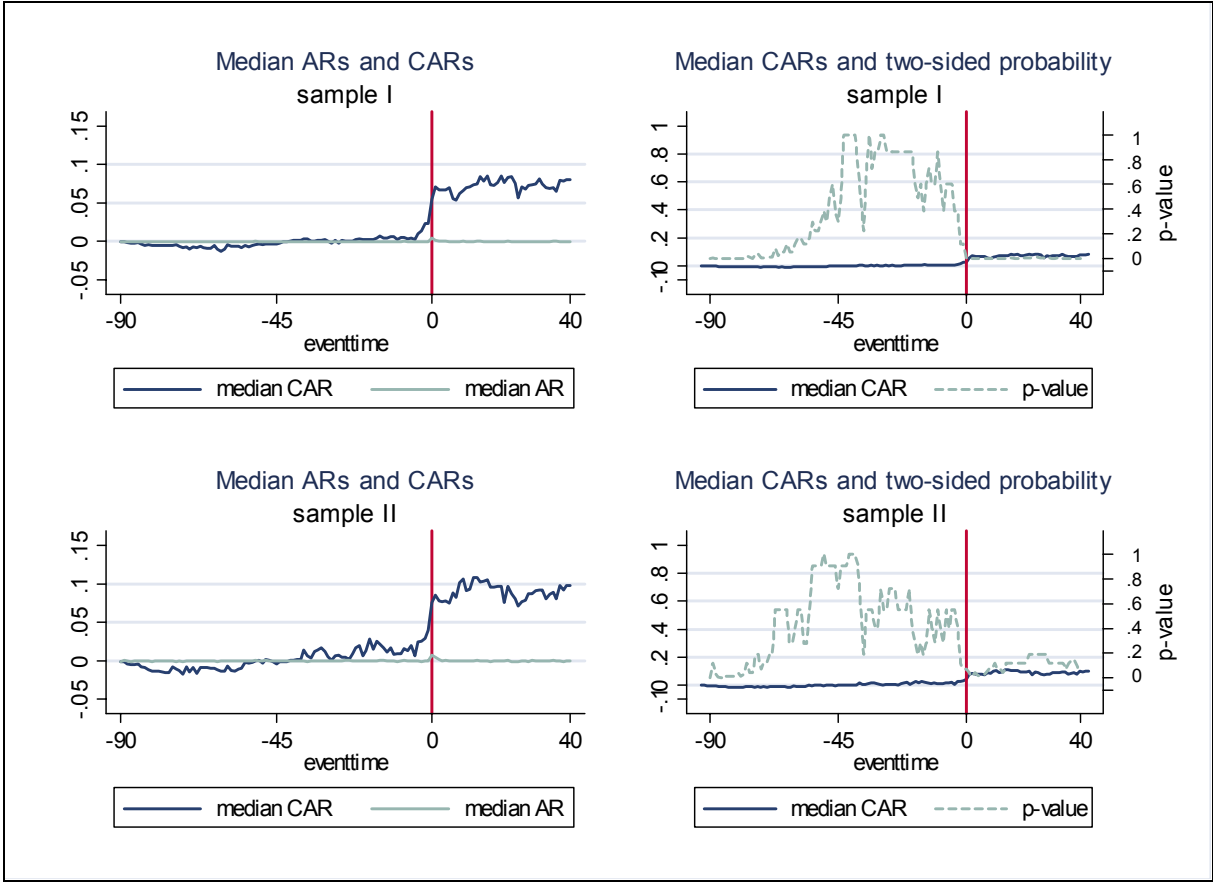


Figure 4: Median CARs with or without *WpÜG* or *Beherrschungs- und Gewinnabführungsvertrag* not more than one year before the squeeze-out announcement

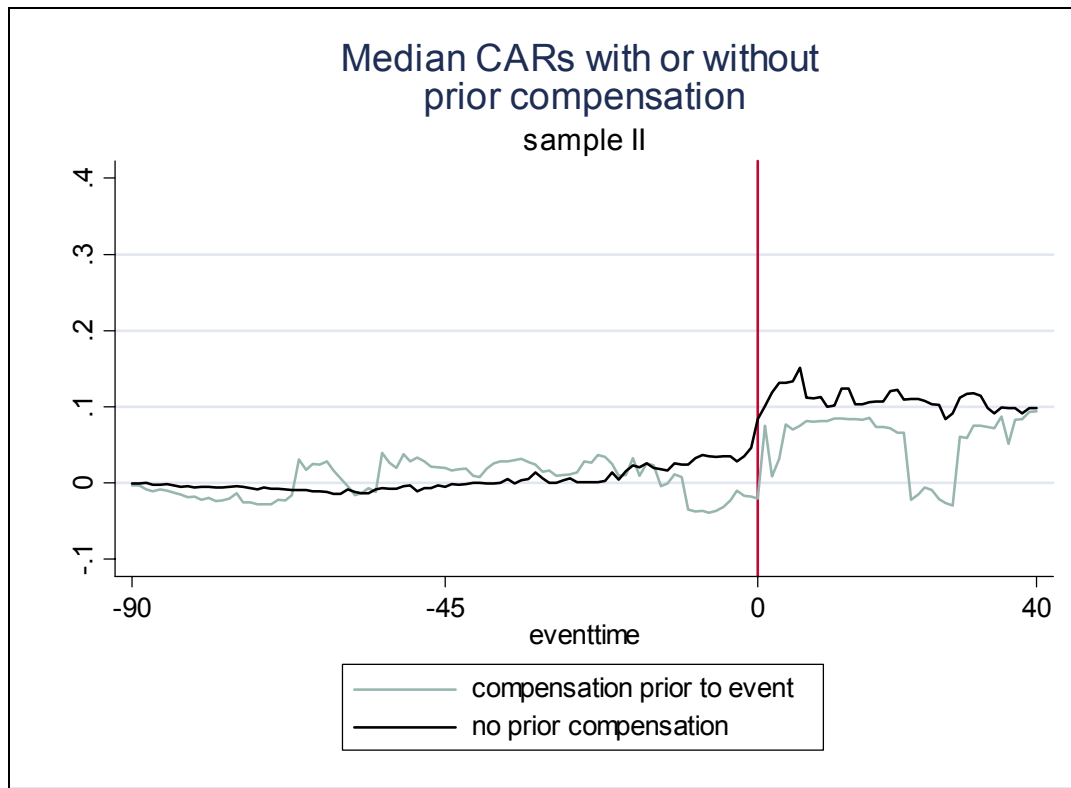


Figure 5: Median CARs with or without *Beherrschungs- und/oder Gewinnabführungsvertrag*

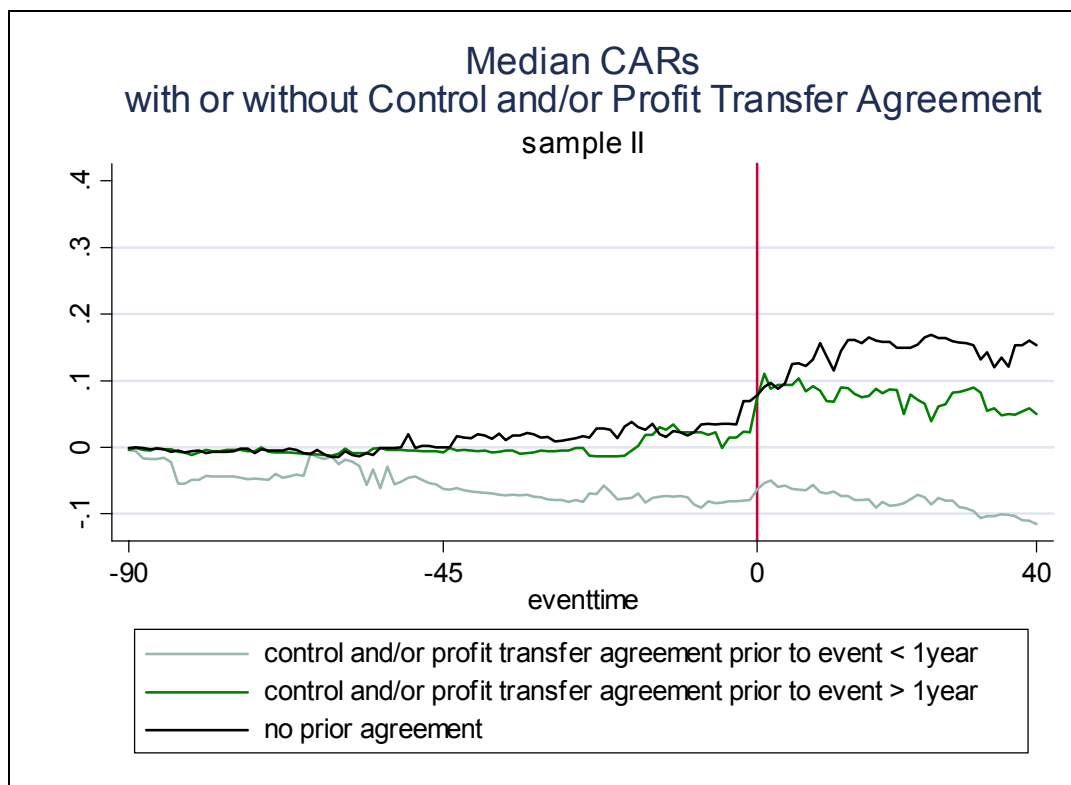


Figure 6: Median CARs with or without announcement of the amount

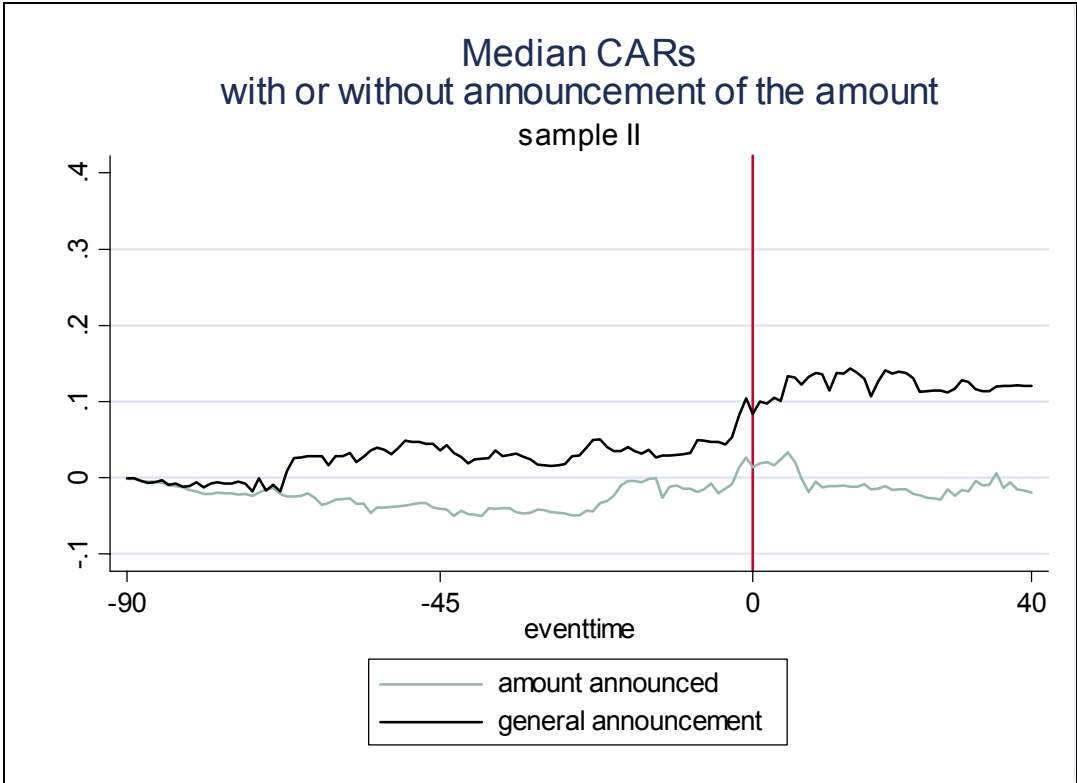


Figure 7: Median CARs depending on the development of the ownership structure before the announcement

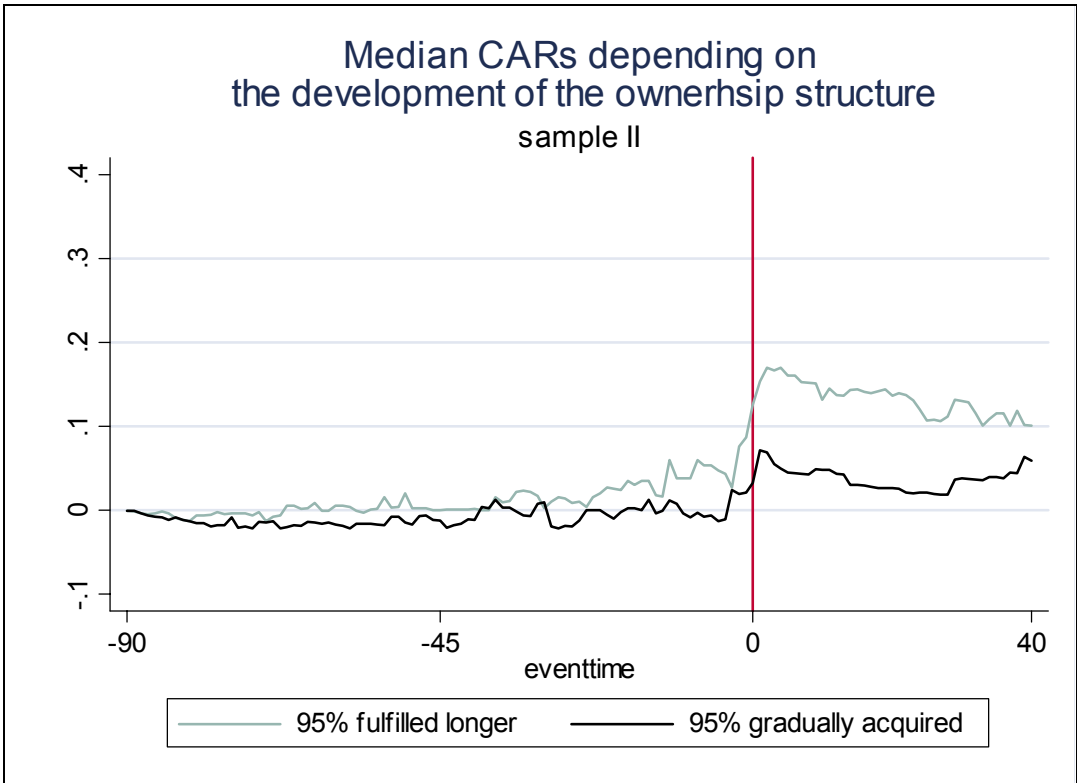


Figure 8: Median CARs with high and low trading volume around the announcement date

