Dividend Announcements, Market Expectation and Corporate Governance

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ABSTRACT

This paper examines wealth effects of dividend announcements in Germany, a country with a corporate governance system different from the US and the UK. Our study improves on earlier research by using a more advanced econometric technique, I/B/E/S forecasts as proxy for market expectations and specific hypotheses in the context of the particular Continental European institutional setting. Our results indicate that abnormal returns are significantly related to the information content of dividend announcements, with higher announcement returns in cases in which prior market expectations were less optimistic. In addition, ownership characteristics and conflicts between controlling and minority shareholders are shown to have a significant influence on announcement returns.

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1 Introduction

A large body of empirical research has documented that in imperfect capital markets (with information asymmetries) the announcement of dividend changes affects shareholder value.[1] However, empirical studies have reported mixed results with regard to the question *why* we observe a positive correlation between unexpected dividend changes and shareholder value.[2] Studies in Anglo-Saxon countries like the US and the UK mainly focus on the cash flow signaling and the free cash flow hypothesis in order to explain this relationship. The former hypothesis claims that dividend changes convey new information about a firm's future profitability. The latter expects changes in a firm's stock price due to the governance function of dividends. The theoretical background of these hypotheses is based on the corporate governance framework in Anglo-Saxon countries where share ownership is dispersed (e.g. Faccio and Lang 2002, La Porta et al. 1999) and minority shareholder protection effective (e.g. La Porta et al. 2000). Franks and Mayer (1995, 2001) describe this as an "outsider system".

Our study investigates dividend announcements in Germany, a country whose institutional setting and capital market environment is substantially different from the US and the UK. As documented by da Silva et al. (2004), empirical research[3] has far neglected the particular role of dividend signaling in countries other than the US and the UK. In Continental European countries, such as Germany, we observe a corporate governance system which is characterized by concentrated share ownership (e.g. Franks and Mayer 2001, Becht and Boehmer 2001, Faccio and Lang 2002 and Mayer 2008) and weak minority shareholder protection (e.g. La Porta et al. 2000). Franks and Mayer (1995, 2001) describe this as an "insider system". Within such an institutional framework we expect, on the one hand,

[1] See, for example, the surveys on payout policy by Allen and Michaely (2003) and Frankfurter et al. (2003).
[2] See, for example, Ofer and Siegel (1987), Lang and Litzenberger (1989), Yoon and Starks (1995) and Amihud and Li (2006).
[3] Among few exceptions are Gugler and Yurtoglu (2003) for the German market and Gurgul et al. (2003) for the Austrian market.

conflicts of interest between owners and managers in widely held firms but additionally, on the other hand, conflicts of interest between large blockholders and minority shareholders in firms with concentrated ownership. Against this background Gugler and Yurtoglu (2003) provide an alternative hypothesis why dividend changes have a signaling function in Continental European capital markets. Their rent extraction hypothesis argues that large blockholders often have the discretion and the incentives to extract private benefits of control as the blockholder bears only a fraction of the costs of these payments (i.e. foregone dividend payments in proportion of his cash flow rights) but receives the full benefits. Because dividends are paid out on a pro-rata basis an increase in dividends may signals that the blockholder abstains from extracting private benefits. Accordingly, dividends can mitigate the agency problem between large blockholders and minority shareholders. As a consequence, the announcement of dividend increases (decreases) should have a positive (negative) effect on stock prices in firms in which the large-small shareholder conflict is severe. One contribution of this paper to the existent literature is that we discriminate between the cash flow signaling, the free cash flow and the rent extraction hypothesis (in the explanation of) when explaining stock price movements after dividend announcements in Germany.

Empirical studies investigating the announcement effect of dividend changes either employ (in the overwhelming majority of cases) a naive expectation model[4], (in some cases) a conditional expectation model[5] or (in few cases) analyst forecasts[6] as a proxy for expected dividends. If we assume markets to be semi-strong efficient in the Fama sense (1970, 1991), stock price reactions should only occur if we observe dividend changes that deviate from their expected change. Hence, our study accounts for market expectations of dividend changes by employing analysts' forecasts of the Institutional Broker's Estimate System (I/B/E/S)

[4] See, for example, Ahorny and Swary (1980), Bernheim and Wantz (1995), Yoon and Starks (1995), Amihud and Murgia (1997), Gerke et al. (1997), Gugler et al. (2003) and Gurgul et al. (2003).
[5] See, for example, Watts (1973), Amihud and Li (2006).
[6] See, for example, Woolridge (1983) and Fuller (2003).

Summary File.[7] Support for the use of I/B/E/S forecasts as proxy for market expectation in our analysis comes from Womack's (1996) and Brown et al.'s (2008) studies. Womack (1996) finds empirical evidence that the information provided by analysts contains valuable information for market participants. In addition, Brown et al. (2008) document that I/B/E/S dividend forecasts are an accurate proxy for market expectations in Germany as the dividend forecast error (calculated as the absolute difference between the actual dividend figure and the corresponding forecast) is relatively low.[8] For this reason, the main contribution of our study is the use of I/B/E/S forecasts as proxy for the market's expected dividend.

Furthermore, our paper improves on earlier research investigating the determinants of abnormal returns after the announcement of unexpected dividend changes by using a more advanced econometric technique. Previous studies in this context did not account for the cross-sectional *and* the time series dimension of the panel data set. We employ random effects estimation methods and hence account for unobserved firm heterogeneity.

Our results indicate that abnormal returns are significantly related to the information content of dividend announcements, with higher announcement returns in cases in which prior market expectations were less optimistic. In addition, ownership characteristics and conflicts between controlling and minority shareholders are shown to have a significant influence on announcement returns.

The remainder of the paper is organized as follows. The next section develops the hypotheses which are relevant in the context of the announcement of dividend changes. Section 3 describes our sample selection procedure and contains a description of our sample. Section 4

[7] To the best of our knowledge, Ofer and Siegel (1987) and Lang and Litzenberger (1989) are the only empirical studies which employ I/B/E/S forecasts in the context of unexpected dividend announcements. However, they do not use the I/B/E/S dividend forecasts as proxy for market expectations. They investigate changes in analysts' earnings forecasts following the announcement of unexpected dividend changes.

[8] Among 39 countries included in their analysis, Germany ranks among the ten countries with the lowest dividend forecast error.

presents the event study results and a univariate analysis. Section 5 provides the results of our multivariate panel regressions. Section 6 concludes.

2 Literature review and hypotheses

There is a wide consensus in the literature that dividends can function as signaling and/or monitoring mechanism.[9] In this section, we review the extant literature on the wealth effects of dividend announcements and derive testable hypotheses in the context of the particular Continental European/German corporate governance regime.

Market Expectation Hypothesis

Against the background of Fama's (1970, 1991) efficient market hypothesis dividend change announcements should only have an impact on stock prices if they are unanticipated by capital market participants. Nevertheless, the majority of empirical studies use the naive expectation model as proxy for market expectation which makes the simplifying assumption that the expected dividend equals the previous dividend paid out.[10] Therefore, these studies expect a dividend change of zero. The root of this simplifying assumption can be found in the so called *reluctance-to-change-dividends* hypothesis which was first developed by Lintner (1956) and was corroborated later by Fama and Babiak (1968). Both seminal papers provide evidence that firms maintain dividend payouts at previous levels and are hence reluctant to increase and even more reluctant to reduce dividends. Other empirical studies, such as Watts (1973), employ a conditional expectation model as proxy for market expectation of dividend changes. More precisely, these studies estimate the Lintner (1956) or Fama and Babiak's (1968) model and use the estimated error terms as proxy for market expectation.

[9] See, for example, the excellent survey on dividend policy and corporate governance by da Silva et al. (2004).
[10] See, for example, Ahorny and Swary (1980), Bernheim and Wantz (1995), Yoon and Starks (1995), Amihud and Murgia (1997), Gerke et al. (1997). Gugler et al. (2003) employ the naive model in their main analysis but they deal with the issue of ("neglecting") market expectation by restricting their sample to "…those firms that experienced an earnings drop in the year of the dividend increase announcement relative to the year before the announcement…" (see Gugler et al. 2003, p. 746) as robustness check.

To the best of our knowledge, there exist only two studies that incorporate the market's expectation of dividend changes by employing analysts' dividend forecasts. Woolridge (1983) and Fuller (2003) both investigate stock price reactions to dividend announcements in the US market and use the *Value Line* dividend prediction as proxy for expected dividends. Support for the use of analysts' forecasts comes from Amihud and Li (2006). They emphasize in their study on the evolution of the information content of dividend announcements in the US that "…analyst reports, media coverage (specialized television and radio channels), and the recent increased use of the Internet…" (see Amihud and Li 2006, p. 638) have increased the availability of public information. As a consequence, market participants are increasingly aware of public information with regard to their investments. Moreover, in Germany, the time horizon for the market to process public information into security prices is relatively long as dividends are usually paid on an annual basis. Thus, while the use of the previous dividend payout as proxy for the market's expectation of current dividend may have been appropriate in past studies on the dividend surprise effects in Anglo-Saxon countries, it does not account for the increased availability of public information and the concrete institutional framework in Germany. We therefore argue in favor of using analyst's forecasts as proxy for market expectations in empirical studies on dividend announcements and formulate the following hypothesis:

H1: We expect a positive (negative) stock price reaction only if the information conveyed by the dividend change signals good (bad) news for the market participants. Stock price movements should be unaffected by dividend increases (decreases) if they are not accompanied by good (bad) news.

As an example, we would expect a positive stock price reaction in cases where companies did not change their dividend payout but the market would have expected a cut in the dividend payout. The expected dividend is the I/B/E/S average consensus estimate of all analysts

following the respective company in the month preceding the dividend announcement. Following Campbell et al. (1997), we classify all dividend announcements into three categories: Announcements which are 5% higher (lower) than the expected dividend are classified as *good (bad) news*. If the announced dividend change lies in between the 10% range around a zero-dividend change the announcement is classified as *no news*.

Cash Flow Signaling hypothesis

Miller and Modigliani (MM, 1961) were the first scholars who explained the positive correlation between dividend change announcements and stock price reactions in their seminal paper by "the informational content of dividends" (MM 1961, p.430). Since then, a large body of theoretical studies[11] has formalized this relationship by assuming various signaling costs of dividends in order to generate a model (signaling) equilibrium. According to all these models, a change in the dividend rate can be interpreted as a change in management's expectations about the firm's future profitability. There are mainly two empirical implications of all cash flow signaling models: (1) The unexpected dividend change should induce a stock price reaction in the same direction of the dividend change. (2) Analysts should update their earnings forecast following the announcement of dividend changes. With regard to the first implication there is an overwhelming majority of papers documenting a positive relationship between unexpected dividend changes and stock price reactions[12] with few exceptions such as Watts's (1973) study showing no economically significant effect of dividend changes on share prices. However, the empirical literature finds mixed evidence with regard to the second implication as Ofer and Siegel (1987) document an existing relationship between dividend changes and changes in analysts' earnings revisions whereas

[11] See, for example, the formal models by Bhattacharya (1979), Kalay (1980), John and Williams (1985), Miller and Rock (1985) and Ofer and Thakor (1987).
[12] See, among many papers, Pettit (1972), Woolridge (1983) and, more recently, Amihud and Li (2006) for the US market. For the German market, see empirical evidence by Gerke et al. (1997), Amihud and Murgia (1997) and Gugler and Yurtoglu (2003).

Lang and Litzenberger's (1989) study fails to document such a relationship. Given the substantial support in the literature for the first implication, this corroborates our first hypothesis outlined in the previous section.

Conveying favorable information to investors via dividend announcements might be of more importance for smaller than for larger companies because smaller firms are usually not adequately covered by financial analysts. Therefore, we expect the information asymmetry between management and market participants to be stronger in small compared to large companies. Among others, Eddy and Seifert (1988), Yoon and Starks (1995) and Amihud and Li (2006) confirm this hypothesis employing US data. So far, there exists no study testing the influence of firm size on abnormal returns after dividend change announcement in the German market. Hence, we formulate the following hypothesis:

H2: The informational role of dividend announcements is more important in smaller firms. Hence, the magnitude of the stock price reaction is decreasing in firm size.

Firm size is measured as the logarithm of the firm's total stock value 14 days before the dividend announcement. As a robustness check, we also employ the number of analysts covering the firm as proxy for information asymmetry between management and capital market participants. This variable is usually highly correlated with firm size and its use is in line with previous studies such as Amihud and Li (2006).

Free cash flow hypothesis

Adjacent to the cash flow signaling hypothesis the finance literature has mainly tested one other explanation of the market reaction to the announcement of changes in dividends in Anglo-Saxon countries: Jensen's (1986) free cash flow hypothesis. He argues that dividend payments are an effective instrument to prevent managers from investing in negative net present value projects. In our context, the important empirical implication that emerges from

his hypothesis is that firms with poor investment opportunities may reduce agency costs and hence increase shareholder value by distributing free cash flows to shareholders. Lang and Litzenberger (1989) were the first who tested the free cash hypothesis against the cash flow signaling hypothesis in the US market. The intuition of (behind) their approach was that they expected a larger price impact of dividend changes in overinvesting firms compared to ones that do not overinvest if the free cash flow hypothesis was the right explanation of the announcement effect of dividends. In contrast, the cash flow signaling hypothesis expects the same market reaction regardless of the firm's investment opportunities. Lang and Litzenberger (1989) defined overinvesting firms as ones with average Tobin's Q lower than one. Their results corroborated the free cash flow hypothesis as firms with Q less than unity experienced a more pronounced price reaction than firms whose Q exceeded unity. Gugler and Yurtoglu (2003) confirm Lang and Litzenberger's (1989) results in the German market as they find a larger price drop after dividend decreases for firms having poor investment opportunities compared to other firms.

However, Yoon and Starks (1995) using a larger sample than Lang and Litzenberger (1989) find evidence against the free cash flow hypothesis in the US market. They argue that the stronger price appreciation after dividend increases of firms with Q less than unity is due to the characteristics of these firms. In their descriptive analysis they show for dividend increases that firms with Q less than unity are smaller, have a higher dividend change and exhibit a higher dividend yield. After controlling for these characteristics in their multivariate regressions of the cumulative abnormal returns they do not find a systematic difference in the magnitude of the market reaction between firms with higher and lower Q than one. This finding is not consistent with the free cash flow hypothesis. Given the mixed results in the literature we formulate the following hypothesis:

H3: Firms with poor investment opportunities measured by Tobin's Q experience a larger price appreciation (drop) after the announcement of a dividend increase (decrease).

Tobin's Q is measured as the ratio of the book value total assets plus the firm's market capitalization (common and preferred equity) minus the book value of equity divided by the book value of total assets at the end of the previous accounting year.

According to Jensen (1986), the firm's free cash flow level itself is a proxy for the potential agency conflict between the firm's managers and shareholders. Managers in firms with high free cash flows are tempted to consume perks. Moreover, we expect this conflict to be more severe in firms which have no valuable growth opportunities measured by Tobin's Q. To the best of our knowledge, there is no empirical paper testing the influence of the firm's free cash flow level itself on the magnitude of the market reaction after a dividend announcement. Therefore, we formulate the following hypothesis:

H4: Firms with a high free cash flow level exhibit a stronger stock price reaction after the announcement of a dividend change.

H4b: Firms with a high free cash flow level that are overinvesting (firms with Tobin's Q lower than median) exhibit a stronger stock price reaction after the announcement of a dividend change than firms that are not overinvesting (firms with Tobin's Q higher than median).

We follow Lehn and Poulsen (1989) in the construction of our free cash flow measure. Free cash flow is defined as operating income plus depreciation, depletion and amortization minus income taxes plus the change in net deferred taxes minus minority interest on net income minus interest expense on debt minus common and preferred dividends paid plus extra items and the gain/loss via the sale of assets in the year before the dividend announcement. The free cash flows are then divided by the companies' net sales of the same fiscal year.

Rent Extraction Hypothesis

Gugler and Yurtoglu (2003) developed an alternative explanation of why dividend changes affect shareholder value which suits the particular Continental European/German corporate governance framework: the rent extraction hypothesis. There are two features of the German corporate governance system which are relevant in the context of our study: (1) the particular ownership structure and (2) the degree of minority shareholder protection. The typical capital market listed German firm exhibits a concentrated ownership structure which is dominated by a small number of large shareholders (in the following called "blockholder"). Franks and Mayer (2001) find in their study based on 171 German listed firms in 1990 that "85% of the largest quoted companies have a single shareholder owning more than 25% of the voting shares"[13]. This percentage seems to be stable over time (at least for non-financial companies). In a study based on all non-financial companies listed on the 'official' trading segment of the Frankfurt stock exchange between 1997 and 2004 (264 companies), Andres (2008) states that the percentage observed by Franks and Mayer (2001) is strikingly consistent with ownership patterns 15 years later, "with 84.5% of the firms featuring a shareholder with a stake of more than 25%."

Furthermore, La Porta et al. (2000) find empirical evidence that the German corporate governance system provides only weak protection for minority shareholders. If shareholder rights are not well protected by law, ownership by large blockholders can be an effective way of protecting shareholders' interests. Due to their substantial equity stake, these investors both have the power and the incentives to monitor management. However, concentrated ownership can also imply potential drawbacks. Large shareholders can use their control rights in order to maximize their own utility, which might, through the extraction of private benefits, come at

[13] According to the German Stock Corporation Act (AktG), a stake of 25% provides a blocking minority and allows the blockholder to prevent far reaching decisions of the general shareholders' meeting, like issues of new shares.

the expense of other shareholders. In line with these arguments, Bebchuk (1999) shows in a theoretical model that in corporate governance systems such as Germany, in which private benefits of control are significant, the ownership structure is characterized by larger blockholders who extract those private benefits of control.

Against the background of these institutional facts, dividend change announcements may provide information about the magnitude of the conflict between large blockholders and minority shareholders. As dividends are paid out on a pro-rata basis both, large blockholders and small, outside shareholders benefit from dividend distributions to the same extent. Hence, dividends can not only mitigate the agency conflict between management and outside shareholders but also the conflict of interest between large blockholders and minority shareholders. As a consequence, we would expect that in firms which are characterized by a strong conflict of interest between both types of shareholders dividend change announcements will induce more pronounced stock price changes. This leads us to formulate the following hypothesis:

H5: Firms which are characterized by a severe large-small shareholder conflict exhibit a stronger stock price reaction following a dividend change announcement.

We employ two instruments to order to measure the magnitude of the conflict between large and small shareholders: (1) information about the firms' shareholding structure and (2) information about the types of shares the firms have issued in order to calculate the firms' cash-flow-right-voting-right-ratio.

Controlling factors

In line with the empirical literature (e.g. Yoon and Starks 1995 and Amihud and Li 2006), we additionally control for other factors which had a significant influence on shareholder value following dividend change announcements or are expected to do so: the dividend yield and

leverage. Among other authors, Bajaj and Vijh (1990) argued that the stock price reaction following an unexpected dividend change should be more pronounced in firms with high dividend yields if the investors in those firms have a preference for stocks with a high yield. This phenomenon is called "clientele effect". Fehrs et al. (1988) and Amihud and Li (2006) corroborate this hypothesis empirically. In the corporate governance literature (e.g. Jensen 1986 and da Silva et al 2004), debt is regarded as a substitutive corporate governance instrument to dividends. This governance role of debt originates in the fact that interest payments on outstanding debt are mandatory for the management and hence decrease the firm's free cash flow. We expect the market reaction of dividend announcements to be negatively related to the firm's leverage.

3. Data and Descriptive Statistics

The sample of our analysis is based on all firms that were included in the DAX, MDAX, or SDAX[14] index as of December 31, 2002 (i.e. the 150 largest exchange-listed German firms). We cover these companies from 1996-2006 and collect data on all dividend announcements over this period. As German firms pay (and therefore also announce) dividends on an annual basis, our sample results in a panel with a theoretical maximum of 1,650 firm-year observations. For 312 firm-year observations, it was not possible to identify the exact date on which the dividend was announced (all announcement data was obtained from Reuters newswires). In line with Amihud and Li (2006) we excluded firms from the financial service sector (122 firm-year observations). In addition, firm-years in which a firm had a 'control agreement'[15] in place (7), or years in which firms acted as either acquirer or target in a M&A transaction (11) were dropped from the sample. The main aim of our study is to measure the announcement returns of dividend payments as well as identifying the determinants of the

[14] The DAX (largest firms), MDAX (mid caps), and SDAX (small caps) are the three major indexes of Deutsche Börse for firms from classic sectors.

[15] Control agreements are defined as agreements between a company and its parent company and take the form of either Profit and Loss Agreements (*Gewinnabführungsvertrag*) or Subordination of Management Agreements (*Beherrschungsvertrag*).

abnormal returns that are due to information conveyed in the dividend announcement. Therefore, it is crucial to ensure that firms do not release other information on the same date. As a result, 64 firm-year observations had to be excluded because of the announcement of other value-relevant information (e.g. restructurings, changes in the board etc.) that could potentially bias our analysis. At this point, it is important to note that dividend announcements are frequently accompanied by earnings announcements as dividends are a direct result of past/future earnings. In our cross-sectional analysis, we control for the effect of contemporaneous earnings announcements by including adequate control variables (earnings estimation error, see below). Finally, 31 firm-year observations were excluded due to missing data items. This procedure results in a sample of 1,103 firm-year observations.

One of the main contributions of our analysis is the use of I/B/E/S forecasts as a proxy for the market's expectation. Even though the companies in our sample are among the 150 largest German firms, analyst coverage for some of the smaller companies is very limited, in particular during the early years of the sample period.[16] As proxy for the market's expectation, we compute the arithmetic mean of the last analyst forecasts before the dividend payment was announced.[17] To mitigate the effect of outliers, firms had to be covered by at least two analysts in any one year. This requirement leads to the exclusion of another 181 firm-year observations with no or less than two analyst forecasts and a final sample of 922 firm-year observations with complete data.

Some of our sample firms (21 firms in 2002) have issued multiple share classes, usually ordinary shares that carry voting rights along with non-voting preference shares.[18] In these cases, we only included the share class for which analyst forecasts are available in our

[16] While estimates of expected sales, EBITDA, EBIT, or EPS are often available, analyst forecasts on dividends are sometimes not provided.
[17] In 93% of our observations, the consensus estimate refers to the last month before the dividend payment was announced. In 63 cases (6.8%) we used earlier forecast data (up to three months). Observations were excluded if no analyst forecasts were available for the three months preceding the dividend announcement.
[18] The only exception is Siemens AG, where preference shares were endowed with six times the voting rights of ordinary shares (from 1920 till 1998). Voting and cash flow rights of Siemens AG were adjusted accordingly.

sample.[19] It should be noted that focusing on one of the two share classes should not induce a bias in our analysis. A closer look at these firms reveals that dividends on ordinary shares usually change along with dividends on preference shares, a finding that confirms Goergen et al.'s (2005) observation on German firms during the period from 1984 to 1993. In addition, we included special dividends in our dividends per share measure. It has been pointed out in the literature (see e.g. Goergen et al. 2005 and Andres et al. 2009) that special dividends frequently reflect permanent changes in dividend policy rather than transitory increases. However, large one-off payments (*Sonderausschüttungen*) – which are associated with special anniversaries or the sale of subsidiaries – were excluded. This procedure is also in line with previous studies on the dividend policy of German firms (Behm and Zimmermann 1993, Goergen et al. 2005, Andres et al. 2009).

As pointed out earlier, we hypothesize that ownership characteristics are an important determinant of the announcement returns of dividend changes. We therefore collected data on ownership structures from *Hoppenstedt* yearbooks.[20] All shareholdings of ordinary shares and preference shares that are larger than 5% were gathered on an annual basis.[21] As German shareholders frequently use complex control structures (pyramid holdings) we tracked shareholdings from the first-tier to ultimate control levels using *Hoppenstedt* yearbooks and Commerzbank's *wer gehört zu wem?* guides. As a typical example of a pyramid holding structure, figure 1 illustrates the ownership and control structures used by the Röchling family to control Rheinmetall AG, a producer of automotive components and defense equipment. At the first tier, Röchling Industrie Verwaltung GmbH, a private company, holds 65.6% of the ordinary (voting) share capital in Rheinmetall AG as well as 9.2% of the non-voting

[19] In cases in which companies have issued multiple share classes, I/B/E/S estimates usually refer to preference shares as only non-voting preference shares are traded publicly. In most of these firms, ordinary (voting) shares are held by a controlling shareholder and not traded on the stock exchange.
[20] These books provide in-depth information about all market-listed German companies.
[21] During our sample period, shareholdings of more than 5% had to be registered with the German Financial Supervisory Authority (BaFin, see §21 of the German Securities Trading Act (*Wertpapierhandelsgesetz*). Shareholdings of less than 5% – even when reported in Hoppenstedt – were excluded for reasons of data consistency.

preference stock. At the second layer, the Röchling family holds 76.2% of Röchling Industrie Verwaltung GmbH, with the remainder being held by small shareholders. The Röchling family thus effectively controls a 65.6% voting stake in Rheinmetall AG, even though only 28.5% of the total equity is provided by the ultimate shareholder. The pyramid structure thus leads to a large divergence between cash flow rights and voting rights.

We follow the procedure used by da Silva et al. (2004) to identify the ultimate controlling shareholder. Based on this methodology, the ultimate controlling shareholder is situated at the first-tier if a) there is no shareholder holding at least 25% of the voting shares[22], or b) the largest shareholder holding more than 25% is a bank, insurance company, the German state, a foreign company or institution, or a family/individual. In all other cases, the ultimate controlling shareholder is said to be at a higher tier which is reached if criteria a) or b) are satisfied. If a widely held firm is reached at a higher layer, the ultimate control lies with this corporation. As explained in the example above, the cash flow rights of the ultimate controlling shareholder are computed by multiplying the ownership stakes along the chain (taking into account ordinary and preference shares).

[Insert Figure 1 about here]

Table 1 presents data on ownership characteristics and summary statistics of the final sample, subdivided into dividend increases, decreases, and maintained dividends. In line with Amihud and Li (2006) we treat dividend changes by less than 2.5% as unchanged dividends since these changes most likely reflect rounding changes.[23] In 521 out of the 922 firm-year observations (56.5%), firms increased their dividends, 316 observations (34.2%) are

[22] According to the German Stock Corporation Act (*Aktiengesetz*), a stake of 25% provides a blocking minority and allows the blockholder to prevent far reaching decisions of the general shareholders' meeting, like issues of new shares, dismissals of directors, or amendments to the articles of incorporation.

[23] Rounding changes are usually due to stock splits or currency conversions from Deutschmarks to Euros. It should be noted that Amihud and Li (2006) use a threshold of 0.5%. However, their sample is based on U.S. firms, which pay dividends on a quarterly basis, leading to small changes. Since German firms pay dividends on a yearly basis, dividend changes are usually comparatively large. Andres et al. (2009) document an average dividend increase (cut) of 36% (30%) for a sample of 220 German firms for the period 1984-2005.

associated with maintained dividends, and in only 86 firm-years (9.3%) were dividend payments reduced.[24] Among the dividend cuts, 33 cases (or 38.8% of the dividend cuts) are dividend omissions. All accounting data items and share price data were obtained from Thompson Financial's Datastream database. Data on analyst forecasts are taken from the Institutional Brokers' Estimate System (I/B/E/S). As argued above, dividend announcements should only trigger market reactions if they convey new information. In addition to the classification of dividend announcements into dividend increases, decreases, and maintained dividends, we therefore also apply an alternative classification which is based on conditional expectations. Following Campbell et al. (1997), we define dividend announcements as *good (bad) news* if the announcement is more than 5% above (below) the dividend expected by market participants. We calculate the average of (at least two) analyst forecasts in the month preceding the dividend announcement to proxy for the market's expectation. Accordingly, all announcements that lie in the 10% range around the average analyst forecast are classified as *no news*.

Panel A of Table 1 shows that firms that increase dividends differ substantially from firms that maintain or decrease dividend payments. With an average coefficient of 1.84,[25] they are less heavily leveraged than firms that decrease (2.08) or maintain (2.15) dividends. In addition, they exhibit higher values of Tobin's q[26] (1.84 compared to 1.33 for firms that cut dividends, and 1.43 for firms that maintain dividends) and a much lower average dividend yield[27] (1.90% compared to 4.78% for decreases and 2.58% for maintained dividends),

[24] Compared to Gugler and Yurtoglu (2003) we observe a slightly higher number of dividend increases and less dividend decreased. In their sample (from 1992 through 1998) 43.8% of the announcements are classified as dividend increases, 36.8% unchanged dividends, and 19.4% dividend cuts.

[25] Leverage is defined as the sum of total current liabilities and long term debt divided by the book value of equity.

[26] In line with other empirical corporate finance studies, we use market-to-book as a proxy for Tobin's q. Tobin's q is thus defined as market value of equity plus total assets minus book value of equity, divided by the book value of total assets.

[27] The dividend yield (DIV_Y) is defined as DIV(i, t-1) / P(i,t), where DIV (i, t-1) is the dividend per share of firm (i) in year t-1, and P(i, t) is the split adjusted share price 14 days before the dividend is announced in year t (this definition follows the procedure suggested in Amihund and Murgia (1997)).

suggesting that firms that increase dividends tend to be growth stocks. On the other hand, they are larger than firms in the other two subgroups, both in terms of total assets and sales. With respect to corporate control structures, our sample confirms one of the stylized facts of the German system of corporate governance. On average, about 52% of the voting shares are held by the two largest shareholders. Furthermore, an average cash flow to voting rights ratio of 0.86 for the controlling shareholder indicates that control structures that violate the one-share-one-vote principle are commonly used.

The percentage of firm-year observations with increased, decreased, and maintained dividends over the sample period is documented in Panel B of Table 1. The distribution of dividend increases, cuts and unchanged dividends suggests that the composition of our sample is representative of all exchange-listed firms and mirrors the trend observed in other recent empirical studies (e.g. Julio and Ikenberry 2004). With the exception of 1996/97, the percentage of firms that increase dividends declines gradually, reaching a low of 38.2% in 2003, until it finally takes a sharp turn upward in 2004. In line with a poor economic environment following the burst of the technology bubble, the proportion of dividend cutting firms is significantly higher during the years 2001-2003. In sum, our 11-year sample period covers an economic boom period, followed by an economic recession, and a second boom period.

[Insert Table 1 about here]

4 Event Study Results and Univariate Analysis

We measure the stock price reaction to the announcement of dividend payments using standard event-study methodology. Based on the market model (Brown and Warner 1985), the abnormal return ε_{it} for firm i on day t is calculated as

$$\varepsilon_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mt}\right), \tag{1}$$

where R_{it} is the return of firm *i* on day *t*, and R_{mt} the return on the CDAX market portfolio[28] on day *t*. The coefficients $\hat{\alpha}_i$ and $\hat{\beta}_i$ are OLS estimates obtained from regressions of firm *i*'s daily returns on the market return over the estimation window from *t* = -121 till *t* = - 2 (relative to the announcement day (*t* = 0)). We use two measures of abnormal returns, the cumulative average abnormal returns, $CAAR_{-1;1}$, measured over the three-day interval from *t* = -1 till *t* = +1, and the average abnormal return on the announcement day, AAR_0. The statistical significance of these returns is measured by the standardized cross-sectional t-statistic proposed by Boehmer et al. (1991) and the non-parametric Corrado (1989) test statistic.

Table 2 reports the event study results. In Panel A, all announcements are classified into three groups, increases, decreases and unchanged dividends. These groups are then subdivided into *good news*, *bad news*, and *no news*, based on the information content of the dividend announcements (as defined above). The results in Panel A show that the average abnormal return on the announcement day, AAR_0, is highly significant for dividend increases (0.81%) and decreases (-1.07%), but insignificant in cases of unchanged dividends (0.17%). Over the three-day interval around the announcement, dividend increases lead to an average $CAAR_{-1;1}$ of 1.44%, also highly significant. The cumulative average abnormal return is negative (-0.47%), but insignificant for dividend cuts. Surprisingly, unchanged dividends are associated with a positive and significant three-day CAAR of 0.64%. A closer look at the three subcategories reveals that the positive announcement return for unchanged dividends is driven by a highly significant return of 2.61% for announcements in which a maintained dividend is a positive surprise for market participants. It thus seems that market expectations play an important role in measuring dividend announcement returns.

[Insert Table 2 about here]

[28] The CDAX is a broad, value-weighted German index and comprises about 350 companies.

This finding is confirmed by the results in Panel B of Table 2, where all announcements are categorized as *good news*, *bad news*, or *no news*. Abnormal returns are highest for dividend announcements that are good news for market participants, with an average announcement day return of 1.12% and a three-day CAAR of 2.02% (both highly significant). Comparing the number of announcements in the three groups to the classification into increases, decreases, and no change, it becomes obvious that an increase in dividends does not necessarily imply good news for market participants. Out of 521 dividend increases, less than 50% (258) are in fact positive announcements. If market participants expected an even higher increase (i.e. if the announcement is classified as *bad news* despite the increase), we observe an announcement day return of -0.28% and a CAAR of -0.16%. In line with these results, unchanged dividends are associated with highly significant and positive returns on the announcement day (0.73%), and a three-day CAAR of 2.61% if market participants expected a dividend cut.

In conclusion, these results indicate that market participants tend to incorporate publicly available information into stock prices before firms officially announce dividend payments. This also implies that 'naïve' dividend announcement models (which assume that the expected dividend equals the previous dividend) are misspecified. Treating all dividend changes as surprises does not account for the ability of market participants to incorporate information in stock prices when it first becomes available.

As discussed in the hypothesis section, we expect that conflicts between large and small shareholders potentially have an impact on dividend policy and on announcement returns. We classify firms as being either widely held or closely held based on shareholdings of voting equity. If a firm does not have a single shareholder holding more than 25% of the voting equity, it is classified as widely held. If a controlling shareholder holds more than 25% of the voting shares, the firm is said to be closely held. Based on this definition, about one-third

(317) of the firm-year observations in our sample are classified as widely held. The proportion of widely held and closely held firms is roughly similar among the three subgroups dividend increases, decreases, and no change. Table 3 shows several firm characteristics of our sample, subdivided into the two ownership groups, as well as test statistics that test for differences in means and medians. Widely held firms seem to be significantly larger, less heavily leveraged, and show lower values of Tobin's q. With a mean $CAAR_{-1;1}$ of 1.14%, abnormal returns are higher for closely held firms (compared to 0.71% for widely held firms), yet not significantly. The differences between widely held and closely held firms are again similar among the different subgroups (not reported).

[Insert Table 3 about here]

5 Multivariate Analysis

The results of the event study show a significant reaction of stock prices to dividend announcements of German firms. A closer analysis of the abnormal returns has revealed that the magnitude of the price reaction seems to be influenced by prior investor expectations. However, the univariate analysis above does not control for interdependencies between other firm characteristics. Most notably, information asymmetries should be higher for smaller firms (Petersen and Rajan 1992). We therefore also employ a multivariate regression framework to test whether market expectations, proxied by I/B/E/S analyst forecasts, are a significant determinant of announcement returns. In the following random-effects panel model (based on all announcements), we use the three-day announcement return, $CAAR_{-1;1}$, as the dependent variable. In the set of explanatory variables, we include the dividend estimation error (DIV_ERR), defined as dividend per share minus the estimated dividend per share (last I/B/E/S consensus estimate prior to the announcement), both divided by the split adjusted stock price 14 days before the dividend is announced, and the change in dividend yield (DIV_CHGN, defined as current minus last year's dividend per share standardized by

the split adjusted stock price 14 days before the dividend is announced). A significant coefficient of DIV_CHGN would lend support to the naïve view of dividend changes as it indicated that the total change, not just the unexpected part, is informative. As additional control variables, we add the earnings estimation error (EPS_ERR, defined similar to the dividend estimation error using the average earnings-per-share I/B/E/S estimate[29]), dividend yield (DIV_Y, as defined above), a control for firm size (MC, natural logarithm of market capitalization), a dummy that is equal to one if the firms Tobin's q is below unity (TQ1), as well as industry and year dummies for each of the 16 sample industries and each year of the sample period. We obtain the following results (t-statistics are based on robust variance estimates):

CAAR = 0.028 + 0.992 DIV_ERR + 0.14 DIV_CHGN + 0.002 EPS_ERR + 0.22 DIV_Y

(t =) (0.88) (4.49)*** (1.28) (0.13) (2.07)**

– 0.002 MC – 0.007 TQ1 (2)

(t=) (-2.08)** (-1.15)

N = 922 R^2 (adj.) = 10.6%

The results confirm that market expectations have a significant influence on abnormal announcement returns. The coefficient of the dividend error variable is positive and highly significant while the coefficient of the change in dividend yield is insignificant. This means that a higher (lower) divergence between I/B/E/S consensus estimates and the actual dividend is associated with a higher (lower) announcement return and lends support to our first hypothesis. In line with previous studies (e.g. Amihud and Li 2006), the magnitude of the announcement returns is negatively related to firm size and positively related to the dividend yield. As pointed out above, our findings indicate that empirical studies that classify dividend announcements based on the direction of dividend changes (i.e. increases vs. decreases) are

[29] The earnings estimation error is set to zero if dividends and earnings are not announced on the same day.

misspecified. Since only the unexpected component of dividend announcements seems to matter for price changes, it might be more plausible to classify announcements based on their news content. We therefore test our hypotheses for the classification into *good news* and *bad news* and compare these results to the 'classical' subsamples dividend increases and dividend decreases.

In analyzing the determinants of dividend announcement returns, we use several random-effects panel regressions.[30] In all model specifications, the three-day announcement return is used as the dependent variable. As independent variables, we include the magnitude of the dividend change (DIV_CHGN, as defined above), control variables for the market's expectations, DIV_ERR and EPS_ERR, as well as the other controls used in regression (2). To test our hypotheses 3 and 4 concerning the free cash flow signaling hypothesis, our first specification further includes lagged free cash flow (as defined above), and a variable that interacts free cash flow with the Tobin's q dummy. The interaction term is supposed to measure the influence of free cash flows on announcement returns in firms that are most susceptible to the problem of overinvestment since they have only very few investment opportunities. Lastly, we include firm leverage, defined as total (short and long term) debt divided by the book value of equity.

[Insert Table 4 about here]

The results in Table 4 using all 922 announcements confirm our previous findings. In model specification (1), the coefficient of the dividend estimation error is highly significant and positive. In addition, the dividend yield has a significantly positive and firm size a significantly negative impact on announcement returns. The effect of DIV_CHGN (the magnitude of the dividend change) is insignificant. If we compare these results to

[30] The Hausman test does not reject the null hypothesis of zero correlation between the vector of explanatory variables and the error term. Therefore, the more efficient random-effects estimator is used in all regressions.

specification (2), where a naïve model is tested, it is striking that the coefficient becomes highly significant. This finding again implies that dividend announcement models that do not control for market expectations are misspecified as they omit an important variable. In this specification, it seems as if the magnitude of the dividend change is informative. However, it only captures part of the omitted variable (i.e. prior market expectations). With respect to the free cash flow hypothesis, all coefficients are insignificant in both model specifications. This finding stands in contrast to Lang and Litzenberger (1989) who document positive abnormal returns for overinvesting firms, but confirms Gugler and Yurtoglu's (2003) results on dividend increases for a sample of German firms.

In the next step, we analyze announcements that are categorized as *good (bad) news* and increases (decreases) separately. As prior market expectations have been shown to be an important determinant of announcement returns, we also include control variables for the dividend and earnings estimation error in all regressions. To test the rent extraction hypothesis, we use (in addition to the controls defined above) several independent variables that are based on the firms' ownership characteristics. The voting rights of the largest shareholder (VR1) are included if they exceed a threshold of 5%. In the presence of a controlling shareholder, an (unexpectedly large) increase in dividends should be regarded as a strong signal since it reduces the amount of cash under the control of the dominant shareholder and therefore reduces the likelihood of minority shareholder expropriation. Consequently, a positive coefficient of VR1 is expected for *good news*, or increases respectively. For *bad news*, or dividend decreases, we expect a negative coefficient. We also include the squared term of VR1 to control for a non-linear relationship. On the other hand, the risk of expropriation should be lower in firms with another large shareholder who has the power and the incentive to control the dominant shareholder. As suggested in Gugler and Yurtoglu (2003), we add a control variable that measures the voting rights of the second largest shareholder if there is a second shareholder who holds more than 5%. Lastly, the

difference between the cash flow rights and the voting rights of the controlling shareholder is captured by the variable CRVR. Since dividends are paid on a pro-rata basis, a large divergence of cash flow rights and voting rights for the controlling shareholder (i.e. a low CRVR ratio[31]) increases the incentives to extract funds through other channels than dividends. Hence, we expect a negative relationship between announcement returns and the ratio of cash flow rights to voting rights for *good news* (increases).

Table 5 contains the results of these model specifications. For *good news* and dividend increases we find a non-linear relationship between the voting rights of the largest shareholder and dividend announcement returns. For *bad news* and dividend decreases, no such effect can be observed. In addition, the presence of a second largest shareholder does not seem to have an influence on dividend announcement returns. With respect to the ratio of cash flow rights to voting rights we find negative and significant coefficients for the subsamples *good news* and increases. This implies that the market reaction is stronger in cases in which the controlling shareholder is willing to increase (pro rata) dividend payments despite strong incentives to expropriate minority shareholders and supports our fifth hypothesis. In both subsamples, *good news* and increases, the coefficient of the variable DIV_CHGN_P, which measures the magnitude of the dividend change, is insignificant. This confirms our previous finding that the 'absolute' change of the dividend yield does not have explanatory power if the regression controls for prior market expectations. In the *good news* and increases subsamples, all other explanatory variables show the signs and significance levels of the previous model specifications. Surprisingly, none of the control variables is significant in the *bad news* and decrease subsamples. It should be noted, though, that the number of observations is much smaller in these subsamples, in particular in the subsample of dividend decreases.

[31] The ratio of cash flow right to voting rights is set to 0 if there is no shareholder controlling (at least) 25% of the voting shares.

[Insert Table 5 about here]

In additional model specifications, we interact the VR1 variable with the dividend estimation error in order to test whether the reaction is stronger for firms with a dominant shareholder if the unanticipated part of the dividend change is higher.[32] The coefficient of the interaction term is positive and highly significant in the subsamples *good news* and increases, indicating that the "unanticipated bang-for-the-buck"[33] is higher for firms with supposedly entrenched and powerful large shareholders.

In sum, the results of our multivariate analysis confirm that the stock price reaction to the announcement of dividend payments is significantly related to the information content of the announcement. The larger the divergence between the market's expectations (proxied by I/B/E/S consensus estimates) and the actual dividend, the higher are abnormal announcement returns. This confirms our first hypothesis. We also find support for the hypothesis that the magnitude of the stock price reaction decreases with firm size (hypothesis two). Our tests of the cash flow signaling hypothesis do not show any significant pattern. Finally, our results indicate that the conflict between large (controlling) and minority shareholders has an influence on announcement returns. The stock price reaction is significantly higher if a) firms have a controlling shareholder who holds very high ownership stakes and might therefore be entrenched, or b) if incentives to expropriate minority shareholders are high due to deviations from the one-share-one-vote principle.

6 Conclusion

This study investigates dividend announcements in Germany, a country whose institutional setting and capital market environment differ substantially from the US and the UK. Our

[32] These regression models are not reported but available upon request.
[33] Bernheim and Wantz (1995) introduced the term "bang for the buck", standing for the share price response per dollar of dividend (change).

sample is based on the 150 largest exchange-listed German firms over the period from 1996-2006.

Our results indicate that abnormal returns are significantly related to the information content of dividend announcements, with higher announcement returns in cases in which prior market expectations were less optimistic. In addition, ownership characteristics and conflicts between controlling and minority shareholders are shown to have a significant influence on announcement returns.

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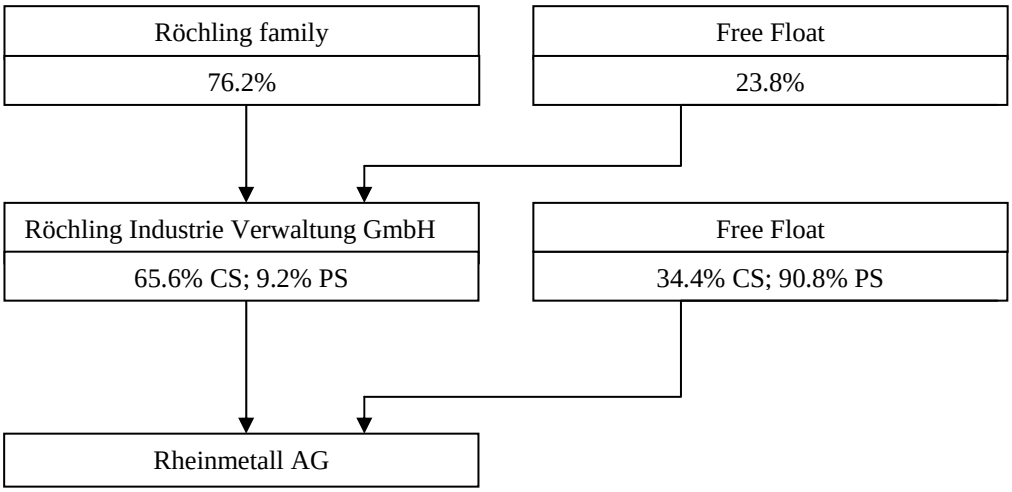
Figure 1

The Ownership Structure of Rheinmetall AG

Figure 1 illustrates the control of Rheinmetall AG by pyramiding and different share classes in 1999. In case that the company issued different share classes, "CS" denotes common stock and "PS" preferred stock. At the first-tier of the pyramid, Rheinmetall AG is controlled by Röchling Industrie Verwaltung GmbH, the company's majority stockholder, which owns 65.6% of the voting shares. This company, in turn, has one blockholder, the Röchling family, who owns 76.2% and thus is the ultimate controlling shareholder. The cash flow rights of the Röchling family in Rheinmetall - defined as the product of its shareholdings along the pyramid - are 28.46%, whereas its voting rights are 65.6%. Hence these control-enhancing mechanisms induce the wedge between cash flow and voting rights and thereby violate the one-share-one-vote principle.



Data source: Hoppenstedt Aktienführer 2000, Verlag Hoppenstedt GmbH, Darmstadt 1999; Commerzbank – wer gehört zu wem, 20. und erweiterte Auflage 2000

Table 1

Summary Statistics

Table 1 provides descriptive data for all sample firms. The sample consists of a total of 922 announcements for the 150 largest companies (DAX, MDAX and SDAX) listed on the Frankfurt Stock Exchange on December, 31 2002 for the eleven year period 1996 to 2006. Dividend yield is calculated as DIV(i,y-1)/P(i,y) and market capitalization measures the firm's total stock value 14 days before the announcement. The change in dividend yield is defined as the change in dividends as a percent of price (P(i,y)) 14 days before the dividend announcement, (DIV(i,y)-DIV(i,y-1)/P(i,y), where DIV(i,y) is the total (adjusted) dividend per share for stock (i) announced for year (y) and DIV(i,y-1) is the total (adjusted) dividend per share for stock (i) announced for the preceding year (y-1 Free cash flow, FCF(i,y-1), is measured as EBIT plus depreciation minus income taxes plus change in net deferred taxes to last year minus minority interest minus interest minus dividends plus extra items and gain/loss sale of assets, all divided by sales (i,y-1). Tobin's q is defined as the market value of the firm's equity plus total assets minus book value of equity, all divided by total assets. The firm's leverage is defined as the sum of total current liabilities and long term debt divided by book value of equity and coverage comprises the number of I/B/E/S analysts. The earnings estimation error is measured as (EPS(i,y)-ESTEPS(i,y)/P(i,y), where EPS(i,y) covers diluted (adjusted) earnings per share for stock (i) announced for year (y) and ESTEPS(i,y) is the estimated earnings per share concerning the last I/B/E/S consensus estimates before the announcement. The cash flow to voting rights ratio is calculated for the ultimate controlling. In addition to the voting rights of the largest shareholder, the voting rights of the second largest shareholder are reported if they exceed 5%.

Panel A. Descriptive Statistics for All Announcements, Firms with Increased, Decreased and Maintained Dividends over the Entire Sample Period (1996-2006)

	All Announcements			Increases		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Dividend Yield (%)	2.40	2.08	2.08	1.90	1.65	1.44
Change in Dividend Yield (%)	0.11	0.14	1.83	0.62	0.35	1.13
Market Capitalization (Mio. €)	6186.3	1084.0	14057.1	6990.5	1702.6	12973.1
Free Cash Flow (Last Year, Mio. €)	645.6	69.5	1967.2	816.4	66.5	2385.1
Total Assets (Mio. €)	12059.7	1457.6	30216.6	12983.2	1712.1	29816.4
Sales (Mio. €)	9634.0	1776.9	20560.5	9779.9	1928.3	18608.0
Tobin's Q	1.65	1.28	1.26	1.84	1.37	1.41
Leverage	1.94	1.48	2.23	1.79	1.28	2.59
Coverage	16.37	15.00	10.59	17.15	15.00	10.59
Dividend Estimation Error	-0.0005	0.0000	0.0080	0.0020	0.0008	0.0059
Earnings Estimation Error	-0.0064	0.0000	0.00725	0.0015	0.0000	0.0266
Voting Rights of the Largest Shareholder	0.41	0.36	0.28	0.40	0.38	0.27
Voting Rights of the 2. Largest Shareholder	0.11	0.10	0.06	0.11	0.10	0.06
Cash Flow to Voting Rights Ratio	0.8557	1.0000		0.8577	1.0000	

Table 1 continued

	Decreases			No Change		
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation
Dividend Yield (%)	4.78	4.10	3.72	2.58	2.47	1.87
Change in Dividend Yield (%)	-3.05	-2.45	3.81	0.11	0.00	0.82
Market Capitalization (Mio. €)	3955.9	608.4	10746.5	5460.4	556.0	16315.1
Free Cash Flow (Last Year, Mio. €)	1408.5	387.6	2088.8	1277.4	133.9	2967.6
Total Assets (Mio. €)	11728.2	1498.9	33591.9	10626.2	1216.4	29959.6
Sales (Mio. €)	8791.9	1895.1	21137.4	9620.0	1473.4	23345.8
Tobin's Q	1.33	1.07	1.15	1.43	1.21	0.91
Leverage	2.08	1.47	1.71	2.15	1.87	1.59
Coverage	15.67	12.00	10.84	15.28	13.00	10.82
Dividend Estimation Error	-0.0132	-0.0110	0.0151	-0.0014	-0.0006	0.0040
Earnings Estimation Error	-0.0581	0.0000	0.2080	-0.0056	0.0000	0.0426
Voting Rights of the Largest Shareholder	0.37	0.30	0.24	0.44	0.38	0.29
Voting Rights of the 2. Largest Shareholder	0.11	0.10	0.06	0.11	0.10	0.05
Cash Flow to Voting Rights Ratio	0.9167	1.0000		0.8359	1.0000	

Panel B. Percentage of the Firm-Year Observations with Maintained, Increased and Decreased Dividends

Year	Number of Firms	Firms that Maintained Dividends (%)	Firms that Increased Dividends (%)	Firms that decreased Dividends (%)
1996	65	40.00	52.31	7.69
1997	81	28.40	67.90	3.70
1998	83	26.51	66.27	7.23
1999	91	37.36	58.24	4.40
2000	87	39.08	57.47	3.45
2001	89	38.20	42.70	19.10
2002	90	41.11	40.00	18.89
2003	89	43.82	38.20	17.98
2004	87	33.33	59.77	6.90
2005	79	26.58	67.09	6.33
2006	81	20.99	75.31	3.70

Table 2
Wealth Effects of Dividend Announcements

Table 2 presents the average abnormal returns (AAR_0) at the announcement date and the cumulative average abnormal returns ($CAAR_{-1,1}$) over the event window -1 to +1 relative to the announcement date estimated by the market model. Panel A classifies the announcements into three groups, increases, decreases and no change, and then subdivides them into good news, bad news and no news. In Panel B the announcements are first categorized into good news, bad news and no news and then subdivided into increases, decreases and no change. The test statistic proposed by Boehmer et al. (1991) and the non-parametric test statistic of Corrado (1989) are reported in columns 4 and 5 and in columns 7 and 8, respectively. Asterisks denote statistical significance at the 0.01(***), 0.05(**) and 0.10(*)-level.

Panel A. Increases, Decreases and No Change

	#	AAR_0	T-Statistic	Corrado	$CAAR_{-1,1}$	T-Statistic	Corrado
Increases	521	0.81%	5.18***	4.56***	1.44%	6.71***	5.20***
Good News	258	1.18%	6.14***	4.98***	2.02%	7.05***	5.00***
Bad News	70	-0.28%	-1.60	-1.01	-0.16%	-0.44	-0.42
No News	193	0.71%	2.55**	2.92***	1.25%	3.24***	3.82***
Decreases	85	-1.07%	-3.82***	-3.63***	-0.47%	-1.35	-0.45
Good News	7	-	-	-	-	-	-
Bad News	71	-1.27%	-4.18***	-3.88***	-0.68%	-1.72*	-0.89
No News	7	-	-	-	-	-	-
No Change	316	0.17%	1.34	2.42**	0.64%	2.47**	3.18***
Good News	28	0.73%	2.68***	2.74***	2.61%	3.69***	3.88***
Bad News	124	-0.24%	-0.25	-0.29	0.15%	0.61	0.72
No News	164	0.38%	1.49	2.94***	0.68%	1.57	2.62***

Panel B. Good News, Bad News and No Change

	#	AAR_0	T-Statistic	Corrado	$CAAR_{-1,1}$	T-Statistic	Corrado
Good News	293	1.12%	6.64***	5.33***	2.02%	7.76***	5.56***
Increases	258	1.18%	6.14***	4.98***	2.02%	7.05***	5.00***
Decreases	7	-	-	-	-	-	-
No Change	28	0.73%	2.68***	2.74***	2.61%	3.69***	3.88***
Bad News	265	-0.52%	-2.47**	-2.79***	-0.15%	-0.47	-0.22
Increases	70	-0.28%	-1.60	-1.01	-0.16%	-0.44	-0.42
Decreases	71	-1.27%	-4.18***	-3.88***	-0.68%	-1.72*	-0.89
No Change	124	-0.24%	-0.25	-0.29	0.15%	0.61	0.72
No News	364	0.53%	2.86***	3.61***	1.00%	3.58***	4.30***
Increases	193	0.71%	2.55**	2.92***	1.25%	3.24***	3.82***
Decreases	7	-	-	-	-	-	-
No Change	164	0.38%	1.49	2.94***	0.68%	1.57	2.62***

Table 3

Summary Statistics for Widely and Closely Held Firms

Table 2 provides descriptive data for widely and closely held firms. A firm is widely held if it does not have a shareholder owning more than 25% of its voting equity. A firm is closely held if there exists one shareholder who holds at least 25% of the voting shares. Cumulative average abnormal returns (CAAR) are measured over the event window -1 to +1 relative to the announcement date. The change in dividend yield is defined as the change in dividends as a percent of price (P(i,y)) 14 days before the dividend announcement, (DIV(i,y)-DIV(i,y-1)/P(i,y), where DIV(i,y) is the total (adjusted) dividend per share for stock (i) announced for year (y) and DIV(i,y-1) is the total (adjusted) dividend per share for stock (i) announced for the preceding year (y-1). The dividend estimation error is calculated as (DIV(i,y)-ESTDIV(i,y))/P(i,y), where ESTDIV(i,y) is the estimated dividend per share concerning the last I/B/E/S consensus estimates before the dividend announcement. The earnings estimation error is measured as (EPS(i,y)-ESTEPS(i,y)/P(i,y), where EPS(i,y) covers diluted (adjusted) earnings per share for stock (i) announced for year (y) and ESTEPS(i,y) is the estimated earnings per share concerning the last I/B/E/S consensus estimates before the announcement. The cash flow to voting rights ratio is calculated for the ultimate controlling shareholder. In addition to the voting rights of the largest shareholder, the voting rights of the second largest shareholder are reported if they exceed 5%. Dividend yield is calculated as DIV(i,y-1)/P(i,y) and market capitalization measures the firm's total stock value 14 days before the announcement. Free cash flow, FCF(i,y-1), is measured as EBIT plus depreciation minus income taxes plus change in net deferred taxes to last year minus minority interest minus interest minus dividends plus extra items and gain/loss sale of assets, all divided by sales (i,y-1). Tobin's q is defined as the market value of the firm's equity plus total assets minus book value of equity, all divided by total assets. The firm's leverage is defined as the sum of total current liabilities and long term debt divided by book value of equity and coverage comprises the number of I/B/E/S analysts. For comparison, the t-statistic for difference between means and the Wilcoxon-statistic for difference between medians are reported. Asterisks denote statistical significance at the 0.01(***), 0.05(**) and 0.10(*)-level.

All Announcements

	Widely held			Closely Held				
	Mean	Median	Standard Deviation	Mean	Median	Standard Deviation	T-Statistic	Wilcoxon
CAAR (%)	0.71	0.58	4.20	1.14	0.65	4.73	1.42	0.62
Change in Dividend Yield (%)	0.18	0.21	1.78	0.07	0.12	1.85	-0.92	2.10**
Dividend Estimation Error	-0.0001	0.0000	0.0088	-0.0008	0.0000	0.0076	-1.18	1.37
Earnings Estimation Error	-0.0031	0.0000	0.0551	-0.0082	0.0000	0.0801	-1.15	1.45
Cash Flow to Voting Rights Ratio	0.9634	1.0000	0.13	0.7992	1.0000	0.26	-12.76***	9.09***
Voting Rights of the Largest Shareholder	0.11	0.11	0.07	0.56	0.54	0.21	47.77***	24.97***
Voting Rights of the 2. Largest Shareholder	0.09	0.10	0.04	0.12	0.10	0.07	6.39***	4.36***
Dividend Yield (%)	2.44	2.20	1.97	2.38	2.00	2.13	-0.46	0.91
Market Capitalization (Mio. €)	8828.3	2120.2	15256.9	4802.1	902.6	13188.8	-3.98***	3.11***
Free Cash Flow (Last Year, Mio. €)	1095.3	116.3	2582.1	733.1	64.7	2225.4	-4.35***	4.33***
Total Assets (Mio. €)	20090.2	2134.9	38401.7	7851.9	1265.9	23856.6	-5.18***	-4.84***
Sales (Mio. €)	16690.4	2313.0	29826.9	5936.7	1471.8	11804.0	-6.17***	-4.93***
Tobin's Q	1.37	1.23	0.53	1.79	1.31	1.48	6.24***	3.12***
Leverage	2.08	1.61	2.28	1.86	1.41	2.20	-1.43	3.04**
Coverage	18.63	18.00	11.61	15.19	14.00	9.81	-4.49***	4.07***

TABLE 4

Cumulative Abnormal Returns and Market Expectations

Table 4 presents the results on the determinants of cumulative abnormal returns (random effects regressions). Cumulative abnormal returns ($CAR_{-1,1}$) are measured over the event window -1 to +1 relative to the announcement date. The change in dividend yield is defined as the change in dividends as a percent of price (P(i,y)) 14 days before the dividend announcement, (DIV(i,y)-DIV(i,y-1)/P(i,y), where DIV(i,y) is the total (adjusted) dividend per share for stock (i) announced for year (y) and DIV(i,y-1) is the total (adjusted) dividend per share for stock (i) announced for the preceding year (y-1). The dividend estimation error is calculated as (DIV(i,y)-ESTDIV(i,y))/P(i,y), where ESTDIV(i,y) is the estimated dividend per share concerning the last I/B/E/S consensus estimates before the dividend announcement. The earnings estimation error is measured as (EPS(i,y)-ESTEPS(i,y)/P(i,y), where EPS(i,y) covers diluted (adjusted) earnings per share for stock (i) announced for year (y) and ESTEPS(i,y) is the estimated earnings per share concerning the last I/B/E/S consensus estimates before the announcement. Dividend yield is calculated as DIV(i,y-1)/P(i,y) and market capitalization measures the firm's total stock value 14 days before the announcement. Tobin's q is defined as the market value of the firm's equity plus total assets minus book value of equity, all divided by total assets. Free cash flow, FCF(i,y-1), is measured as EBIT plus depreciation minus income taxes plus change in net deferred taxes to last year minus minority interest minus interest minus dividends plus extra items and gain/loss sale of assets, all divided by sales (i,y-1). The firm's leverage is defined as the sum of total current liabilities and long term debt divided by book value of equity. All regressions include dummy variables for each year of the sample period and for the industry classifications (Deutsche Börse). The regressions comprise 922 firm-year observations. T-statistics from robust standard errors appear in parentheses. Asterisks denote statistical significance at the 0.01(***), 0.05(**) and 0.10(*)-level.

	$CAR_{-1,1}$	
	(1)	(2)
Change in Dividend Yield	0.141	0.428
	(1.27)	(3.62)***
Dividend Estimation Error	0.986	
	(4.45)***	
Earnings Estimation Error	0.001	
	(0.04)	
Dividend Yield	0.229	0.289
	(2.14)**	(2.53)**
Ln(Market Capitalization)	-0.002	-0.002
	(-2.01)**	(-1.39)
Tobin's Q	-0.010	-0.010
	(-1.38)	(-1.47)
Free Cash $Flow_{t-1}$	-0.020	-0.022
	(-1.06)	(-1.15)
Tobin's Q*Free Cash $Flow_{t-1}$	0.053	0.051
	(0.85)	(0.85)
Leverage	-0.001	-0.001
	(-0.98)	(-1.10)
Intercept	0.069	0.056
	(2.29)**	(1.78)*
R-Squared	0.107	0.087
Wald Chi^2	110.41	89.37
$P(Chi^2)$	0.000	0.000

TABLE 5

Dividend Announcement Returns and Ownership Characteristics

Table 5 presents the results on the determinants of cumulative abnormal returns for good news/increases (random effects regressions) and bad news/decreases (OLS regressions). Cumulative abnormal returns ($CAR_{-1,1}$) are measured over the event window -1 to +1 relative to the announcement date. The change in dividend yield is defined as the change in dividends as a percent of price (P(i,y)) 14 days before the dividend announcement, (DIV(i,y)-DIV(i,y-1)/P(i,y), where DIV(i,y) is the total (adjusted) dividend per share for stock (i) announced for year (y) and DIV(i,y-1) is the total (adjusted) dividend per share for stock (i) announced for the preceding year (y-1). The dividend estimation error is calculated as (DIV(i,y)-ESTDIV(i,y))/P(i,y), where ESTDIV(i,y) is the estimated dividend per share concerning the last I/B/E/S consensus estimates before the dividend announcement. The earnings estimation error is measured as (EPS(i,y)-ESTEPS(i,y)/P(i,y), where EPS(i,y) covers diluted (adjusted) earnings per share for stock (i) announced for year (y) and ESTEPS(i,y) is the estimated earnings per share concerning the last I/B/E/S consensus estimates before the announcement. Dividend yield is calculated as DIV(i,y-1)/P(i,y) and market capitalization measures the firm's total stock value 14 days before the announcement. Tobin's q is defined as the market value of the firm's equity plus total assets minus book value of equity, all divided by total assets. Free cash flow, FCF(i,y-1), is measured as EBIT plus depreciation minus income taxes plus change in net deferred taxes to last year minus minority interest minus interest minus dividends plus extra items and gain/loss sale of assets, all divided by sales (i,y-1). The firm's leverage is defined as the sum of total current liabilities and long term debt divided by book value of equity. The cash flow to voting rights ratio is calculated for the ultimate controlling. In addition to the voting rights of the largest shareholder, the voting rights of the second largest shareholder (>5%) are included in the regression framework. All regressions include dummy variables for each year of the sample period and for the industry classifications (Deutsche Börse). T-statistics from robust standard errors appear in parentheses. Asterisks denote statistical significance at the 0.01(***), 0.05(**) and 0.10(*)-level.

	$CAR_{-1,1}$			
	Good News	Increases	Bad News	Decreases
Change in Dividend Yield	0.480	0.195	-0.044	0.186
	(1.50)	(0.90)	(-0.27)	(0.69)
Dividend Estimation Error	1.296	0.780	0.421	0.716
	(2.16)**	(2.55)**	(1.03)	(1.77)*
Earnings Estimation Error	0.132	0.187	-0.000	-0.017
	(1.45)	(2.85)***	(-0.02)	(-1.17)
Dividend Yield	0.497	0.421	-0.012	0.300
	(2.26)**	(2.17)**	(-0.07)	(1.15)
Ln(Market Capitalization)	-0.002	-0.002	0.000	-0.002
	(-0.79)	(-1.56)	(0.16)	(-0.51)
Tobin's Q	-0.004	-0.005	-0.010	-0.020
	(-0.39)	(-0.46)	(-1.09)	(-1.56)
Free Cash $Flow_{t-1}$	0.053	-0.015	-0.011	0.064
	(1.53)	(-0.54)	(-0.33)	(0.60)
Tobin's Q*Free Cash $Flow_{t-1}$	-0.084	-0.010	0.059	0.051
	(-0.97)	(-0.12)	(0.36)	(0.26)
Leverage	-0.002	-0.001	-0.001	0.001
	(-1.99)**	(-1.08)	(-0.34)	(0.43)
Voting Rights of the Largest Shareholder	-0.086	-0.066	0.037	-0.048
	(-1.71)*	(-2.01)**	(0.88)	(-0.62)
Voting Rights of the Largest $Shareholder^2$	0.108	0.080	-0.035	0.081
	(1.99)**	(2.12)**	(-0.82)	(0.91)
Voting Rights of the 2. Largest Shareholder	-0.001	0.001	0.004	0.001
	(-0.27)	(0.19)	(-0.69)	(0.09)
Cash Flow to Voting Rights Ratio	-0.034	-0.024	-0.017	-0.003
	(-2.13)**	(-2.01)**	(-1.10)	(-0.12)
Intercept	0.070	0.101	-0.002	-0.015
	(1.09)	(2.02)**	(-0.05)	(-0.16)
R-Squared	0.282	0.167	0.082	0.248
Wald Chi^2/F-Statistic	247.63	95.13	0.93	1.53
P(Chi^2)/P(F-Statistic)	0.000	0.000	0.554	0.096