DO TARGET PRICES PREDICT RATING CHANGES?

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Abstract

Both bond rating agencies and equity analysts evaluate publicly traded companies releasing their opinions to investors. Yet, the quality of this information can be extremely volatile. A large number of studies have investigated the accuracy of debt and equity analysts' research and the price effect of the release of new information to the market. Both rating actions and equity research revisions have proven to deliver consistent and statistically significant price effect on the underlying asset classes, thus allowing to conclude that investors consider this information valuable. Predicting rating actions would therefore be beneficial to both companies and investors. Surprisingly, though, only a few studies have addressed this issue.

In this paper we develop a model to predict rating actions by looking at previously issued target prices. Since target prices provide a valuation of the equity value of a company which is by its very nature more volatile, a change in target prices could signal a change in the underlying robustness of a company's operations which can eventually have an impact on debt rating. Collecting a unique dataset of 416 rating actions and 14.046 target prices issued by 75 different equity analysts and 3 different rating agencies on companies listed in the European market (UK, Germany, Euronext, France and Italy) between 1/1/2000 and 12/31/2005, we find that positive rating events are anticipated by consistent increases of the target prices released in the four months before the rating action. The evidence is slightly weaker for negative rating events, since significant reductions in target prices are observable only in a shorter window (three months). Our results are aligned with previous studies showing analysts' overly optimistic behavior and analysts' reluctance in reducing target prices over time. Controlling for the macro industry of each company, we find evidence that target prices are more likely to predict a rating action for financial rather than industrial companies which supports Gropp and Richards (2001) and Schweitzer et al. (1992) results who point out that differences in regulatory regimes, which imply different degrees of transparency, may affect the quality and accuracy of publicly available information.

Both bond rating agencies and equity analysts evaluate publicly traded companies releasing their opinions to investors: while rating agencies give opinions about the creditworthiness of the issuers, equity analysts provide investors with information on the current and future prospects of the equity value of the same companies. Yet, the quality of this information can be extremely volatile. A large number of studies have investigated the accuracy of debt and equity analysts' research and the price effect of the release of new information to the market.[1] Both rating actions (i.e. revisions of outstanding rating) and equity research revisions (i.e. new recommendation and/or Target price) have proven to deliver consistent and statistically significant price effect on the underlying asset classes, thus allowing to conclude that investors consider this information valuable. A critical factor in differentiating debt and equity research stems from the very nature of the two different financial claims. Standard corporate finance textbooks show that equity is junior a claim than debt and therefore riskier while both values are a function of the company's operating cash flows. Since operating cash flows – both actual and expected - are devoted first to debt repayment and eventually to equity, an improvement or deterioration of operating cash flows will affect equity prices first, leaving debt values less affected. Only larger swings in expected operating cash flows determine a change in debt value. It is straightforward then to observe higher volatility on equity rather than debt market prices, as demonstrated by the differences in debt and equity betas. Following this evidence of higher risk and volatility, it is not surprising to observe that equity research provides a much more frequent coverage of companies, releasing a considerably larger number of research reports. Looking at rating actions and equity research issued on the same companies and monitored by Datastream or Bloomberg, the average coverage for a listed company is 30 equity reports per year vs an average of 1.5 rating actions. This evidence suggest that equity research, being more frequent and targeted at a more volatile asset, could be used to infer the probability of a rating action to occur by looking at the evolution of prior expected equity values which are incorporated in equity analysts research.

Previous studies found that rating actions can be limitedly predicted from publicly available information (Holthausen and Leftvich (1986)). Goh and Ederington (1998) found that downgrades are very weakly correlated with information analysts already have and have impounded in earnings forecasts. In contrast, upgrades appear to be a response to information that analysts already have since the upgrades follow periods of upward earnings forecasts. Recent

1 On rating actions among others see Weinstein (1977), Hand et al. (1992), Goh and Ederington (1993), Gropp and Richards (2001); on equity research among others see Stickel, (1995), Womack (1996), Michaely and Womack (1999), Francis and Soffer (1997), Brav and Lehavy (2003))

findings (Womack (1996), Brav et al (2001), Bradshaw 2002, Asquith et al (2005), among others) have demonstrated that analyst qualitative recommendation and target prices are important pieces of information worth looking at. In particular, recent studies (Asquith et al (2005), Bradshaw and Brown (2006), Bonini et al (2007)) have addressed the quality and accuracy of target prices issued by equity analysts showing that markets react strongly to Target prices and that TPs are much more comprehensive and informative statements than earnings forecasts.

Surprisingly though, the relationship between target prices and rating actions and the possibility of predicting future rating actions by looking at previous changes in Target prices has remained essentially unexplored.

We believe that understanding target prices effectiveness in forecasting rating actions is relevant for two reasons. First, target prices are much more comprehensive a measure than earnings forecasts. Since earnings forecasts predict the future earnings of a company, they show a tendency to converge towards the "true value" at the end of the investment horizon when earnings figures released by the company become less and less uncertain. Furthermore, earnings are accounting measures affected by accounting principles, managerial actions, and fiscal policies among others. Differently, target prices are estimates of what the "true value" of a company should be, adjusted for market factors like size and momentum. Secondly, target prices are frequently issued by a plethora of equity analysts and they are possibly the best estimate of the current and future value of a company's equity. Since equity is junior and riskier, a small change in the company cash flows' soundness will affect equity before than debt, resulting in adjustments in target prices well before changes in the quality of debt.

In this spirit we expect to observe target price changes to anticipate rating revisions. In particular, upwards or downwards changes in target prices, by indicating that a company has become riskier (or less risky) may suggest that the underlying fundamentals are improving (worsening) for equity and, if the observed change is sufficiently large, for debt as well thus opening room for a potential rating revision.

Using a large and unique hand-collected dataset of 416 rating actions and 14.046 target prices issued by 75 different equity analysts and 3 different rating agencies on companies listed in the European market (UK, Germany, Euronext, France and Italy) between 1/1/2000 and 12/31/2005, we find that positive rating events are anticipated by consistent increases of the target prices released in the four months before the rating action. The evidence is slightly weaker for negative rating events, since significant reductions in target prices occur abruptly and in shorter timeframes (three months). Our results are aligned with previous studies showing analysts' overly-optimistic behavior and analysts reluctance in reducing than to increase target prices over time (Womack (1996), Barber et al. (2001)). Controlling for the macro industry of each company, we find evidence that target prices are more likely to predict a rating action for financial rather than industrial companies which supports Gropp and Richards (2001) and Schweitzer et al. (1992) results who point out that differences in regulatory regimes, which imply different degrees of transparency, may affect the quality and accuracy of publicly available information and therefore, target prices.

We finally investigate whether the anticipation of a rating action given by addition to a "watchlist", may influence results. As in Hand et al. [1992] we argue that rating changes and previous inclusion in a watchlist are positively correlated. Target prices therefore should also predict the inclusion in the watchlist. Comparing the average change in target price for contaminated (i.e. preceded by a watchlist inclusion) versus uncontaminated rating actions, we find that contaminated downgrades show more pronounced reductions in target price over time while there is no significant difference for upgrades. This difference can be explained according to whether or not the watch list was released during the four months prior to the rating action, corresponding to our observation window. Since watch lists are usually released on average three months before the downgrade, they fall into our observation window, bringing with them a further reduction in target price.

Overall, the results suggest that target prices may perform a useful role in anticipating rating changes and confirm prior evidence that rating actions can be predicted from publicly available information.

The remainder of this work is organized as follows. Section I reviews previous literature; Section II presents Hypotheses; research design and methodology are described in Section III and IV. Section V presents empirical results. Section VI reports results for Granger causality tests. Section VII concludes with suggestions for future research.

I. Literature Review

A large stream of literature has analyzed the informational content of bond ratings, investigating the impact of rating changes on bond and stock prices. If ratings have an incremental informational content compared to publicly available information, rating changes should have a consistent impact on market prices. Conversely, if ratings are based mostly on already available information and if the necessary updates are not timely enough, agencies' rating actions should not produce any effect on market prices.

Recent studies report that equity markets react negatively (positively) to news that a company's debt is being downgraded (upgraded) by Moody's or Standard and Poor's, indicating that rating actions have informational content with negative (positive) implications on earning forecast and stock performance. In a seminal contribution Weinstein (1977) examines price changes in the interval before and after rating actions. He concludes that rating revisions do not have any effect on the prices of the related bonds. These results would confirm market efficiency in the semi-strong form. Hand et *al.* (1992) examine the daily excess bond and stock returns associated with rating agencies' announcements. Their sample is composed of 250 additions to S&P's credit watch lists between 1981 and 1983, and 1,100 actual rating changes announced by Moody's and S&P between 1977 and 1982. They distinguish between rating revisions preceded by *rumors* and press releases, and uncontaminated rating revisions. Looking at the watch list sample, the authors observe significant changes in stock prices only for negative watch list revisions, while bond yields seem to react significantly for both positive and negative watch list; the reaction is higher in the uncontaminated sub-sample. Focusing on actual rating changes, only downward revisions seem to have an effect on both stocks and bonds; by contrast, upward revisions produce effects only on bond yields. Goh and Ederington (1993) find that revisions do have effects on both equity and debt. They examine the reaction of common stock returns to bond rating changes. While previous studies find a significant negative stock response to downgrades, indicating that these downgrades have informational content with negative implications, they argue that this reaction should not be expected for all downgrades. They argue that downgrades may have a different impact on stock prices depending on the reason which led to an increase in the firm's risk and, in particular, on whether such an increase corresponds to a wealth transfer from bondholders to stockholders. The authors find a significant negative market reaction only to downgrades due to a deterioration of a firm's financial prospects. The rationale for this evidence is that since equity is a secondary claim compared to debt, the negative expectation of operating cash flows (and consequently of free cash flows to equity), will negatively affect bondholders and, to a much larger extent, equityholders. Secondly, while a surprise downgrade is clearly bad news for bondholders it may not always be bad news for stockholders. In particular, if the bonds are downgraded because the rating agencies foresee an increase in leverage that will transfer wealth from bondholders to stockholders, bond prices should fall but equity prices should rise.

Dichev and Piotroski (2001) check also for post-announcement drift by investigating the price impact along a three-year horizon. Downgrades and upgrades are broken up into two subsamples depending on whether they relate to holding or subsidiaries. Using a very large dataset of Moody's bond ratings changes between 1970 and 1997 they find negative abnormal returns on the magnitude of 10 to 14 percent in the first year following downgrades but no reliable abnormal returns following upgrades. The results show that only downgrades matter: they exhibit a post-announcement effect which lasts at least one year and is more pronounced for holdings, small firms and lower rated entities.

A stream of the literature investigates the impact of rating changes specifically for banks. Schweitzer et al. (1992) test the null hypothesis that rating actions matter less for banks than for corporations, the idea being that since banks are highly regulated entities the amount of information available to the market might be higher and hence the information content of rating actions might be lower. The alternative hypothesis that rating actions matter more for banks is based on the idea that regulators might allow the withholding of adverse information in view of the preservation of the stability of the banking system, therefore leading to more pronounced abnormal returns associated with unfavorable bank rating actions. The authors' results show that downgrades lead to a stronger effect when involving banks, thus landing support to the second hypothesis. Gropp and Richards (2001) assess the impact of rating changes performed by S&P, Moody's and Fitch between 1989 and 2000 on stock and bond prices for a sample of 32 European banks. They find little evidence of announcement effects on bond prices, while for stock prices strong effects are associated only with unanticipated rating changes; moreover, the underlying reason seems to matter for the sub-sample of downgrades: the ones motivated by the worsening of the issuer's financial prospects results in a reduction in the prices, while the increase of issuer's leverage results in an increase in the prices. Most of the studies presented above agree about the asymmetric reaction of market prices to negative and positive rating events: only after downward revisions is it possible to observe significant reactions.

Vassalou and Xing (2003) explain this point as stemming from the pattern of the underlying default probability. Based on the same sample of Dichev and Piotroski, they calculate an indicator of default probability and they verify that the asymmetric reaction is due to asymmetric variations of that indicator.

The implications of the empirical evidence on the information content of ratings are not unambiguous. In any case, some elements indicate that rating may have an innovative informational content, even though sometimes the revisions may not be timely. Among the reasons for such a delay, there is the widespread habit of agencies not to worsen situations of temporary difficulties, thereby turning them into default.

The empirical evidence thus shows that rating actions do have a significant impact on both bond and stock prices. Yet only a few papers investigate if and how is it possible to predict rating actions in order to anticipate their price effects for both corporate hedging and portfolio allocation purposes. Goh and Ederington (1998) examine changes in both actual earnings and analysts' forecasts of future earnings around bond rating changes by Moody's over the period 1984-1990. While rating changes and revisions in analysts' earnings forecasts apparently bring some new information to the market, there is also evidence that both react to public information that the market already has. Although studies of bond ratings have established that the stock market reacts negatively to bond downgrade announcement, it also has been observed that downgrades (upgrades) tend to occur following periods of negative (positive) abnormal returns. Comparing the timing of the release of rating actions and equity researches, their primary concern in their study was Granger causality, that is whether rating changes help predict earning forecasts and vice-versa. Their evidence shows that most bond downgrades are preceded by declines in actual and forecasted earnings, indicating that downgrades are at least partially a response to public information that both earnings analysts and the market already have. Moreover, both actual earnings and forecasts of future earnings tend to fall following downgrades. Although part of this post-downgrade forecast revision can be attributed to negative news, regarding actual earnings, most appears to be a reaction to the downgrade itself. In contrast to downgrade, upgrades appear to be purely a response to information that the market already has since there is no market response, since the upgrades follow both periods of positive returns and upward earnings forecast revisions and since there is no evidence that actual earnings rise following upgrades. Di Cesare (2006) analyzes the ability of Credit Default Swap (CDS) spreads, bond spreads and stock prices to anticipate the decisions of the main rating agencies for the largest international banks. Conditional on negative rating events, all the indicators show significant abnormal changes before both announcements of review and actual rating changes, but rating actions still seem to convey new information to the market. Results for positive rating events are less clear-cut with the market indicators showing abnormal behaviours only in conjunction with the events. Between the elected market indicators, the CDS spread is particularly useful to predict negative events and stock prices for positive events.

A recent stream of literature has investigated the informational content of equity research focusing on target prices. Target prices are explicit quantitative prediction released by the analyst as ancillary summary information to comprehensive equity research reports. At any given time a target price should be the analyst's best estimate of the expected future price of a stock. Target prices therefore are not a measure of a company's "fair" value rather a measure of the fair value adjusted for exogenous factors like, for example, market momentum, liquidity or industry factors. Finally, target prices are a much more comprehensive information than earnings forecast. Earnings forecast are a by-product of a company's valuation which is largely affected also by fiscal policies and strategic issues. Target prices, on the other hand, should be the best available estimate of the "true" market sentiment. We therefore believe that understanding analysts' target price forecasting power is relevant for three reasons: first, target price's influence on stock market prices has been largely documented by several previous studies (Asquith et al. (2005), Barber et al. (2001), etc). Secondly, target prices are a straightforward measure of the potential change in the value of the underlying security. Since equity is more sensitive to changes in the quality of cash flows, a sharp change in target prices (i.e. in the expected future equity value) may signal a change in the quality of cash flows to debtholders as well, which can translate into a rating action. Finally, while most of academic research has been devoted to the relationship between bond rating actions and stock returns, bond prices and earning forecast, the possible stronger relationship between target prices and rating actions has remained essentially unexplored.

Further, our study contribute to the existing literature by providing an evidence, not yet explored by previous studies, of any anticipation in target prices revision prior to a rating actions, in order to analyze the ability of equity analysts to predict the decisions of the main rating agencies.

II. Hypotheses

Target prices are statements incorporating earnings forecasts and the latter have proven to be meaningfully correlated with rating actions (Goh and Ederington (1998)). Furthermore target prices revisions are released much more frequently than rating actions. Since downgrades (upgrades) associated with negative (positive) revision of the firm's prospective cash flows will negatively affect bondholders but, to a much larger extent, equity holders who have secondary claims compared to debt - we expect that rating downgrades (upgrades) can be anticipated by a reduction (increase) in target prices. Since it is well known that equity markets tend to react more sharply to good news, we expect that target prices will change more when cash flows prospects

improve; thus we conjecture that the rating action anticipation effect should be more evident for upgrades rather than downgrades.
We then put forward the following:

Hypothesis 1: *a sharp change in the published target prices of any given company, may carry a signal of a potential rating action. This anticipation effect is stronger for positive changes.*

Analysts' behaviour is known to express an overly-optimistic behaviour i.e. a habit to overestimate (underestimate) increases (reductions) in the prices (Bradshaw 2001, Bonini et al. 2007). Since companies voluntarily release favourable information but are reluctant to release unfavourable information, and rating agencies are more interested in detecting deterioration of creditworthiness than improvements, we expect an asymmetric distribution of target prices prior to upgrades or downgrades.
Thus we conjecture:

Hypothesis 2: *since target prices are skewed towards positive stock recommendations we expect a bias towards upgrades.*

In addition to outright changes in ratings, Hand et al. [1992] have stressed that it is also important to consider the information contained in the "credit watch list." Companies are added to the credit watch list, if the rating agency believes that a rating change is likely. This information is supplemented by the expected direction of the change, e.g. there may be "indicated upgrades", "indicated downgrades" or "developing." The credit watch would indicate "developing," if a ratings change of unknown direction is likely. In this paper, we follow Hand et al. [1992] and use credit watches in two ways. First, we examine changes in target prices around credit watches, testing whether they contain relevant market information.
Second, we use them as a means of distinguishing between anticipated and unanticipated ratings changes. As in Hand et al. [1992] we argue that a ratings change that is preceded by a ratings watch in the same direction should be largely anticipated and, hence, should be associated with significant changes in target prices.
Thus we model the following:

Hypothesis 3: *change in target prices better predict announced changes, by additions to the watch list, than unanticipated ones. Rating announcements related to information that has already been released through a watch list (contaminated events) is expected to result in higher changes in target prices since such a credit event is typically a public signal, which can be reflected in stock price*[2].

Two previous studies investigate the question of whether ratings changes matter specifically for banks. As Schweitzer et al. [1992] argue, there are reasons to think that ratings changes might have a different impact on banks as highly regulated entities, as opposed to corporations. They note that the regulation of an industry may increase the amount of information available to the market. If so, the informational value of firm-specific events may be less for highly regulated firms. Indeed, Wansley et al. (1985) and Dhillon [1989] and Plonchek et al. [1989] find that the announcement effect of new security issues is smaller for banks than for industrial firms, and Asquith and Mullins [1986] report similar findings for equity issues made by public utilities. On the other hand, Schweitzer et al. [1992] note that bank regulators may withhold adverse information in order to sustain investor confidence in a troubled bank and avoid bank runs and/or because the existence of a troubled bank may reflect badly upon the regulator's performance. If so, we should observe no significant movement in target prices associated with unfavorable bank debt rating changes prior to the rating action itself. On the other hand, if any adverse information is available in the rating period, we should observe higher, more pronounced negative changes in target prices than those for industrial firms.

Moreover, evaluation methods matter. According to Walker (2008), market ratio methods are more frequently used to evaluate banks than the fundamental ones. It implies that it is much easier to assess and thus, to adjust, target prices for a financial firm, if such information is available to the market.

Hypothesis 4: *different regulatory regimes (designed respectively for financial and non financial issuers), which imply different degrees of transparency, and the different evaluation methods adopted to evaluate financial and non financial firms, may influence target price behavior prior to a rating action.*

2 Boot, Milbourn, and Schmeits (2006), Holthausen, and Leftwich (1992). These authors show that a watch list entry with designation downgrade is accompanied by a negative stock market reaction.

III. Sample Selection and Data

Table 1 shows descriptive statistics on rating actions from the Database for the European sample. Our analysis concentrates on long term issuers' ratings which are the agencies' opinion of an obligor's overall financial capacity to pay its financial obligations. We use distinct information from the three main rating agencies to avoid any cross-agency contamination. The sample was compiled by combining the information provided by the Bloomberg and DataStream databases with the information provided by the rating agencies' websites. The database includes 66 continuously rated European listed companies, 445 rating actions and 14,046 target prices issued by 75 equity analysts. Descriptive statistics on the sample is reported in Table 1.

INSERT TABLE 1 HERE

For each firm, we exclude "single report companies", i.e. companies for which only one equity report has been published across the time interval of analysis (between two consecutive rating actions). The columns report numbers of downgrades, upgrades, negative and positive outlooks and watch lists (including confirmed ratings) by year, by agency and by issuer type. The observations corresponding to an outlook removal are classified either as an upgrade or as a downgrade depending on whether the previous outlook is negative or positive. The rating events consist of 61 upgrading and 125 downgrading. Agencies changed ratings by two notches 21 times (18 downgrades and 3 upgrades) and three times by three notches (downgrade).

Rating changes by S&P (46%) dominate those issued by Moody's and Fitch respectively 35% and 19%. We classified rating actions according to whether they were anticipated by the inclusion in the watch list in the same direction. Overall, 74 downgrades (59%) are classified as anticipated by a watch list, and 26 downgrades (21% of the downgrades) are anticipated by an outlook while 20 upgrades (33%) are classified as anticipated by a watch list, and 20 upgrades (33%) are anticipated by an outlook.

The observations corresponding to an outlook removal are classified either as an upgrade or as a downgrade depending on whether the previous outlook is negative or positive.

The observations corresponding to the evolving watches are not regarded as an event on them but rather are used to define the following rating change as announced.

IV. Methodology

According to recent literature, rating changes include upgrades and downgrades, as well as positive and negative outlooks, controlling for any anticipations through watch lists. Following the different rating structures adopted by the three main rating agencies, we first transform rating opinions into a common cardinal scale.

We calculate the rating action (RA) as the difference between two consecutive rating events (R) as follows:

$$RA = (R_{t+1}) - R_t$$

The variable assumes values equal to -3, -2, -1, +1, +2, +3, according to the observed notch change in the company rating, where a 'notch' is defined as any movement in the rating. For instance a movement from Ba1 to Ba2 represents a single notch downgrade whereas a movement from Ba1 to Baa2 represents a two notch upgrade.

Similarly, the observations corresponding to an outlook (or an outlook removal) are classified either as an upgrade or as a downgrade depending on whether the previous outlook was positive or negative.

On the basis of the collected rating actions, we calculate the Average Change in Target Prices (ACTP) before each rating action in three different observation windows *T* [-60, 0], [-90, 0] and [-120, 0] days. We concentrate our analysis on these intervals considering that 1) for shorter windows (i.e. <60 days) the frequency of Tp changes become negligible and, 2) for larger windows (i.e. >120 days) results may be misleading since rating actions may overlap significantly.

For each selected window we first calculated the change in target prices (CTP_i) for each company *i* as follows:

$$CTP_i(T) = \left. \frac{\sum_{j=1}^{J} \sum_{n=1}^{N} \frac{(TP_{n|j} - TP_{n-1|j})}{TP_{n-1|j}}}{M} \right| RA$$

where:

T is the selected observation window as previously specified

$j \in \{1,..,J\}$ is the relevant Target Price issuing analyst;

$n \in \{1,..,N\}$ is the number of reports issued by analyst *j* on company *i* within the observation window;

($TP_{n|j} - TP_{n-1|j}$) indicates the difference between two contiguous target prices issued by the same analyst *j*;

M is the total number of *TP* changes for all analysts recorded for each company *i* on the observation window *T*;

RA is the rating action ameasured in terms of notches ranging from -3 to +3.

It is worth noting that we calculated the *TP* change as ($TP_{n|j} - TP_{n-1|j}$). Since the first *TP* issued within the observation window is *n*, then $TP_{n-1|j}$ will be out of the observation window. This approach may lead to including TP changes which have been originated by information released before the observation window. Yet, the alternative option of adopting ($TP_{n+1|j} - TP_{n|j}$) reduces significantly the number of observation especially for smaller observation windows without providing results with incremental information.

Once CTP have been estimated for all *i* we calculate the Average Change in Target Price (ACTP) as follows:

$$ACTP(T) = \left. \frac{\sum_{i=1}^{I} CTP_i}{I} \right| RA$$

Figure 1 reports the dispersion of the observed values of ACTP for each class of rating action for the European sample. The average change in target prices seems to be correlated in signs with the corresponding rating action. ACTP is negative for downgrades, ranging between -40% to 10% as well as ACTP is positive in the 90 or 120 days prior a positive rating action, ranging from -26% to 60%. Additionally, Figure 2 reports the percentage of negative, positive and neutral rating actions for different brackets of ACTP(-120) change: around 80% of negative rating actions are preceded by negative ACTP ranging between (-50;-20%). More interesting, this percentage increases observing positive rating actions: strong positive ACTP ranging between (+20%; 50%), always precedes positive rating changes.

INSERT FIGURE 1 HERE

INSERT FIGURE 2 HERE

These first findings support our intuition. To further investigate the first hypothesis we adopt a multinomial logistic data regression approach.

The characteristics of this model fit with our study. Multinomial logit model infact assumes that:

- The dependent variable is nominal and consists of more than two discrete categories Multinomial logit model is a regression model which generalizes logistic regression by allowing more than two discrete outcomes, consistently with our dependent variable (rating actions) which assumes values equal to -3, -2, -1, +1, +2, +3;
- The data are case specific: that is: each independent variable has a single value for each case;
- The dependent variable cannot be perfectly predicted from the independent variables for any case;
- There is no natural ordering in the alternatives and it is not realistic to assume that there is a monotonic relationship between one underlying variable and the observed outcomes;

With the observed change values for RA as the dependent variable and ACTP, as the independent variables, we performed a multinomial logistic regression using "confirmed rating" (rating action=0) as the baseline group. Logistic regression estimates the probability of a certain event occurring (in our case rating action), given a set of dependent variables.

Under these assumptions, we estimate the following model:

$$P\{y_i = j)\} = \frac{\exp(X_i \beta_j)}{1 + \sum_{j}^{J} \exp(X_i \beta_j)}$$

where for the i^{th} observation, y_i is the observed outcome (for j= -3, -2, -1, 1, 2) and X_i is a vector of explanatory variables. It is worth noting that since we observed just one rating change of more than 3 notches we have excluded this Rating Action value from the analysis. Finally, the unknown parameters β_j are estimated by maximum likelihood.

V. Results

Table 2 shows the results associated to each rating actions using average changes in target prices (ACTP) as independent variable. The outcomes for the dependent variable are -3, -2, -1, +1 and 2, to indicate all the cases in which the rating of the company has been changed by, respectively, -3, -2, -1, +1 and 2 notches.

INSERT TABLE 2 HERE

The sign of the parameters for such cases is, as we expected, negative for the downward revisions, and positive for upward ones. This indicates that downgrades and negative outlooks follow negative changes in target price and, vice versa, upgrades and positive outlooks follow positive changes in target price. We find that using two months window, the results are not significant for any outcome, while using three and four months windows the results for the outcomes -1 and +1 – (rating action by only one notch) – are statistically significant. We do not achieve significant results for outcomes different from 1 and -1; this is basically due to the too small number of rating events with more than one notch change. Our first findings are thus the following:

- The parameters of the regression: in the case of the 90 day period the parameter of downward revisions is, in absolute value, higher than the parameter of the upward ones. The opposite happens in the 120 day period.
- *P. values*: in the 90 day period the regression fits better for the downward revisions. The opposite happens in the 120 day period. This result indicates that downward revisions are always associated with negative changes in target prices in the previous three months, but upward revisions may be associated with positive changes and with no or small negative changes. In the four months window, instead, upward revisions are always anticipated by positive changes, while downward revisions may be anticipated by negative, null or small positive changes.

Differences according to the selected window are consistent with the hypothesis of analysts' systematic optimism in response to information, analyzed in several prior studies[3].

The evidence indicates that analysts are less likely to reduce than to increase their target price over time. Thus, when a negative event is to occur, they begin to cut their forecasts later than when increasing their forecasts in the presence of good news. This is why the cut in target price associated with negative events is more evident in a narrower window, closer to the rating action.

[3] See, for example, Easterwood and Nutt (1999).

Table 3 present the results of the multinomial logistic regression for only outcomes (-1; 0; +1) and rating action equal to zero as the baseline group[4].

INSERT TABLE 3 HERE

The sign of the parameters for such cases is still negative for the downward revisions, and positive for upward ones. The model improved and it is always highly significant for positive and negative rating actions at conventional level (1%). In contrast, results for the downward revisions are not affected by using a larger window (four months).

A graphical representation of the estimated equation of the multinomial regression analysis has been plotted in Figure 3.

INSERT FIGURE 3 HERE

In order to test the predictive power of the model for outcomes -1 and +1, we applied three models fit to the whole sample.

Likelihood Ratio tests the null hypothesis that all population logistic regression coefficients except the constant are zero. Similarly, Rao's Efficient Score tests whether the estimated coefficient for a given explanatory variable in the logistic regression is robustly different from zero. The Wald Statistic is an alternative test which is commonly used to test the significance of individual logistic regression coefficients for each independent variable (that is, to test the null hypothesis in logistic regression that a particular logit (effect) coefficient is zero. Results of the three tests are reported in tables 4.

INSERT TABLE 4 HERE

In addition, Table 5 presents the results of the association of predicted probabilities and observed responses that we used to assess the model fit. The percent of concordant observations should be close to 100. We find that the model shows an excellent predictive capacity (*association of predicted probabilities and observed responses*), the pairs of concordant elements for outcomes (-1, +1) being above 70% on average.

[4] Since we have still only 11 observations for revisions of more than one notch, we decide to focus only on the outcomes 1 and -1.

INSERT TABLE 5 HERE

Following Hypothesis 3, we now investigate whether the anticipation of a rating action by an addition to a watch list, may affect our results.

The purpose of a watch list is to indicate a likely change in the company rating. Reasons for initiating a watch list process might be that the company has announced a major event (for example investment decisions), but it is unclear whether this will be realized or not; alternatively, a sudden change in credit quality is expected, but the extent of the change is unknown. In both cases the firm may be placed on the watch list. Watch list placements are accompanied by preliminary estimates of the rating direction. During the watch list interval, the rating agency requests information from the firm. At the end of the watch list period, the rating is removed from watch list and concurrently designated as downgrade, upgrade or confirmation.

Following Hand et al. (1992) we use credit watches in two ways. First, we examine changes in target prices around credit watches, testing whether they contain market relevant information. Second, we use them as a means of distinguishing between anticipated and unanticipated ratings changes.

Overall, 94 (51%) out of 186 rating actions (including only upgrades and downgrades) were preceded by a watch list. Consistently with Hand et al. (1992), we name these Rating actions as "contaminated". We expect that all the contaminated events should show lower ACTP versus not contaminated ones. The rationale for this assumption is that analysts may have discounted the new event at the time of the announcement of a watch list. Conversely, if the release of the watch list falls into the four months before the rating action, we should observe a greater effect on the target price due to the fact that both the impacts of the watch list and the rating action itself, will be included in our observation window. As table the following table shows, the length of the watch list period varies considerably between upgrades and downgrades[5].

Number of Months between Watch lists and Upgrades/Downgrades

	Average	Max	Min	Median
Upgrades	5,15	15	0,4	2,42
Downgrades	3,12	10	0,5	2,67
Upgrades & Downgrades	3,46	15	0,4	2,67

[5] Our data are coherent with the estimates contained in the recent work of Hirsch C. and Krahnen P. J. (2007). They report that 90% of negative watch lists takes on average 95 days to be completed, while 90% of positive watches take on average 218 days.

The time lag between watch lists and related upgrades is on average five months, so that the signals fall far from the upgrade announcements and both kinds of rating events can then be viewed as separate rating actions.

We further examine changes in target prices around credit watches, testing whether they contain market relevant information.

Table 6 and Figure 4 shows respectively the results of the multinomial logistic regression for outcomes (-1; 0; +1) controlling for the inclusion, if any, in the watch list and the predicted probability plot. Watch list is treated as a dummy variable taking a value of 1 if the rating action is anticipated by a watch list, zero if the rating actions are not contaminated.

INSERT TABLE 6 HERE

The sign of the parameters for such cases is still negative for the downward revisions, and positive for upward ones. We find that the watch list is statistically significant at conventional levels (1%) for downgrades, not for upgrades and that the addition of watch list helps to better predict rating changes.

INSERT FIGURE 4 HERE

We finally test Hypothesis 4, controlling for the issuer's sector. We split the in two sub samples according to whether the issuer was a financial institution (147 observations) or a non financial one (270 observations).

Looking at the sample we observe that target prices reduction prior to a downgrade is highly evident in the financial sector while it is not clear at all for the non financial sector (Table 14). According to Gropp and Richards (2001) and Schweitzer et al. (1992), we observe strong differences in target prices trend before negative events between the two groups of issuers: the reduction of target price is highly evident for financial sector while it is not evident at all for the industrial one. Conversely, the positive target price trend when upward revisions occur is evident in both cases.

INSERT TABLE 7 HERE

VI. Granger causality test

Our tests have shown that there exist significant correlations between rating actions and changes in target prices. Yet, little can be inferred about causality and the direction of it in our time-series. To address this issue we run a Granger-causality test that, although with the well known limitations highlighted in Bishop (1979) provides some insight on the existence of a causality relationship in addition to the already proven correlation. If rating changes Granger cause any changes in target prices, then we should observe negative (positive) changes in TP following downgrades (upgrades). If analysts' target prices Granger cause rating changes, then negative (positive) revisions in target prices should be observed prior to downgrades (upgrades). Of course, Granger causality can flow both ways and a finding that one "Granger causes" the other does not preclude that both ratings and analysts' target prices are responding at different speeds to other public information.

If stock analysts feel that the rating change likely reflects inside information unavailable to them, rating changes could lead financial analysts to change their target prices. Target prices might also be altered if a surprise rating change is expected to affect the firm's future interest costs. Granger causality tests are reported in table 8.

INSERT TABLE 8 HERE

The significant negative changes in target prices prior downgrades confirm that generally changes in target prices in the three observed time windows (-120,-90,-60) Granger causes downgrades. This is consistent with our previous results. In contrast, rating actions, in particular downgrades does not Granger cause any further changes in target prices in the three time windows (+60, +90, +120) suggesting that stock analysts' doesn't view downgrades as providing new information about the firm's future wealth. This result support the conclusion that any negative changes in target prices observed after downgrades represent a response to the downgrade and not a lagged response to pre-downgrade information.

We also test Granger causality for positive rating actions (upgrades). We found that upgrades tend to follow several months of positive changes of target prices but, surprisingly, that there is a limited positive evidence of rating actions to Granger-cause changes in target price for the longest observation window (120 days window). This result is isolated and we rule out it may suggest the existence of a proper causality. Yet, we interpret it as a sign of the improvement in the quality of the operating cash flows, already incorporated in target price change before the rating action and reinforced by he rating action itself. Since analysts are well known to overshoot predictions (Bradshaw (2001), Bonini et al. (2007) when signals from the company improve the average target price revision quickly and significantly increases.

VII. Conclusions

Most academic research and business press attention has been devoted to the relationship between rating actions and earning forecasts, or bond and stock returns, to the effect of analysts' recommendations on stock returns or trading volumes, and to the accuracy of stock recommendations and target prices. But the ability of target prices to predict future rating actions has, surprisingly, remained essentially unexplored.

Consequently, it is an open question whether ratings or target prices bring more information to the market and which is timelier. The motivation of this research stems from the empirical regularity that target price revisions are released much more frequently than rating actions.

Our study contributes to the existing literature by providing an evidence of the predictive power of target prices prior a rating action, in particular that target prices changes contain information since most downgrades (upgrades) are preceded by declines (increase) in target prices.

While there are more stock analysts than rating agencies and analysts focus specifically on the outlook for the firm's equity, which is more volatile than debt, we expected target prices include more update information about the risk profile of the company. Moreover, target price are self-contained statements incorporating stock recommendations and earning forecasts which have proven to be meaningfully correlated with rating actions.

Looking at the ACTP calculated in three different intervals before each rating action, we found that the sign of the parameters for such cases is, as we expected, negative for the downward revisions, and positive for upward ones. Positive rating events are anticipated by consistent increases in target prices in the previous four months while is less significant the predictive power of target prices, for the same interval, for negative rating events. The main reason is that companies voluntarily release favourable information but are reluctant to release unfavourable information. This considerations, together with the overly-optimistic behaviour of sell-side analysts, should explain why target prices should adjust more fully prior to upgrades than prior to downgrades. Results are opposite if we shorten the observation window: the evidence indicates that analysts are less likely to reduce than to increase their target price over time. Thus, when a negative event is to occur, they begin to cut their forecasts later than when increasing their forecasts in the presence of good news.

Results also differ controlling by the sector. According to Gropp and Richards (2001) and Schweitzer et al. (1992), we also observe strong bias between the two groups of issuers mainly due to the different regulatory regimes (designed respectively for financial and non financial issuers), which imply different degrees of transparency, and possibly to the different evaluation methods adopted to evaluate financial and non financial firms.

We finally investigate whether the anticipation of a rating action by a watch list in the same direction, may influence our results. Comparing the average change in target price for contaminated versus uncontaminated rating actions, we found that contaminated downgrades show more pronounced reductions in target price over time while there is no significant difference for upgrades. This difference can be explained according to whether or not the watch list was released during the four months prior to the rating action, corresponding to our observation window. Since watch lists are usually released on average three months before the downgrade, they fall into our observation window, bringing with them a further reduction in target price.

Our study thus provides direct evidence of an existing relationship between target prices and rating actions. The documented decline in target prices prior to downgrades illustrates that some rating changes are at least partially anticipated (Steiner and Heinke 2001; Wansley and Clauretie 1985).

Consistently with Goh and Ederington (1998), who observed abnormal returns before and after a rating action, we also test Granger causality between rating actions and target prices. We didn't find any significant reduction in target price after downgrades, indicating that downgrades did not presage declines in target prices. Downgrade appear to be purely a response to information that the market already has since they follow both periods of negative target prices changes and since there is no evidence that target prices decrease following downgrades. In contrast to downgrade, target prices changes limitedly Granger cause upgrades indicating that the two actions are correlated but based on somehow different sets of information. In this case a sharp change in target price conveys a signal of a future change in ratings although the determinants of the rating action may be different than that of the target price change.

References

Asquith P., Mikhail M., Au A., Information content of equity analyst reports, Journal of Financial Economics, 75: 245-282, 2005.

Barber B., Lehavy R., McNichols M., Trueman B., Can investor profit from the prophets? Security analyst recommendations and stock returns, The Journal of Finance, 56 (2): 531-563, 2001.

Bonini S., Zanetti L., and Bianchini R., Target Price accuracy in equity research, Working Paper, available at http://www.SSRN.com, 2006.

Bonini S., Zanetti L., and Bianchini R., Portfolio returns and target prices, Working Paper, available at http://www.SSRN.com, 2007.

Bradshaw M., How do analysts use their earnings forecasts in generating stock recommendations?, Accounting Review, 79 (1), pp. 25-50, January 2004.

Bradshaw M., Brown L., An examination of sell-side analysts' abilities to predict target prices, Unpublished Working Paper, Harvard University, 2002.

Bradshaw M., The use of target price to justify sell-side analysts' stock recommendations, Accounting horizons, 16 (1): 27-41, 2002.

Bradshaw, M., Analysts' Reports, Stock Recommendations, and Target Prices, Working Paper, Harvard University, 2001.

Brav A., Lehavy., An empirical analysis of analysts' target prices: short term informativeness and long term dynamics, The Journal of Finance, 2003.

Dallocchio M., Salvi A. et al, Do upgradings and downgradings convey information? An event study of the French bond market, Economic Notes, 2006.

Di Cesare A., Do market based indicators anticipate rating agencies? Evidence for international banks, Banca d'Italia, Temi di discussione 593, 2006.

Dichev I.D. e J.D. Piotroski , The Long-Run Stock Returns Following Bond Ratings Changes, The Journal of Finance, vol. 56, n. 1, 173-203, 2001.

Ederington, L.H., Why Split Rating Occurr, Financial Management, Spring, 37-47, 1986.

Ederington L. H., Goh G. C., Bond rating agencies and stock analysts: who knows what when?, Journal of Financial and Quantitative Analysis, 1998.

Francis J., Soffer L., The relative informativeness of analyst' stock recommendations and earning forecast revisions, Journal of Accounting Research, 35 (2): 193-211, 1997.

Goh J. C., Ederington L. H., Is a bond rating downgrade bad news, good news, or no news for stockholders?, Journal of finance, 68 (5), 1993.

Gropp, R. e A.J.Richards, Rating Agencies Actions and the Pricing of Debt and Equity of European Banks: What Can We Infer about Private Sector Monitoring of Bank Soundness?, Working Paper n. 76, European Central Bank, 2001.

Hand, John, Robert Holthausen, and Richard Leftwich, The effect of bond rating agency announcements on bond and stock prices, Journal of Finance 47, pp. 733-752, 1992.

Holthausen, R. e R. Leftwich, The Effect of Bond Rating Changes on Common Stock Prices, Journal of Financial Economics, 17, 57-89, 1986.

Hirsch C., Krahnen J. P., A primer on rating agencies as monitors: an analysis of the watch list period, Working Paper, available at http://www.ssrn.com, 2007.

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

Resti A. C., Omacini C., Che cosa determina i rating creditizi delle aziende europee?, Banche e Banchieri, 2001.

Schweitzer et al., Bond rating agencies and their role in bank market discipline, Journal of financial services research 6, pp. 249-263, 1992.

Stickel, S.E., The Anatomy of the Performance of Buy and Sell Recommendations, Financial Analyst Journal, 1995.

Vassalou, M. e Y. Xing, Equity returns following changes in default risk: New insights into the informational content of credit ratings, EFA 2003 Annual Conference Paper No. 326. http://ssrn.com/abstract=413905, 2003.

Walker M. et al., Does valuation method choice affect target price accuracy?, working paper, University of Warwick, 2008 .

Wansley, J., Clauretie T., The impact of credit watch placement on equity returns and bond prices, Journal of Financial Research 8, pp. 31-42, 1985.

Weinstein, M., The Effect of a Rating Change Announcement on Bond Price", Journal of Financial Economics, 5, 329-350, 1977.

Womack K., Do brokerage analysts' recommendations have investment value?, The Journal of Finance, 51 (1): 137-167, 1996.

Table 1

Descriptive statistics on rating actions from the Database, 2000 to 2005: the European Sample

This table shows descriptive statistics on rating actions from the Database for the European sample. The European data set includes 269 new rating actions (as a total of 417 overall rating actions) performed in the period 1st January 2000 - 31st December 2005 by S&P, Fitch and Moody's in Germany, UK and France.

Country	Target Prices	Rating Actions	Firms	Financials	Industrials	Analysts
Italy	3.171	148	23	18	5	42
United Kingdom	2.899	91	15	5	10	73
France	5.130	113	16	5	11	70
Germany	2.811	93	12	3	9	13
Total	**14.011**	**445**	**66**	**31**	**35**	**75**

BY COUNTRY

Year	Downgrade	Upgrade	Positive Outlook	Negative Outlook	Negative watch list	Positive watch list	Total	%
Italy	36	13	45	34	15	5	148	33%
Germany	28	14	13	14	16	8	93	21%
France	28	22	21	13	17	12	113	25%
United Kingdom	33	12	10	10	21	5	91	20%
Total	**125**	**61**	**89**	**71**	**69**	**30**	**445**	**100%**

BY AGENCY

Agency	Downgrade	Upgrade	Positive Outlook	Negative Outlook	Negative watch list	Positive watch list	Total	%
Fitch	31	13	9	9	16	6	84	19%
Moody's	42	25	24	22	29	14	156	35%
S&P	52	23	56	40	24	10	205	46%
Total	**125**	**61**	**89**	**71**	**69**	**30**	**445**	**100%**

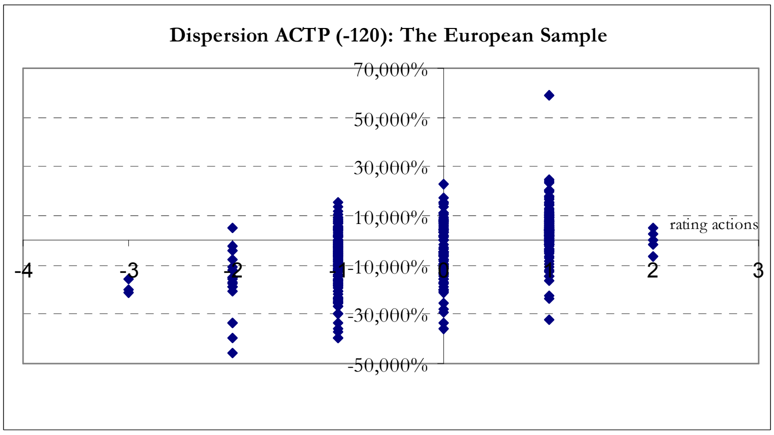
BY ISSUER TYPE

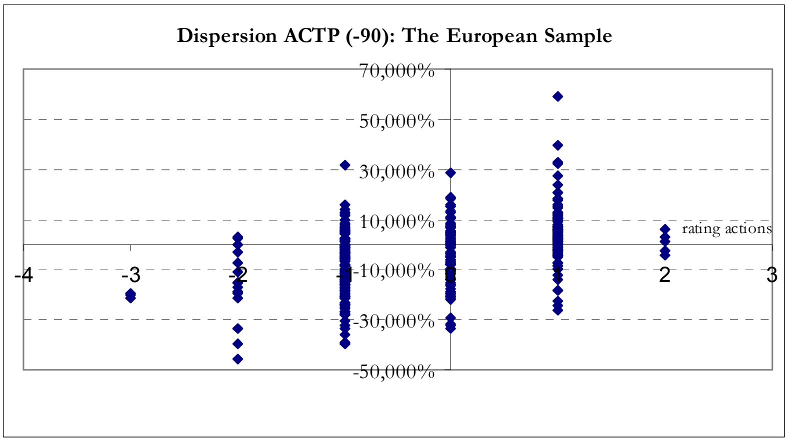
Type	Downgrade	Upgrade	Positive Outlook	Negative Outlook	Negative watch list	Positive watch list	Total	%
Financial	39	17	45	32	17	4	154	35%
Corporate	86	44	44	39	52	26	291	65%
Total	**125**	**61**	**89**	**71**	**69**	**30**	**445**	**100%**

Figure 1

Dispersion of ACTP (-120) and rating actions

Figure 1 reports the dispersion of the observed values of ACTP on a 120-90-60 days window for each class of rating action (-3, -2, -1, 0, +1, +2).





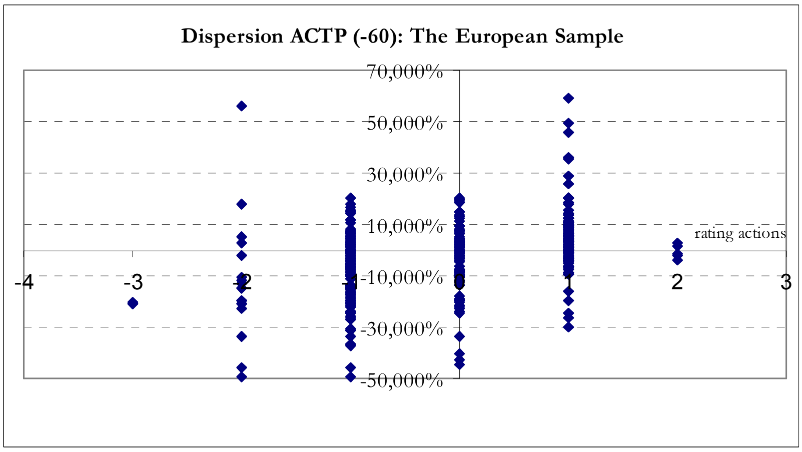


Figure 2

Range values of ACTP (-120) and rating actions

These graphs show the percentage of negative, positive and neutral rating actions for each ACTP (-120) range.

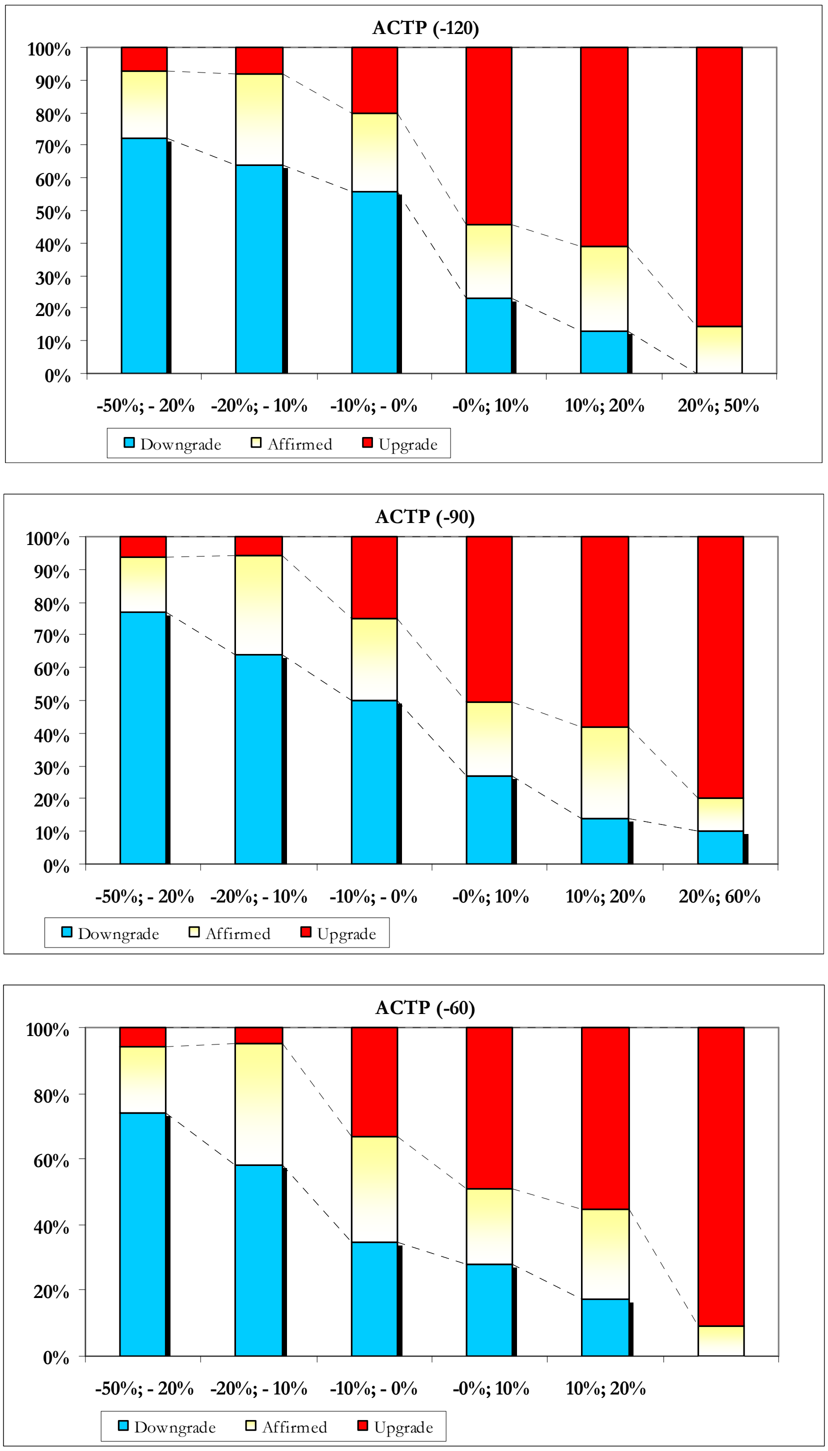


Table 2

Multinomial logistic regression: evidence from the European Sample

This table presents the results of the multinomial logistic data regressions for the European Sample , which has outcomes -3, -2, -1, +1 and 2, to indicate all the cases in which the rating of the entity shifted by, respectively, -3, -2, -1, +1 and 2 notches.

		Rating actions				
		Downgrades			Upgrades	
Indipendent variables		**-3**	**-2**	**-1**	**1**	**2**
ACTP 60 days		-0,002	0,001	-0,001	0,007	-0,009
		(0,802)	*(0,852)*	*(0,335)*	*(0,000)****	*(0,186)*
Intercept		-3,33	-1,85	0,68	-0,70	-2,11
		*(0,002)****	*(0,000)****	*(0,004)****	*(0,016)***	*(0,004)*
Pseudo R^2	*0,0292*					
Chi ^{2}	*33,39***					
ACTP 90 days		-0,001	-0,003	-0,004	0,008	-0,001
		(0,868)	*(0,0421)*	*(0,026)***	*(0,000)****	*(0,904)*
Intercept		-3,41	-1,45	0,91	-0,71	-2,96
		*(0,002)****	*(0,002)****	*(0,000)****	*(0,014)****	*(0,001)****
Pseudo R^2	*0,0411*					
Chi ^{2}	*47,04****					
ACTP 120 days		-0,002	-0,004	-0,006	0,008	-0,002
		(0,801)	*(0,298)*	*(0,001)****	*(0,000)****	*(0,777)*
Intercept		-3,31	-1,33	1,12	-0,82	-2,83
		*(0,003)****	*(0,005)***	*(0,000)****	*(0,007)****	*(0,001)****
Pseudo R^2	*0,0556*					
Chi ^{2}	*63,70****					
N.observations	445					

***,**,* denote statistical significance at the 1%,5%, and 10% levels respectively

Table 3

Multinomial logit model: evidence from the European Sample

This table shows the results of the multinomial logistic regression applied to the larger European sample. ACTP is calculated over the four-month period that preceds each observed rating action. The model is highly significant for positive and negative rating actions at conventional level (1%). Furthermore, results don't worsen for the downward revisions using a larger window (four months).

	Rating action	
	Downgrade	**Upgrade**
Indipendent variables	**-1**	**1**
ACTP - 120 days	-3,18	8,56
	*(0,006)****	*(0,000)****
Intercept	0,3	0,26
	*(0,033)***	*(0,057)****

Pseudo R^2	*0,1016*
Chi ^{2}	*91,46****
N.observations	417

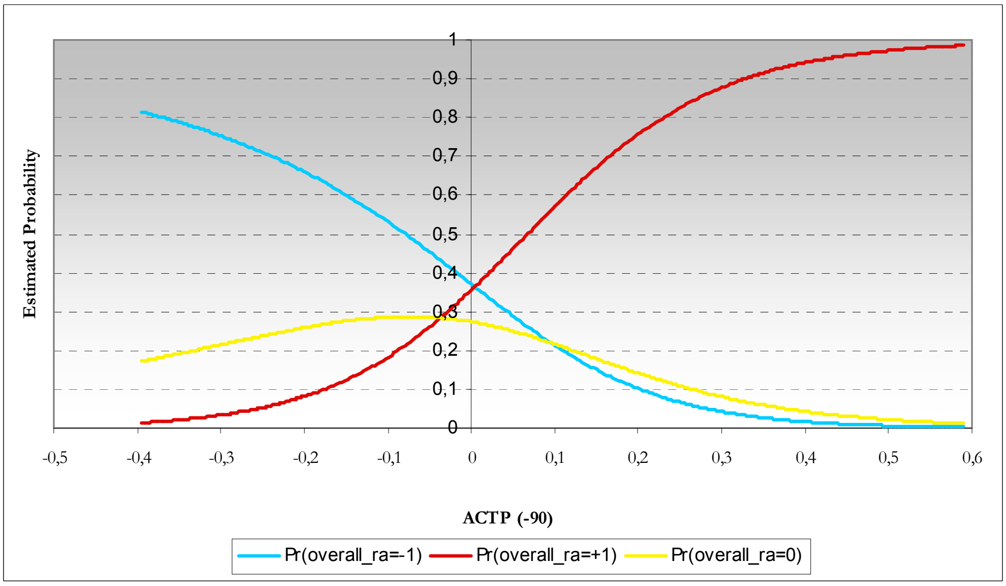
	Rating action	
	Downgrade	**Upgrade**
Indipendent variables	**-1**	**1**
ACTP - 90 days	-3,17	7,09
	*(0,005)***	*(0,000)****
Intercept	0,30	0,26
	*(0,028)***	*(0,056)**

Pseudo R^2	*0,0898*
Chi ^{2}	*80,87****
N.observations	417

Figure 3

Plotting of the multinomial logit model: the European Sample

The figure shows the predicted probabilities for the European sample. We generate predicted probabilities for the response groups while holding other variables constant at specific values.



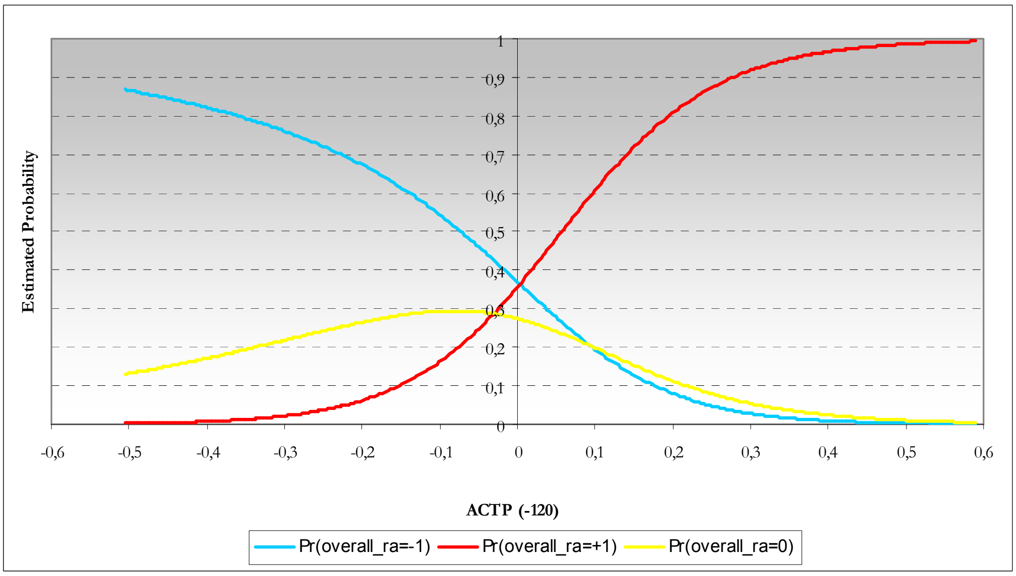


Table 4

Model significance and model fit

This table presents the measures of three fit models applied to the whole sample. Likelihood ratio tests the null hypothesis that all population logistic regression coefficients except the constant are zero. Similarly, Rao's Efficient Score (Score) tests whether the logistic regression coefficient for a given explanatory variable is zero. The Wald statistic is an alternative test which is commonly used to test the significance of individual logistic regression coefficients for each independent variable (that is, to test the null hypothesis in logistic regression that a particular logit (effect) coefficient is zero.

Testing Global Null Hypothesis: BETA=0			
Test	**χ^2 (Chi-square)**	**DF**	**Pr > ChiSq**
Likelihood Ratio	459.717	1	<.0001
Score	412.697	1	<.0001
Wald	356.746	1	<.0001

Table 5

Association of predicted probabilities and observed responses

This table presents the results of the association of predicted probabilities and observed responses that we used to assess the model fit.

	INTO					
FROM	**1**	**0**	**-1**	**Total**	**% Discordant**	**% Concordant**
1	**66**	0	28	94	*30%*	***70%***
0	18	**0**	31	49	*100%*	***0%***
-1	30	0	**92**	122	*25%*	***75%***

Table 6

Multinomial logit model including watch list

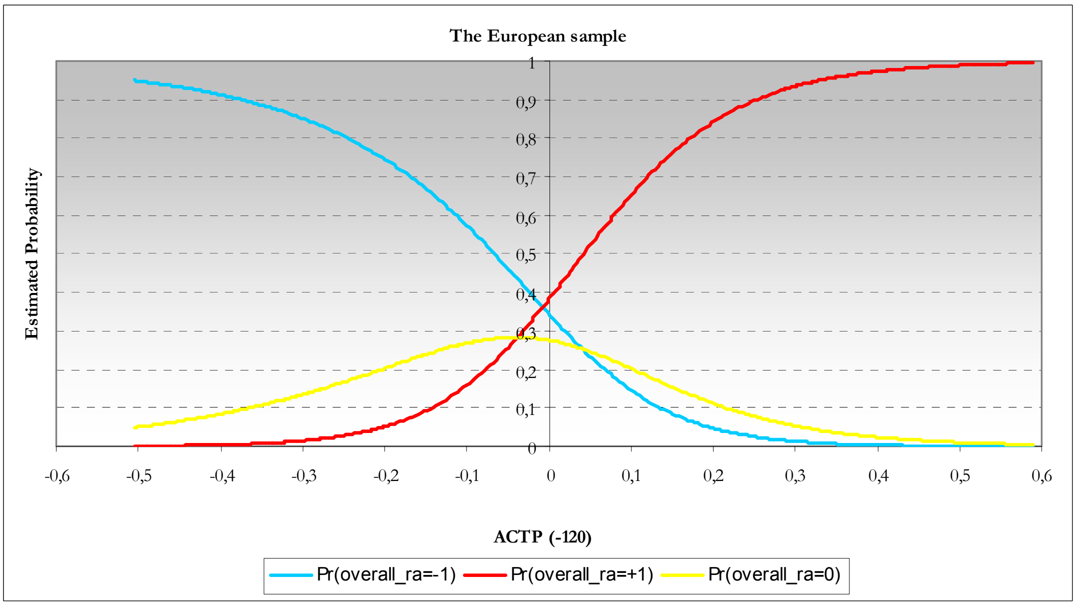
In these table we run the multinomial logistic regression for outcomes (-1; 0; +1) controlling for the addition in the watch list. Watch list is treated as a dummy variable taking a value of 1 if the rating action is anticipated by a watch list, zero if the rating actions are not contaminated. The sign of the parameters for such cases is still negative for the downward revisions, and positive for upward ones. We find that the watch list is statistically significant at conventional levels (1%) for downgrades, not for upgrades.

The European sample	Rating action	
	Downgrade	**Upgrade**
Indipendent variables	**-1**	**1**
ACTP 120 days	-5,42	8,47
	*(0,000)****	*(0,000)****
Watch list	1,96	0,19
	*(0,000)****	*(0,389)*
Intercept	0,22	0,33
	(0,179)	*(0,036)***

Pseudo R^2	*0,2267*
Chi ^{2}	*204,13****
N.observations	417

Graph 4

Plotting predicted probabilities estimated in the multinomial logit model including watch list



TheEuropean sample	*Rating action (-1)*	*Rating action (+1)*
_cons	0,2203	0,3257
ACTP (-120)	-5,4207	8,4752
	1,4638	1,0771
y = Pr(rating action)	***41%***	***30%***
dy/dx	***-2,38***	***2,48***

Table 7

Multinomial logistic regression by sector

This table shows the results of the multinomial logistic regression controlling by issuer sector. We split the observations according to whether covered firms referred to the financial or non financial sector. We find that while ACTP is statistically significant in predicting upgrades for both the sub samples, ACTP is statistically significant in predicting downgrades at conventional levels (5%) only for the financial sector.

Financial sector		
	Rating action	
	Downgrade	**Upgrade**
Indipendent variables	**-1**	**1**
ACTP 120 days	-7,95	6,26
	*(0,005)****	*(0,033)***
Intercept	0,78	0,95
	*(0,005)****	*(0,000)****

Pseudo R^2	*0,1618*
Chi^2	*47,72****
N.observations	147

Non Financial sector		
	Rating action	
	Downgrade	**Upgrade**
Indipendent variables	**-1**	**1**
ACTP 120 days	-1,65	7,37
	(0,21)	*(0,000)****
Intercept	0,23	0,13
	-0,169	*(0,000)****

Pseudo R^2	*0,0666*
Chi^2	*39,12****
N.observations	270

Table 8
Granger Causality test

PANEL A: Downgrades

Lag	Test: TP-120 does not G cause RA	
	F-statistics	Prob.
4	403.125	0.00374
5	350.110	0.00487
6	321.366	0.00516
7	285.778	0.00770
8	261.400	0.01027
9	197.631	0.04544
10	174.137	0.07630
11	151.733	0.13077
12	143.648	0.15583

Lag	Test: TP-90 does not G cause RA	
	F-statistics	Prob.
4	429.041	0.00245
5	365.339	0.00363
6	313.406	0.00615
7	310.752	0.00419
8	277.764	0.00666
9	213.602	0.02951
10	194.173	0.04360
11	170.578	0.07719
12	163.242	0.08871

Lag	Test: TP-60 does not G cause RA	
	F-statistics	Prob.
4	511.318	0.00065
5	450.782	0.00070
6	402.037	0.00088
7	458.729	0.00011
8	423.087	0.00013
9	328.322	0.00114
10	321.582	0.00093
11	300.532	0.00130
12	253.997	0.00480

Lag	Test: RA does not G cause TP+120	
	F-statistics	Prob.
5	147.811	0.20015
6	109.651	0.36726
7	137.489	0.22050
8	168.503	0.10752
9	147.527	0.16383
10	128.931	0.24381
11	137.944	0.19170
12	118.940	0.29959

Lag	Test: RA does not G cause TP+90	
	F-statistics	Prob.
5	129.541	0.26931
6	125.502	0.28264
7	128.745	0.26190
8	205.918	0.04541
9	172.206	0.09239
10	143.415	0.17601
11	140.896	0.18133
12	134.282	0.20877

Lag	Test: RA does not G cause TP+60	
	F-statistics	Prob.
5	254.948	0.03227
6	189.033	0.09116
7	0.99308	0.44287
8	148.564	0.18046
9	136.260	0.22971
10	152.554	0.16619
11	186.645	0.08454
12	155.126	0.17944

PANEL B: Upgrades

Lag	Test: TP-120 does not G cause RA	
	F-statistics	Prob.
4	106.461	0.37687
5	0.92996	0.46409
6	130.681	0.25937
7	147.363	0.18350
8	136.324	0.22051
9	135.052	0.22001
10	138.043	0.19972
11	129.073	0.24096
12	120.378	0.29197

Lag	Test: TP-90 does not G cause RA	
	F-statistics	Prob.
4	111.692	0.35150
5	0.97212	0.43765
6	131.287	0.25667
7	146.735	0.18579
8	139.772	0.20528
9	137.704	0.20754
10	143.995	0.17341
11	137.148	0.19832
12	121.960	0.28127

Lag	Test: TP-60 does not G cause RA	
	F-statistics	Prob.
4	135.788	0.25245
5	106.759	0.38182
6	127.384	0.27476
7	128.508	0.26411
8	126.483	0.26948
9	120.707	0.29866
10	0.68492	0.73618
11	0.68291	0.75159
12	0.62211	0.81845

Lag	Test: RA does G cause TP+120	
	F-statistics	Prob.
4	484.791	0.00122
5	570.991	0.00011
6	437.442	0.00058
7	324.391	0.00400
8	296.107	0.00560
9	273.889	0.00764
10	244.513	0.01387
11	266.625	0.00657
12	269.338	0.00543

Lag	Test: RA does not G cause TP+90	
	F-statistics	Prob.
4	0.80634	0.52367
5	0.86456	0.50761
6	0.73312	0.62407
7	126.714	0.27520
8	113.623	0.34751
9	103.451	0.42024
10	112.583	0.35479
11	0.96978	0.48180
12	104.964	0.41687

Lag	Test: RA does not G cause TP+60	
	F-statistics	Prob.
4	0.89532	0.46938
5	0.64073	0.66911
6	0.84214	0.54040
7	119.300	0.31454
8	105.913	0.39917
9	111.007	0.36529
10	101.232	0.44132
11	108.171	0.38869
12	120.011	0.30303