Informational Content of Financial Experts' Recommendations and their Impact on Capital Markets

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Preface

Up to the year 2000, the financial press frequently quoted the opinion of financial experts on stocks since it seemed that they always correctly predicted the future development of stocks. In those times, financial analysts increased their earnings forecasts every year and stock recommendations were mainly positive. Since market indices rose from year to year, analysts' forecasts proved to be valuable for investors. However, the role of financial experts came under scrutiny when markets crashed in 2000 but recommendations still remained positive. People began to realize that financial experts might have been too optimistic and their recommendations seemed to be biased due to conflicts of interests. Among others, I also made my first (negative) experiences with financial markets in that time. This aroused my interest in the question of how "valuable" stock recommendations are apart from the general hype during that time; this later led me to choose this field of research for my thesis.

However, this work would not have been possible without the effort of various persons that accompanied me along the way. First of all, I would like to thank Professor Dr. Werner Neus, my thesis supervisor, for his continuous support and valuable advice concerning my research projects. Additionally, I thank Professor Dr. Joachim Grammig for acting as a second referee for my thesis. Special thanks, however, go to my colleague Dr. Andreas Walter for his guidance and encouragement throughout the last three years. I owe him much of the outstanding opportunities and experiences; our fruitful discussions on this field of research led to interesting publications. Finally, it was always enjoyable to spend time with him. More generally, I would like to thank all seminar participants (at Tübingen and various conferences) who gave me valuable advice that helped me shape my hypotheses and improve the methodologies used.

Various other persons should not go unmentioned. I thank Anna Rohlfing for reading this work and correcting my English. To Martin Weiss, I am indebted for his continuous computing and LaTeX support. Since the second part of this work is based on a rather large database that had to be compiled by hand, I thank the team of research assistants. Additionally, I would like to thank the whole team of the banking chair (Joachim Brixner, Björn Dymke, Jens Grunert, Ralf Österle and Philipp Sturm) for the comfortable atmosphere that made it really enjoyable to spend the last years together. Furthermore, special thanks go to the Graduiertenkolleg "Unternehmensentwicklung, Marktprozesse und Regulierung in dynamischen Entscheidungsmodellen" at the University of Tübingen for granting me a scholarship that made it possible to work on this project and attend various conferences.

Finally, even though it is impossible to describe the importance of their support and encouragement, I thank my family and Cornelia. Without their love and patience, this work would surely not have been completed. I dedicate this book to them.

Alexander G. Kerl

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1 Introduction

The German stock market has experienced an extraordinary boom in recent years. Despite the burst of the dot.com bubble in 2000, the DAX increased from around 2,200 points at the end of 1995 to about 8,000 points at the end of 2007. In this period, the number of German stocks listed on German stock exchanges rose from 812 in 1995 to 1,103 by the end of 2006.[1] In this period, the market capitalization of these stocks rose from € 422,522 million to € 1,241,963 million, while the yearly market turnover rose from € 840,514 million to € 3,591,210 million. By the end of 2006, around 4 (8) million people in Germany were invested in stocks (funds), which is equal to about 6% (12%) of the whole population.[2] Together, these people increased their level of stock holdings from € 197.5 billion (1995) to € 372.3 billion (2006), and the level of mutual fund holdings from € 22.1 billion (1995) to € 121.8 billion (2006). However, an even bigger share of all stocks in Germany was held by institutional investors, namely corporations and investment funds. By the end of 2006, corporations had invested € 948.9 billion in stocks, another € 344.6 billion of stocks was held by investment funds. These figures highlight the importance of the German capital market for both, private and institutional investors. Since every investor is confronted with a tough decision problem among a broad range of different stocks, investors make use of the advice provided by financial experts.

These experts act as intermediaries between companies and investors. For both, private and institutional investors, unbiased and objective financial research issued by different types of information providers is of great relevance for their investment decisions. For private investors, for example, an important source of information is the advice of journalists

[1] These and subsequent figures are provided by the DAI (Deutsches Aktieninstitut e.V.).

[2] However, the percentage of German private stock holders (about 6% of the whole population at the end of 2006) is relatively low compared to other countries such as the US (25.4%), Japan (27.7%) or France (14.5%).

that work for *Personal Finance Magazines* (*PFMs*). Apart from all kinds of financial and investment related information such as cover stories, technical analyses, and interviews with potential insiders, some magazines regularly disclose a section on stock recommendations. Journalists claim these stock recommendations being based on self-contained research procedures. For the US, examples for *PFMs* are *Kiplinger* and *SmartMoney*; in Germany, for example, the *Effecten-Spiegel* is broadly known. For institutional investors, financial research is performed by analysts who work for investment banks and brokerage houses. Since the analysts' task is to provide detailed research and a recommendation, they collect and interpret all types of (financial) information such as accounting data, ad hoc announcements, yearly or quarterly disclosure, and information from the companies' conference calls. Within their analysts' reports, they disclose various information on the stocks they cover such as recommendations, earnings forecasts, target prices, and further information that is disclosed within the text as justification for the 'summary measures'.

Up to the year 2000, the financial press frequently quoted the opinion of financial experts on stocks since it seemed that they always correctly forecasted the future development of stocks. In those times, financial analysts increased their earnings forecasts every year and stock recommendations were mainly positive.[3] Since market indices rose from year to year, analysts' forecasts proved to lead investors correctly. However, financial experts' role came under scrutiny when markets crashed in 2000 but recommendations still remained positive. People began to realize that financial experts might have been too optimistic and their recommendations seemed to be biased due to conflicts of interests. Via the disclosure of optimistic research, investment banks hoped for further investment banking deals and commissions. As a consequence, the SEC and former New York's State Attorney Elliot Spitzer got suspicious. In December 2002, ten leading investment banks (among others Deutsche Bank, Credit Suisse First Boston, and Morgan Stanley) agreed to a $ 1.4 billion global settlement to reform investment practices. As part of the agreement, research analysts should be better insulated from investment banking pressure. Hence, firms were requested to sever links between research and investment banking, including analyst compensation and their practice to accompany investment banks on their road shows. Additionally, the prosecuted banks were required to fund independent research firms. Each bank was obliged to contract with at least three independent research firms in order to provide objective investment advice to customers. Last, each firm agreed to disclose stock recommendations and price target forecasts in order to allow for a more detailed evaluation.

Due to the economic significance of financial experts' market research and, at the same time, public interest in financial recommendations, it is of high importance to thoroughly evaluate the work of analysts and journalists. The first part of this work, namely Chapter 2 to 4, concentrates on selected issues concerning the recommendations issued by journalists who work for *Personal Finance Magazines*. Since there is limited evidence for this specific source of financial research for the German market (see, e.g., Pieper et al., 1993; and Röckemann, 1994), we set up a new database by collecting all explicit buy and sell recom-

[3] See, among others, Barber et al. (2001) and Brav and Lehavy (2003).

mendations which are issued by German *Personal Finance Magazines* within the period from 1995 to 2003. With this unique dataset we aim to answer the following questions: First, we focus on the question whether markets react to the disclosure of journalists' recommendations in the short-run (see Chapter 2). For this purpose, standard event-study methodology is applied which analyzes whether abnormal returns and excess trading volumes exist around the publication day of the recommendation. Second, we ask whether such a market reaction is based on naïve buying-pressure by private investors or on a fundamental revaluation of the stock due to new and valuable information (see Chapter 2). Whereas the first phenomenon would only result in a temporary price-pressure effect, the latter effect would be based on a reaction of permanent nature. Third, we investigate whether recommendations outperform passive benchmarks such as the market index in the long-run (see Chapter 3). We focus on answering whether investors should rely more on buy or sell recommendations. Additionally, we evaluate if there are sub-groups of stocks that promise higher returns in the long-run due to their companies' characteristics. This could be due to firm size, price-to-book ratio, year of disclosure, or membership in the *Neuer Markt* index. And, forth, we focus on how journalists decide which stocks to recommend (see Chapter 4). Within the economic literature, investors are assumed to be subject to attention grabbing effects. Hence, we apply this attention hypothesis to journalists in order to analyze whether they are prone to primarily focusing on stocks that attract attention by unusually high news disclosure, past performance, and excessive trading volumes. Since most of these questions have not been answered for the German market, we address them in the form of separated research contributions (see individual chapters).

The second part of this work, namely Chapter 5 and 6, concentrates on selected issues concerning research published by financial analysts working for investment banks and brokerage houses. These analysts regularly write reports to provide information for institutional investors like pension and fund managers. Whereas economic research on financial analysts for the US dates back for decades, European evidence is limited. Beckers et al. (2004), Jegadeesh and Kim (2006), and Au (2005) publish studies that evaluate analysts recommendations and earnings forecasts within an international and European context. However, for the German market there is much less research.[4] Whereas Henze and Röder (2005) analyze the quality of stock recommendations, Bessler and Stanzel (2007) focus on the quality of earnings forecasts issued by analysts. Again, we focus on some selected and separated issues on which we like to contribute to existing literature. Since we intend to analyze the complete text of analysts' reports alongside with a special focus on target prices, we cannot rely on standard databases like *First Call* or *I/B/E/S*. Therefore, we make use of analysts' reports provided in their original form by the *Investext* database from *Thomson Financial*. The dataset consists of 1,000 analysts' reports on German companies which are published by leading investment banks (according to the *Institutional Investor's* annual rankings) in the period from 2002 to 2004. We like to concentrate on some issues that have to the best of our knowledge not been answered for the German capital market so far:

[4] See also a couple of dissertations from Löffler (1998), Henze (2004), Richter (2005), Fleischer (2005) and Stanzel (2007).

First, we analyze whether markets react to the disclosure of text-based justifications and target price revisions conditional on the standard 'summary measures' such as recommendations and earnings forecasts (see Chapter 5). For this purpose, multivariate regressions are used to evaluate whether recommendation revisions, earnings forecast revisions, and target price revisions impact the stock return around the publication day of the report. Additionally, we hand-code the complete text of each report with respect to text-based positive and negative information in order to analyze whether the information included in the text contains relevant information for capital markets beyond the above mentioned 'summary measures'. Furthermore, we contribute to the growing literature that evaluates whether analysts who are potentially subject to conflicts of interests issue less informative recommendations for capital markets. At the same time, we evaluate whether analysts who work for high-reputable banks might issue more valuable information. Second, we focus on the question of target price accuracy and try to distinguish potential factors that are relevant for the accuracy (see Chapter 6). For this purpose, we define a measure to evaluate target price accuracy. In this chapter, we answer the question whether analysts perform equally well with their target price forecasts when issuing buy and sell recommendations. To additionally analyze determinants that explain target price accuracy, we concentrate on a set of analyst-specific factors (optimism, detail of analysis) and firm-specific factors (firm size, volatility). Finally, we contribute to current literature by analyzing target price accuracy with respect to potential conflicts of interests and reputation of the investment bank. With Chapter 7 we sum up the results and conclude.

2

Market Responses to Buy Recommendations Issued by *Personal Finance Magazines*: Effects of Information, Price-Pressure, and Company Characteristics

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2.1 Introduction

By definition, private investors are not members of the financial community itself, since they have to spend most of their time making a living outside of Wall Street. Nevertheless, they invest substantial amounts of their wealth in direct stock holdings. Since this is a crucial decision as it affects their standard of living in the future, they consult so-called financial experts to come up with advice for investment decisions. Private investors usually find this kind of advice at brokerage houses, investment newsletters, 'financial gurus' and journalists.

Whereas the market reaction to the information provided by the first three groups of financial experts has been analyzed extensively by academics, investment advice published by journalists has not been very thoroughly researched so far. Probably the best way to account for financial advice published by this group is to analyze stock recommendations of *Personal Finance Magazines* (*PFMs*). Unlike other sources, journalists working for these magazines do not only report second hand information previously published by other financial experts, but often provide, besides general investment related information about

capital markets, direct buy recommendations of stocks based on self contained research procedures. In the US, magazines such as *Barron's*, *Kiplinger* and *SmartMoney* can be classified as *PFMs*. For the British market, *Moneywise* represents this business press branch, and for the German market, e.g., the *Effecten-Spiegel* and *Börse Online* serve the same purpose.

Traditionally, research on the market reaction to financial experts' recommendations accepted the semi strong form of the efficient market hypothesis (EMH) by Fama (1970), which predicts that security prices instantly reflect all publicly available information. Consequently, observed increases in prices were attributed to new, unknown information comprised in buy recommendations. Because the assumption of the EMH (that close substitutes for securities exist in the market) is questionable, two competing hypotheses based upon research by Kraus and Stoll (1972) and Scholes (1972) emerged in the literature, enlarging the framework of the EMH: First, based on a line of arguments building on the limits of arbitrage in security markets, the price-pressure hypothesis (PPH) assumes that investors must be compensated for transaction costs and portfolio risks when they agree to immediately buy or sell securities which they otherwise would not trade. Hence, this compensation is provided by a temporary price increase (decline) for large quantities of stocks offered for purchase (sale). In the context of our study, the PPH states that an initial price reaction to *PFMs* buy recommendations is solely driven by temporary buying-pressure from naïve investors, which should be reversed afterwards. Second, the information hypothesis (IH), which we evaluate in our study as well, assumes that abnormal returns are caused by new, relevant information, leading to a permanent revaluation of the security.

We suspect that the information environment of a recommended stock plays a decisive role regarding whether market reactions are induced by price-pressure effects or information effects. Therefore, we predict first that the lower the frequency for company specific information releases, the larger the information effect of a recommendation. Second, we expect that the less liquid the market of a stock is, the higher the price-pressure effect. As far as we know, these two hypotheses have not been empirically evaluated for financial experts' recommendations in terms of the information environment.

In order to evaluate both predictions, we use the market value of a company as a proxy for the information environment, since previous studies have documented that information on small companies is processed less frequently to the market than for big companies (see, e.g., Arbel and Strebel, 1983; and Arbel, 1985). Hence, stock prices of small companies should be exposed particularly to the information effect. In addition, since market liquidity for small companies is usually much lower, recommendations on small stocks should also be severely exposed to the price-pressure effect. The price-to-book ratio of a stock serves as another proxy for the information environment. In particular, value companies were quite out of favour during our investigation period, where high-tech companies received most of the attention by the financial community. Consequently, we suspect rare recommendations on value stocks to induce a market reaction due to the information effect. At the same time, markets for less closely followed companies, e.g. value companies, are less liquid. Hence, we assume recommendations of these stocks to be particularly exposed to price-pressure effects.

With our study, we aim to contribute to current research in several ways. First, with a unique data set we analyze the market reaction to buy recommendations issued by a widely neglected sub-group of financial experts: the journalists of *Personal Finance Magazines* (*PFMs*). Furthermore, we distinguish if this market reaction seems to be based on temporary buying-pressure by naïve investors or if valuable information content leads to a fundamental revaluation of the stock. Confirming the latter effect would clearly support the economic role of journalism while contradicting the prejudice that journalists just pass on worthless second-hand information. Finally, we relate both competing effects to different company characteristics. This has, to the best of our knowledge, not been done before. Selecting German *PFMs* for the analysis is appropriate since these magazines have a long tradition in providing investment advice and are important to German private investors. This is largely due to the fact that banks which control the brokerage business in Germany refrained from issuing direct buy and sell recommendations for specific stocks for a long time, since they feared legal actions for damages if a stock investment were to fail. In addition, other sources of information like investment newsletters are largely irrelevant in the German market. Hence, *PFMs* have emerged as one of the primary sources of information for private investors. In 2000, for example, around one out of five German private investors consulted *PFMs* for their investment decisions[5]. With the foundation of the *Neuer Markt* in 1997 and the high number of IPOs before the millennium[6], German private investors felt an increasing necessity for credible investment advice to cope with this period of fundamental transition in the German stock market.

The results in this chapter show a significant market reaction before and around the publication day itself. Furthermore, around the publication of recommendations, excess volumes show increased trading activity; first indication that price-pressure effects might be at work. While analyzing the impact of company characteristics to the market reaction, we find that small stocks and value stocks are subject to greater price reactions than big stocks and glamour stocks. Whereas small (big) stocks are defined as stocks that belong to the quintile with the smallest (biggest) market capitalization in each year, value (growth) stocks are defined as stocks that belong to the quintile with the smallest (biggest) price-to-book ratio in each year. Moreover, riskier stocks, as classified by their high beta factors, are associated with greater price reactions compared to stocks with lower betas. Robustness checks reveal that the observed market reaction is neither severely biased by confounding corporate news prior to the event day nor by short-term momentum effects. However, results show that the price reaction within years of bear markets, i.e. years with a decreasing market in terms of a decreasing Composite DAX (CDAX), are less pronounced compared to years of bull markets, i.e. years with a rising market.

Finally, we aim to segregate pure price-pressure effects from permanent information effects in order to decompose the initial price reaction. Overall, we confirm for our entire sample that more than half of the market reaction seems to be due to the information effect.

[5] Calculations are based on data provided by the media service of the VDZ (Verband Deutscher Zeitschriftenverleger e.V.) and by DAI (Deutsches Aktieninstitut e.V.).

[6] According to DAI (Deutsches Aktieninstitut e.V.) the number of IPOs steadily increased from 14 in 1996 to 174 in 1999.

When focusing on sub-groups of the sample, it can be shown that the market reaction of small stocks is not only driven by information effects but also by price-pressure effects. This does not apply to the high abnormal returns realized by value stocks, which seem to be solely driven by the information effect. In contrast, low but still significant abnormal returns of glamour stocks are solely generated by price-pressure effects. In conclusion, journalists seem to publish valuable information at least for the group of small and value stocks; a result which is not yet visible in this area of research.

The remainder of the chapter is structured as follows. Section 2.2 describes related research while Section 2.3 describes the database and provides some descriptive statistics. The employed event study methodology is also briefly discussed in this section. Section 2.4 presents our empirical findings. Finally, we provide a discussion in Section 2.5 and conclude in Section 2.6.

2.2 Related Research

A number of papers focus on the market reaction associated with recommendations issued by brokerage houses and security analysts in the US. Besides Stickel (1995), who reveals in an event-study that buy recommendations are associated with short-term price increases around the publication day (PD), similar results are reported, for example, by Womack (1996). Mikhail et al. (2004) report that returns are significant and positively associated with the analysts' prior performance in the short-run and long-run. In contrast to these studies, Barber et al. (2001) and Barber et al. (2003) take a more investor-oriented, calendar-time perspective for a long-run analysis. The first study documents that purchasing the most favorable consensus recommendations of security analysts yields significant positive abnormal returns. The latter study, however, points out that between the years 2000 and 2001, it was not the most but the least favoured stock that outperformed the market.

Second, Jaffe and Mahoney (1999) and Metrick (1999) analyze the stock selection abilities of US investment newsletters. Both studies take advantage of the *Hulbert Financial Digest* database which has been tracking recommendations of investment newsletters since 1980. Within both studies there is no consistent evidence for significant abnormal returns in the short-run. This implies that investment newsletters do not seem to provide valuable information to investors.

Third, second-hand information which is published by financial gurus, e.g. recommendations made by prominent money managers at *Barron's Annual Roundtable* or by panelists of the *Wall Street Week* television show, is examined thoroughly in the literature. For example, Desai and Jain (1995) and Ferreira and Smith (2003) find that buy recommendations earn significant positive abnormal returns around the PD. Barber and Loeffler (1993) and Liang (1999) get similar results concerning the *Pros' Picks* published in the *Dartboard* column of the *Wall Street Journal*. Furthermore, the latter study finds this market reaction to be mainly based on temporary price-pressure effects. Additionally, within both studies the market reaction around the PD is found to be connected to significantly

higher trading volumes.

On the contrary, studies analyzing the market reaction of stock recommendations which originate from the information generating process done by journalists are rare exceptions and can mainly be found for European markets. Lidén (2007), who analyzes the Swedish market for daily newspapers and *PFMs*, reports a positive publication day effect for buy recommendations although this effect is almost fully reversed within 20 days, supporting the price-pressure hypothesis. Abnormal returns around the PD are also associated with higher trading volumes for buy recommendations. In addition, a very limited number of studies focus exclusively on the recommendations of *PFMs*. For Germany, both Pieper et al. (1993) and Röckemann (1994) report significant positive abnormal returns around the event day. However, both studies focus on a small dataset and analyze stock recommendations for a rather limited time period. On the contrary, Yazici and Muradoglu (2002) do not find evidence that the published investment advice within the Turkish magazine *Moneymatik* helps private investors to earn abnormal returns.

2.3 Data and Methodology

2.3.1 Description of Database

In Germany, a number of magazines belong to the general business press branch[7]. Within our investigation period from 1995 to 2003, 13 of these magazines can be classified under *Personal Finance Magazines* (*PFMs*) since they provide private investors with investment related information about capital markets[8]. A major criterion which must be fulfilled by any of those 13 *PFMs* to be chosen for our analysis is a regular, easy-to-see recommendation box. This box has to contain explicit advice for the reader - i.e. direct buy recommendations. This characteristic assures that these recommendations are easy to implement for any naïve private investor. Finally, only five *PFMs* fulfill these requirements and remain in our sample[9]. With the exception of the *Telebörse*, all these publications have existed within the entire investigation period. Nevertheless, including the *Telebörse* helps to control for survivorship bias. Hence, there will be no upward bias in our abnormal return calculation due to the ex-post choice of only surviving *PFMs*.

In 1995, the *PFMs* in our sample jointly distributed around 190,000 magazines weekly. During the late 1990s, when financial markets experienced an extraordinary boom, the number of distributed magazines rose steadily and peaked at around 1,165,000 in 2000[10]. This number implies that around one out of five private investors consulted one of the

[7] Data is provided by the media service of the VDZ (Verband Deutscher Zeitschriftenverleger e.V.).

[8] Specifically, these are *Der Aktionär*, *Börse Online*, *Börsenberater*, *Capital* (*Capitaldepesche*), *Euro*, *Finanzen*, *Focus Money*, *Geldidee*, *Investormagazin*, *Telebörse*, *Wertpapier*, *Aktien Research* and *Effecten-Spiegel*.

[9] These are *Wertpapier*, *Effecten-Spiegel*, *Börse Online*, *Telebörse* and *Capital* (*Capitaldepesche*).

[10] Data is provided by the media service of the VDZ (Verband Deutscher Zeitschriftenverleger e.V.) which provides print run data collected by IVW (Informationsgemeinschaft zur Feststellung von Werbeträgern e.V.).

magazines on a regular basis[11]. Later, this trend was reversed, and the combined weekly number of distributed magazines decreased to around 260,000 in 2003.

In order to be included in our sample, a recommendation has to fulfill the following criteria: first, as mentioned before, the recommendation must have an explicit character, i.e. a direct buy recommendation. Second, only stocks, neither options nor bonds, are used in our sample. Third, as our study focuses on the German capital market, we only include recommendations for stocks which have their primary listing on a German stock exchange. Fourth, buy recommendations of forthcoming IPOs are excluded from our sample. Fifth, return data for the period from 199 trading days prior to the publication day to 20 trading days subsequent to the publication day must be available via *Datastream*.

2.3.2 Descriptive Statistics

Based on the above mentioned criteria, we hand collected 2,860 recommendations[12] to build up a unique database of *PFMs'* buy recommendations. Table 1 displays summary statistics for these recommendations.

Two properties of the sample deserve particular attention. First, to evaluate the risk of each recommended stock, we calculate stock-specific betas on monthly return data for a 36-month time period prior to the event day[13]. The median beta equals roughly 0.80. This is a deviation from related studies for the US market. Barber and Loeffler (1993) find that the *Pros' Picks'* stock recommendations from investment analysts which are published in the monthly *Dartboard* column, have a median beta of 1.16. Desai and Jain (1995) reveal that buy recommendations made by prominent money managers at *Barron's Annual Roundtable* have a median beta of 1.13. Hence, editors of German *PFMs* seem to recommend less risky stocks compared to US financial experts. Within the years from 1995 to 1999, the median beta is reported to fluctuate between 0.88 and 0.96. From 2000 on, betas sharply dropped to 0.53 in 2002 which corresponds to the burst of the stock market bubble at the beginning of 2000. As investors became more cautious, *PFMs* started to recommend less risky stocks for purchase.

Second, we measure the percentage of recommendations which are accompanied by confounding events. Since companies are obliged to report new information such as earnings forecast revisions, dividend adjustments or other major corporate news, we control for these confounding events via ad hoc announcements[14]. We control for the announcements which are released in the period five to three days prior to the event, as these might influence the decision process of the editorial staff about which stock is recommended for purchase.

[11] In 2000, the number of German private stock holders is reported to be 6.21 million. Data on the German capital market is provided by DAI (Deutsches Aktieninstitut e.V.).

[12] Before applying the mentioned criteria, the database contained 3,021 recommendations. 161 recommendations failed the selection criteria, hence 94.67% of the original sample remain for the final analysis.

[13] In order to calculate beta factors, we employ the Composite DAX (CDAX) as a proxy for the market portfolio.

[14] To control for ad hoc announcements, we examine the database of the DGAP (Deutsche Gesellschaft für Ad-hoc-Publizität).

Table 1: Descriptive statistics for buy recommendations, from 1995 to 2003
The table displays the number of buy recommendation for each year and the entire investigation period. The market capitalization (MC) is given in millions of euros. Data on price-to-book ratios (PTB) is available for 2,772 buy recommendations; resulting in a corresponding coverage ratio of 96.92%. The calculation of betas is based on monthly return data of each stock over the 36-months period prior to the event. Due to a not negligible number of stocks with a short performance history, betas can just be calculated for 2,271 buy recommendations. This corresponds to 79.41% of all buy recommendations. Column (9) displays the percentage of events in which ad hoc announcements were released by the company between three and five trading days prior to the event. Data on ad hoc announcements is available starting from 1996. Hence, 2,604 buy recommendations could be screened for ad hoc announcements. That is 91.05% of the original sample.

Buy Recommendations								
(1) Year	**(2) No. of Rec.**	**(3) MC Median**	**(4) MC Mean**	**(5) PTB Median**	**(6) PTB Mean**	**(7) Beta Median**	**(8) Beta Mean**	**(9) % in Sample w/ concurrent ad hoc news**
1995	256	184.98	1331.73	1.87	2.41	0.96	0.97	n/a
1996	261	188.41	1425.44	1.67	2.06	0.96	0.98	3.07%
1997	279	273.17	2103.90	2.13	2.88	0.90	0.94	9.68%
1998	250	613.11	5276.46	2.30	3.53	0.94	0.93	10.00%
1999	281	651.60	5040.34	2.19	3.73	0.88	0.86	10.68%
2000	371	997.72	6723.14	2.21	4.12	0.63	0.66	12.67%
2001	428	467.83	4098.41	2.03	3.08	0.53	0.67	11.92%
2002	382	464.52	4225.43	1.74	2.28	0.53	0.77	11.26%
2003	352	282.52	1982.48	1.26	1.49	0.81	0.94	5.68%
Average all Years	2860	403.44	3704.81	1.87	2.84	0.80	0.85	9.64%

As can be seen in column (9), 9.64% of the recommendations are preceded by ad hoc announcements.

2.3.3 Methodology

The purpose of our study is to reveal if *PFMs'* recommendations impact prices and trading volumes of the recommended stocks. Hence, we analyze if abnormal returns, i.e. returns that significantly deviate from the 'normal' return, and excess volumes exist around the PD of the recommendation. To measure the market reaction to buy recommendations, we apply standard event-study methodology outlined by MacKinlay (1997). For each recommendation, calendar time is converted to event time by defining the PD as event day [0]. The estimation period encompasses the period from [-199] to [-21] whereas the period from [-20] to [+20] is defined as the event period.

Abnormal returns for any given point in time and stock are the difference between realized[15] and normal returns. In order to estimate these expected, normal returns, we

[15] To calculate realized returns, we download the data type RI from *Datastream* which includes adjustments for dividends and stock splits.

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[16] 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. Since abnormal return calculation might be sensitive to the employed model, we also calculate ARs based on the constant mean model and the market adjusted model. Since all models yield virtually identical results, we exclusively report results based on the market model which accounts for individual stock risk. To calculate the market reaction for more than one day, we cumulate abnormal returns for the respective period.

In a second step, we calculate the average excess volume (EV) for each trading day which is the stock-specific ratio of the trading volume on each day in the event period to the average trading volume from the estimation period (see Womack, 1996). A limitation of the volume data is that it does not cover all existing regional German stock exchanges but only daily turnover volumes of the *Frankfurt Stock Exchange*.

In order to test for statistical significance of abnormal returns (ARs) and cumulative abnormal returns (CARs), we apply the traditional t-test based on Brown and Warner (1985). Since this method has shown to be sensitive to asymmetrically distributed returns and event-induced increases in variance as Brown and Warner (1985) and Boehmer et al. (1991) have shown, we also employ the nonparametric rank test based on Corrado (1989) to test for robustness. This type of test is correctly specified no matter how skewed the cross-sectional distribution of abnormal returns is. Furthermore it is less affected by event-induced increases in variance compared to parametric tests. Since turnover data does not seem to be symmetrically distributed, we also perform the nonparametric rank test based on Corrado (1989) to test significance of excess volumes.

2.4 Empirical Results

2.4.1 Market Reaction

Assuming that journalists working for *PFMs* are either capable of generating novel and relevant information while recommending a specific stock or at least initiating price-pressure by inducing naïve investors to buy a specific stock, we should observe an immediate increase in the stock's valuation associated with buy recommendations. Thus, we implicitly test for the null hypothesis that *PFMs'* recommendations do not lead to a revaluation of stocks.

Table 2 reports abnormal returns (ARs), cumulative abnormal returns (CARs) and excess volumes (EVs) for buy recommendations within the event period [-20,+20]. We

[16] For our study, we compute discrete returns. To test for robustness, we also perform the analysis on logarithmic returns. Since the results are virtually the same across the two different methods of calculation, we report and discuss only results based on discrete returns.

observe positive and statistically significant ARs on trading days [-7] through [+2]. However, apart from these days, subsequent trading days display ARs which fluctuate without consequently being positive or negative. The maximum value of a daily AR is reported for trading day [-1], the day prior to the official publication, with 1.08%, while on the PD itself we find a highly significant market reaction of 0.64%.

Table 2: Abnormal returns, cumulative abnormal returns and excess volumes for buy recommendations

This table shows abnormal returns (AR_t), cumulative abnormal returns (CAR_t) and excess volumes (EV_t) for the event period [-20,+20]. To test for statistical significance, t-statistics, based on Brown and Warner (1985), are displayed next to the (cumulative) abnormal returns. ***,**,* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the parametric t-test. +++,++,+ indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the nonparametric rank test based on Corrado (1989). Due to limited data on daily turnover, the analysis of excess volumes is based on 1,676 buy recommendations. This corresponds to 58.60% of the original sample. A further limitation of the volume data is that it does not cover all existing regional German stock exchanges but only daily turnover volumes of the *Frankfurt Stock Exchange*.

Buy Recommendations					
Event Day	AR_t	t-stat	CAR	t-stat	EV_t
-20	-0.06%	-1.12	-0.06%	-1.12	0.96^{+}
-19	0.03%	0.68	-0.02%	-0.31	0.97^{+}
-18	-0.02%	-0.45	-0.05%	-0.52	0.96
-17	-0.04%	-0.74	-0.08%	-0.82	1.02
-16	-0.09%	-1.81*	-0.18%	-1.54	0.96
-15	0.01%	0.17	-0.17%	-1.34	1.01
-14	0.11%	2.17**	-0.06%	-0.42	1.06
-13	0.06%	1.21	0.01%	0.04	1.05
-12	-0.05%	-0.97	-0.04%	-0.29	1.06
-11	-0.01%	-0.22	-0.06%	-0.34	1.07
-10	0.16%	3.12***	0.10%	0.62	1.03
-9	0.23%	4.47***$^{+}$	0.33%	1.88*	1.02
-8	0.08%	1.56	0.41%	2.24**	1.04
-7	0.14%	2.78***	0.55%	2.90***	1.07
-6	0.18%	3.59***$^{+}$	0.73%	3.73***	1.18
-5	0.30%	5.97***$^{+++}$	1.04%	5.10***$^{++}$	1.24
-4	0.49%	9.69***$^{+++}$	1.53%	7.30***$^{+++}$	1.28
-3	0.50%	9.91***$^{+++}$	2.03%	9.43***$^{+++}$	1.31
-2	0.16%	3.18***	2.20%	9.91***$^{+++}$	1.25
-1	1.08%	21.22***$^{+++}$	3.28%	14.40***$^{+++}$	1.55^{+++}
0	0.64%	12.61***$^{+++}$	3.92%	16.81***$^{+++}$	1.61^{+++}
1	0.44%	8.58***$^{+++}$	4.35%	18.25***$^{+++}$	1.43^{++}
2	0.26%	5.11***$^{++}$	4.61%	18.92***$^{+++}$	1.37^{+++}
3	-0.14%	-2.73***	4.47%	17.96***$^{+++}$	1.24
4	-0.02%	-0.36	4.46%	17.52***$^{+++}$	1.23
5	-0.07%	-1.36	4.39%	16.92***$^{+++}$	1.23
6	0.04%	0.85	4.43%	16.77***$^{+++}$	1.20
7	-0.11%	-2.09**	4.32%	16.07***$^{+++}$	1.22
8	-0.08%	-1.66*	4.24%	15.48***$^{+++}$	1.03

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Event Day	AR_t	t-stat	CAR	t-stat	EV_t
9	-0.12%	-2.37**	4.12%	14.79***+++	1.09
10	-0.11%	-2.09**	4.01%	14.17***+++	1.07
11	-0.01%	-0.13	4.01%	13.93***+++	1.06
12	0.05%	0.94	4.05%	13.88***+++	1.09
13	-0.14%	-2.68***	3.92%	13.21***+++	1.04
14	-0.13%	-2.47**	3.79%	12.61***+++	1.08
15	-0.03%	-0.61	3.76%	12.33***+++	1.09
16	0.00%	-0.10	3.76%	12.15***+++	1.06
17	0.00%	0.07	3.76%	12.00***+++	1.08
18	-0.13%	-2.55**	3.63%	11.43***+++	1.07
19	-0.03%	-0.53	3.60%	11.20***+++	1.08
20	-0.03%	-0.54	3.58%	10.98***+++	1.16

Since new information is usually incorporated into prices gradually, one has to examine the cumulative abnormal returns in order to measure not only the price reaction of one single day, but also the entire market reaction to *PFMs'* recommendations. Table 2 displays the cumulative abnormal return starting from trading day [-20]. Statistically significant positive CARs under the parametric as well as the nonparametric test are reported from day [-5] on, hence CAR [-20,-5]. The maximum positive value of 4.61% is displayed over the period [-20,+2]. As can be seen in the table, although significant CARs start long before the PD, there is still a noticeable increase in absolute CARs from trading day [-1] on, which reveals that following buy recommendations might be both a realizable and profitable strategy for private investors.

However, we should not analyze cumulative abnormal returns which start long before the recommendations are known to any market participant. As it would be more appropriate to evaluate shorter periods, Table 3 displays CARs for some selected periods which should be influenced more directly by our event. Most *PFMs* decide on trading day [-3] at the latest which stocks are included on the buy list for the current week's edition. Hence, a price reaction which we assign to the recommendations should first start when the decision is fixed. Based on the findings of Table 2, this price reaction does not last longer than up to trading day [+2], when no further significant price increase can be documented.

Table 3: Cumulative abnormal returns for buy recommendations

This table reports cumulative abnormal returns for distinct periods around the event day [0] for buy recommendations. To test for statistical significance, t-statistics, based on Brown and Warner (1985), are displayed next to the CARs. ***,**,* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the parametric t-test. +++,++,+ indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the nonparametric rank test based on Corrado (1989).

		Buy Recommendations						
		Mean	t-stat	Minimum	First Quarter	Median	Third Quarter	Maximum
Panel A: Overall Results								
CAR	[-2,+2]	2.58%*** +++	22.67	-28.91%	-1.11%	1.64%	5.43%	107.34%
CAR	[-1,+2]	2.42%*** +++	23.76	-24.72%	-0.94%	1.56%	4.81%	78.80%
CAR	[0,+2]	1.34%*** +++	15.18	-19.34%	-1.24%	0.77%	3.43%	47.68%
CAR	[+1,+2]	0.70%*** +++	9.68	-39.43%	-1.14%	0.31%	2.26%	32.61%
Panel B: Bull Market								
CAR	[-2,+2]	2.88%*** +++	21.52	-23.19%	-0.68%	1.91%	5.51%	39.11%
CAR	[-1,+2]	2.64%*** +++	22.07	-15.14%	-0.60%	1.76%	5.00%	40.53%
CAR	[0,+2]	1.50%*** +++	14.48	-17.35%	-1.02%	0.89%	3.45%	33.97%
CAR	[+1,+2]	0.80%*** +++	9.48	-17.30%	-0.97%	0.32%	2.17%	32.61%
Panel C: Bear Market								
CAR	[-2,+2]	2.22%*** +++	11.15	-28.91%	-1.78%	1.06%	5.05%	107.34%
CAR	[-1,+2]	2.15%*** +++	12.06	-24.72%	-1.35%	1.17%	4.50%	78.80%
CAR	[0,+2]	1.13%*** +++	7.34	-19.34%	-1.82%	0.58%	3.37%	47.68%
CAR	[+1,+2]	0.54%*** +++	4.25	-39.43%	-1.62%	0.28%	2.45%	25.28%
Panel D: Small								
CAR	[-2,+2]	5.04%*** +++	17.20	-26.93%	-0.16%	3.52%	8.20%	107.34%
CAR	[-1,+2]	4.88%*** +++	18.63	-13.57%	-0.15%	3.34%	7.74%	78.80%
CAR	[0,+2]	2.67%*** +++	11.75	-16.35%	-0.93%	1.49%	5.53%	47.68%
CAR	[+1,+2]	1.25%*** +++	6.76	-39.43%	-1.04%	0.56%	2.89%	28.97%
Panel E: Big								
CAR	[-2,+2]	1.05%*** +++	5.97	-15.52%	-1.34%	0.68%	3.38%	19.52%
CAR	[-1,+2]	0.75%*** +++	4.77	-16.66%	-1.37%	0.49%	2.97%	16.86%
CAR	[0,+2]	0.54%*** +++	3.95	-17.38%	-1.25%	0.38%	2.20%	12.27%
CAR	[+1,+2]	0.40%*** +++	3.59	-9.30%	-1.03%	0.19%	1.60%	13.48%
Panel F: Value								
CAR	[-2,+2]	4.02%*** +++	15.56	-28.91%	-0.43%	2.72%	6.77%	107.34%
CAR	[-1,+2]	3.77%*** +++	16.30	-24.72%	-0.33%	2.26%	6.31%	78.80%
CAR	[0,+2]	2.16%*** +++	10.82	-17.94%	-0.89%	1.22%	4.38%	35.81%
CAR	[+1,+2]	1.18%*** +++	7.19	-18.40%	-1.00%	0.60%	2.71%	28.97%
Panel G: Glamour								
CAR	[-2,+2]	1.61%*** +++	5.24	-24.03%	-2.14%	1.05%	5.25%	31.73%
CAR	[-1,+2]	1.73%*** +++	6.29	-17.64%	-1.41%	1.17%	4.67%	43.41%
CAR	[0,+2]	0.58%** +++	2.42	-19.34%	-1.94%	0.34%	3.00%	25.05%
CAR	[+1,+2]	0.26% +	1.32	-14.29%	-1.60%	0.09%	1.92%	21.66%

For all buy recommendations, Panel A of Table 3 displays the highest market reaction of 2.58% for the period [-2,+2]. Thus, the null hypothesis that *PFMs'* recommendations do not lead to a revaluation of stocks can be rejected for short-term periods around the event. Furthermore, we analyze if the positive market reaction holds only in bull markets, i.e. years of a rising CDAX, as shown in Panel B, or if we can also observe price increases in bear markets, i.e. years of a decreasing CDAX as displayed in Panel C. The CAR for the period [-2,+2] in the bull market is 2.88%, whereas in times of bear markets, the CAR still displays 2.22%. Results are significant for both states of the market.

To analyze if *PFMs'* recommendations also have significant impact on the trading volume around the PD, we calculate average excess trading volumes, also displayed in Table 2. Each excess trading volume statistically differs from its average level within the period [-1,+2]. On the event day itself, the excess trading volume peaks at around 161% of the normal trading level. Since the increase in trading volume caused by the recommendations concentrates on a few trading days around the event day this indicates that generated abnormal returns seem to be induced by *PFMs'* recommendations.

To gain further insight in the factors influencing the market reaction we estimate cross sectional regressions on company specific factors. Following Fama and French (1993), company size, price-to-book ratio and risk might be important to explain abnormal returns. With respect to the size of a company we include the dummy variables BIG and SMALL for stocks belonging to the extreme quintiles in each year in terms of market capitalization. Similarly, GLAMOUR and VALUE represent dummy variables for stocks belonging to the extreme quintiles in each year in terms of price-to-book ratios. Furthermore, we include the variable BETA based on monthly return data for the 36-month period prior to the event day which accounts for longer-term risks additional to what is already incorporated in the market model. Additionally, we control for confounding news and the short-term momentum effect (see, e.g., Jegadeesh and Titman, 1993; Rouwenhorst, 1998) which might be significant determinants for cumulative abnormal returns around the event day. Hence, we include the dummy variable ADHOC if confounding news is released by the company the week prior to the event [-5,0] and the variable PASTPERF which represents the performance of cumulative abnormal returns in the period [-20,-3]. Finally, we check if results are driven by the state of the market, i.e. by bull or bear markets. Hence, we include the dummy variable BEARMARKET which represents years of a negative market movement. We estimate the following model:

$$\begin{aligned} CAR_i[t, t+s] = c & \\ & + \beta_1 BIG_i + \beta_2 SMALL_i \\ & + \beta_3 GLAMOUR_i + \beta_4 VALUE_i + \beta_5 BETA_i \\ & + \beta_6 ADHOC_i + \beta_7 PASTPERF_i + \beta_8 BEARMARKET_i \\ & + \varepsilon_i \end{aligned} \tag{2.1}$$

where CAR_i [t,t+s] represents the cumulative abnormal return for recommendation i from trading day [t] to trading day [t+s].

Table 4 reports results for the multivariate ordinary least square regressions[17]. As revealed by the adjusted R^2 of the distinct regressions, our model offers the highest explanatory power for the cumulative abnormal return of the periods [-2,+2] and [-1,+2]. Therefore, we focus on these results in the following discussion.

Table 4: Determinants of cumulative abnormal returns for buy recommendations
This table shows results based on multivariate OLS regressions of possible determinants on CARs of different periods for buy recommendations. The independent variables are defined as follows: (i) BIG (SMALL) are dummy variables for stocks belonging to the quintile with the highest (lowest) market capitalization in a given year. (ii) GLAMOUR (VALUE) represent dummy variables for stocks belonging to the quintile with the highest (lowest) price to book ratio in a given year. (iii) BETA is the variable for the stock's risk. Its calculation is based on monthly return data of each stock over a 36-month period prior to the event. (iv) ADHOC represents a dummy variable which equals one if an ad hoc announcement is released by the company the week prior to the event [-5,0]. (v) PASTPERF represents the performance of CAR in the period [-20,-3]. (vi) BEARMARKET is a dummy variable for those years with a negative CDAX movement. ***,**,* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the parametric t-test. The OLS regression is based on 1,986 buy recommendations. That is 69.44% of the original sample. The problem of heteroscedasticity (revealed via the White heteroscedasticity test) is solved by reporting robust standard errors (White heteroscedasticity consistent standard errors).

Buy Recommendations								
	(1)		(2)		(3)		(4)	
	CAR[-2,+2]		CAR[-1,+2]		CAR[0,+2]		CAR[+1,+2]	
Variable	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
C	0.0179***	5.16	0.0141***	4.25	0.0104***	3.79	0.0060***	2.62
BIG	−0.0090***	-3.23	−0.0117***	-4.68	−0.0038*	-1.80	−0.0005	-0.27
SMALL	0.0258***	5.74	0.0265***	6.39	0.0134***	3.96	0.0065**	2.33
GLAMOUR	−0.0073*	-1.89	−0.0045	-1.21	−0.0080***	-2.79	−0.0038*	-1.65
VALUE	0.0092**	2.37	0.0078**	2.25	0.0050*	1.77	0.0034	1.46
BETA	0.0088**	2.52	0.0110***	3.37	0.0040	1.47	0.0010	0.45
ADHOC	0.0074	1.46	0.0067	1.44	0.0027	0.70	0.0027	0.87
PASTPERF	−0.0300	-1.49	−0.0302*	-1.67	−0.0020	-0.15	0.0059	0.54
BEARMARKET	−0.0109***	-3.56	−0.0083***	-2.93	−0.0070***	-3.04	−0.0039**	-2.08
Adj. R^2	6.20%		7.60%		3.22%		1.02%	
Prob(F-statistic)	0.0000		0.0000		0.0000		0.0004	

First, with respect to the company size, Table 4 displays that the coefficient on BIG is significantly negative whereas the coefficient on SMALL is significantly positive. Hence, small stocks, as compared to big stocks, seem to display a greater price reaction to buy recommendations compared to big stocks. Second, in order to test the influence of price-to-book ratios on abnormal returns, Table 4 shows the coefficient on GLAMOUR as negative. However, statistical significance under the 10%-level can only be reported for the CAR [-2,+2]. In contrast, the coefficient on VALUE is significantly positive; buying value stocks results in higher CARs. Although the evidence on glamour stocks is less clear cut, overall, we can conclude that value stocks seem to be subject to a greater price reaction to buy recommendations than glamour stocks. Third, the coefficient on BETA is significantly positive, revealing that the purchase of high beta stocks, thus more risky stocks, results in

[17] We solved the problem of heteroscedasticity (revealed via the White heteroscedasticity test) by reporting robust standard errors (White heteroscedasticity-consistent standard errors). See also White (1980).

higher CARs.

Additionally, Table 4 displays results for the included control variables. The dummy variable ADHOC, controlling for biases caused by confounding corporate news, is reported to be insignificant in all regressions. Hence, the observed price reaction on buy recommendations does not seem to be affected in a systematic manner by the release of confounding ad hoc announcements. Next, by controlling for the short-term momentum effect, we find the coefficient on PASTPERF to be mostly insignificant. So, we do not find a indication that abnormal returns around the event are biased due to the short-term momentum effect. Finally, the dummy variable BEARMARKET is found to be significantly negative, demonstrating that CARs within times of bear markets are lower than within bull markets. Similar evidence for hedge funds is found by Edwards and Caglayan (2001). However, as shown in Panel C of Table 3, CARs in absolute terms are still significantly positive even when exercising recommendations in bear markets.

2.4.2 Price-pressure versus Information Value

In this section of the chapter, we address two issues. First, we examine the entire sample to determine how much of the price reaction can be attributed to new information in *PFMs'* buy recommendations, and what fraction seems to be associated with temporary price-pressure. Second, we aim to address the information hypothesis and the price-pressure hypothesis more directly in the context of companies' characteristics. Therefore, we will broaden current research by distinguishing between different sub-groups of stocks like small stocks and big stocks, glamour stocks and value stocks.

Table 5 reports CARs for three periods in order to separate pure price-pressure effects from information effects. The CAR for the period [-2,+2] represents the total price reaction around the PD, since both effects take place contemporaneously. This total price reaction can be divided into two components: the CAR for the period [-2,+20] and the CAR for the period [+3,+20]. The CAR [-2,+20] represents the information effect since the whole price reaction around the event day and its future development up until trading day [+20] are included. Assuming that the pure information value should result in a fundamental revaluation of the stock, this effect must be permanent up until trading day [+20]. The CAR [+3,+20] represents the price-pressure reversal effect. Since we assume increased buying pressure around the event day to be reversed after the event, this period best captures the possible reversal effect and hence estimates the size of the price-pressure effect. We choose the period starting at trading day [+3] through [+20] since Table 2 shows that the reversal of CAR for buy recommendations starts at trading day [+3]. We define the price-pressure itself to be of equal size but of the opposite sign compared to the measurable price-pressure reversal from the period [+3,+20].

Panel A of Table 5 displays results for the entire sample of buy recommendations. With respect to the permanent information effect, we observe a significant increase in stock prices of 1.54% for the period [-2,+20]. The price-pressure reversal effect CAR [+3,+20] accounts for -1.04%. Hence, we assume stock prices to increase by 1.04% due to price-pressure around the event itself. Since the total price reaction CAR [-2,+2] of 2.58% almost evenly

Table 5: Cumulative abnormal returns for buy recommendations, segregated by the information effect and the price-pressure effect

This table reports CARs for buy recommendations segregated by the information effect and the price-pressure effect. Panel A reports both components of CARs for the entire sample. Panel B presents information for sub-samples based on stock-size quintiles and price-to-book ratio quintiles. In particular, BIG (SMALL) displays results for those buy recommendations which belong to the quintile with highest (lowest) market capitalization in a given year. Accordingly, GLAMOUR (VALUE) displays results for those buy recommendations which belong to the quintile with the highest (lowest) price to book ratio in a given year. To test for statistical significance, t-statistics, based on Brown and Warner (1985), are displayed next to the CARs. ***,**,* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the parametric t-test. +++,++,+ indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the nonparametric rank test based on Corrado (1989). Panel B also reports differences of the CARs of respective sub-samples, e.g. BIG vs. SMALL. To control for statistical significance of these differences, the traditional t-test is used to test the equality of mean and the nonparametric Wilcoxon/Mann-Whitney test is used to test the equality of median. °°°,°°,° indicate statistical significance at the 1%-,5%-,10%-level (two-tailed test) based on the Wilcoxon/Mann-Whitney test.

Buy Recommendations						
	Total Price Reaction = Information Effect + Price-Pressure Effect		Information Effect		Price-Pressure Reversal Effect	
	CAR[-2,+2] Coeff.	t-stat	CAR[-2,+20] Coeff.	t-stat	CAR[+3,+20] Coeff.	t-stat
Panel A: All Recommendations						
Overall	2.58%*** +++	22.67	1.54%*** +	6.32	-1.04%*** ++	-4.81
Panel B: Specific Sub-groups						
BIG	1.05%*** +++	5.97	0.97%***	2.58	-0.08%	-0.23
SMALL	5.04%*** +++	17.20	3.12%*** +	4.96	-1.92%*** ++	-3.46
Diff. (SMALL-BIG)	3.99%*** °°°	9.33	2.15%*** °°	2.84	-1.84%*** °°°	2.97
GLAMOUR	1.61%*** +++	5.24	-0.64%	-0.96	-2.25%*** +++	-3.85
VALUE	4.02%*** +++	15.56	4.22%*** +++	7.62	0.21%	0.42
Diff. (VAL-GLA)	2.41%*** °°°	4.97	4.86%*** °°°	5.88	2.45%*** °°°	3.57

splits between the information effect and the price-pressure effect, we find support for both the information hypothesis and the price-pressure hypothesis for the entire sample.

Panel B reports results for sub-samples based on the stocks' characteristics. With respect to the size of the recommended stocks, we predict that the information effect is bigger for stocks with a lower frequency of company specific information releases, i.e. small stocks. In accordance with this, small stocks significantly increase by 3.12% in the period [-2,+20], whereas big stocks only generate a respective value of a significant 0.97%. Thus, the permanent information effect CAR [-2,+20] confirms that editors of *PFMs* are mainly capable of generating valuable information for small stocks compared to big stocks. Additionally, we expect stocks within less liquid markets, like small stocks, to be exposed to higher price-pressure. This is confirmed since stock prices of small stocks significantly decrease by -1.92% within the period [+3,+20], whereas big stocks only display a respective value of a statistically insignificant -0.08%. Thus, the price-pressure effect can only be confirmed for small stocks. Combining both effects, stock prices of small stocks increase by 5.04% within the period [-2,+2] which is partly due to the information effect and partly

due to the temporary price-pressure effect. In contrast, big stocks display a significant CAR [-2,+2] of 1.05%, entirely due to the information effect.

Figure 1: Cumulative abnormal returns for small stocks versus big stocks
This figure plots cumulative abnormal returns for buy recommendations for small stocks and big stocks for the period [-2,+20]. The solid line represents CARs for those stocks which belong to the quintile with lowest market capitalization in a given year, hence small stocks. The dashed line represents CARs for those stocks which belong to the quintile with the highest market capitalization in a given year, hence big stocks. The CAR of day [t] equals the sum of ARs from trading day [-2] to [t].

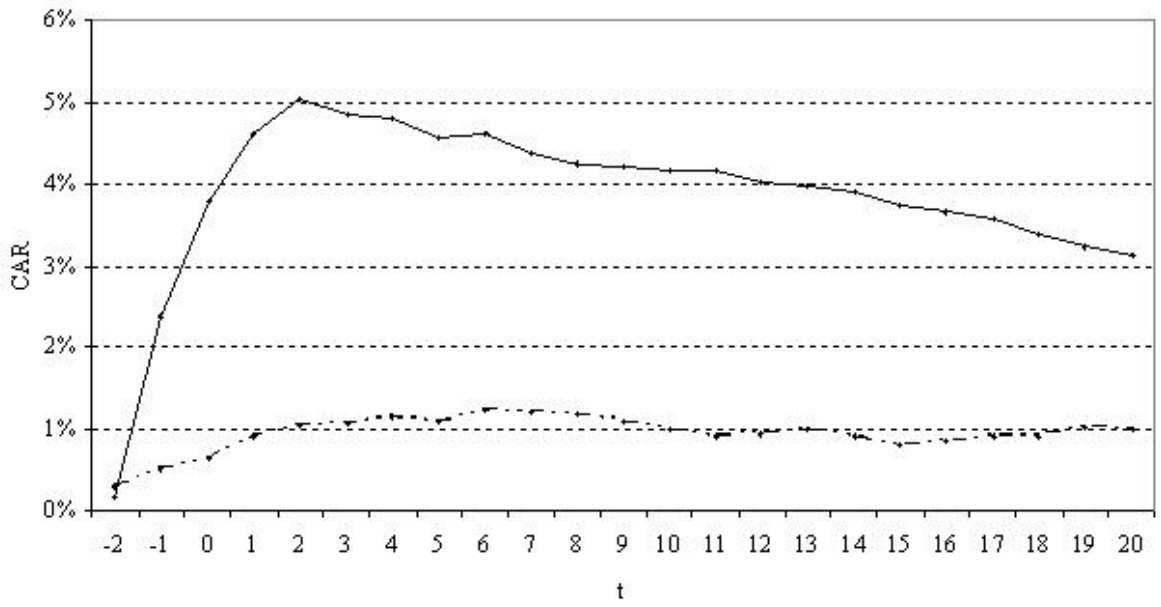

Figure 1 plots cumulative abnormal returns for buy recommendations of both small stocks and big stocks in order to give a more graphical and intuitive impression of the price reaction for the period [-2,+20]. As can be seen in Figure 1, small stocks heavily outperform big stocks[18].

Second, we predict recommendations of value stocks to have greater information value due to the fact that they are also less closely followed by the financial community. In line with this prediction, stock prices of value stocks are reported to significantly increase by 4.22% in the period [-2,+20], representing the information effect, whereas glamour stocks display a statistically insignificant -0.64%. Hence, we can conclude that *PFMs'* editors disclose particularly valuable information when recommending value stocks, while recommendations on glamour stocks have no information value at all. With respect to the price-pressure effect, glamour stocks reveal a statistically significant CAR [+3,+20] of -2.25% indicating that extreme price-pressure might be at work here whereas recommendations on value stocks are associated with an insignificant 0.21% for the corresponding

[18] As an additional robustness check, we expand the period of investigation for ten further trading days beyond the chosen event period. For both small and big stocks the CAR [+21,+30] is insignificant. Hence, we can conclude that there are no short-term price changes due to the price-pressure effect and the information effect after trading day [+20].

period. Although we mainly predicted value stocks to be associated with price-pressure (as markets of value stocks might be less liquid compared to markets of glamour stocks), this prediction cannot be confirmed. In contrast, we find that glamour stocks show an extreme price-pressure reversal effect. Combining both effects, stock prices of value stocks increase by 4.02% in the period [-2,+2], mainly due to the information effect. The total price reaction for glamour stocks is 1.61%, exclusively generated by the price-pressure effect since there is no significant information effect.

Figure 2: Cumulative abnormal returns for value stocks versus glamour stocks
This figure plots cumulative abnormal returns for buy recommendations for value stocks and glamour stocks for the period [-2,+20]. The solid line represents CARs for those stocks which belong to the quintile with lowest price-to-book ratio in a given year, hence value stocks. The dashed line represents CARs for those stocks which belong to the quintile with the highest price-to-book ratio in a given year, hence glamour stocks. The CAR of day [t] equals the sum of ARs from trading day [-2] to [t].

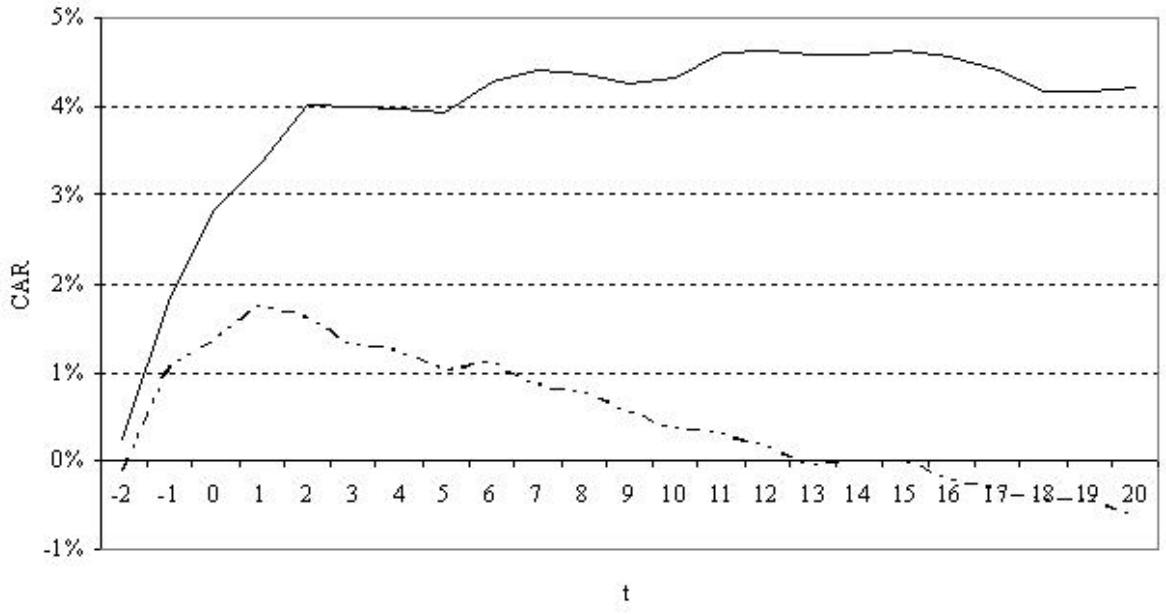

Figure 2 displays cumulative abnormal returns for buy recommendations of both value stocks and glamour stocks for the period [-2,+20]. The figure highlights that value stocks outperform glamour stocks in the period [-2,+2][19].

[19] We expand the period of investigation for ten further trading days to analyze the robustness of the findings. Whereas the CAR [+21,+30] is found to be insignificant for glamour stocks, revealing no further decrease in stock prices beyond trading day [+20], the CAR [+21,+30] of value stocks reveals a statistically significant increase, stressing our result that the market reaction for value stocks is not exposed to price-pressure effects at all.

2.5 Discussion

The first striking fact about the market reaction is that a substantial increase in prices can be observed well before the journalists themselves decide upon an inclusion of a specific stock on the buy list. The CAR for the period [-20,-3] is shown to be 2.03%, almost half of the total price reaction. However, we do not suspect information leakage to be the reason for this up-front market reaction. It seems to be quite unlikely that information about *PFMs'* recommendations could be anticipated by the market, since our event does not represent a major change in companies' prospects which might be foreseen. Unlike in cases of a prospective merger, very few individuals might be informed about an upcoming *PFM* recommendation. Furthermore, structuring a merger deal usually requires several months, whereas the decision to recommend a stock for purchase is usually made in a few days. Hence, the observed market reaction can hardly be explained by insider trading. Alternatively, one could think of two possible explanations for the pre-event market reaction. First, the editorial staff might follow short-term momentum strategies. Concretely, journalists might be tempted to recommend those stocks for purchase which performed best in the week preceding the day of the recommendation. In this case, high abnormal returns prior to the event day would trigger a buy recommendation and not vice versa. Second, there might be other confounding events prior to the publication day which lead to the pre-event market reaction. As displayed in Table 1, 9.64% of the recommendations are preceded by ad hoc announcements representing confounding events. When testing a smaller sample with randomly resampled recommendations, only 5.60% of the recommendations are accompanied by concurrent events. This fact indicates that journalists are tempted to cover stocks of companies that announced important company news recently.

Although our study focuses on market responses in the very short-run and thus does not focus on the potential investment value for private investors, we would like to briefly discuss our results in this respect. As Table 3 shows, the benefit for private investors heavily depends on the time when recommendations are exercised. Subscribers who usually receive their copy of the magazine on trading day [-1] would earn a significant CAR [-1,+2] of 2.42% whereas for investors who trade on the event day a CAR [0,+2] of solely 1.34% remains. Consequently, in order to profit from the recommendations, readers of *PFMs* should buy the recommended stocks as soon as possible. Taking explicit costs like commissions charged by the broker[20] and the bid-ask spread into account (see Keim and Madhavan, 1998; Berkowitz and Logue, 2001, for the different components of transaction costs), it seems as if in general, exercising recommendations is solely beneficial for investors who have the opportunity to trade on trading day [-1]. However, our results concerning recommendations for specific groups of stocks like value stocks and small stocks give a more promising picture for private investors as can be seen in Panel D-G of Table 3. Subscribers investing in value stocks will earn a significant CAR [-1,+2] of 3.77%, while regular readers who purchase their copy on the official publication day still secure a CAR [0,+2] of 2.16%. The same yields for trading

[20] In 1995, online brokerage houses charged commissions (i.e. costs charged by brokers and additional fees per order for the custody bank) of about 1.2% for a round trip transaction. Nowadays, this fee has sharply declined to about 0.6%.

solely in small stocks which offers a CAR [-1,+2] of 4.88%, while for regular readers the CAR [0,+2] is still 2.67%. Showing that the market reaction of both small stocks and particularly of value stocks contains information content (although small stocks are also influenced by price-pressure) supports the eligibility of journalists within the information generating process for at least specific types of stocks.

Given the substantial market response to *PFMs'* buy recommendations, journalists could face the accusation that they trade prior to the publication for their own benefit. Although abnormal returns are reported to be significant from trading day [-7] onwards, they are low, compared to the abnormal return of trading day [-1] when most subscribers of the *PFMs* are able to trade. Even more important, observable excess trading volumes are statistically insignificant before trading day [-1]. Hence, as far as our data reveals, journalists do not seem to take advantage of their insider information. This empirically supports what one would expect since all of our *PFMs* follow the *German Press Code*, which emphasizes the responsibility of journalists not to mix personal economic interests with their profession as journalists (see guideline 7.4 of the *German Press Code* for further information). Additionally, some of the magazines established an even stricter code of conduct prohibiting any trade in stocks, directly or through agents, before the information is officially published and prohibiting any trade at all if journalists cover stocks regularly and imposing further disclosure requirements which are checked by assigned notaries. Comparable editorial policies are found by Lidén (2007) for Swedish newspapers and *PFMs*.

When relating our findings to other studies, which are mentioned in Section 2.2, it is difficult to compare results due to different event windows. However, it seems as if our results are in line with routinely found positive abnormal returns based on recommendations published by brokerage houses and financial gurus. On the contrary, recommendations of investment newsletter do not show evidence for significant abnormal returns. Within the group of studies covering journalists' recommendations, results are mixed. In direct comparison to the findings of Lidén (2007), the most recent study covering journalists, our results are only marginally higher compared to those associated with Swedish journalists.

Our results can also be interpreted in light of literature on the investment behavior of private investors. As has been shown recently by Barber and Odean (2006), out of the myriad of possibilities, private investors seem to choose investments according to whether a specific stock catches their attention. We find complementing evidence that the recommendations of *PFMs* might be one possible source of information which grabs the attention of private investors, since we can document increased trading volumes around the publication day of *PFMs* as well.

Having documented that journalists are capable of generating valuable investment advice, according to Admati and Pfleiderer (1990), it still seems an open issue why journalists choose to directly sell their information via the publication of *PFMs* instead of selling it indirectly through the creation of mutual funds. Private information would then enter into portfolio choices to manage the funds. In this case, the sale of information is done via selling shares of the fund to investors. Although Admati and Pfleiderer (1990) show that for a number of cases selling information indirectly dominates selling it directly, we must

focus on the special case of investors who are heterogeneous in the type and amount of private information they have. This best represents what can be observed in reality. For this case, the direct sale of information results in strictly higher profits compared to the indirect sale. The reason for this, as Admati and Pfleiderer (1990) argue, is that direct sale traders, hence our private investors, can unbundle a vector of information signals and optimally combine them with their private information. Under these circumstances, obtaining information indirectly is likely to be suboptimal for private investors since their information endowments are individually different. Hence, it seems to be a rational choice for journalists to decide to sell the information via the release of *PFMs*.

2.6 Conclusion

In order to trade on the stock market, private investors depend on investment advice from financial experts like brokerage houses, investment newsletters, 'financial gurus' and journalists. Unlike the first three groups, financial advice from journalists has not been extensively analyzed by academics so far. Therefore, we base our empirical study on five different German *Personal Finance Magazines* (*PFMs*) covering the years 1995 to 2003. As found in related studies, buy recommendations are associated with positive cumulative abnormal returns. For a five-day period around the event, a cumulative abnormal return of 2.58% is reported. In addition, the trading volume increases to around 161% of the normal level at the event day.

Unlike most previous studies on the market reaction to financial experts' recommendations (see, e.g., Röckemann, 1994; Womack, 1996), we partition the total price effect into two components: the permanent information effect and the temporary price-pressure effect. Thereby, we test both the information hypothesis and the price-pressure hypothesis. The price-pressure effect is shown to be most extreme for small stocks and glamour stocks. However, whereas the initial price reaction to small stocks is additionally driven by permanent information value, this does not hold true for glamour stocks. In contrast, value stocks are associated with high CARs that are solely driven by novel fundamental information, since a decreasing trend after the initial price reaction is absent.

3

Long-run Performance Evaluation of Journalists' Stock Recommendations

(forthcoming in: Kerl, A. G. and Walter, A. (2009) *Kredit & Kapital. Berlin: Duncker & Humblot.*)

3.1 Introduction

Private investors are having a hard time when it comes to investing their funds, especially in times when private pension planning is becoming increasingly important. Not only do private investors usually lack knowledge about capital markets, but it is also difficult to make informed choices among thousands of different investment opportunities. Therefore, a whole industry providing professional investment advice has emerged. In general, private investors receive investment advice from financial experts, most prominently from security analysts of brokerage houses and from journalists. Both groups of financial experts usually provide, among other things, direct stock recommendations to investors. Although the immediate market reaction to financial experts' stock recommendations has been extensively analyzed for security analysts as well as for journalists, the question whether they provide valuable advice in the long-run is far less intensely researched. Particularly, the question whether the second group of financial experts (journalists) has the ability to predict stock prices and, thus, publishes valuable recommendations in the long-run is basically unexplored.

In order to examine the role of journalists as a source of investment advice for private investors, we evaluate stock recommendations of German *Personal Finance Magazines* (*PFMs*) such as, for instance, the *Effecten-Spiegel* and *Börse Online*. In contrast to other

business media like television shows or daily newspapers, which often merely re-transmit stock recommendations of security analysts or prominent money managers, *PFMs* claim to employ self-contained research procedures in order to derive original buy and sell recommendations for their readers. Although journalists of *PFMs* would not be willing to disclose their particular research procedures, we do have information concerning the educational and professional background of journalists working for *PFMs*. One editor-in-chief revealed that his journalists usually possess university degrees in economics or business. Often, journalists are former security analysts at brokerage houses. Thus, the educational and professional background of these journalists is similar to the one of security analysts. Although they might have limited access to various information sources, journalists working for *PFMs* should consequently be almost as competent to issue meaningful recommendations as security analysts employed by brokerage houses.

Our contribution to the literature is threefold: Firstly, we aim to close the gap in research concerning the long-run performance evaluation of journalists' stock recommendations. Besides the apparent lack of empirical evidence for this group of financial experts for international markets in general and for Germany specifically, analyzing the long-run performance of journalists' recommendations might be particularly interesting since this group of financial experts is, unlike security analysts, free from the usual conflicts of interest. Journalists do not have to consider a company's interests like investment banking activities. Secondly, prior research on long-run performance evaluation which employs a market index as a benchmark adjustment has been attacked on methodological grounds. By creating characteristic-adjusted reference portfolios we not only control for common characteristics of recommended stocks but we also account for the *new listing bias* and the *rebalancing bias*. In addition, we remedy the *skewness bias* by using bootstrapped skewness-adjusted t-statistics. Thirdly, we address for the first time the question whether self-contained research procedures of journalists work equally well concerning specific characteristics of stocks (market capitalization, price-to-book, prior performance, and listing at the *Neuer Markt*) or during several sub-periods of our investigation period.

Analyzing a large sample of buy and sell recommendations issued by *PFMs* on German stocks in the period from 1995 to 2003, our results indicate that stock recommendations of journalists seem to have substantial investment value for private investors on the sell side. Private investors would have been guided correctly by the journalists if they sold respective stocks. With respect to the buy side, however, we have to conclude that buy recommendations do contain positive but economically and statistically insignificant investment value in general. This result of insignificant investment value on the buy side differs, however, from prior findings which predominantly document a negative investment value for buy recommendations transmitted through the business media. In contrast, we find that journalists seem to have some predictive abilities for subgroups of stocks on the buy side. In particular, buy recommendations on value stocks and on positive momentum stocks seem to contain investment value. In addition, if journalists had refrained from recommending *Neuer Markt* stocks for purchase, our results would allow us to assign to them predictive ability with respect to the remaining market segments.

The remainder of the chapter is structured as follows. Section 3.2 gives a brief review

of the related literature and presents our hypotheses. Section 3.3 describes the database and provides some descriptive statistics. The employed methodology to calculate reference portfolios and abnormal returns is also characterized in this section. Section 3.4 presents our empirical findings. Finally, we conclude in Section 3.5.

3.2 Related Literature and Hypotheses

3.2.1 Related Literature

The literature on performance evaluation of financial experts' advice can basically be separated into stock recommendations issued by security analysts of brokerage houses and stock recommendations distributed via the business media. With respect to the second category, one has to further distinguish between those recommendations which are mere re-statements of, e.g., recommendations by security analysts (second-hand information) and those recommendations which are based on self-contained original research by journalists.

The vast majority of research on financial experts concentrates on recommendations issued by security analysts which work for brokerage houses. Since brokerage houses employ huge departments to perform this kind of research for their clients, only significant abnormal returns would justify the costs of preparing the reports and to work out stock recommendations. Starting with the work of Cowles (1933), researchers have been eager to analyze the short- and long-run performance of such recommendations (see, among others, Bjerring et al., 1983; Elton et al., 1986; Stickel, 1995; Womack, 1996; Francis and Soffer, 1997; Barber et al., 2001; Barber et al., 2003; Mikhail et al., 2004; Agrawal and Chen, 2008; Asquith et al., 2005; Fang and Yasuda, 2006; and Jegadeesh and Kim, 2006). The studies almost unequivocally find a significant market reaction associated with the release of a recommendation in the short-run. In terms of the long-run investment value, Womack (1996) analyzes for the US market abnormal returns up to six months subsequent to the publication of the recommendation. In contrast to modest returns following buy recommendations, he finds a significant negative price drift subsequent to the publication of sell recommendations. Thus, only sell recommendations seem to have significant investment value for investors. Similar evidence is reported by Agrawal and Chen (2008) who find an unambiguously significant continuing price drift over the subsequent twelve months for negative recommendations. Accordingly, Fang and Yasuda (2006) find more investment value in sell rather than in buy recommendations. They document that only high-profile All-American analysts who also work for top-tier banks are able to consistently earn abnormal returns with their buy recommendations, whereas all different kinds of analysts earn significant abnormal returns on their sell recommendations. With respect to international markets, Jegadeesh and Kim (2006) again document a more pronounced investment value for downgrades. In particular, in five of the G7 countries they find evidence for significant price drifts for downgrades, whereas only in two countries the price drift is significantly positive over the subsequent 132 trading days. For Germany, Gerke and Oerke (1998) and

Henze and Röder (2005), among others, examine analysts' recommendations by various brokerage houses. The authors of the latter study find that both buy and sell recommendations lead to significant excess returns in the long-run. In line with international evidence, sell and strong sell recommendations lead to more pronounced excess returns compared to buy and strong buy recommendations. Although the literature on security analysts' recommendations is quite comprehensive and the review above only scratches the surface, one can extract two major findings from prior research: Firstly, stock recommendations issued by security analysts seem to have investment value in the long-run. Secondly, the investment value for sell recommendations is higher than for buy recommendations.

As mentioned before, the business media regularly publishes stock recommendations. However, one has to distinguish between two strands of the literature. Firstly, there exist a number of studies which evaluate the performance of second-hand information retransmitted through the business media. Those studies do not analyze financial advice generated by journalists themselves, but examine the investment value of re-statements of other financial experts' recommendations like those of security analysts or financial gurus published by the business media. For example, Lloyd-Davies and Canes (1978), Syed et al. (1989), Liu et al. (1990), Liu et al. (1992), Beneish (1991) and Huth and Maris (1992) find short-run abnormal returns based on stock recommendations issued in the *'Heard on the Street'* (*HOTS*) column of the *Wall Street Journal* (*WSJ*). Kiymaz (2002) performs a similar analysis with recommendations of the *HOTS* column of the Turkish magazine *Ekonomik Trend*, supporting US results. Barber and Loeffler (1993), Metcalf and Malkiel (1994), Wright (1994) and Liang (1999) report significant abnormal returns associated with recommendations issued in the *'Dartboard'* column of the *WSJ*. Whereas Pari (1987), Beltz and Jennings (1997) and Ferreira and Smith (2003) analyze recommendations issued by panelists in the *Wall Street Week* television show, Desai and Jain (1995) focus on recommendations issued by prominent money managers at *Barron's Annual Roundtable*. All studies find excess returns around the event triggered by price-pressure. A recent study by Brixner and Walter (2007) has also confirmed the existence of price-pressure due to second-hand information for Germany. The study finds that the market reacts to re-statements of stale security analysts' recommendations in the column *Tendenzen & Tips* of the daily newspaper *Frankfurter Allgemeine Zeitung*. However, when it comes to long-run analyses, various studies suggest that second-hand information have negative investment value (see, e.g., Shepard, 1977; Dimson and Marsh, 1986; Pari, 1987; Desai and Jain, 1995; Sant and Zaman, 1996; and for an excellent review, Schuster, 2003). As a consequence, private investors lose money if they follow second-hand information distributed via the business media.

Apart from studies on second-hand information and gossip re-transmitted via the business media, empirical evidence on stock recommendations issued by journalists using self-contained research procedures is rather limited. Some studies exist on the short-run market reaction associated with the initial publication of stock recommendations. Lidén (2007), for example, finds a market reaction on the publication day in accordance with the type of recommendation for the Swedish market. For the German market, Pieper et al. (1993) and Röckemann (1994) analyze the short-run investment value of stock recommendations

issued by *Personal Finance Magazines* (*PFMs*). In Chapter 2 we have also analyzed this question. All studies find positive abnormal returns around the event day for buy recommendations. In terms of the long-run performance of journalists' stock recommendations, Lidén (2006) compares stock recommendations from security analysts and *PFMs*. He finds that for the Swedish market buy recommendations from *PFMs* mislead investors. In particular, the mean market-adjusted return over a two-year period is (insignificantly) negative at 6.01%. Thus, buy recommendations of Swedish journalists do not seem to contain investment value at all. Sell recommendations, however, have investment value as stock prices display a continuous negative drift in the months subsequent to the publication. Yazici and Muradoglu (2002) focus on recommendations of the *Investor Ali* column of the weekly economics journal *Moneymatik* and thus on the Turkish market. In their long-run study of buy recommendations, they state that the recommendations do not add any long-term value to small investors. In contrast, the average two-year cumulative abnormal return is -13.9%.[21]

3.2.2 Hypotheses

If the efficient market hypothesis (EMH) proposed by Fama (1970) holds, we should not observe any price drifts in the months subsequent to the release of the recommendations; no matter whether journalists are capable of producing relevant information or not. In contrast, stock prices should adjust instantaneously or at least rapidly to new information. As a consequence, in the absence of a price drift private investors should not be able to profit from the recommendations in the long-run. Thus, building on the foundations of the EMH, we predict in our *first hypothesis* that stock recommendations of journalist do not contain investment value. In particular, we predict buy and sell recommendations to yield abnormal returns in the months subsequent to the release of the respective recommendation which are indistinguishable from zero.

Although the traditional view on capital markets assumes market efficiency, the EMH has come under attack from both the theoretical as well as the empirical side recently. As far as theoretical papers are concerned, the literature primarily argues that the premises for market efficiency are not fulfilled. In contrast, researchers argue that the existence of limits of arbitrage and investor sentiment prevents markets from being efficient.[22] The empirical evidence against the EMH can be separated into two categories. On the one hand, a large number of empirical studies have found an initial underreaction to news since long-run post-event returns are significantly positive, including dividend initiations (Michaely

[21] For Germany, to the best of our knowledge, no academic study exists which analyzes the investment value of buy recommendations in the long-run. However, Reinhart Schmidt earned merits for sensitizing private investors with respect to the performance of stock recommendations. Based on his work, the *Manager-Magazin* published a series of studies on the profitability of buy recommendations issued by German *PFMs* in the early 1990s. The analyses, which focused more on practical issues, found a poor long-run performance for the analyzed magazines.

[22] See, e.g., Kent et al. (1997); Barberis et al. (1998); and Hong et al. (2000) for theoretical models which explain over- and underreaction of stocks prices.

et al., 1995), earnings announcements (Ball and Brown, 1968; Bernard and Thomas, 1990), share repurchases (Lakonishok and Vermaelen, 1990; Ikenberry et al., 1995; and Mitchell and Stafford, 2000); and stock splits (Dharan and Ikenberry, 1995; Ikenberry et al., 1996).[23] On the other hand, there is also ample evidence that stock prices overreact since long-run post-event returns are significantly negative. This evidence has been documented for IPOs (Ibbotson, 1975; Loughran and Ritter, 1995), mergers (Asquith, 1983), dividend omissions (Michaely et al., 1995), and new exchange listings (Dharan and Ikenberry, 1995).

The empirical evidence concerning financial experts' stock recommendations can be attributed to both camps. Whereas the literature on financial analysts primarily finds an initial underreaction as price drifts usually continue in the direction of the recommendation, second-hand information distributed via the business media is basically associated with an initial overreaction. Thus, in the case in which we have to reject our *first hypothesis* as long-term returns are different from zero, two scenarios have to be distinguished. On the one hand, if we observe a price drift in the subsequent months according to the direction of the recommendation, this would indicate that stock recommendations of journalists are somehow similar to stock recommendations of security analysts. On the other hand, if we find a significant long-run return contrary to the recommendation, this would indicate that original stock recommendations by journalists do not systematically differ from second-hand information distributed via the business media.

Our *second hypothesis* is motivated by the finding in the literature that sell recommendations are usually associated with a higher investment value than buy recommendations. As far as security analysts are concerned, the literature (see, e.g., Dugar and Nathan, 1995; Womack, 1996; Lin and McNichols, 1998; Michaely and Womack, 1999; Agrawal and Chen, 2008; and Fang and Yasuda, 2006) frequently explains higher abnormal returns for sell recommendations by 'conflicts of interest'. E.g., Agrawal and Chen (2008) state that returns for sell recommendations are higher for analysts with investment banking relations since respective sell recommendations tend to be more credible if they are willing to voice an unfavorable opinion. However, the 'conflicts of interest' argument does not apply to our sample, since journalists of *PFMs* do not have to take into account a company's interests, such as investment banking. However, the result of higher investment value of sell recommendations is also documented in the study of Lidén (2006) who analyzes the buy and sell recommendations for Swedish journalists. Obviously, journalists are not subject to the usual 'conflicts of interest'. So, how can one explain this finding for journalists? Firstly, an explanation could be found in the potentially infrequent occurrence of sell recommendations. If the number of sell recommendations is smaller compared to the number of buy recommendations, each rare sell recommendation potentially contains more information value. Secondly, an explanation for a more pronounced initial underreaction for sell recommendations might be found in the fact that private investors are exposed to short sale constraints.[24] Hence, implementing sell recommendations is only possible if a stock

[23] For an excellent discussion concerning the issue of over- and underreaction see Fama (1998).

[24] In Germany, online brokerage houses and commercial banks only rarely allow private investors to engage in short-selling activities. Hence, we conclude that within our investigation period, from 1995 through 2003, short-selling was not an option within reach of a common private investor.

is part of an existing portfolio which might only be the case for a rather restricted number of investors. Thus, prices might adjust slowly to new information, since private risk arbitrageurs are restricted in their trading opportunities. This rationale is supported by a model of Diamond and Verrecchia (1987) who show the effects of short-sale constraints on the speed of adjustment to private information on stock prices. They find that these constraints reduce the adjustment speed of prices, especially with respect to bad news, thus sell recommendations. Hence, information efficiency is reduced. Hong et al. (2000) explain the obvious asymmetry between buy and sell recommendations through the analyst coverage of stocks. They claim that low-coverage stocks react more slowly to bad news than to good news since the former will only be revealed by analysts, whereas the latter will also be made public via increased disclosures, e.g., by the company itself. In consequence, in case we have to reject our *first hypothesis* as stock prices might initially underreact, we predict in our *second hypothesis* that the absolute value of long-run investment value is higher for sell recommendations as opposed to buy recommendations.

3.3 Data and Methodology

3.3.1 Description of Database

We analyze a sample of all German *Personal Finance Magazines* (*PFMs*) which provide direct stock recommendations in an easy-to-see recommendation box. Within our investigation period from 1995 to 2003, we identify five *PFMs* which fulfill this requirement.[25] Within these five *PFMs*, we hand-collected explicit stock recommendations, i.e., direct buy and sell recommendations of stocks with a German *International Securities Identification Number* (*DE-ISIN*).[26] Since one objective of the study is to analyze whether journalists of *PFMs* are prone to momentum investment strategies (i.e., if they recommend past winners for purchase and vice versa), we further restrict our analysis to stocks which have at least a performance history of six months. Additionally, for each recommended stock, monthly performance data, market capitalization and the price-to-book ratio has to be available via Datastream.

Based on the above-mentioned criteria, we hand-collected 2,637 buy recommendations and 1,168 sell recommendations.[27] Table 6 displays descriptive statistics for these recom-

[25] In particular, these are *Wertpapier*, *Effecten-Spiegel*, *Börse Online*, *Telebörse* and *Capital* (*Capitaldepesche*). Except one magazine, the *Telebörse*, all publications existed within the entire investigation period. Including the *Telebörse*, however, helps to control for survivorship bias with respect to the analyzed sample of *PFMs*.

[26] In order to construct reference portfolios on size and price-to-book ratios, we had to limit our analysis to the well-specified group of German stocks with a *DE-ISIN*.

[27] Diverging from Chapter 2 where 2,860 buy recommendations are analyzed, we had to restrict our sample to stocks with a *DE-ISIN* which reduces our sample of buy recommendations to 2,637. In contrast, within Chapter 2 all buy recommendations with a primary listing on the German stock market are analyzed. Hence, e.g., *Thiel Logistics*, which is a constituent of the MDAX but has a *LU-ISIN*, is not a member of the sample. We selected this procedure for consistency reasons since our characteristics-based benchmark portfolios are populated exclusively by *DE-ISIN* stocks.

mendations with respect to the number of recommendations, the percentage of stocks listed at the *Neuer Markt*, the average market capitalization tertile and the average price-to-book tertile of a recommended stock in each year as well as for the entire investigation period. A stock recommendation is, e.g., classified in market capitalization tertile three (one) if it belongs to the tertile of the biggest (smallest) stocks as measured by market capitalization of all listed stocks with a *DE-ISIN* at the beginning of a given year. Accordingly, a price-to-book tertile of, e.g., three (one) is assigned if a stock is part of the tertile with the highest (lowest) price-to-book ratios of all listed stocks with a *DE-ISIN* at the beginning of a given year.

Table 6: Descriptive statistics for buy and sell recommendations
For each year from 1995 to 2003 and for the overall period, column (1) through column (3) give the total number and the number of all buy and sell recommendations in a given year. Within column (4) to (6), the percentage of stocks belonging to the *Neuer Markt* is displayed. Column (7) and column (8) display the mean market capitalization tertile individually for both, buy and sell recommendations. Column (8) and column (10) display the mean price-to-book tertile for both, buy and sell recommendations. Stocks classified in group three reveal the highest values, hence, recommendations of high market capitalization or high price-to-book ratio. On the contrary, stocks classified in group one contain the lowest market capitalization or lowest price-to-book ratio each year.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	No. of			**% of *Neuer Markt***			**Mean Market**		**Mean Price to**	
Year	**Recommendations**			**Recommendations**			**Cap. Tertile**		**Book Tertile**	
	All	*Buys*	*Sells*	*All*	*Buys*	*Sells*	*Buys*	*Sells*	*Buys*	*Sells*
1995	342	225	117	n/a	n/a	n/a	2.36	2.42	1.97	2.06
1996	354	247	107	n/a	n/a	n/a	2.32	2.26	1.98	1.95
1997	367	267	100	1.09	1.50	0.00	2.48	1.93	1.74	1.68
1998	324	229	95	7.41	5.24	12.63	2.62	2.22	1.84	1.95
1999	351	259	92	17.66	13.13	30.43	2.68	2.24	1.83	2.10
2000	460	349	111	25.87	16.33	55.86	2.67	2.31	1.74	2.14
2001	552	394	158	34.96	24.11	62.03	2.74	2.27	1.85	2.01
2002	545	346	199	30.83	22.83	44.72	2.75	2.24	1.94	1.83
2003	510	321	189	11.76	9.66	15.34	2.79	2.37	1.79	1.91
1995 - 2003	3805	2637	1168	16.56	11.83	27.23	2.62	2.26	1.85	1.95

As can be seen in Table 6, the number of buy recommendations (2,637) is approximately twice as high as the number of sell recommendations (1,168) for the entire investigation period. Column (1) displays the total number of buy and sell recommendations for each year. This reveals an increasing trend, especially from 1998 to 2001, where the number of recommendations rose from 324 to 552. This increase in recommendations is somehow associated with the increasing relevance of the *Neuer Markt*.[28] Column (4) reveals the importance of *Neuer Markt* stocks during the period mentioned. Whereas in 1998 only

[28] According to DAI (Deutsches Aktieninstitut e.V.) the number of IPOs at the *Neuer Markt* steadily increased from 14 in 1996 to 174 in 1999.

7.41% of the recommended stocks were listed at the *Neuer Markt*, this percentage increased to 34.96% in 2001. Thus, as analysts' coverage was low for *Neuer Markt* stocks, our data suggests that it were basically journalists who filled that gap and provided private investors with information on these stocks. Interestingly, when splitting the sample into buy and sell recommendations, 27.23% of the sell recommendations are stocks listed at the *Neuer Markt*, whereas only 11.83% of the buy recommendations belong to this group. This might be an interesting finding as anecdotal evidence would suggest that *Neuer Markt* stocks were primarily recommended for purchase and not for sale.

With regard to market capitalization, journalists focus on heavyweights when publishing their recommendations. Furthermore, stocks recommended for purchase are considerably larger than stocks recommended for sale (market capitalization tertile 2.62 as opposed to 2.26). Taking the dynamics of the development into consideration, we can perceive a trend towards recommending big stocks for purchase in the course of our investigation period (the mean market capitalization tertile increases from 2.36 to 2.79). A similar trend, however, cannot be detected for sell recommendations. Finally, the table displays results for the mean group allocation in terms of price-to-book ratio. It is a surprising fact that (contrary to anecdotal evidence) buy as well as sell recommendations are not issued on high price-to-book ratio stocks, which are usually associated with fast growing companies. In fact, the mean tertile rank over the entire investigation period is 1.85 (1.95) for buy (sell) recommendations.

In section 3.2.1 we distinguish between two strands of literature concerning the business media: (i) second-hand information re-transmitted through business media and (ii) original stock recommendations based on self-contained research procedures by journalists. Although one editor-in-chief told us that his employees perform original analyses, it might be questionable whether this statement is credible or just cheap talk. Specifically, it might be that journalists just copy the reports of security analysts and claim the recommendations to be original. Thus, to analyze if journalists primarily copy analysts' research reports, we randomly selected 10% of the recommendations of our sample and checked via the *Investext* database if they were preceded by analysts' reports within the week prior to the recommendation. However, as far as our random sample is concerned, with 82.16% the vast majority of the recommendations are not preceded by an analyst report by any of the 450 investment banks, brokerage houses and independent research companies which act as information providers for *Investext*. Additionally, Elton et al. (1986) found that only 11.6% of analysts' recommendations are subject to a change in the recommendation level and that only a change in a recommendation provides markets with new information.[29] Thus, we feel confident to place our work in the second category which analyzes original stock recommendations of journalists.

[29] Please note that Chapter 4 looks closer into the decision process of journalists. The analysis basically finds that journalists are affected by attention stimuli similar to that of individual investors like recent news, prior performance and unusually high trading volumes.

3.3.2 Methodology

In order to analyze whether journalists have predictive abilities when recommending stocks for purchase and sale, one needs to examine the long-run performance of the recommended stocks measured by buy-and-hold abnormal returns (*BHARs*).[30] As a traditional method, researchers adjust the buy-and-hold return of the recommended stock itself (referred to as 'actual return' in the remainder of the text) by the overall market development to assess whether financial experts possess valuable forecasting abilities in addition to the movement of the market as a whole. To proxy this market development, we choose the Composite DAX (CDAX) and refer to resulting buy-and-hold abnormal returns (*BHARs*) as 'market-adjusted returns'.[31]

However, this practice of using a broad market index as benchmark has been intensively criticized in the literature recently (see, e.g., Barber and Lyon, 1997; Lyon et al., 1999). Not only does a broad benchmark ignore characteristics of stocks like the size and the price-to-book ratio of a stock, but in addition Lyon et al. (1999) name several causes for misspecification in traditional long-run performance measurement. With respect to the misspecification of the benchmark and, thus, the calculation of normal buy-and-hold returns, the authors primarily discuss the *new listing bias* and the *rebalancing bias*.[32] To avoid these biases, they propose to carefully construct reference portfolios as benchmarks for normal return calculation and thereby obtain well-specified test statistics in random samples. As suggested by the study mentioned above, we use company size and price-to-book ratios as characteristics for the reference portfolios to control for common characteristics of recommended stocks. The construction of reference portfolios is done as follows.

[30] For calculation of returns, we download the datatype *RI* from *Datastream* which includes adjustments for dividends and stock splits. Throughout the chapter, we calculate discrete returns. Additionally, when reporting long-run (abnormal) returns, we never include the return of the event month. Although starting return calculations at the day of publication would mirror an investor perspective more closely, we refrained from this procedure for two reasons. Firstly, calculating daily returns for the characteristic-adjusted reference portfolios would be prohibitively cumbersome from a computational point of view. Secondly and more importantly, Chapter 2 has documented severe non-information based price-pressure effects within the initial market reaction of stock recommendations issued by journalists. Hence, by displaying buy-and-hold returns starting with the first complete calendar month subsequent to the recommendation month, we mostly circumvent the problem of biased results due to price-pressure. However, although not included generally in our *BHARs* computation we do specifically report the *BHAR* from the day of publication of a recommendation to the end of the calendar month, named 'Eventmonth' in Table 7.

[31] For the calculation of 'actual returns' and 'market-adjusted returns', in the case of a delisting of one of the recommended stocks subsequent to the publication of the recommendation, we replace the missing post-event return of the sample firm by the return of the broad market index Composite DAX (CDAX).

[32] Firstly, the *new listing bias* arises because in event studies of long-run abnormal returns, sample firms are tracked for a long time, but firms that constitute the broad market index typically include firms which went public subsequent to the event. Since IPOs frequently underperform the market (see, e.g., Ritter, 1991), this leads to deflated normal buy-and-hold returns, thus inflating buy-and-hold abnormal returns and creating a positive bias. Secondly, the *rebalancing bias* exists because the compound return of a broad market index is typically calculated assuming periodic rebalancing, whereas the return of a sample firm is compounded without rebalancing, creating a negative bias in *BHARs*.

Firstly, at the beginning of each year in the period from 1995 to 2003, we rank every listed stock with a German *International Securities Identification Number* (*DE-ISIN*) according to its market capitalization. Specifically, we partition our sample into tertiles according to market capitalization. The stocks with a size rank in the first tertile are assigned to the portfolio of small stocks while stocks with a size rank in the second and third tertile belong to the portfolio of medium and big stocks. Secondly, each size portfolio is further partitioned into three price-to-book ratio tertiles at the beginning of each year. For example, stocks of the small stock portfolio are assigned to three portfolios (small value, small blend and small glamour portfolio) according to their price-to-book ratio. Similar procedures are performed for stocks placed within the medium and big stocks portfolio. For each year, the whole procedure results in nine portfolios of equal numbers of stocks.[33] We then follow Lyon et al. (1999) to calculate buy-and-hold returns for each reference portfolio. The return of each portfolio represents a passive, equally weighted investment in all stocks constituting the reference portfolio.

To calculate these *BHARs*, we match each sample (or recommended) stock based on its two-dimensional ranking with the appropriate matching reference portfolio.[34] These *BHARs* will subsequently be called 'characteristic-adjusted returns'. Although this procedure helps to control for the *rebalancing* and *new listing bias*, it does not address the *skewness bias*. For example, Barber and Lyon (1997) found that long-run buy-and-hold abnormal returns are positively skewed, which leads to a negative bias in test statistics. To remedy the *skewness bias*, the authors recommend the use of a bootstrapped skewness-adjusted t-statistic. Closely following this suggested method, we first calculate a skewness-adjusted t-statistic itself. Additionally, we bootstrap these skewness-adjusted t-statistics by drawing 10,000 resamples of size $m/2$ from the original sample of m recommended companies.[35] We then use the percentile confidence intervals of the empirical bootstrapped distribution as critical value for the lower and upper bounds.

3.4 Empirical Results

3.4.1 Investment Value of Stock Recommendations

Table 7 displays (adjusted) returns for several periods prior to and past the publication of a recommendation. The first vertical panel addresses actual returns, whereas the second and

[33] The type and number of constituents of each of the nine portfolios in each year remains the same, independently of the period *BHAR* is calculated for. Only if stocks are delisted subsequent to their inclusion in the reference portfolio, we assume that the proceeds are invested in an equally weighted reference portfolio which is rebalanced monthly (see Lyon et al., 1999).

[34] In case of one the recommended stocks being delisted subsequent to the publication of the recommendation, we replace the missing post-event return of the sample firm by the return of the matching portfolio. This assumes that investors decide to place the proceeds of a delisted stock in a portfolio of stocks with similar stock characteristics.

[35] Lyon et al. (1999) state that the sample size of $m/4$ and $m/2$ yield well-specified results. However, in absolute terms, they use a sample size ranging from 200 to 4,000. Thus, for computing the bootstrapped t-statistics, we use the sample size of $m/2$ or at least 200.

the third panel address market-adjusted and characteristic-adjusted returns, respectively.

Table 7: Long-run investment value for buy and sell recommendations

This table displays 'actual returns' (assuming that after the delisting of a recommended stock, the proceeds are invested in the Composite DAX (CDAX)), 'market-adjusted returns' (where market-adjustment is based on the CDAX) and 'characteristic-adjusted returns' based on size and price-to-book ratio matched reference portfolios. For the computation of market-adjusted returns and characteristic-adjusted returns, we assume that after a delisting of a recommended stock, the proceeds are invested in the CDAX or the corresponding reference portfolio, respectively. Additional to buy-and-hold (abnormal) returns for 3-, 6-, 12-, 18- and 24-month period we also report actual and market-adjusted buy-and-hold (abnormal) returns for the event month itself, hence, from the day of publication to the end of the calendar month of the publication (called 'Eventmonth'). Furthermore, we also display actual and market-adjusted returns for the 3- and 6-month period prior to the official publication month. All types of return calculations are based on 2,637 buy recommendations and 1,168 sell recommendations. We closely follow Lyon et al. (1999) to calculate statistical significance. First, we calculate skewness-adjusted t-statistics. Second, we draw 10,000 bootstrapped resamples from the original sample of size $m/2$ or at least of a sample size of 200 to calculate skewness-adjusted t-statistics for each resample. From this transformed, empirical distribution we calculate critical values for a 90%, 95% and 99% interval. ***, **, * indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test), observable within the column marked as 'bs'.

	Actual Returns			**Market-Adjusted Returns** (CDAX)			**Characteristic-Adjusted Returns** (Size, Price-to-book)		
	Mean	*bs*	t-skew	Mean	*bs*	t-skew	Mean	*bs*	t-skew
Panel A: Buy Recommendations (N=2,637)									
6-month period before event	4.03%	***	7.02	1.79%	***	3.41	n/a		n/a
3-month period before event	2.41%	***	6.04	1.17%	***	3.26	n/a		n/a
Eventmonth	1.12%	***	6.48	0.96%	***	6.03	n/a		n/a
3-month period after event	0.61%		1.45	-0.91%	**	-2.38	-0.19%		-0.49
6-month period after event	1.98%	***	3.11	-1.04%		-1.84	0.22%		0.42
12-month period after event	7.39%	***	7.76	0.80%		0.91	1.66%	**	1.96
18-month period after event	13.38%	***	11.23	3.60%	***	3.12	2.29%	**	2.03
24-month period after event	20.05%	***	14.53	4.83%	***	3.24	2.10%		1.42
Panel B: Sell Recommendations (N=1,168)									
6-month period before event	-9.83%	**	-2.42	-11.03%	**	-2.50	n/a		n/a
3-month period before event	-5.84%		-2.03	-6.91%		-2.14	n/a		n/a
Eventmonth	-2.13%	***	-4.07	-2.04%	***	-4.13	n/a		n/a
3-month period after event	-5.38%	***	-4.42	-6.81%	***	-5.85	-6.32%	***	-5.69
6-month period after event	-5.67%	***	-3.32	-8.86%	***	-5.26	-8.34%	***	-5.19
12-month period after event	-1.19%		-0.48	-8.86%	***	-3.52	-9.24%	***	-3.78
18-month period after event	4.14%		1.42	-8.62%	**	-2.51	-11.41%	***	-3.22
24-month period after event	13.06%	***	4.03	-7.43%		-2.01	-12.63%	***	-3.35

We first discuss some interesting findings regarding the prior performance of recommended stocks. To this end, we focus on the second vertical panel of Table 7 where market-adjusted returns for both buy and sell recommendations are displayed for the 6-month period and 3-month period prior to the month of publication. For buy recommendations, the table reveals a tendency for journalists to recommend those stocks for purchase which performed better compared to the market in the months prior to publication. For example, the 6-month market-adjusted return prior to the publication is significantly positive at 1.79%.[36] The analogous tendency of the editorial staff to put underperforming stocks on the sell list is even more apparent. Referring to the 6-month market-adjusted return prior to the publication, journalists recommend stocks for sale which underperform the market by a significant 11.03%. Thus, we find evidence of editors following momentum investment strategies while recommending stocks both for purchase and sale. However, this tendency is much more pronounced for sell recommendations.

When looking at market-adjusted returns subsequent to publication, we observe, for buy recommendations, a modest but significant market-adjusted return of 4.83% in the long-run, i.e., in the 24-month period after the publication. For sell recommendations, we calculate strictly negative market-adjusted returns for all investigated periods. In particular, the market-adjusted return in the long-run is -7.43% but insignificant. However, all market-adjusted returns between three and 18 months are similar in magnitude and statistically significant. Thus, our results support the finding in Lidén (2006) that sell recommendations do contain investment value when investment value is measured by market-adjusted returns.

However, as mentioned before, abnormal return calculations using a broad market index are subject to several biases discussed above. Thus, in the remainder of the chapter we focus exclusively on characteristic-adjusted returns to measure the investment value of journalists' recommendations. For buy recommendations, we observe less pronounced characteristic-adjusted returns in the long-run compared to market-adjusted returns. The 24-month characteristic-adjusted return, for instance, drops to 2.10% compared to the market-adjusted return of 4.83%. In addition, characteristic-adjusted returns are now, although still mostly positive, statistically insignificant for the majority of analyzed periods (with the exception of the 12-month and 18-month period after publication). Hence, we now find much weaker evidence for an investment value in buy recommendations compared to a naïve benchmark adjustment with a broad market index. Thus, with respect to buy recommendations we find support for our *first hypothesis* since abnormal returns are not consistently significantly positive in the months subsequent to the release of buy recommendations. However, unlike the finding in Lidén (2006), who documents for Swedish journalists negative market-adjusted returns while employing value-weighted industry indexes as benchmarks, journalists of German *PFMs* at least do not lead readers in the wrong but in a rather neutral direction.

[36] For the remainder of this chapter, we will refer to a return as being statistically significant if the respective skewness-adjusted t-statistics is statistically significant at least at the 5%-level (two-tailed test) when comparing it to the bootstrapped, empirical distribution.

With regard to sell recommendations, employing characteristic-adjusted returns emphasizes that sell recommendations contain tremendous investment value, hence, that journalists have predictive abilities when issuing sell recommendations. In particular, characteristic-adjusted returns in all analyzed periods display large negative and statistically significant returns with a peak in the long-run corresponding to -12.63%. Consequently, our *first hypothesis* has to be rejected for sell recommendations. In contrast, stock prices seem to initially underreact to sell recommendations. As one looks at the magnitude of long-run returns, we find strong support for our *second hypothesis* which predicts the investment value for sell recommendations to be higher than for buy recommendations. In particular, the absolute value of the investment value is about six times higher for sell recommendations compared to buy recommendations. With respect to the *second hypothesis*, the findings for German *PFMs* are in line with the international evidence for security analysts.

One might wonder why the usage of characteristic-adjusted returns lowers the investment value for buy recommendations and increases the investment value for sell recommendations. This is due to the fact that the value-weighted broad market index CDAX is heavily dependent on large capitalized stocks. As small stocks perform better than large stocks during our investigation period, returns of characteristic-adjusted reference portfolios are usually higher than respective returns of the CDAX. Thus, employing characteristic-adjusted returns affects abnormal returns for buy and sell recommendations asymmetrically.

3.4.2 Determinants of Characteristic-adjusted Returns

In this section, we analyze the determinants of characteristic-adjusted *BHARs*. This might not only be a decisive question from an academic point of view. Moreover, identifying characteristics of stocks for which journalists show the most predictive ability might help investors to make more educated investment decisions. In addition, although journalists are unable to generate investment value with their buy recommendations generally, it might be interesting to explore whether journalists show predictive abilities with respect to specific types of buy recommendations. This section is organized as follows. Firstly, in a univariate analysis in Table 8, we present *BHARs* for the 6-, 12- and 24-month period for specific subgroups (with regard to company size, price-to-book, prior performance, sub-periods and stock listings at the *Neuer Markt*) in order to determine the magnitude and significance of characteristic-adjusted returns. Secondly, results derived from the univariate analysis are complemented with evidence from a multivariate regression which can be found in Table 9.

Company Size As has been shown in numerous previous studies (see, e.g., Banz, 1981; Fama and French, 1993), company size plays a decisive role in explaining (abnormal) returns. Thus, we partition our sample into SMALL stocks and BIG stocks, where SMALL stocks are defined as stocks belonging to the smallest quintile in terms of the market capitalization of the respective group of recommendations (e.g. buy recommendations)

in a given year. Analogously, BIG stocks belong to the quintile with the largest market capitalization.

Table 8: Characteristic-adjusted BHAR for specific sub-groups

For both, buy recommendations (Panel A) and sell recommendations (Panel B), the table shows $BHARs$ for the groups of SMALL and BIG stocks, and for VALUE and GLAMOUR stocks. SMALL (BIG) stocks are stocks belonging to the quintile of recommended stocks with the lowest (highest) market capitalization of the respective group of recommendations (e.g. buy recommendations) in a given year. VALUE (GLAMOUR) stocks are stocks belonging to the quintile of recommended stocks with the lowest (highest) price-to-book ratio of the respective group of recommendations (e.g. buy recommendations) in a given year. Furthermore, the table shows $BHARs$ for stocks with a positive (POSPERF) and negative (NEGPERF) prior performance (in terms of market-adjusted $BHARs$ in the six months prior to the month of the official release of the recommendation). The table also charts $BHARs$ for three different three-year periods from 1995 to 1997, from 1998 to 2000, from 2001 to 2003. Finally, the table shows $BHARs$ for those stocks that belong to the *Neuer Market* in contrast to $BHARs$ of those stocks (called 'others' within the table), that do not belong to this market segment. We closely follow Lyon et al. (1999) to calculate statistical significance. First, we calculate skewness-adjusted t-statistics. Second, we draw 10,000 bootstrapped resamples from the original sample of size $m/2$ or at least of a sample size of 200 to calculate skewness-adjusted t-statistics for each resample. From this transformed, empirical distribution we calculate critical values for a 90%, 95% and 99% interval. ***, **, * indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test), observable within the column marked as 'bs'.

		$BHAR_6$			$BHAR_{12}$			$BHAR_{24}$	
	N	Mean	*bs*	t-skew	Mean	*bs*	t-skew	Mean	*bs*	t-skew
Panel A: Buy Recommendations										
SMALL	523	-1.79%		-1.32	-1.79%		-0.75	3.69%		0.77
BIG	523	0.62%		0.68	-0.26%		-0.19	-4.52%	**	-2.34
Others	1591	0.75%		1.07	3.42%	***	3.14	3.76%	**	2.17
VALUE	521	3.26%	***	2.77	4.70%	**	2.54	8.65%	***	2.88
GLAMOUR	521	-1.50%		-1.08	-0.46%		-0.19	-3.02%		-0.85
Others	1595	-0.21%		-0.31	1.35%		1.33	1.63%		0.84
POSPERF	1296	3.23%	***	4.36	6.42%	***	5.16	8.07%	***	3.61
NEGPERF	1341	-2.68%	***	-3.48	-2.94%	***	-2.66	-3.67%		-1.94
1995-1997	739	2.50%	***	3.17	7.08%	***	4.85	9.29%	***	3.04
1998-2000	837	-0.79%		-0.80	1.42%		0.96	-0.03%		-0.01
2001-2003	1061	-0.56%		-0.60	-1.94%		-1.40	-1.23%		-0.48
NEUER MARKT	312	-9.68%	***	-4.34	-6.59%		-1.85	-21.94%	***	-5.24
Others	2325	1.55%	***	2.96	2.76%	***	3.28	5.33%	***	3.44
Panel B: Sell Recommendations										
SMALL	230	-6.51%		-1.40	-9.12%		-1.54	-16.63%		-1.47
BIG	230	-3.34%		-1.75	-2.11%		-0.85	2.57%		0.60
Others	708	-10.55%	***	-5.14	-11.59%	***	-3.24	-16.27%	***	-3.29
VALUE	227	-11.51%	**	-2.33	-14.73%	**	-2.37	-21.35%		-1.75
GLAMOUR	227	-5.71%		-1.79	-5.92%		-1.42	-4.73%		-0.67
Others	714	-8.16%	***	-4.38	-8.54%	**	-2.62	-12.37%	***	-2.80
POSPERF	297	-2.23%		-0.80	1.30%		0.34	3.95%		0.56

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		$BHAR_6$		$BHAR_{12}$		$BHAR_{24}$	
	N	Mean *bs*	*t*-skew	Mean *bs*	*t*-skew	Mean *bs*	*t*-skew
NEGPERF	871	-10.42%***	-5.35	-12.83%***	-4.08	-18.29%***	-4.41
1995-1997	324	-4.36%**	-2.01	-6.50%**	-2.08	-7.75%	-1.45
1998-2000	298	-12.51%**	-2.90	-18.62%***	-3.44	-25.29%***	-3.26
2001-2003	546	-8.42%***	-3.41	-5.74%	-1.46	-8.62%	-1.37
NEUER MARKT	318	-15.10%***	-3.80	-12.16%**	-2.41	-16.74%**	-2.35
Others	850	-5.80%***	-3.49	-8.14%***	-2.91	-11.10%**	-2.49

As displayed in Panel A of Table 8, we find mixed evidence for buy recommendations concerning company size as a determinant for *BHARs*. In the first year after the publication, abnormal returns are slightly lower for SMALL stocks than for BIG stocks. However, in the long-run we report a positive but insignificant $BHAR_{24}$ for SMALL stocks with 3.69%, whereas buy recommendations on BIG stocks are associated with a significant negative $BHAR_{24}$ of -4.52%. Interestingly, the three remaining quintiles (Others) display a similarly positive $BHAR_{24}$ of 3.76% compared to SMALL stocks, which is statistically significant. Multivariate results emphasize the finding that BIG stocks are associated with mediocre returns. As can be seen from Table 9, the respective coefficient is significantly negative for the 12-month and 24-month horizon.

Table 9: Multivariate OLS regression results for buy and sell recommendations

This table analyzes determinants of $BHARs$ via multivariate OLS regressions. As dependent variables we choose the 6-, 12- and 24-month characteristic-adjusted return for both buy and sell recommendations. As explanatory variables, we include dummy variables for SMALL and BIG stocks and for VALUE and GLAMOUR stocks. SMALL (BIG) are dummy variables for stocks belonging to the quintile of recommended stocks with the lowest (highest) market capitalization of the respective group of recommendations (e.g. buy recommendations) in a given year. VALUE (GLAMOUR) represent dummy variables for stocks belonging to the quintile of recommended stocks with the lowest (highest) price-to-book ratio of the respective group of recommendations (e.g. buy recommendations) in a given year. Furthermore, we include in the regressions a dummy for a positive (negative) prior performance - called POSPERF (NEGPERF). This dummy is based on the market-adjusted $BHAR$ of the six months prior to the month of the official release of the recommendation. Additionally, we include dummy variables for stock recommendations dating from 1995 to 1997 and 1998 to 2000. Finally, we include a dummy variable for those stocks that belong to the *Neuer Markt*. ***,**,* indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) according to the parametric t-test. We employ robust standard errors (White heteroscedasticity-consistent standard errors).

	$BHAR_6$		$BHAR_{12}$		$BHAR_{24}$	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Panel A: Buy Recommendations						
SMALL	-0.0267	-1.76	-0.0566**	-2.19	0.0023	0.04
BIG	-0.0141	-1.20	-0.0475***	-2.72	-0.1178***	-4.31
VALUE	0.0359***	2.60	0.0399	1.77	0.0503	1.23
GLAMOUR	-0.0058	-0.38	-0.0219	-0.89	-0.0239	-0.60
POSPERF	0.0607***	5.62	0.1129***	6.14	0.1294***	4.04
1995-1997	0.0277**	2.18	0.1090***	4.67	0.0900**	1.98
1998-2000	0.0039	0.29	0.0540**	2.54	0.0216	0.68
NEUER MARKT	-0.0935***	-4.12	-0.0457	-1.26	-0.2477***	-5.78
C	-0.0234	-1.81	-0.0641***	-3.00	-0.0276	-0.77
N	2637		2637		2637	
Adj. R^2	2.98%		2.56%		2.12%	
Prob(F-statistic)	0.0000		0.0000		0.0000	
F-statistic	9.58		10.49		10.41	
Panel B: Sell Recommendations						
SMALL	0.0647	1.31	0.0582	0.90	0.0365	0.38
BIG	0.0355	1.32	0.0581	1.51	0.1360**	1.99
VALUE	-0.0452	-0.93	-0.0580	-0.91	-0.0548	-0.55
GLAMOUR	0.0106	0.31	0.0004	0.01	0.0251	0.33
NEGPERF	-0.0659	-1.91	-0.1249**	-2.34	-0.1880**	-1.96
1995-1997	0.0173	0.54	-0.0008	-0.01	0.0280	0.32
1998-2000	-0.0425	-1.18	-0.1246**	-2.45	-0.1592**	-2.05
NEUER MARKT	-0.0719	-1.80	-0.0084	-0.14	0.0100	0.12
C	-0.0216	-0.62	0.0233	0.39	0.0158	0.14
N	1168		1168		1168	
Adj. R^2	1.02%		0.88%		0.74%	
Prob(F-statistic)	0.0013		0.0006		0.0002	
F-statistic	3.21		3.47		3.80	

We find even clearer evidence in favor of small stocks for sell recommendations. As can be seen from Panel B of Table 8, the investment value for BIG stocks is negligible compared to SMALL stocks for all analyzed periods. Surprisingly, the long-run $BHAR_{24}$ is positive at 2.57% for BIG stocks. SMALL stocks, however, experience large negative but insignificant $BHAR_{24}$ at -16.63%. Similar evidence can also be documented for the three remaining quintiles (Others).[37] The key finding that BIG stocks do not have investment value is also supported by multivariate regression results where the coefficient for BIG stocks is positive for all analyzed periods. For the long-run (thus $BHAR_{24}$), the effect even turns out to be statistically significant.

Price-to-Book Previous research has documented a decisive role of the price-to-book ratio in explaining (abnormal) returns (see, e.g., Fama and French, 1993, 1995). Thus, we separate recommendations according to membership of the group of VALUE stocks or GLAMOUR stocks. VALUE stocks belong to the smallest quintile in terms of the price-to-book ratio of the respective group of recommendations (e.g. buy recommendations) in a given year. Analogously, GLAMOUR stocks belong to the quintile with the largest price-to-book ratio.

For buy recommendations, Panel A of Table 8 documents strong evidence in favor of a superior investment value for recommended VALUE stocks. In particular, *BHARs* for VALUE stocks are consistently positive and statistically significant for all analyzed periods. In the long-run an average $BHAR_{24}$ of 8.65% is found for buy recommendations. In contrast, recommended GLAMOUR stocks do not offer comparable returns, since respective buy recommendations earn an insignificant -3.02% in the long-run. Analogous results can be found for the three remaining quintiles (Others). The finding that recommendations on VALUE stocks exclusively earn positive characteristic-adjusted returns is supported by multivariate results. In particular, the coefficient on VALUE is positive for all analyzed periods and significantly positive for the 6-month period.

With regard to sell recommendations, we find complementing evidence for a superiority of VALUE stocks over GLAMOUR stocks. For example, going short in sell recommendations on VALUE stocks will result in an average $BHAR_{24}$ of 21.35% in the long-run. In contrast, executing sell recommendations on GLAMOUR stocks will result in a respective characteristic-adjusted return of 4.73%. However, apart from short-selling recommended VALUE stocks, the remaining three quintiles (Others) are associated with high negative and statistically significant $BHAR_{24}$ of -12.37% in the long-run. Consistently, according to multivariate regression results, sell recommendations on VALUE stocks are associated with negative but insignificant coefficients for all analyzed periods.

One might find a reason for the superiority of value stocks over glamour stocks in the information environment of a firm. In particular, value stocks were pretty much out of favor during our investigation period, whereas glamour stocks attracted most of the attention from the financial community. Therefore, our results contradict the anecdotal

[37] Due to the higher number of constituents, the results of this group, although similar in the level of return compared to SMALL stocks, are found to be significant.

evidence that profit opportunities arose for biotech and internet stocks. In fact, our results indicate quite the opposite. A reader of the analyzed magazines was well advised not to invest in glamour stocks but rather in value stocks, because the advice from journalists was particularly predictive for this sub-group.

Prior Performance The literature on the momentum effect (see, e.g., Jegadeesh and Titman, 1993; Rouwenhorst, 1998) shows that stock prices seem to be exposed to short-term and medium-term price drifts. As discussed in Section 3.4.1, journalists seem to follow momentum investment strategies when deciding on stock recommendations, i.e., they have a tendency to recommend past winners for purchase and past losers for sale. Thus, we partition our sample into two sub-groups according to whether a stock has a positive (POSPERF) or negative (NEGPERF) market-adjusted return in the 6-month period prior to the month of publication.

Notably, past performance is a highly selective criterion for buy recommendations. Whereas buy recommendations on past winners are associated with significantly positive characteristic-adjusted returns for all analyzed periods, buy recommendations on past losers are associated with negative returns, statistically significant for most periods. In particular, buy recommendations of stocks with a positive prior market-adjusted return earn a $BHAR_{24}$ of 8.07%, whereas we document a respective value of -3.67% for stocks with a negative prior performance. This result is supported by multivariate regression results, which reveal consistently positive and statistically significant coefficients for the dummy variable POSPERF.

Analogously, past performance also serves as selection criterion with respect to the predictive ability of journalists for sell recommendations. For recommendations on past losers, we document both economically and statistically significant characteristic-adjusted returns for all analyzed periods with a peak for the 24-month period following the event. The respective $BHAR_{24}$ is -18.29%. For sell recommendations on past winners, however, characteristic-adjusted returns are close to zero and turn even positive in the long-run with an insignificant $BHAR_{24}$ of 3.95%. Results are again backed by multivariate regressions as the dummy variable NEGPERF takes on negative and statistically significant coefficients for most analyzed periods.

Our finding that only buy recommendations on past winners earn abnormal returns, whereas sell recommendations are only profitable if a stock performed below average prior to the publication might indicate a very pronounced momentum effect for the German stock market. A number of papers has documented a momentum effect in terms of price drifts for the German market (see, e.g., Schiereck et al., 1999; Glaser and Weber, 2003). In particular, Schiereck et al. (1999) state that results for the German stock market closely match the findings for other markets documented by Jegadeesh and Titman (1993) and Rouwenhorst (1998). However, the general momentum effect is very unlikely to explain our result, since we document differences of more than 10% for buy recommendations and well above 20% for sell recommendations for the sub-groups constructed on prior performance for the 24-month period. As a possible remedy to control for the momentum effect, one

could construct reference portfolios about price-to-book ratio and company size as well as on momentum characteristics. However, we refrained from this three-factor approach for a simple reason: employing a momentum factor would have resulted in 27 reference portfolios instead of nine, hence, this procedure would clearly reduce the validity of results since the potential impact of outliers increases with the decreasing number of stocks in each portfolio.[38]

Sub-periods In order to assess temporal stability of our results, we partition our nine-year investigation period into three distinct sub-periods; from 1995 to 1997, from 1998 to 2000, and from 2001 to 2003. The first two sub-periods encompass bull markets, whereas the third sub-period is characterized by a bear market.

For buy recommendations, we exclusively observe strictly positive and statistically significant *BHARs* for the first sub-period from 1995 to 1997. In particular, buy recommendations in this period are associated with a large $BHAR_{24}$ of significant 9.29% in the long-run. For the two remaining sub-periods, however, Panel A of Table 8 does not display any statistically or economically significant characteristic-adjusted returns, indicating that buy recommendations in general do not contain investment value past 1997. As previously mentioned, buy recommendations in our first sub-period display particularly high *BHARs*; a fact also supported by multivariate regression results. Whereas the coefficient for the period from 1998 to 2000 is positive but mainly insignificant, the coefficient for the first sub-period from 1995 to 1997 displays significantly positive values for all analyzed *BHARs*.

A different picture emerges when we analyze sell recommendations. Here, we observe high buy-and-hold abnormal returns especially in the second sub-period from 1998 to 2000, a period of extreme market volatility. For this period, Table 8 displays a statistically significant $BHAR_{24}$ of -25.29%. This is around three times higher than for the remaining sub-periods which display -7.75% (-8.62%) within the first (third) sub-period. Multivariate results reinforce the perception that we find most pronounced returns for sell recommendations in the sub-period from 1998 to 2000, since respective coefficients appear to be significantly negative for most analyzed *BHARs*.

Stock Listing at the *Neuer Markt* As shown in Table 6, the number of recommendations of stocks which are listed at the *Neuer Markt* rises steeply between 1999 and 2001, due to booming stock and IPO markets. Stocks being listed in this market segment represent predominately high tech or internet firms with huge expected growth opportunities but little contemporaneous earnings. Since these stocks differ from traditional stocks, it seems reasonable to separate the results. We therefore partition our sample into those stocks listed at the *Neuer Markt* and those that are listed in other market segments.

We observe huge and negative *BHARs* for *Neuer Markt* recommendations on the buy side. After 24 months, these stocks, although recommended for purchase, lose a significant

[38] Increasing the number of portfolios by adding momentum as a third factor would result in 27 portfolios with a number of constituting stocks of each portfolio as low as 19.

-21.94%. Thus, investing in buy recommendations of *Neuer Markt* stocks was devastating for private investors' wealth. Journalists of *PFMs* entirely failed to provide valuable investment advice for this group of stocks. The finding of mediocre returns for buy recommendations of *Neuer Markt* stocks is also confirmed by multivariate regression results. In particular, the coefficients on the respective dummy variable are significantly negative for the 6-month and 24-month period. This evidence becomes even more important if one recalls the low research coverage from security analysts for the *Neuer Markt*. Note, however, that the sub-sample of *Neuer Markt* recommendations on the buy side is quite limited with 312 recommendations. In contrast, all other stock recommendations are associated with positive and significant 5.33% in the long-run. Thus, the results for the *Neuer Markt* help to explain why it is only the first sub-period from 1995 to 1997 which produces significant abnormal returns for buy recommendations, since at this time recommendations on *Neuer Markt* stocks were virtually inexistent (see Table 6). In consequence, our data reveals that one would have found a significant investment value also for buy recommendation if *Neuer Markt* recommendations were to be excluded. However, when computing the investment value for private investors, one needs to take all recommendations into account, not just a sub-sample which turns out to be profitable with the benefit of hindsight.

For sell recommendations, both stocks listed at the *Neuer Markt* and those stocks listed elsewhere display negative and, for all periods, significant abnormal returns. Whereas after 24 months and thus in the long-run, the group of *Neuer Markt* stocks is associated with -16.74%, the second group displays -11.10%. Consequently, within multivariate regressions, the dummy variable for the *Neuer Markt* listings remains insignificant, supporting the notion of no difference between both groups. Thus, we can conclude that recommendations of *Neuer Markt* stocks seem to be unique for buy recommendations, whereas the investment value for respective sell recommendations does not differ significantly from other market segments. In contrast to buy recommendations journalists have provided investment value for *Neuer Markt* stocks on the sell side.

3.5 Conclusion

Analyzing a large sample of stock recommendations issued by *PFMs* in the period from 1995 to 2003, we find that buy recommendations exhibit significantly positive market-adjusted returns in the long-run when using a broad market index as benchmark (the 24-month market-adjusted return equals 4.83%). However, these profits can be largely explained by common characteristics of the recommended stocks. Hence, they vanish when using a characteristic-adjusted benchmark (the respective characteristic-adjusted return equals insignificant 2.10%). On the contrary, we find strong evidence that journalists generate valuable investment advice when issuing sell recommendations. Independently of the type of benchmark adjustment employed, returns are significant (the 24-month market-adjusted return equals -7.43% and the respective characteristic-adjusted return equals -12.63%). Thus we find that at least sell recommendations contain investment value for private investors. In addition, we also confirm that the investment value due to a more

pronounced underreaction in the first place is higher for sell recommendations as opposed to buy recommendations.

Although buy recommendations contain little investment value in general, we find that buy recommendations on value stocks contain significant investment value for readers (24-month characteristic-adjusted return equals 8.65%). For glamour stocks, in contrast, journalists show the no predictive ability. Another group of buy recommendations which provides investment value are those on stocks with a positive market-adjusted performance prior to publication. Specifically, buy recommendations which belong to the group of past winners are associated with a significant investment value (24-month characteristic-adjusted return equals 8.07%). Finally, our results reveal that following buy recommendations for *Neuer Markt* stocks was hazardous for investors' wealth. The usual stock recommendations would have harmed private investors with a mean -21.94% loss in the 24-month period subsequent to the publication. The remaining buy recommendations listed elsewhere, however, seem to contain some investment value.

4

The Usual Suspects: The Effects of Attention on Journalists' Stock Recommendations

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4.1 Introduction

Investors are confronted with a tough searching problem since they have to pick stocks out of a myriad of possibilities. In order to obtain a manageable set of investment alternatives, investors have to narrow their search by some filter criteria. There have been a number of recent studies which link the trading of individual investors to attention (see, e.g., Lee, 1992; Odean, 1999; Hirshleifer et al., 2003; and Barber and Odean, 2006). In particular, the literature argues that, since attention is a scarce resource, individual investors particularly pick those stocks which caught their attention recently. However, a direct test of the so-called *attention hypothesis* is cumbersome. In an ideal world, one has to go back in time and examine the information set of investors on an individual level. However, in reality, this information set is basically unobservable. Therefore, one has to find observable measures which proxy attention indirectly. E.g., Barber and Odean (2006) proxy attention by (i) recent news, (ii) prior performance and (iii) unusually high trading volume of a stock. Their findings reveal that trading of individual investors on the buy side is heavily influenced by the three measures, indicating that attention serves as a filter criterion. In contrast, trading on the sell side is less affected by attention due to short-sale constraints.

We contribute to the literature on the *attention hypothesis* by analyzing stock recommendations of a group of important information producers for individual investors, the

journalists of *Personal Finance Magazines (PFMs)*.[39] Extensive literature already exists which examines the profitability of stock recommendations provided by financial experts to individual investors like recommendations of analysts of brokerage houses (Stickel, 1995; Womack, 1996; and Mikhail et al., 2004), 'financial gurus' (Barber and Loeffler, 1993; Ferreira and Smith, 2003), investment newsletters (Jaffe and Mahoney, 1999; Metrick, 1999) and journalists (Lidén, 2007). Nevertheless, the question whether information producers are prone to attention stimuli is basically unexplored. In addition to testing the *attention hypothesis* for journalists, we will examine whether journalists prefer stocks with common characteristics. Thereby, we will complement the analysis of Brennan and Hughes (1991), who show that the analysts of brokerage houses prefer to issue recommendations for stocks which (i) have low share prices and (ii) have recently experienced a stock split. Finally, we will show that journalists recommend their favorite stocks, the usual suspects, quite frequently.

4.2 Data and Definition of Variables

We analyze a sample of stock recommendations of all German *PFMs*, which provide direct stock recommendations in an easy-to-see recommendation box for the period 1996 to 2003.[40] Focusing solely on stocks with a German *International Securities Identification Number (DE-ISIN)* and a performance history of at least 200 trading days, we hand-collected 3,463 stock recommendations (2,412 buy and 1,051 sell recommendations) for our sample.

In order to test the *attention hypothesis* and to identify common characteristics of recommendations, we have compiled a second group of control recommendations, the so-called pseudo recommendations, for the purpose of comparison. We drew these pseudo recommendations as follows: To each of the stocks in our sample, we assigned from the group of all listed stocks in Germany in the respective year the stock with a *DE-ISIN* which is closest in terms of market capitalization. Each of these 3,463 pseudo recommendations is treated as if it would have been recommended on the publication day of the assigned sample recommendation.[41]

For the analysis, we employ logistic regressions (for a review see Amemiya, 1981) since our dependent variable is binary - it equals one if the stock belongs to the group of sample recommendations and zero if it belongs to the group of matched pseudo recommendations. We convert calendar time into event time, measured in trading days, where day [0] repre-

[39] Besides general investment related information about capital markets, these magazines publish direct buy and sell recommendations for stocks based on self contained research procedures. For the US, e.g., *Barron's*, *Kiplinger* and *SmartMoney* can be classified as *PFMs*.

[40] In particular, these are *Wertpapier*, *Effecten-Spiegel*, *Börse Online*, *Telebörse* and *Capital (Capitaldepesche)*.

[41] The size matching is done at the beginning of each specific year. We drew the second-closest stock in terms of market capitalization for the group of pseudo recommendations if the stock of the pseudo recommendations (i) was already delisted on the day of recommendation, (ii) was also recommended by a *PFM* on that day or (iii) had insufficient data history.

sents the respective publication day of each recommendation in the *PFM*. Three days prior to the official publication day, day [-3], is particularly noteworthy, since journalists decide which stocks to recommend at this point in time.[42]

Like individual investors, journalists might also be led by attention grabbing stimuli when deciding which stocks to recommend. We therefore include a set of variables to test the *attention hypothesis*. We account for recent news on stocks by including the dummy variable NEWS which equals one if the respective company issued ad hoc news in the period [-10,-3].[43] We hypothesize this variable to be positive for both buy and sell recommendations. Since increased news disclosure will also increase the attention allocated to the respective stock, news disclosure will positively affect the probability of a stock being recommended. Prior performance of a stock is measured by the variables PRIORPERF [-10,-3] and PRIORPERF [-200,-11]. Both short-term and medium-term performance measures are computed as market-adjusted returns.[44] If prior performance plays a decisive role in catching the journalists' attention and if journalists follow momentum strategies, we hypothesize the coefficient to be positive (negative) for buy (sell) recommendations. Finally, the variable VOLUMERATIO measures the cumulated trading volume in the week prior to the journalists' decision day divided by the mean trading volume in the previous ten weeks. We hypothesize that this variable will be positive for both buy and sell recommendations since unusually high trading volume will increase attention and, hence, the probability that a stock will be recommended.

In order to test whether common characteristics influence the probability that a stock is recommended, we define PRICE as the unadjusted price of a recommended stock at the journalist's decision day. Following Brennan and Hughes (1991), we predict the variable to be negative for both buy and sell recommendations. Moreover, we include the dummy variable SPLIT which equals one if the respective stock was subject to a stock split in the period [-200,-3][45]. We predict that this coefficient will be positive for both buy and sell recommendations, since stock splits and, subsequently, lower stock prices, would increase the probability that journalists recommend a specific stock. Last, the variable USUALSUSPECT counts the number of times the respective stock was recommended in the 12 months prior to the recommendation by one of the *PFMs*. We predict that this variable will be positive for both types of recommendations.

[42] This information is directly received from the editors of the covered *PFMs*.

[43] Ad hoc announcements deal with corporate events which are likely to have a significant effect on the stock price like, e.g., changes in the executive board structure, earnings announcements, and merger activities. To control for ad hoc announcements, we examine the database of the DGAP (Deutsche Gesellschaft für Ad-hoc-Publizität).

[44] Market adjusted returns are calculated by subtracting the return of the broad market index *CDAX* from the return of the recommended stock.

[45] The dummy variable SPLIT is set to one if the adjustment factor (*AF*) provided by *Datastream* changed by the factor of 1.25 or more. This equals stock splits of at least 5 for 4 stocks.

4.3 Results

Table 10 shows descriptive statistics for both sample recommendations and pseudo recommendations. Panel A refers to buy recommendations, whereas Panel B refers to sell recommendations.

Table 10: Descriptive statistics of sample recommendations and pseudo recommendations
This table displays descriptive statistics for both sample and pseudo recommendations. Panel A displays results for buy recommendations whereas Panel B for sell recommendations. As 'attention variable set' we count those recommendations that are preceded by ad hoc news in the period [-10,-3] (NEWS), two different measures for prior performance (PRIORPERF for the period [-200,-11] and [-10,-3]) and the level of abnormal trading volume (VOLUMERATIO). To control for 'common characteristics' we include the unadjusted stock price (PRICE), the information if there was a stock split in the period [-200,-3] prior to the recommendation (SPLIT) and we count the number of times the respective stock was recommended in the 12 months prior to the recommendation by one of the *PFMs* (USUALSUSPECT).

	Sample Recommendations			**Pseudo Recommendations**		
Panel A: Buy recommendations	N	Mean	% in sample	N	Mean	% in sample
Attention variables set						
NEWS	2,412	n/a	19.53	2,412	n/a	7.67
PRIORPERF [-200,-11]	2,412	2.82%	n/a	2,412	3.58%	n/a
PRIORPERF [-10,-3]	2,412	2.54%	n/a	2,412	-0.09%	n/a
VOLUMERATIO	1,656	1.33	n/a	1,441	1.13	n/a
Common characteristics set						
PRICE	2,405	76.45	n/a	2,412	179.76	n/a
SPLIT	2,412	n/a	9.25	2,412	n/a	7.46
USUALSUSPECT	2,412	2.11	n/a	2,412	0.86	n/a
Panel B: Sell recommendations						
Attention variables set						
NEWS	1,051	n/a	41.96	1,051	n/a	6.95
PRIORPERF [-200,-11]	1,051	-11.93%	n/a	1,051	0.15%	n/a
PRIORPERF [-10,-3]	1,051	-4.92%	n/a	1,051	-0.44%	n/a
VOLUMERATIO	733	2.39	n/a	587	1.08	n/a
Common characteristics set						
PRICE	1,048	64.42	n/a	1,051	189.85	n/a
SPLIT	1,051	n/a	5.71	1,051	n/a	7.33
USUALSUSPECT	1,051	1.64	n/a	1,051	0.72	n/a

In order to test the predictions derived in the previous section of the chapter, table 11 lists logistic regression results for two model specifications. In particular, model 1 excludes and model 2 includes the variable VOLUMERATIO.[46]

Table 11: Logistic regression results for buy and sell recommendations
This table displays logistic regression results for both buy and sell recommendations. Results are displayed for two model specifications where Model 1 excludes and Model 2 includes the variable on unusual trading volume. ***, **, * indicates statistical significance at the 1%-, 5%-, 10%-level (two-tailed test).

	Model 1		**Model 2**	
Panel A: Buy recommendations	Coeff.	z	Coeff.	z
Attention variables set				
NEWS	0.986***	9.97	0.939***	8.21
PRIORPERF [-200,-11]	0.043	0.63	0.004	0.05
PRIORPERF [-10,-3]	3.938***	9.56	3.827***	8.10
VOLUMERATIO			0.075***	2.76
Common characteristics set				
PRICE	-0.001***	-6.73	-0.001**	-2.27
SPLIT	0.052	0.44	0.022	0.14
USUALSUSPECT	0.466***	21.37	0.438***	16.82
constant	-0.699***	-13.90	-0.773***	-11.29
N	4,817		3,097	
pseudo R^2	14.59%		12.09%	
Panel B: Sell recommendations				
Attention variables set				
NEWS	2.201***	15.48	1.887***	11.78
PRIORPERF [-200,-11]	-0.075	-1.22	-0.055	-0.81
PRIORPERF [-10,-3]	-1.222***	-3.43	-1.442***	-3.28
VOLUMERATIO			0.182***	3.59
Common characteristics set				
PRICE	-0.001***	-3.97	-0.002**	-2.56
SPLIT	-0.266	-1.28	-0.219	-0.85
USUALSUSPECT	0.428***	11.86	0.275***	6.57
constant	-0.861***	-11.24	-0.810***	-7.27
N	2,098		1,319	
pseudo R^2	20.92%		18.01%	

Referring to the set of variables concerning the proxies for attention, we find strong evidence for the *attention hypothesis*. Both descriptive statistics and multivariate results support our prediction that recent news, prior returns (at least in the short-term) and high trading volumes are key factors which capture the journalists' attention. Remarkably, we find that recent ad hoc news disclosures have a very strong influence on journalists' decisions. In particular, 19.53% (41.96%) of buy (sell) recommendations in our sample are foregone by ad hoc news disclosures, whereas the respective fraction for the group of

[46] This is done due to limited data on trading volumes. In particular, trading volumes are available for 64% of all recommendations from *Datastream*.

pseudo recommendations is only 7.67% (6.95%). Putting the numbers in perspective, the probability that a recommended stock is foregone by an ad hoc news disclosure is about six times higher than could be expected by chance. Additionally, journalists follow short-term momentum strategies since they recommend stocks for purchase (sale) with exceptional high (low) returns in the preceding trading days. The short-term performance for buy (sell) recommendations is 2.54% (-4.92%), whereas the respective performance of stocks in the control groups is close to zero with -0.09% (-0.44%). Unlike for individual investors, extreme returns do not only catch the attention of journalists, but journalists extrapolate the short-term trends while recommending stocks. Summing up, we can confirm the *attention hypothesis* for journalists in general. However, our results deviate from the finding of Barber and Odean (2006) in one major respect. Unlike individual investors, who are short-sale constraint, journalists are affected by attention on both buy and sell side. The effects are even stronger for sell recommendations.

With respect to the set of variables concerning common characteristics of recommended stocks, both descriptive statistics and multivariate results support the importance of the price level and the fact that a stock belongs to the journalists' favourites. On the one hand, we find support for the result derived by Brennan and Hughes (1991) that information producers tend to recommend stocks with low prices, since the mean stock price for buy (sell) recommendations is € 76.45 (€ 64.42), whereas the mean stock in the group of pseudo recommendations costs € 179.76 (€ 189.85). However, they explain their results by the fee structure of brokerage houses, but the preference for low priced stocks by journalists is independent from fee-based incentives. On the other hand, we cannot support the second finding of Brennan and Hughes (1991) which refers to stock splits. Finally, we obtain strong evidence that journalists prefer to recommend the same stocks over and over again. Thus, the coefficient on USUALSUSPECT is positive and highly significant for both buy and sell recommendations. Buy (sell) recommendations were recommended 2.11 (1.64) times in the prior twelve months, whereas the respective number for the control group is 0.86 (0.72).

4.4 Concluding Remarks

Unlike prior research on the *attention hypothesis* which focuses on the trading behavior of investors, our study extends the respective literature to information producers for individual investors (financial experts). In particular, we find journalists to be prone to similar attention stimuli as individual investors, and thus we confirm the *attention hypothesis* for this group of financial experts. Since journalists' stock recommendations have been shown to affect individual investors' trading (see Chapter 2), journalists' attention biases intensify individuals' attention biases.

5

Never Judge a Book by Its Cover - What Security Analysts Have to Say Beyond Recommendations

(forthcoming in: Kerl, A. G. and Walter, A. (2008) *Financial Markets and Portfolio Management.*)

5.1 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.[47] 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

[47] Starting with the work of Cowles (1933), several hundred studies have been published on analysts' reports.

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.[48]

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 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 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 und 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.[49] 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.

[48] For an extensive review of literature, see Section 5.2 of this chapter.

[49] 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.

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 three top 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 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 chapter is organized as follows. Section 5.2 presents the related literature. Section 5.3 reveals our sample selection procedure, presents summary statistics on a typical analysts' report and introduces the model variables. Section 5.4 presents empirical results with respect to the determinants of the market reaction to analysts' reports. Section 5.5 summarizes our findings and concludes.

5.2 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.[50] 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.[51] 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; 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 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

[50] 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.

[51] 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).

easily from commercial data providers like *I/B/E/S* (*Insititutional 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; Bradshaw, 2002) but do not relate their findings to the induced market reaction.[52] 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; 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 mixed.[53] 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

[52] Demirakos et al. (2004) also conduct a content analysis of financial analysts' reports while focusing on employed valuation methodologies for the UK.

[53] 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.

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, 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 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.

5.3 Sample Selection, Summary Statistics, and Model Variables

5.3.1 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.[54] 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 5.2). 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.[55] 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

[54] 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.

[55] 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).

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 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.

5.3.2 Summary Statistics

Table 12 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.[56] 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.[57] 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).

[56] 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).

[57] 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.

Table 12: 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 per share forecasts for the next financial year, the disclosure of current target prices forecasts and about whether information about potential conflicts of interest (CoI) were given. In addition, the percentage of concurrent disclosure of company figures (quarterly 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 the 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	Up	Reit	Down	All	Reit	Down	All	Up	Reit	Down	Total
Panel A: Report distribution, disclosure, ad hoc announcements														
# of reports			455				422			123				1000
# of reports w/ prior rec.	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				
EPS (next fin. 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
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 CoI [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
Quarterly 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 news [-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
Panel B: Categories analysts' justification [in %]														
Exp. revenues/sales (pos)	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. revenues/sales (neg)	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 (pos)	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 (neg)	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)	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)	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

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	Buy			Hold				Sell			All			
	Up	Reit	All	Up	Reit	Down	All	Reit	Down	All	Up	Reit	Down	Total
Outlook earnings/profits (pos)	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)	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)	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)	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)	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)	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
Cost efficiency (pos)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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)	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
Panel C: Conflicts of interest [in %] based on subsample with conflict of interest disclosure														
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

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	Buy			Hold				Sell			All			
	Up	Reit	All	Up	Reit	Down	All	Reit	Down	All	Up	Reit	Down	Total
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
Panel D: Mean of model variables														
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

Similar to the findings in prior studies (see, e.g., Barber et al., 2001; Brav and Lehavy, 2003), Panel A of Table 12 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 upgrades and 63 reports are downgrades.[58] 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.[59]

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*)).[60] Panel A of Table 12 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 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.

[58] A similar predominance of reiterations is documented by Elton et al. (1986).

[59] 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.

[60] Ad hoc announcements are provided by *DGAP* (Deutsche Gesellschaft für Ad-hoc-Publizität).

(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 12 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 12 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 12). As presented in Panel C of Table 12, 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.

5.3.3 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.[61] After computing the earnings revision, we truncate the 1^{st} and 99^{th} percentile to mitigate the effect of possible outliers. As can be seen in Panel D of Table 12, 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.[62] In order to avoid distortion caused by extreme outliers, we again truncate the 1^{st} and 99^{th} 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 $STRG\_ARG_{j,t}$ which measures the direction

[61] 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).

[62] 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).

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 12 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 an additional positive (negative) statement, we define the variable $LOG\_STR\_ARG_{j,t}$ which takes the natural logarithm of positive statements less the natural logarithm of negative statements into account.[63]

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 5.3.2). Our first proxy variable $UND\_HLD_{j,t}$ 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). $UND\_HLD_{j,t}$ 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 $CoI_{j,t}$ 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 12 shows that the average value of potential conflicts of interest as disclosed by 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 $CoI_{j,t}$ 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

[63] The variable LOG_STR_ARG is calculated as follows: ln (sum of positive statements + 1) - ln (sum of negative statements + 1).

the variable for analysts' justification reflect independent information, Table 13 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 $EARN\_REV$ and TP_REV (0.4434, p=0.0000).

Table 13: Correlation matrix

This table reports nonparametric Spearman correlation coefficients for each pair of model variables. $UP\_GR_{j,t}$ ($DOWN\_GR\_j,t$) takes on the value of 1 if an analysts' recommendation is an upgrade (downgrade) from the previous level. Accordingly, $REIT_{j,t}$ 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**	-0.1001***	0.0176						
	(0.0107)	(0.0050)	(0.6233)						
TP_REV	0.1950***	-0.2147***	0.0378	0.4434***					
	(0.0000)	(0.0000)	(0.2901)	(0.0000)					
STR_ARG	0.0654*	-0.1479***	0.0721**	0.3402***	0.2893***				
	(0.0671)	(0.0000)	(0.0436)	(0.0000)	(0.0000)				
LOG_STR_ARG	0.0660*	-0.1420***	0.0671*	0.3316***	0.2759***	0.9807***			
	(0.0646)	(0.0001)	(0.0602)	(0.0000)	(0.0000)	(0.0000)			
UND_HLD	-0.0251	0.0736*	-0.0407	-0.0080	0.0190	0.0047	0.0270		
	(0.5530)	(0.0814)	(0.3356)	(0.8499)	(0.6531)	(0.9120)	(0.5228)		
CoI	-0.0762*	0.0629	0.0019	0.0148	-0.0049	0.0097	0.0273	0.8348***	
	(0.0714)	(0.1368)	(0.9638)	(0.7258)	(0.9087)	(0.8195)	(0.5182)	(0.0000)	

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 12 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.

5.4 Results

5.4.1 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.[64] Our analyses are based on standard OLS estimations employing robust standard errors as proposed by White (1980).[65]

With respect to the most prominent summary measure, the recommendation revision, column (1) of Table 14 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 revision of earnings forecasts, column (2) documents as 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 earning 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.

[64] 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.

[65] 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 of 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.

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.

Table 14: 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]. $UP\_GR_{j,t}$ ($DOWN\_GR_{j,t}$) 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]	PS	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
UP_GR	+	0.0086		-0.0056		-0.0178			-0.0166	-0.0171
		(0.83)		(-0.50)		(-1.60)			(-1.50)	(-1.54)
DOWN_GR	-	-0.0371***		-0.0421**		-0.0231**			-0.0159	-0.0174
		(-2.83)		(-2.55)		(-2.11)			(-1.45)	(-1.59)
EARN_REV	+		0.1653***	0.1611***		0.0945**			0.0683*	0.0737*
			(3.25)	(3.05)		(2.30)			(1.71)	(1.83)
TP_REV	+				0.1331***	0.1090***			0.0835**	0.0883**
					(4.32)	(2.66)			(2.04)	(2.15)
STR_ARG	+						0.0077***		0.0051***	
							(6.57)		(4.76)	
LOG_STR_ARG	+							0.0178***		0.0111***
								(5.93)		(3.91)
INTERCEPT	?	-0.0034	-0.0063**	-0.0032	-0.0045**	-0.0009	-0.0109***	-0.0102***	-0.0066**	-0.0055*
		(-1.17)	(-2.31)	(-1.20)	(-2.00)	(-0.34)	(-3.56)	(-3.29)	(-2.29)	(-1.89)
adj. R^2		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

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 14 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.

Since 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 15). 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.

Table 15: 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]. $UP\_GR_{j,t}$ ($DOWN\_GR_{j,t}$) 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

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CAR[-2,+2]	Predicted Sign	Coeff	*t*-stat
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^2		12.16%	
N		628	

5.4.2 The Effect of Conflicts of Interest

As discussed in Section 5.2, 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 5.4.1, 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 16, 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.

Table 16: 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]. $UP\_GR_{j,t}$ ($DOWN\_GR_{j,t}$) 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]	(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^2	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

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 12). 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 12). 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.[66] 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 chapter we will exclusively focus on the variables STR_ARG and UND_HLD.

[66] A similar reasoning for less severe conflicts of interest in the UK can be found in Ryan and Taffler (2006).

5.4.3 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 5.2). 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.

Table 17: 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]. $UP\_GR_{j,t}$ ($DOWN\_GR_{j,t}$) 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
CAR[-2,+2]	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
UP_GR	-0.0040	-0.0072	-0.0170	-0.0123	-0.0151	-0.0121	-0.0163	0.0004	-0.0146	0.0002
	(-0.24)	(-0.53)	(-1.05)	(-0.84)	(-0.96)	(-0.83)	(-1.00)	(0.02)	(-0.91)	(0.01)
DOWN_GR	-0.0326**	-0.0502	-0.0271*	-0.0161	-0.0199	-0.0080	-0.0270*	0.0184	-0.0197	0.0225*
	(-2.12)	(-1.58)	(-1.95)	(-1.05)	(-1.46)	(-0.51)	(-1.94)	(1.28)	(-1.44)	(1.84)
EARN_REV	0.2750***	0.0235	0.1300**	0.0639	0.1030	0.0412	0.1318**	0.0573	0.1057	0.0313
	(3.12)	(0.52)	(1.98)	(1.47)	(1.64)	(0.89)	(1.96)	(1.00)	(1.64)	(0.54)
TP_REV			0.1558***	0.0130	0.1397***	-0.0261	0.1494***	0.0281	0.1317***	-0.0144
			(3.01)	(0.22)	(2.72)	(-0.43)	(2.90)	(0.24)	(2.59)	(-0.12)
STR_ARG					0.0044***	0.0059***			0.0045***	0.0072***
					(3.41)	(2.99)			(3.48)	(2.82)
UND_HLD							-0.0026	0.0076	-0.0025	0.0076
							(-0.68)	(1.12)	(-0.66)	(1.15)
INTERCEPT	0.0011	-0.0092**	0.0053	-0.0087**	-0.0018	-0.0120***	0.0079	-0.0165**	0.0007	-0.0198***
	(0.28)	(-2.39)	(1.59)	(-2.20)	(-0.47)	(-2.92)	(1.47)	(-2.51)	(0.12)	(-2.98)
adj. R^2	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

The results displayed in Table 17 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 been 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.

5.4.4 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.

Table 18: 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]. $UP\_GR_{j,t}$ ($DOWN\_GR_{j,t}$) 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 annoucements	
	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	-0.0136	-0.0214**	-0.0130	-0.0204	-0.0174	-0.0070	-0.0274	-0.0109	0.0129
	(-0.66)	(-1.03)	(-2.49)	(-0.67)	(-1.53)	(-0.96)	(-0.46)	(-1.64)	(-0.89)	(1.31)
DOWN_GR	-0.0019	-0.0288	-0.0154	-0.0159	-0.0253	-0.0016	-0.0130	0.0079	-0.0023	-0.0403**
	(-0.12)	(-1.48)	(-0.86)	(-1.12)	(-1.10)	(-0.13)	(-0.79)	(0.58)	(-0.16)	(-2.01)
EARN_REV	0.1117*	0.0020	0.0084	0.1875**	-0.0467	0.1209**	0.1130*	0.0360	0.0729	0.1317
	(1.85)	(0.03)	(0.17)	(2.00)	(-0.57)	(2.24)	(1.82)	(0.45)	(1.22)	(1.59)
TP_REV	0.0875	0.1447*	0.1953***	0.0182	0.0387	0.1873***	0.1350**	0.0922	0.1057**	0.0935
	(1.50)	(1.80)	(3.00)	(0.30)	(0.49)	(3.55)	(2.13)	(1.31)	(2.20)	(0.91)
STR_ARG	0.0065***	0.0042***	0.0050***	0.0055***	0.0082***	0.0042***	0.0053***	0.0058***	0.0046***	0.0070***
	(3.53)	(3.25)	(3.01)	(3.54)	(3.76)	(3.36)	(3.79)	(3.00)	(3.90)	(2.73)
UND_HLD	0.0026	0.0001	0.0004	0.0055	0.0043	-0.0020	-0.0041	0.0061	-0.0004	0.0038
	(0.47)	(0.02)	(0.10)	(0.32)	(0.81)	(-0.57)	(-0.99)	(1.22)	(-0.11)	(0.54)
INTERCEPT	-0.0090	-0.0052	-0.0069	0.0067	-0.0135*	-0.0071	-0.0057	-0.0104	-0.0086*	-0.0038
	(-1.25)	(-1.03)	(-1.15)	(-1.05)	(-1.92)	(-1.37)	(-1.03)	(-1.37)	(-1.74)	(-0.38)
adj. R^2	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

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 18 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 18 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 18 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].[67] As mentioned in

[67] As an additional robustness test, we also performed further regressions for different ad hoc control periods

Panel A of Table 12, 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 18, 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.

5.5 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 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

like [-2,0], [-4,+4] and [-10,+10]. Results are qualitatively identical to those reported in Table 18.

(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 be 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.

6 Target Price Accuracy

6.1 Introduction

Analysts' reports play a decisive role for capital markets. Alongside with company releases, reports issued by financial analysts provide information for all kinds of different market participants like fund managers, pension managers, or high-wealth investors. In consequence, economic research has focused on analyzing whether capital markets react to analysts' reports. Various studies have found that market participants appreciate the information derived by analysts. However, traditional studies (see, e.g., Abdel-Khalik and Ajinkya, 1982; Elton et al., 1986; Lys and Sohn, 1990; Stickel, 1991; Stickel, 1995; Womack, 1996; and Mikhail et al., 1997) have focused exclusively on the market impact of recommendations (e.g., levels like buy, hold and sell recommendations or their revisions) and earning forecasts which analysts disclose in their reports.

The literature only recently shifted its focus towards a third quantitative measure: target prices. This is due to the fact that major databases like *First Call* from *Thomson Financial* started to cover target prices at the end of 1996. Hence, 1997 is the first complete year where standard data providers delivered data concerning this measure.[68] When focusing on continental European markets like Germany, common databases do not provide information on target prices at all. Nevertheless, via target prices (in relation to current stock prices) analysts can disclose more detailed information concerning their view of the covered company, compared to simply disclosing recommendation levels. Current US literature has documented that target prices are highly acknowledged by the market. Brav and Lehavy (2003), for example, analyze the market reaction to the publication of

[68] This information is taken from Brav and Lehavy (2003). Other studies from Asquith et al. (2005), Gleason et al. (2007), and Bradshaw and Brown (2006) show similarly that target price availability started in 1997.

target prices. Within their analysis, they form portfolios based on the revision of the target price scaled by the pre-announced stock price. Whereas the average buy-and-hold abnormal return for the least favourable revisions is -3.96%, it increases to +3.21% for the most favourable revisions. Similarly, Asquith et al. (2005) set up a model which includes target price changes additionally to recommendation and earnings forecast changes. They find that the market reacts more to target price forecast revisions than to earnings forecast revisions. Furthermore, they find that target prices have information value since the market reacts to them even conditional on all other information. For the German market, Chapter 5 finds similar evidence concerning the importance of target prices for capital markets. Within reports from the *Investext* database, we find that an upgraded recommendation (e.g., from hold to buy) is associated with a target price revision of +10.5%, whereas analysts' reports which downgrade a recommendation (e.g., from hold to sell) also downgrade the target price forecast by -8.9%. Based on the regression model, we find that target prices add information in excess to the general 'summary measures' as, e.g., recommendation and earnings forecast revisions. However, we show that especially target price revisions of highly-reputable investment banks contain value-relevant information. Following these papers, target price estimates are not merely a function of earnings estimates but contain value-relevant information for capital markets.

Since earnings forecasts, recommendation levels and target prices have proven value-relevance, researchers focused on analyzing forecast accuracy.[69] With respect to the accuracy of earnings forecasts, Loh and Mian (2006) and Ertimur et al. (2007) found that analysts who issue more accurate earnings forecasts also issue more profitable stock recommendations. Loh and Mian (2006), e.g., describe a strategy that is long in the favourable stocks and short in the unfavourable stocks that are issued by the most accurate analysts (in terms of earnings forecast accuracy). Such a strategy leads to a statistically significant average monthly return of 0.737% (the four-factor alpha[70]). On the contrary, recommendations of analysts that belong to the lowest accuracy quintile lead to a monthly average return of statistically significant -0.529%. Overall, recommendations of highly accurate analysts outperform recommendations of those analysts that belong to the least accurate quintile by 1.27% per month. Their results show that investors who have access to information issued by competent, highly accurate analysts are rewarded.

With respect to the accuracy of target price forecasts, Asquith et al. (2005) analyze whether the current stock price reaches or exceeds the target price within the 12-months period. The authors conclude that price forecasts are achieved in 54.28% of all cases. If the target price is achieved, the company's maximum (minimum) stock price overshoots the target price by 37.27% during the 12 months, whereas otherwise the company's maximum (minimum) stock price undershoots the target by 15.62%. Bradshaw and Brown (2006) find that expected returns, which they derive from the ratio of the target price compared

[69] Brown (2000) provides a review of studies analyzing the question whether the analysts' forecasts (mainly on earnings and stock recommendations) are accurate and whether investors could earn abnormal returns by following these recommendations.

[70] The four-factor model by Carhart (1997) uses risk premium, company size, book-to-market and momentum as factors.

to the actual stock price, exceed actual returns by 35%. Only 24% (45%) of target price forecasts are met at the end of (sometime during) the 12-months period. The authors explain the low performance of their analysts' forecasts (in comparison to Asquith et al., 2005) with generally lower skills of not highly-ranked analysts and a focus on both, bull and bear markets.[71] Additionally, Bradshaw and Brown (2006) conclude that superior earnings forecasting abilities do not lead to superior target price forecasting abilities. Contrarily, Gleason et al. (2007) find a positive association between earnings forecast accuracy and the profitability of target prices. The authors explain this finding (in contrast to the findings of Bradshaw and Brown, 2006) by considering the effect of valuation model use on target price accuracy. Bonini et al. (2007) develop inaccuracy measures and compare these to the actual returns realized by each stock. They find, very much in line with the findings of Bradshaw and Brown (2006), that forecasting accuracy is very limited with prediction errors up to 46%.

This chapter analyzes the accuracy of analysts' target price forecast. This topic is currently discussed in literature and has, to the best of our knowledge, not been analyzed for the German market before. Our main contribution is to analyze potential factors that might be relevant for explaining target price accuracy. For the first time, we take the text-based informational depth of each analyst report into account to evaluate whether those analysts who provide additional information also issue more accurate target prices. Similarly, Stickel (1992) showed that *Institutional Investor* All-American Research Team members supply more accurate earnings forecasts compared to other analysts.[72] Furthermore, we evaluate the target price accuracy in the light of the reputation of the issuing bank and with respect to potential conflicts of interest which might impact the issued reports - two topics which are currently heavily discussed in the literature.

Results based on the accuracy measure show that the target price accuracy level for the total sample amounts to 73.64%[73] after 12 months (see also Table 21). Splitting the sample according to the type of recommendation shows an accuracy level for buy (hold) recommendations of 75.69% (76.12%), whereas it decreases for sell recommendations to 59.43%. For the total sample, the company's maximum (minimum) stock price within the 12-months period overshoots the target price forecasts, on average, by 17.72%, meaning that, for positive forecasts, a projected target price of 100 is associated with a stock price of 117.72 on average (see Table 20). However, only 56.53% of the forecasts are met within the 12-months period. In these cases, maximum (minimum) stock price overshoot target prices by 41.96%. For the remaining reports, where the target prices are not reached within

[71] In comparison to that, Asquith et al. (2005) only focus on analysts that belong to the All-American Research Team based on the *Institutional Investors'* yearly rankings. Additionally, their sample represents the bull market from 1997 to 1999.

[72] However, Bradshaw and Brown (2006) consider that analysts might have no incentive to provide accurate target prices since the membership of the *Institutional Investor* All-American Research Team is not based on target price accuracy but on factors including earnings forecast accuracy and quality of stock recommendations.

[73] If stock prices would exactly meet target price forecasts after 12 months, target price accuracy measured by our accuracy measure would be 100%.

the 12-months period, the stock price within the 12-months period reaches 86.20% of the forecasted price. Overall, it takes 72 days (median) to reach the target price for those stocks that succeed in doing so. Whereas hold and sell recommendations reach their target prices (if they do so) in about 50 days, it takes buy recommendations twice as long.

Our main focus is to distinguish between potentially relevant factors that explain target price accuracy. Results show that the stock price potential estimated by an analyst (defined as the absolute value of the target price forecast divided by the current stock price minus one[74]) is negatively related to the level of forecast accuracy. Hence, target prices that are highly deviating from the current stock price are, after 12 months, not as likely to be exactly reached compared to target prices that are only marginally deviating from the current stock price. Furthermore, the text-based informational depth seems to be a proxy for thorough research by analysts. Results show weak evidence that further information disclosure by analysts is associated with more accurate forecasts. This result, however, is mainly true for the sample of positive recommendations. Additionally, results show that analysts' forecasts for stocks with a large market capitalization are more accurate. On the other hand, target prices estimates for highly volatile stocks are less accurate compared to stocks with low volatility. With respect to reputation, results reveal that highly reputable banks issue target prices which are more accurate (at least for all positive recommendations). Last, results show that target price accuracy does not depend on potentially existing conflicts of interest.

The remainder of the chapter is structured as follows. Section 6.2 describes the sample selection process alongside with descriptive statistics. Section 6.3 introduces the used measure to compute target price accuracy and discusses its potential determinants. Section 6.4 displays results before Section 6.5 concludes.

6.2 Database

6.2.1 Database and Sample Selection

For analyzing target price forecasts that are disclosed within analysts' reports issued for German stocks, we focus on the period from 2002 to 2004. As mentioned before, major databases such as *First Call* do not deliver information on target prices for the German market. Therefore, we make use of the database *Investext* from *Thomson Financial* which provides analysts' financial reports in its original form. *Investext* claims to provide reports of over 450 different banks and independent research firms that cover more than 30,000 reports worldwide. For the German market, the database comprises 31,423 reports in the years from 2002 to 2004. Due to our research questions, we are required to read each of the reports in its entirety, a procedure which takes about 30 minutes per report. Therefore, we restrict the sample based on two rules. First, we exclusively focus on reports from banks that appear in the *Institutional Investor's* ranking in at least one year during the investi-

[74] Investors might interpret the estimated potential of a stock as 12-months return (excluding dividend payments).

gation period. Banks only show up in this ranking in case of employing analysts that are part of the *Institutional Investor* All-European Research Team.[75] US research commonly refers to the *Institutional Investor's* rankings as a selection criterion to distinguish valuable financial research (see, e.g., Stickel, 1992; Previts et al., 1994; Stickel, 1995; Womack, 1996; Asquith et al., 2005; and Fang and Yasuda, 2006). Since we only select banks that appear at least once in the annual rankings within the period from 2002 to 2004, this results in 13 investment banks for which *Investext* provides reports.[76] Second, we focus on reports between three and 20 pages length. Finally, this results in 10,364 reports that match the search criteria. Since we have to read each report in its entirety, we draw a random sample of 1,000 reports that represent approximately 10% of the whole population.

6.2.2 Summary Statistics

Table 19 presents summary statistics for the 1,000 randomly selected reports, organized according to the three recommendation levels (buy, hold, and sell recommendations[77]) and, additionally, for the total sample. Since analyzing the target price accuracy requires each report to contain a target price, our final sample contains 950 reports.[78] The final sample contains much more buy (443) and hold recommendations (400) compared to sell recommendations (107). Such a finding is not surprising, since analysts are reluctant to issue negative information about covered companies, and is in line with the literature (see, e.g., Barber et al., 2001; Brav and Lehavy, 2003). With respect to the stock price potential, we compute the implicit return that analysts assign to each stock as the ratio of the target price[79] relative to its current stock price minus one (see Panel A in Table 19). Whereas buy recommendations are expected to increase by 35.42%, hold recommendations display an implicit return of only 7.16%, and sell recommendations are expected to decrease by -12.96%. Altogether, analysts have a positive perception of the future and assign an implicit return of 18.07%.[80] A solid level of optimism is also documented by Brav and Lehavy (2003) who find that, on average, target prices are 28% higher than current stock prices.

[75] The magazine *Institutional Investor* conducts an annual survey among a large number of buy-side managers who are asked to rank sell-side analysts along the dimensions stock picking ability, earnings forecast accuracy, quality of written reports and overall services. Once an analyst is recognized as top analyst in a given industry in the survey, he becomes a member of the *Institutional Investor's* All-European Research Team.

[76] Among others, these are BNP Paribas, Credit Suisse First Boston, Deutsche Bank, JP Morgan, and UBS.

[77] At the beginning of 2002, Lehman Brothers and other banks switched from a five category rating scheme to a three category rating scheme (see Bradley et al., 2003). Since we only find a negligible number of 15 strong buy recommendations and no strong sell recommendations, we join these strong buy recommendations with the 440 buy recommendations to obtain a three category rating scheme. Such a procedure is also applied in Ertimur et al. (2007).

[78] The reduction of 50 reports is only partly based on missing target prices within the reports. Additionally, we discard those reports with extreme values in terms of the accuracy measure AM (the 1^{st} and 99^{th} percentile). This is done to reduce possible outlier effects (see also Section 6.3.1).

[79] Usually, analysts issue price target forecasts for the following 12-months period.

[80] Since analysts do not disclose assumptions on the implicit return of the market within their reports, we include the implicit stock return without further adjustments in our model.

Table 19: Descriptive statistics

This table presents descriptive statistics on the information collected from 1,000 randomly drawn analysts' reports on German stocks. The table is organized alongside the recommendation levels, i.e., buy recommendations (Buy), hold recommendations (Hold) and sell recommendations (Sell), and, additionally, a column for all reports (Total). In Panel A, we disclose the total number of reports, the number of reports that contain target price information, the mean actual stock price and the mean target price in €, and the mean implicit return, computed by the target price TP_t over the current stock price P_t minus one. Last, we report the percentage of the sample for which this implicit return is positive. 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, information is disclosed. Panel C displays to what percentage reports contain information on conflicts of interests. Furthermore, for these reports it is disclosed to what percentage a holding (underwriting) relationship occurs. Finally, Panel D discloses information on market capitalization, price-to-book-ratios (both measured for each company at the publication date t of the stock's report), and the ratio of reports written by those three banks that employ the largest number of highly-ranked analysts following the *Institutional Investor* All-European rankings.

		Buy	Hold	Sell	Total
Panel A: Target prices					
	Number of reports	455	422	123	1000
	Number of reports with target prices	443	400	107	950
	Mean current stock price (P_t) in €	42.61	37.57	31.59	39.25
	Mean target price (TP_t) in €	53.43	39.18	27.51	44.51
	Mean implicit return [in %]	35.42	7.16	-12.96	18.07
	Implicit return > 0 [% of sample]	98.87	65.75	19.63	76.00
Panel B: Information categories					
	Exp. on revenues/sales [in %]	44.24	43.75	40.19	43.58
	Exp. earnings/profits [in %]	50.56	48.25	44.86	48.95
	Outlook revenues/sales [in %]	39.50	34.75	36.45	37.16
	Outlook earnings/profits [in %]	48.98	39.00	51.40	45.05
	Product introduction [in %]	11.51	7.00	1.87	8.53
	New project [in %]	2.93	2.25	1.87	2.53
	Cost efficiency [in %]	23.48	21.00	18.69	21.89
	M&A activity [in %]	10.38	9.50	5.61	9.47
	Stock repurchase [in %]	2.03	1.50	0.93	1.68
	Industry climate [in %]	10.38	18.50	27.10	15.68
	Quality of management [in %]	9.26	5.50	8.41	7.58
	International operations [in %]	16.70	10.50	3.74	12.63
	Competition [in %]	18.28	14.25	18.69	16.63
	Risk [in %]	22.35	29.75	35.51	26.95
	Future business perspective [in %]	25.51	17.00	25.23	21.89
Panel C: Conflicts of interest					
	Availability of CoI information [in %]	64.33	75.00	66.36	69.05
	Holding/Ownership relation [in % of CoI Sample]	43.86	45.67	33.80	43.60
	Underwriting relation [in % of CoI Sample]	37.89	47.00	50.70	43.45

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		Buy	Hold	Sell	Total
Panel D: Misc					
	Median market cap. (in billion €)	4.01	6.85	2.74	4.65
	Median PTBV	1.77	1.73	1.56	1.71
	Top 3 banks [in %]	44.24	55.75	42.06	48.84

As mentioned before, we aim to contribute to the literature by analyzing the impact of the informational depth of each report on the accuracy of target prices. To measure the extent to which analysts disclose information in the reports, we identify 15 categories which are commonly addressed by analysts. For example, analysts frequently report on the outlook concerning earnings or profits. Following Asquith et al. (2005) with small changes, we distinguish the following categories: expectations on revenues/sales, expectations on earnings/profits, outlook on revenues/sales, outlook on earnings/profits, product introduction, new project, cost (in)efficiencies, M&A activity, stock repurchase, industry climate, quality of management, international operations, competition, risk, and future business perspective. Therefore, Panel B in Table 19 displays for each of the 15 categories how often analysts address the specific topic in their reports. While reading each report, we coded each category with a one if it was addressed, and with zero if it was not addressed at all. For example, in about every second report (48.95%), analysts address their expectations on earnings and profits. Other categories quite often concerned are: expectations on revenues/sales (43.58%), outlook on earnings/profits (45.05%), and the outlook on revenues/sales (37.16%). On the contrary, the information on stock repurchases is, among these 15 categories, the most rarely addressed information (1.68% of the reports contain information on stock repurchases). Interestingly, in the majority of categories, more information is disclosed for buy recommendations compared to sell recommendations.

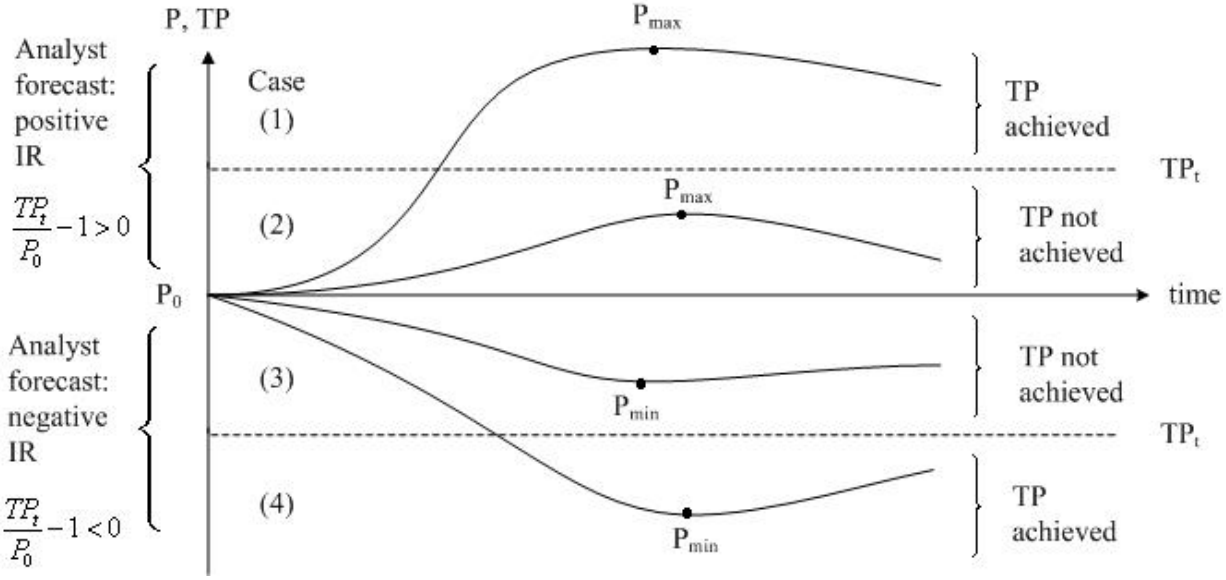
Another topic of interest is the ongoing discussion on potential conflicts of interest which might bias the analysts' view. We therefore aim to control for these influences by taking advantage of the disclosure of business ties within the reports. However, such a disclosure can only be found in 69.05% of the final sample reports (see Panel C in Table 19). Hence, such an analysis is restricted to a slightly smaller sample. To measure conflicts of interest, we focus on two important issues: (1) the fact that the bank has current holdings in the company and (2) the fact that the bank serves or has served as an underwriter for stocks of the covered company. Both types of potentially conflicting relations occur at the same frequency - in about 43% of the sample.

Panel D of Table 19 displays the median market capitalization of € 4.65 bn and the median price-to-book-value of 1.71. It should be noted that sell recommendations are smaller (median of € 2.74 bn) in size compared to the average firm covered in an analyst report.

The final analysis includes 950 reports with disclosed target prices. In this sample, 722 reports (76.00% of the sample) are associated with a positive implicit return (with a target price above the current stock price), see Panel A of Table 19. For this subsample, analysts

anticipate the direction of stock price movements correctly if the firm's stock price achieves or exceeds the forecasted target price at some time within the 12-months period (see upper part of Figure 3 for an illustration of target price under- and overachievement). For the remaining 225[81] reports that are associated with a negative implicit return (a forecasted decline in the stock price), analysts anticipate the direction of stock price movements correctly if the stock price falls below the target price (see lower part of Figure 3).

Figure 3: Graphical illustration of target price under- and overachievement
This figure illustrates four cases in which target price forecasts are overachieved (case (1) and (4)) or underachieved (case (2) and (3)). Within the upper part of the figure (case (1) and (2)), analysts have forecasted a positive development of the stock (positive implicit return). If the maximum stock price (P_{max}) within the 12-months period achieves or exceeds the forecasted target price (see upper dashed line), the forecast is achieved (case (1)), otherwise, it is not achieved (case (2)). Within the lower part of the figure (case (3) and (4)), analysts have forecasted a negative development of the stock (negative implicit return). If the minimum stock price (P_{min}) within the 12-months period falls below the forecasted target price (see lower dashed line), the forecast is achieved (case (4)), otherwise, the forecast is not achieved (case (3)).



The percentage of stocks that achieve their target price forecast is presented in Panel A of Table 20. For the full sample, 56.53% of all target prices are achieved within the 12-months period. Sorting along the type of category, target prices of hold recommendations are most often achieved (69.50%) compared to buy recommendations (45.60%) and sell recommendations (53.27%). Focusing on the necessary time to achieve a target price, again, target price forecasts of hold recommendations are most often achieved within the first three months after publication (50.75% of the price targets of all hold recommendations are achieved within the first three months), compared to buy recommendations (17.38%) and sell recommendations (35.51%). These results could have been expected, since the deviation of the target price compared to the current stock price is the lowest for hold recommendations (7.16% as displayed in Panel A of Table 19) compared to buy (sell) recommendations with 35.42% (-12.96%). Asquith et al. (2005) report that the probability

[81] Combined with three reports that have an implicit return of zero this adds up to 950 reports.

Table 20: Target price achievement within the 12-months forecast period
In Panel A of this table we present the percentage of reports that achieve the price target within the 12-months forecast period. Results are displayed for all recommendations and sorted by recommendation level. Additionally, the fraction of reports that achieve the price target within the months 1 to 3, 4 to 6, 7 to 9 and 10 to 12 is displayed. In Panel B, we compute for the group of stocks that achieve (does not achieve) its target price within the 12-months period the level of over-achieving (partly fulfilling) the target price (see also Figure 3). Similar results are also displayed for the full sample. We compute the ratio as the maximum price P_{max} achieved within 12 months divided by the price target TP_t if the price target is above the current stock price P_t. In cases of the price target TP_t below the current stock price P_t, the ratio equals the price target divided by the minimum price P_{min} achieved within 12 months.

Panel A: Percentage of reports achieving 12 months target price (somewhen in the 12 months)						
		Target price achieved in:				
	TP achieved	1-3 months	4-6 months	7-9 months	10-12 months	N
All Recommendations	56.53%	33.47%	10.95%	6.53%	5.58%	950
Buy	45.60%	17.38%	11.51%	7.22%	9.48%	443
Hold	69.50%	50.75%	10.50%	5.50%	2.75%	400
Sell	53.27%	35.51%	10.28%	7.48%	0.00%	107
Panel B: 12-months price maximums (minimums) / predicted price targets						
	if TP missed	N	if TP achieved	N	Full Sample	N
All Recommendations	86.20%	413	141.96%	537	117.72%	950
Buy	83.42%	241	124.14%	202	101.99%	443
Hold	91.41%	122	147.73%	278	130.55%	400
Sell	86.90%	50	176.95%	57	134.87%	107

of achieving a particular target is highly dependent on the level of optimism. They disclose that price targets that forecast a change of 0-10% and 10-20% are achieved in 74.4% and 59.6% of the cases, whereas price targets that forecast a change of 70% or more are realized in fewer than 25% of the cases. Unreported results show that for those stocks that reach the target price forecast, achieving the target price forecast takes an average (mean) of 72 days. Sorting along the three categories, it takes stock prices of buy recommendations to reach their target prices an average of 109 days, whereas for hold (sell) recommendations it only takes 48 (55) days.

Column 1 of Panel B in Table 20 presents the average percentage level of price target achievement by 43.47% of the stocks that have not reached the forecasted target price within 12 months.[82] For those stocks that do not reach the forecasted target price, the maximum (minimum) stock price within the 12-months period is 86.20% of the forecasted price. Column 3 of Panel B in Table 20 presents the average percentage level of price target achievement by 56.53% of the stocks that have reached the forecasted target price within 12 months. For these stocks, the maximum (minimum) stock price within the 12-months

[82] Comparable to Asquith et al. (2005), we compute the ratio as the maximum price achieved within the 12-months period divided by the price target if the price target is above the current stock price. In cases of the price target being below the current stock price, the ratio equals the price target divided by the minimum price achieved within the 12-months period.

period overshoots the target price by 41.96%, i.e., for positive forecasts, a projected target price of 100 is associated with a stock price of 141.96 on average. Interestingly, when focusing on the full sample, the maximum (minimum) stock price overshoots target price forecasts by 17.72%. For the sample of buy recommendations, the forecasted target is overshot by 1.99% on average, whereas for the sample of sell recommendations, targets are overshot by remarkable 34.87% within the 12-months period. These findings are in line with results from Asquith et al. (2005) who report for all recommendations an overshooting of 13.09%. Whereas target prices of strong buy (buy) recommendations are overshot by 3.86% (17.47%), target prices of sell recommendations are overshot by 31.63%.[83] However, one has to keep in mind that these figures overstate the abilities of financial analysts, since they are not based on the target price achievement *after* exactly 12 months but show target prices relative to maximum (minimum) stock price *within* the 12-months period. In the following section, we therefore introduce a measure that evaluates target price accuracy after the usual time horizon of target prices, namely 12 months.

6.3 Methodology

6.3.1 Accuracy Measure

Studies have shown that capital markets react to published target prices (see, e.g., Brav and Lehavy, 2003; Asquith et al., 2005). Hence, based on the assumptions of the efficient market hypothesis, the disclosure of target prices seems to contain new and relevant information for financial markets. However, such a finding does not imply that target price forecasts are accurate from an ex-post perspective. Analysts might have limited incentives for primarily focusing on target price accuracy since bonuses depend on a whole set of performance variables - not necessarily on target price accuracy.[84] Bonini et al. (2007) additionally argue that target prices might be subject to biases since there is no explicit control of the forecast quality. Hence, analysts might use target prices strategically, e.g., in order to increase the sales hype of a stock (see, e.g., Asquith et al., 2005)[85]. Empirical evidence on over-optimism, although not for target prices, stems from analysts issuing earnings

[83] It would be interesting to analyze if these results depend on different market phases. However, comparing the prevailing market phase with the upcoming 12-months target price achievement might lead to biased results.

[84] Hong and Kubik (2003) state that analysts heavily focus on the annual polls of money managers conducted by the magazine *Institutional Investor*, since they are highly rewarded in the case of success. Bradshaw and Brown (2006) quote the career information page www.thevault.com: "Once a research analyst finds himself listed as an *II*-ranked analyst, the first stop is into his boss's office to renegotiate his annual package." However, within *Institutional Investor's* rankings, analysts are evaluated along the four dimensions stock picking ability, earnings forecasts accuracy, quality of written reports, and overall services. Target price accuracy is not part of this set. Cooper et al. (2001) and Bernhardt et al. (2004) show that published compensation schedules by banks include earnings forecast accuracy but not target price accuracy as a factor for setting analysts' salaries.

[85] To some extent this study takes the strategic use of target prices into account when controlling for conflicts of interest (see Section 6.4.2).

forecasts. Stickel (1990), Abarbanell (1991), Dreman and Berry (1995), and Chopra (1998) have shown that earnings forecasts are optimistically biased. Similarly, analysts tend to issue target prices that are strongly deviating from current stock prices in order to attract the attention of institutional investors. Such effects have been shown, e.g., for private investors by Barber and Odean (2006). However, missing the target price after 12 months could also have a negative impact on the analysts' reputation. Therefore, analysts always face the trade-off between setting a high target price potential for attracting institutional investors and not setting it too high for not disappointing investors (and risking their own reputation) since it might never be reached. Taking this into account, an ex-post analysis of target price accuracy seems useful for both, investors and investment banks which employ analysts.

With respect to analyzing target price achievement, both, Asquith et al. (2005) and Bradshaw and Brown (2006), compute binary variables for meeting (not meeting) the target prices within and/or at the end of the 12-months period. The study of Bonini et al. (2007) extends this approach and develops two different measures of target price accuracy. However, they do this from an investor-oriented perspective. Any over-achievement of a target price accounts as highly accurate, even in cases when the 12-months stock price strongly deviates from the forecasted target. This displays the perspective of investors who are willing to accept a deviation between 12-months stock prices and forecasted targets if this means an extra gain for them (in addition to what they already expected). However, we consider the correct measure for target price accuracy (at least in a narrow sense) to acknowledge exact and precise forecasts. If an analyst forecasts an increase in the stock price up to € 50, a 12-months stock price of € 49 is more precise (although it does not reach the forecasted price) compared to an over-achievement of the price target resulting in a 12-months stock price of € 60. The computation of the accuracy measure (AM) works as follows:

$$\begin{aligned} AM &= 1 - \overbrace{\left[\left(|\frac{P_{End}}{TP_t} - 1|\right)|TP_t > P_t; \left(|1 - \frac{P_{End}}{TP_t}|\right)|TP_t < P_t\right]}^{12-months\ deviation\ between\ TP\ and\ stock\ price} \\ &= 1 - \left[\left(|\frac{P_{End}}{TP_t} - 1|\right)\right] \end{aligned} \tag{6.1}$$

where TP_t is the target price forecast at the publication date t of the report, P_t is the current stock price at the publication date t of the report, and P_{End} is the stock price at the end of the 12-months period. Based on the mentioned example, either a stock price (at the end of the 12-months period) of € 45 or € 55 leads to a 10% deviation from the € 50 target price. Hence, any deviation from the price forecast will consequently lead to a reduction of accuracy. Within the mentioned example, this results in a target price accuracy of 90% based on the introduced accuracy measure. Only in case of a perfect match of the forecast and the 12-months stock price, the deviation would be 0% leading to a target price accuracy of 100%.

6.3.2 Determinants for Target Price Accuracy

Within the remainder of the text, we focus on the degree of accuracy measured by AM and, additionally, try to find explanations for different levels of target price accuracy (see Section 6.4). For such an analysis, we initially discuss important determinants that could explain target price accuracy. These potentially relevant determinants can be divided in two groups: (1) analyst-specific determinants and (2) firm-specific determinants. Further variables are introduced to evaluate whether conflicts of interests and reputation play an important role in terms of target price accuracy.

First, we focus on analyst-specific determinants. As mentioned before, analysts constantly face the trade-off between disclosing target prices that highly deviate from the current stock price in order to generate increased trading volume, and not setting them too high in order not to risk their own reputation since target prices which imply a high absolute value of implicit return are less likely to be achieved after 12 months. Hong and Kubik (2003) associate such behaviour with career concerns. After controlling for accuracy, they find that analysts who issue relatively optimistic forecasts are rewarded by better job opportunities in the future. Hence, it seems important to control for this optimism in analysts' forecasts. We therefore introduce a variable called POTENTIAL computed as the absolute value of the implicit return which is the target price forecast TP_t at the publication date t of the report divided by the current stock price P_t at the publication date t of the report minus one (see Panel A in Table 19). We hypothesize POTENTIAL to be negatively related to the accuracy measure AM (hence, lower accuracy), since a higher stock-specific potential will lead, on average, to target prices being less often achieved. Based on the results of Table 20, it is obvious that stock prices of hold recommendations achieve the forecasted prices more frequently and, on average, much faster. Not surprisingly, this is due to the lower deviation between target price forecast and current stock price. Bradshaw and Brown (2006) and Bonini et al. (2007) comparably use the implicit return as explanatory variable in their models.[86]

Furthermore, we hypothesize that increased information disclosure within the analysts' reports, also called informational depth, plays a significant role for target price accuracy. The informational depth of a report might be a proxy for the prudence an analyst applies when performing the task of analyzing a company. Hence, there is more informational disclosure in cases of a more accurate and detailed work by an analyst. We expect this to lead to a higher accuracy of the issued target prices in the long-run. We therefore model a variable called INFOMEASURE which aggregates the number of information categories (altogether 15, see Section 6.2.2) addressed in each report. Hence, this variable is theoretically distributed among [0, 15], i.e., zero for the case that none of the 15 information categories is addressed by the analyst in the body of the text, whereas 15 means that all of the 15 categories are addressed. For the sample, the mean of the INFOMEASURE variable is 3.20, its minimum 0 and its maximum 10. We hypothesize this variable to be positively related to the accuracy measure AM, i.e., a higher information disclosure

[86] Nevertheless, the variable POTENTIAL might be more appropriate since it only accounts for the absolute value of the deviation.

in the body of the text will increase the forecast accuracy, since analysts likely have put more detailed work in analyzing the company. Up to our knowledge, no other study yet focused on explaining accuracy of target price forecasts (or recommendations) by coding the informational content of the reports to proxy the level of detail an analyst applies.

Second, we concentrate on firm-specific variables to explain target price accuracy. As respective research concerning target price accuracy is absent, we have to borrow from the literature on earnings estimates to hypothesize the role of firm-specific factors. Shipper (1991) and Brown (1993) document that earnings accuracy is conditional on the size of the firm (i.e., analysts' earnings forecasts inaccuracies are lower for companies with large market capitalizations). Although the findings stem from earnings forecast studies, it might be fruitful to additionally take such measures representing the information environment of a firm into account when analyzing target price accuracy. We therefore focus on the specific firm size (measured for each company in a log form of market capitalization, i.e., LogMV, at the publication date t of the stock's report). For this variable, we hypothesize that 12-months price targets could be more easily forecasted for bigger stocks, resulting in a variable that is positively related to the accuracy measure AM. This could be due to the fact that for these stocks more information and more analyst coverage are publicly disclosed which reduces uncertainty. Similar results, although for the case of earnings forecast accuracy, have been found by Sinha et al. (1997) and Capstaff et al. (1999). They report that analysts' forecast errors are smaller for companies with large market capitalizations and for companies that are followed by a large number of analysts. Beckers et al. (2004) support these findings with respect to the number of analysts. Apart from size which has proven its importance (see, e.g., Banz, 1981; Stickel, 1995), the price-to-book value (PTBV) is another firm characteristic that mirrors the information environment of each firm. Comparable to market capitalization, we measure it for each company at the publication date t of the stock's report. One might hypothesize this variable to be negatively related to the accuracy measure since stock price patterns of growth stocks (i.e. stocks with high price-to-book values such as high-tech, biotech or internet stocks) are much more volatile and, therefore, not as likely to reach the forecasted target exactly compared to so-called value stocks.

A different strand of literature reports that earnings forecast accuracy decreases with increased earnings volatility (see, e.g., Huberts and Fuller, 1995; DeBondt and Forbes, 1999; Beckers et al., 2004). The authors explain this finding by assuming that earnings volatility is inversely related to earnings predictability. Beckers et al. (2004) proxy earnings volatility by using historical annualized daily stock return volatility during the one-year period preceding the earnings forecast. Following their line of arguments, a large proportion of the stock-specific risk results from the volatility of earnings. Analogously to earnings volatility being useful for explaining earnings forecasts, stock price volatility serves in explaining stock price forecasts. We therefore include historic volatility of daily stock returns in the model. The variable VOLATILITY is measured as the standard deviation of the stocks' daily return for the period [-180,-3].[87] We hypothesize this variable to be

[87] Apart from the period [-180,-3], we additionally performed all analyses of the chapter with VOLATILITY

negatively related to the accuracy measure, since higher volatility might be a proxy for higher risk, which makes it more difficult for analysts to accurately forecast the 12-months price.[88]

Additionally, the reputation of the bank could play a significant role with respect to forecast accuracy. Clement (1999) and Jacob et al. (1999) document that analysts who work for the largest and most prestigious banks issue more precise earnings forecasts. Assuming that there are differences between the banks themselves with respect to the quality of their analysts' reports, one might think that the most accurate reports might be published by distinguished, well-known banks. Following the *Institutional Investor's* All-European rankings, we compute for each bank the average number of employed top analysts (in terms of their listing in the *Institutional Investor's* All-European Research Team rankings) for the years 2002 to 2004. Hence, a dummy variable called TOP3BANK is introduced which is equal to one if the bank is one of the three banks with the highest average number of top analysts, and zero otherwise.[89] Panel D of Table 19 displays that these highly ranked banks write about every second report of our final sample (48.84%). We hypothesize highly reputable banks to issue more accurate target price forecast. Thus we expect the coefficient on TOP3BANK to be positive.

With respect to potential conflicts of interest, a relationship between the bank and the covered company itself could bias the accuracy of target prices. On the one hand, there is evidence that conflicts of interest lead to biased reports issued by analysts (see, e.g., Lin and McNichols, 1998; Michaely and Womack, 1999; and Dechow et al., 2000). On the other hand, there is research (see, e.g., Iskoz, 2003; Agrawal and Chen, 2004) that claims that analysts are not biased at all. Led by this relevant but still unresolved question, we focus on the probably biased relationship between target price forecast accuracy and conflicts of interest. As mentioned in Section 6.2.2, information on bank-firm relationships is only disclosed in 69.05% of our sample. In order to control for these potentially conflicting relations, we introduce a dummy variable called RELATIONSHIP which takes the value of one if the bank has either current holdings in the company or serves/has served as an underwriter for stocks of the covered company, and zero otherwise. In order to test for robustness, we model a second variable called UND_HLD which takes the value of one if the bank has either current holdings in the company or serves/has served as an underwriter for stocks of the covered company, which takes the value of two if the bank has both, current holdings in the company and serves/has served as an underwriter for stocks of the covered company, and which is equal to zero otherwise. If existing relations

measures based on the period [-120,-3] and [-60,-3]. Results are robust across the three different versions of defining volatility.

[88] Contrarily to the expected negative relation when explaining the forecast accuracy exactly *after* 12 months by volatility, the logic for explaining the amount of target price achievement *within* the 12-months period (see target price achievement by maximum/minimum prices within the 12-months period, Panel B of Table 20) would be the other way round. High volatility stocks would be more likely to reach the forecasted target price at least once within the 12-months period compared to low volatility stocks.

[89] Additionally, one might argue that apart from the bank-specific reputation it is also the analyst-specific reputation that is relevant for capital markets. However, most reports are written by analyst teams where it seems impossible to distinguish the effect of each analysts' individual reputation on capital markets.

between bank and covered firm lead to biased forecasts, we can expect these variables to be negatively related to the accuracy measure. The rationale behind this is that forecasts from analysts suffering from conflicts of interests might be less accurate since biased.

6.4 Results

6.4.1 Overall Target Price Accuracy

Table 21: Accuracy of target prices
This table presents results for the accuracy measure *AM*. In Panel A, we report results (median, mean, standard deviation, and number of observations) for all recommendations. In Panel B, we split up the sample according to the recommendation level (buy, hold or sell recommendation). In Panel C, the sample is split according to the implicit return being above or below zero. Panel B and Panel C additionally report differences of the mean and median of (i) buy versus sell recommendations and (ii) reports with a positive versus negative implicit return. To control for statistical significance of these differences, the *t*-test is used to test the equality of mean and the nonparametric Wilcoxon/Mann-Whitney test is used to test the equality of median.

		Median	**Mean**	**sd**	**N**
Panel A: Accuracy measure (AM) for all recommendations					
	All	73.64%	67.35%	0.26	950
Panel B: Accuracy measure (AM) based on recommendation levels					
	Buy recommendation	75.69%	69.71%	0.24	443
	Hold recommendation	76.12%	69.01%	0.25	400
	Sell recommendation	59.43%	51.37%	0.33	107
	Difference (Buy - Sell)	16.26%***	18.34%***		
	p-value	0.0000	0.0000		
Panel C: Accuracy measure (AM) based on implicit return					
	Implicit return > 0	77.15%	70.18%	0.24	722
	Implicit return < 0	64.62%	58.10%	0.31	225
	Difference (IR>0 - IR<0)	12.54%***	12.08%***		
	p-value	0.0000	0.0000		

Table 21 discloses detailed information on the accuracy measure *AM*. Within Panel A, the median accuracy level is displayed to be 73.64%. Unreported results show that for 9.2% of the sample, the amount of accuracy based on AM is between 95-100%, for 12.4% of the sample the accuracy level is between 90-95%, for 26.6% of the sample AM is between 75-90%, for 30.4% of the sample it is between 50-75%, and the remaining 21.4% of the sample displays an amount of accuracy of lesser than 50%. Within Panel B, we split up the sample according to the recommendation levels. Whereas buy recommendations have a median accuracy level of 75.69%, sell recommendations are more inaccurate with a median level of accuracy of 59.43%. The median difference of both groups of 16.26% is statistically significant (p=0.0000). Similar results can be drawn from Panel C where the sample is split according to the implicit return. Whereas the group of stocks with a

positive implicit return has a median accuracy level of 77.15% after 12 months, the accuracy of the group of stocks with a negative implicit return amounts up to 64.62%. Again, the median difference of both groups (12.54%) is statistically significant (p=0.0000). One can draw from this evidence that analysts are not equally successful in forecasting optimistic and pessimistic future outcomes. The results show that they do significantly better with respect to positive forecasts. Within the literature for earnings forecast accuracy such a phenomenon has been shown by Ali et al. (1992) and Butler and Saraoglu (1999). They find that a bias between earnings forecasts and realized earnings predominantly exists in cases of a negative earnings development. In the case of rising earnings, analysts deliver satisfactory forecasts.

Table 22: Determinants explaining the accuracy of target prices

This table reports robust regression results for multivariate model specifications on the accuracy measure *AM*. The regressions are performed for the total sample (column 1 and 2), for buy, hold, and sell recommendations (column 3 to 5), and, furthermore, for stocks that are associated with a positive and negative implicit return (IR>0, IR<0) by analysts (column 6 and 7). POTENTIAL is computed as the absolute value of the target price forecast TP_t at the publication date t of the report divided by the current stock price P_t at the publication date t of the report minus one. The model variable INFOMEASURE aggregates the number of information categories (altogether 15: expectations on revenues/sales, expectations on earnings/profits, outlook on revenues/sales, outlook on earnings/profits, product introduction, new project, cost (in)efficiencies, M&A activity, stock repurchase, industry climate, quality of management, international operations, competition, risk, and future business perspective) which are addressed in each report. It is therefore theoretically distributed among [0,15]. LogMV is the natural logarithm of the market capitalization of each stock, measured at the publication date t of the stock's report. PTBV is the price-to-book ratio of each stock, measured at the publication date t of the stock's report. VOLATILITY is the standard deviation of the stocks' daily return for the period [-180,-3]. BUY and SELL are dummy variables for reports where analysts classified the covered stocks as buy or sell recommendation. IR<0 is a dummy variable for reports where analysts forecasted a negative development of the stock price (negative implicit return). ***, **, * indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

	(1) *ALL*	(2) *ALL*	(3) *BUY*	(4) *HOLD*	(5) *SELL*	(6) *IR>0*	(7) *IR<0*
POTENTIAL	-0.0632**	-0.0689***	-0.1293***	0.0628	-0.4932*	-0.0610**	-0.8213***
	(-2.26)	(-2.67)	(-4.28)	(0.76)	(-1.84)	(-2.21)	(-4.31)
INFOMEASURE	0.0074*	0.0075*	0.0108*	0.0041	0.0013	0.0081*	0.0104
	(1.78)	(1.81)	(1.88)	(0.66)	(0.08)	(1.83)	(1.00)
LogMV	0.0256***	0.0259***	0.0141*	0.0393***	0.0160	0.0230***	0.0367***
	(5.32)	(5.36)	(1.82)	(5.97)	(0.88)	(4.17)	(3.43)
PTBV	-0.0083***	-0.0072**	-0.0174***	0.0010	0.0083	-0.0119***	0.0074
	(-2.69)	(-2.22)	(-4.32)	(0.21)	(0.68)	(-3.56)	(1.06)
VOLATILITY	-0.0571***	-0.0575***	-0.0389***	-0.0595***	-0.0970***	-0.0493***	-0.0659***
	(-6.18)	(-6.13)	(-2.85)	(-4.65)	(-3.71)	(-4.45)	(-4.01)
BUY	0.0278						
	(1.60)						
SELL	-0.1376***						
	(-4.39)						
IR<0		-0.1125***					
		(-5.34)					
Intercept	0.6281***	0.6500***	0.7364***	0.4934***	0.7519***	0.6589***	0.5213***
	(10.95)	(11.39)	(8.54)	(6.08)	(3.66)	(10.47)	(4.07)
adj. R^2	17.22%	17.08%	12.31%	16.64%	12.76%	12.80%	23.08%
N	950	950	443	400	107	722	225
Prob(F-test)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

The main objective within this chapter is to analyze the driving factors that might help to explain target price accuracy (see Table 22). Results could be interesting for both, institutional investors and investment banks at the same time. We therefore perform standard OLS regressions which employ robust standard errors as proposed by White (1980) in order to evaluate the impact of the analyst- and firm-specific determinants on target price accuracy. Since Table 21 has shown significant differences between forecast accuracy of stocks based on recommendation levels (or, alternatively, the implicit return) we add dummy variables for buy and sell recommendations (see column 1 of Table 22) when analyzing the total sample. Alternatively, within column 2, we use a dummy variable for reports which disclose an implicit return that is below zero. Results show that target price forecasts of negatively classified reports (as sell recommendations or, alternatively, as reports that are associated with a negative implicit return) are much less accurate compared to the remainder of the sample. Based on this finding, we consequently split up the sample and perform separate regressions for the sub-groups (see columns 3 to 7). For further analyses (see Section 6.4.2), we purely focus on the sub-group results.

First, we hypothesized that the POTENTIAL of a stock might play an important role. Those analysts that issue target prices that highly deviate from the current stock price might have, as main objective, the aim to raise attention for the specific stock. However, in terms of forecast accuracy, they might do a worse job. Such a rationale can be supported by our results. The coefficient of the variable POTENTIAL is significantly negative, as predicted, for all regressions with the exception of the sub-group of stocks that are classified as hold recommendations. Hence, for all stocks where analysts issued forecasts that highly deviate from the current stock price, forecast accuracy decreases. Only when this deviation is low (which is the case for the group of hold recommendations, see Panel A of Table 19), it has no impact on accuracy. This result is in line with the literature. Asquith et al. (2005) find that the probability of achieving a price target is particularly depending on the deviation or, as they put it, optimism exhibited by the analyst. Bradshaw and Brown (2006) state that analyst target price performance is worse the higher is the forecasted price relative to the current stock price. At the same time, they show that target prices are less often reached at the end (within) the 12-months period when one focuses only on those stocks that have the highest potential. For this quintile of reports, they display that the target price forecast error is by far the highest. Similar evidence based on earnings forecasts is given by LaPorta (1996). Whereas earnings for stocks with low earnings growth forecasts are very close to their expected value, earnings for stocks with high earnings growth forecasts highly deviate from their forecasts.

The second analyst-specific variable is the informational depth of each report. The variable INFOMEASURE is added to each of the regressions as a proxy to evaluate whether carefully prepared reports lead to higher accuracy of price forecasts. Although our hypothesis is confirmed for the total sample (see columnn 1 and 2 of Table 22) and for those reports that are positively classified (as buy recommendation or, alternatively, as recommendation associated with a positive implicit return), results for the variable INFOMEASURE are only significant under the 10% significance level. Hence, the informational depth of each report which proxies the level of prudence an analyst exercises when performing the task

of analyzing a company seems to have only weak explanatory power for the level of target price accuracy. These results are suppored by Breton and Taffler (2001) who document that text-based information, e.g., about the firm's management, strategy and its trading environment, is important for arriving at investment recommendations. However, it remains still unanswered why the amount of information-disclosure seems to be only important within the positively classified cases. The literature on earnings forecast accuracy (see, e.g., Ali et al., 1992; Butler and Saraoglu, 1999) reports that a bias between earnings forecasts and realized earnings predominantly exists in cases of a negative earnings development. Since analysts only reluctantly issue negative information, each forecast of a decreasing stock price is a strong sign for an overvalued company. As visible in the tables, when stock prices are forecasted to depreciate significantly, target price accuracy does not depend on the soft-information such as the amount of information disclosure. The recommendation itself predominates. On the contrary, in cases of positive recommendations, which are quite commonly issued by analysts, further disclosure of soft-information is relevant, since the recommendation level itself does not provide such strong information. These findings are supported by the results presented in Table 21. Target price accuracy is much lower for companies with a negative forecast.

Apart from the analyst-specific variables, we added a set of firm-specific variables (LogMV, PTBV, VOLATILITY) to analyze whether the information environment of the firm has a significant impact on target price accuracy. Differences in target price accuracy might not only be traceable to analyst-specific features and differences but also to indirect effects based on differences in the information environment of a firm (see, e.g., Stickel, 1995), e.g., a generally higher information-level for big companies that are followed by multiple analysts. In line with the literature (see, e.g., Sinha et al., 1997; Capstaff et al., 1999) the coefficient of LogMV is significant for all regressions (with the exception of sell recommendations). Results support the hypothesis that 12-months target prices of bigger firms with higher informational disclosure are easier to forecast. A higher informational disclosure based on a higher level of analyst coverage reduces forecast uncertainty. With respect to the price-to-book value, the coefficients are significantly negative for the total sample (column 1 and 2) and for positively classified reports (column 3 and 6). As predicted, stocks with a higher price-to-book value, i.e., glamour stocks like biotech and internet stocks, reveal to be associated with lower forecast accuracy. Last, results show strong evidence that VOLATILITY plays an important role in explaining target price forecast accuracy. All regressions throughout all sub-groups display significantly negative coefficients.[90] As hypothesized, exactly forecasting the price of a stock with a higher volatility is not as easy as for stocks with lower volatility.

[90] Results on VOLATILITY are also virtually identical for different computations based on the period [-120,-3] and [-60,-3] apart from the standard period [-180,-3].

6.4.2 The Effect of Bank Reputation and Conflicts of Interest

Market participants mainly pay indirectly for the research provided by investment banks. Shipper (1991) states that analysts' research reports and recommendations are often part of a group of bundled investment banking services. Hence, investors should be interested in evaluating the analysts' role as financial intermediaries. Having an adequate knowledge about the most successful analysts (for example in terms of target price accuracy), would allow them to focus more on their valuable advice. However, recent studies have concentrated mainly on analyzing earnings forecast accuracy. Stickel (1992), for example, finds that *Institutional Investor's* All-American analysts' earnings forecasts are more accurate than forecast that are issued by other analysts. Furthermore, the forecasts by All-American analysts also trigger a more significant market reaction. Clement (1999) reports forecast accuracy to be positively associated with analysts' experience and their employers' size. Jacob et al. (1999) also examine the contribution of experience and brokerage house variables on analysts' earnings forecast accuracy. They find that the employer size and the brokerage house's degree of industry specialization are positively related to the earnings forecast accuracy. Unlike Clement (1999), they do not find that earnings forecast accuracy improves with larger experience. However, bank reputation has only been analyzed with respect to earnings forecasts accuracy, not with respect to target price forecast accuracy. Therefore, we extend the literature on this issue.

Table 23: Determinants explaining the accuracy of target prices including reputation of issuing bank

This table reports robust regression results for multivariate model specifications on the accuracy measure *AM*. The regressions are performed for buy, hold, and sell recommendations, and, furthermore, for stocks that are associated with a positive and negative implicit return by analysts (IR>0, IR<0). POTENTIAL is computed as the absolute value of the target price forecast TP_t at the publication date t of the report divided by the current stock price P_t at the publication date t of the report minus one. The model variable INFOMEASURE aggregates the number of information categories which are addressed in each report. It is therefore theoretically distributed among [0,15]. LogMV is the natural logarithm of the market capitalization of each stock, measured at the publication date t of the stock's report. PTBV is the price-to-book ratio of each stock, measured at the publication date t of the stock's report. VOLATILITY is the standard deviation of the stocks' daily return for the period [-180,-3]. TOP3BANK is equal to one if the bank is one of the three banks with the highest average number of top analysts (following the *Institutional Investor's* All-European rankings for the years 2002 to 2004), and zero otherwise. ***, **, * indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

	BUY	*HOLD*	*SELL*	*IR>0*	*IR<0*
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
POTENTIAL	-0.1241***	0.0626	-0.4821*	-0.0554**	-0.8182***
	(-4.09)	(0.76)	(-1.77)	(-2.01)	(-4.29)
INFOMEASURE	0.0082	0.0042	0.0009	0.0066	0.0105
	(1.38)	(0.68)	(0.05)	(1.47)	(1.01)
LogMV	0.0167**	0.0390***	0.0148	0.0254***	0.0366***
	(2.16)	(5.77)	(0.75)	(4.55)	(3.38)
PTBV	-0.0180***	0.0011	0.0074	-0.0124***	0.0074
	(-4.48)	(0.23)	(0.62)	(-3.68)	(1.06)
VOLATILITY	-0.0369***	-0.0596***	-0.0975***	-0.0482***	-0.0662***
	(-2.63)	(-4.65)	(-3.66)	(-4.36)	(-4.02)
TOP3BANK	0.0521**	-0.0067	-0.0172	0.0444***	-0.0090
	(2.39)	(-0.28)	(-0.26)	(2.58)	(-0.25)
Intercept	0.6953***	0.4991***	0.7717***	0.6199***	0.5279***
	(7.96)	(5.89)	(3.33)	(9.53)	(3.97)
adj. R^2	13.00%	16.23%	10.96%	13.36%	22.37%
N	443	400	107	722	225
Prob(F-test)	0.0000	0.0000	0.0001	0.0000	0.0000

Table 23 displays results when adding the variable TOP3BANK to the regressions which is a dummy variable for reports issued by the three most prestigious banks which employ the highest number of highly reputable analysts (see Section 6.3.2). The coefficients on all basic model variables (POTENTIAL, LogMV, PTBV and VOLATILITY) are in accordance with the results in Table 22. Also in line with prior results, INFOMEASURE is positively related to the accuracy measure (although insignificant within this specification). The dummy variable TOP3BANK is only statistically significant for the positive sub-groups (the group of buy recommendations and the group of stocks with a positive implicit return). For these groups, TOP3BANK coefficients are significantly positive. Hence, it seems as if in cases of a positive forecast, highly reputable banks (following the *Institutional Investor's* All-European Ranking) issue price target forecasts that are more accurate after 12 months, a result which is in line with findings of cited studies on earning forecast

accuracy. Again it seems as if the driving forces which explain target price accuracy for optimistic forecasts cannot be transferred to explain the mechanism for target price forecast accuracy in cases of pessimistic forecasts (a result which is also visible within the variable INFOMEASURE, see Section 6.4.1).

Furthermore, economic research is currently interested in analyzing probably biasing relations between the bank and the covered companies. Due to the investment banks' general motivation to secure future investment banking deals, analysts are assumed to be influenced by conflicts of interest when tracking and analyzing stocks. On the one hand, it is a fact that the overall number of stocks which are recommended for purchase heavily outweighs the number of stocks recommended for sale - a sign that analysts aim to please the covered companies or to attract investors. A number of studies finds that conflicts of interests bias analysts' work (see, e.g., Lin and McNichols, 1998; Michaely and Womack, 1999; and Dechow et al., 2000). In particular, the studies document that affiliated analysts issue more favourable reports compared to their non-affiliated colleagues. This evidence is supported by Dugar and Nathan (1995) who find that financial analysts of brokerage houses that provide investment banking services for a company are more optimistic with respect to recommendations and earnings forecasts compared to those analysts that do not provide any service. Evidence that analysts tend to manipulate their investment recommendations in a response to pressure from investment banking is documented by Bradshaw et al. (2003). On the other hand, another strand of literature finds quite the reverse concerning conflicts of interest and, thus, exculpates analysts. Iskoz (2003) and Agrawal and Chen (2004), e.g., provide evidence that affiliated analysts do not seem to issue more biased reports than analysts from independent research firms. Cowen et al. (2006) even find that analysts employed by banks which fund research through underwriter and trading activities issued less optimistic forecasts and recommendations as opposed to banks which do not perform M&A services at all. In order to measure whether potential conflicts of interest impact target price accuracy we extend the basic model of Section 6.4.1. However, it should be noted that the sample is significantly reduced when looking at possible conflicting interests. This is due to a reduced disclosure of this type of information within analysts' reports (see Panel C of Table 19 which reports that only 69.05% of the reports disclose this type of information).

Table 24: Determinants explaining the accuracy of target prices including conflicts of interests

This table reports robust regression results for multivariate model specifications on the accuracy measure *AM*. The regressions are performed for buy, hold, and sell recommendations, and, furthermore, for stocks that are associated with a positive and negative implicit return by analysts (IR>0, IR<0). POTENTIAL is computed as the absolute value of the target price forecast TP_t at the publication date t of the report divided by the current stock price P_t at the publication date t of the report minus one. The model variable INFOMEASURE aggregates the number of information categories which are addressed in each report. It is therefore theoretically distributed among [0,15]. LogMV is the natural logarithm of the market capitalization of each stock, measured at the publication date t of the stock's report. PTBV is the price-to-book ratio of each stock, measured at the publication date t of the stock's report. VOLATILITY is the standard deviation of the stocks' daily return for the period [-180,-3]. RELATIONSHIP takes the value of one if the bank has either current holdings in the company or serves/has served as an underwriter for stocks of the covered company, zero otherwise. UND_HLD takes the value of one if the bank has either current holdings in the company or serves/has served as an underwriter for stocks of the covered company, which takes the value of two if the bank has both current holdings in the company and serves/has served as an underwriter for stocks of the covered company, and which is equal to zero otherwise. ***, **, * indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

	BUY	*HOLD*	*SELL*	*IR>0*	*IR<0*
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
Panel A: Conflict of interest - relation at all					
POTENTIAL	-0.1162***	0.0649	-0.9621**	-0.0231	-1.0158***
	(-3.14)	(0.70)	(-2.14)	(-0.64)	(-3.84)
INFOMEASURE	0.0051	0.0019	0.0159	0.0067	0.0118
	(0.81)	(0.29)	(0.67)	(1.40)	(1.02)
LogMV	0.0292***	0.0387***	0.0272	0.0327***	0.0338***
	(3.46)	(5.56)	(1.14)	(5.48)	(3.03)
PTBV	-0.0134**	0.0010	0.0393	-0.0056	0.0092
	(-2.47)	(0.20)	(1.05)	(-1.28)	(0.99)
VOLATILITY	-0.0142	-0.0703***	-0.0796	-0.0401***	-0.0697***
	(-0.96)	(-4.31)	(-1.62)	(-2.89)	(-3.37)
RELATIONSHIP	-0.0018	0.0288	0.0337	0.0009	0.0517
	(-0.08)	(1.05)	(0.35)	(0.05)	(1.08)
Intercept	0.6180***	0.5270***	0.5628*	0.5792***	0.5417***
	(6.07)	(6.07)	(1.77)	(8.05)	(3.99)
adj. R^2	13.12%	17.98%	11.14%	13.13%	25.75%
N	285	300	71	483	170
Prob(F-test)	0.0000	0.0000	0.0013	0.0000	0.0000
Panel B: Conflict of interest - underwriting/holding relation					
POTENTIAL	-0.1163***	0.0665	-0.9259**	-0.0230	-1.0116***
	(-3.13)	(0.71)	(-2.02)	(-0.63)	(-3.72)
INFOMEASURE	0.0052	0.0020	0.0155	0.0067	0.0124
	(0.83)	(0.30)	(0.66)	(1.40)	(1.07)
LogMV	0.0293***	0.0390***	0.0306	0.0328***	0.0359***
	(3.47)	(5.60)	(1.24)	(5.49)	(3.18)

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	BUY	*HOLD*	*SELL*	*IR>0*	*IR<0*
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
PTBV	-0.0133**	0.0006	0.0336	-0.0056	0.0074
	(-2.44)	(0.12)	(0.93)	(-1.28)	(0.85)
VOLATILITY	-0.0146	-0.0706***	-0.0800*	-0.0402***	-0.0700***
	(-0.98)	(-4.35)	(-1.65)	(-2.90)	(-3.41)
UND_HLD	-0.0060	0.0131	0.0037	-0.0008	0.0218
	(-0.44)	(0.89)	(0.07)	(-0.07)	(0.82)
Intercept	0.6218***	0.5305***	0.5579*	0.5802***	0.5378***
	(6.07)	(6.18)	(1.74)	(8.09)	(3.93)
adj. R^2	13.18%	17.86%	10.97%	13.13%	25.46%
N	285	300	71	483	170
Prob(F-test)	0.0000	0.0000	0.0008	0.0000	0.0000

Within Panel A of Table 24 we proxy the relationship between the bank and the covered company by including the variable RELATIONSHIP. Within Panel B, UND_HLD is included which not only proxies for underwriting *or* holding relationships but puts special weight on those reports that disclose both, an underwriting *and* a holding relation. Results show that coefficients for the variable RELATIONSHIP (Panel A) are all insignificant across the different regressions. A similar result holds when including UND_HLD instead of RELATIONSHIP (see Panel B). Hence, results show that the type of relationship between the investment bank and the covered company does not seem to have an influence on the level of the accuracy of price targets. Such results are important for investors since they might have feared that conflicted analysts issue price forecasts that are not as accurate as independent research would be. Dugar and Nathan (1995) similarly find that earnings forecasts issued by affiliated analysts are as accurate as earnings forecasts issued by non-affiliated analysts.

6.5 Discussion and Concluding Remarks

Sell-side analysts perform an important task within financial markets since they act as intermediaries that interpret financial information like accounting data for investors. As part of their job they make recommendations about stocks and issue earnings and target price forecasts. Apart from all further details which are disclosed within their reports, financial research has shown that these 'summary measures' contain new and relevant information for investors and financial markets (see, e.g., Stickel, 1995; Francis and Soffer, 1997; Brav and Lehavy, 2003; and Asquith et al., 2005). However, analysts seem to be subject to various biases when performing their task of covering companies in order to write financial reports. A huge part of the literature addresses the phenomenon of overly optimistic analysts. Some authors argue that analysts might issue biased recommendations since they

aim to enhance the existing investment banking relations between their bank and the covered company (see, e.g., Lin and McNichols, 1998; Francis and Philbrick, 1993). Others state that analysts aim to generate further underwriting business and trading commissions via their firm-specific disclosures (see, e.g., Hayes, 1998; Hong and Kubik, 2003). Referring to the disclosure of target prices, Asquith et al. (2005) wonder whether they are meant to increase the sales hype of a stock or to compensate for overly optimistic reports.

Since investment banks heavily invest in their research departments, they are interested in measuring and evaluating the performance of their analysts. A whole strand of literature evolved that analyzes the accuracy of earnings forecasts. Loh and Mian (2006) and Ertimur et al. (2007), e.g., found that analysts who issue more accurate earnings forecasts also issue more profitable recommendations (levels). At the same time, earnings forecast accuracy seems to be relevant with respect to determine analysts' bonuses. This is due to the fact that an important aspect of analysts' compensations is their performance in the well-known yearly ranking of All-American analysts issued by *Institutional Investor*. This ranking takes earnings forecast accuracy explicitly into account. However, since data on target prices has only recently been included into standard databases, target prices, their impact on financial markets, and their accuracy have not been analyzed with similar thoroughness. Two seminal papers (see Brav and Lehavy, 2003; Asquith et al., 2005) have shown that target prices contain relevant information for capital markets, even conditionally on other information that is issued in the form of, e.g., earnings price forecasts. With respect to the question of target price accuracy, evidence is still evolving with a number of working papers (see, e.g., Bonini et al., 2007; Bradshaw and Brown, 2006; and Gleason et al., 2007).

We contribute to the literature by analyzing target price accuracy in the German capital market. Contrary to Bonini et al. (2007) who take an investor-oriented perspective where any over-achievement of forecasts is positively acknowledged by their model since investors will benefit, we define target price accuracy in terms of exactly matching a forecasted price. Such a measure evaluates the forecasting ability of analysts. Results show that, generally, the target price accuracy level after 12 months amounts to 73.64%. Splitting the sample according to the recommendation levels shows that for buy recommendations it is 75.69%, whereas it decreases for sell recommendations to 59.43%. However, the main focus of this study is to distinguish the driving forces of price target accuracy. First, we focus on analyst-specific variables such as the absolute value of the deviation between the target price and the current price and the amount of informational disclosure within the text. In line with the literature (see, e.g., Asquith et al., 2005; Bonini et al., 2007; and Bradshaw and Brown, 2006), forecasts that are largely deviating from the current stock price are likely to be not as accurate as forecasts which are close by. With respect to the disclosure of text-based information, this study provides weak evidence that the level of target price accuracy can be explained by the amount of information that is disclosed within reports. This text-based informational disclosure is assumed to proxy the prudence that an analyst applies when performing the task of covering a company within his reports. Our results show that within the sub-groups of stocks that are recommended for purchase (or, alternatively, that are attributed a positive implicit return) a higher level of disclosed information increases the level of forecast accuracy. Hence, the amount of text-based information seems to proxy the

detail that analysts apply for their task. Although such information has not been taken before to explain target prices accuracy, economic research has realized that text-based non-financial information seems to add explanatory power in various contexts. Bradshaw (2002) examines the frequency with which analysts supplement their recommendations or target prices with non-financial information such as recent accounting irregularities, court decisions, new contracts, or general macroeconomic conditions. They find that such information is often used when the stock recommendation itself is less favourable. Amir and Lev (1996) analyze the relevance of financial and non-financial information for explaining stock market reactions within the telecommunication sector and find that non-financial text-based information such as growth proxies and market penetration measures are highly value-relevant. Similarly, Asquith et al. (2005) report that markets react to the disclosure of non-financial text-based information - a result that is comparable to our results from Chapter 5. Barker (1999) analyzes different valuation models and states that these models are only a "point of departure" beyond which analysts explore subjective company-specific information (such as the quality of management) to arrive at their conclusions. Breton and Taffler (2001) figure out that text-based information, e.g., information on the firm's management, strategy, and its trading environment, is important for drawing investment recommendations.

When it comes to the analysis of firm-specific variables to explain target price accuracy, we find, very much in line with the literature on earnings forecast accuracy (see, e.g., Brown, 1993; Sinha et al., 1997; and Capstaff et al., 1999), that target price forecast accuracy is higher for bigger firms (in terms of market capitalization). For these firms, informational disclosure is higher since a higher number of analysts regularly covers these companies, thus reducing forecast uncertainty. A second important result stems from including volatility in our model to explain target price accuracy. Results show that stocks which are highly volatile are much harder to forecast accurately compared to low volatile stocks. Although such findings have not been made for the analysis of target price accuracy, the economic literature reports similar results with respect to earnings forecast accuracy, which decreases with increasing earnings volatility (see, e.g., Huberts and Fuller, 1995; DeBondt and Forbes, 1999; and Beckers et al., 2004). Beckers et al. (2004) explicitly proxy earnings volatility by historical stock return volatility.

Last, we apply the ongoing discussion about analysts' reputation and conflicts of interest to our basic analysis of target price accuracy. With respect to the reputation of analysts, results reveal that, in line with studies focusing on earnings forecast accuracy (see, e.g., Brown and Chen, 1991; Stickel, 1992), highly reputable banks issue target prices that are more accurate. Similarly to the results of the text-based information disclosure, this result only holds for all buy recommendations or, alternatively, recommendations that are attributed a positive implicit return. Studies like Ali et al. (1992) or Butler and Saraoglu (1999) report that a bias between earnings forecasts and realized earnings predominantly exists in cases of a negative earnings development. Hence, neither highly-reputable analysts nor analysts that disclose a huge amount of text-based information can do better compared to the average analyst when negative forecasts are issued. It would be up to further research to connect these findings to Easterwood and Nutt (1999) who find that analysts underreact

to negative information but overreact to positive information. Finally, results show that the level of accuracy does not depend on potentially existing conflicts of interest between the investment bank and the covered company. Within the literature, there is mixed evidence on the question whether affiliated analysts are more biased compared to non-affiliated analysts. Therefore we add an important result since irrespectively of a potential bias, analysts' performance while issuing target price forecasts seems to be unbiased by such influences like conflicts of interests.

7 Conclusion

Both, private and institutional investors, can choose among thousands of different investment alternatives for investing their funds. However, they might not always have the time and knowledge to perform the task of asset selection themselves. Therefore, it is common practice to consult specialized financial experts such as journalists working for *Personal Finance Magazines* and analysts working for brokerage houses or investment banks to provide valuable information. On the one hand, journalists regularly publish financial advice such as buy and sell recommendations of stocks within the weekly magazines which are cheaply available to a huge range of customers. On the other hand, financial analysts who are part of market research teams employed by investment banks regularly publish financial reports on the stocks they cover. Within these company-specific reports, they disclose various forecasts (e.g., earnings and target price forecasts), interpretations, and, most often, text-based justifications for their views. Such information is meant to support the asset selection process of institutional investors.

Due to the economic significance and, at the same time, public interest in financial research, it is the aim of this work to analyze some selected issues related to financial experts and the impact of their advice on capital markets. In the first part, namely Chapter 2 to 4, we concentrated on the analysis of stock recommendations published by journalists. In this context, we answered four basic questions. First, we focused on the question whether markets react in the short-run to the disclosure of journalists' recommendations. We found that recommendations issued by journalists working for *PFMs* lead to short-run market reactions. Additionally, the disclosure of recommendations leads to excess volumes. Market participants seem to associate new and relevant information with such disclosures. Second, we analyzed whether such a market reaction is based on naïve buying-pressure by private investors, or whether it is based on a fundamental revaluation of the stock due to new and valuable information. With respect to this question, we showed

that the reaction is only partly based on new and relevant information which leads to a fundamental revaluation of the stock. The other part of the reaction is merely based on naïve buying-pressure by private investors leading to a temporary reaction. Third, the question whether recommendations outperform passive benchmarks in the long-run was answered. The results showed that only sell recommendations outperform passive benchmarks in the long-run. Buy recommendations issued by journalists do not lead to significant abnormal returns on average, a result which is in line with the literature on financial analysts and their long-run performance. Forth, we evaluated how journalists decide which stocks they recommend. With respect to this last question, we found that journalists are prone to primarily focussing on stocks which attract their attention by unusually frequent news disclosure, extraordinary past performance, and excessive trading volumes. Additionally, they tend to recommend the same stocks over and over again.

In the second part of this work, namely Chapter 5 and 6, we focused on the analysis of some selected issues concerning the publication of financial reports by analysts working for investment banks. In this context, we first focused on the question whether markets react to the disclosure of text-based justifications conditional on the standard 'summary measures' such as recommendations, earnings, and target price forecasts. The analyses based on the first question showed that markets react to information which is included in the text of analysts' reports, even conditional on all other information sources such as recommendation (changes), earnings forecast (revisions), and target price (revisions). And, second, we evaluated target price accuracy and, additionally, focused on factors that determine their accuracy. With respect to this question, the level of target price accuracy is much lower for sell recommendations compared to buy recommendations. Furthermore, we revealed that factors such as overconfidence, detail of analysis (analyst-specific factors), size, and volatility (firm-specific factors) are relevant for explaining the accuracy of target prices. Since this dataset is not available through standard providers such as *Thomson Financial*, we found new and unpublished evidence.

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