Target Price Accuracy

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Abstract. This study analyzes the accuracy of forecasted target prices which are disclosed by leading investment banks within their analysts' reports on German stocks for the period from 2002 to 2004. We compute a measure for target price forecast accuracy that evaluates the ability of analysts to exactly forecast the ex-ante (unknown) 12-months stock price. Overall, the target price forecasting accuracy is 73.64%. Our main contribution is to determine factors that explain this target price accuracy. When focusing on analyst-specific differences, target price forecasts that highly deviate from current stock prices (since analysts are overly optimistic) are, ex-post, less accurate. On the contrary, target price forecasts issued by analysts who also provide a detailed rationale in their report are marginally more accurate compared to less thoroughly researched reports. With respect to firm-specific factors, analysts are more successful in forecasting 12-months stock prices for large companies. However, analysts do worse when forecasting target prices for highly volatile and risky stocks. Finally, we show that analysts working for highly reputable banks are more successful when issuing positive target price forecasts compared to the average analyst. Potential conflicts of interests between analyst and covered company, however, do not bias forecast accuracy.

Keywords: *Target Prices*, *Forecast Accuracy, Financial Reports, Security Analysis*

JEL Classification: *G14; G15*

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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.[1] 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 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, Kerl and Walter (2008) find similar evidence concerning the importance of target prices for capital markets. Within reports from the *Investext* database, they 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

[1] 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.

downgrade a recommendation (e.g., from hold to sell) also downgrade the target price forecast by –8.9%. Based on their regression model, they find that target prices add information in excess to the general 'summary measures' as, e.g., recommendation and earnings forecast revisions. However, the authors 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.[2] 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[3]). 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 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

[2] 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.

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

highly-ranked analysts and a focus on both, bull and bear markets.[4] 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 paper 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.[5] 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%[6] after 12 months (see also Table III). 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 II). 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%.

[4] 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.

[5] 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.

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

For the remaining reports, where the target prices are not reached within 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[7]) 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 paper is structured as follows. Section 2 describes the sample selection process alongside with descriptive statistics. Section 3 introduces the used measure to compute target price accuracy and discusses its potential determinants. Section 4 displays results before Section 5 concludes.

2 Database

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

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

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 investigation period. Banks only show up in this ranking in case of employing analysts that are part of the *Institutional Investor* All-European Research Team.[8] 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.[9] 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.

2.2 Summary statistics

[Insert Table I about here]

Table I presents summary statistics for the 1,000 randomly selected reports, organized according to the three recommendation levels (buy, hold, and sell recommendations[10]) and, additionally, for the total sample. Since analyzing the target price accuracy requires each

[8] 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.

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

[10] 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).

report to contain a target price, our final sample contains 950 reports.[11] 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; and 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[12] relative to its current stock price minus one (see Panel A in Table I). 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%. 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.

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 I 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.

[11] 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 1st and 99th percentile). This is done to reduce possible outlier effects (see also Section 3.1).

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

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 I). 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 I 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 I. 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 1 for an illustration of target price under- and overachievement). For the remaining 225[13] 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 1).

[Insert Figure 1 about here]

The percentage of stocks that achieve their target price forecast is presented in Panel A of Table II. 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

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

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 I) compared to buy (sell) recommendations with 35.42% (-12.96%). Asquith et al. (2005) report that the probability 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.

[Insert Table II about here]

Column 1 of Panel B in Table II 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.[14] 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 II 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 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%. However, one has to keep in mind that these figures overstate the abilities of financial analysts, since they are not based on

[14] 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.

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.

3 Methodology

3.1 Accuracy measure

Studies have shown that capital markets react to published target prices (see, e.g., Brav and Lehavy, 2003; and 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.[15] 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). Empirical evidence on over-optimism, although not for target prices, stems from analysts issuing earnings 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.

[15] 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.

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 works as follows:

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

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%.

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 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 I). 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 II, 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.[16]

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 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

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

maximum 10. We hypothesize this variable to be positively related to the accuracy measure *AM*, i.e., a higher information disclosure 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 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, and 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; and 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].[17] We hypothesize this variable to be 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.[18]

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.[19] Panel D of Table I 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

[17] Apart from the period [-180,-3], we additionally performed all analyses of the paper with VOLATILITY measures based on the period [-120,-3] and [-60,-3]. Results are robust across the three different versions of defining volatility.

[18] 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 II) 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.

[19] 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.

McNichols, 1998; Michaely and Womack, 1999; and Dechow et al., 2000). On the other hand, there is research (see, e.g., Iskoz, 2003; and 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 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 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.

4 Results

4.1 Overall target price accuracy

[Insert Table III about here]

Table III 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.

[Insert Table IV about here]

The main objective within this paper is to analyze the driving factors that might help to explain target price accuracy (see Table IV). 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 III 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 III) when analyzing the total sample. Alternatively, within column 2, we use a dummy variable for reports which disclose an implicit return 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 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 I), 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 column 1 and 2 of Table IV) 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 supported 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; and 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 III. 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; and 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.[20] As hypothesized, exactly forecasting the price of a stock with a higher volatility is not as easy as for stocks with lower volatility.

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

[20] 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].

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.

[Insert Table V about here]

Table V 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 3.2). The coefficients on all basic model variables (POTENTIAL, LogMV, PTBV and VOLATILITY) are in accordance with the results in Table IV. 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 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., studies like 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 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 I which reports that only 69.05% of the reports disclose this type of information).

[Insert Table VI about here]

Within Panel A of Table VI 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.

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; and 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; and 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; and 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) and Kerl and Walter (2008) report that markets react to the disclosure of non-financial

text-based information. 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; and 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.

6 References

Abarbanell, J. S. (1991) Do analysts' earnings forecasts incorporate information in prior stock price changes?, *Journal of Accounting and Economics* **14**, 147-165.

Abdel-Khalik, A. and Ajinkya, B. (1982) Returns to Informational Advantages: The Case of Analysts' Forecast revisions, *The Accounting Review* **57**, 661-680.

Agrawal, A. and Chen, M. A. (2004) Analyst Conflicts and Research Quality, *working paper.*

Ali, A., Klein, A. and Rosenfeld, J. (1992) Analysts' Use of Information about Permanent and Transitory Earnings Components in Forecasting Annual EPS, *The Accounting Review* **67**, 183-198.

Amir, E. and Lev, B. (1996) Value-relevance of nonfinancial information: The wireless communication industry, *Journal of Accounting and Economics* **22**, 3-30.

Asquith, P., Mikhail, M. B., and Au, A. S. (2005) Information Content of Equity Analyst Reports, *Journal of Financial Economics* **75**, 245-282.

Bandyopadhyay, Brown and Richardson (1995) Analysts' Use of Earnings Forecasts in Predicting Stock Returns: Forecast Horizon Effects, *International Journal of Forecasting* **11**, 429-445.

Banz, R. W. (1981) The relationship between return and market value of common stocks, *Journal of Financial Economics* **9**, 3-18.

Barber, B. M. and Odean, T. (2006) All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors, forthcoming in *Review of Financial Studies.*

Barber, B., Lehavy, R., McNichols, M., and Trueman, B. (2001) Can Investors Profit From the Prophets? Security Analyst Recommendations and Stock Returns, *Journal of Finance* **56**, 531-563.

Barker, R. G. (1999) The role of dividends in valuation models used by analysts and fund managers, *The European Accounting Review* **8**, 195-218.

Beckers, S., Steliaros, M. and Thomson, A. (2004) Bias in European Analysts' Earnings Forecasts, *Financial Analysts Journal* **60**, 74-85.

Bernhardt, D., Campello, M. and Kutsoati, E. (2004) Analyst Compensation and Forecast Bias, *working paper* no. 99-09, Tufts University

Bonini, S., Zanetti, L. and Bianchini, R. (2007) Target Price Accuracy in Equity Research, *working paper*.

Bradley, D. J., Jordan, B. D., and Ritter, J. R. (2003) The Quiet Period Goes out with a Bang, *Journal of Finance* **58**, 1-36.

Bradshaw, M. T. (2002) The Use of Target Prices to Justify Sell-Side Analysts' Stock Recommendations, *Accounting Horizons* **16**, 27-41.

Bradshaw, M. T. and Brown, L. D. (2006) Do Sell-Side Analysts Exhibit Differential Target Price Forecasting Ability?, *working paper*.

Bradshaw, M. T., Richardson, S. A., and Sloan, R. G. (2003) Pump and Dump: An Empirical Analysis of the Relation between Corporate Financing Activities and Sell-side Analyst Research, *working paper*.

Brav, A. and Lehavy, R. (2003) An Empirical Analysis of Analysts' Target Prices: Short-term Informativeness and Long-term Dynamics, *Journal of Finance* **58**, 1933-1967.

Breton, G. and Taffler, R. J. (2001) Accounting information and analyst stock recommendation decisions: a content analysis approach, *Accounting and Business Research* **31**, 91-101.

Brown, L. D. (1993) Earnings forecasting research: its implications for capital market research, *International Journal of Forecasting* **9**, 295-320.

Brown, L. D. and Chen, D. M. (1991) How good is the all-American research team in forecasting earnings?, *Journal of Business Forecasting* **9**, 14-18.

Brown, L. D. ed, (2000) I/B/E/S Research Bibliography: Sixth Edition, I/B/E/S International Inc.

Butler, K. C. and Saraoglu, H. (1999) Improving Analysts' Negative Earnings Forecasts, *Financial Analysts Journal* 55, 48-56.

Capstaff, J., Paudyal, K. and Rees, W. (1999) The Relative Forecast Accuracy of UK Brokers, *Accounting and Business Research* **30**, 3-16.

Carhart, M. M. (1997) On Persistence in Mutual Fund Performance, *Journal of Finance* **52**, 57-82.

Chopra, V. K. (1998) Why so much error in analysts' earnings forecasts?, *Financial Analysts Journal* **54**, 30-37.

Clement, M. B. (1999) Analyst Forecast Accuracy: Do Ability, Resources, and Portfolio Complexity Matter?, *Journal of Accounting and Economics* **27**, 285-303.

Cooper, R. A., Day, T. E. and Lewis, C. M. (2001) Following the leader: a study of individual analysts' earnings forecasts, *Journal of Financial Economics* **61**, 383-416.

Cowen, A., Groysberg, B., and Healy, P. (2006) Which Type of Analyst Firms Are More Optimistic?, *Journal of Accounting and Economics* **41**, 119-146.

DeBondt, W. and Forbes, W. P. (1999) Herding in Analyst Earnings Forecasts: Evidence from the United Kingdom, *European Financial Management* **5**, 143-163.

Dechow, P., Hutton, A., and Sloan, R. (2000) The Relation between Analysts' Forecasts of Long-term Earnings Growth and Stock Performance following Equity Offerings, *Contemporary Accounting Research* **17**, 1-32.

Dreman, D. and Berry, M. (1995) Analyst forecasting errors and their implications for security analysis, *Financial Analysts Journal* **51**, 30-42.

Dugar, A. and Nathan. S. (1995) The Effect of Investment Banking Relationships on Financial Analysts' Earnings Forecasts and Investment Recommendations, *Contemporary Accounting Research* **12**, 131-160.

Easterwood, J. C. and Nutt, S. R. (1999) Inefficiency in analysts' earnings forecasts: Systematic misreaction or systematic optimism?, *Journal of Finance* **54**, 1777-1797.

Elton, E., Gruber, M., and Grossman, S. (1986) Discrete Expectational Data and Portfolio Performance, *Journal of Finance* **41**, 699-713.

Ertimur, Y., Sunder, J. and Sunder, S. (2007) Measure for Measure: The Relation Between Forecast Accuracy and Recommendation Profitability of Analysts, *Journal of Accounting Research* **45**, 567-606.

Fang, L. H. and Yasuda A. (2006) Are Stars' Opinions Worth More? The Relation between Ana-lyst Reputation and Recommendation Value, *working paper*.

Francis, J. and Philbrick, D. R. (1993) Analysts' decisions as products of a multi-task environment, *Journal of Accounting Research* **31**, 216-230.

Francis, J. and Soffer, L. (1997) The Relative Informativeness of Analysts' Stock Recommendations and Earnings Forecast Revisions, *Journal of Accounting Research* **55**, 193-211.

Gleason, C. A., Johnson, W. B. and Li, H. (2007) The Earnings Forecast Accuracy, Valuation Model Use, and Price Target Performance of Sell-Side Equity Analysts, *working paper*.

Hayes, R. M. (1998) The impact of Trading Commission Incentives on Analysts' Stock Coverage Decisions and Earnings Forecasts, *Journal of Accounting Research* **36**, 299-320.

Hong, H. and Kubik, J. (2003) Analyzing the Analysts: Career Concerns and Biased Forecasts, *Journal of Finance* **58**, 313-351.

Huberts, L. and Fuller, R. (1995) Predictability Bias in the U.S. Equity Market, *Financial Analysts Journal* **51**, 12-28.

Iskoz, S. (2003) Bias in Underwriter Analyst Recommendations: Does it Matter?, *working paper*.

Jacob, J., Lys, T., and Neale, M. (1999) Expertise in Forecasting Performance of Security Analysts, *Journal of Accounting and Economics* **28**, 27-50.

Kerl, A. G. and Walter, A. (2008) Never Judge a Book by Its Cover – What Security Analysts Have to Say Beyond Recommendations, *working paper*.

LaPorta, R. (1996) Expectations and the Cross-Section of Stock Returns, *Journal of Finance* **51**, 1715-1742.

Lin, H. W. and McNichols, M. F. (1998) Underwriting Relationships, Analysts' Earnings Forecasts and Investment Recommendations, *Journal of Accounting and Economics* **25**, 101-127.

Loh, R. and Mian, M. (2006) Do accurate earnings forecasts facilitate superior investment recommendations?, *Journal of Financial Economics* **80**, 455-483.

Lys, T. and Sohn, S. (1990) The Association between Revisions of Financial Analysts' Earnings Forecasts and Security Price Changes, *Journal of Accounting and Economics* **13**, 341-363.

Michaely, R. and Womack, K. (1999) Conflict of Interest and the Credibility of Underwriter Analyst Recommendations, *Review of Financial Studies* **12**, 653-686.

Mikhail, M., Walther, B. R., and Willis, R. H. (1997) Do Security Analysts Improve Their Performance with Experience?, *Journal of Accounting Research* **35**, 131-157.

Previts, G. J., Bricker, R. J., Robinson, T. R., and Young, S. J. (1994) A Content Analysis of Sell-Side Financial Analyst Company Reports, *Accounting Horizons* **8**, 55-70.

Shipper, K. (1991) Commentary on analysts' forecasts, *Accounting Horizons* **5**, 105-121.

Sinha, P., Brown, L. D. and Das, S. (1997) A Re-Examination of Financial Analysts' Differential Earnings Forecast Accuracy, *Contemporary Accounting Research* **28**, 409-417.

Stickel, S. E. (1990) Predicting individual analyst earnings forecasts, *Journal of Accounting Research* **28**, 409-417.

Stickel, S. E. (1991) Common Stock Returns Surrounding Earnings Forecast Revisions: More Puzzling Evidence, *The Accounting Review* **66**, 402-416.

Stickel, S. E. (1992) Reputation and Performance Among Security Analysts, *Journal of Finance* **47**, 1811-1836.

Stickel, S. E. (1995) The Anatomy of the Performance of Buy and Sell Recommendations, *Financial Analysts Journal* **51**, 25-39.

White, H. (1980) A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity, *Econometrica* **48**, 817-838.

Womack, K. L. (1996) Do Brokerage Analysts' Recommendations Have Investment Value? *Journal of Finance* **51**, 137-167.

Table I: 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
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

Table II: 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 1). 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

Table III: 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 IV: 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 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 (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]. ***, **, * indicate statistical significance at the 1%-, 5%-, 10%-level (two-tailed test) based on robust standard errors as proposed by White (1980).

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
	ALL		*ALL*		*BUY*		*HOLD*		*SELL*		*IR>0*		*IR<0*	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
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	

Table V: 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.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
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 VI: 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.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
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)	
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	

Figure 1: 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)).