# Portfolio Returns and Target Prices

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# Portfolio returns and target prices


## Abstract

In this paper we examine the profitability of trading strategies based on target prices embedded in equity research reports. We adopt target prices as information signals to build our portfolio strategy. At the first stage, we exploit implicit returns (difference between the current price and the target price) as a buying or short selling signal to open every transaction in the portfolio. Next, we use raw and adjusted target prices as a closing transaction signal. We build three different strategies to verify if the overshooting of target prices revealed by several studies could affect the profitability of a trading strategy based on these target prices.

We have formed four portfolios within every strategy to verify whether analysts' target prices have any investment value. We find that all strategies deliver positive abnormal returns against the market. In particular, the highest and lowest implicit return classes exhibit the highest stock returns and abnormal returns. In the last part control these returns for systematic risk, factors through the CAPM and the Fama & French three factor model. The positive performances of our strategies persist and, in particular, our strategies beat the market with consistent abnormal returns in all the four implicit return classes analyzed. From the three factors equation, it seems that analysts tend to advise buying stocks with risk above the average market risk, with growth profile and with large market value. Conversely analysts advise selling value stocks and those with a negative beta.

## 1. Introduction

Equity analyst research aims at forecasting future earnings, stock price (target price) and giving a recommendation of buying or selling for any given company. This information seems to be relevant, especially for unsophisticated investors who may incorporate it to drive their investment decisions. During past decades, a large number of studies focused on the reaction of stock prices to the publication of research papers. Evidence shows that, on average, recommendations contain valuable information to investors (Stickel, 1995; Womack 1996) with significant abnormal returns observed following the issuance of a research report.

Most of the academic research has clustered around the analysis of stock price reaction and portfolio profitability. Only recently, academics have addressed the informativeness of target prices associated with recommendations.

This paper focuses on the profitability of an investment strategy based on target prices issued by analysts. The motivation of this study stems from reckoning that any target price is a quantitative forecast produced by the analyst in his research, univocally connected with present and future prices thus providing an excellent investment indication and performance benchmark. Furthermore, target prices are a comprehensive measure of the overall value of a company. Differently, earnings forecasts are just an accounting measure which is, at best, a constituent of value.

The main contribution of this paper is to develop an innovative trading strategy using target prices with a twofold purpose: firstly, as a buying (or short selling) signal and secondly, as a position's closing signal (i.e. a take profit signal). More specifically, we do not implement a calendar-time methodology, but for every target price issued, we create an independent transaction. Each buying/selling operation is then independent in terms of investment horizon.

Our results show that, on average, stocks with the highest and lowest implicit returns (a metric calculated as the difference between the target price and the current stock market price) give better returns than stocks with limitedly positive or negative implicit return. This strategy yields positive returns, even after controlling for characteristics of companies that explain the cross sectional distribution of stock returns.

The rest of the paper is organised as follows. The second section gives a brief summary of available empirical literature on the value of analyst research. The third describes the construction of the dataset. The fourth section gives the descriptive statistics of the dataset. The fifth explains the procedure followed to build the portfolios on the basis of the implicit return estimated by the analysts, outlines the methodology used to estimate returns and presents the results. Section six uses different procedures to ensure that the results obtained can be attributed to the recommendations rather than to the design of the research, such as the number of portfolios or the variables used to proxy the attributes of the company or its information environment. The paper finishes by summarising the main conclusions.

## 2. Related Literature

Over the past two decades, the predictive power of analysts has been the subject of empirical and experimental studies. Different authors have developed two main lines of research: the effects of stock recommendations on the share price and the creation of portfolio strategy based on analyst's recommendations.

Early investigations on this topic have been primarily related to the market's reaction to revisions in either analysts' earning forecasts, or recommendations. Abdel-Khalik and Ajiinkya (1982) find significant abnormal returns during the publication week of forecast revisions by Merrill Lynch analysts. Llyod-Davies and Canes (1978) indirectly examine the market reaction to security analyst recommendations by studying stock suggestions in "Wall Street Journal". Elton, Gruber and Grossman (1986) and Stickel (1995) examine the sign of abnormal returns. More recently, Womack (1996) uses First Call data to examine price changes. He shows that the stocks subject to a recommendation change record an abnormal return significantly different from zero: positive changes (+2.4%) in case of an upgrade, negative changes (-9.1%) in case of a downgrade. The empirical results clearly show that stock prices and volumes are influenced by recommendation changes. Moreover, the author highlights that analysts are particularly good at stock picking but also at market timing. Francis and Soffer (1997) find that neither earnings forecast revisions nor stock recommendations completely incorporate the information in other signals well known. Stickel (1995) performs a similar analysis also controlling for the magnitude of stock recommendations. He includes proxies for analyst's reputation and the size of the analyst's brokerage house. His results are consistent with those of Francis and Soffer. Only few studies investigate the effect of the target price on stock prices. Bradshaw (2002) focuses on the joint reporting of target prices and recommendations: he finds that the issuing of a target price is positively correlated with recommendations that are more favourable. Bradshaw and Brown (2005) analyze the analysts' ability of predicting futures prices: through a binary metric, they find that, on average, target price forecast errors are systematically negative with approximately 24-45 percent of analysts' target prices being met. Moreover, analysts do not exhibit persistent differential abilities to forecast target prices. Although the market response to target price forecasts is significant, the market acts as if it understands analysts' inability to consistently forecast target prices and discounts more optimistic target prices. Bonini, Zanetti and Bianchini (2006) analyze the accuracy of target prices and they document large and statistically significant prediction errors: 4% for sell recommendations, 46.81% and 31.98% for strong buy and buy recommendations. They also show a significant positive relationship between prediction errors and ex ante implicit returns, which might suggest a strategic overshooting.

Several authors tried to exploit positive abnormal returns through stock recommendations issued by analysts, generating benchmark-superior portfolio strategies. Barber et al' (2001, 2003) analyse the value of trading strategies based on the consensus level of the stock recommendations issued by analysts in the United States. In their first paper, they observe that the trading strategy consisting of buying the most highly recommended stocks and simultaneously selling the least favoured stocks generates abnormal returns, which disappear when the transaction costs are taken into account. In their second paper, they observe that the same strategies give negative returns. The reason seems to be the inclusion of the turbulent 2000 period, where stock prices crashed. Analysts continued to give favourable recommendations to small, growth-oriented companies, precisely those companies that performed worse as from that date. Jegadeesh and Kim (2003) use a similar methodology with data on stock recommendations from G7 countries (USA, UK, Canada, France, Germany, Italy and Japan). They reach the conclusion that trading strategies based on the consensus level are not profitable, as the losses from 2000 onwards eliminated the positive returns of previous years. Boni and Womack (2003) create a consensus-based portfolio to examine the competition between analysts. The authors highlight that the returns achievable by buying upgraded stocks and selling downgraded stocks is 1.4% on a monthly basis and 18% on a yearly basis. They also find that analysts' competition reduces the opportunity to make profits from changes of recommendations: portfolios formed with stocks followed by a great number of analysts generate lower returns.

Later, Jegadeesh, Kim, Krische and Lee (2004) study the value of strategies based on consensus changes. Their aim is to study the impact caused by new corporate information on stock recommendations and their effects on the capital market. These authors show that changes in stock recommendations predict future returns, suggesting that they capture qualitative aspects of corporate activity not picked up by other quantitative variables. Finally, Chen and Cheng (2002) show that stock recommendations are not just taken into consideration by individual investors, but are also followed by institutional investors, who increase (reduce) their participations in companies with favourable (unfavourable) recommendations.

### 3. Sample and Data

The analysis is conducted on a unique database[1] of over 16.000 research reports published from January 1st 2000 up to December 31st 2005. We select 14.756 reports published by 47 distinct research firms covering 98 companies continuously listed on the Milan Stock Exchange in the whole sample period and representing approximately 405.32 bn€ or 81,96% of the overall market capitalization.

After database cleaning, the sample reduces to 10.769 reports. Not all of the 10.769 reports are included in the portfolio due to the absence of a target price in 1.766 reports; hence, the total number of (long or short) operations in the portfolio is 9.003.

The information about companies – such as, daily closing prices, market capitalization, price to book value and dividend yield – and about the market – such as benchmark and risk free interest rate- are collected by Datastream. Industry classification is based on FTSE Global Classification system for which, given the characteristics of our sample, we choose the "Economics group" level 3 of detail.

Table 1 provides descriptive evidence on the reported companies.

INSERT TABLE 1 HERE

The table shows that even if no company weights more than 3.77% of the total number of reports, the standard deviation of the sample is rather high. The distribution of the number of reports across the companies is not homogenous. In fact, 40 firms have 79.4% of the total number reports. Moreover, the same 40 firms are the most capitalized companies in the sample. This non normal distribution of the number of the reports might influence the returns of the different portfolios. Yet, this evidence provides support to the empirical evidence presented in the literature that financial analysts focus their attention to stocks with higher market capitalization[2]. A possible explanation is that analysts work more on big

[1] For further details on database construction, see Bonini et al. (2007)
[2] See Womack (1996), for Italy see Fabrizio (2000)

companies since they are characterized by higher volume of transactions on which the financial intermediary can earn higher trading commissions.

## 4. Trading Strategies

A key feature of this research is the signalling use of target price. Since target prices are a comprehensive quantitative outcome of an analyst's overall company evaluation, we conjecture that this measure should be more accurate than qualitative recommendations in predicting future stock value. By using target prices as opening and closing signals, we expect a portfolio strategy based on target prices to obtain larger returns than traditional approaches like those reported in Jegadeesh, Kim and Lee (2004) and Barber, Leahvy , McNichols and Truman (2001).

### *4.1 Portfolio drivers*

The portfolio strategy we build considers each report as a buying or short-selling signal. Every price forecasted by any analyst is an opening position signal and determines both the sign of the position opened in the portfolio (long or short) and, through target price implicit return, the return objective that triggers the closing of the position. As shown in Bonini et al. (2007) and Bradshaw and Brown (2006), *ex-ante* target prices convey an immediate performance prediction that we define "implicit return" which is given by the algebraic difference between the target price and the current market price.

Formally, we define implicit return (IR) as:

$$IR = [TP_t/P_t]-1$$

This prediction is met if at some point during or at the end of the time horizon, the underlying share price reaches the target price.

Table 2 shows the distribution of the implicit return over time.

INSERT TABLE 2 HERE

The implicit return is the input parameter for the portfolio strategy. In particular, we generate six portfolios based on the implicit return estimated by the analyst in the report. Many researchers use the recommendations level or recommendations revisions as criteria to build the portfolios; in our simulation we use implicit return to link the different portfolios with the buying and selling strategy we implement[3]. The yearly distribution of reports shows an asymmetry in implicit returns. Every year more than 60% of implicit returns estimated by analysts is greater than 10%, and only few analysts issue a report with extremely negative implicit returns (between 1 and 4 percent). This suggests that analysts may have a preference for issuing a report when a company has a positive outlook and on average. The cross-sectional distribution of implicit returns shows a positive bias with the right tail fatter than normal, which is consistent with the sell side analysts' preference on issuing positive forecasts rather than negative.

Table 3 reports the implicit returns transition matrix of reports issued by the same research firm on the same company across our time horizon.

INSERT TABLE 3 HERE

The table shows that the most of the reports reiterates or increases the implicit return and only 29% of the subsequent report forecasts have a smaller implicit return. Moreover, upgrades and downgrades are most often to the nearest class.

*4.2 Portfolio strategy: position opening*

Looking at the relative level of implicit return, our portfolio strategy buys the stock if the implicit return estimated by the analyst is positive and short sells the stock if the forecasted implicit return is negative. This strategy implies that the portfolios are not equal in terms of long and short positions across the five years, but it allows to control the analyst's ability to select the stocks that are over and under valued. This particular strategy reflects the behaviour of a hypothetic investor who believes in analysts' ability to perform an efficient stock picking and to predict accurate future prices. If the inclusion of a stock in the portfolio reflects the stock picking ability, the target price embedded in the report allows the investor to have a precise future price objective to implement the market timing part of the strategy. Through target prices as closing position signals, investor can have a precise and definite price objective, and it is possible to evaluate the analysts' forecasting ability without any additional information on the analyst's true time horizon.

Several authors (see Barber et al. (2001), Jegadeesh et al.(2004) and Boni and Womack (1999)) debate on the appropriate holding period due to the trade off between the

[3] See Jegadeesh, Kim, Prische and Lee (2004) and Barber, Lehavy, McNichols and Nichols (2001, 2004).

frequency of rebalancing and transaction costs. The strategy implemented in this paper does not rebalance the entire portfolio every period. In this way, a profitable trading operation can remain open for a long or a short period and every transaction is mutually independent. The advantages of this approach are that investors can avoid estimating a specific time horizon and that transaction costs can be significantly than those incurred by classical buy and hold strategies which imply the choice of a fixed rebalancing frequency. Finally, this procedure could ideally be automated, being completely independent from the portfolio manager subjectivity.[4]

As previously shown, implicit returns levels are heterogeneous across time. Womack (1996) documents significant differences in price reaction after the release of extreme recommendations (strong buy or strong sell) or revisions in recommendations. These two evidences induce us to exclude reports with moderate implicit returns, i.e. between -10% and +10%. Setting an inclusion threshold at -10/+10 percent implicit return, means eliminating most reports with hold recommendations. Since analysts often associate a limited potential growth in prices with hold recommendations, these estimates would convey an advice which is not coherent with any position in a portfolio which aims at maximizing the upside potential.

*4.3 Portfolio strategy: unadjusted closing*

Bonini, Zanetti and Bianchini (2006) find large prediction errors in target prices issued by analysts. They show a relevant overshooting phenomenon in reports with large implicit returns. Moreover, they find a concave movement of stock prices: on average share prices react after recommendations coherently with the sign of the implicit return. Nevertheless, the stock does not reach the price predicted by the analyst. On average the share price reaches a maximum price that is below (above) the target in case of positive (negative) implicit return. After having reached the maximum (minimum), the price starts to fall (raise) and at the end of the horizon, the error on average is larger than the error measured at the maximum (minimum) share price point. This price dynamic suggests that, on average analysts overestimate the potential stock price growth/decrease.

Therefore in this paper we examine three different closing strategies to evaluate the over shooting consequence on portfolio performance. In the first strategy (*TP strategy*) we do not correct the target price and we use it as the closing signal. According to this approach,

[4] Although algorithmic trading has gained momentum in practice, a "full automation" feature is more a theoretical option rather than a real portfolio strategy.

every transaction in the portfolio is kept open as long as the price reaches the target in the next 365 days after the report is issued. After a period of 365 days, the position is automatically closed, independently from the achieved price level. For every implicit return class we compute the portfolio return as follow:

$$R_{P_{TP}} = \frac{1}{n+m}\left(\sum_{i=1}^{n} R_{L_{TP_{\gamma\eta i}}} + \sum_{t=1}^{m} R_{S_{TP_{\gamma\eta i}}}\right)$$

$$R_{L_{TP_{\gamma\eta i}}} = \begin{cases} \frac{TP_{\gamma\eta_t}}{P_{\eta_t}} - 1 & if P_{\eta j} \geqslant TP_{\gamma\eta_t} \\ \frac{P_{\eta_{t+365}}}{P_{\eta_t}} - 1 & otherwise \end{cases} \Bigg| \; j \in \{t, t+2, \ldots\ldots, t+365\}$$

$$R_{S_{TP_{\gamma\eta i}}} = \begin{cases} \frac{P_{\eta_t}}{TP_{\gamma\eta_t}} - 1 & if P_{\eta j} \leqslant TP_{\gamma\eta_t} \\ \frac{P_{\eta_t}}{P_{\eta_{t+365}}} - 1 & otherwise \end{cases} \Bigg| \; j \in \{t, t+2, \ldots\ldots, t+365\}$$

where:

*n:* number of long transactions in the portfolio;

*m*: number of short transactions in the portfolio;

$R_{PTP}$: portfolio return as the mean of all long and short transactions;

$R_{L\ TP\gamma\eta i}$: return on a long transaction related to the report *issued* by firm γ on company η in t[5];

$R_{S\ TP\gamma\eta i}$: return on a short transaction related to the report *issued* by firm γ on company η in t;

$TP_{\gamma\eta t}$: target price released by firm γ on company η in t;

$P_{\eta t}$: stock market price of company η at the research report publication date t;

$P_{\eta t+365}$: stock price 365 days after the issuance of the report.

The equations above describe the four possible returns for every position in the portfolio. The strategy computes a short or a long return based on the implicit return in *t*: if $[(TP_{\gamma\eta t}/P_{\eta t}) > 1]$ the portfolio computes the long return otherwise it calculates the position as a short selling. Both long and short returns can be computed in two different ways: if the stock price reaches the target price during the year following the issuance of the report, the return for that specific operation is equal to the difference between the target price and the price in *t.*

[5] Firm: institution (bank or research company) who issue research reports

Otherwise it is equal to the difference between the price 365 days after the report is issued and the price in *t*.

It is noteworthy that returns for long and short positions are specular: for the long position the portfolio buys the stock at price $P_t$ and, when the price reaches the target price, it sells the stock exactly at the price forecasted by the analyst. For short position, the simulation short sells the stock at a price $P_t$ and, when the price reaches the target price, it buys it at $TP_t$.

*4.4 Portfolio strategy: closing adjustments*

The second and the third strategies try to generate larger performances by adjusting the closing signals. Bonini et al. (2007) show that analysts systematically overshoot their forecast. The overshooting magnitude is expressed by two parameters: $\delta_1$ and $\delta_2$.

Specifically the, $\delta_1$ factor measures the price reaction after a report is issued. In particular, it measures the difference between the maximum (minimum) price reached by the stock during a specific time horizon and the price at the date of issuance in case of a positive (negative) implicit return $[(TP_{\gamma\eta t}/P_{\eta t}) > 1]$. The $\delta_1$ parameter is computed as follows:

$$\delta_{1_{\gamma\eta t}} = \frac{P_{\eta m}}{P_{\eta t}} - 1$$

where:

$t$: date of the report issuance by firm γ on company η;

$P_{t\eta}$: company *η's* stock price at the research report publication date t;

$P_{\eta m}$: maximum/minimum price level within the prediction time horizon after the report issued by firm γ.

The $\delta_2$ parameter measures the difference between the maximum/minimum price in the investment horizon and the stock price at the report publication date:

$$\delta_{2_{\gamma\eta t}} = \frac{TP_{\gamma\eta t}}{P_{m\gamma\eta}} - 1 |\, TP_{\gamma\eta t} > P_{\eta t};\ 1 - \frac{TP_{\gamma\eta t}}{P_{m\gamma\eta}} |\, TP_{\gamma\eta t} < P_{\eta t}$$

where:

$t$: date of report issuing by firm γ on company η;

$P\eta t$: company *η's* stock price at the research report publication date t;

$P\eta m$ : maximum/minimum price level within the prediction investment horizon after report issued by firm γ.

$TP\gamma\eta t$ : target price issued in t by firm γ on company $\eta$.

Intuitively, de-biasing the closing signals should generate superior performances due to a more precise closing signal. Accordingly, we generate two additional strategies.

*4.5 Portfolio strategy: closing adjusted by historical performance*

The second strategy ($\delta_1$ *strategy*) uses the historical $\delta_1$ parameter to predict the stock price movement after a report issuing. The portfolio, for every report, calculates the historical $\delta_1$ parameter for firm $\gamma$ and company $\eta$ as follows:

$$\Delta_{1_{\gamma\eta t}} = \frac{1}{t-1}\sum_{i=1}^{t-1}\delta_{1\gamma\eta i}$$

For every report issued by firm $\gamma$ on company $\eta$ the portfolio computes the mean of the previous $\delta_1$ and uses it to find the predicted maximum/minimum future price. The maximum/minimum future price is calculated as follows:

$$P_{\Delta_{1\gamma\eta t}} = P_{\eta_t}(1+\Delta_{1_{\gamma\eta_t}})|(TP_{\gamma\eta_t}/P_{\eta_t}) > 1; \frac{P_{\eta_t}}{(1+\Delta_{1\gamma\eta_t})}|(TP_{\gamma\eta_t}/P_{\eta_t}) < 1$$

Where:

$P_{\Delta 1\gamma\eta t}$: maximum/minimum predicted price of company η's shares subsequent to the publication of a report by firm γ;

$\Delta_{1\gamma\eta\ t}$: potential growth in the future price due to the publication, in t, of a research report by firm γ on company η.

After generating adjusted expected prices for all reports released by analysts, the portfolio computes the ex-post return related to a strategy that buys or short sells the stocks conditional on the implicit return [$(TP_{\gamma\eta t}/P_{\eta t}) > 1$] at time $t$ and closes the different positions when the share price reaches the $P_{\Delta 1\gamma\eta\ t}$. If stock price does not reaches the $P_{\Delta 1\gamma\eta\ t}$ the portfolio return is computed as the difference between the price in t and the price 365 days after t. The portfolio return with $\delta_1$ correction is given by:

$$R_{P\triangle_1} = \frac{1}{n+m}\left(\sum_{i=1}^{n} R_{L\triangle_{1\gamma\eta i}} + \sum_{i=1}^{m} R_{S\triangle_{1\gamma\eta i}}\right)$$

$$R_{L\triangle_{1\gamma\eta i}} = \begin{cases} \frac{P_{\Delta_{1\gamma\eta t}}}{P_{\eta_t}} - 1 & if P_{\eta j} \geqslant P_{\triangle_1 \gamma\eta t} \\ \frac{P_{\eta_{t+365}}}{P_{\eta_t}} - 1 & otherwise \end{cases} \Bigg| \; j \in \{t, t+2, \ldots\ldots, t+365\}$$

$$Rs_{\triangle_{1\gamma\eta i}} = \begin{cases} \frac{P_{\eta_t}}{P_{\Delta_{1\gamma\eta t}}} - 1 & if P_{\eta j} \leqslant P_{\triangle_1 \gamma\eta t} \\ \frac{P_{\eta_t}}{P_{\eta_{t+365}}} - 1 & otherwise \end{cases} \Bigg| \; j \in \{t, t+2, \ldots\ldots, t+365\}$$

Where:

*n:* number of long transactions in the portfolio;

*m*: number of short transactions in the portfolio;

$Rp_{\Delta 1}$: portfolio return as the mean of all long and short transactions;

$R_{S\,\Delta 1\gamma\eta i}$: return on long transactions related to analyst's report *issued* in t;

$R_{S\,\Delta 1\gamma\eta i}$: return on short transactions related to analyst's report *issued* in t;

$P_{\Delta 1\gamma\eta\, t}$: maximum/minimum predicted future price;

$P_{\eta}t$: stock market price at the research report publication t;

$P_{\eta}t_{+365}$: stock price 365 days after the report issuance.

Similarly to the unadjusted strategy, returns are expressed by four different equations, conditional on the implicit return estimated by the analyst and the stock price dynamics during the year after the report publication.

*4.5 Portfolio strategy: closing adjusted by historical prediction error.*

The third strategy (*$\delta_2$ strategy*) tries to overperform the TP strategy trough the correction of target prices by the historical error committed by analysts in previous reports. This technique corrects the target price in *t* by the mean of past errors committed by the firm on the same company. In this way, we try to eliminate the overshooting phenomenon highlighted by Bonini et al. (2006) and Bradshaw and Brown (2005)

The $\delta_2$ parameter measures the difference between the maximum/minimum price in the investment horizon and the stock price at the report publication date:

$$\delta_{2_{\gamma\eta t}} = \frac{TP_{\gamma\eta t}}{P_{m\gamma\eta}} - 1 |\; TP_{\gamma\eta t} > P_{\eta t};\; 1 - \frac{TP_{\gamma\eta t}}{P_{m\gamma\eta}} |\; TP_{\gamma\eta t} < P_{\eta t}$$

where:

*t*: date of report issuing by firm γ on company η;

*Pηt*: company *η's* stock price at the research report publication date t;

*Pηm* : maximum/minimum price level within the prediction investment horizon after report issued by firm γ.

*TPγηt* : target price issued in t by firm γ on company *η*.

The portfolio calculates the historical $\delta_2$ parameter for firm *γ* and company *η* after every report is issued as:

$$\Delta_{2_{\gamma\eta_t}} = \frac{1}{t-1}\sum_{i=1}^{t-1}\delta_{2\gamma\eta i}$$

The modified target price is calculated as follows:

$$TP_{\Delta_{2t}} = TP_t(1-\Delta_{2\gamma\eta_t})|\,(TP_{\gamma\eta_t}/P_{\eta_t}) > 1;\ \frac{TP_t}{(1-\Delta_{2\gamma\eta_t})}|\,(TP_{\gamma\eta_t}/P_{\eta_t}) < 1$$

Similarly with previous strategies, also in the $\delta_2$ simulation, the portfolio computes different returns depending on the movement of the stock price in the trading window. If the price during the 365 days after the publication of the report reaches the modified target price the portfolio closes the position otherwise it keeps the position open up to *t+365*.

The portfolio return for the $\delta_2$ strategy is:

$$R_{P\Delta_2} = \frac{1}{n+m}\left(\sum_{i=1}^{n} R_{L\Delta_{2\gamma\eta i}} + \sum_{i=1}^{m} R_{S\Delta_{2\gamma\eta i}}\right)$$

$$R_{L\Delta_{2\gamma\eta i}} = \begin{cases} \frac{TP_{\Delta_2\gamma\eta t}}{P_{\eta_t}} - 1 & if P_{\eta j} \geqslant TP_{\Delta_2\gamma\eta t} \\ \frac{P_{\eta_{t+365}}}{P_{\eta_t}} - 1 & otherwise \end{cases} \Bigg|\ j \in \{t, t+1, \ldots\ldots, t+365\}$$

$$Rs_{\Delta_{2\gamma\eta i}} = \begin{cases} \frac{P_{\eta_t}}{TP_{\Delta_2\gamma\eta t}} - 1 & if P_{\eta j} \leqslant TP_{\Delta_2\gamma\eta t} \\ \frac{P_{\eta_t}}{P_{\eta_{t+365}}} - 1 & otherwise \end{cases} \Bigg|\ j \in \{t, t+1, \ldots\ldots, t+365\}$$

Where

*n:* number of long transactions in the portfolio;

*m*: number of short transactions in the portfolio;

$Rp_{\Delta 1}$: portfolio return as mean of all long and short trading operations;

$R_{S\,\Delta 2\gamma\eta i}$: return on long transactions related to analyst's report *issued* in t;

$R_{S\,\Delta 2\gamma\eta i}$: return on short transactions related to analyst's report *issued* in t;

$TP_{\Delta 2\gamma\eta\, t}$: target price corrected by historical prediction error;

$P_\eta t$: stock market price at the research report publication t;

$P_\eta t_{+365}$: stock price 365 days after the report issuing.

*4.7 Strategies performance*

Table 4 Panel A presents the descriptive statistics of the returns for the three 3 strategies and 4 implicit return classes. Each panel gives the average stock return, the standard deviation, the maximum and the minimum values, the Sharpe ratio and the holding period for each portfolio.

INSERT TABLE 4 PANEL A&B HERE

We observe that for all strategies the most profitable implicit return classes are the first, with returns between 7,45% and 4.97%, and the last class, with returns between 19.62% and 17.84%. Hence, companies with the highest/lowest predicted growth in the stock price are also the companies that perform better in the subsequent period. Moreover, Table 4 shows that for simple stock returns the most profitable strategy is the TP strategy with a mean return over the four classes of 6.51%. Therefore, analysts, on average, seem to effectively predict positive stock returns. In this case, the correction parameters do not produce a profitable correction of the analyst's overshooting and, on the contrary, the $\delta_1$ and $\delta_2$ strategies create a future price and a modified target price excessively conservative. This conservative characteristic is supported by standard deviation figures: the $\delta_1$ and $\delta_2$ strategies present lower standard deviations with respect to the standard deviation of the TP strategy and the Sharpe ratio, especially for $\delta_2$ strategy is only slightly lower than the Sharpe ratio of the TP strategy.

Table 4 Panel B gives statistics about the mean, standard deviation and Sharpe ratio of the strategies across the different years. The more conservative profile of the $\delta_1$ and $\delta_2$ strategies is reflected in the yearly returns. In fact in 2001 and 2002, where the global stock market return was dominated by a bear period, we observe an over performance of the $\delta_2$ strategy against the TP strategy and an overperformance of the $\delta_1$ against the TP strategy in 2001. On the contrary, in 2003 and 2004 the TP strategy dominates the other two strategies confirming the more aggressive characteristic of this strategy.

Another relevant characteristic is the distribution of positive and negative returns of the different classes across years. During 2001 and 2002 we observe for all strategies, high returns associated with the two classes with negative implicit returns and low returns in the top classes. In 2004 and 2005 we observe the opposite performance pattern: higher returns are associated with top implicit return classes and lower returns with the worst class. Finally, in 2003, the returns in the two positive and in the two negative implicit return classes are almost equal for all strategies.[6] This phenomenon could suggest a role for the stock market momentum on the portfolios. Even if the positive implicit return reports dominates (in term of numbers) the negative implicit return reports across the years, the returns associated with these implicit returns are largely different. During bear years, positive target prices are less frequently reached than in bull years. On the contrary during bull years it becomes more difficult to deliver positive returns by negative recommendations. This evidence is consistent with stocks pricing reacting both to company-specific news, incorporated in analysts' reports, and general market movements.

Table 5 Panel A shows the abnormal returns, as the difference between the stock returns and the benchmark returns. Benchmark returns are computed as the difference between the price of the market index at the opening position date and the price of the index at the selling date.

INSERT TABLE 5 PANEL A&B HERE

The three strategies have positive returns also when compared to the benchmark returns. Table 5 shows that the $\delta_2$ strategy is the most profitable in terms of abnormal returns with an average return of 6.51%. Moreover, abnormal returns in the $\delta_2$ strategy are positive in the best and the worst classes and are negative on average in the two central classes. The $\delta_2$ strategy is also the best in terms of return corrected for risk. The average Sharpe ratio for $\delta_2$ is the highest, even if the TP Sharpe ratio dominates the $\delta_2$ Sharpe ratio in the second classes and the $\delta_2$ Sharpe ratio is dominated by the $\delta_1$ in the third implicit return class. Table 5 reveals that the average holding period is lower in $\delta_2$ strategy than in $\delta_1$ and TP strategies. This means that, on average, the $\delta_2$ strategy delivers better performance in terms of risk-return. This over performance is obtained with a lower amount of capital due to the shorter holding time for every transaction. Reducing the holding period allows us to reduce the capital invested every day[7].

[6] This suggests a limit in the strategy: when implicit returns and market momentum have opposite signs, it's more difficult to generate abnormal positive returns..
[7] Every days $\delta_2$ portfolios have few positions opened.

Table 5 Panel B describes the yearly abnormal returns for every implicit return class. The statistics show that the three strategies over perform the benchmark in the first three years but yield negative abnormal returns in the last two years. The results indicate that the strategies provide downside protection in downturn market periods but still provide positive returns in bullish markets. The $\delta_2$ strategy over-performs other two strategies also in the yearly statistics. In particular the $\delta_2$ strategy delivers higher abnormal returns than the $\delta_1$ and the *TP* strategies every year except for 2001.

*4.8 Weighted portfolio performances*

In this section we examine the performances of the different strategies under the circumstance of different weights in portfolio classes. Table 4 and 5 show a constant positive return associated with extreme classes and a persistent negative return associated with the two middle implicit return classes. This evidence suggests the possibility of exploiting larger abnormal returns through over weighting the first and the last implicit return class ( $[(TP_t/P_t)-1]>20\%$ and $[(TP_t/P_t)-1]\leq-20\%$). The over weighting highest (absolute value) implicit return classes has an additional economic foundation: rational investors, who believe in analysts' superior ability to predict future stock price movements, may prefer investing more in stocks with the highest predicted future price growth. Hence, investors would overweight stocks with larger implicit returns to profit from different forecasts. Following this conjecture, we generate portfolios overweighting the first and fourth implicit return classes and keeping a constant rate of investment in the others two classes.

Table 6 shows the abnormal returns associated with the weighted implicit return classes.

INSERT TABLE 6 PANEL A&B HERE

The Table evidences a significant increase in return for all strategies. The $\delta_2$ remains the most profitable strategy with an average return of 3.18% and a Sharpe ratio of 8.86%. For all strategies Table 6 shows an increase in the Sharpe ratio with respect to the Sharpe ratio showed in the simple abnormal return table. This finding suggests that such an overweighting strategy increases returns but also delivers larger returns per unit of risk.

Table 6 panel B shows the yearly abnormal returns for the weighted portfolios. As in the previous results, we observe better performances in the first three years rather than in 2004 and 2005. The $\delta_2$ strategy obtains an average return between 16.77% and -7.69% across the sample years, the $\delta_1$ strategy yields between 15.61% and -8.92% and the *TP* strategy delivers returns between 19,23% and -9,30%. It is noteworthy to observe that the dispersion of returns is larger in the *TP* strategy than in the others two strategies. The standard deviation of average returns across different years is 11,59% for the *TP* strategy, 10,24% for the $\delta_2$ and 9,64% for the $\delta_1$ strategy. The differences in standard deviations between the strategies reflect the different performance profiles of $\delta_1$, $\delta_2$ and *TP*, with the first strategy being the most conservative, since it shows the lowest standard deviation across years and the lowest average return (2,60%). The *TP* strategy has the highest standard deviation across years and an average return higher than $\delta_1$, but lower than $\delta_2$. Finally, the $\delta_2$ has a standard deviation slightly higher than $\delta_1$, but a larger average return (3,18%). The superior ability of $\delta_2$ strategy to deliver higher return per unit of risk is revealed by the Sharpe ratio. In $\delta_2$, the Sharpe ratio is equal to 8,86%, this value is larger than 6,15% (TP strategy) and 5,40% ($\delta_1$ strategy).

**5. Evaluation of the portfolios' performance**

*5.1 CAPM adjusted portfolio returns*

The differences in the returns generated by different portfolios could originate from systematic risk differences in the traded stocks. To account for market risk in the portfolios, we measure the returns of weighted portfolios in the context of CAPM. For every class of implicit return and for each strategy, we estimate the following equation:

$$R_{p_t} - r_{f_t} = \alpha_p + \beta_p (R_{M_t} - r_{f_t}) + \varepsilon_{pt}$$

where:

$Rp_t$: portfolio return for each implicit return class

$R_{ft}$ : risk-free rate in the $Rp_t$*'s* investment horizon

$R_{Mt}$: Market Index return in the $Rp_t$*'s* investment horizon

$\alpha_{p:}$ Jensen's alpha

$\beta_{p:}$ measure of exposure to the market risk

The alpha coefficient is interpreted as a measure of the returns relative to the market index, which acts as a benchmark.

Table 7 shows the results obtained for the three strategies and, within every strategy, for the four implicit return classes. From left to right, we present alpha and beta coefficients, the t-statistics associated, the adjusted coefficient of determination, the root of mean square errors and the F-statistic. Also controlling for CAPM market risk, the $\delta_2$ and *TP* strategies outperform the $\delta_1$ strategy. This outperformance is revealed by the positive alpha coefficients associated with the three strategies. The two extreme implicit return classes show the highest alphas (between 0.0597 and 0.465) and for all strategies these alphas are significant at 1% level.

INSERT TABLE 7 HERE

The first implicit return class ($(TP_t/P_t)-1 > 20\%$) shows, for all strategies, a positive and statistically significant alpha. The three intercepts are between 6% and 8.6% and seem to suggest that buying the stocks when analysts' forecast a consistent growth in the share price produces a positive outperformance over the market. In particular, these transactions beat the benchmark when the market is in a bull phase. In fact, the beta associated with the first class is higher than 1 for all strategies. This means that the strategy consisting of going long on stocks with a high implicit return (>20%), outperforms the market when the market is in a bull phase, but underperforms it in a bear phase.

The last implicit return class ($(TP_t/P_t)-1 \leq 20\%$) delivers the highest outperformance over the market. Alphas are larger than 40% for the $\delta_2$ and *TP* strategies and slightly smaller for than 40% for the $\delta_1$ strategy. The beta associated with this implicit return class is negative, meaning that our portfolio strategy captures positive abnormal returns associated with negative analysts' forecasts (negative implicit returns), especially in weak markets. Yet, the first and last implicit return classes are also the riskiest: the betas of these classes are, in absolute value, larger than one.

An interesting evidence of the last implicit return class is that, while delivering positive returns it also shows positive alpha and negative beta. These results may suggest that trading on negative outlook stocks delivers consistent positive returns and that these returns are contra cyclical with respect to the benchmark. Large negative betas indicate that short selling the stocks with negative implicit return produce a strategy that yields opposite returns compared to the benchmark: i.e. it delivers positive returns when the benchmark decreases and negative, or lower returns when the benchmark increases.

Finally, F-statistic significance for the analyses is high for the first three implicit return classes but weaker for the last one. The reason behind this phenomenon is the different number of transactions across the four classes. Due to the upward bias of target prices, for all strategies, the first two classes are extremely significant (F-stat between 468.5 and 712.08), while the last two have a lower F-statistic[8].

*5.2 Fama & French three factors model adjusted portfolio returns*

Academic literature shows that there is a predictable component in the returns of stocks, which questions the suitability of the CAPM model to explain the cross-section of stock returns. To control for this effect we run Fama and French (1993) three-factor model regressions. Standard equation goes as follows:

$$R_{p_t} - r_{f_t} = \alpha_p + \beta_p (R_{M_t} - r_{f_t}) + \varphi_p HML_t + \phi_p SMB_t + \varepsilon_{pt}$$

where:

$Rp_t$: portfolio return for each implicit return class

$R_{ft}$ : risk-free rate in the $Rp_t$*'s* investment horizon

$R_{Mt}$: MIBTEL return in the $Rp_t$*'s* investment horizon

$\alpha_{p:}$ Jensen's alpha

$\beta_{p::}$ measure of exposure to the market risk

$\varphi_p$: measure of exposure to value (growth) style strategy

$\Phi_p$: measure of exposure to company's size style strategy

We adjust the standard variables as follows: the $SMB_t$ factor is the difference in month t between the average returns on the three portfolios containing the smallest cap stocks and the three portfolios containing the highest cap stocks, and the $HML_t$ factor is the difference between the average returns on the two stock portfolios with a high BTM ratio and the average performance of the stock portfolios with a low BTM ratio[9].

In the equation above the three independent variables coefficients allow a two-fold interpretation. First, they are measures of the exposure of each portfolio to the specific risk factors (sensitivity). Second, the coefficients indicate the proportion of the average return attributable to each of the three additional return drivers: market, size, and book-to-market ratio. In this second interpretation, the coefficients allow to verify the existence of trends in analysts' target prices; i.e., the implicit existence of investment styles. A positive SMB factor

[8] Because analysts tend to publish reports with positive recommendations and positive target prices rather than reports with negative forecasts, dataset are generally upward biased. The number of positive reports' is indeed much larger than the negative ones. On the same line, see, Brav, Lehavy and Trueman (2005).

[9] See Fama and French (1993) for details regarding the construction of the SMB and HML factors

would signal that the return on the portfolio depends more on the performance of small rather than large stocks. Similarly, a positive HML coefficient would suggest a greater sensitivity to high book-to-market value stocks, instead of a trend towards stocks with a low book-to market ratio (growth stocks). Controlling for the three above factors, we expect to understand whether analysts merely issue recommendations clustered around the two additional parameters (e.g. positive Tp for large stocks), or, on the contrary they express superior ability in picking over-performing stocks.

Table 8 reports regressions results.  We observe that the adjusted coefficients of determination increase compared to the CAPM model, due to the additional explicative power of the three-factor model. The beta market coefficients slightly increase and remain significant in all implicit return classes. Once again, results show that the highest implicit return class is also the portfolio with the highest systematic risk.

INSERT TABLE 8 HERE

The value of the estimated abnormal returns is positive and significant for all implicit return classes, after controlling for market, size and book-to-market factors. As in CAPM estimation, the highest alphas are associated with the first and the last implicit return classes. In this simulation the TP strategy, overperform the others two in all portfolios.

Most of the coefficients associated with the additional market factors (SMB and HML) are significantly different to zero. In particular, the coefficients of the SMB size factor are negative and statistically significant in the first three implicit return classes for the $\delta_1$ and the *TP* strategies and in the first two for the $\delta_2$ strategy. This coefficient is strongly negative for all implicit return classes, suggesting that analysts have a strong tendency to issue research reports for large stocks. Moreover the non-significance of SMB for the last class seems to suggest that analysts' issue few negative target prices independently from the size of the companies.

Likewise, the sign of the coefficients associated with the HML factor is negative for all implicit return classes and for all strategies. The magnitude of the coefficient decreases steadily from the highest to the lowest implicit return class, signalling that positive target prices are oriented more towards a growth strategy (stocks with low book-to-market values), while the sell portfolio leans more towards a value strategy (stock with low book-to-market values).

The different signs and magnitude in the coefficients of the SMB and HML imply different investment styles across the implicit return classes. The first class essentially encompasses high beta stocks, and is more exposed to large growth stocks than to value and small shares. Conversely, the last implicit return class contains stocks with low betas, high BTM and SMB coefficients. Since the dataset is skewed towards extremely large companies it is not surprising that, for all classes the SMB coefficient estimate is negative: bigger companies are characterized by a higher number of transactions therefore analysts could obtain economic benefits deriving from commission on trading and brokerage activity.

These results are consistent with findings by Barber et al. (2001) who show that the best performing portfolios consist of growth stocks with a high beta value and, conversely, the worst performing portfolios contains value stocks with a low beta value. These findings and the evidence that abnormal returns obtained using the Fama and French are always higher than the results calculated using CAPM allow to conclude that the SMB and HML parameters do not play an important role in determining expected returns in our strategies.

## 6. Conclusions

Using a large and novel dataset of analyst recommendations and target prices, we examined the profitability of an innovative set of trading strategies based on target prices embedded in equity research reports. A great deal of academic studies focus their attention on the stock price reaction after an analyst's recommendations and on the possibility of delivering positive returns through strategies based on stock recommendations. Since target prices published in the analysts' reports are the results of a comprehensive company's valuation, the same target price should be the most precise forecast developed by analysts on the future stock price. In this paper we adopt target prices as information signals to build our portfolio strategy. At the first stage, we exploit implicit returns (difference between the current price and the target price) as a buying or short selling signal to open every transaction in the portfolio. Next, we use raw and adjusted target prices as a closing transaction signal.

We build three different strategies to verify if the overshooting of target prices revealed by several studies could affect the profitability of a trading strategy based on these target prices. The first strategy (TP strategy) utilizes the target prices without any correction, while two additional strategies correct the target prices by the historical price reaction and by the historical target price error. We then generate four portfolios within every strategy to check whether analysts' target prices have any investment value. We find that all strategies deliver positive abnormal returns. In particular, the highest and lowest implicit return classes exhibit the highest stock returns and abnormal returns.

In the last part of the paper we have controlled the portfolio performances for systematic risk factors through the CAPM and the Fama & French three factor model. The positive performances of our strategies persist also after controlling for these factors; in particular our strategies beat the market with consistent abnormal returns in all the four implicit return classes analyzed. From the three factors equation, it seems that analysts tend to advise buying stocks with risk above the average market risk, with growth profile and with large market value. Conversely analysts advise selling value stocks and those with a negative beta.

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**TABLE 1**

**Descriptive statistic of companies**

The table shows the descriptive statistics for the 7036 reports issued on 98 companies included in the sample. Company industry classification is based on FTSE classification at level 3. Report N° is the number of reports included in the final sample.

| Company | Industry | Report N. and % | | Company | Industry | Report N. and % | |
|---|---|---|---|---|---|---|---|
| Aedes | Financials | 23 | (0,21%) | Gewiss | General Industries | 18 | (0,17%) |
| Alitalia | Cyclical services | 29 | (0,27%) | Gruppo Coin | Cyclical services | 93 | (0,86%) |
| Alleanza | Financials | 199 | (1,85%) | Gr. E. L'espresso | Cyclical services | 203 | (1,89%) |
| Amga | Utilities | 55 | (0,51%) | Ifil | General Industries | 36 | (0,33%) |
| Autogrill | Cyclical services | 212 | (1,97%) | Irce | General Industries | 138 | (1,28%) |
| Autostrada To-Mi | Cyclical services | 51 | (0,47%) | It Holding | Cycl. cons. goods | 25 | (0,23%) |
| Autostrade | Cyclical services | 265 | (2,46%) | Italcementi | Basic Industries | 39 | (0,36%) |
| Banca Carige | Financials | 7 | (0,07%) | Italmobiliare | Basic Industries | 177 | (1,64%) |
| Banca Fideuram | Financials | 158 | (1,47%) | Jolly Hotels | Cyclical services | 21 | (0,20%) |
| Banca Intesa | Financials | 287 | (2,67%) | La Doria | Non-Cycl. cons. goods | 20 | (0,19%) |
| Banca Lombarda | Financials | 46 | (0,43%) | Marcolin | Cycl. cons. goods | 30 | (0,28%) |
| Banca Mps | Financials | 185 | (1,72%) | Marzotto | Cycl. cons. goods | 14 | (0,13%) |
| Bnl | Financials | 210 | (1,95%) | Mediaset | Cyclical services | 167 | (1,55%) |
| Bca.Ppo.Etruria | Financials | 15 | (0,14%) | Mediobanca | Financials | 332 | (3,08%) |
| Bca.Ppo.Intra | Financials | 21 | (0,20%) | Mediolanum | Financials | 51 | (0,47%) |
| Bca.Ppo.Italiana | Financials | 31 | (0,29%) | Merloni | Cycl. cons. goods | 211 | (1,96%) |
| Bca.Ppo.Milano | Financials | 109 | (1,01%) | Milano Assic. | Financials | 54 | (0,50%) |
| Benetton | Cycl. cons. goods | 231 | (2,15%) | Mirato | Non-Cycl. cons. goods | 61 | (0,57%) |
| Beni Stabili | Financials | 84 | (0,78%) | Mondadori Ed | Cyclical services | 193 | (1,79%) |
| Bonif.Ferraresi | Non-Cycl. cons. goods | 5 | (0,05%) | Navig. Montanari | Cyclical services | 36 | (0,33%) |
| Brembo | Cycl. cons. goods | 131 | (1,22%) | Parmalat | Non-Cycl. cons. goods | 134 | (1,24%) |
| Bulgari | Cycl. cons. goods | 331 | (3,07%) | Permasteelisa | Basic Industries | 99 | (0,92%) |
| Buzzi Unicem | Basic Industries | 153 | (1,42%) | Pininfarina | Cycl. cons. goods | 50 | (0,46%) |
| Capitalia | Financials | 178 | (1,65%) | Pirelli | General Industries | 224 | (2,08%) |
| Carraro | Cycl. Cons. goods | 24 | (0,22%) | Poligrafici Ed. | Cyclical services | 13 | (0,12%) |
| Cembre | General Industries | 22 | (0,20%) | Ras | Financials | 219 | (2,03%) |
| Cementir | Basic Industries | 54 | (0,50%) | Rcs Mediagroup | Cyclical services | 133 | (1,24%) |
| Class Editori | Cyclical services | 50 | (0,46%) | Recordati | Non-Cycl. cons. goods | 150 | (1,39%) |
| Credito Emiliano | Financials | 88 | (0,82%) | Reno De Medici | Basic Industries | 37 | (0,34%) |
| Cdt.Valtellines | Financials | 3 | (0,03%) | Rich. Ginori | Basic Industries | 20 | (0,19%) |
| Cremonini | Non-Cycl. cons. goods | 80 | (0,74%) | Risanamento | Financials | 10 | (0,09%) |
| Crespi | Basic Industries | 2 | (0,02%) | Sabaf | General Industries | 78 | (0,72%) |
| Csp Intern. | Cycl. cons. goods | 22 | (0,20%) | Saes Getters | General Industries | 72 | (0,67%) |
| Danieli | General Industries | 16 | (0,15%) | Saipem | Resources | 233 | (2,16%) |
| Ducati Motor Hold. | Cycl. cons. goods | 110 | (1,02%) | San Paolo Imi | Financials | 298 | (2,77%) |
| Edison | Utilities | 84 | (0,78%) | Sirti | Information Technology | 22 | (0,20%) |
| Enel | Utilities | 329 | (3,06%) | Snai | Cyclical services | 12 | (0,11%) |
| Enertad | Cyclical services | 17 | (0,16%) | Snia Ord | Non-Cycl. cons. goods | 48 | (0,45%) |
| Eni | Resources | 320 | (2,97%) | Sogefi | Cycl. cons. goods | 54 | (0,50%) |
| Erg | Resources | 144 | (1,34%) | Sol | Basic Industries | 20 | (0,19%) |
| Ergo Previd. | Financials | 58 | (0,54%) | Stefanel | Cycl. cons. goods | 35 | (0,33%) |
| Ericsson | Information Technology | 11 | (0,10%) | Stm | Information Technology | 194 | (1,80%) |
| Fiat | Cycl. cons. goods | 311 | (2,89%) | Targetti | General Industries | 43 | (0,40%) |
| Fin Part | Cycl. cons. goods | 86 | (0,80%) | Telecom Italia | Non-cyclical services | 370 | (3,44%) |
| Finecogroup | Financials | 153 | (1,42%) | Telecom It. M. | Information Technology | 180 | (1,67%) |
| Finmeccanica | General Industries | 5 | (0,05%) | Tim | Non-cyclical services | 310 | (2,88%) |
| Fondiaria-Sai | Financials | 121 | (1,12%) | Trevi | General Industries | 33 | (0,31%) |
| Gabetti | Financials | 8 | (0,07%) | Unicredito | Financials | 71 | (2,77%) |
| Generali | Financials | 256 | (2,38%) | Unipol | Financials | 71 | (0,66%) |
| | | | | | | | |
| Mean number or reports | | | | | | 109,89 | |
| Median | | | | | | 71,50 | |
| Standard deviation | | | | | | 100,21 | |

**Table 2**
**Yearly portfolio compostion**

This table reports the distribution of the implicit return, [(TPt/Pt)-1], over the years. The columns show the absolute distribution for each year. We also report the percentage of reports included in each portfolio each year (over the total number of reports issued the relevant year).

| Implicit return | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 599 | (39,91%) | 721 | (43,41%) | 708 | (33,32%) | 454 | (24,29%) | 274 | (14,83%) | 2756 | (30,61%) |
| 10% < (TPt/Pt)-1 ≤ 20% | 362 | (24,12%) | 393 | (23,66%) | 565 | (26,59%) | 630 | (33,71%) | 631 | (34,16%) | 2581 | (28,66%) |
| 0% < (TPt/Pt)-1 ≤ 10% | 286 | (19,05%) | 259 | (15,59%) | 466 | (21,93%) | 522 | (27,93%) | 525 | (28,42%) | 2058 | (22,85%) |
| -10% < (TPt/Pt)-1 ≤ 0% | 149 | (9,93%) | 157 | (9,45%) | 218 | (10,26%) | 188 | (10,06%) | 257 | (13,91%) | 969 | (10,76%) |
| -20% < (TPt/Pt)-1 ≤ -10% | 54 | (3,60%) | 66 | (3,97%) | 103 | (4,85%) | 53 | (2,84%) | 101 | (5,47%) | 377 | (4,19%) |
| (TPt/Pt)-1 ≤ -20% | 51 | (3,40%) | 65 | (3,91%) | 65 | (3,06%) | 22 | (1,18%) | 59 | (3,19%) | 262 | (2,91%) |
| Total | 1501 | (100,00%) | 1661 | (100,00%) | 2125 | (100,00%) | 1869 | (100,00%) | 1847 | (100,00%) | 9005 | (100,00%) |

**TABLE 3**
**Implicit return transition matrix**

The table shows the absolute and relative implicit return transitions. For each initial implicit return class (FROM), we identify the revised implicit return (TO). Percentages are calculated as the ratio between the number of reports revised in the new implicit return class (TO) over the total number of reports of the initial implicit return class (FROM).

| | FROM | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TO** | (TPt/Pt)-1 > 20% | | 10% < (TPt/Pt)-1 ≤ 20% | | 0% < (TPt/Pt)-1 ≤ 10% | | -10% < (TPt/Pt)-1 ≤ 0% | | -20% < (TPt/Pt)-1 ≤ -10% | | (TPt/Pt)-1 ≤ -20% | |
| (TPt/Pt)-1 > 20% | 1452 | (60,32%) | 538 | (24,87%) | 152 | (8,97%) | 38 | (4,87%) | 11 | (3,64%) | 9 | (4,23%) |
| 10% < (TPt/Pt)-1 ≤ 20% | 622 | (25,84%) | 916 | (42,35%) | 486 | (28,69%) | 106 | (13,59%) | 29 | (9,60%) | 11 | (5,16%) |
| 0% < (TPt/Pt)-1 ≤ 10% | 235 | (9,76%) | 560 | (25,89%) | 687 | (40,55%) | 244 | (31,28%) | 44 | (14,57%) | 20 | (9,39%) |
| -10% < (TPt/Pt)-1 ≤ 0% | 60 | (2,49%) | 100 | (4,62%) | 288 | (17,00%) | 266 | (34,10%) | 94 | (31,13%) | 28 | (13,15%) |
| -20% < (TPt/Pt)-1 ≤ -10% | 23 | (0,96%) | 35 | (1,62%) | 63 | (3,72%) | 93 | (11,92%) | 83 | (27,48%) | 36 | (16,90%) |
| (TPt/Pt)-1 ≤ -20% | 15 | (0,62%) | 14 | (0,65%) | 18 | (1,06%) | 33 | (4,23%) | 41 | (13,58%) | 109 | (51,17%) |
| Total | 2407 | 100% | 2163 | 100% | 1694 | 100% | 780 | 100% | 302 | 100% | 213 | 100% |

**TABLE 4 Panel A**
**Return on Portfolio Strategies**

The Table summarizes the results of the three trading strategies. Every strategy is divided by the implicit return incorporated in the analyst's report. For every class we compute the mean of the returns generated by the trading operations opened after every report issued, the standard deviation of these returns, the maximum/minimum returns, the Sharpe ratio and the average number of days between buying and selling days (Holding period).

**TP STRATEGY**

| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 7.45% | 27.45% | 96.46% | -100.00% | 27.15% | 307.8 |
| 10% < (TPt/Pt)-1 ≤ 20% | 5.08% | 17.81% | 68.63% | -100.00% | 28.52% | 244.6 |
| -20% < (TPt/Pt)-1 ≤ -10% | 1.16% | 22.16% | 56.55% | -54.12% | 5.22% | 247.8 |
| (TPt/Pt)-1 ≤ -20% | 19.62% | 32.45% | 97.40% | -62.77% | 60.47% | 289.8 |
| Total | 6.51% | 23.84% | 97.40% | -100.00% | 27.30% | 275.8 |

**δ1 STRATEGY**

| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 4.97% | 20.91% | 98.85% | -100.00% | 23.79% | 232.0 |
| 10% < (TPt/Pt)-1 ≤ 20% | 3.39% | 16.10% | 61.79% | -100.00% | 21.04% | 215.5 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.90% | 20.99% | 56.55% | -54.12% | 4.29% | 227.7 |
| (TPt/Pt)-1 ≤ -20% | 17.84% | 32.68% | 192.33% | -62.77% | 54.61% | 241.3 |
| Total | 4.58% | 19.89% | 192.33% | -100.00% | 23.02% | 225.0 |

**δ2 STRATEGY**

| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 5.36% | 21.53% | 152.88% | -100.00% | 24.91% | 222.2 |
| 10% < (TPt/Pt)-1 ≤ 20% | 3.39% | 16.06% | 103.09% | -100.00% | 21.10% | 206.8 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.88% | 21.21% | 56.55% | -54.12% | 4.15% | 234.4 |
| (TPt/Pt)-1 ≤ -20% | 21.66% | 37.79% | 192.33% | -62.77% | 57.33% | 260.5 |
| Total | 4.92% | 20.69% | 192.33% | -100.00% | 23.77% | 217.9 |

**TABLE 4 Panel B**
**Yearly Return on the Portfolio Strategies**

The Table summarizes the results of the three trading strategies with annual frequency. Every strategy is divided by the implicit return incorporated in the analyst's report. For every class wecompute the mean of the returns generated by the trading operations opened after every report, the standard deviation of these returns, and the Sharpe ratio.

**TP STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | -4,30% | 30,31% | -14,17% | 4,43% | 26,75% | 16,58% |
| 10% < (TPt/Pt)-1 ≤ 20% | -5,58% | 27,12% | -20,57% | -4,03% | 21,79% | -18,51% |
| -20% < (TPt/Pt)-1 ≤ -10% | 14,60% | 11,49% | 127,11% | 11,17% | 19,68% | 56,74% |
| (TPt/Pt)-1 ≤ -20% | 36,42% | 15,79% | 230,59% | 39,68% | 32,20% | 123,24% |
| Total | -2,12% | 29,46% | -7,18% | 3,53% | 26,60% | 13,25% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 17,10% | 27,33% | 62,57% | 11,25% | 22,87% | 49,19% |
| 10% < (TPt/Pt)-1 ≤ 20% | 10,45% | 12,99% | 80,46% | 10,36% | 10,61% | 97,69% |
| -20% < (TPt/Pt)-1 ≤ -10% | 2,04% | 20,05% | 10,16% | 0,90% | 19,48% | 4,62% |
| (TPt/Pt)-1 ≤ -20% | 17,52% | 30,22% | 57,96% | 2,24% | 23,34% | 9,61% |
| Total | 13,44% | 22,82% | 58,89% | 10,14% | 17,24% | 58,80% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | 9,51% | 17,84% | 53,30% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | 6,61% | 12,32% | 53,68% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -13,26% | 23,25% | -57,02% | | | |
| (TPt/Pt)-1 ≤ -20% | -0,25% | 31,24% | -0,81% | | | |
| Total | 5,11% | 17,74% | 28,82% | | | |

**δ1 STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | -3,31% | 26,28% | -12,61% | 2,18% | 21,83% | 10,01% |
| 10% < (TPt/Pt)-1 ≤ 20% | -6,56% | 24,81% | -26,44% | -3,95% | 20,22% | -19,51% |
| -20% < (TPt/Pt)-1 ≤ -10% | 14,24% | 11,70% | 121,70% | 9,84% | 18,49% | 53,19% |
| (TPt/Pt)-1 ≤ -20% | 33,14% | 23,16% | 143,09% | 33,03% | 41,53% | 79,55% |
| Total | -1,92% | 26,54% | -7,22% | 2,23% | 23,94% | 9,32% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 11,25% | 17,40% | 64,67% | 9,10% | 14,38% | 63,25% |
| 10% < (TPt/Pt)-1 ≤ 20% | 8,82% | 10,98% | 80,31% | 8,00% | 9,63% | 83,13% |
| -20% < (TPt/Pt)-1 ≤ -10% | 1,50% | 18,57% | 8,09% | 0,02% | 18,73% | 0,10% |
| (TPt/Pt)-1 ≤ -20% | 14,07% | 28,13% | 50,04% | 0,18% | 17,46% | 1,02% |
| Total | 9,73% | 16,17% | 60,16% | 7,93% | 12,51% | 63,41% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | 7,10% | 14,88% | 47,69% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | 4,05% | 10,99% | 36,88% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -12,26% | 22,38% | -54,78% | | | |
| (TPt/Pt)-1 ≤ -20% | 0,57% | 23,78% | 2,40% | | | |
| Total | 3,11% | 15,26% | 20,38% | | | |

**δ2 STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | -2,99% | 26,51% | -11,28% | 3,79% | 21,12% | 17,94% |
| 10% < (TPt/Pt)-1 ≤ 20% | -5,87% | 24,10% | -24,37% | -4,05% | 19,89% | -20,37% |
| -20% < (TPt/Pt)-1 ≤ -10% | 14,39% | 12,31% | 116,86% | 10,30% | 18,98% | 54,27% |
| (TPt/Pt)-1 ≤ -20% | 37,96% | 27,10% | 140,10% | 44,78% | 48,13% | 93,03% |
| Total | -1,28% | 26,86% | -4,76% | 3,75% | 25,01% | 15,00% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 11,92% | 18,53% | 64,34% | 6,90% | 17,93% | 38,47% |
| 10% < (TPt/Pt)-1 ≤ 20% | 8,46% | 11,28% | 75,03% | 7,57% | 10,25% | 73,86% |
| -20% < (TPt/Pt)-1 ≤ -10% | 1,56% | 19,08% | 8,19% | 0,93% | 16,75% | 5,57% |
| (TPt/Pt)-1 ≤ -20% | 15,37% | 28,65% | 53,66% | -2,12% | 17,92% | -11,86% |
| Total | 9,98% | 16,99% | 58,74% | 6,83% | 14,28% | 47,84% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | 8,05% | 16,37% | 49,16% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | 4,47% | 11,74% | 38,08% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -13,25% | 22,30% | -59,40% | | | |
| (TPt/Pt)-1 ≤ -20% | 0,26% | 26,00% | 0,99% | | | |
| Total | 3,49% | 16,32% | 21,40% | | | |

**TABLE 5 Panel A**
**Abnormal Returns on the Portfolio Strategies**

The Table summarizes the results of the three strategies. Every strategy is divided by the implicit return incorporated in the analyst's report. For every class we compute the mean of the different returns abnormal returns as the difference between the stock return and the benchmark return (return on MIBTEL index) for the same horizon. The Table also shows the standard deviation of these abnormal returns, the maximum/minimum, the Sharpe ratio and the average number of days between the buying and the selling days (Holding period).

| **TP STRATEGY** | | | | | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
| (TPt/Pt)-1 > 20% | 2,04% | 26,33% | 101,83% | -126,55% | 7,75% | 307,8 |
| 10% < (TPt/Pt)-1 ≤ 20% | -0,29% | 17,73% | 111,94% | -112,40% | -1,63% | 244,6 |
| -20% < (TPt/Pt)-1 ≤ -10% | -4,42% | 31,53% | 51,72% | -79,19% | -14,03% | 247,8 |
| (TPt/Pt)-1 ≤ -20% | 14,12% | 40,88% | 88,35% | -82,22% | 34,54% | 289,8 |
| Total | 1,10% | 24,40% | 111,94% | -126,55% | 4,51% | 275,8 |

| **δ1 STRATEGY** | | | | | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
| (TPt/Pt)-1 > 20% | 1,49% | 19,84% | 101,83% | -120,64% | 7,51% | 232,0 |
| 10% < (TPt/Pt)-1 ≤ 20% | -0,92% | 15,68% | 98,39% | -109,58% | -5,87% | 215,5 |
| -20% < (TPt/Pt)-1 ≤ -10% | -3,82% | 30,38% | 51,72% | -79,19% | -12,57% | 227,7 |
| (TPt/Pt)-1 ≤ -20% | 13,39% | 39,72% | 193,52% | -82,22% | 33,72% | 241,3 |
| Total | 0,62% | 20,55% | 193,52% | -120,64% | 3,01% | 225,0 |

| **δ2 STRATEGY** | | | | | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
| (TPt/Pt)-1 > 20% | 2,50% | 19,80% | 136,01% | -120,64% | 12,63% | 222,2 |
| 10% < (TPt/Pt)-1 ≤ 20% | -0,79% | 15,51% | 98,39% | -109,58% | -5,11% | 206,8 |
| -20% < (TPt/Pt)-1 ≤ -10% | -4,20% | 30,42% | 60,98% | -79,19% | -13,82% | 234,4 |
| (TPt/Pt)-1 ≤ -20% | 17,49% | 45,17% | 193,52% | -82,22% | 38,71% | 260,5 |
| Total | 1,29% | 21,09% | 193,52% | -120,64% | 6,10% | 217,9 |

**TABLE 5 Panel B**
**Yearly Abnormal Returns on the Portfolio Strategies**

The Table summarizes the results of the three strategies with annual frequency. Every strategy is divided by the implicit returns incorporated in the analyst's report. For every class we compute the mean , the standard deviation and the Sharpe ratio of abnormal returns. Abnormal returns are calculated as difference between the return on a trading transaction and the return on benchmark for the same horizon.

**TP STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 9,77% | 26,97% | 36,20% | 3,01% | 23,88% | 12,60% |
| 10% < (TPt/Pt)-1 ≤ 20% | 8,37% | 25,91% | 32,33% | 0,48% | 16,67% | 2,86% |
| -20% < (TPt/Pt)-1 ≤ -10% | 25,53% | 12,97% | 196,79% | 16,73% | 25,79% | 64,85% |
| (TPt/Pt)-1 ≤ -20% | 50,02% | 19,07% | 262,26% | 42,30% | 37,56% | 112,61% |
| Total | 11,73% | 27,17% | 43,16% | 4,53% | 24,23% | 18,70% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 2,44% | 28,74% | 8,49% | -5,77% | 25,46% | -22,65% |
| 10% < (TPt/Pt)-1 ≤ 20% | 0,86% | 15,20% | 5,65% | -2,54% | 14,14% | -17,99% |
| -20% < (TPt/Pt)-1 ≤ -10% | -8,48% | 25,19% | -33,66% | -10,85% | 27,13% | -39,99% |
| (TPt/Pt)-1 ≤ -20% | 3,71% | 31,73% | 11,69% | -13,15% | 28,78% | -45,69% |
| Total | 1,11% | 24,33% | 4,54% | -4,37% | 20,37% | -21,45% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | -5,10% | 19,96% | -25,53% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | -4,44% | 16,06% | -27,63% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -26,80% | 29,22% | -91,70% | | | |
| (TPt/Pt)-1 ≤ -20% | -13,56% | 34,03% | -39,86% | | | |
| Total | -7,21% | 21,02% | -34,31% | | | |

**δ1 STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 7,33% | 22,84% | 32,09% | 1,85% | 19,81% | 9,33% |
| 10% < (TPt/Pt)-1 ≤ 20% | 6,30% | 22,92% | 27,48% | 0,22% | 15,14% | 1,44% |
| -20% < (TPt/Pt)-1 ≤ -10% | 24,98% | 13,67% | 182,71% | 15,50% | 24,68% | 62,80% |
| (TPt/Pt)-1 ≤ -20% | 44,83% | 28,22% | 158,88% | 34,55% | 44,47% | 77,69% |
| Total | 9,54% | 24,28% | 39,27% | 3,73% | 22,20% | 16,79% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 1,44% | 18,35% | 7,86% | -2,90% | 16,89% | -17,19% |
| 10% < (TPt/Pt)-1 ≤ 20% | 0,75% | 12,37% | 6,03% | -2,73% | 12,48% | -21,87% |
| -20% < (TPt/Pt)-1 ≤ -10% | -8,08% | 24,27% | -33,28% | -10,00% | 26,92% | -37,14% |
| (TPt/Pt)-1 ≤ -20% | 0,95% | 29,66% | 3,20% | -14,41% | 20,87% | -69,05% |
| Total | 0,48% | 17,62% | 2,70% | -3,34% | 15,50% | -21,55% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | -4,53% | 17,63% | -25,70% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | -5,38% | 14,70% | -36,58% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -24,52% | 28,70% | -85,44% | | | |
| (TPt/Pt)-1 ≤ -20% | -9,68% | 27,69% | -34,98% | | | |
| Total | -7,20% | 18,94% | -38,00% | | | |

**δ2 STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 8,02% | 23,16% | 34,65% | 3,61% | 18,32% | 19,73% |
| 10% < (TPt/Pt)-1 ≤ 20% | 5,78% | 22,35% | 25,87% | 0,44% | 14,99% | 2,91% |
| -20% < (TPt/Pt)-1 ≤ -10% | 25,08% | 14,72% | 170,41% | 15,45% | 25,03% | 61,72% |
| (TPt/Pt)-1 ≤ -20% | 51,05% | 31,83% | 160,41% | 47,69% | 50,02% | 95,35% |
| Total | 10,03% | 24,92% | 40,25% | 5,49% | 23,02% | 23,84% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 2,48% | 18,06% | 13,71% | -3,41% | 19,19% | -17,77% |
| 10% < (TPt/Pt)-1 ≤ 20% | 0,62% | 12,33% | 5,02% | -2,77% | 12,65% | -21,87% |
| -20% < (TPt/Pt)-1 ≤ -10% | -8,49% | 24,37% | -34,85% | -8,84% | 24,74% | -35,75% |
| (TPt/Pt)-1 ≤ -20% | 2,38% | 30,27% | 7,88% | -16,63% | 22,63% | -73,50% |
| Total | 0,97% | 17,57% | 5,51% | -3,55% | 16,48% | -21,54% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | -2,39% | 17,02% | -14,02% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | -4,55% | 14,80% | -30,73% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -26,13% | 28,07% | -93,07% | | | |
| (TPt/Pt)-1 ≤ -20% | -11,58% | 28,82% | -40,19% | | | |
| Total | -6,41% | 19,16% | -33,44% | | | |

**TABLE 6 Panel A**
**Abnormal Returns on the Weighted Portfolio Strategies**

The Table summarizes the results of the three strategies with diifferent weights between implicit return classes. Every strategy is divided by the implicit return incorporated in the analyst's report. For every class we compute the mean of the different abnormal returns as difference between the stock return and the benchmark return for the same horizon. The Table also shows the standard deviation of these abnormal returns, the maximum/minimum, the Sharpe ratio and the average number of days between the buying and the selling days (Holding period).

**TP STRATEGY**

| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 4,08% | 52,65% | 203,65% | -253,10% | 7,75% | 307,8 |
| 10% < (TPt/Pt)-1 ≤ 20% | -0,29% | 17,73% | 111,94% | -112,40% | -1,63% | 244,6 |
| -20% < (TPt/Pt)-1 ≤ -10% | -4,42% | 31,53% | 51,72% | -79,19% | -14,03% | 247,8 |
| (TPt/Pt)-1 ≤ -20% | 28,51% | 81,40% | 176,69% | -164,44% | 35,02% | 289,8 |
| Total | 2,60% | 42,19% | 203,65% | -253,10% | 6,15% | 275,8 |

**δ1 STRATEGY**

| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 2,98% | 39,68% | 203,65% | -241,27% | 7,51% | 232,0 |
| 10% < (TPt/Pt)-1 ≤ 20% | -0,97% | 15,97% | 98,39% | -109,58% | -6,05% | 215,5 |
| -20% < (TPt/Pt)-1 ≤ -10% | -3,82% | 30,38% | 51,72% | -79,19% | -12,57% | 227,7 |
| (TPt/Pt)-1 ≤ -20% | 27,04% | 79,09% | 387,03% | -164,44% | 34,19% | 241,3 |
| Total | 1,86% | 34,52% | 387,03% | -241,27% | 5,40% | 225,0 |

**δ2 STRATEGY**

| | Mean | Std dev. | Max | Min | Sharpe ratio | Holding Period |
|---|---|---|---|---|---|---|
| (TPt/Pt)-1 > 20% | 5,00% | 39,59% | 272,03% | -241,27% | 12,63% | 222,2 |
| 10% < (TPt/Pt)-1 ≤ 20% | -0,83% | 15,74% | 98,39% | -109,58% | -5,24% | 206,8 |
| -20% < (TPt/Pt)-1 ≤ -10% | -4,20% | 30,42% | 60,98% | -79,19% | -13,82% | 234,4 |
| (TPt/Pt)-1 ≤ -20% | 35,23% | 90,02% | 387,03% | -164,44% | 39,13% | 260,5 |
| Total | 3,18% | 35,86% | 387,03% | -241,27% | 8,86% | 217,9 |

**TABLE 6 Panel B**
**Yearly Abnormal Returns on the Weighted Portfolio Strategies**

The Table summarizes the annual results of the three strategies  with different weights between implicit return classes. Every strategy is divided by the implicit returns incorporated in the analyst's report. For every class we compute the mean , the standard deviation and the Sharpe ratio of the abnormal returns. Abnormal returns are calculated as difference between the return on trading transaction and the return on the benchmark for the same horizon.

**TP STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 19,53% | 53,95% | 36,20% | 6,02% | 47,76% | 12,60% |
| 10% < (TPt/Pt)-1 ≤ 20% | 8,35% | 26,28% | 31,78% | 0,42% | 17,21% | 2,46% |
| -20% < (TPt/Pt)-1 ≤ -10% | 25,53% | 12,97% | 196,79% | 16,73% | 25,79% | 64,85% |
| (TPt/Pt)-1 ≤ -20% | 100,03% | 38,14% | 262,26% | 84,09% | 75,45% | 111,45% |
| Total | 19,23% | 47,41% | 40,57% | 7,98% | 44,22% | 18,05% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 4,88% | 57,48% | 8,49% | -11,53% | 50,92% | -22,65% |
| 10% < (TPt/Pt)-1 ≤ 20% | 0,84% | 15,28% | 5,51% | -2,64% | 14,49% | -18,25% |
| -20% < (TPt/Pt)-1 ≤ -10% | -8,48% | 25,19% | -33,66% | -10,85% | 27,13% | -39,99% |
| (TPt/Pt)-1 ≤ -20% | 8,20% | 62,91% | 13,03% | -24,48% | 56,41% | -43,40% |
| Total | 2,50% | 44,08% | 5,66% | -6,89% | 35,23% | -19,57% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | -10,19% | 39,91% | -25,53% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | -4,47% | 16,13% | -27,74% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -26,80% | 29,22% | -91,70% | | | |
| (TPt/Pt)-1 ≤ -20% | -27,13% | 68,05% | -39,86% | | | |
| Total | -9,30% | 30,91% | -30,07% | | | |

**δ1 STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 14,66% | 45,67% | 32,09% | 3,70% | 39,63% | 9,33% |
| 10% < (TPt/Pt)-1 ≤ 20% | 6,28% | 23,34% | 26,88% | 0,17% | 15,75% | 1,10% |
| -20% < (TPt/Pt)-1 ≤ -10% | 24,98% | 13,67% | 182,71% | 15,50% | 24,68% | 62,80% |
| (TPt/Pt)-1 ≤ -20% | 89,66% | 56,43% | 158,88% | 68,69% | 89,08% | 77,11% |
| Total | 15,61% | 42,18% | 37,01% | 6,53% | 40,46% | 16,13% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 2,88% | 36,70% | 7,86% | -5,81% | 33,79% | -17,19% |
| 10% < (TPt/Pt)-1 ≤ 20% | 0,75% | 12,47% | 6,00% | -2,84% | 12,85% | -22,13% |
| -20% < (TPt/Pt)-1 ≤ -10% | -8,08% | 24,27% | -33,28% | -10,00% | 26,92% | -37,14% |
| (TPt/Pt)-1 ≤ -20% | 2,68% | 58,79% | 4,56% | -27,01% | 40,26% | -67,09% |
| Total | 1,26% | 30,35% | 4,16% | -4,78% | 24,69% | -19,35% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | -9,06% | 35,26% | -25,70% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | -5,42% | 14,78% | -36,65% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -24,52% | 28,70% | -85,44% | | | |
| (TPt/Pt)-1 ≤ -20% | -19,37% | 55,38% | -34,98% | | | |
| Total | -8,92% | 26,99% | -33,05% | | | |

**δ2 STRATEGY**

| | 2001 | | | 2002 | | |
|---|---|---|---|---|---|---|
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 16,05% | 46,32% | 34,65% | 7,23% | 36,64% | 19,73% |
| 10% < (TPt/Pt)-1 ≤ 20% | 5,76% | 22,79% | 25,28% | 0,35% | 15,57% | 2,23% |
| -20% < (TPt/Pt)-1 ≤ -10% | 25,08% | 14,72% | 170,41% | 15,45% | 25,03% | 61,72% |
| (TPt/Pt)-1 ≤ -20% | 102,11% | 63,65% | 160,41% | 94,98% | 100,28% | 94,72% |
| Total | 16,77% | 43,96% | 38,15% | 9,97% | 42,37% | 23,52% |
| | **2003** | | | **2004** | | |
| | Mean | Std dev. | Sharpe ratio | Mean | Std dev. | Sharpe ratio |
| (TPt/Pt)-1 > 20% | 4,95% | 36,12% | 13,71% | -6,82% | 38,38% | -17,77% |
| 10% < (TPt/Pt)-1 ≤ 20% | 0,62% | 12,33% | 5,01% | -2,80% | 12,82% | -21,80% |
| -20% < (TPt/Pt)-1 ≤ -10% | -8,49% | 24,37% | -34,85% | -8,84% | 24,74% | -35,75% |
| (TPt/Pt)-1 ≤ -20% | 5,54% | 59,98% | 9,24% | -31,45% | 44,08% | -71,34% |
| Total | 2,32% | 30,19% | 7,70% | -5,18% | 27,26% | -18,98% |
| | **2005** | | | | | |
| | Mean | Std dev. | Sharpe ratio | | | |
| (TPt/Pt)-1 > 20% | -4,77% | 34,04% | -14,02% | | | |
| 10% < (TPt/Pt)-1 ≤ 20% | -4,58% | 14,88% | -30,82% | | | |
| -20% < (TPt/Pt)-1 ≤ -10% | -26,13% | 28,07% | -93,07% | | | |
| (TPt/Pt)-1 ≤ -20% | -23,16% | 57,64% | -40,19% | | | |
| Total | -7,69% | 27,13% | -28,33% | | | |

**TABLE 7**

**Weighted Portfolios in the context of CAPM**

This table provides evidence of the estimatiom of the CAPM equation by ordinary least square. We regress the difference between the weighted portfolios' returns and the risk free rate on the difference between MIBTEL return and risk free rate. Significance at 10%,5% and 1% level is denoted by *,**,*** respectively.

**TP STRATEGY**

| Dependent Variable | α | | RMt - Rft | | Adj $R^2$ | Root MSE | F-Stat |
|---|---|---|---|---|---|---|---|
| | Coefficient | *T-stat* | Coefficient | *T-stat* | | | |
| (TPt/Pt)-1 > 20% | 0.086*** | *8.59* | 1.315*** | *21.64* | 0.147 | 0.513 | 468.5 |
| 10% < (TPt/Pt)-1 ≤ 20% | 0.011** | *3.29* | 0.0593*** | *24.29* | 0.187 | 0.171 | 589.93 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.033** | *3.19* | -0.983*** | *-12.81* | 0.307 | 0.188 | 164.22 |
| (TPt/Pt)-1 ≤ -20% | 0.443*** | *11.35* | -2.061*** | *-7.65* | 0.197 | 0.581 | 58.49 |
| All | 0.082*** | *15.13* | 0.770*** | *21.63* | 0.073 | 0.407 | 467.98 |

**δ1 STRATEGY**

| Dependent Variable | α | | RMt - Rft | | Adj $R^2$ | Root MSE | F-Stat |
|---|---|---|---|---|---|---|---|
| | Coefficient | *T-stat* | Coefficient | *T-stat* | | | |
| (TPt/Pt)-1 > 20% | 0.060*** | *8.07* | 1.320*** | *24.87* | 0.185 | 0.383 | 618.54 |
| 10% < (TPt/Pt)-1 ≤ 20% | 0.001 | *0.24* | 0.623*** | *26.83* | 0.219 | 0.152 | 719.91 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.025* | *2.64* | -1.00*** | *-13.73* | 0.337 | 0.174 | 188.44 |
| (TPt/Pt)-1 ≤ -20% | 0.395*** | *10.30* | -2.063*** | *-7.08* | 0.164 | 0.596 | 50.11 |
| All | 0.060*** | *14.99* | 0.720*** | *22.40* | 0.078 | 0.330 | 501.78 |

**δ2 STRATEGY**

| Dependent Variable | α | | RMt - Rft | | Adj $R^2$ | Root MSE | F-Stat |
|---|---|---|---|---|---|---|---|
| | Coefficient | *T-stat* | Coefficient | *T-stat* | | | |
| (TPt/Pt)-1 > 20% | 0.074*** | *9.95* | 1.449*** | *26.68* | 0.207 | 0.388 | 712.08 |
| 10% < (TPt/Pt)-1 ≤ 20% | 0.001 | *0.667* | 0.638*** | *26.89* | 0.219 | 0.152 | 723.29 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.026* | *2.69* | -0.969*** | *-12.98* | 0.312 | 0.179 | 168.35 |
| (TPt/Pt)-1 ≤ -20% | 0.465*** | *10.55* | -2.221*** | *-7.03* | 0.162 | 0.690 | 49.40 |
| All | 0.068*** | *14.99* | 0.756*** | *22.03* | 0.076 | 0.348 | 485.92 |

## TABLE 8

### Weighted Portfolios in the context of Fama-French 3 Factors Model

This table provides evidence of the estimatiom of the Fama & French 3 factors equation by ordinary least square. The dependent variable is the weighted portfolios' returns and the risk free rate. The thre independent variables are: the difference between MIBTEL return and risk free rate (RM-Rf), the differece in return between high book to price stocks and low book to price stocks (HML) and the difference in return between stocks with low market value and stocks with hig market value (SMB) . Significance at 10%,5% and 1% level is denoted by *,**,*** respectively.

**TP STRATEGY**

| Dependent Variable | α | | $R_{Mt}$ - $R_{ft}$ | | HML t | | SMB t | | Adj $R^2$ | Root MSE | F-Stat |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | *T-stat* | Coefficient | *T-stat* | Coefficient | *T-stat* | Coefficient | *T-stat* | | | |
| (TPt/Pt)-1 > 20% | 0.201*** | *11,98* | 1.483*** | *23,09* | -3.608*** | *-8,48* | -1.125*** | *-3,26* | 0,168 | 0,506 | 184,18 |
| 10% < (TPt/Pt)-1 ≤ 20% | 0.063*** | *13,00* | 0.647*** | *27,23* | -2.156*** | *-13,95* | -1.497*** | *-13,22* | 0,256 | 0,163 | 295,15 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.076*** | *5,36* | -0.708*** | *-8,13* | -1.073*** | *-2,72* | -2.275*** | *-6,40* | 0,379 | 0,178 | 75,83 |
| (TPt/Pt)-1 ≤ -20% | 0.469*** | *7,18* | -1.820*** | *-5,42* | 0,096 | *0,06* | -2.542* | *-1,72* | 0,210 | 0,576 | 21,80 |
| All | 0.115*** | *13,85* | 0.922*** | *24,69* | -1.947*** | *-8,47* | -1.59*** | *-8,58* | 0,095 | 0,407 | 206,13 |

**δ1 STRATEGY**

| Dependent Variable | α | | $R_{Mt}$ - $R_{ft}$ | | HML t | | SMB t | | Adj $R^2$ | Root MSE | F-Stat |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | *T-stat* | Coefficient | *T-stat* | Coefficient | *T-stat* | Coefficient | *T-stat* | | | |
| (TPt/Pt)-1 > 20% | 0.143*** | *13,11* | 1.434*** | *26,52* | -3.562*** | *-10,22* | -1.567*** | *-5,21* | 0,217 | 0,376 | 250,60 |
| 10% < (TPt/Pt)-1 ≤ 20% | 0.037*** | *9,01* | 0.679*** | *29,72* | -1.71*** | *-11,74* | -1.4*** | *-12,99* | 0,275 | 0,146 | 326,90 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.063*** | *4,96* | -0.742*** | *-8,87* | -1.026*** | *-2,77* | -2.099*** | *-6,15* | 0,398 | 0,166 | 82,41 |
| (TPt/Pt)-1 ≤ -20% | 0.348*** | *6,10* | -2.170*** | *-6,02* | 2,298 | *1,45* | -0,466 | *-0,30* | 0,171 | 0,593 | 18,25 |
| All | 0.0944*** | *15,36* | 0.879*** | *26,44* | -2.30*** | *-11,41* | -1.90*** | *-11,55* | 0,113 | 0,328 | 251,640 |

**δ2 STRATEGY**

| Dependent Variable | α | | $R_{Mt}$ - $R_{ft}$ | | HML t | | SMB t | | Adj $R^2$ | Root MSE | F-Stat |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | *T-stat* | Coefficient | *T-stat* | Coefficient | *T-stat* | Coefficient | *T-stat* | | | |
| (TPt/Pt)-1 > 20% | 0.114*** | *8,13* | 1.495*** | *26,38* | -1.784*** | *-4,85* | -0.340 | *0,29* | 0,214 | 0,386 | 246,98 |
| 10% < (TPt/Pt)-1 ≤ 20% | 0.033*** | *8,13* | 0.685*** | *29,16* | -1.575*** | *-10,64* | -1.229*** | *11,13* | 0,264 | 0,147 | 308,44 |
| -20% < (TPt/Pt)-1 ≤ -10% | 0.066*** | *4,96* | -0.69*** | *-5,86* | -0.948** | *-2,50* | -2.245*** | *-6,42* | 0,384 | 0,169 | 77,79 |
| (TPt/Pt)-1 ≤ -20% | 0.413*** | *5,78* | -2.333*** | *-5,86* | 2,251 | *1,18* | -0,070 | *-0,04* | 0,163 | 0,689 | 17,33 |
| All | 0.079*** | *12,22* | 0.875*** | *24,39* | -1.266*** | *-5,80* | -1.242*** | *-6,94* | 0,091 | 0,348 | 199,26 |