Recommendations and the Performance of Target Price Changes

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Abstract

We provide evidence that the predictive ability of target price changes for post-event abnormal stock returns is incremental to that contained in stock recommendations. For recommendation reiterations we find positive (negative) post-event abnormal returns for large target price increases (reductions) within each recommendation level. Thus, abnormal returns follow the direction of the target price change even when it "contradicts" the recommendation level (e.g. buy combined with a large target price reduction). Our results imply that analysts are in some situations either unaware of the information in their own target price forecasts or use target price changes to signal private information to the market if outside pressure prevents them from changing the recommendation. We also show that the returns to the target price strategy are highest for small stocks and generally vanish if transaction costs are taken into account. Overall, analysts' recommendations go wrong when they are issued with large "contradicting" target price changes and are correct and significant when they agree.

I. Introduction

It is well established in the academic literature, that analysts' stock recommendations can predict future post-event abnormal returns.[1] In contrast, the performance of analysts' target prices has received only limited attention.[2] This is despite the fact that event studies have shown that target price changes exhibit great information content.[3] One reason for the lack of interest in target prices might be that analyst's compensation and job tenure seem to be unrelated to their target price forecast accuracy (see Bradshaw/Brown (2006)), which would be reasonable if target prices provide no profitable investment advice to the average investor. In addition, some recent studies find target prices to be imprecise and largely biased estimates of future stock prices.[4]

However, even if target prices are imprecise they can convey information about future abnormal returns. Since most target prices are associated with a concrete time horizon, they represent an implicit return estimate. Brown, et al. (1991) extract implicit abnormal return estimates implied in target prices for the Canadian stock market and find post announcement abnormal returns in the direction of the predicted abnormal returns. Gleason, et al. (2007) sort stocks by the target price's implicit return estimates. This sorting carries information about future abnormal returns if the analyst also issued relative accurate earnings estimates.

Our study builds on the research in Brav/Lehavy (2003) who investigate the performance of target price changes conditional on the direction of the recommendation change (upgrades, reiterations, downgrades) issued by the same broker. They sort stocks within each of these three categories by their target price

[1] See, for example, Womack (1996), Barber, et al. (2001), Jegadeesh, et al. (2004), Green (2006) and Barber, et al. (2007b).
[2] See Brown, et al. (1991), Brav/Lehavy (2003) and Gleason, et al. (2007).
[3] See Asquith, et al. (2005) and Brav/Lehavy (2003)
[4] See Bradshaw/Brown (2006), Asquith, et al. (2005) and Bonini, et al. (2008).

change and show for the upgrade and reiteration category that the extreme portfolios have abnormal returns which are remarkably different to the ones of the collective portfolio within the respective category.

However, it is not clear whether target price changes exhibit valuable information for each recommendation level. For example, large target price increases (reductions) for strong buy (sell) may not provide valuable information to the market since the recommendation already provides a clear trading signal. On the other hand, the positive performance of the portfolio with the most favorable target price revisions might be driven by buy and strong buy recommendations and the negative performance of the portfolio with the least favorable target price revisions might be driven by hold, sell and strong sell recommendations. In this case the abnormal returns would not contradict the analyst's recommendation. Therefore it is not clear under which circumstances target price changes exhibit information content for future abnormal returns and whether the target price change and the recommendation are consistent to each other.

In addition, the cumulative abnormal returns reported in Brav/Lehavy should be taken with caution since they are not adjusted for momentum effects. Since Brav/Lehavy sort stocks by their target price changes, which are naturally strongly related to past price changes, the missing control for momentum effects might drive some of the profitability of target price changes.[5] Moreover, while the results in Brav/Lehavy show that abnormal returns are correlated with past target price changes, the results do not directly imply that target price changes contain valuable

[5] Brav/Lehavy (2003) also conduct a calendar-time approach with a holding period of 6 months and use the Carhart (1997) four factor model to test for abnormal returns of the calendar-time portfolios. The portfolios which had significant cumulative abnormal returns (CARs) now have lower and less significant abnormal returns, whereas the abnormal returns of the portfolio within the reiteration category with the least favorable target price revisions are no longer significantly different from zero. While this points out that a proper control for risk is important in this context we do not learn whether target price reductions that are accompanied by recommendation reiterations possess predictive value for a holding period of less than 6 month.

information incremental to that contained in recommendation levels. A recent study by Barber, et al. (2007b) shows that abnormal returns to analysts' stock recommendations stem from *both*, the recommendation levels assigned as well as the changes in those recommendation. Since the target price change is presumably correlated with the recommendation level and change, the investment value for target prices found by Brav/Lehavy might be due to the missing control for the recommendation level. That is, the portfolios with the most favorable target price revisions are presumably biased towards more profitable recommendations, whereas portfolios with the least favorable target price revisions include less profitable recommendations.

Due to these reasons, we take a closer look at the predictive value of target price revisions. To gain further insight into the interaction between the investment value of stock recommendations and target price changes, we control for the level of the recommendations and momentum effects. We concentrate on target price changes that are accompanied by recommendation reiterations since these cases represent the bulk of all target price change observations.

First, we provide evidence that the predictive value of target price changes found by Brav/Lehavy is only partly attributable to the asymmetry in recommendation levels between the portfolios with the most and least favorable target price changes. Second, we show that the information value in target price changes is incremental to that contained in stock recommendations levels. Moreover, we provide evidence that the information in target price changes is not only incremental but actually more important than the information in reiterated recommendation levels in order to predict future abnormal returns. Our results further imply that analysts are either unaware of the information in their own target price forecasts or use target price changes to signal private information to the market when outside pressure prevents them from changing the recommendation. However, the positive predictive value of analysts' target price changes is generally more pronounced for small stocks and typically vanishes completely if transaction costs are taken into account.

Overall, these results show that the market underreacts to target price changes and investors should be highly cautious about recommendations when they are issued with large “contradicting” target price changes (e.g. a buy recommendation combined with a large target price reduction).

II. Data, Variables and Descriptive Statistics

Target prices and recommendations come from the FactSet Database. Analysts report their estimates directly to FactSet which provides them in real-time to the buy side managers. In 2008 Factset claims that their subscribers manage a combined 80% of the total equities under management.[6] The historical data is reported on a daily basis. Each database record contains the name of the company covered, the name of the analyst, and a target price or a recommendation between 1 and 5. A recommendation of 1 represents a strong buy; 2, a buy; 3, a hold; 4, a sell; and 5, a strong sell. If a broker uses another scale, FactSet converts the broker’s recommendation to its five-point scale. Returns are obtained from the CRSP database. In order to calculate CARs and BHARs for each event-firm we obtain stock assignments to the 125 characteristic-based benchmark portfolios from Russ Wermers’ website.[7]

The used target prices sample starts January 2001 and ends December 2007. We only use target prices and recommendations for companies listed in the US. We require the name of the analyst and a previous target price from the same analyst for the firm not to be older than one year. Target prices for which no recommendation is

[6] See http://www.factset.com/websitefiles/PDFs/brochures/fsm108_contentcontribution_brochure.pdf

[7] For an application and discussion on the use of characteristic-based benchmark portfolios see Daniel, et. al (1997) and Wermers (2003).

available from the same analyst on the date of the announcement or whose stock value was below one dollar at the time of the announcement are dropped from the sample. Taking these conditions into account, we are left with 162,773 target price change observations.

Since our study builds on Brav/Lehavy, a few words are in order to compare the two samples. We use data from FactSet whereas Brav/Lehavy use data from FirstCall. Perhaps more important, our sample spans the years 2001-2007, while the Brav/Lehavy sample covers the bull years of 1997-1999. Due to the significant differences in the overall market returns in these two periods[8] and the fact that the value of stock recommendations is known to depend on the overall market condition (see Barber, et al. (2002)), it is not clear ex-ante whether target price changes in our sample are also correlated with future abnormal returns.

For our trading strategies we sort stocks according to their scaled target price changes ($\Delta TP/P$). $\Delta TP/P$ is the difference between the current (t) and prior target price (TP) issued by the same analyst, deflated by closing stock price (P) outstanding at the current date.

$$\Delta TP/P = \frac{TP_t - TP_{t-1}}{P_t}$$

Table 1 shows that target price change observations are relatively low in the first few years of the sample. This is mainly due to the fact that the target price coverage of the Factset database starts in 2001 and that most of the target prices here are initiations.

[Table 1]

[8] The average yearly return of the S&P 500 was 2.73% from 2001-2007 and 25.73% from 1997-1999.

The distribution across the recommendation changing categories in Table 2 shows that 87% of the target price changes are not accompanied by a recommendation change and that most of these recommendation reiterations are strong buy, buy or hold recommendations.

[Table 2]

The sample contains remarkably more hold, sell and strong sell recommendations than the one used by Brav/Lehavy which is presumably due to the observed time period. Most of the target prices in our sample are announced in the time period after NASD Rule 2711 became effective in September 2002, which led to a generally greater share of negative recommendations.[9]

Table 3 shows the mean scaled target price change ($\Delta TP/P$), mean scaled price change ($\Delta P = (P_t - P_{t-1})/P_t$), mean implicit return change ($\Delta(TP/P) = TP_t/P_t - TP_{t-1}/P_{t-1}$) and the implicit return estimate itself ($TP/P = TP_t/P_t$) within the extreme target price change groups. Every calendar year target price change quintile breakpoints are calculated for every recommendation changing category. Target price changes are then classified as most favorable (least favorable) if they exceed (fall below) the highest (lowest) quintile breakpoint of the preceding calendar year.

[Table 3]

[9] See Barber, et al. (2006).

As expected, large price changes precede, on average, large target price changes. For recommendation reiterations this average price change is approximately half the average target price change. In addition, Table 3 shows that on average large target price changes can be explained by both, the preceding price change and the implicit return estimate change. In fact there may be many large target price changes which are completely explained by the preceding price change or which even represent a change of the implicit return estimate in the opposite direction of the target price changing direction. One could argue that the change of the implicit return estimate (TP_t/P_t-TP_{t-1}/P_{t-1}) might be a superior investment signal, since it better represents the shift in the analysts' opinion. However, in order to be in line with Brav/Lehavy we use target price changes as the investment signal.[10]

Quite interesting is the fact that the implicit return estimates for the portfolios with the least favorable target price changes are in several cases larger compared to the portfolios with the most favorable target price changes. This holds even for the hold, buy and strong buy reiterations. Since these observations constitute a large fraction of the overall sample combined with the performance we observe for these target prices, it is not surprising that Gleason, et al. (2007), who sort stocks by the target price's implicit return estimates, do not find a strong relation between the information in target prices and future abnormal returns.

Finally, it is worthwhile to take a closer look at the distribution of recommendation levels within the extreme portfolios. Since abnormal returns vary across recommendation levels and target price changes are presumably correlated with recommendation levels, the asymmetric distribution of recommendation levels within the extreme quintile portfolios might explain the predictive value of target price

[10] We also considered the change in the implicit return estimate as the investment signal. The significance levels were slightly lower, but the results were qualitatively similar to that presented in section IV.

changes found by Brav/Lehavy. Table 4 provides descriptive evidence that the target price change actually is correlated with the recommendation level and change. For the upgrade category, the average “upgrade-step-size” for the portfolio with the most favorable target price revisions is significantly greater compared to the portfolio with the least favorable target price revisions. The reverse holds true for the downgrade category.

[Table 4]

Most interestingly, even within the reiteration category there is a remarkable asymmetry in the distribution of the recommendation levels. The portfolio with the most favorable target price revisions contain significantly more buy and strong buy recommendations than the portfolio with the least favorable target price revisions. Since more favorable recommendations within the recommendation reiteration category have higher abnormal returns (see Barber, et al. (2007b)) this asymmetry might drive some of the results in Brav/Lehavy. However, given the average abnormal returns reported by Barber, et al. (2007b), this asymmetry is most probably not strong enough to explain the predictive value of the most favorable target price revisions only by means of the accompanied above average recommendation level. The recommendation level is also most probably not the driving force behind the negative abnormal returns of the portfolio with the least favorable target price revisions. This follows from the fact that the distribution of recommendation levels within the portfolio with the least favorable target price revisions is, if at all, only slightly more “negatively skewed” than the overall sample within the reiteration category.

III. Methodology

In order to study the hypothesis that target prices provide information about future abnormal returns more closely, we analyze the predictive value of extreme target price changes conditional on the following recommendation levels: Strong Buy, Buy, Hold, Sell/Strong Sell. The sell and strong sell recommendations are combined, since the number of observations is very low in these categories. If not mentioned otherwise, the sample is confined to recommendation reiterations since they make up the bulk of observations (see Table 2).

Disaggregating the class of recommendation reiterations into the respective recommendation levels enables us to test whether target price changes not only on average but even for each recommendation level provide valuable information and whether target price changes provide more valuable information than the recommendation level. Further we can examine if the observed abnormal returns are consistent with the advice given by the recommendations. Assuming that analysts interpret the information conveyed by their target price changes on average correctly, large reductions of target prices in combination with reiterated strong buy recommendations, for example, should not be followed by average negative abnormal returns.

Analyzing the predictive value of target price changes is especially interesting for the extreme recommendation levels. On the one hand, large target price increases (reductions) for strong buy (sell) may not provide valuable information to the market since the recommendation already provides a clear trading signal. On the other, since recommendations are bounded from above (strong buy) and below (strong sell), analysts must resort to target price increases (decreases) to signal private information about an increase in the undervaluation (overvaluation) if the stock already is given a strong buy (sell) recommendation.

We use calendar time regressions and calculate post event abnormal returns in order to test for abnormal performance. In the calendar time regression approach, for each recommendation category quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P. A target price change ΔTP/P is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. These stocks enter the respective portfolio at the close of trading on the first trading day following the date of the target price change announcement and remains in that portfolio for a predefined time span.

Waiting a trading day ensures that the portfolios are based on available information.[11] Although most target prices are typically issued before the close of trading we prefer to avoid a potential bias caused by the possible inclusion of event returns which Brav/Lehavy have shown to be large for high target price changes. It is plausible to assume that the abnormal returns following target price changes have a similar time structure like that reported for recommendation changes. Given the evidence of Green (2006), waiting a trading day will lead to a high reduction of abnormal returns which in principle can be reached by an investor since FactSet reports the target prices in real time to their subscribers.[12]

We assume a one dollar investment in every stock entering the portfolio. The return for a portfolio is:

$$\frac{\sum_{i=1}^{n_{jt}} x_{it} \cdot R_{it}}{\sum_{i=1}^{n_{jt}} x_{it}} = R_{jt}$$

[11] Since the FactSet historical database only assigns the date the target price was issued, one cannot know if the target price was issued before or after the close of the trading day.

[12] Additional tests have shown that investing at the close of trading on the day the target price was announced leads to a high increase of abnormal returns. However, it is unclear how much of this increase is due to the inclusion of event returns or a quicker investment reaction.

where R_{it} is the return for stock i on day t, n_{jt} is the number of stocks in portfolio j on day t and x_{it} is the value of the investment in stock i on day t-1. Computing portfolio returns in such a buy-and-hold manner avoids the upward bias in equal weighting documented by Canina, et al. (1998). Note that a stock can enter a portfolio even if it is already contained in the portfolio. Since the calendar time approach eliminates the problems of cross sectional dependencies this will not result in misleading conclusions.[13] When there are no stocks matching the criterions of a portfolio the portfolio is not invested.

We test the abnormal performance of each extreme quintile portfolio using the three-factor model developed by Fama/French (1993) with an additional momentum factor following Carhart (1997):[14]

$$R_{j,t} - R_{f,t} = \alpha_j + \beta_j \left(R_{m,t} - R_{f,t} \right) + s_j SMB_t + h_j HML_t + u_j UMD_t + \varepsilon_{j,t}$$

In this model, α_j represents the average abnormal return of portfolio j.

As a robustness check and since the calendar time portfolio approach has its own drawbacks, as the low power to detect abnormal performance in periods of changing event activity (Loughran/Ritter (2000)), we also calculate the CARs and BHARs for each firm following target price changes. At the end of June in each year every stock is assigned to one of 125 portfolios sorted by market capitalization, book-to-market

[13] Mitchell/Stafford (2000) point out that the changing composition of the portfolios can lead to heteroskedasticity. At least for the portfolios we draw the main conclusions from, this assumption seems implausible since the number of stocks in these portfolios is always high in terms of diversification. However, we have verified that using heteroscedastic robust estimates alters none of the conclusions drawn below.

[14] $R_{j,t}$ is the return of portfolio j on day t, R_m is the return on a value weighted market portfolio, R_f is the one-month Treasury bill rate, SMB is the return on a zero investment portfolio calculated by the return on a portfolio consisting of small market capitalization stocks minus a portfolio of stocks with high market capitalization, HML is calculated by subtracting the return of a portfolio of low book-to-market stocks from a portfolio of high book-to-market stocks and WML is the return on a portfolio of stocks having high returns in the preceding year minus the return on a portfolio of stocks with low returns in the preceding year on day t. The factor-portfolio data are obtained from Kenneth French's website.

and momentum.[15] The daily abnormal returns are then calculated by subtracting the return of the matching market capitalization/book-to-market/momentum portfolio.

We then use the event-firms' CARs and BHARs to test the significance of the average CARs and BHARs of each extreme quintile portfolio.[16] To avoid inflated test statistics caused by cross sectional dependencies we construct a non-overlapping sample which excludes target price changes with overlapping return accumulation periods with any previous target price for the same stock in the same recommendation and target price category.

Note that our approaches ensure that the cumulative abnormal returns shown in this paper are properly adjusted for momentum effects, which clearly play an important role since extreme target price changes are preceded by large price changes (see Table 3).

Finally, we examine if the reported abnormal returns would have implied significant trading profits. To estimate total round-trip transaction costs we use the results of Keim/Madhavan (1998) who provide an estimate of the costs incurred by institutions in trading exchange-listed and NASDAQ stocks depending on their market capitalization. Following Keim/Madhavan we use the NYSE quintile breakpoints to sort stocks at the beginning of every month. If market capitalization is missing we assume the lowest trading costs reported for the largest stocks in their sample. Keim/Madhavan also distinguish between exchange-listed stocks and NASDAQ stocks. For every capitalization quintile we assume the least expensive. Therefore the transaction costs used in this paper represent a lower bound for the actual transaction costs and ensure that the abnormal returns after transactions costs present an upper

[15] The stock assignments are obtained from Russ Wermers' website. We also use these assignments to calculate the daily value-weighted return for each of the 125 benchmark-portfolios. Delisting returns are taken into account as described on Russ Wermers' website.

[16] We chose to calculate both, the CARs and BHARs since either are subject to methodological concerns. See Barber/Lyon (1997) and Fama (1998).

bound of the profit that could have been realized by the average investor. If the remaining abnormal returns do not imply a profitable trading strategy, the predictive value of target price changes on a before transaction costs basis can be attributed to market imperfections.

IV. Empirical Results

IV.1 Calendar Time Portfolios

Table 5 presents the results for the calendar time regressions. Given a holding period of 1 month, Panel A of Table 5 shows that the portfolios with the most favorable target price changes produce significant abnormal monthly returns of about 0.80%. The absolute value of the abnormal returns on the least favorable portfolios of the reiteration categories is more volatile with -0.29% for the strong buy and -1.32% for the sell recommendations.[17]

[Table 5]

The spreads in the abnormal returns between the abnormal returns for the portfolios with the most and least favorable target price revisions are significant across each recommendation category.

The results show that target prices contain investment value for each recommendation level. Since the abnormal returns follow the direction of the target price change when it contradicts the recommendation level (e.g. buy combined with

[17] In unreported results we also constructed most and least favorable portfolios for every possible recommendation changing category. None of the differences of the average abnormal returns on the most and least favorable portfolios was highly significant, but 18 of the 20 differences had the predicted sign. The missing significance on the portfolio return differences may be due to the low number of observations reported in Table 2.

a large target price reduction), the results also imply a inconsistency between the trading advice of the recommendation and the post-event abnormal returns.

One could argue that analysts themselves are not fully aware of the investment value of their own target price changes. Take for example an analyst who largely decreases her target price but sticks to a buy recommendation. Since previous research shows that the market reacts only marginally to recommendation reiterations but strongly in the direction of the target price change (see Brav/Lehavy (2003) and Asquith, et al. (2005)), on average the stock price after the market's reaction is lower than before the analyst issued her report. In this case it is highly likely that the analyst would still stick to the buy recommendation since the stock now seems even more profitable than at the time she issued her report. Nevertheless, precisely in these cases large negative abnormal returns are realized which contradicts the buy recommendation of the analyst. The reverse holds true for the sell category.

Another explanation for the apparent inconsistency in analysts' forecasts is that analysts are reluctant to change the recommendation due to outside pressure. They then use the possibility of changing the target price in order to signal their private information to the market. In this case signaling of private information by means of target price changes would not be restricted to the strong buy (sell) category where the recommendation is bounded from above (below). We leave this question open for further research.

Below the abnormal returns of the extreme quintile portfolios in Panel A of Table 5 we report the performance of a portfolio consisting of all target price changes issued within the respective recommendation level. For strong buy and buy recommendation these values are significantly positive, while they are insignificant and around zero for the hold and sell portfolios. This should not be taken as a contradiction to the significant investment value for the sell category demonstrated by Barber, et al. (2007b). The portfolios in Table 4 only represent a special part of the recommendation reiterations in the used sample, which by itself comprises only a special part of reiterated recommendations, namely the ones issued with target price changes. Also the abnormal returns observed with reiterated recommendations are in general smaller in magnitude and significance than recommendations in conjunction with a "supporting" change.[18]

A comparison of the abnormal returns between the extreme quintile portfolios and the overall portfolio in the respective category shows that the incremental abnormal returns that can be attributed to target price changes are higher in absolute value than the abnormal return of the overall portfolio. This demonstrates that target price changes contain more valuable information than reiterated recommendation levels.

Panel B and C of Table 5 extend the holding period for the stocks entering a portfolio to 3 and 6 months. The daily average abnormal returns and the significance in most cases decrease. This evidence is consistent with that reported by Green (2006), Barber, et al. (2001) and Jegadeesh/Kim (2006) who find the highest average abnormal returns occurring on the first days after recommendation announcements.

However, for the portfolios in the strong buy and buy categories with the least favorable target price changes, the abnormal returns remain at the same level or increase in the case of strong buy recommendations. This observation for the least favorable target price changes is consistent with the results of longer lasting abnormal returns for negative recommendations reported by Womack (1996) and Barber, et al. (2001). Further, the positive analyst recommendations might actually help to delay the convergence of prices to the underlying fundamentals.

[18] The literature detects the highest post-event abnormal returns for recommendation changes representing strong new consistent information, like upgrades to strong buy recommendations. See for example Womack (1996), Green (2006) and Barber, et al. (2007b).

Most importantly, the difference between the portfolios with the most and least favorable target price changes stays significant for the strong buy and buy reiteration categories for both holding periods.

Since we used fixed holding periods one might argue that accounting for the changes of the analysts' opinion in defining the holding period might lead to a disappearance of the inconsistency. In order to account for the possibility that analysts on average recognize their target price changes' prediction value early enough, the portfolios in Panel D assume a holding period of three months only if the analyst does not change the recommendation for the company in this time span. If the analyst changes his recommendation, the stock is dropped at the closing price of the first trading day after the announcement. The abnormal returns for these portfolios are similar in magnitude and significance. None of the conclusions drawn above are altered.

Taken together, these results show that the market underreacts to target price changes. Moreover, analysts are either unaware of the information contained in their own target price forecasts or use target price changes to signal private information to the market when outside pressure prevents them from changing their recommendation.

Our results are somewhat in contrast to the line of argument in Bradshaw/Brown (2006). They show that analysts' compensation and job tenure increases in recommendation performance but there is no evidence that analyst compensation is tied to their target price forecast accuracy. Bradshaw/Brown argue that, since target prices are not subjected to media scrutiny, they provide a potential way to make optimistic forecasts in order to curry favor with managers or to generate trading revenues for their firm. We agree with Bradshaw/Brown that the market does not pay much attention to target prices. However, we argue that target prices actually provide valuable information which is not fully processed by the market. In addition, target prices might be used by analysts to signal private information to the market if outside pressure prevents them from changing the recommendation.

IV.2 Factor Loadings

In order to get a clearer view what kind of stocks are included in the extreme quintile portfolios, Table 6 shows the factor loadings of the calendar time portfolios for a holding period of three month. We combined the most favorable and least favorable portfolios across the recommendation levels since they do not appear to be systematically different.

[Table 6]

The SMB coefficients are positive and of high significance for both portfolios, meaning that the stocks in these portfolios are on average of small market capitalization or are at least correlated with such stocks' returns. Table 3 has shown that on average, high price changes precede high target price changes and since small stocks are also often high volatility stocks, this might explain the high fraction of small stocks in the extreme portfolios. The high significance of the UMD coefficient with a sign equal to target price changing direction can be explained by the average preceding price change in the direction of the target price change shown in Table 3. The high significance of the UMD coefficient highlights the importance of a correct adjustment for momentum effects in a performance analysis on target price changes. Finally, the exposure to the book-to-market factor (HML) is positive and significant for both portfolios, but compared to the other factors this factor plays a rather minor role.

IV.3 CARs and BHARs

The average cumulative and buy-and-hold abnormal returns for the firms in the extreme portfolios and a holding period of 3 month can be found in Table 7. With the exception of the buy portfolio with the least favorable target price changes, all portfolio returns are in the expected direction and significant. Therefore the results are somewhat stronger compared to the calendar-time-approach. The CARs are generally higher than the BHARs which arises by the generally more volatile returns of single stocks compared to their benchmark.[19]

[Table 7]

Altogether, the results support the notion that target price changes possess predictive value for future abnormal returns incremental to the information contained in recommendation levels. Again, analysts are either unaware of the information in their own target price forecasts or use target price changes to signal private information to the market when outside pressure prevents them from changing the recommendation.

IV.4 Transaction Costs and Market Capitalization

If abnormal returns before transaction costs stem primarily from small stocks, they might be not realizable in a trading strategy, since transaction costs are higher for smaller stocks. In order to be the driving force behind the abnormal returns, small stocks must represent a significant fraction and earn higher abnormal returns than large stocks.

With respect to the first criterion, the factor loadings on the SMB factor in Table 7 indicate that the extreme quintile portfolios consist to a great deal of small stocks.

[19] See Barber/Lyon (1997) for an empirical examination of this phenomenon.

With respect to the second criterion, we take a closer look at the relation between market capitalization and abnormal returns before transaction costs. Table 8 differentiates between small and large stocks. A stock is defined as small / large when its market capitalization falls into the lowest / highest two NYSE market capitalization quintiles. The results show a clear connection between the size and the magnitude of the abnormal returns.

[Table 8]

The observation that abnormal returns before transaction costs are more pronounced for small stocks is consistent with that of Stickel (1995), Womack (1996), Barber, et al. (2001) and Mikhail, et al. (2004) finding higher post-recommendation abnormal returns for small stocks. Moreover as Fama (1998) points out, available asset pricing models generally have problems explaining the returns of small stocks and many anomalies disappear for large stocks. An explanation of this phenomenon is that the ability of arbitrage to immediately adjust prices to their fair value is limited among small stocks.[20] Taken together, the results indicate that the abnormal returns before transaction costs found in this study are primarily driven by small stocks.

When we take transaction costs into account, Table 9 shows that the remaining abnormal returns are at best insignificantly different from zero. Especially for short

[20] Transaction costs are higher for small stocks and the influence on the price by buying or selling large quantities of a stock is larger for small stocks. Assuming equal misvaluations in the absence of arbitrageurs Loughran/Ritter (2000) argue that misvaluations in the presence of arbitrageurs, in equilibrium, must be larger for small stocks. Otherwise, arbitrageurs could make more money, net of costs, by finding misvaluations among big stocks. See also Grossman/Stiglitz (1980), Pontiff (1996) and Shleifer/Vishny (1997).

holding periods, showing the best performance before transaction costs, the higher transaction costs produce significant negative abnormal returns.[21]

[Table 9]

As a final check, whether the information in target price changes and recommendations can be exploited after accounting for transaction costs, we employ the trading strategy that is expected to yield the largest abnormal returns before transaction costs and test whether they remain significantly positive after transaction costs. Based on the results in Barber, et al. (2007b) and Brav/Lehavy, we therefore analyze recommendation upgrades to buy or strong buy and recommendation downgrades to hold, sell or strong sell. The results are presented in Table 10.

[Table 10]

Panel A of Table 10 shows that a strategy that goes long in the portfolio with the most favorable target price changes within the upgrade category and short in the portfolio with the least favorable target price changes within the downgrade category produces large positive abnormal hedge portfolio returns before transaction costs. However, Panel B of Table 10 reveals that the abnormal returns do not remain significantly positive after transaction costs. Therefore we conclude that target prices carry information for future stock prices but this information is most probably not exploitable for direct profit by the large investors.

[21] The least favorable portfolios assume short position, thus a trading profit is represented by positive values.

However, the results in Table 10 do not imply that the information in target prices is useless for investors. While several studies advocate that high abnormal returns can be earned by buying stocks with recommendation upgrades to buy or strong buy and selling those with downgrades to hold, sell and strong sell, our results in Panel A of Table 10 show that investors should refrain from trading on these recommendation changes if they are accompanied by large target price changes in the opposite direction, since they, at best, earn insignificant positive abnormal returns before transaction costs.

IV. Conclusions

Recommendations and target prices both reflect analysts' expectation about the relative near-term performance of a stock. We have shown that target price changes have information about post-event abnormal returns that is incremental to that contained in recommendation. In addition, the results show that target price changes produce more important trading signals than reiterated recommendation levels. Furthermore, we find a systematic inconsistency between the suggested trading action implied in reiterated recommendations and abnormal returns depending on the target price change. Overall, analysts' recommendations go wrong when they are issued with large "contradicting" target price changes and are high and significant when they agree. This implies that analysts are either unaware of the information in their own target price forecasts or use target price changes to signal private information to the market if outside pressure prevents them from changing the recommendation.

Next we have shown that target price changes add explanation to the recommendation categories found to be the most profitable in the academic literature, namely upgrades to buy, strong buy and downgrades to hold, sell and strong sell. While these recommendation categories have no predictive value when accompanied by high target price changes in the opposite direction of the recommendation changing direction, large significant abnormal returns can be observed when the changing directions agree.

However, possible profits after transaction costs are close to zero or negative. This supports the hypothesis that the general observation of stronger abnormal returns among small stocks might be explained by transaction costs limiting the ability of arbitrage to immediately adjust prices to fully reflect all available information. Nevertheless, the information in target prices is not useless for investors. Investors should be highly cautious about strong buy and buy recommendations if their target price is greatly reduced. These stocks do not earn positive abnormal returns. In fact, reiterated buy and strong buy recommendations actually tend to earn significant negative abnormal returns. In addition, as Barber, et al. (2001) point out, there is one group of investors which can take advantage of the results in this paper. Those intending to buy or sell stocks, and so will be incurring transaction costs in any case, can make economic profit by considering the information contained in target price changes.

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Table 1
Numbers of Analysts, Equities and Target Price Changes, 2001-2007

Target price changes and recommendations are obtained from the Factset database. The sample consists of all target price changes available between January 2001 and December 2007 for which a recommendation reiteration or change is available from the same analyst at the time of the target price change announcement. Further only target prices for firms are considered which have an available return in the CRSP database for at least one month after the target price announcement. Observations for stocks with a stock price below 1$ at the announcement date of the target price are excluded.

	Number		
Year	TP Changes	Analysts	Equities
2001	2,731	500	1,239
2002	14,503	974	2,401
2003	21,265	1,163	2,596
2004	23,201	1,329	2,744
2005	26,268	1,525	3,154
2006	31,908	1,728	3,426
2007	42,897	2,135	3,530
Total:	162,773	3,541	4,795

Table 2
Number of Target Price Changes within Recommendation Changing Categories, 2001-2007

Target price changes and recommendations are obtained from the Factset database. The sample consists of all target price changes available between January 2001 and December 2007 for which a recommendation reiteration or change is available from the same analyst at the time of the target price change announcement. Further only target prices for firms are considered which have an available return in the CRSP database for at least one month after the target price announcement. Observations for stocks with a stock price below 1$ at the announcement date of the target price are excluded.

		To Recommendation of:				
		Strong Buy	Buy	Hold	Sell	Strong Sell
From Recommendation of:	Strong Buy	55,385	2,701	3,737	52	144
		34.03%	1.66%	2.30%	0.03%	0.09%
	Buy	2,908	28,208	2,138	126	53
		1.79%	17.33%	1.31%	0.08%	0.03%
	Hold	3,970	2,055	51,232	508	1,001
		2.44%	1.26%	31.47%	0.31%	0.61%
	Sell	48	104	439	1,713	142
		0.03%	0.06%	0.27%	1.05%	0.09%
	Strong Sell	136	31	903	86	4,953
		0.08%	0.02%	0.55%	0.05%	3.04%

Reiterations:	141,491	87%
Upgrades:	10,680	7%
Downgrades:	10,602	7%
Total:	162,773	

Table 3

Average Change of Target Prices, Prices and Implicit Return Estimates within Recommendation Changing Categories, 2001-2007

For recommendation changing categories quintile breakpoints are calculated every calendar year using the scaled target price changes $\Delta TP/P$ ($(TP_t-TP_{t-1})/P_t$). A target price change $\Delta TP/P$ is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. For these extreme target price changes this table shows the average scaled target price change $\Delta TP/P$, the average scaled price change ΔP (P_t-P_{t-1}/P_t), the average change of the implicit return estimate $\Delta(TP/P)$ ($TP_t/P_t-TP_{t-1}/P_{t-1}$) and the actual implicit return estimate itself TP/P (TP_t/P_t).

From Recommendation of:		To Recommendation of: Strong Buy		Buy		Hold		Sell		Strong Sell	
		most fav.	least fav.	most fav.	least fav.	most fav.	least fav.	most fav.	least fav.	most fav.	least fav.
Strong Buy	ΔTP/P	*27.15%*	*-34.17%*	*22.45%*	*-91.89%*	*12.97%*	*-90.47%*	*-7.24%*	*-282.60%*	*-2.13%*	*-185.62%*
	ΔP	*14.92%*	*-22.18%*	*15.60%*	*-50.09%*	*16.48%*	*-40.62%*	*1.84%*	*-211.66%*	*4.96%*	*-70.26%*
	Δ(TP/P)	*7.48%*	*-3.92%*	*1.95%*	*-10.36%*	*-6.92%*	*-34.42%*	*-9.61%*	*-26.06%*	*-7.54%*	*-68.50%*
	TP/P	*32.11%*	*36.53%*	*25.81%*	*46.01%*	*7.38%*	*8.80%*	*-5.28%*	*12.79%*	*-0.66%*	*-22.20%*
Buy	ΔTP/P	*33.49%*	*-36.02%*	*26.51%*	*-47.23%*	*12.95%*	*-119.21%*	*13.01%*	*-72.00%*	*8.85%*	*-95.21%*
	ΔP	*17.96%*	*-28.35%*	*16.83%*	*-32.57%*	*16.23%*	*-58.56%*	*17.35%*	*-38.40%*	*23.37%*	*-25.60%*
	Δ(TP/P)	*8.93%*	*1.20%*	*3.86%*	*-1.78%*	*-6.85%*	*-35.19%*	*-7.64%*	*-29.57%*	*-18.31%*	*-65.32%*
	TP/P	*36.76%*	*35.89%*	*27.50%*	*40.68%*	*8.53%*	*15.38%*	*-1.57%*	*-13.18%*	*-9.62%*	*-15.58%*
Hold	ΔTP/P	*47.73%*	*-19.49%*	*45.49%*	*-48.52%*	*21.12%*	*-33.33%*	*10.52%*	*-91.64%*	*10.42%*	*-67.24%*
	ΔP	*14.89%*	*-19.23%*	*17.66%*	*-31.69%*	*13.59%*	*-25.96%*	*15.01%*	*-43.65%*	*15.67%*	*-32.52%*
	Δ(TP/P)	*30.74%*	*4.22%*	*23.84%*	*-5.97%*	*6.50%*	*-4.57%*	*-4.53%*	*-36.30%*	*-5.40%*	*-34.08%*
	TP/P	*35.16%*	*22.43%*	*32.88%*	*29.09%*	*7.96%*	*9.24%*	*-8.75%*	*-17.48%*	*-9.15%*	*-22.87%*
Sell	ΔTP/P	*55.33%*	*-38.37%*	*49.39%*	*-27.89%*	*37.81%*	*-15.48%*	*22.39%*	*-42.25%*	*12.93%*	*-50.45%*
	ΔP	*25.52%*	*-35.86%*	*9.15%*	*-22.36%*	*18.78%*	*-21.09%*	*13.27%*	*-34.20%*	*12.43%*	*-35.08%*
	Δ(TP/P)	*16.80%*	*2.03%*	*42.67%*	*-7.79%*	*20.07%*	*5.12%*	*10.12%*	*-11.61%*	*2.26%*	*-16.66%*
	TP/P	*35.13%*	*11.79%*	*24.50%*	*17.75%*	*6.23%*	*8.27%*	*-7.21%*	*-13.82%*	*-15.26%*	*-17.91%*
Strong Sell	ΔTP/P	*67.53%*	*-0.26%*	*70.79%*	*-39.18%*	*40.38%*	*-12.27%*	*26.66%*	*-28.10%*	*17.22%*	*-29.35%*
	ΔP	*5.48%*	*-6.89%*	*18.82%*	*-74.12%*	*13.94%*	*-17.31%*	*7.03%*	*-18.15%*	*11.20%*	*-27.08%*
	Δ(TP/P)	*62.21%*	*6.16%*	*55.89%*	*42.66%*	*27.87%*	*2.22%*	*20.82%*	*-13.31%*	*7.11%*	*-6.33%*
	TP/P	*36.61%*	*19.27%*	*38.46%*	*40.87%*	*6.31%*	*1.25%*	*-3.96%*	*-15.89%*	*-8.88%*	*-13.98%*

Table 4
Distributions of Recommendation Changing Categories

For recommendation upgrades, reiterations and downgrades quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P. A target price change ΔTP/P is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. This table shows the percentage of the specific changing categories for the highest (most fav.) and the lowest (least fav.) thus defined target price changes in comparison to the overall distribution of the recommendation changes within the upgrades, reiterations and downgrades. The recommendations are encoded as follows: 1 = strong sell, 2 = sell, 3 = hold, 4 = buy, 5 = strong buy.

Panel A: Upgrades

			Quintile	
		total	*least fav.*	*most fav.*
From:	To:			
1	**2**	0.81%	1.89%	0.18%
1	**3**	8.46%	7.36%	8.48%
2	**3**	4.11%	3.44%	5.01%
1	**4**	0.29%	0.19%	0.77%
2	**4**	0.97%	0.92%	1.55%
3	**4**	19.24%	19.17%	21.97%
1	**5**	1.27%	0.34%	3.51%
2	**5**	0.45%	0.53%	1.00%
3	**5**	37.17%	32.82%	40.66%
4	**5**	27.23%	33.35%	16.86%

Panel B: Reiterations

			Quintile	
		total	*least fav.*	*most fav.*
From:	To:			
1	**1**	3.50%	4.10%	1.84%
2	**2**	1.21%	1.18%	1.02%
3	**3**	36.21%	38.84%	27.90%
4	**4**	19.94%	16.40%	23.34%
5	**5**	39.14%	39.48%	45.90%

Panel C: Downgrades

			Quintile	
		total	*least fav.*	*most fav.*
From:	To:			
2	**1**	1.34%	0.64%	1.93%
3	**1**	9.44%	10.56%	5.84%
4	**1**	0.50%	1.04%	0.22%
5	**1**	1.36%	4.31%	0.26%
3	**2**	4.79%	4.31%	4.04%
4	**2**	1.19%	1.44%	0.75%
5	**2**	0.49%	1.24%	0.22%
4	**3**	20.17%	17.24%	24.01%
5	**3**	35.25%	44.35%	23.31%
5	**4**	25.48%	14.87%	39.42%

Table 5
Calendar Time Portfolios, Recommendation Reiteration

For recommendation reiteration categories quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P in Panel A-D and the implicit return estimate change Δ(TP/P) in Panel E. A target price change ΔTP/P or implicit return estimate change Δ(TP/P) is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. The "most fav." and "least fav." portfolios assume a 1$ investment in these target price changes. The "overall" portfolio assumes a 1$ investment in every target price change of a recommendation reiteration category. The positions remain in the portfolios for a predefined time span in Panel A, B, C. Panel D assumes a 3 month holding period unless the analyst changes his recommendation within this holding period. The stock leaves the portfolio at the close of trading the day after the recommendation change in these cases. For the portfolios this table shows the intercept in basis points from a regression of the daily portfolio excess return on the four factors of Carhart (1997). Further it shows the t-statistics of these intercepts and the t-statistic of the difference of the portfolio returns. Portfolio returns are winsorized at the 1st and 99th percentiles to mitigate the possible effect of extreme observations. The abnormal returns for one month (in percent) are estimated by using the approximate number of trading days (21). Thus this value equals (1+α)^21-1.

Panel A: 1 Month Holding Period

		Strong Buy	Buy	Hold	Sell
most fav.	monthly abn. Ret	0.86%	0.98%	0.69%	0.83%
	Avg. daily abn. ret	**4.09**	**4.65**	**3.28**	**3.95**
	t-statistic	*3.32*	*3.41*	*2.83*	*1.67*
least fav.	monthly abn. Ret	-0.29%	-0.74%	-0.69%	-1.32%
	Avg. daily abn. ret	**-1.37**	**-3.55**	**-3.28**	**-6.34**
	t-statistic	*-0.79*	*-2.15*	*-1.66*	*-1.91*
	test of difference	*2.56*	*3.83*	*2.87*	*2.55*
	overall perf.	**1.26**	**1.52**	**0.55**	**0.66**
	t-statistic	*1.89*	*2.29*	*0.87*	*0.49*

Panel B: 3 Month Holding Period

		Strong Buy	Buy	Hold	Sell
most fav.	monthly abn. Ret	0.41%	0.31%	0.32%	0.40%
	Avg. daily abn. ret	**1.94**	**1.48**	**1.51**	**1.91**
	t-statistic	*2.04*	*1.54*	*1.75*	*1.12*
least fav.	monthly abn. Ret	-0.42%	-0.69%	-0.23%	-0.14%
	Avg. daily abn. ret	**-1.99**	**-3.30**	**-1.08**	**-0.66**
	t-statistic	*-1.65*	*-2.73*	*-0.79*	*-0.27*
	test of difference	*2.56*	*3.1*	*1.59*	*0.86*
	overall perf.	**0.31**	**0.33**	**0.58**	**0.72**
	t-statistic	*0.53*	*0.59*	*1.09*	*0.74*

Panel C: 6 Month Holding Period

		Strong Buy	Buy	Hold	Sell
most fav.	monthly abn. Ret	0.31%	0.20%	0.13%	0.29%
	Avg. daily abn. ret	**1.48**	**0.94**	**0.62**	**1.39**
	t-statistic	*1.79*	*1.11*	*0.84*	*0.97*
least fav.	monthly abn. Ret	-0.48%	-0.61%	-0.24%	0.08%
	Avg. daily abn. ret	**-2.29**	**-2.91**	**-1.16**	**0.39**
	t-statistic	*-2.15*	*-2.63*	*-0.98*	*0.18*
	test of difference	*2.8*	*2.76*	*1.27*	*0.39*
	overall perf.	**0.42**	**0.18**	**0.52**	**0.06**
	t-statistic	*0.77*	*0.34*	*1.04*	*0.06*

Panel D: 3 Month Holding Period, Accounting for Analysts' Recommendation Changes

		Strong Buy	Buy	Hold	Sell
most fav.	monthly abn. Ret	0.45%	0.33%	0.29%	0.42%
	Avg. daily abn. ret	**2.12**	**1.57**	**1.40**	**1.99**
	t-statistic	*2.22*	*1.61*	*1.63*	*1.08*
least fav.	monthly abn. Ret	-0.37%	-0.63%	-0.22%	-0.29%
	Avg. daily abn. ret	**-1.78**	**-2.99**	**-1.05**	**-1.41**
	t-statistic	*-1.44*	*-2.43*	*-0.75*	*-0.55*
	test of difference	*2.49*	*2.91*	*1.49*	*1.08*
	overall perf.	**0.31**	**0.45**	**0.52**	**0.78**
	t-statistic	*0.53*	*0.82*	*0.99*	*0.73*

Table 6
Factor Loadings, Calendar Time Regression three Month holding Period

For upgrades to buy / strong buy, reiterations and downgrades to hold / sell / strong sell quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P. A target price change ΔTP/P is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. The "most fav." and "least fav." portfolios assume a 1$ investment in these target price changes. The positions remain in the portfolios for a predefined time span. For these portfolios this table shows the intercept, the factor loadings and the adjusted R-square from a regression of the daily portfolio excess return on the four factors of Carhart (1997). Further it shows the t-statistics of these intercepts and coefficients (in italics). Portfolio returns are winsorized at the 1st and 99th percentiles to mitigate the possible effect of extreme observations.

		Intercept	RMRF	SMB	HML	PR12	Adj. R^2
Reiterations	most fav. ΔTP/P	0.0160	1.1517	0.6103	0.1010	0.1628	93.5%
		2.02	*132.8*	*37.25*	*4.21*	*12.53*	
	least fav. ΔTP/P	-0.0269	1.1423	0.8408	0.1376	-0.5294	91.7%
		-2.64	*102.7*	*40.02*	*4.47*	*-31.77*	

Table 7
Average CARs BHARs, Recommendation Reiterations

For recommendation reiteration categories quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P. A target price change ΔTP/P is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. This table shows the average CAR and BHAR of these extreme target price changing categories and their t-statistics (in italics). The sample excludes target price changes with overlapping return accumulation periods with any previous target price for the same stock in the same recommendation and target price changing category. At the beginning of every month every stock is assigned to one of 125 portfolios sorted by market capitalization, book-to-market and momentum. The return of the matching portfolio serves as the expected return for the calculation of the abnormal returns. The CARs and BHARs are winsorized at the 1st and 99th percentiles to mitigate the possible effect of extreme observations.

Panel A: CARs, 3 Month Holding Period

	Strong Buy	Buy	Hold	Sell
most fav.	**1.32%**	**1.72%**	**1.20%**	**1.44%**
	5.30	*5.27*	*5.26*	*2.46*
least fav.	**-0.74%**	**-0.04%**	**-0.68%**	**-2.21%**
	-2.90	*-0.10*	*-2.41*	*-3.10*

Panel B: BHARs, 3 Month Holding Period

	Strong Buy	Buy	Hold	Sell
most fav.	**1.02%**	**1.33%**	**0.99%**	**1.30%**
	4.03	*3.94*	*4.22*	*2.17*
least fav.	**-1.12%**	**-0.66%**	**-1.13%**	**-2.80%**
	-4.39	*-1.62*	*-4.03*	*-4.10*

Table 8
Calendar Time Portfolio Performance Depending on Market Capitalization, Before Transaction Costs

This table distinguishes between stocks with „high“ and „low“ market capitalization, whereas “high” is defined to be in the upper two size quintiles and “low” to be in the two lower size quintiles. The quintile breakpoints are calculated monthly using all available market capitalization data for NYSE stocks. Stocks are assigned to these quintiles at the beginning of every month. Within recommendation changing and market capitalization categories terciles are calculated every calendar year using the scaled target price changes ΔTP/P. Portfolios are constructed using the breakpoints of the preceeding year as described before. This table shows the intercept (in basis points) from a regression of the daily portfolio excess return on the four factors of Carhart (1997) and the t-statistic of this intercept (in italics). Portfolio returns are winsorized at the 1st and 99th percentiles to mitigate the possible effect of extreme observations.

		1 Month Holding Period		6 Months Holding Perio(	
		Market Cap		*Market Cap*	
		low	high	low	high
TP Change	most fav.	**6.3**	**1.5**	**2.1**	**0.6**
		6.46	*1.72*	*3.22*	*0.86*
	least fav.	**-3.7**	**-1.1**	**-2.5**	**-1.1**
		-2.54	*-1.09*	*-2.39*	*-1.42*

Table 9
Calendar Time Portfolios Adjusted for Transaction Costs

For upgrades to buy / strong buy, reiterations and downgrades to hold / sell / strong sell quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P. A target price change ΔTP/P is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. The "most fav." and "least fav." portfolios assume a 1$ investment in these target price changes. The positions remain in the portfolios for a predefined time span. For these portfolios this table shows the intercept (in basis points) from a regression of the daily portfolio excess return on the four factors of Carhart (1997) and the t-statistic of this intercept (in italics). Portfolio returns are winsorized at the 1st and 99th percentiles to mitigate the possible effect of extreme observations. Transaction costs are accounted for depending on the market capitalization by using the results of Keim and Madhaven (1998). The “least fav.” portfolios assume short positions, thus trading profits are represented by positive alphas.

		+1 month	+3	+6	+12
Reiterations	most fav. ΔTP/P	**-5.97**	**-1.64**	**-0.70**	**-0.75**
		-6.24	*-2.05*	*-0.97*	*-1.13*
	least fav. ΔTP/P	**-8.33**	**-1.18**	**0.54**	**1.13**
		-6.66	*-1.16*	*0.56*	*1.13*

Table 10
Calendar Time Portfolios by Recommendation Change Direction

For upgrades to buy / strong buy and downgrades to hold / sell / strong sell quintile breakpoints are calculated every calendar year using the scaled target price changes ΔTP/P. A target price change ΔTP/P is defined as most favorable (least favorable) if it exceeds (falls below) the highest (lowest) quintile breakpoint of the preceding calendar year. The "most fav." and "least fav." portfolios assume a 1$ investment in these target price changes. The positions remain in the portfolios for a predefined time span. For these portfolios this table shows the intercept from a regression of the daily portfolio excess return on the four factors of Carhart (1997). Further it shows the t-statistics of these intercepts (in italics). Portfolio returns are winsorized at the 1st and 99th percentiles to mitigate the possible effect of extreme observations. The monthly abnormal returns (in percent) are estimated by using the approximate number of trading days (21). Thus this value equals $(1+\alpha)^{21}-1$.The "least fav." portfolios in Panel B assume short positions, thus trading profits are represented by positive alphas.

Panel A: Before Transaction Costs

		+1	+3	+6
Upgrades to buy / strong buy	most fav. ΔTP/P	1.75%	0.87%	0.55%
		8.26	**4.11**	**2.62**
		3.61	*2.91*	*2.28*
	least fav. ΔTP/P	0.63%	-0.05%	-0.05%
		2.98	**-0.26**	**-0.23**
		1.3	*-0.19*	*-0.21*
Downgrades to hold / sell / strong sell	most fav. ΔTP/P	0.26%	0.37%	0.30%
		1.26	**1.75**	**1.44**
		0.63	*1.39*	*1.41*
	least fav. ΔTP/P	-0.79%	-0.82%	-0.43%
		-3.76	**-3.91**	**-2.04**
		-1.17	*-1.99*	*-1.27*

Panel B: After Transaction Costs

		+1	+3	+6
Upgrades to buy / strong buy	most fav. ΔTP/P	**-2.30**	**0.41**	**0.42**
		-1.30	*0.34*	*0.40*
Downgrades to hold / sell / strong sell	least fav. ΔTP/P	**-9.43**	**-1.67**	**1.31**
		-2.94	*-0.77*	*0.81*