Stock Performance
around Share Repurchase Announcements in Germany

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Abstract

Empirical studies of open-market share repurchases in the U.S. typically find a mean abnormal return around the announcement day of about 3%. In Germany share repurchases were highly restricted before May 1998. Since then firms have repurchased shares in the open market more than 250 times. Since the institutional framework differs considerably from the U.S., an analysis of the German data can give important insights.

Gerke/Fleischer/Langer (2002), using a larger data set and more carefully chosen procedures than prior studies on German repurchase announcements, presented several puzzling results. We confirm that in Germany the announcement day return is considerably higher than in the U.S. and that this return is higher in Germany's "Neuer Markt" than in the traditional market segments. We cannot confirm their findings about bull and bear markets. When we look at subsamples based on the reasons for the repurchase stated in the announcements, we obtain results which are completely different from the results of Gerke/Fleischer/Langer (2002).

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1. Introduction

Two of the most notable trends in corporate finance in the U.S. during the past 15 years are the growing popularity of share repurchases and the decreasing popularity of dividends. Between 1985 and 1996 the announced value of repurchases increased from $15.4 billion to $113 billion, while aggregate dividends only increased from $67.6 billion to $141.7 billion.[1] In 1998 the aggregate amount of share repurchases surpassed aggregate dividends for industrial firms.[2]

In Germany share repurchases were highly restricted until 1998. As a consequence the volume of repurchases was small. The growing popularity of repurchases in the U.S. and in other countries was a strong argument for lifting the restrictions. From the introduction of the new regulation in May 1998 until January 2003 at least 250 stock repurchase intentions were announced.

A large number of studies, starting with Vermaelen (1981) and Dann (1981), show that stock prices react positively to the announcement of share repurchase programs. The existing literature suggests that the U.S. market perceives repurchase announcements as good news because they signal that

i. managers believe the stock is undervalued.
ii. the management is committed to reduce potential agency problems.
iii. the total tax burden of the firm and its stockholders, at the margin, decreases.
iv. the liquidity of the stock will increase.

Despite the large number of empirical studies on repurchase announcements, our knowledge in this area is far from perfect. By looking at repurchases that took place in a different institutional setting we hope to disentangle the set of possible reasons for the positive market reaction. The German institutional environment differs from the U.S. mainly in the following respects:

[1] Jagannathan/Stephens/Weisbach (1999).

[2] Grullon (2000).

- In the U.S. a repurchase announcement is simply a statement of intention, the firm is in no way obliged to do so. A firm can legally repurchase its own stock whenever it chooses, even without announcing its intentions to do so.[3] In Germany, the actual start of the repurchase activities must be announced.
- In the U.S. a reason is stated only in a small fraction of the announcements. In Germany a reason for the repurchase is stated in most announcements.
- The U.S. tax system favours repurchases over dividends. In Germany, assuming a Miller-type tax equilibrium, the dividend/stock repurchase decision and the debt/equity choice did not affect the market value of German firms before 2002.

Given these differences in the institutional setting, an empirical study based on German data complements the studies based on U.S. data in an ideal way. First, before 2002, an increase in the market value of the firm cannot be related to tax advantages associated with the reduction in dividends or the increase in leverage. Second, by having announcements which are followed up by actual purchases in a much larger percentage of the cases and after a shorter time span on the average, the average stock price increase at the time of the announcement should be larger. Third, the fact that almost 70% of German firms give at least one reason for the repurchase in their announcement allows us to break the market reaction down into motive related reactions.

We are aware of three empirical studies on stock performance around the repurchase announcement day for Germany. Dombeck (2001) was the first one. He does not find a large announcement effect. Because he does not describe his procedure, his data and his results in detail, it is difficult to evaluate his results. Schremper (2002) reports an abnormal return on the announcement day of only 2.63%. He looks at 112 observations in the time period May 1998 until December 2000 and also does not exclude contaminated announcements. This may explain the different results. The study by Gerke/Fleischer/Langer (2002) is the most careful one. It is based on 120 German open market repurchases from May 1998 to March 2002 and contains a number of results which are puzzling:

i) In Germany the mean abnormal return during the announcement day and the subsequent day is much larger than in the U.S. (7% vs. 3%).

ii) It is considerably higher in bear markets than in bull markets.

[3] The announcement is one of the "safe harbour" provisions under the stock price manipulation provisions of the Security Exchange Act. Additionally the repurchasing firm has to satisfy the four antimanipulation guidelines (Security Exchange Commission rules 10b-18). Jagannathan/Stephens/Weisbach (1999) discuss the announcement obligation in the US extensively in their section 2.

iii) For the firms that state in their announcement that undervaluation is the reason for the repurchase, the abnormal price increase is even higher (8.83%) and is "permanent".

We can only confirm the first result. We also find that Germany's "Neuer Markt" has considerably higher announcement returns than the more traditional segments. We believe that the bear market effect, which Gerke/Fleischer/Langer (2002) report, is caused by the "Neuer Markt" effect. More importantly, for the sample of firms that give undervaluation as the reason for the repurchase we find that the average abnormal return on the announcement day is much lower (6.7%) and that the abnormal price increase evaporates within days.

We look more closely at the reasons for the repurchase which are stated in the announcement than prior studies. Firms that give no reasons, several reasons or a reason other than undervaluation do much better in holding on to and improving their abnormal gains around the announcement day than the firms that only give undervaluation as their reason.

The outline of the paper is as follows: In section 2 the institutional settings in Germany will be described and compared to the U.S. in detail. Section 3 discusses the design of our empirical study. The results are given in section 4. Section 5 gives a brief summary and outlook.

2. The German Institutional Settings

From 1931 to 1998 share repurchases were highly restricted in Germany. Schremper (2002) reports that between 1929 and 1931 stock repurchases occurred frequently in Germany[4]. As a consequence of a number of "undesirable events" a law was passed which almost completely prohibited repurchases. The restrictions were loosened somewhat in 1937 and 1965.

The law of 1965 lists seven exceptions from the general rule that a firm cannot buy back its own shares. Those can be found in § 71 Aktiengesetz (1965) paragraph 1 points 1-7, namely: To prevent severe damage to the firm, to distribute shares to employees and so forth. As a consequence, share repurchases were a rare occurrence before 1998.

[4] Schremper (2002), p. 13.

According to the revised law there is a structured procedure for repurchasing stocks for German corporations. Since May 1998 share repurchases are possible under the following conditions (§71 Aktiengesetz (1998)):

- The annual stockholder assembly must authorize the management. This authorization is valid for a maximum of 18 months.
- The maximum volume of repurchases is 10% (presently it is unclear whether this limit may be extended by a sequence of authorizations) and must be specified.
- The minimum and maximum repurchase price must also be specified in the authorization.
- The repurchased stock must not be used for trading.[5]
- All shareholders must be treated equally. Therefore privately negotiated repurchases are not allowed.

The reason why the shares were repurchased does not have to be given at the time of the authorization. However, in the following annual report the actual repurchases must be reported. The repurchased shares loose their voting privilege.

Before management implements the repurchase approved by the stockholders assembly it must inform the market in case the repurchase may influence the stock price.[6] Because it is very difficult for management to decide whether this may be the case, announcements of the intention to repurchase are typically made in which the details and reasons are given. Therefore, the accurate start of the repurchase program can be determined and this results in a perfect sample of stock repurchase announcements on which we will focus in this paper. There are two ways in which the announcement may be made:

- An ad may be placed in a nationally recognized daily newspaper with a good coverage of financial news ("ein überregionales Börsenpflichtblatt").
- A message in a well-established electronic information system.

Most firms choose the latter, which is referred to in German as the "Ad-hoc Nachricht". We will use the literal translation ad-hoc message. Schremper (2002) reports that for his sample of German stock repurchases 94% of the shares in Germany were bought back on the open

[5] Exemption: Financial institutes (§ 71 paragraph 1 point 7).

[6] See §15 Wertpapierhandelsgesetz (WPHG).

market.[7] Other methods are the fixed-price and the Dutch tender offer, the sale of put options, the private negotiation and so forth.[8]

3. Empirical Tests

3.1. The Dataset

We analyse the ad-hoc messages in the online archives of the German association of ad-hoc messages ("Deutsche Gesellschaft für Ad-Hoc Mitteilungen")[9], the Hugin ad-hoc service[10] and the Euroadhoc portal[11] beginning with the introduction of the new regulation of stock repurchases in May 1998. The end of the observation period is January 31, 2003. In addition, we check the news archives published on the homepages of the 30 German firms included in the DAX index.

For this period 262 announcements are in the ad-hoc messages' databases, of which 13 contain repurchase announcements relating to voting and non-voting shares. Two additional announcements are taken from the homepages of firms. So we start with 277 observations.[12] Then we exclude 67 observations in which a stock repurchase announcement and another announcement which may influence the stock price are included in the same ad-hoc message or in two separate messages on the same trading day ("contaminated announcements").

In a second step we exclude the 18 announcements related to foreign stocks dually-listed in Germany. This result in 192 pure stock repurchase announcements of German firms for the German capital market during this period. In a next step we excluded 2 more observations

[7] Schremper (2002), p. 177.

[8] The reader who is interested in the difference in methods of buying back shares is referred to: Dann (1981), Grullon/Ikenbery (2000), Dittmar (2000), Ikenberry/Lakonishok/Vermaelen (2000), and related literature.

[9] The website and the online archive of the "Deutsche Gesellschaft für Ad-Hoc Mitteilungen" can be found at www.dgap.de.

[10] www.huginonline.de.

[11] www.euroadhoc.com.

[12] We count the announcements concerning voting and non-voting shares as two observations. This may affect our results due to a possible correlation of those types of shares. Nevertheless, we prefer this approach to a random inclusion of only the voting or the non-voting shares.

because of overlapping observation periods.[13] For 2 stocks no transaction prices during the announcement period were observed. These were also excluded.

Therefore, our study is based on 188 uncontaminated stock repurchase announcements during the period May 1998 until January 2003.[14]

3.2. The Design

We analyse an event window of 51 days using daily returns. It starts 25 days before (t_{-25}) and ends 25 days after the announcement (t_{+25}). We first calculate the average cumulative abnormal return $\overline{CAR}$ using the r*ebalance-strategy*:[15]

$$\overline{CAR_T^{RS}} = \sum_{t=1}^{T}\left[\frac{1}{N}\sum_{i=1}^{N}\left(1 + AR_{i,t}\right)\right] \qquad (1)$$

$\overline{CAR_T^{RS}}$: Average cumulative abnormal return from day t = 1 to T, using the r*ebalance-strategy.*

N : Number of observed announcements.

The abnormal return is calculated as:

$$AR_{i,t} = R_{i,t} - E\left[R_{i,t}\right] \qquad (2)$$

$AR_{i,t}$: Abnormal rate of return of stock i at day t.

$R_{i,t}$: Observed rate of return of stock i at day t.

$E\left[R_{i,t}\right]$: Expected rate of return of stock i at day t.

If the ad-hoc message is published after the trading hours we allocate the observation to the next trading day. We use *Datastream* closing prices for the Xetra-System. In several cases, where no Xetra prices are available, we use prices from the Frankfurt stock exchange.

[13] Baader Wertpapierhandelsbank AG.

[14] This sample includes 19 non-voting and 169 regular shares with 13 joint announcements.

[15] As stated first by Fama/Fisher/Jensen/Roll (1969).

Furthermore, we assume that the expected rate of return for all stocks on a specific day t is equal to the rate of return of the market portfolio on that day. We approximate the rate of return of the market portfolio by the rate of the change of the CDAX index. The advantage of this approach is that it is easy to handle and there is no need for an estimation period. In addition, Campbell/Lo/MacKinley (1997) describe the good capability of this approach for the estimation of short-period-abnormal-returns. However, some problems with this approach have to be mentioned. Several studies[16] show that a size bias exists when this benchmark is used, since these firms are themselves a component of this benchmark. Through continuous adjustments of the index an implicit *rebalance-strategy* is assumed.

To test the significance of our empirical results it is necessary to estimate the variance of our sample. We estimate the variance ($\overline{\hat{\sigma}}_{50}(AR^{RS})$) in a 50-day window *before* the individual observation periods in order to eliminate biases of the variance around the day of the announcement.[17] We assume the variance of the cumulative abnormal return to be T times the estimated variance.

In this study we test for significance using the parametric t-statistics. Thus, we assume asymptotic normal distributed and independent returns of firms, where an announcement is observed. This assumption is not unrestrictedly valid because an autocorrelation between overlapping abnormal return calculation periods of some stocks cannot be excluded. But nevertheless we prefer the t-statistics with low autocorrelation to a t-statistics where autocorrelation is explicitly considered, as stated in Brown/Warner (1985).[18] Moreover, by applying this test statistic we enable the comparison with other studies.

The t-ratio of the test statistic is computed as follows:

$$T_T^{RS} = \sqrt{N}\,\frac{\overline{CAR_T^{RS}}(mul)}{\sqrt{T} * \overline{\hat{\sigma}_{50}}(AR^{RS})} \qquad (5)$$

T_T^{RS} : T-value of the t-statistics for additively cumulated abnormal return using the *rebalance-strategy* from day t = 1 until T assuming independence of the events.[19]

[16] See Dimson/Marsh (1985), p. 113-115, Stehle (1997), p. 237-240.

[17] See table 1 for results.

[18] Brown/Warner (1985), p. 22 and p. 29.

[19] See Cambell/Lo/MacKinlay (1997), p. 162; assuming all abnormal returns are i.i.d. over the cumulation period.

$\overline{\hat{\sigma}_{50}}(AR^{RS})$: Average estimated cross-sectional standard deviation of the abnormal returns using the *rebalance-strategy* with implied independence of the observations given in (6):

$$\overline{\hat{\sigma}_{50}}(AR^{RS}) = \sum_{i=1}^{N} \frac{1}{N} \sqrt{\frac{1}{49} \sum_{1}^{50} (AR_{i,t} - \overline{AR_t})^2} \qquad (6)$$

$\overline{AR_t}$: Average abnormal return at day *t*.

The dynamic of the analysis is shown in figure 1:

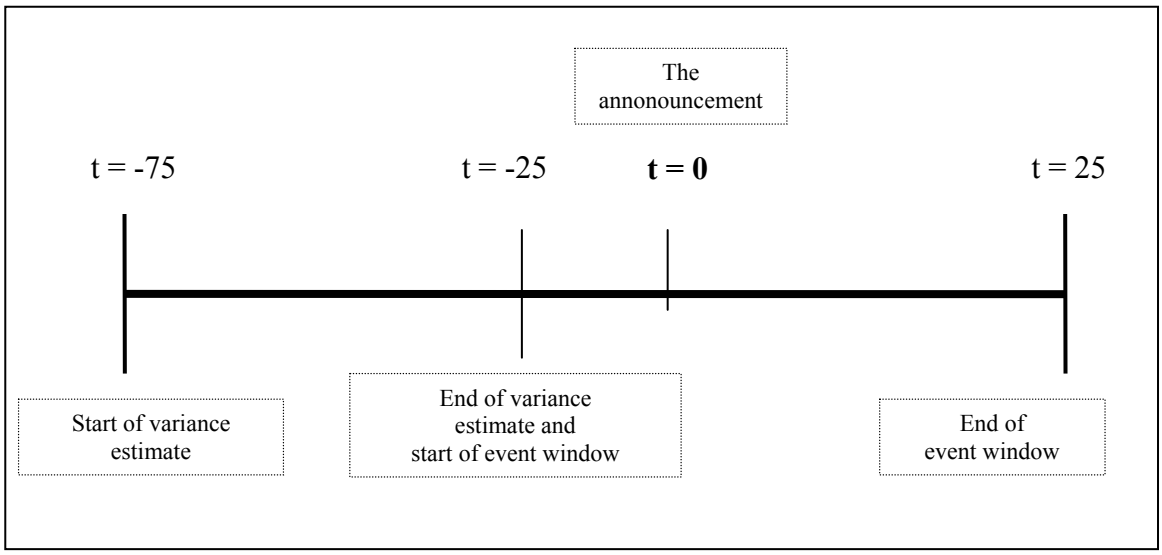

Figure 1: The dynamic of the analysis.

4. Results

4.1. Abnormal Return and Cumulative Abnormal Return for the Complete Sample

We first show that the standard deviation of the abnormal returns calculated before the observation period ($\overline{\hat{\sigma}_{50}}(AR^{RS})$), which we use for testing our results, is slightly lower than that based on the

$\overline{\hat{\sigma}_{50}}(AR^{RS})$	0.03331
$\overline{\sigma_{50}}$	0.03683

Table 1: Comparison of the standard deviations.

observation period ($\overline{\sigma_{50}}$). The results can be seen in table 1. We calculate a skewness of the abnormal returns of 1.398.

The daily average abnormal returns and the associated significance level are given in table 2. We state for all t H_0 as:

$$\overline{AR_t} = 0. \qquad (7)$$

As hypothesized we get a positive abnormal return on the day of the announcement of 4.793%, which is statistically significant at a high level. Even one day after the announcement we observe a positive market reaction of 1.043%,[20] which is economically and statistically significant.

t	$\overline{AR_t}$		t	$\overline{AR_t}$	
r-25/-24	-0,204%		r-1/ 0	4,793%	***
r-24/-23	-0,309%		r 0/ 1	1,043%	***
r-23/-22	-0,303%		r 1/ 2	0,017%	
r-22/-21	-0,355%		r 2/ 3	-0,104%	
r-21/-20	-0,052%		r 3/ 4	0,137%	
r-20/-19	-0,285%		r 4/ 5	0,400%	*
r-19/-18	-0,028%		r 5/ 6	-0,181%	
r-18/-17	-0,226%		r 6/ 7	0,183%	
r-17/-16	-0,248%		r 7/ 8	-0,023%	
r-16/-15	-0,349%		r 8/ 9	-0,005%	
r-15/-14	-1,084%	***	r 9/ 10	0,209%	
r-14/-13	-0,274%		r 10/ 11	-0,110%	
r-13/-12	-0,035%		r 11/ 12	0,223%	
r-12/-11	-0,319%		r 12/ 13	0,152%	
r-11/-10	-0,243%		r 13/ 14	0,066%	
r-10/-9	-0,649%	***	r 14/ 15	-0,133%	
r-9/-8	-0,099%		r 15/ 16	-0,013%	
r-8/-7	-0,314%		r 16/ 17	-0,371%	
r-7/-6	-0,281%		r 17/ 18	0,027%	
r-6/-5	-0,475%	*	r 19/ 20	-0,346%	
r-5/-4	-0,103%		r 20/ 21	0,257%	
r-4/-3	-0,225%		r 21/ 22	0,068%	
r-3/-2	-0,001%		r 22/ 23	-0,294%	
r-2/-1	0,029%		r 23/ 24	-0,126%	
			r 24/ 25	-0,358%	
			99% significance ***		
			95% significance **		
			90% significance *		

Table 2: Daily average abnormal returns.

[20] Alternative explanations for this could be that ad-hoc messages are published right before the Xetra-system closes or that there is additional visibility created through newspaper articles with a delay of one day.

Maximum, minimum and median of the abnormal returns are given in table 3. We find 152 positive abnormal returns at the announcement day. This is equivalent to 80.85% of all observations.

Maximum	32.961%
Minimum	-16.913%
Average	4.793%
Median	3.393%
# positive	152 (80.85%)
# negative	36 (19.15%)

Table 3: Maximum, minimum and median of the abnormal returns on the announcement day.

These results confirm our hypothesis that announcements which are followed by actual purchases should be associated with higher abnormal returns than announcements which may be intentions only. As stated above, this confirms to some extend the results of Gerke/Fleischer/Langer (2002) who find an average abnormal return of 7% on the announcement day and the subsequent day.

Compared with international results, Vermaelen (1981) gets an abnormal return for open market share repurchases in the U.S. of approximately 1% on the announcement day, Ikenberry/Lakonishok/Vermaelen (1984) 3.5% and Grullon (2000) observes 2.94%. This is much lower than our results. Rau/Vermaelen (2002) find for British share repurchase announcements an abnormal return of about 1%.

In order to compare our results with the dividend literature we consider the existing studies on dividend policy in Germany. The first is the Amihud/Murgia (1997) paper. They test for tax based signalling models around the announcements of changes in dividends and found an average abnormal return of 0.965 % on the announcement day that is significant for 200 observations from 1988 to 1992. The second study from Gerke/Oerke/Sentner (1997) analyzes the information procession of the German capital market at the announcement of changes in dividends. They found an average abnormal return for the time horizon January 1987 until July 1994 on the announcement day of 0.69 % for all and 0.96 % for uncontaminated observations.

We conclude that in the short run the market favours stock repurchases over dividends even tough the German tax system does not favour one over the other. In other words there is no

clear tax advantage associated with financial leverage. As of the year 2002 due to a change in the taxation of dividends, stock repurchases are favoured over dividends.[21]

Table 4 contains the cumulative abnormal returns according to equation (1) for different time horizons.

Intervall	CAR	t - value	
[-25;+25]	-0,917%	-0,5390	
[-25;-1]	-6,430%	-5,4024	***
[-10;-5]	-2,061%	-3,4639	***
[-5;-1]	-0,774%	-1,4250	
[0;+5]	6,286%	10,5638	***
[-1;+1]	5,866%	13,9401	***
[+5;+10]	0,584%	0,9808	
[+5;+20]	0,336%	0,3460	
[+1;+25]	0,720%	0,6047	

Table 4: Cumulative abnormal returns for selected intervals.

We observe a significant negative cumulative abnormal return before the announcement (t = -25 to day = -1) of -6.43% which, in absolute terms, even outweighs the announcement effect. On the other hand a significant positive effect around the announcement day can be observed as described above. For example, between day -1 and day +1 the cumulative abnormal return is 5.87%. For the total observation period (day -25 to day +25) we get an insignificant cumulative abnormal return of -0.917%. The results are illustrated graphically in figure 2.

In the next section we split the sample into subsamples which give more information and different insights.

[21] While interpreting these different results and drawing conclusions we have to consider several things: i) those two dividend papers analyse different time horizons than we do; ii) The German dividend taxation changed in January 2002; and iii) if constant increase in dividends is expected, the announcement of this increase in dividends could not be unexpected and could therefore already be priced.

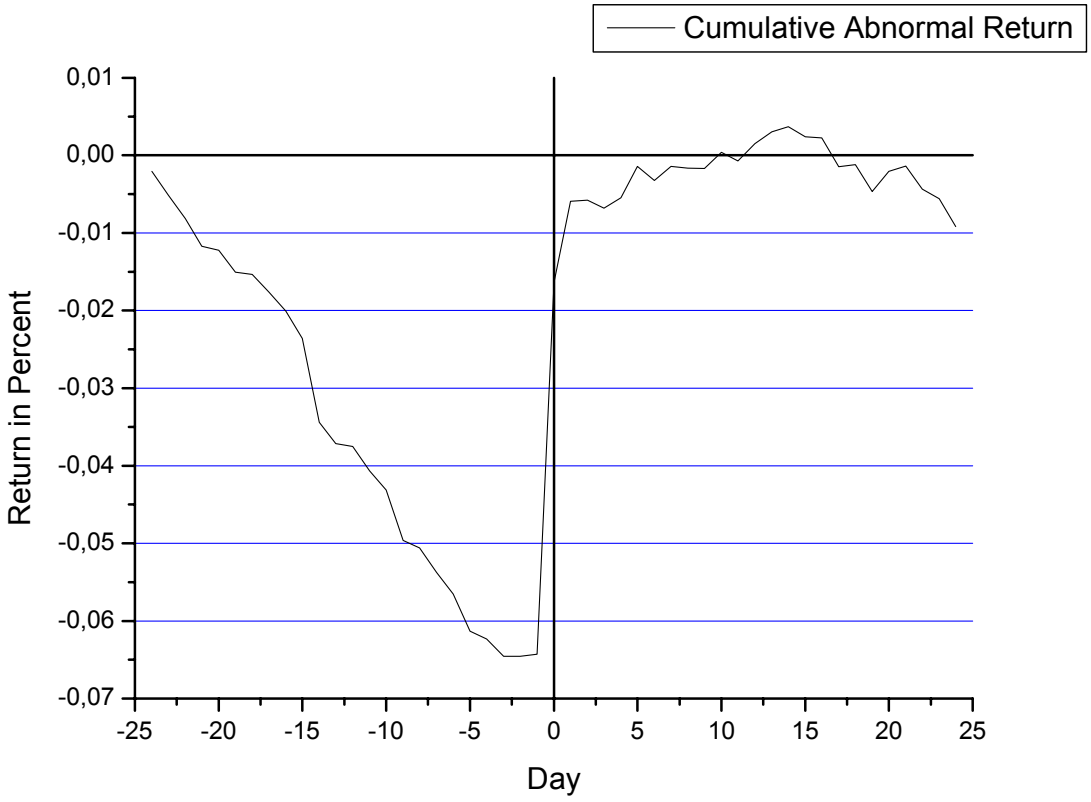

Figure 2: Cumulative abnormal return of the observed period.

4.2. Abnormal Returns and Cumulative Abnormal Returns for Subsamples

The segmental distribution of the average abnormal return on the announcement day can be found in table 5. The average cumulative abnormal returns are given in appendix A1. We find several interesting results.

First we find 100 announcements and 76 uncontaminated announcements of firms listed in the "Neuer Markt". Considering the fact that only 12 firms listed in this segment paid dividends in the year 2002, this confirms to some extent studies[22] which relate the changes in dividend payout policies to different firm characteristics. They describe the "modern firm" as smaller, more flexible, with enormous growth opportunities and less likely to pay dividends. Thus, a so called modern firm seems more likely to repurchase stock then to pay dividends because a stock

[22] See for example, Fama/French (2000).

repurchase represents a more flexible alternative instrument for the management to distribute cash to the shareholders.[23]

Furthermore, table 5 documents that the average abnormal return on the announcement day of firms in the traditional market segment "Amtlicher Handel" is much lower than that of firms in the segment for smaller and growth orientated firms, the "Neuer Markt".[24] Nevertheless the positive proportion of the abnormal returns of those two segments is almost identical at about 82%. Due to the small sample of the segments "Geregelter Markt" and "Freiverkehr", the results for these segments should be interpreted cautiously.

Segment	Number	# positive	Average Abnormal Return in t=0
Amtlicher Handel	90	73 (81.11%)	2,939%
Neuer Markt	76	63 (82.89%)	6,798%[25]
Geregelter Markt	16	10 (62.50%)	3,534%
Freiverkehr	6	6 (100.00%)	10,585%
Sum	188	152 (80,85%)	

Table 5: Average abnormal return on the announcement day (t=0) for the different segments of the German stock market.

Table A1 in the appendix contains the average cumulative abnormal return for the market segments. In the 25 days before the announcement the cumulative abnormal returns are much more negative and much more statistically significant for the firms listed in the "Neuer Markt" than for firms listed in the "Amtlicher Handel". Also the cumulative abnormal return around the announcement day (day -1 to +1) and on the days shortly after (day 0 to +5) is higher for these firms.

To relate our results to the bear and bull market separation by Gerke/Fleischer/Langer (2002) we give the yearly distribution of the abnormal returns in Table 6.

[23] See also Bagwell/Shoven (1989), Bartov/Krinsky/Lee (1998), Dittmar (2000), Stephens/Weisbach (2000), de Jong/van Dijk/Veld (2000).

[24] Gerke/Fleischer/Langer (2002) find an even higher abnormal return of 9.02% on the announcement day for the firms listed in the "Neuer Markt" until March 2002. Probably due to the use of a more complete sample or a different benchmark, their results could not be confirmed (7.27%).

[25] Alternatively, using the Nemax All Share Index as a benchmark for firms listed in the "Neuer Markt" segment, we get very similar results. For example, the abnormal return on the announcement day would be 6.92%.

Year	Number	# positive	Average Abnormal return in t = 0
1998	5	5 (100.00 %)	6,989%
1999	38	28 (73.68%)	3,011%
2000	56	45 (80.36%)	4,437%
2001	55	49 (89.09%)	7,028%
2002	32	24 (75.00%)	3,597%
2003	2	1 (50.00%)	0,847%
Sum	188	152 (80,85%)	

Table 6: Average abnormal return on the announcement day (t=0) for the different years.

We find an average abnormal return of 7% in the year 2001 which, from the economic perspective, is remarkably higher than the abnormal returns observed in the other years for which we have more than 30 observations. Gerke/Fleischer/Langer (2002) find for the bear market, which they declare from March 2000 to March 2002,[26] an abnormal return of 7%. In order to interpret our results more carefully and to show some clustering, table A2 in the appendix gives the yearly distribution separated by market segments and the respective average abnormal returns. What can be seen is that every year the average abnormal return of firms listed in the "Neuer Markt" is remarkably higher than those of firms listed in the "Amtlicher Handel". Especially in the year 2001 we observe for the "Neuer Markt" an abnormal return of more than 9%. In this year the absolute number of announcing firms listed in the "Neuer Markt" is twice as much as in the "Amtlicher Handel", while it is lower during the other years. Therefore, we conclude that the bear or bull market effect should be related to the different market segments in other words, it could be a "Neuer Markt" effect.

In the next step, in order to compare our results to those of Gerke/Fleischer/Langer (2002), we construct new subsamples. The characteristics used to create these new subsamples are the main motives for the share repurchase given in the ad-hoc messages. They can be summarized as follows:

1) An upcoming Acquisition[27]

[26] This is the end of their observation period.

[27] We do not control for the acquisition itself being realized after the repurchase.

2) Actual undervaluation of stocks[28]

3) Stock option programs for employees

4) Several reasons, a combination of 1) to 3)[29]

5) No reasons given[30]

We therefore have 38 true messages with undervaluation as the motive for the repurchase, further 52 messages with acquisitions, 9 with stock option programs, 31 mixed and 58 where no or other motives were given. The different results can be seen in table 7.

Motive	Number	# positive	Average Abnormal return in t = 0
Acquisition	52	43 (82,69%)	2,673%
Undervaluation	38	28 (73,68%)	6,698%
Stock Option	9	6 (66,67%)	2,011%
Several Reasons	31	29 (93,55%)	8,063%
No Reasons Given	58	46 (79,31%)	4,135%
Sum	188	152 (80,85%)	

Table 7: Average abnormal return on the announcement day (t=0) for groups formed according to reasons given in the announcement statement.

The results can be summarized as follows. The average abnormal return on the announcement day for firms that are planning to use the stock for an upcoming acquisition or their stock option programs[31] is remarkably lower than for those firms which give several reasons or think their stock is undervalued.[32] The positive proportion of the abnormal returns is on the one hand highest for the subsample of firms which give several reasons for their repurchase but relatively low for those that declare undervaluation as the reason. Additionally, the average cumulative

[28] In two messages the aim of „Signalling" itself was found.

[29] This group includes messages where at least two of the 1) -3) motives were given, making it impossible to allocate them exactly to one group, i.e., 1), 2) or 3).

[30] This group contains for the most part ad-hoc messages that do not include any motive at all, and in addition 3 announcements with miscellaneous reasons given such as intentions to limit volatility or increase liquidity of the stock.

[31] There could appear a small sample bias for those firms planning to use the stock for their stock option programs because there are only 9 observations.

[32] For those firms that give undervaluation as the reason for their repurchase Gerke/Fleischer/Langer (2002) find even a higher average abnormal return (8.9% at t=0), as stated above.

abnormal return separated by the main motives given in the ad-hoc message is given in figure 3 and in table A3 in the appendix.

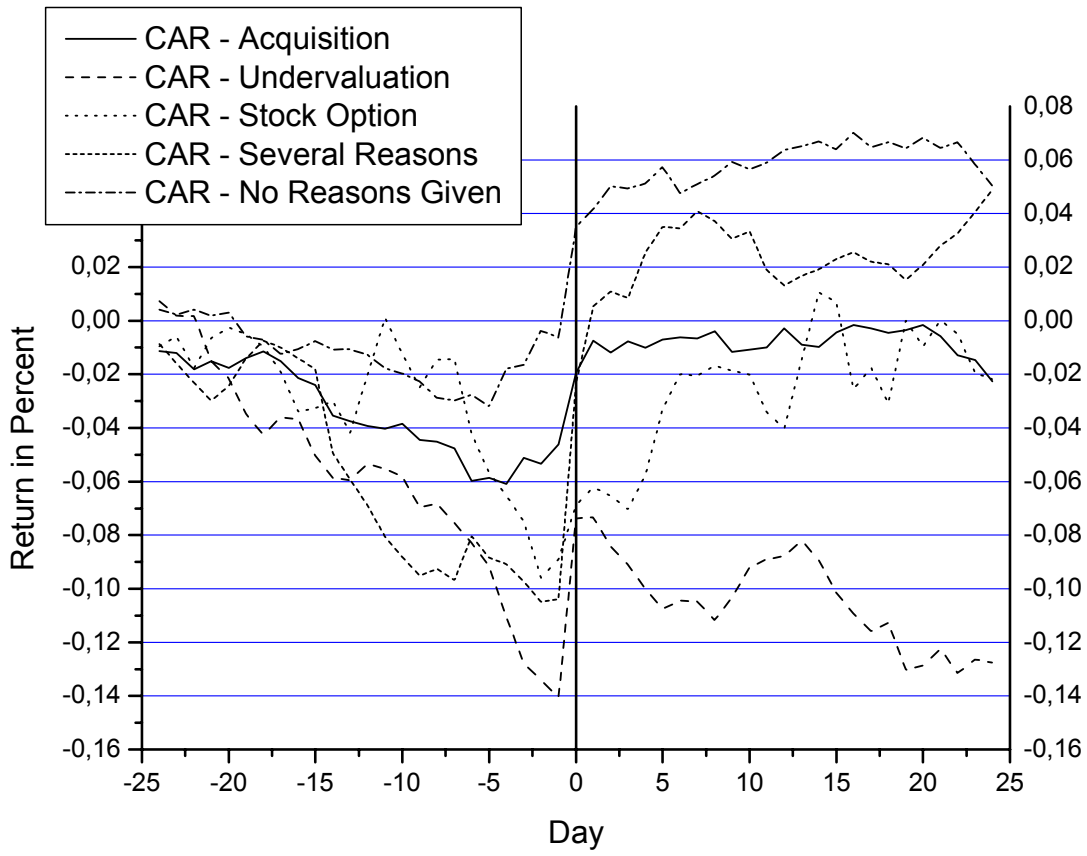

Figure 3: Cumulative abnormal returns separated by motives.

For the sample of firms that give undervaluation as the reason for the repurchase figure 3 shows that the abnormal price increase on the announcement day of 6.7% evaporates within days and that their performance is substantially and significantly worse (-12.3% after the observation period) than firms with other motives.

Possible reasons for this observation could be:

i. Other motives could be new information to the market.

ii. The implied signals have different credibility.

iii. The market is pricing the undervalued stocks correctly thus a repurchase motivated by undervaluation is recognized as a redundant signal in the long run.

iv. Different credibility of the indicated motives.

Secondly, firms that give undervaluation in combination with an upcoming acquisition or a stock option program as motives in their announcement seem to choose a more credible signal. As a consequence, at the end of the observation period the strong negative pre-announcement cumulative abnormal return of those firms can be compensated. The cumulative abnormal returns for this subsample and for firms which basically give no motive for their repurchase are positive with 4.47% and 5% but not statistically significant.

To get an additional insight, we allocate the separate motives for the repurchase to the market segments. The results can be seen in table A4 in the appendix. Again we observe a "Neuer Markt" effect. All average abnormal returns of this market segment are higher than those of the "Amtlicher Handel", while the absolute number of reasons for the repurchase appears relatively similar throughout both segments.

5. Concluding Remarks and Outlook

Because of the German institutional settings and the more structured procedure of share repurchases, our sample announcements are on the average followed up by actual purchases in a much larger percentage of the cases and after a shorter time span than in studies of the U.S. market. We calculate daily abnormal returns for 188 uncontaminated observations from May 1998 until January 2003 using as a benchmark a market value weighted portfolio. We observe 4.793% average abnormal return on the announcement day which is considerably higher than abnormal returns observed in the U.S. and confirm the findings of prior studies on the German market.

Furthermore, we believe that the bear market effect which Gerke/Fleischer/Langer (2002) report is caused by the "Neuer Markt" effect. We therefore allocate the abnormal returns separated by years to the different German market segments and find remarkably higher abnormal returns for firms listed in the "Neuer Markt" than for firms of the "Amtlicher Handel".

Gerke/Fleischer/Langer (2002) find a high (8.83%) and permanent abnormal price increase for firms that state undervaluation as the reason in their announcement. We control for contamination and look more closely at the reasons for the repurchase that are stated in the announcement. We find no evidence of a permanent abnormal price increase. More precisely, firms that give no reason, several reasons or a reason other than undervaluation do much better in holding on to and improving their abnormal gains around the announcement day than the firms that only give undervaluation as their reason.

Future research focusing on long run performances after share repurchases on the German market and on analyzing German repurchases before 1998 is still needed.

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Appendix

A1 Average cumulative abnormal returns for different market segments

This table presents the average cumulative abnormal return around the repurchase announcement given in the form of an ad-hoc message.
The market segments "Amtlicher Handel", "Neuer Markt", "Geregelter Markt", and "Freiverkehr" contain the results for those firms listed in the specific segment. In each column the average cumulative abnormal returns are calculated according to equation (1). The t – values and the significance levels are calculated according to equation (5).
The significance level is marked as follows: 99% significance: ***; 95% significance: **; 90% significance: *.

Segments:	Amtlicher Handel (90)		Neuer Markt (76)		Geregelter Markt (16)		Freiverkehr (6)	
Intervall	CAR	t - value	CAR	t - value	CAR	t - value	CAR	T - value
[-25;+25]	1,379%	0,5156	-5,106%	-2,0774 **	7,213%	1,2374	-3,967%	-0,4167
[-25;-1]	-3,435%	-1,8348 *	-10,040%	-5,8368 ***	-3,255%	-0,7979	-14,091%	-2,1150 **
[-10;-5]	-1,452%	-1,5512	-2,587%	-3,0083 ***	-2,201%	-1,0790	-4,168%	-1,2511
[-5;-1]	-0,598%	-0,6996	-0,541%	-0,6894	-0,751%	-0,4032	-6,432%	-2,1150 **
[0;+5]	5,189%	5,5443 ***	6,585%	7,6558 ***	9,667%	4,7389 ***	9,951%	2,9874 ***
[-1;+1]	4,652%	7,0290 ***	7,456%	12,2592 ***	4,321%	2,9958 ***	8,056%	3,4202 ***
[+5;+10]	0,523%	0,5589	0,173%	0,2017	3,347%	1,6407 *	-0,681%	-0,2044
[+5;+20]	0,674%	0,4407	-0,562%	-0,4003	2,767%	0,8307	0,174%	0,0320
[+1;+25]	1,875%	1,0017	-1,864%	-1,0835	6,935%	1,6999 *	-0,461%	-0,0692

A2 Yearly distribution separated by market segments

	1998	AR in t=0	1999	AR in t=0	2000	AR in t=0	2001	AR in t=0	2002	AR in t=0	2003	AR in t=0	Sum	AR in t=0
Amtlicher Handel	4	2,50%	23	1,83%	33	3,14%	16	4,81%	13	2,95%	1	-0,05%	90	2,94%
Neuer Markt	0	n.a.	10	5,00%	17	5,36%	32	9,08%	16	5,21%	1	1,75%	76	6,80%
Geregelter Markt	1	24,96%	4	0,12%	4	6,93%	5	2,02%	2	-3,37%	0	n.a.	16	3,53%
Freiverkehr	0	n.a.	1	21,90%	2	16,21%	2	4,52%	1	0,15%	0	n.a.	6	10,59%
Sum	5	6,99%	38	3,01%	56	4,44%	55	7,03%	32	3,60%	2	0,85%	188	4,79%

A3 Average cumulative abnormal return separated by the main motives given in the ad-hoc message

This table presents the average cumulative abnormal return around the repurchase announcement given in the form of an ad-hoc message.
The motives acquisition, undervaluation, and stock option programs for employees contain results for those firms where only one reason for the repurchase is given in the respective ad-hoc message. The column "several reasons" contains firms that give at least two of the previous motives in one ad-hoc-message. In each column the average cumulative abnormal returns are calculated according to equation (1). The t – values and the significance levels are calculated according to equation (5).
The significance level according to equation (5) is marked as follows: 99% significance: ***; 95% significance: **; 90% significance: *.

Motives:	Acquisition (52)		Undervaluation (38)		Stock Option (9)		Several Reasons (31)		No Reasons Given (58)	
Intervall	CAR	t - value	CAR	t - value	CAR	t - value	CAR	t - value	CAR	t - value
[-25;+25]	-2,257%	-0,6978	-12,761%	-3,3737 ***	-2,171%	-0,2793	4,889%	1,1674	5,029%	1,6426
[-25;-1]	-4,609%	-2,0368 **	-14,067%	-5,3137 ***	-8,895%	-1,6352	-10,397%	-3,5471 ***	-0,635%	-0,2964
[-10;-5]	-1,834%	-1,6211	-3,642%	-2,7518 ***	-5,781%	-2,1253 **	-0,775%	-0,5289	-1,429%	-1,3336
[-5;-1]	1,370%	1,3260	-5,773%	-4,7774 ***	-4,666%	-1,8792 *	-2,362%	-1,7659 *	2,120%	2,1672 **
[0;+5]	3,914%	3,4592 ***	3,317%	2,5058 **	5,595%	2,0571 **	13,906%	9,4887 ***	6,379%	5,9537 ***
[-1;+1]	4,596%	5,7443 ***	6,074%	6,4897 ***	3,383%	1,7588 *	11,020%	10,6341 ***	4,547%	6,0012 ***
[+5;+10]	-0,072%	-0,0641	0,802%	0,6062	3,743%	1,3760	0,798%	0,5443	0,530%	0,4943
[+5;+20]	0,855%	0,4627	-2,856%	-1,3211	4,796%	1,0798	-0,462%	-0,1932	1,711%	0,9782
[+1;+25]	-0,320%	-0,1416	-5,392%	-2,0369 **	4,713%	0,8664	7,223%	2,4643 **	1,530%	0,7139

A4 Motives for the repurchase separated by market segments

	Acquisition	AR in t=0	Undervaluation	AR in t=0	Stock Option	AR in t=0	Several Reasons	AR in t=0	No Reasons Given	AR in t=0	Sum	AR in t=0
Amtlicher Handel	26	2,61%	15	2,63%	4	0,11%	12	6,53%	33	2,34%	90	2,94%
Neuer Markt	22	3,43%	16	8,83%	4	4,66%	15	10,47%	19	6,54%	76	6,80%
Geregelter Markt	3	-0,14%	5	5,62%	1	-0,83%	2	2,84%	5	5,61%	16	3,53%
Freiverkehr	0	n.a.	3	16,12%	0	n.a.	1	2,34%	2	6,41%	6	10,59%
Sum	51	2,67%	39	6,70%	9	2,01%	30	8,06%	59	4,14%	188	8,06%