

# Never Judge a Book by Its Cover

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## What Security Analysts Have to Say Beyond Recommendations<sup>♦</sup>

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### Abstract.

Our study analyzes the market reaction to the complete content of a large sample of analysts' reports in the period from 2002 to 2004 for the German market. In particular, we explore whether the three summary measures in the reports, i.e., recommendation revisions, earnings forecast revisions, and target price forecast revisions are acknowledged by the market. Additionally, we investigate if the given justifications in the written text of analysts' reports contain information value beyond the three summary measures. We find that earnings forecast revisions and target price forecast revisions contain valuable information, both unconditional and conditional on the remaining information in the report. Recommendation revisions, however, do provide little independent information. Our findings also reveal that the justifications given by the analysts are highly acknowledged by market participants. These justifications provide valuable information, both unconditional and conditional on all other types of information in a report. With respect to the current discussion about potential conflicts of interests of affiliated analysts, our findings suggest that business ties between banks and the analyzed companies do not affect the market reaction to the dissemination of an analysts' report, systematically. Finally, we find the summary measures and the given justifications in the written text to have a much more pronounced impact on the market reaction for reports issued by banks with a particularly high reputation in the industry compared to other banks.

Keywords: security analysts' reports, information production, market efficiency, stock recommendation, information content, target price, earnings forecast

JEL Classification: G14; G15

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## 1 Introduction

Academics, practitioners, and private investors alike have long been interested in understanding the activities of financial analysts. In particular, the question whether analysts' reports do contain useful information and thus affect market efficiency has been discussed intensively over the last decades.<sup>1</sup> An analyst report is the culmination of an analysts' work which includes the collection and evaluation of information related to the future performance of a specific company. This process of collecting and evaluating information results in a detailed written report which usually displays the following three summary measures on its front page: (i) the actual and the previous recommendation level (i.e., buy, hold, or sell), (ii) the actual and the previous corporate earnings forecast, and (iii) the actual and the previous target price forecast. In addition, the written text of the report provides extensive quantitative and qualitative analyses supporting the three summary measures. Finally, the bank which employs the respective analyst disseminates the report to its clients and thus to the market. Regularly, bank clients do not pay directly for the reports. In contrast, they pay indirectly for the information via commissions when trades are executed at the brokerage of the bank. Alternatively, the bank is compensated by commissions on other investment banking services. Most prior research has documented that analysts' reports usually trigger a significant market reaction around their dissemination.<sup>2</sup>

Our study provides novel evidence on analysts' reports for the German capital market. In particular, we analyze the market perception of the various elements which can be found in analysts' reports. Therefore, we analyze a hand-collected random sample of 1,000 original analysts' reports in the 3-year period from 2002 to 2004 in order to explore which report elements (i.e., recommendation revision, earnings forecast revision, target price forecasts revision, and the content of the written text) are the distinctive sources which cause a revaluation of the respective stock. Specifically, we explore whether the three summary measures do provide independent signals to the market or whether one signal incorporates the information of the other signals. Thereby, we provide evidence for the information content of target prices; an analysis which has not been conducted for the German market before. Most importantly, however, we present analyses beyond the three summary measures as we investigate the association between the market reaction and the written content of analysts' reports. In particular, we hand-code the complete text of each of the 1,000 reports in order to

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<sup>1</sup> Starting with the work of Cowles (1933), several hundred studies have been published on analysts' reports.

<sup>2</sup> For an extensive review of literature, see section 2 of this paper.

measure the strength of the justifications given to derive the three summary measures; an analysis that has not been conducted for a market outside the US before. We find that earnings forecast revisions and target price revisions do contain both valuable and independent information. Recommendation revisions, however, only provide little valuable information beyond the other information disclosed in the reports. Besides the three summary measures which have been in the focus of prior research, we find that the written justification given by the analysts in the body of the text seems to be the most important determinant of the market reaction; a result which has been basically neglected in prior research. The given justifications are highly acknowledged by market participants. In addition, it shows that including a measure for the given justifications reduces or even eliminates the significance of the traditionally analyzed summary measures.

We also assess the extent to which potential conflicts of interest are at work when analysts write and publish their reports. In the presence of conflicts of interests like underwriting relationships, analysts might be tempted to paint a too positive picture of companies' prospects in order to secure current and future deal flow with the company. These conflicts of interest could arise since investment banks' clients should not be embarrassed by too negative reports. Following increased US regulation, internationally operating banks offer information on business relations with the analyzed company in each analyst's report.<sup>3</sup> In particular, we use the information provided in the reports about the intensity of the business ties to proxy the extent of potential conflicts of interest. We examine whether the market discounts potentially biased forecasts of conflicted analysts. The findings of our study reveal, however, that conflicts of interest do not affect the market reaction to the dissemination of an analysts' report, systematically.

Novel to the literature which analyzes the market reaction to all elements of an analyst's report, we analyze whether market perception of the elements in a report differ with regard to the reputation of the issuing bank. In particular, we partition our sample according to the criterion whether the issuing bank was among the Top3 banks according to the ranking of *Institutional Investor*. Our study reveals a decisive disparity in the market reaction on the elements in the report between top banks and the remaining banks. Whereas the market reacts to both summary measures and the given justifications in the written content of the report for top banks, the market perceives only the given justification and not the summary measures as

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<sup>3</sup> The Sarbanes-Oxley Act implements many new requirements for analyst research. E.g., banks are now enforced to publish information about sell-side remuneration issues and about business ties between the banks and the analyzed companies.

relevant factors for remaining banks' reports. This result leads to the following reasoning. First, the market seems to rely more heavily on the research of highly reputable banks. Second, this finding highlights the decisive role of the written content of reports, since only the given justifications provide relevant information to the market in all cases.

Finally, we perform various robustness tests in order to verify our finding that the given justifications in the body of the text are the most relevant information in an analyst's report. In particular, we analyze whether company characteristics affect inference about the sources of investment information and thus the particular skills of analysts. Specifically, we examine whether we can find differences along the dimensions market capitalization and price-to-book value of stocks, two proxies widely used in the literature to control for the information environment of the recommended companies. Furthermore, we test whether results are robust within bull and bear markets. In addition, we explore whether a simultaneous disclosure of earning figures by the company distorts implications about analysts' skills. The results of the robustness tests confirm that the given justifications in the written text of the report are the most significant and robust factors in the price formation process when controlling for company characteristics, different market phases and company's news disclosure. The market acknowledges the detailed information in the text of a report. The three summary measures seem to have less information value than the information in the text. To sum up, buy side managers (e.g., fund managers) who are the usual recipients of analysts' reports are well advised to read the written content of the report carefully.

The remainder of the paper is organized as follows. Section 2 presents the related literature. Section 3 reveals our sample selection procedure, presents summary statistics on a typical analysts' report and introduces the model variables. Section 4 presents empirical results with respect to the determinants of the market reaction to analysts' reports. Section 5 summarizes our findings and concludes.

## **2 Related Literature**

Early research on analysts' reports studies each of the three summary measures separately. In particular, most of the early studies (see, e.g., Elton *et al.*, 1986; Stickel, 1995; Womack, 1996; and Mikhail *et al.*, 1997) concentrate on the issue whether a revision in analysts' recommendation levels triggers a market reaction of the respective stock. These studies document a positive stock price reaction for upgrades, whereas downgrades are associated

with negative abnormal returns.<sup>4</sup> In addition, the studies find that downgrades are usually associated with a more pronounced market reaction than upgrades. However, analyzing recommendation revisions has (at least) two decisive drawbacks. First, recommendation revisions occur rather infrequently. Prior research has shown that the majority of analysts' reports reiterates the prior recommendation level. For example, Elton *et al.* (1986) document that only 11.6% out of in their sample of 9,977 analysts' recommendations are subject to a change in recommendation levels. Second, another problem of analyzing recommendation levels in isolation is that there is a limited number of recommendation levels.<sup>5</sup> Thus, the complex information derived by the analyst is translated in discrete recommendation categories. This ultimately leads to an imprecise statistic and a loss of precision. Thus, in addition to analyzing recommendation revisions, another strand of literature analyzes the market reaction to revisions in earnings forecasts, and thus a continuous variable. The literature (see, e.g., Abdel-khalik and Ajinkya, 1982; Lys and Sohn, 1990; Stickel, 1991; and Mikhail *et al.*, 1997) documents that changes in earnings forecasts trigger a significant market reaction. Stock prices rise in conjunction with a positive revision of future earnings estimates and vice versa. Finally, revisions of target prices, which also can be set continuously by the analyst, have been subject to a number of studies. Analogously to the finding for earnings forecast revisions, the studies (see, e.g., Bandyopadhyay *et al.*, 1995; and Bradshaw, 2002) document a positive relation between the market reaction and the target price revision published by the analysts.

More recently, the literature has shifted its focus with respect to analyzing the summary measures of analysts' reports simultaneously. The respective research is motivated by the question whether the three summary measures provide distinct information to the market or whether one particular summary measure, like the revision of the recommendation level, reflects the information of the remaining summary measures perfectly. Francis and Soffer (1997) analyze whether both earnings forecast and recommendation revisions impact stock prices and find that earnings forecast revisions are informative even when controlling for recommendation changes. Brav and Lehavy (2003) broaden the analysis of Francis and Soffer (1997) with respect to target prices, a key information in the reports which has been neglected by research for a long time, and find a significant market reaction to the information

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<sup>4</sup> Jegadeesh *et al.* (2004) show that the investment value of analysts' recommendations can only be partly explained by other predictive variables like stock's momentum or turnover volume. In particular, analysts' recommendations seem to contain information orthogonal to a large set of other predictive variables.

<sup>5</sup> Banks mostly used a five category scheme for their recommendations, i.e., strong buy, buy, hold, sell and strong sell. In 2002, Lehman Brothers, Morgan Stanley and Goldman switched to a three category rating; as a consequence most investment banks followed with their ratings (see Bradley *et al.*, 2003).

contained in target prices conditional on contemporaneously issued recommendation levels and earnings forecasts.

Since the three summary measures have shown to provide independent signals to the market, Asquith *et al.* (2005) expand the literature by adding a fourth information, i.e., the analyst's justification supporting his opinion, to the analysis. Unlike the first three summary measures, which are quantitative by nature and which can be obtained rather easily from commercial data providers like *I/B/E/S (Institutional Brokers Estimate System)*, *Thomson First Call* or *Zacks Investment Research*, information on the analyst's justification can only be gathered by reading the entire text of each analyst's report. Early studies which follow this cumbersome approach analyze the written content of reports in a rather explorative way (see, e.g., Previts *et al.*, 1994; and Bradshaw, 2002) but do not relate their findings to the induced market reaction.<sup>6</sup> Asquith *et al.* (2005), however, are the first to analyze the market reaction with respect to both the three summary measures as well as the analysts' justification supporting the summary measures. Their seminal findings can be summarized as follows: First, the inclusion of the analyst's justification is not only a highly significant factor for the market reaction. But the inclusion of the analyst's justification also reduces or even eliminates the significance of the information available in earnings forecast and recommendations revision. Second, they report an  $R^2$  of their regression results of over 20% which is three to four times larger than found in studies that employ only quantitative summary measures of a report (see, e.g., Francis and Soffer, 1997; and Brav and Lehavy, 2003). Hence, the authors show that traditional studies on analysts' reports neglect decisive information, i.e., the written content of a report, and thus produce biased results concerning the determinants of the market reaction.

Building upon the finding that analysts' reports trigger a market reaction in general, the question whether analysts are subject to conflicts of interests while writing reports has attracted considerable attention from financial practitioners and academic circles alike. The respective research is motivated by corporate frauds in the last decades which finally provoked financial regulations. In particular, according to a SEC (*Securities Exchange Commission*) settlement from April 2003, a clear separation of stock research from investment banking is required. The evidence whether conflicts of interest exist, however, is rather

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<sup>6</sup> Demirakos *et al.* (2004) also conduct a content analysis of financial analysts' reports while focusing on employed valuation methodologies for the UK.

mixed.<sup>7</sup> On the one hand, studies like Lin and McNichols (1998), Michaely and Womack (1999) and Dechow *et al.* (2000) find that conflicts of interests exist since affiliated analysts issue more favorable reports than their non-affiliated colleagues. Bradshaw *et al.* (2003) find that analysts routinely manipulate their investment advice as a response to investment banking pressure. A recent study by Agrawal and Chen (2008) documents that the level of recommendations is positively related to the conflicts of interest an analyst faces. However, they find that the market properly discounts the positive bias. On the other hand, e.g., Dugar and Nathan (1995) and Clarke *et al.* (2006) find that the market reaction does not depend systematically on a potential affiliation. In addition, Iskoz (2003) and Agrawal and Chen (2004) both conclude that in general, there is no evidence that affiliated or investment bank analysts are more biased than analysts from independent research firms. Contrary to common wisdom, Cowen *et al.* (2006) even find that analysts employed by banks which fund research through underwriter and trading activities issued less optimistic forecast and recommendations as opposed to banks which do not perform M&A services at all.

Another strand of literature analyzes whether the reputation of the issuing bank has an impact on the quality of analysts' reports. E.g., Clement (1999) and Jacob *et al.* (1999) document those analysts working for large and prestigious banks to issue more precise earnings forecasts. This empirical evidence might be explained by career concerns of analysts. Hong and Kubik (2003) show that analysts who issue more accurate forecasts are more likely to change their job to a prestigious and large bank. On the contrary, prestigious banks are more likely to dismiss an analyst for poor performance than less reputable banks. With respect to the market reaction and thus the perception of investors to the information comprised in a report, prior research has shown that highly ranked analysts do provide more accurate earnings forecasts and that respective recommendations result in more pronounced stock price reactions (see, e.g., Stickel, 1992; and Stickel, 1995). Accordingly, Clement and Tse (2003) find that investors respond more strongly to forecasts issued by analysts of large banks. Bonner *et al.* (2007) proxy the reputation of an analyst by the degree of media coverage an analyst attracts. Their findings also suggest that the degree of media coverage, thus the reputation, affects the initial market reaction to his forecast. Fang and Yasuda (2006) provide complementing evidence for an exceptional information value of recommendations published by analysts employed by top-tier banks. In particular, an investor could achieve higher returns by following investment advice by top-tier banks compared to executing recommendations of

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<sup>7</sup> E.g., Barber *et al.* (2007) report that buy recommendations of independent research firms overperform those of investment banks. Sell recommendations of independent research firms, however, underperform those of investment banks.



less prestigious banks. Accordingly, Sorescu and Subrahmanyam (2006) also provide supporting evidence that analysts employed by prestigious banks show a greater ability to forecast stock prices.

The review of the literature above mainly refers to empirical studies conducted for the US. Empirical evidence based on non-US data is, however, rather sparse. A rare exception is the paper by Jegadeesh and Kim (2006). They analyze the *I/B/E/S* detailed history file with respect to recommendation revisions in the G7 countries in the period from 1993 to 2002. As a result, they find a significant market reaction in all countries except Italy. Another major finding of the study is the superiority of US analysts which provide most value to investors despite of facing the most severe conflicts of interest. The authors conclude that US analysts are likely to be highly skilled in identifying mispriced stocks as opposed to their colleagues abroad. However, in contrast to the recent literature on the US market the authors do not evaluate different types of summary measures simultaneously. Another study by Au (2005) extends the analysis with respect to analyzing recommendation changes and earnings estimates both unconditional and conditional on each other. Also employing the *I/B/E/S* detailed history file she analyzes a large sample of constituents of the *MSCI Europe Index* in the period from 1993 to 2004. She finds both summary measures to contain independent and valuable information. However, to the best of our knowledge there does not exist a study on non-US data examining the entire set of all three summary measures simultaneously. Nor does any international evidence exist on the information content of analysts' justifications derived from the written content of reports. The current study tries to fill this gap in research.

### **3 Sample Selection, Summary Statistics, and Model Variables**

#### *3.1 Sample Selection*

Our study focuses on original analysts' reports issued for German stocks in the 3-year period from 2002 to 2004. We obtain the original reports from the database *Investext*. This database offers the most complete set of original analysts' reports on companies for a large number of different countries. In particular, *Investext* provides reports issued by over 450 investment banks, brokerage houses and independent research firms which cover more than 30,000 companies worldwide. For German stocks, the database comprises 31,423 reports in the investigation period. Since our analyses ask for reading each report in its entirety, which requires approximately 30 minutes per report, we had to restrict our universe of reports. Thus,

we employed the following sampling procedure: First, with respect to the issuing bank we restrict our analysis to reports issued by banks that appear in the *Institutional Investor's* ranking in at least one year during our investigation period. A bank is listed in the ranking when it employs analysts that are part of the *Institutional Investor's* All-European Research Team.<sup>8</sup> Prior research for the US market has also frequently taken the *Institutional Investor's* annual ranking as a selection criterion (see, e.g., Stickel, 1992; Previts *et al.*, 1994; Stickel, 1995; Womack, 1996; and Fang and Yasuda, 2006). Please note, however, that research on the US market has shown that highly ranked analysts do provide more accurate earnings forecasts and that respective recommendations result in more pronounced stock price reactions (see respective review of literature in Section 2). Thus, one has to be aware that our results do not yield for the universe of all investment banks but for highly reputable leaders of the industry. Ultimately, 13 banks of the *Institutional Investor's* rankings provide reports in the *Investext* database.<sup>9</sup> Second, with respect to report characteristics and in order to focus on regular company specific reports we further restrict our sample to reports between three and 20 pages length and excluded any report on industry and sector analysis since these do not provide company specific information. In our investigation period from 2002 to 2004, we identify 10,364 reports that match our search criteria. Finally, in order to reduce the final number of reports to a manageable level, we draw from these 10,364 reports a random sample of 1,000 reports.

A crucial issue in determining the market reaction to a report is the definition of the date of dissemination to the public. As far as the reports in our random sample are concerned, all reports provide an initial publication date on the report itself. This publication date is identical with the date in the *Investext* database. However, the question remains if the date on the report is indeed the first time that the report is transmitted to bank's clients and, thus, is publicly available to investors. One way to reveal the earliest possible date of dissemination is to look at the current stock price mentioned in each report. This price might indicate when the analyst finished writing the report and, hence, could have disseminated it to clients. In 64.3% of the sample reports the date of the current stock price is indicated on the report itself. Analyzing this subgroup of reports, we find that the mean (median) number of trading days between the

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<sup>8</sup> Every year, the magazine *Institutional Investor* conducts a survey among a large number of buy-side managers who evaluate sell-side analysts along the four dimensions stock picking ability, earnings forecasts accuracy, quality of written reports, and overall services. Analysts become member of the *Institutional Investor's* All-European Research Team if they are recognized as top analyst in a given industry in the survey. Please note that *Institutional Investor* does not provide a specific ranking for the German market.

<sup>9</sup> These banks are ABN Amro, BNP Paribas, Citigroup Smith Barney / Schroder Salomon Smith Barney, Credit Suisse First Boston, Deutsche Bank, ING Financial Markets, JP Morgan, Julius Bär Brokerage, Kempen & Co., Pictet & Cie, Sanford C. Bernstein & Co., Santander Central Hispano Bolsa and UBS (Warburg).

indicated date of the current stock price and the official publication date of the report is 1.4 (1.0) trading days. Therefore, we decided not only to analyze the market reaction on the exact publication date of the report but the market reaction from two trading days prior to two trading days subsequent to the publication date reported on the report itself.

### 3.2 Summary Statistics

Table 1 presents summary statistics for the information collected from the 1,000 randomly selected reports. All reports are classified by the recommendation level in three categories, i.e., buy, hold and sell recommendation.<sup>10</sup> We therefore organize the table along this dimension. Usually, reports also indicate whether a recommendation is an upgrade, a reiteration or a downgrade; an information which is crucial since it potentially provides novel information to the market. If this type of information is not available in the sample report itself, we searched for the most recent report available in the *Investext* database (if released within 60 days prior to the sample report) to determine the previous recommendation level.<sup>11</sup> Within the table, each category (Buy, Hold and Sell) is therefore separated in upgrades (Up), reiterations (Reit) and downgrades (Down) if this applies to the respective category. Furthermore, in the last four columns of the table, we report statistics for all upgrades (Up), all reiterations (Reit), all downgrades (Down) and all reports (Total).

[ Insert Table 1 about here ]

Similar to the findings in prior studies (see, e.g., Barber *et al.*, 2001; and Brav and Lehavy, 2003), Panel A of Table 1 shows that analysts issue considerably more buy (455) and hold recommendations (422) than sell recommendations (123). When considering recommendation revisions, changes of recommendations are rare events. Only 50 reports are

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<sup>10</sup> Due to the fact that at the beginning of our investigation period in 2002, Lehman Brothers and other banks switched from a five category rating scheme to a three category rating scheme (see Bradley *et al.*, 2003), we find only a negligible percentage of 1.4% of strong buy recommendation. The recommendation level of a strong sell is actually never used. Therefore, we join these 15 strong buy recommendations with the 440 buy recommendations to obtain a three category rating scheme which is adopted by most leading investment banks today. The procedure is also applied in Ertimur *et al.* (2007).

<sup>11</sup> Asquith *et al.* (2005) mention that analysts usually write a minimum of six reports a year on the companies they follow. Therefore we only include information about prior recommendation levels from those prior reports which date back a maximum of 60 days. Applying this procedure, we are able to determine the prior recommendation level for 96.4% of our sample reports.

upgrades and 63 reports are downgrades.<sup>12</sup> The reluctance of analysts' to change recommendation levels highlights the relevance to explore analysts' reports beyond recommendation revisions, i.e., with respect to the earnings and target price revisions and the given justifications in the report. Upgrades happen to result more often in buy recommendations (66%) than in hold recommendations (34%) and downgrades result more often in hold recommendations (71.4%) than in sell recommendations (28.6%). Whereas all reports contain information about the current recommendation level, this does not yield for earnings forecasts and target prices. As can be seen in the last column of Panel A, 92.0% of the reports contain earnings forecasts for the upcoming financial year. With respect to price targets, 97.0% of the sample reports provide this summary measure.<sup>13</sup>

We are also interested in whether the reports analyzed are issued as a reaction of an important news release by the company. Thus, in order to identify concurrent news disclosure by the company we inspect for each sample report whether an important corporate news disclosure was transmitted to the market prior to the publication of the report. In particular, we draw on two information sources. First, according to the mentioned reason for the publication on the report itself, we find that 47.9% of the reports are written as a reaction to the disclosure of company's figures like quarterly earnings data. Second, federal law requires companies in Germany to immediately disclose specific information which is not subject to public knowledge and which, if it became publicly known, would likely have a significant effect on the stock price of the respective company, via an ad hoc announcement (see §15 *Securities Trading Act (Wertpapierhandelsgesetz)*).<sup>14</sup> Panel A of Table 1 displays that 28.8% of the reports are preceded by ad hoc announcements published within the five-day period from four trading days prior to the publication to the publication day itself [-4,0]. In the three-day prior period ending at the publication day [-2,0], 25.3% of the reports are preceded by ad hoc announcements. This second information source indicates that around a quarter of reports might be triggered by recent ad hoc announcements.

As mentioned before, in order to analyze nuances aside the three summary measures, we examine the complete text of the reports. In particular, we identify 15 categories on which analysts commonly give justifications for their recommendations. For example, analysts' reports usually deal with the question whether expectations on sales have been met or whether

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<sup>12</sup> A similar predominance of reiterations is documented by Elton *et al.* (1986).

<sup>13</sup> Sometimes, target prices were explicitly given for a 12-months period. More commonly, however, a time horizon for the target price forecast was not provided by the analysts. Nonetheless, we do not suspect our analysis to be negatively affected since we do not find a systematic structural break in the (unknown) time horizon.

<sup>14</sup> Ad hoc announcements are provided by *DGAP* (Deutsche Gesellschaft für Ad-hoc-Publizität).

these expectations have been missed. We evaluate for each category whether an analyst made a positive or negative statement on each topic assigned to one of the categories (in cases the topic was addressed within the report). Following Asquith *et al.* (2005) with small adaptations we distinguish the following categories: expectations on revenues/sales met, expectations on earnings/profits met, outlook on revenues/sales, outlook on earnings/profits, product introduction, new project, cost (in)efficiency, M&A activity, stock repurchase, industry climate, quality of management, international operations, competition, risk, and future business perspective.

Panel B of Table 1 displays for all 15 categories how often, within each category, positive or negative information is disclosed. For example, within 32.6% of the total sample, analysts disclose the information that expectations on revenues/sales were met or exceeded, indicating a positive information for this category. Only in 10.6% of the sample, these expectations were not met and thus negative information on this category was conveyed. In 13 of the 15 categories, analysts are more reluctant to disclose negative as opposed to positive information. Only when it comes to the industry climate and risk, analysts disclose more negative than positive information. It comes to no surprise that the information that the expectations on revenues/sales were met or exceeded coincides more often with upgrades (36.5%) compared to the coincidence with reiterations (33.0%) or downgrades (24.6%). For the entire set of categories we find the percentage of positive information to be higher for upgrades than for downgrades in 14 out of 15 cases (with the exception of M&A activity). Accordingly, the fraction of negative information is higher for downgrades than for upgrades in all but two categories (with the exceptions of the quality of management and competition). With respect to the recommendations themselves, we can find supporting evidence – positive information coincides mainly with buy recommendations, whereas negative information coincides mainly with sell recommendations. Overall, the following categories of analysts' justification are most often addressed: expectations on revenues/sales (positive: 32.6%, negative: 10.6%), expectations on earnings/profits (positive: 33.7%, negative: 14.4%), outlook on revenues/sales (positive: 23.0%, negative: 13.7%), outlook on earnings/profits (positive: 28.5%, negative: 16.4%), cost (in)efficiency (positive: 17.4%, negative: 3.9%), industry climate (positive: 3.1%, negative: 13.1%), risk (positive: 3.2%, negative: 23.5%), future business perspectives (positive: 15.2%, negative: 6.2%).

In order to estimate the level of conflicts of interest which an analysts might face we take advantage of the disclosure of business ties on the reports. In particular, we find a respective disclosure by the issuing bank in 68.1% of the sample reports. By analyzing the sample

reports, we identify a number of categories of business ties which are usually addressed. The categories can be classified as: (i) the bank has current holdings in the firm, (ii) there exists a bank-firm connection via an investment banking relationship, (iii) there exists a bank-firm connection via a non-investment banking relationship, (iv) a compensation is paid for the bank for its services, (v) the bank serves as a market maker for companies' stocks, (vi) banks' employees perform director functions for the company and, finally, (vii) the bank serves as an underwriter for the company. In most cases, reports disclose not only a single relation between the brokerage firm and the covered company but a set of different business ties, each mentioned separately. Panel C of Table 1 displays for each of the seven categories how often, within each category, a relation between the bank and the covered company is disclosed. Note that percentages are calculated for the sub sample of reports which provide information concerning business ties to the analyzed company (see Panel A of Table 1). As presented in Panel C of Table 1, business ties between banks and the company are especially prevailing in terms of paid compensations (60.4%) and investment banking relationships (53.2%). It is therefore an essential question if such potential conflicts of interest lead to biased reports and whether this potential bias is recognized by the market via discounting the potential information value of the report.

### 3.3 Model Variables

In order to analyze the impact of the three summary measures and the strength of the given justifications, we first have to specify some model variables. With respect to the first summary measure, the revision in recommendation levels, we define two dummy variables.  $UP\_GR_{j,t}$  is set to 1 if an analysts' recommendation for firm  $j$  is upgraded at time  $t$  from the previous level in  $t-1$  and 0 otherwise. Accordingly,  $DOWN\_GR_{j,t}$  is set to 1 if an analysts' recommendation for firm  $j$  is downgraded at time  $t$  from the previous level in  $t-1$  and 0 otherwise. For the two remaining summary measures, we calculate for each report the respective percentage change from the previous report. We compute the revision of earnings forecasts  $EARN\_REV_{j,t}$  as the percentage change from the current earnings per share forecast (for the upcoming financial year) of firm  $j$  at time  $t$  compared to the previous reports earnings forecast (for the identical upcoming financial year) of firm  $j$  at time  $t-1$ . We obtain previous earnings forecasts for 71.9% of the sample.<sup>15</sup> After computing the earnings revision, we truncate the 1<sup>st</sup> and 99<sup>th</sup> percentile to mitigate the effect of possible outliers. As can be seen in

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<sup>15</sup> If the prior earnings forecast is not disclosed in the report itself, we searched for the prior earnings forecast in the most recent report available in the *Investext* database (if released within 60 days prior to the sample report).

Panel D of Table 1, upgrades are associated with a mean earnings forecast revision of 6.9%, reiterations with -1.4% and downgrades with -3.6%. Interestingly, downgrades to sell recommendations come along with much more pronounced mean earnings forecasts reductions (-9.2%) compared to downgrades to hold recommendations (-1.7%). Concerning the third summary measure, we define the variable  $TP\_REV_{j,t}$  which represents the percentage change of the current target price of firm  $j$  at time  $t$  compared to the previous target price of firm  $j$  at time  $t-1$ . We obtain previous target prices for 85.6% of our sample.<sup>16</sup> In order to avoid distortion caused by extreme outliers, we again truncate the 1<sup>st</sup> and 99<sup>th</sup> percentile for  $TP\_REV_{j,t}$ . Upgrades are associated with an increase of 10.5% of target prices, whereas downgrades are accompanied by a respective decrease in target prices of -8.9%. Reiterations reveal a target price change close to zero (-0.8%). Note that the mean target price changes reveal greater dispersion compared to mean earnings forecast changes.

With respect to the justification supporting an analysts' opinion and thus the written content of the report, we define the variable  $STR\_ARG_{j,t}$  which measures the direction and the strength of the given justifications. As described in the previous section more in detail, we catalogue the written content of the report with respect to 15 information categories. Closely following Asquith *et al.* (2005),  $STR\_ARG_{j,t}$  aggregates the total number of positive statements in the 15 categories less the total number of negative statements in the 15 categories for firm  $j$  at time  $t$  for each report. For example, if an analyst writes positively about the introduction of a new product, a recent M&A activity and an improvement in the industry's climate, each of these three categories will be assigned the value of +1. In addition, if the outlook about future sales is negative in the same report, this accounts for a value of -1. Consequently, our variable  $STR\_ARG_{j,t}$  will take a value of +2 (3-1) for this report. Panel D of Table 1 reveals summary statistics for  $STR\_ARG_{j,t}$ . Whereas upgrades are associated with an average of 1.7 positive arguments and thus a predominance of positive information in the written text, reiterations are only associated with an average of 0.8 positive arguments and downgrades with an average of 0.8 negative arguments (-0.8). However, one could argue that the linear modeling of the variable  $STR\_ARG$  is not the appropriate functional form to measure the strength of the written arguments. Alternatively, one could propose that the marginal value of analysts' justifications is decreasing with any new reasoning in the same direction. Thus, we alternatively consider each additional positive (negative) statement as less valuable as prior statements in the same direction. To model this decreasing marginal effect of

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<sup>16</sup> Again, if the prior target price is not disclosed in the report itself, we searched for the prior target price in the most recent report available in the *Investext* database (if released within 60 days prior to the sample report).

an additional positive (negative) statement, we define the variable  $\text{LOG\_STR\_ARG}_{j,t}$  which takes the natural logarithm of positive statements less the natural logarithm of negative statements into account.<sup>17</sup>

To construct proxy variables for the potential severity of conflicts of interest we follow a very simple approach by adding the number of business ties reported by the analyzing bank (see section 3.2). Our first proxy variable  $\text{UND\_HLD}_{j,t}$  is constructed in accordance with the respective definition in Asquith *et al.* (2005) and takes the most important sources for potential conflicts of interest into account (underwriter affiliation and stock holdings).  $\text{UND\_HLD}_{j,t}$  takes on a value of 1 if the employer is an underwriter of the firm or has current holdings in the firm, 2 if the employer is both an underwriter and has current holdings in firm  $j$  at time  $t$ , and 0 otherwise. Our second proxy variable  $\text{CoI}_{j,t}$  comprises all business ties and thus encompasses any kind of potential origin for conflicts of interest. The variable can take on any value between zero and seven depending on the number of business ties mentioned in the report. Panel D of Table 1 shows that the average value of potential conflicts of interest as disclosed by  $\text{UND\_HLD}$  is close to one for the total sample. Thus, on average, the bank is either an underwriter of the firm or has current holdings in the firm. As far as the second proxy variable  $\text{CoI}_{j,t}$  is concerned, we find an average number of potential conflicts of interests of 2.6, indicating a rather close relationship between the analysts' employer and the analyzed firms. Thus, our sample allows for analyzing whether these severe business ties lead to biased reports.

In order to get a first glance on the question whether the three summary measures and the variable for analysts' justification reflect independent information, Table 2 displays Spearman correlation coefficients for the model variables defined above. Concerning the correlation between the three summary measures, we find that upgrades are significantly positively correlated with both earnings forecast revisions (0.0910,  $p = 0.0107$ ) and target price revision (0.1950,  $p = 0.0000$ ). Accordingly, downgrades are significantly negatively correlated with both earnings forecast revisions (-0.1001,  $p = 0.0050$ ) and target price revision (-0.2147,  $p = 0.0000$ ). Reiterations, however, are not significantly correlated with the two remaining summary measures. The table documents the strongest correlation between the two metric summary measures  $\text{EARN\_REV}$  and  $\text{TP\_REV}$  (0.4434,  $p = 0.0000$ ).

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<sup>17</sup> The variable  $\text{LOG\_STR\_ARG}$  is calculated as follows:  $\ln(\text{sum of positive statements} + 1) - \ln(\text{sum of negative statements} + 1)$ .



[ Insert Table 2 about here ]

With respect to the correlation between the summary measures and the variable for the given strength of arguments STR\_ARG, we find a significantly positive correlation. In particular, the model variables STR\_ARG and EARN\_REV are positively correlated (0.3402,  $p = 0.0000$ ); the same yields for the correlation of the model variables STR\_ARG and TP\_REV (0.2893,  $p = 0.0000$ ). This means that, in general, positive (negative) earnings forecast revisions (target price revisions) are accompanied by positive (negative) justifications within the text. With respect to the recommendation revision, high values for STR\_ARG are significantly positively (negatively) associated with upgrades (downgrades). Similar results are documented for correlations between the summary measures and the logarithmic specification of the strength of arguments. So finally, the inspection of correlation coefficients yields two insights. On the one hand, it does not seem that any variable incorporates the information of the other variables as the correlation coefficients are strictly well below 50%. On the other hand, we document significant correlation between the model variables which could induce estimation problems in multivariate OLS regressions. We try to account for this potential multicollinearity problem by developing the full model specification in a stepwise procedure.

After having introduced all model variables, we finally have to estimate the triggered market reaction. Therefore, we compute via the market-model the five-day cumulative abnormal return (CAR) centering the official publication date. To measure the market reaction to published reports, we apply standard event-study methodology outlined by MacKinlay (1997). For each report, calendar time is converted to event time by defining the publication date as event day [0]. The estimation period encompasses the period from [-180] to [-11] whereas the period from [-2,+2] is defined as the event period. Abnormal returns for any given point in time and stock are the difference between realized and normal returns. For realized returns, we download the type *RI* from *Datastream* which includes adjustments for dividends and stock splits. In order to estimate these expected, normal returns, we choose the market model as surveyed by Brown and Warner (1985). First, for raw returns of each recommended stock, we estimate OLS parameters in the estimation period while using the value-weighted CDAX as the independent variable. This index consists of the entire universe of stocks traded on the *Frankfurt Stock Exchange*. Within the context of the market model, the normal return on each day in the event period is defined as the return of the CDAX, adjusted

by the estimated OLS parameters. Panel D of Table 1 reveals that upgrades are associated with a moderate average CAR of 0.8%, whereas downgrades lead to a pronounced negative average CAR of -4.3%. Reiterations do not seem to systematically affect stock prices as the respective average CAR is close to zero (-0.3%). Consequently, the average CAR for the whole sample is -0.5% within these five days.

## 4 Results

### 4.1 Determinants of the Market Reaction

In this section, we analyze the market reaction to analysts' reports with respect to the model variables described previously. Since multicollinearity might be an issue in our data set, we apply a stepwise procedure in a sense that we first regress each coefficient separately on the five-day cumulative abnormal return. Successively, we include additional variables in order to judge whether the signals in the report provide independent information to the market or whether one signal incorporates the information of the other signals.<sup>18</sup> Our analyses are based on standard OLS estimations employing robust standard errors as proposed by White (1980).<sup>19</sup>

With respect to the most prominent summary measure, the recommendation revision, column (1) of Table 3 displays that upgrades are associated with a positive (but insignificant) market reaction ( $t = 0.83$ ), whereas we observe a negative stock price reaction for downgrades where the coefficient is negative and statistically different from zero ( $t = -2.83$ ). Although we do not find upgrades to significantly impact stock prices, we confirm prior research on recommendation revisions which documents a more severe market impact triggered by downgrades. Please note, however, that due to the rather infrequent occurrence of changes in recommendation levels our result concerning the relevance of recommendation revisions might be exposed to the small sample problem. Concerning the second summary measure, the

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<sup>18</sup> As a test for robustness, we additionally perform all regressions on the dependent variable CAR[-4,+4] which is the nine-day cumulative abnormal return centering the official publication date [0]. Since results are qualitatively identical compared to employing the tighter event window CAR [-2,+2], we do only report results for the latter event window. Tables are available from the authors upon request.

<sup>19</sup> One might argue that inference about determinants of the market reaction could be biased when banks publish analysts' reports on the same firm within a small number of consecutive days. This might be especially a problem around the firms' disclosure of annual figures when different banks adjust their view on the firm. The problem of multiple effects on the stock price within an overlapping period, namely the analyzed five-day window around the publication day [0], is just relevant for 12.1% of all reports. We therefore re-estimated all regressions for the remaining 87.9% of the sample where a potential overlapping bias is absent. Since results are qualitatively identical, we consider these overlapping analysts' reports not to be biasing our results. Respective regression results can be requested from the authors.

revision of earnings forecasts, column (2) documents a positive relation between the revision of earnings forecasts and the market reaction. In particular, the coefficient on EARN\_REV is positive and significant ( $t = 3.25$ ). Thus, increased earnings estimates lead to higher stock prices around the publication day. When regressing recommendation and earnings forecast revisions simultaneously on the cumulative abnormal return, see column (3), the univariate results can be confirmed. Downgrades and earnings revisions do contain information even conditional on each other, a result supporting the findings of Francis and Soffer (1997). Both summary measures explain 6.39% of the variation in cumulative abnormal returns. In column (4) we regress target price revisions on the cumulative abnormal return. Similarly to the finding for earnings forecast revisions, we also find a positive relation between target price revisions and the stock price reaction. A positive revision in target prices impacts the price of the respective stock positively. In particular, the coefficient on TP\_REV is positive and significant ( $t = 4.32$ ). In order to explore whether the three summary measures do contain independent information, we regress target price revisions simultaneously with the two remaining summary measures (recommendation and earnings forecast revisions). Column (5) reveals that downgrades, earnings revisions and target price revisions are statistically significant and, thus, provide information conditional on each other. All three summary measures together explain 7.08% of the variation of the market reaction.

[ Insert Table 3 about here ]

Having analyzed the impact of summary measures on the stock price, we are interested in whether one can find value relevant information in the body of the report's text. Thus, univariate regressions in column (6) and (7) analyze the market reaction with respect to the strength of the written arguments supporting an analyst's opinion. As a result we find that the more the quantity of good news outnumbers the quantity of bad news, i.e., the higher the values for STR\_ARG are, the more positive the respective market reaction proves to be. In particular, column (6) documents that the coefficient on the variable STR\_ARG is positive and highly significant ( $t = 6.57$ ). We alternatively regress the logarithmic form of the variable, LOG\_STR\_ARG, on the market reaction and confirm the finding that justifications impact stock prices. Column (7) of Table 3 reveals the respective coefficient to be positive and significant ( $t = 5.93$ ). With respect to the fit of the regression it seems as the linear modelling

STR\_ARG is the more appropriate form of measuring the strength of the given justifications as the fit of the regression of (6) is better than (7).

As discussed previously, univariate regressions on individual model variables are unable to answer the question whether the summary measures and the analysts' justification all provide independent information to capital markets. Therefore, columns (8) and (9) display results for specifications including all model variables (the three summary measures and the strength-of-argument variable), simultaneously. The regressions only differ with respect to the chosen specification of the strength-of-argument variable. Whereas the regression in column (8) includes the variable STR\_ARG, results displayed in column (9) are based on LOG\_STR\_ARG. The first interesting finding is that revisions in recommendation levels are basically not significant when one considers all model variables including the three summary measures and the given justification, simultaneously. This result implies that analysts incorporate gradations of their opinion in the remaining measures additional to the recommendation level itself. In consequence, the crude information transmission through the limited, discrete recommendation level categories loses its value in a multivariate context. Transmissions through recommendation categories do not seem to be independent signals.

Looking at revisions of earnings forecasts, we can confirm the significant impact on the stock price. The coefficient on EARN\_REV is positive and significant in both specifications ( $t = 1.71$  and  $t = 1.83$ , respectively). Thus, revisions in earnings forecasts provide independent information to the market which is not comprised in the other variables. We report even stronger evidence for revisions of target prices. The respective coefficients are also both positive and significant ( $t = 2.04$  and  $t = 2.15$ ). Because target prices are often calculated on the basis of earnings estimates, one might suppose that target prices provide negligible value. However, our finding contradicts this reasoning and supports the evidence provided by Brav and Lehavy (2003) who show that target prices contain information for the market, both unconditionally and conditionally on contemporaneously issued stock recommendation and earnings forecast revisions.

Concerning the analyses of the written content of reports, we find that the justification supporting the analysts' opinion transmits independent information to the market, even in the presence of the three summary measures. The respective coefficients on the aggregate variables STR\_ARG and LOG\_STR\_ARG remain robustly positive and significant ( $t = 4.76$  and  $t = 3.91$ , respectively). Concerning  $t$ -values, the strength of the given justification has a more pronounced impact on stock prices compared to the three summary measures.

Consequently, analysts seem to be successful in transmitting gradations in the written content of their reports. The value of an analyst's work is not entirely reflected in the three summary measures. Note that Asquith *et al.* (2005) found: "When analyst justifications are included, the market still reacts strongly to changes in price targets, but the significance of earnings forecasts and recommendation revisions is reduced and, in some models, eliminated." This does also hold true for the German market. Once having included the strength-of-argument variable, the explanatory power of earnings forecasts and recommendation revisions is reduced. This finding has important implications. From a practitioners perspective, buy-side managers like money managers of mutual funds are well advised to read each analysts' report carefully; the three summary measures which can be gathered quite easily from the first page of each report are (even combined) an insufficient statistic for the information comprised in the report. Once including the strength of the given justifications, the adjusted  $R^2$  increases from 7.08% to 10.38%. From an academic viewpoint, our study does not only confirm the finding of Asquith *et al.* (2005) that the given justifications are a highly significant factor of the market reaction for a market outside the US, but also contributes to other strands of recent literature which analyze the role of non-quantitative information in capital markets. E.g., Smith and Taffler (1995) analyze the impact of non-quantitative information on the perception of readers of annual reports. In addition, a recent study by Breton and Taffler (2001) explores the relative importance of accounting information compared to non-financial information items in the analyst's decision process. Finally, we have to conclude that it does not seem to be sufficient to refer to summary measures which are, admittedly, much easier to obtain.

As our linear or logarithmic modelling of the given justifications in one variable might be subject to some criticism, we also regress all 30 individual justification categories (15 positive and 15 negative categories) separately on the market reaction (see Table 4). Due to the rather infrequent occurrence of many categories, the coefficients of only three positive categories (expectations on revenues/sales, M&A activity and international operations) and two negative categories (expectations on earnings/profits and risk) show to be significantly positive or negative on a disaggregate level. However, for 21 of the 30 categories, the sign of the coefficient correctly specifies the hypothesized effect for each coefficient, a positive effect for the 15 positive categories and a negative effect for the 15 negative categories. Concerning the three summary measures, EARN\_REV and TP\_REV remain to significantly impact stock prices, whereas the market does not react significantly according a recommendation revision. As the results for the summary measures show to be robust with respect to different modeling

of the given justifications, in the following we exclusively employ the aggregate variables STR\_ARG and LOG\_STR\_ARG.

[ Insert Table 4 about here ]

#### *4.2 The Effect of Conflicts of Interest*

As discussed in Section 2, a current strand of literature analyzes whether business ties between the issuing bank and the firm lead to biased reports by conflicted analysts. In order to judge the severity of conflicts of interest on the stock price reaction, we basically replicate our analysis from Section 4.1, but include two variables which account for potential conflicts of interest in the regression analysis. We employ again a stepwise procedure where we successively add explanatory variables (starting with recommendation revisions; then stepwise adding earnings revisions, target price revisions and the strength-of-argument variable in the two specifications). Within columns (1) to (5) of Table 5, we use the UND\_HLD specification which purely focuses on potential underwriter affiliations and stock holdings. Within columns (6) to (10), the CoI specification is used which comprises seven distinct types of business ties. Note, that the inclusion of these variables considerably reduces the number of observations within each regression, since only 68.1% of the reports disclose information about business ties to the firm.

[ Insert Table 5 about here ]

Unlike for the three summary measures and the given justifications where hypothesized effects are obvious, the expected sign for the variables which proxy for conflicts of interest is less apparent. For both proxy variables, UND\_HLD and CoI, a higher value of the variable indicates more severe conflicts of interest. Thus, a negative coefficient is expected in regression results. In cases of a positive report, the market reaction should be less pronounced for situations with close business ties than in cases when no conflicts of interest exist. Market participants would adjust or discount the too positive information in the report for potential conflicts of interest. In cases of a negative report, the market reaction should be more negative for high values of the proxy variables as opposed to cases where these conflicts of interest are

largely absent. In a situation when an analyst works for a bank which has close business ties to the analyzed firm, any negative information is particularly credible and, thus, should lead to a more pronounced negative market reaction.

With respect to potential conflicts of interest, our regressions provide unambiguous evidence. We find no indication that the market reaction systematically depends on the severity of business ties. In all specifications displayed in column (1) to (10) the coefficients are insignificant and close to zero. Thus, the market reaction does not seem to be affected by conflicts of interest in a systematic way; a remarkable result having in mind that more than half of the reports disclosed a relationship based on paid compensation or investment banking activities (see Panel C of Table 1). This places our work in the camp which contradicts the common wisdom that conflicts of interest are a major problem in security analysis. One could discuss several interpretations for this finding. First, conflicts of interest by analysts do not exist on the German market. Analysts do not bias their opinion about the summary measures and the strength of arguments. Consequently, the market does not have a need for discounting the non-existing bias. This interpretation might be backed by the fact that only 45.5% of sample reports recommend to buy the respective stock (see Panel A of Table 1). Thus, the other two categories, hold and sell, which are usually interpreted as negative signals, are much more common than in the US where one usually finds a predominance of buy recommendations over the two remaining categories.<sup>20</sup> Second, conflicts of interest might result in biased estimates by the analyst. But investors are not sophisticated enough to discount the information in (positively) biased reports although this bias exists. Third, as only a subset of banks discloses detailed information about business relations, our results might be exposed to a selection bias. We are, however, not able to analyze the remaining reports with respect to the (unobservable) conflicts of interest.

With respect to the summary measures and the given justification, main findings are supported. Again, earnings revisions, target price revisions, and the strength of argument are decisive factors which explain the stock price reaction in conjunction with the release of the report. Finally, since the alternative specifications for the justifications supporting an analyst's opinion and the proxy for the conflicts of interest do not yield differing conclusions, in the remainder of the paper we will exclusively focus on the variables STR\_ARG and UND\_HLD.

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<sup>20</sup> A similar reasoning for less severe conflicts of interest in the UK can be found in Ryan and Taffler (2006).

### 4.3 *The Effect of Bank Reputation*

The prior literature has revealed a decisive role of a bank's reputation concerning the market perception of recommendations (see Section 2). In particular, the initial market reaction seems to be more pronounced if a recommendation is issued by a bank with an exceptional reputation. This finding implies that investors rely more heavily on the quality of research from distinguished and well-known banks. Prior research, however, has mainly concentrated on the first two summary measures, recommendations and earnings forecasts. To the best of our knowledge, evidence concerning the market perception, concerning target prices, and the strength of the given justifications, has not been analyzed with respect to bank reputation before. In order to fill this gap, we separate our sample in reports, which are issued by a bank with a particularly high reputation (TopBank) and in reports issued by one of the remaining banks. In particular, we compute for each bank the average number of employed top analysts (in terms of their listing in the *Institutional Investor* All-European Research Team rankings) for the years 2002 to 2004. Those three banks with the highest average number of top analysts are assigned to the group TopBanks.

[ Insert Table 6 about here ]

The results displayed in Table 6 reveal that stock prices react more heavily on the information comprised in reports issued by TopBanks than to remaining reports. If one refers to the full model, which excludes UND\_HLD in columns (5) and (6), we find that the summary measures are only decisive factors for the group of TopBanks. In particular, the target price revision is highly significant ( $t = 2.72$ ) and the earnings revision is marginally significant ( $t = 1.64$ ). In contrast, both mentioned summary measures do not significantly impact stock prices for reports issued by the remaining banks. With respect to the given justifications, information comprised in reports is highly acknowledged by the market for all reports as the coefficient on STR\_ARG is highly significant for both groups ( $t = 3.41$  and  $t = 2.99$ , respectively). Thus, our results highlight our prior finding that the strength of the argumentation in the body of the text seems to be a particularly important source of information, since this proxy variable is the only factor which impacts the market reaction for both groups. In contrast, the market perceives the summary measures on earnings and target price revisions as largely irrelevant information if the issuing institution does not belong to the group of the three most reputable banks. Complementing evidence is also revealed by the



fit of the regression for both groups. For reports issued by one of the highly reputable banks (TopBank), information comprised in the report can explain 18.49% of the variation. In contrast, the market reaction on stocks analyzed by one of the remaining banks is far less interrelated to the information in the reports as the respective coefficient of determination is only 3.09%. As can be seen from columns (9) and (10), which display regression results for the model specification including UND\_HLD, the derived conclusions are confirmed. In addition, we find additional evidence for a negligible influence of potential conflicts of interest on the market reaction as the coefficient on UND\_HLD is insignificant for both regressions.

#### 4.4 Robustness Tests

Our finding that revisions in earnings forecasts and target prices as well as the strength of the analyst's justification influence the market reaction might not be universally valid, but caused by subgroups of recommended stocks. In order to verify the validity of our key findings, we perform robustness tests along three dimensions. First, our results might be driven by the information environment of the recommended firms. In particular, we evaluate two proxies for the information environment widely used in the literature: the market capitalization (firm size) and the price-to-book ratio of the analyzed firms. For example, prior research on firm size by Stickel (1995), Womack (1996), and Barber *et al.* (2001), found that stock prices of smaller companies are more exposed to stock recommendations compared to big companies. Thus, we examine whether the determinants of the market reaction prevail for both, small and big stocks, as well as for value and growth stock, or whether our finding is largely dependent on one specific type of stock. Second, we control for different market phases in order to reveal potential particularities within bull and bear markets. Third, we analyze if the simultaneous disclosure of corporate news by the respective firm biases inference about the determinants of the market reaction.

[ Insert Table 7 about here ]

With respect to the first proxy for the information environment of a firm, firm size, we partition our sample in small and big stocks. A firm is assigned to the group of small (big)

stocks, if its market value is below (above) the median market value of all sample stocks in the respective calendar year. Column (1) of Table 7 displays the regression results for small stocks, whereas column (2) displays the regression results for big stocks. A major finding is that only the coefficients on STR\_ARG are significant for both groups. Results on earnings forecast and target price revisions are rather mixed: the coefficient on EARN\_REV is only significant for small stocks ( $t = 1.85$ ), whereas the coefficient on TP\_REV is only significant for big stocks ( $t = 1.80$ ). Concerning the price-to-book ratio of firms, we separate our sample in value and growth stocks. A firm is assigned to the group of value (growth) stocks if its price-to-book ratio is below (above) the median price-to-book value of all sample stocks in the respective calendar year. The regression results displayed in column (3) and column (4) of Table 7 highlight the strong impact of the given justifications on the market reaction. In fact, the STR\_ARG is the only determinant which shows to be significant for both groups. With respect to the summary measures, only growth stocks react significantly on revisions in earnings forecasts ( $t = 2.00$ ). Concerning target price revisions, exclusively stock prices in the group of value stocks are significantly ( $t = 3.00$ ) impacted by target price revisions. Thus, our results imply that the variable which proxies for the given justifications, STR\_ARG, is the only universally robust factor. The popular summary measures are, however, only significant determinants for the market reaction for specific subgroups of stocks.

Concerning different market phases, we partitioned the sample in terms of rising and falling markets. We classify a report to be published in a short-term bear (bull) market if the return of the CDAX was negative (positive) in the 3-month period prior to the publication. Once again, regression results displayed in column (5) and (6) of Table 7 confirm that the given justifications are the most robust factors in the revaluation of stocks, since the respective coefficient for STR\_ARG is highly significant for both groups. Coefficients are statistically significant ( $t = 3.76$  and  $t = 3.36$ , respectively). In contrast, exclusively in times of rising stock prices, the market reacts to earnings and target price revisions. Thus, these summary measures are only significant factors in upward moving markets if the given justifications are taken into account. On the contrary, the given justifications prove to be a universally robust impact factor for the market reaction.

We finally address the issue whether the strength of the given justification remain a significant factor of the market reaction when concurrent company information is released simultaneously. In order to take concurrent news disclosure into account, we first partition the sample according to whether a report is written in conjunction with a release of earnings figures by the firm. If a report is triggered by such a release, this information is disclosed on

the cover page. Second, we partition our sample according to whether the respective company released an ad hoc announcement according to §15 of the German *Securities Trading Act (Wertpapierhandelsgesetz)* in the period from four trading prior the publication day to the publication day itself, thus in the period  $[-4,0]$ .<sup>21</sup> As mentioned in Panel A of Table 1, around a quarter of the reports is accompanied by the simultaneous disclosure of ad hoc announcements. For these reports we consider the market reaction to be potentially contaminated. Analysts' skills can be better judged by analyzing the remaining uncontaminated reports.

With respect to the first selection criterion, the release of earnings figures by the company, we find that the given justifications are important factors under both scenarios, meaning with and without a release of earnings figures by the firm. As can be seen in columns (7) and (8) of Table 7, the respective coefficients for the strength-of-argument variable are positive and statistically significant for the group of contaminated and uncontaminated reports ( $t = 3.79$  and  $t = 3.00$ , respectively). With respect to the summary measures the results reveal that earnings and target price revisions are significant factors exclusively for non-contaminated reports ( $t = 1.82$  for EARN\_REV and  $t = 2.13$  for TP\_REV). Concerning the second selection criterion, ad hoc announcements, we document similar results in columns (9) and (10). In accordance with the prevailing evidence documented in the previous robustness test, we find the given justifications in the text to be the most important information for the market reaction. Thus, even under a scenario where important information is disclosed by the company, we find evidence that analysts are capable to report valuable information in the text of the report.

## 5 Concluding Remarks

This study analyzes the market reaction to the complete content of a large sample of analysts' reports issued on German stocks for the first time. In particular, we explore whether the three summary measures in the reports, i.e., recommendation revisions, earnings forecast revisions, and target price forecast revisions are acknowledged by the market. Additionally, we investigate if the given justifications in the written text of analysts' reports contain information value beyond the three summary measures. We find that earnings forecast revisions and target price forecast revisions contain valuable information, both unconditional

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<sup>21</sup> As an additional robustness test, we also performed further regressions for different ad hoc control periods like  $[-2,0]$ ,  $[-4,+4]$  and  $[-10,+10]$ . Results are qualitatively identical to those reported in Table 7. Respective tables are available from the authors upon request.

and conditional on the remaining information in the report. With respect to earnings revisions, these results confirm the finding of Francis and Soffer (1997) who also find revisions in earnings estimates to provide independent information to the market. More importantly, our results concerning target prices are also in line with the findings of Brav and Lehavy (2003). They also document that target prices, which have been included in analysts reports only recently and, thus, have not been studied with respect to the market reaction before, do provide relevant information to the market. According to our results, market participants seem to be even more interested in target prices than in earnings forecasts, since target price revisions show to be a more significant and robust determinant of the stock price reaction than earnings forecasts. We believe this finding should encourage the just evolving literature which analyzes whether the degree of accuracy in target prices justifies the pronounced reaction of investors on this novel summary measure (see, e.g., Bonini *et al.*, 2007). The traditional subject of study on analysts' recommendations, recommendation revisions, however, does provide little independent information if the other information are considered simultaneously.

Our study also contributes to the literature which reveals the importance of non-financial information in financial markets (see, e.g., Smith and Taffler, 1995; Breton and Taffler, 2001; and Henry, 2006). Our findings document that the analysts' given justifications are highly acknowledged by market participants. These justifications provide valuable information, both unconditional and conditional on all other types of information in a report. Moreover, the given justifications show to be the single most important information in analysts' reports as far as the market reaction is concerned. Interestingly, including a proxy variable for the strength of the given justifications lowers and sometimes eliminates the significance of the summary measures. Thus, results derived by traditional studies which do not take non-financial information into account, might produce biased predictions concerning the relevance of the summary measures. To put our results in perspective, our study confirms the findings of Asquith *et al.* (2005) for the German market, thus, for an international market. The relevance of the written content of the reports, however, is not just documented by Asquith *et al.* (2005) and by our study. This view might also be supported by practitioners. Please note that the ranking of *Institutional Investor* is based on a practitioners' survey who have to rate not only the stock picking ability and earnings forecasts accuracy but also the quality of written reports.

We finally contribute to the literature by analyzing whether the reputation of the issuing bank affects the market reaction. Our findings reveal that the summary measures and the given justifications in the written text have a much more pronounced impact on the market reaction

when the report is issued by banks with a particularly high reputation in the industry. To put it differently, investors attach great importance to the information in reports published by a prestigious bank. This result might not come to much of a surprise, since our classification of bank reputation is based on the survey of *Institutional Investor*. As this survey is based on a survey among a large number of investors like fund managers who evaluate sell-side analysts and thereby banks, the finding that investors put more emphasis on information transmitted by highly ranked banks is just a validation that buy-side managers act on financial markets according to their poll at the survey.

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**Table 1: Summary statistics**

This table presents summary statistics on the information collected from 1,000 randomly drawn analysts' reports on German stocks. All reports are classified by the recommendation level, i.e., buy recommendation (Buy), hold recommendation (Hold), and sell recommendation (Sell), in three categories. Therefore, the table is organized along this dimension. Each category (Buy, Hold, and Sell) is further separated in upgrades (Up), reiterations (Reit), and downgrades (Down) if this applies to the respective category. Furthermore, in the last four columns, the table reports statistics for all upgrades (Up), all reiterations (Reit), all downgrades (Down) and all reports (Total). In Panel A, we disclose summary statistics for the distribution of reports, the disclosure of current earnings forecasts, the disclosure of current target prices forecasts and about whether information about potential conflicts of interest were given. In addition, the percentage of concurrent disclosure of company figures and concurrent ad hoc announcements issued by the respective company are also displayed. In Panel B, we disclose information on each of the 15 categories on which analysts commonly give justifications for their recommendations. For each of the 15 categories, the table displays the percentage of how often, within each category, positive or negative information is disclosed. Based on those reports that publish information on conflicts of interest, Panel C shows to percentage of several business relations to the analyzed company. Panel D presents the mean for the model variables. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. The variable STR\_ARG measures the strength of the given justifications and is calculated for each report as the aggregate of the number of positive statements in the 15 categories less the number of negative statements in the 15 categories. UND\_HLD and CoI specify the amount of potential conflicts of interest. CAR [-2,+2] is the market- and risk-adjusted five-day cumulative abnormal return centring the official publication day [0].

	Buy			Hold				Sell			All			
	Up	Reit	All Buy	Up	Reit	Down	All Hold	Reit	Down	All Sell	Up	Reit	Down	Total
<b>Panel A: Report distribution, disclosure, ad hoc announcements</b>														
Number of reports			455				422			123				1000
Number of reports with prior rec. level	33	407	440	17	342	45	404	102	18	120	50	851	63	964
Buy/hold/sell [in %]	7.5	92.5	100.0	4.2	84.7	11.1	100.0	85.0	15.0	100.0				
Current EPS for upcoming financial year [in %]	94.3	93.1	93.2	100.0	89.9	95.7	91.0	89.5	100.0	91.1	96.2	91.4	96.9	92.0
Current Target Price [in %]	97.1	98.8	98.7	100.0	96.9	89.4	96.2	94.3	88.9	93.5	98.1	97.5	89.2	97.0
Information on conflict of interest [in %]	54.3	65.0	64.2	88.2	73.2	70.2	73.5	63.8	66.7	64.2	65.4	68.2	69.2	68.1
Concurrent disclosure of company figures [in %]	37.1	47.1	46.4	52.9	51.7	40.4	50.5	45.7	38.9	44.7	42.3	48.8	40.0	47.9
Ad hoc announcement [-4,0] [in %]	17.1	29.5	28.6	35.3	31.3	25.5	30.8	20.0	38.9	22.8	23.1	29.1	29.2	28.8
<b>Panel B: Categories analysts' justification</b>														
Exp. on revenues/sales met (pos) [in %]	37.1	37.1	37.1	35.3	32.4	25.5	31.8	18.1	22.2	18.7	36.5	33.0	24.6	32.6
Exp. on revenues/sales not met (neg) [in %]	8.6	6.7	6.8	11.8	12.8	6.4	12.1	19.0	22.2	19.5	9.6	10.6	10.8	10.6
Exp. earnings/profits met (pos) [in %]	31.4	40.5	39.8	47.1	31.3	25.5	31.3	18.1	27.8	19.5	36.5	34.1	26.2	33.7
Exp. earnings/profits not met (neg) [in %]	5.7	10.2	9.9	5.9	17.3	17.0	16.8	21.9	27.8	22.8	5.8	14.5	20.0	14.4
Outlook revenues/sales (pos) [in %]	37.1	32.4	32.7	11.8	16.8	17.0	16.6	9.5	5.6	8.9	28.8	23.3	13.8	23.0
Outlook revenues/sales (neg) [in %]	14.3	6.0	6.6	5.9	17.3	27.7	18.0	22.9	38.9	25.2	11.5	12.6	30.8	13.7
Outlook earnings/profits (pos) [in %]	48.6	39.0	39.8	17.6	20.4	23.4	20.6	15.2	5.6	13.8	38.5	28.7	18.5	28.5
Outlook earnings/profits (neg) [in %]	17.1	8.1	8.8	17.6	18.2	21.3	18.5	34.3	55.6	37.4	17.3	15.3	30.8	16.4
Product introduction (pos) [in %]	11.4	11.0	11.0	11.8	6.1	0.0	5.7	1.0	0.0	0.8	11.5	7.8	0.0	7.5
Product introduction (neg) [in %]	2.9	0.5	0.7	0.0	1.1	2.1	1.2	0.0	5.6	0.8	1.9	0.7	3.1	0.9
New project (pos) [in %]	2.9	2.6	2.6	5.9	1.4	2.1	1.7	1.0	0.0	0.8	3.8	1.9	1.5	2.0
New project(neg) [in %]	0.0	0.5	0.4	0.0	0.3	2.1	0.5	1.0	0.0	0.8	0.0	0.5	1.5	0.5

**Table 1** (continued)

	Buy			Hold				Sell			All			
	Up	Reit	All Buy	Up	Reit	Down	All Hold	Reit	Down	All Sell	Up	Reit	Down	Total
Cost efficiency (pos) [in %]	17.1	21.4	21.1	47.1	15.4	4.3	15.4	10.5	11.1	10.6	26.9	17.7	6.2	17.4
Cost efficiency (neg) [in %]	2.9	1.7	1.8	5.9	5.0	6.4	5.2	6.7	11.1	7.3	3.8	3.6	7.7	3.9
M&A activity (pos) [in %]	2.9	8.6	8.1	5.9	5.9	8.5	6.2	3.8	0.0	3.3	3.8	6.9	6.2	6.7
M&A activity (neg) [in %]	2.9	1.9	2.0	0.0	3.1	6.4	3.3	0.0	11.1	1.6	1.9	2.2	7.7	2.5
Stock repurchase (pos) [in %]	0.0	1.9	1.8	11.8	0.6	2.1	1.2	1.0	0.0	0.8	3.8	1.2	1.5	1.4
Stock repurchase (neg) [in %]	0.0	0.2	0.2	0.0	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.2
Industry climate (pos) [in %]	2.9	3.3	3.3	11.8	3.4	2.1	3.6	1.0	0.0	0.8	5.8	3.1	1.5	3.1
Industry climate (neg) [in %]	8.6	6.9	7.0	11.8	15.6	21.3	16.1	25.7	22.2	25.2	9.6	12.7	21.5	13.1
Quality of management (pos) [in %]	11.4	7.9	8.1	0.0	2.0	2.1	1.9	2.9	0.0	2.4	7.7	4.9	1.5	4.8
Quality of management (neg) [in %]	2.9	1.0	1.1	0.0	3.9	0.0	3.3	5.7	0.0	4.9	1.9	2.7	0.0	2.5
International operations (pos) [in %]	20.0	12.6	13.2	0.0	5.0	4.3	4.7	0.0	0.0	0.0	13.5	8.0	3.1	8.0
International operations (neg) [in %]	8.6	3.1	3.5	5.9	5.3	6.4	5.5	3.8	11.1	4.9	7.7	4.1	7.7	4.5
Competition (pos) [in %]	17.1	13.8	14.1	11.8	5.6	4.3	5.7	2.9	0.0	2.4	15.4	9.2	3.1	9.1
Competition (neg) [in %]	8.6	3.8	4.2	17.6	8.9	6.4	9.0	13.3	22.2	14.6	11.5	7.0	10.8	7.5
Risk (pos) [in %]	11.4	4.5	5.1	5.9	1.7	2.1	1.9	1.0	0.0	0.8	9.6	2.9	1.5	3.2
Risk (neg) [in %]	20.0	16.7	16.9	35.3	26.8	27.7	27.3	37.1	22.2	35.0	25.0	23.2	26.2	23.5
Future business perspective (pos) [in %]	42.9	23.3	24.8	17.6	8.1	8.5	8.5	2.9	0.0	2.4	34.6	14.7	6.2	15.2
Future business perspective (neg) [in %]	0.0	0.2	0.2	5.9	7.8	12.8	8.3	19.0	33.3	21.1	1.9	5.5	18.5	6.2
<b>Panel C: Conflicts of Interest [in %] based on subsample with conflict of interest disclosure</b>														
Holding/Ownership relation	36.8	44.0	43.5	33.3	44.7	51.5	44.8	29.9	50.0	32.9	35.3	42.7	51.1	42.9
Client relation (IB)	36.8	49.5	48.6	60.0	56.9	48.5	56.1	59.7	50.0	58.2	47.1	53.8	48.9	53.2
Client relation (non-IB)	5.3	15.8	15.1	20.0	18.7	24.2	19.4	7.5	33.3	11.4	11.8	16.1	26.7	16.6
Compensation paid	36.8	58.2	56.8	60.0	63.0	66.7	63.2	61.2	66.7	62.0	47.1	60.6	66.7	60.4
Market maker	10.5	26.0	25.0	26.7	24.8	36.4	26.1	9.0	16.7	10.1	17.6	23.6	31.1	23.8
Director function	5.3	16.1	15.4	6.7	13.7	27.3	14.8	11.9	16.7	12.7	5.9	14.6	24.4	14.8
Underwriting relation	47.4	37.4	38.0	53.3	44.7	60.6	46.8	50.7	66.7	53.2	50.0	42.0	62.2	43.8
<b>Panel D: Mean of model variables</b>														
EARN_REV [in %]	3.9	-1.2	-0.9	11.6	-1.3	-1.7	-0.9	-2.9	-9.2	-4.0	6.9	-1.4	-3.6	-1.2
TP_REV [in %]	8.0	-0.6	0.0	14.7	-1.2	-8.3	-1.2	-0.3	-10.3	-1.7	10.5	-0.8	-8.9	-0.7
STR_ARG	1.9	1.9	1.9	1.2	0.1	-0.3	0.1	-1.2	-2.1	-1.3	1.7	0.8	-0.8	0.8
UND_HLD	0.8	0.8	0.8	0.9	0.9	1.1	0.9	0.8	1.2	0.9	0.9	0.8	1.1	0.9
CoI	1.8	2.6	2.5	2.7	2.8	3.3	2.8	2.3	3.1	2.5	2.2	2.6	3.2	2.6
CAR[-2,+2] [in %]	0.3	0.2	0.2	2.0	-0.9	-4.5	-1.2 #	-0.3	-3.6	-0.8	0.8	-0.3	-4.3	-0.5

**Table 2: Correlation matrix**

This table reports non-parametric Spearman correlation coefficients for each pair of model variables. UP\_GR<sub>*jit*</sub> (DOWN\_GR<sub>*jit*</sub>) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. Accordingly, REIT<sub>*jit*</sub> takes on the value of 1 if an analysts' recommendation reiterates the previous recommendation level. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. The variable STR\_ARG (LOG\_STR\_ARG) measures the strength of the given justifications and is calculated for each report based on the aggregate of the number (natural logarithm of the number) of positive statements in the 15 categories less the number (natural logarithm of the number) of negative statements in the 15 categories. UND\_HLD and CoI specify the amount of potential conflicts of interest. *p*-values are listed below the correlation coefficients and are set in parentheses. \*\*\*, \*\*, \* indicate statistical significance at the 1%-, 5%-, 10%-level.

	UP_GR	DOWN_GR	REIT	EARN_REV	TP_REV	STR_ARG	LOG_STR_ARG	UND_HLD	CoI
UP_GR									
DOWN_GR									
REIT									
EARN_REV	0.0910 ** (0.0107)	-0.1001 *** (0.0050)	0.0176 (0.6233)						
TP_REV	0.1950 *** (0.0000)	-0.2147 *** (0.0000)	0.0378 (0.2901)	0.4434 *** (0.0000)					
STR_ARG	0.0654 * (0.0671)	-0.1479 *** (0.0000)	0.0721 ** (0.0436)	0.3402 *** (0.0000)	0.2893 *** (0.0000)				
LOG_STR_ARG	0.0660 * (0.0646)	-0.1420 *** (0.0001)	0.0671 * (0.0602)	0.3316 *** (0.0000)	0.2759 *** (0.0000)	0.9807 *** (0.0000)			
UND_HLD	-0.0251 (0.5530)	0.0736 * (0.0814)	-0.0407 (0.3356)	-0.0080 (0.8499)	0.0190 (0.6531)	0.0047 (0.9120)	0.0270 (0.5228)		
CoI	-0.0762 * (0.0714)	0.0629 (0.1368)	0.0019 (0.9638)	0.0148 (0.7258)	-0.0049 (0.9087)	0.0097 (0.8195)	0.0273 (0.5182)	0.8348 *** (0.0000)	



**Table 3: Determinants of the market reaction to the release of analysts' reports**

This table reports robust regression results for univariate and multivariate model specifications on the dependent variable CAR [-2,+2] which is the market- and risk-adjusted five-day cumulative abnormal return centring the official publication day [0]. UP\_GR<sub>*j,t*</sub> (DOWN\_GR<sub>*j,t*</sub>) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. STR\_ARG (LOG\_STR\_ARG) measures the strength of the given justifications and is calculated for each report based on the aggregate of the number (natural logarithm of the number) of positive statements in the 15 categories less the number (natural logarithm of the number) of negative statements in the 15 categories.. \*\*\*, \*\*, \* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

CAR[-2,+2]	Predicted Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
UP_GR	+	0.0086 (0.83)		-0.0056 (-0.50)		-0.0178 (-1.60)			-0.0166 (-1.50)	-0.0171 (-1.54)
DOWN_GR	-	-0.0371 *** (-2.83)		-0.0421 ** (-2.55)		-0.0231 ** (-2.11)			-0.0159 (-1.45)	-0.0174 (-1.59)
EARN_REV	+		0.1653 *** (3.25)	0.1611 *** (3.05)		0.0945 ** (2.30)			0.0683 * (1.71)	0.0737 * (1.83)
TP_REV	+				0.1331 *** (4.32)	0.1090 *** (2.66)			0.0835 ** (2.04)	0.0883 ** (2.15)
STR_ARG	+						0.0077 *** (6.57)		0.0051 *** (4.76)	
LOG_STR_ARG	+							0.0178 *** (5.93)		0.0111 *** (3.91)
INTERCEPT	?	-0.0034 (-1.17)	-0.0063 ** (-2.31)	-0.0032 (-1.20)	-0.0045 ** (-2.00)	-0.0009 (-0.34)	-0.0109 *** (-3.56)	-0.0102 *** (-3.29)	-0.0066 ** (-2.29)	-0.0055 * (-1.89)
adj. R <sup>2</sup>		1.15%	4.48%	6.39%	3.69%	7.08%	4.96%	3.97%	10.38%	9.40%
N		964	701	683	836	628	1000	1000	628	628

**Table 4: Full regression model with disaggregated analysts' justifications**

This table reports robust regression results for a multivariate model specification on the dependent variable CAR [-2,+2] which is the market- and risk-adjusted five-day cumulative abnormal return centring the official publication day [0]. UP\_GR<sub>*j,t*</sub> (DOWN\_GR<sub>*j,t*</sub>) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. Instead of using the STR\_ARG variable which aggregates the justifications for analysts' decisions, we include within the regression each single category, i.e. 15 positive and 15 negative categories on expectations on revenues/sales met, expectations on earnings/profits met, outlook on revenues/sales, outlook on earnings/profits, product introduction, new project, cost (in)efficiency, M&A activity, stock repurchase, industry climate, quality of management, international operations, competition, risk, and future business perspective. \*\*\*, \*\*, \* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

CAR[-2,+2]	Predicted Sign	Coeff	t-stat
UP_GR	+	-0.0166	-1.56
DOWN_GR	-	-0.0159	-1.39
EARN_REV	+	0.0817	1.97 **
TP_REV	+	0.0921	2.29 **
Exp. on revenues/sales met (pos)	+	0.0131	1.84 *
Exp. on revenues/sales not met (neg)	-	-0.0031	-0.29
Exp. earnings/profits met (pos)	+	0.0044	0.66
Exp. earnings/profits not met (neg)	-	-0.0199	-1.72 *
Outlook revenues/sales (pos)	+	0.0019	0.27
Outlook revenues/sales (neg)	-	0.0015	0.16
Outlook earnings/profits (pos)	+	0.0061	0.96
Outlook earnings/profits (neg)	-	-0.0060	-0.64
Product introduction (pos)	+	0.0114	1.34
Product introduction (neg)	-	-0.0261	-1.20
New project (pos)	+	-0.0021	-0.12
New project(neg)	-	0.0019	0.05
Cost efficiency (pos)	+	0.0106	1.63
Cost efficiency (neg)	-	0.0172	1.61
M&A activity (pos)	+	0.0172	2.01 **
M&A activity (neg)	-	0.0219	1.94 *
Stock repurchase (pos)	+	0.0091	0.64
Stock repurchase (neg)	-	-0.0095	-0.50
Industry climate (pos)	+	-0.0002	-0.01
Industry climate (neg)	-	-0.0022	-0.27
Quality of management (pos)	+	-0.0075	-0.93
Quality of management (neg)	-	0.0307	1.47
International operations (pos)	+	0.0171	1.92 *
International operations (neg)	-	-0.0113	-0.97
Competition (pos)	+	0.0058	0.68
Competition (neg)	-	-0.0055	-0.60
Risk (pos)	+	0.0087	0.73
Risk (neg)	-	-0.0145	-2.44 **
Future business perspective (pos)	+	0.0005	0.07
Future business perspective (neg)	-	0.0244	2.17 **
INTERCEPT	?	-0.0115	-2.18 **
adj. R <sup>2</sup>		12.16%	
N		628	

**Table 5: Determinants of the market reaction to the release of analysts' reports when controlling for potential conflicts of interest**

This table reports robust regression results for multivariate model specifications on the dependent variable CAR [-2,+2] which is the market- and risk-adjusted five-day cumulative abnormal return centring the official publication day [0]. UP\_GR<sub>*j,t*</sub> (DOWN\_GR<sub>*j,t*</sub>) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. STR\_ARG (LOG\_STR\_ARG) measures the strength of the given justifications and is calculated for each report based on the aggregate of the number (natural logarithm of the number) of positive statements in the 15 categories less the number (natural logarithm of the number) of negative statements in the 15 categories. UND\_HLD and CoI specify the amount of potential conflicts of interest. \*\*\*, \*\*, \* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

CAR[-2,+2]	Predicted Sign	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UP_GR	+	0.0200 *	-0.0069	-0.0164	-0.0147	-0.0154	0.0205 *	-0.0064	-0.0154	-0.0138	-0.0145
		(1.69)	(-0.54)	(-1.36)	(-1.24)	(-1.28)	(1.73)	(-0.50)	(-1.29)	(-1.19)	(-1.22)
DOWN_GR	-	-0.0252 **	-0.0192	-0.0193	-0.0123	-0.0136	-0.0258 **	-0.0200 *	-0.0200	-0.0132	-0.0145
		(-2.11)	(-1.61)	(-1.61)	(-1.04)	(-1.14)	(-2.13)	(-1.66)	(-1.64)	(-1.10)	(-1.20)
EARN_REV	+		0.2270 ***	0.1105 **	0.0824 *	0.0877 *		0.2258 ***	0.1081 **	0.0805 *	0.0858 *
			(3.18)	(2.15)	(1.69)	(1.78)		(3.15)	(2.10)	(1.65)	(1.73)
TP_REV	+			0.1336 ***	0.1083 **	0.1129 **			0.1356 ***	0.1104 **	0.1150 **
				(2.82)	(2.31)	(2.40)			(2.82)	(2.32)	(2.41)
STR_ARG	+				0.0055 ***					0.0054 ***	
					(4.70)					(4.65)	
LOG_STR_ARG	+					0.0120 ***					0.0118 ***
						(3.89)					(3.84)
UND_HLD	-	0.0002	-0.0008	0.0013	0.0006	0.0005					
		(0.05)	(-0.22)	(0.37)	(0.17)	(0.14)					
CoI	-						0.0012	0.0008	0.0020	0.0018	0.0018
							(0.54)	(0.46)	(1.41)	(1.28)	(1.27)
INTERCEPT	?	-0.0026	-0.0006	-0.0008	-0.0068	-0.0054	-0.0054	-0.0037	-0.0053	-0.0113 **	-0.0100 **
		(-0.50)	(-0.14)	(-0.18)	(-1.49)	(-1.19)	(-0.87)	(-0.67)	(-1.07)	(-2.23)	(-1.97)
adj. R <sup>2</sup>		0.42%	9.28%	10.00%	14.44%	13.05%	0.52%	9.34%	10.52%	14.88%	13.49%
N		657	504	468	468	468	657	504	468	468	468

**Table 6: Determinants of the market reaction to the release of analysts' reports, separated by TopBank**

This table reports robust regression results for multivariate model specifications on the dependent variable CAR [-2,+2] which is the market- and risk-adjusted five-day cumulative abnormal return centring the official publication day [0]. UP\_GR<sub>*j,t*</sub> (DOWN\_GR<sub>*j,t*</sub>) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. STR\_ARG (LOG\_STR\_ARG) measures the strength of the given justifications and is calculated for each report based on the aggregate of the number (natural logarithm of the number) of positive statements in the 15 categories less the number (natural logarithm of the number) of negative statements in the 15 categories. UND\_HLD specifies the amount of potential conflicts of interest. We compute for each bank the average number of employed top analysts (in terms of the *Institutional Investor* All-European Research Team rankings) for the years 2002 to 2004. Those three banks with the highest average of top analysts within the covered period are assigned to the group TopBanks. We estimate regressions separately for reports issued by TopBanks (uneven columns) and reports issued by the remaining banks (even columns). \*\*\*, \*\*, \* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

	TopBank	Others	TopBank	Others	TopBank	Others	TopBank	Others	TopBank	Others
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CAR[-2,+2]										
UP_GR	-0.0040 (-0.24)	-0.0072 (-0.53)	-0.0170 (-1.05)	-0.0123 (-0.84)	-0.0151 (-0.96)	-0.0121 (-0.83)	-0.0163 (-1.00)	0.0004 (0.02)	-0.0146 (-0.91)	0.0002 (0.01)
DOWN_GR	-0.0326 ** (-2.12)	-0.0502 (-1.58)	-0.0271 * (-1.95)	-0.0161 (-1.05)	-0.0199 (-1.46)	-0.0080 (-0.51)	-0.0270 * (-1.94)	0.0184 (1.28)	-0.0197 (-1.44)	0.0225 * (1.84)
EARN_REV	0.2750 *** (3.12)	0.0235 (0.52)	0.1300 ** (1.98)	0.0639 (1.47)	0.1030 (1.64)	0.0412 (0.89)	0.1318 * (1.96)	0.0573 (1.00)	0.1057 (1.64)	0.0313 (0.54)
TP_REV			0.1558 *** (3.01)	0.0130 (0.22)	0.1397 *** (2.72)	-0.0261 (-0.43)	0.1494 *** (2.90)	0.0281 (0.24)	0.1317 *** (2.59)	-0.0144 (-0.12)
STR_ARG					0.0044 *** (3.41)	0.0059 *** (2.99)			0.0045 *** (3.48)	0.0072 *** (2.82)
UND_HLD							-0.0026 (-0.68)	0.0076 (1.12)	-0.0025 (-0.66)	0.0076 (1.15)
INTERCEPT	0.0011 (0.28)	-0.0092 ** (-2.39)	0.0053 (1.59)	-0.0087 ** (-2.20)	-0.0018 (-0.47)	-0.01201 *** (-2.92)	0.0079 (1.47)	-0.0165 ** (-2.51)	0.0007 (0.12)	-0.0198 *** (-2.98)
adj. R <sup>2</sup>	13.79%	2.17%	15.83%	-0.01%	18.49%	3.09%	15.62%	-0.88%	18.60%	5.38%
N	359	324	334	294	334	294	324	144	324	144



**Table 7: Determinants of the market reaction to the release of analysts' reports, separated by size, price-to-book, market phase, and concurrent news disclosure**

This table reports robust regression results for multivariate model specifications on the dependent variable CAR [-2,+2] which is the market- and risk-adjusted five-day cumulative abnormal return centring the official publication day [0]. UP\_GR<sub>*j,t*</sub> (DOWN\_GR<sub>*j,t*</sub>) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. EARN\_REV is computed as the percentage change from the current earnings per share forecast to the previous forecast. TP\_REV represents the percentage change of the current target price compared to the previous target price. STR\_ARG measures the strength of the given justifications and is calculated for each report based on the aggregate of the number of positive statements in the 15 categories less the number (natural logarithm of the number) of negative statements in the 15 categories. UND\_HLD specifies the amount of potential conflicts of interest. Within columns (1) and (2), we estimate the standard model while segregating the sample via the year specific median market capitalization of analyzed stocks. In columns (3) and (4), we estimate the standard model while segregating the sample via the year specific median price-to-book ratio. In columns (5) and (6), we estimate the standard model while segregating the sample in bull and bear market periods. In column (7) and (8), we estimate the standard model while segregating the sample according to whether a report was written due to the concurrent disclosure of company's figures. In columns (9) and (10), we estimate the standard model while segregating the sample according to whether an ad hoc announcement was issued by the respective company in the period [-4,0] where trading day [0] is the official day of publication of the report. \*\*\*, \*\*, \* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

	Size		Price-to-book		Bear/Bull market		Quarterly disclosure (QD)		Ad hoc announcements	
	Small	Big	Value	Growth	Bear market	Bull market	No QD	Pure QD	No ad hocs	Pure ad hocs
CAR[-2,+2]	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UP_GR	-0.0136 (-0.66)	-0.0136 (-1.03)	-0.0214 ** (-2.49)	-0.0130 (-0.67)	-0.0204 (-1.53)	-0.0174 (-0.96)	-0.0070 (-0.46)	-0.0274 (-1.64)	-0.0109 (-0.89)	0.0129 (1.31)
DOWN_GR	-0.0019 (-0.12)	-0.0288 (-1.48)	-0.0154 (-0.86)	-0.0159 (-1.12)	-0.0253 (-1.10)	-0.0016 (-0.13)	-0.0130 (-0.79)	0.0079 (0.58)	-0.0023 (-0.16)	-0.0403 ** (-2.01)
EARN_REV	0.1117 * (1.85)	0.0020 (0.03)	0.0084 (0.17)	0.1875 ** (2.00)	-0.0467 (-0.57)	0.1209 ** (2.24)	0.1130 * (1.82)	0.0360 (0.45)	0.0729 (1.22)	0.1317 (1.59)
TP_REV	0.0875 (1.50)	0.1447 * (1.80)	0.1953 *** (3.00)	0.0182 (0.30)	0.0387 (0.49)	0.1873 *** (3.55)	0.1350 ** (2.13)	0.0922 (1.31)	0.1057 ** (2.20)	0.0935 (0.91)
STR_ARG	0.0065 *** (3.53)	0.0042 *** (3.25)	0.0050 *** (3.01)	0.0055 *** (3.54)	0.0082 *** (3.76)	0.0042 *** (3.36)	0.0053 *** (3.79)	0.0058 *** (3.00)	0.0046 *** (3.90)	0.0070 *** (2.73)
UND_HLD	0.0026 (0.47)	0.0001 (0.02)	0.0004 (0.10)	0.0055 (0.32)	0.0043 (0.81)	-0.0020 (-0.57)	-0.0041 (-0.99)	0.0061 (1.22)	-0.0004 (-0.11)	0.0038 (0.54)
INTERCEPT	-0.0090 (-1.25)	-0.0052 (-1.03)	-0.0069 (-1.15)	0.0067 (-1.05)	-0.0135 * (-1.92)	-0.0071 (-1.37)	-0.0057 (-1.03)	-0.0104 (-1.37)	-0.0086 * (-1.74)	-0.0038 (-0.38)
adj. R <sup>2</sup>	15.08%	12.77%	15.97%	14.42%	10.12%	25.89%	19.99%	9.58%	11.18%	18.84%
N	234	234	234	234	207	261	249	219	329	139