The Reaction of Italian Stock Market to Recommendation Revisions.

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Enrico Maria Cervellati*- Antonio C. F. Della Bina – Pierpaolo Pattitoni
Department of Management - University of Bologna
Via Capo di Lucca, 34 – 40126 Bologna
Tel: +39 (0)51 2098103 - Fax: +39 (0)51 246411
e-mail: enrico.cervellati@unibo.it, antonio.dellabina@unibo.it, pierpaolo.pattitoni@unibo.it

Abstract

The objective of this paper is to examine the market reaction to the issuance of recommendation by financial analysts. We add to the previous international literature in several respects mostly due to the Italian peculiarity and for the unique dataset that we have created. Italy is an important case since analysts have to compulsory send their reports to the Stock Exchange Commission and the Stock Exchange the same day they give it to their clients. Reports should be available on the Stock Exchange website within a period of 60 days. As far as we know there is no other country in the World in which this delayed compulsory disclosure is provided. We have constructed a database that includes 22,194 reports issued on companies listed in the Italian Stock Exchange from September 1999 to July 2005. For the purposes of our analysis we calculate abnormal returns and abnormal volumes associated with the dissemination of the reports, performing two distinct short-term event studies: the first associated with the "report date", i.e. when the analyst gives the report to private clients; the second with regard to the "public access date", i.e. when the report is freely and publicly available on the Stock Exchange website. First of all, we find a violation of law since some intermediaries send their reports after the term allowed by regulation, more precisely one third of the total number of reports issued from January 2004 to July 2005 seem to be in violation of law. At the report date we find average abnormal returns of 0.65% for upgrades and of -0.82% for downgrades, coherent with the hypothesis that recommendations indeed convey new information to the market that efficiently react to these news. However, we find abnormal returns even some days before the report date. This can be the effect of other news affecting prices, e.g. earnings announcement, or the violation of Italian regulation. In a three days event window centered around the report date, we find that downgrades have an impact equal to -1.76%, in terms of CAR, while upgrades record a CAR equal to 1.27%, coherent in sign with previous studies in the literature, but not in magnitude, usually much more greater for downgrades. Our explanation is that in the period considered the percentage of upgrades and downgrades was very similar; therefore the market reacts almost in the same way. The event study related to the public access date show very different results. We do not find statistically significant abnormal returns, suggesting that the market efficiently does not react to the mere publication of the report on the website. It remains to be investigated if abnormal returns before the report date are due to the effect of other price-sensitive news or if they mean violation of the Italian regulation.

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* Corresponding author.

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1. Introduction

The role of financial analysts is of primary relevance in the process of elaboration and transmission of information to investors in reducing the costs associated in gathering information. If the researches produced by analysts really convey new information to an efficient market, then they should create value.

The main objective of the paper is to examine the market reaction to the reports issued by analysts on companies listed in the Italian Stock Exchange, and to define the contribution in terms of information embedded on them, as well as their investment value. We consider the Italian case for the peculiar regulatory system that imposes to financial analysts to transmit the reports to the Consob, the Italian Securities and Exchange Commission, and to Borsa Italiana S.p.A., the managing company of the Italian Stock Exchange, within the same day in which the reports are available to their private clients.[1]

Our database includes 22,194 reports issued between the 9th September 1999 and the 25th July 2005 on all the companies listed in the Italian Stock Exchange.

To evaluate the market reaction we calculate both extra-returns and abnormal volumes deriving from recommendation changes.

We perform two separate short term event studies using two different event dates: the first is the moment in which the report is produced ("report date"), while the second refers to the date in which the report is published

[1] This provision has been recently changed. According to recent Consob Regulation no. 15232/2005, the new requirements are that the written recommendations have to be sent to the Consob the same day they are issued. However, the publication can be done in two different ways: by transmitting them to the market management company, which shall make them available to the public or through the issuer's website (in this case there should be an advise in the stock exchange website informing where to find the report) the same date of issuance, or within sixty days if the report is for clients of the intermediary. This regulatory change, however, took place in April 2006, not affecting our results because outside our sample period.

in the Stock Exchange website ("public access date").[2] We want to verify the efficient market hypothesis for which investors should react in correspondence of the report date, but not after the publication date since the information has already been incorporated in the prices through the transactions of the analyst' private clients. In this respect, if no value is included in the report, then the activity of the analyst is worthless, and investors should not adjust their portfolios in response to that. If, instead the report has some value, then we should observe abnormal returns. If the market is efficient, instead, these abnormal returns should last for a very short period of time and then disappear. When the report becomes publicly available, the informational content should be already incorporated into market prices, therefore we should not observe any abnormal return.

The results obtained show an average abnormal return of 0.65% for upgrades and of -0.82% for downgrades.[3] However, in contrast with the market efficiency hypothesis, we find a market reaction also some days before the report date. It is possible that price-sensitive information are disseminated before the recommendation change, but an alternative explanation can be proposed: analysts give the information to their private clients before the report date in which they should transmit the report to the Consob and to the Stock Exchange. This would result in a violation of the Italian regulation in force.

The impact of recommendation changes is calculated using Cumulative Abnormal Returns (CAR) on different periods. The first one refers to the three days around the event date [-1; +1], the second window instead includes the five days preceding the previous interval [-6; -2], while the third one the five days following it, i.e. [+2; +6]. The CAR on the three days window around the event date is 1.27% for upgrades and -1.76% for downgrades, in line with previous results found in the literature. We do not find any significant effect in the five days preceding the three days event

[2] See Belcredi, Bozzi, Rigamonti (2003).

[3] Cervellati, Della Bina, Giulianelli (2005) on a sample of about 5,200 reports on IPOs in the Italian Stock Exchange shows a similar market reaction: about +1% for upgrades and -0.90 for

window, neither for upgrades or downgrades, while in the subsequent ones we show a statistically significant CAR of -0.67% only for downgrades, even if the average abnormal returns are not significantly different from zero. This could be explained by the inertia that typically follows bad news, like a downgrade, following a behavioral explanation. The pattern followed by abnormal volumes shows similar results. At the report date, market reaction in terms of volumes traded seems greater for downgrades than for upgrades. Abnormal volumes for upgrades and downgrades are respectively 32.43% and 43.94% more than average, both statistically significant at 1%.

Consistent with our initial hypothesis the cumulative abnormal returns at the public access date are not significant. The market seems to react correctly at the report date but it still remains to be investigated which are the reasons for the market reaction before the report date, i.e. if there are relevant price-sensitive information released before that date or if a violation of the Italian regulation occurs.

The structure of the paper is the following: the second paragraph presents a survey of the literature; the third paragraph explains the methodology applied and the database used; the fourth paragraph comments the results obtained and concludes.

2. Review of the literature

Several studies focus on the market reaction to recommendation changes and on the effects of the activity of financial analysts.[4] One of the first studies is Womack (1996) that analyzes 1,573 recommendation changes issued between 1989 and 1991, with respect to 822 companies listed in the US stock market. The analysis uses the database provided by First Call

downgrades.

[4] For a recent review of the literature regarding analysts' recommendations and earnings forecasts since 1993, see the paper by Ramnath, Rock, Shane (2005). A pioneer study on market reaction to analysts' recommendation changes is Stickel (1995).

Corporation, a company that records in real time "virtually"[5] all the reports issued by analysts. The empirical evidence shows that stocks subject to recommendation changes record large abnormal returns.[6] However, this initial reaction is incomplete, since during the post-event period, for added-to-buy recommendation the mean post-event drift is 2.4%, and short-lived (one month), whereas for added-to-sell recommendation is -9.1%, that is larger and lasting for six months. The asymmetry between these two values can be explained with the higher frequency with which analysts tend to upgrade their recommendations and with the greater cost of issuing a negative report. The post-event drifts seem to contrast with the efficient market hypothesis since the information contained in the report is not immediately incorporated in stock prices. In correspondence of the diffusion of the report, Womack calculates a coefficient of abnormal volumes: on average, recommendations that add a stock to the buy list induce abnormal volumes of 190% while recommendations that add a stock to the sell list induce abnormal volumes of 300%.

Juergens (1999), instead, measures the value of the recommendations formulated by analysts when reports are followed or preceded by the dissemination of price-sensitive information from the issuing companies. This analysis confirms the hypothesis of a high informative contribution of the research activity performed by analysts. All the recommendations, not only the ones followed or preceded by price-sensitive news, generate abnormal returns and affect stocks' volatility. Furthermore, the empirical evidence shows that the information embedded in analysts' reports have a greater investment value if compared to the public available information.[7]

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[5] "Virtually" because the database does not really includes all the available reports since intermediaries issue reports to First Call on a voluntary basis.

[6] The CAR on a three days window centered on the event day and adjusted for the company size is 3% for added-to-buy recommendations and -4.7% for added-to-sell recommendations. Bjerring, Lakonishok and Vermaelen (1983) and Beneish (1991) have documented similar anomalies but with reference to the general case of issuance of recommendations, not only on changes. Kim, Lin and Slovin (1997) consider a sample of buys that are the initiations of coverage. The results obtained confirm Womack's conclusions.

[7] These results are coherent with the broad definition of market efficiency given by Grossman and Stiglitz (1980) since positive returns are necessary to compensate for the costs incurred in

Taffler, Ryan and Walker (2004) identify the companies' informational events that are able to determine relevant changes of price and quantity of the stocks of the companies to which the news are referred. The authors use a methodology that takes into consideration all the information that can affect a company, including the anticipation or leakage of information before the diffusion to the public. About 65% of the changes in prices and volumes can be explained by the publicly available information. It has been identified a restrict set of categories of news that can be considered as factors determining anomalies in price and volume movements. Analysts' recommendations and revisions in earnings forecasts that are not associated with the diffusion of other news prevail on all other categories in terms of relevant market reactions. These two factors explain 17.4% of price changes and 16.1% of volume changes that have been the consequences of the events affecting the company. The publication of accounting prospects, instead, explains the 17% of the price changes and the 15.2% of the volume changes. The market reaction to changes of recommendations or earning forecasts can be used to define a series of investment strategies.

Boni and Womack (2006) study the competition between analysts, from 1996 to 2001. To add value to their recommendations, analysts specialize in the study of few stocks. The authors highlight that the returns achievable through strategies based on analysts recommendation changes record a Sharpe ratio that is five times greater than the one associated with a "price momentum" strategy [Jegadeesh and Titman (1993)]. A strategy consisting in buying stocks that have been upgraded and selling stocks that have been downgraded is able to generate a monthly return of 1.4%, about the 18% per year. After a month from the recommendation change, the returns from the stocks recommended by the analysts are positive for 53 firms out of 59. The competition among brokerage firms reduces the opportunity to profit from recommendation changes: a portfolio formed with stocks followed by a great number of analysts generates lower returns.

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collecting information. In their definition of market efficiency, it seems that analysts' recommendations have value for investors.

Barber, Lehavy, McNichols and Trueman (2003) show that, from January 1996 to June 2003, stocks that have been upgraded by brokerage firms with the lowest percentage of buy recommendations record better returns with respect to stocks upgraded by brokerage firms that have, on average, a higher percentage of buy recommendations. The opposite occurs for downgrades.

Jegadeesh and Kim (2003) compare recommendations issued by analysts in the G7 countries between 1993 and 2002, evaluating their investment value.[8] They consider 50,260 upgrades and 63,557 downgrades in the United States; 38,345 upgrades and 40,669 downgrades in the remaining G7 countries. The evidence shows that the proportion of sell and strong sell recommendations is lower than the one of buy and strong buy in all countries. The results also highlight that stock prices react significantly to changes of recommendation the day of the event and the following one. This reaction occurs in all the countries except from Italy;[9] while the greatest market reaction refers to the United States, followed by Japan. The authors analyze different investment strategies consisting in buying stocks that have been upgraded and in selling stocks that have been downgraded. Once more, the greatest profits refer to the United States and Japan.[10]

Belcredi, Bozzi and Rigamonti (2003) perform for Italy[11] a study similar to Stickel (1995) and Womack (1996). They analyze 4,990 reports, published on the Italian Stock Exchange website between September 1999 and March 2002 issued by 56 brokers on 237 listed companies. Recommendations are classified with an eight-point scale system, from strong buy to sell. Their study considers 659 changes of recommendation, and documents an abnormal return of 2.52% for upgrades and of -2.63% for downgrades in a

[8] For Italy, the period considered is shorter because of availability of data in the IBES Database on stocks' recommendations only from October 1993 to December 1998.

[9] We claim that this lack of reaction for Italy can be explained with a problem of the database used in this study, i.e. the one of I/B/E/S offered by the company Thomson Financial. We will discuss the details in the discussion that follows.

[10] This could be explained by the fact that for Italy the dates included in their database are probably not the real "report date", but the "public access date".

[11] For Italy, also see Cervellati and Della Bina (2004) and Fabrizio (2000).

three-day window centered on the report date. The authors show significant abnormal volumes for upgrade and an anticipated market reaction, due either to the diffusion of price sensitive information or to a leakage of information in the days preceding the diffusion of the research. The authors also consider the market reaction following the public access date, finding that there is no statistically significant market reaction, either considering extra-returns or abnormal volumes, highlighting that the market correctly reacts after the report date, when the real information is conveyed, and not to the mere publication in the website.

Cervellati, Della Bina, Giulianelli (2005) analyze the market reaction to changes in recommendations issued on companies listed in the Italian Stock Exchange, using the distinction among suggested report and public access date but on all the recommendations regarding Initial Public Offerings from 1998 to 2003, founding similar results. The decision to analyze only the recommendations having regard IPOs is due to two main reasons. The first was a practical one: the reports on IPOs in the period considered were about 5,200; a rather impressive amount of data to process, considering that reports shall be analyzed manually one by one, being not homogeneous.[12] The second and most important reason is instead a theoretical one: analysts have a crucial role in IPOs since, quite often, the company that is going public is not known by investors, therefore, analysts' recommendations are particularly valuable in conveying new information.[13]

[12] Cervellati, Della Bina and Pattitoni (2006) propose an analysis of the investment values of strategies based on the average consensus of financial analysts' recommendations, using all the 16,634 reports available on the website of Borsa Italiana from the 1st January 1999 to the 23rd July 2004.

[13] However, we should highlight that the date that the authors use to denote the public access date is the last one of the interval allowed by the Consob regulation and not the exact publication date on the website, since the Italian Stock Exchange has released this information only starting July 2004.

3. The impact of recommendation changes

3.1 Description of the dataset

The dataset includes all 22,194 reports available on the website of Borsa Italiana S.p.A., regarding all the companies listed in the Italian Stock Exchange and issued by analysts from 9 September 1999 to 25 July 2005.

The Italian regulatory framework is a unique one since it imposes several duties on financial analysts.

Art. 69 of the so-called "*Regolamento Emittenti*" (Consob Regulation no. 11971 of 14th May 1999, on Issuers), in fact, states that issuers of financial products, authorized brokerage firms and institutions having ownership relationships with them, are obliged to transmit to Consob and to Borsa Italiana S.p.A. all the "studies and statistics"[14] that they disseminate to the general public, on the same day of dissemination.[15] However, if the reports are only for the shareholders of the issuing firm, or of a firm that has a control relation with it, or again for the brokerage firm's clients, then the deposit to the Stock Exchange can be delayed. The maximum time interval allowed between the report date and the deposit date changed over time: it initially was set (the 12th June 1999) to be 15 calendar days, then passed to 10 days (the 16th June 2001), and finally to 60 days (11th July 2002).

We have performed a careful analysis of the sample, eliminating double reports[16] or reports lacking the recommendation, so that the final sample contained 14,633 reports issued by 60 brokerage firms on 233 companies.

[14] We would highlight that Italian regulation does not contain a precise definition of "research" while it generically refers to "studies and statistics". In contrast, the American SEC gives a precise definition of "equity research" or "research report".

[15] Reports should also include a disclaimer on potential conflict of interests. With reference to the potential problem of conflict of interest in the Italian Stock Market, see Cervellati and Della Bina (2005).

[16] They could be identical apart from the language used (Italian or English) or just repeated.

3.1.1 The systems of classification of the recommendations

The definition of a stock rating system is a rather delicate operation since analysts use a variety of terms to formulate their recommendations. The most simple rating system consists of a three-point scale (buy, hold, sell), while the most used by analysts is a five-point scale system (buy, outperform, hold, under-perform, sell). However, it is possible to have other rating systems with a different number of scales (six or eight for example) or numerical systems.[17] It is however unavoidable a certain degree of subjectivity in realizing a rating system that pretends to be representative of the recommendations. For the purposes of the analysis, we decided to classify the recommendation using a five-point scale, since it is probably the one mostly employed by academics at an international level. Since rating systems are not homogeneous, it is important to pay attention in comparing similar recommendations issued by different analysts. In other words, the buy recommendation given by a specific analyst can be his/her highest valuation, or can follow a "strong buy" and correspond to an "outperform" of another analyst.

3.1.2 The matrix of recommendation changes

Once defined the rating systems, the next step consists in the construction of the so-called matrix of recommendation changes (table 2).

There are two fundamental reasons to analyze recommendation changes instead of the series of recommendations itself [Stickel (1995), Womack (1996)]. First, an efficient market should react to new information, and not to the reiteration of past information. Second, recommendations are subject to "*calendar clustering*" since they are often issued in response to the publication of periodical financial reports from the companies, or after important announcements. To analyze the changes we have considered only those reports that contained the current and previous rating, excluding

[17] Belcredi, Bozzi, and Rigamonti (2003) use a eight-points scale from strong buy to sell, while Fabrizio (2000) uses a four-points scale (buy, hold, sell and "other recommendations").

2,553 reports. Table 1 proposes the basic description of the database, differentiating among the changes in recommendations (upgrades and downgrades) from the reports that just reiterate the same recommendation.

[Table 1 about here]

It is worth noting that the percentage of upgrades is less than the percentage of downgrades. It seems therefore that financial analysts tend to revise with greater frequency their recommendations downward rather than upward. This result can probably be explained if we consider the period in which the reports were issued in correspondence with one of the greatest bear markets of all times (2000-2001). The greater frequency of downgrades rather than upgrades is consistent with the phenomenon knows as "optimism bias" of financial analysts [O'Brien (1998)] claiming that analysts tend to be excessively optimistic in their initial forecasts and only with some delay and gradually they revise their recommendations. Further evidence of the greater frequency of downgrades than of upgrades in the year following 2000-2001 are presented in Jegadeesh and Kim (2003) and in Ivkovic and Jegadeesh (2004), while is in contrast to what found in previous other papers like Womack (1996) that however refer to a previous period characterized by bull markets.

[Table 2 about here]

3.2 Methodology

In what follows, we examine the market reaction to the diffusion of the reports. The impact of an upgrade or a downgrade has been measured using the event study methodology. To determine the informative and investing value of the reports, we have separated the report date from the public access date. We have performed two different kinds of event study

analyses: the first one takes as the event date the report date, i.e. the date in which the report is given only to the private clients of the analyst ("event study 1"); the second one, instead, take as event date the public access date ("event study 2"). If no news is conveyed in the recommendation change, then we should observe no extra-returns since no portfolio adjustment should take place in correspondence of the day in which the report is transmitted only to the clients of the brokerage firm. In this case, the research activity performed by the analysts should be worthless. On the contrary, if the informative content of the report is relevant and the market is efficient, we should observe extra-returns and abnormal volumes the day in which it is given to the private clients of the analyst and immediately disappear. If the market is efficient, then no significant reaction should take place at the public access date, since profit opportunities relative to the news should have been already incorporated by portfolio adjustments that had taken place around the report date.

3.2.1 Abnormal returns analysis

In order to calculate abnormal returns, we use the standard event-study methodology [Brown and Warner (1980), (1985)], adopting the *Market Model*.

The event window is composed by the three days around the event, i.e. [-1; +1], both for the report and public access date. With regard to the estimation window, instead, we had to be more careful, giving the fact that the two events that we consider can be very close in time to each other.

Therefore, as shown in table 3, to estimate the Market Model[18] parameters to calculate abnormal returns, we use for both event studies the interval [-121; -2] with respect to the report date.[19]

[Table 3 about here]

[18] As market portfolio, we used the value-weighted general index of the Italian Stock Exchange, i.e. the Mibtel.

[19] In fact, if we took the 120 days preceding the public access date we would have incorporated the

Averaging the abnormal returns corresponding to the N recommendations changes for the securities included in the sample (i = 1, 2 ... N) we finally obtain the mean abnormal return for time t (AR_t). In order to assess the global effect of recommendation changes, the daily mean abnormal returns have been aggregated in cumulative abnormal return (CAR).

To test the statistical significance of our results, we performed both parametric [Brown and Warner (1980), (1985)][20] and non-parametric tests [Corrado (1989)][21].

3.2.2 Abnormal volumes analysis

With regard to the analysis of abnormal volumes, we decided to use the following logarithmic transformation[22] of volumes proposed by Ajinkya and Jain (1989).[23]

From now on, we will use the term "volume" to refer to the logarithm.

To measure the Abnormal Volume (AV) we calculate it as the difference between the "volumes" of the stock i at time t and an average over 120 days.[24]

Also for Abnormal Volumes, the event window includes the three days around the event, both for the report and public access date.

However, we used different estimation windows for the report and public access date, due to the proximity of the two events, as explained above. Table 3 shows the assumption that we made: for event study 1, we took the

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abnormal returns following the issuance of the report.

[20] For a further robustness check, we also used the tests proposed by Boehmer E., Musumeci J., Poulsen A.B (1991) that takes into account the event-induced variance.

[21] The rank test proposed is better specified under the null hypothesis and does not require the assumption of symmetry, necessary for the correct specification of signed rank and sign test. Furthermore, it is resistant to the misspecification caused by the event-induced variance. See Corrado (1989), pp. 394-95.

[22] Since the original distribution of the volumes is supposedly not normal, this transformation is necessary to obtain a normal one.

[23] The measure used is the following: $V_{it} = \ln(1 + Vol_{it})$, where Vol_{it} is the volume of stock i at time t, while V_{it} is its logarithmic transformation.

[24] Of course, also this average is calculated starting from the logarithm of volumes.

windows [-2; -61] and [+2; +61] with regard to the report date, instead for event study 2, we used the period [+2; +121] with reference to the public access date.[25]

To test the statistical significance of our results, we used the standard methodology for volumes proposed by Ajinkya and Jain (1989).[26]

3.3 Empirical evidence on average abnormal returns

In what follows we present the results obtained for average abnormal returns in correspondence of the recommendation change with reference to the report date and the public access date.

From table 4, we highlight that at the report date, for upgrades the extra-return is 0.65% while for downgrades is equal to -0.82%, both statistically significant. In absolute terms, the market reaction for upgrades is lower than for downgrades. It is worth to notice that we observe abnormal returns not only at the report date, but also around it. The abnormal returns in the window [-1; +1] are statistically significant. For upgrades the abnormal returns are significant also the second day before and the first day after the report date, while for downgrades we find abnormal returns significantly different from zero one day before and the fourth day after the report date. The results are in line with our intuition that an efficient market should react in a positive way to upgrades (good news) and negatively to downgrades (bad news). However, if the market is perfectly efficient, we should observe an immediate and exhaustive reaction the day corresponding to the report date,[27] while we observe extra-returns also some day following the report date and some day in advance.

Even if from a theoretical point of view we should expect this immediate reaction. It should be considered that in real markets, this could not be the best behavior. For example, institutional investors that decide to follow the

[25] We have tried several alternative time intervals to calculate the average volumes. The obtained results are similar; therefore, we can consider the results as robust.

[26] For a further robustness check, we also used non-parametric tests [Corrado (1989)].

[27] One should also consider the day following the report date, if the report is given to the analyst's private clients when the market is close.

analyst's recommendation, may want to fraction their orders to avoid the price impact of a relevant transaction.[28]

The fact that there are abnormal returns statistically different from zero some day before the report date can be explained in different ways. The first explanation is that there exists a leakage of information before the report date, i.e. that analysts give the reports to their private clients, or at least to a part of them, even before the official report date. This would result in a violation of law, being in contrast with Consob regulation that requires that analysts to send the report the same day that is given to the analyst's private clients.

An alternative explanation is that some price-sensitive information is present in the period before the recommendation, e.g. an earning announcement. Of course, if some important news is disseminated before the report date, this will not result in a violation of law, rather in a correct market response.[29]

[Table 4 about here]

In figure 1, we show the anticipated market reaction and the persistence of abnormal returns in the days closely following the report date.

[Figure 1 about here]

The second event study, instead, refers to the public access date, i.e. when the report is published in the Stock Exchange website. While the overall results refer to the entire sample period, i.e. from September 1999 to July 2005, with regard to this event study, the data for the exact public access date is available only from 1 July 2004.[30]

[28] We thank Ugo Rigoni for this helpful comment.

[29] In a work in progress paper, we are checking for price-sensitive news, focusing our attention on earning announcements. We are grateful to Devin Shanthikumar for this suggestion.

[30] Our sample end the 25 July 2005. However, we are currently elaborating new data until July 2006.

Figure 2 gives a graphical representation of the number of days between the report and the public access date (in the horizontal axis) and the relative frequency of occurrence (in the vertical axis).

First, we observe that in the 8.57% of the cases, we have no differences between the report and the public access date, i.e. they coincide. Another peak can be observed after seven days (5,29% of the total), suggesting that several intermediaries do not immediately send the report to be published but they send it within a week. About the 20% of the reports are published within the first week. If we recall that the law prescribes to publish the report within sixty days, we can highlight the percentage of reports that complies with the regulation is about 67% of the total. There is, therefore, one third of reports that are issued after the period allowed by law. Since Borsa Italiana to publish the reports uses an automatic system that rends available the report the same day the intermediaries send it, it seems that some intermediaries send the reports after the maximum date allowed by regulation.[31]

[Figure 2 about here]

For our calculation, we should exclude at least the cases of coincidence, to evaluate separately the effect of the two events. In what follows, however, for prudential reasons, when calculating the extra-returns and abnormal volumes we have excluded not only the cases of coincidence between the two dates but also the cases in which less than eight days last within the two dates.[32]

[31] Almost 30% of the reports are issued the last 12 days of the interval (i.e. from the 49th day to the 60th), with a 6.57% of reports being published the 60th day. Another 15% of report is published within 10 days from the end of the period required by law, i.e. from the 61st to the 70th day, summing to about 82% within the first 70 days. This is like saying that almost all the reports are issued in time (allowing 10 days after the 60th day).

[32] The reason is that, since we observe a market reaction after the report date (four days for abnormal returns and six days for abnormal volumes), we exclude eight days for prudential reasons, i.e. to be sure that we do not take into account the abnormal reaction generated by the issuance of the report, considering the whole event window, i.e. [-1; +1]. However, we also performed other

Table 5 and figure 3 display the average abnormal returns around the public access date.

[Figure 3 and Table 5 about here]

It can be noticed that the market reaction in correspondence of this date is almost insignificant.[33] These results seem to support the efficient market hypothesis for the Italian Stock Exchange, in fact, we should expect no market reaction to a mere publication on the website of the recommendation that has been already issued by the analysts to their clients.

3.4 Empirical evidence on Cumulative abnormal returns

To verify if these recommendations really create value for investors we calculated cumulative abnormal returns on different time windows. To estimate the total effect of the recommendation changes on the whole period considered, daily average abnormal returns have been aggregated to obtain the Cumulative Abnormal Return (CAR) on different time windows.
We have divided the period [-6; +6] in three main windows: a three days window centered on the event date [-1; +1], a window of five days preceding the previous central event window [-6; -2] and a third one including five days following the central three days event window [+2; +6].
Table 6 shows the results for the three time windows considered. The results confirm our expectations: we find a CAR significantly different from zero both for upgrades and downgrades in the three days window centered around the report date, while the CAR on the three days window

calculations just excluding the cases of coincidence of the two events, or using other differences within one week, and the results are very similar. Therefore, we can take our results as robust.

[33] This confirms what found by Cervellati, Della Bina and Giulianelli (2005) that recorded neither extra returns nor abnormal volumes at the public access date, but with respect to a sample or report only referred to IPOs. The results seem therefore to be more general and not only valid for IPOs.

around the public access date are not statistically significant.

[Table 6 about here]

For event study 1, the CAR on the window [-1; +1] is equal to 1.27% for upgrades and -1.76% for downgrades, both significant at 1%. It is worth noting that in the five days following the central event window, there are no significant cumulative abnormal returns for upgrades, while the CAR for downgrades is –0.67%. This asymmetry can be explained by the fact that individuals usually incorporate bad news more slowly, using a behavioral explanation. Furthermore, before the event window, CARs are not statistically significant for upgrades or for downgrades.

From figure 4, it is possible to notice an interesting trend before the report date. For downgrades, there is a positive CAR, even if not statistically significant, that seems to suggest that in the period just before the issuance of the report the stocks under review have increased in value, becoming overvalued and possible targets for downgrades.

The opposite happen for stocks that have received an upgrade, which price decreased before the report date, suggesting an undervaluation of those stocks that then are objective of positive recommendation. An alternative explanation of this last effect is what in literature is known as "booster shoot" [Womack (1996)]. Following this view, analysts could deliberately upgrade those stocks that have recorded poor performances in the past, not because they are undervalued, but just to support the price of the stocks of companies for which they want to maintain or create a positive relation with the management.[34]

[Figure 4 about here]

[34] It should be highlighted that the CAR [-2; -6] for upgrades is not statistically significant, like for downgrades. However, we find that the CAR [-2; -10] is significantly different from zero for upgrades and equal to -0.52% while for downgrades is 0.25% but still

The results of event study 2, presented in table 6 and figure 5, show that CARs are not significant at the public access date or around it, both for upgrades and downgrades.

This is coherent with the hypothesis that the market correctly reacts at the report date, when the information is conveyed to prices through the trading activity of analysts' clients.

Given that our results support the idea that the market reacts after the report date and not at the public access date, we decided to go further in the analysis of the market reaction after event 1.

In table 7, therefore, we focus on what we expect to be the recommendation changes having the greatest market impact, i.e. those from and to the extremes of rating systems. We therefore calculate the CAR on a three-day event window for added-to-buy, added-to-sell, removed-from-buy and removed-from-sell, following Womack (1996).

[Table 7 about here]

For added-to-buy we find a CAR equal to 1.82%, statistically significant, and greater than what we found for upgrades in general, as expected. With regard to added-to-sell we find a CAR equal to -2.15%, higher than what we found for downgrades, and statistically significant. In case of removed-from-buy, we find a statistically significant negative reaction equal to -1.31%, lower than the general result for downgrades, bur rather relevant. With regards to removed-from-sell, instead, we find a slightly negative reaction, while we were expecting a positive reaction. However, it is not significantly different from zero. The low number of removed-from-sell recommendations can explain the result. Therefore, this last result should not be taken into account.

3.5 Empirical evidence on abnormal volumes

The analysis on abnormal volumes is performed both for the report and the

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insignificant.

public access date, and it is presented in tables 8 and 9, and in figures 6 and 7, both for upgrades and downgrades (part A and part B, respectively).
In correspondence of the report date (table 8), there are abnormal volume equal to 0.3234 for upgrades and 0.4394 for downgrades, respectively 32.43% and 43.94% more than the average, both statistically significant at 1%.

[Figure 6 (part A and B) and table 8 about here]

From these results it is possible to notice that the market reaction in terms of volumes is greater for downgrades than for upgrades.
While this result confirms what found in literature, the possible explanation can be different. Usually, two explanations are put forward to explain this result. The first refers to the fact that usually the percentage of downgrades is smaller than the one for upgrades; therefore the impact for the former should be higher. A second explanation has a "behavioral" nature, claiming that people react more heavily to negative news, therefore increasing trading after a downgrade. While, in our case, the behavioral explanation holds, the one referring to the percentages of upgrades versus downgrades does not, since the frequencies of occurring are almost the same.
If we compare the results found in the analysis of CARs, we can see that for downgrades there is a greater market reaction in the event window around the report date, that seems to last thereafter, while the reaction in response to upgrades is smaller at the report date and not persisting.
With regard to the analysis centered around the public access date (table 9), we would like to highlight that from a statistical point of view there are abnormal volumes significantly above average but there is no peak at the public access date, seeming to suggest that the real reaction happens around the report date.

[Figure 7 (part A and B) and table 9 about here]

3.6 Comparing cumulative abnormal returns and abnormal volumes

In what follows we present a comparison between cumulative abnormal returns and abnormal volumes in correspondence both at the report and public access date and for upgrades and downgrades.
Figure 8 shows the results obtained for event study 1, in correspondence of the report date for upgrades. It is evident that around this date, following an upgrade, there is an increase of abnormal volumes as well as of cumulative abnormal returns.

[Figure 8 about here]

Figure 9, instead, presents the market reaction around the report date, following a downgrade. It is evident that CARs and abnormal volumes are significant around the report date. As we have shown in the previous analysis, in fact, the market reaction is statistically significant in both cases, but the magnitude for upgrades is lower if compared to downgrades, while it lasts longer.

[Figure 9 about here]

Figure 10 presents the results of the event study 2, relative to the public access date in case of upgrade. While from a statistical point of view there are abnormal volumes significantly above average in the period around the date of publication of the reports, there is no peak at the public access date. Since we are doing our calculations with regard to public access date using just one year and a half of data, our results should be taken with caution. In other words, it is possible that we find significant abnormal volumes due to specificity of the period considered and to the low number of data. Figure 11 shows the results in case of downgrades.

[Figure 10 and 11 about here]

4. Conclusions

Given the role of primary relevance played by financial analysts in the process of elaboration of accounting and financial data provided by listed companies, we verify if the researches they produce really convey information to the market, and therefore if they indeed have value.

In this respect we have analyzed the impact of the issuance of reports on prices and quantities of the stocks recommended by analysts, calculating both extra returns and abnormal volumes associated with the upgrades and downgrades.

Italy is a very peculiar case since it requires analysts to send the report to the Stock Exchange Commission the same day they issue it to their private clients. The intermediaries issuing reports are obliged to submit the reports within sixty days to the Stock Exchange, that then make them available on its website.

About one third of the reports are issued beyond the period allowed by regulation, seeming to suggest a violation of law. A good part of the reports is however sent the same day of issuance or within a week, and another relevant part just some days before deadline allowed by law.

The main market reaction takes place in correspondence of the diffusion of the report to the analysts' private clients, stabilizing around normal values in the following period for upgrades, while lasting in the post-event window for downgrades. At the report date average abnormal returns are statistically significant both for upgrade and downgrade. However, the reaction to downgrades is greater than the one for upgrades.

Since the percentage of revisions upward and downward in the sample is almost the same, we can not argue that the greatest reaction to downgrades is due to a lower frequency of downward revisions, rather due to the fact that for upgrades the reaction last longer.

This result is confirmed analyzing volumes: an upgrade generates statistically significant abnormal volumes that, however, are lower than the ones recorded for downgrades. In other words, it seems to suggest that we observe an higher market reaction, both in terms of extra-returns and abnormal volumes for downgrades, that is long-lasting, while for upgrades there is a still significant market reaction, but lower in magnitude and short-lived.

Abnormal returns and volumes are present not only before the official diffusion of the report to the market, but also before the report date. We claim two hypotheses to explain this evidence. The first explanation supposes a not full informational efficiency of the market, caused by leakage of information or by insider trading. The second one is based on the possibility that other important price sensitive news had preceded the diffusion of the report of the analyst. We do not exclude that the a part of recommendation changes can be concentrated around earnings announcements and that those news could explain a great deal of the abnormal return associated with the recommendation change.

The future research should investigate if price sensitive news in correspondence of the recommendation changes could affect the results deriving from the present analysis.

It remains to be investigated the investment value for analysts' private clients of investment strategies that use portfolios based on recommendations or average consensus, exploiting the difference between the report date and the public access date.

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Table 1. Basic description of the database

Part A. Sample description

Total number of studies	22,194
Studies that are non-monographic, double, without rating, with ambiguous rating	5,008
Total number of monographic studies with rating	17,186
Studies without previous rating	2,553
Total number of monographic studies that form the sample of observations	14,633

Part B. Changes and Reiteration of Recommendations

Recommendation	Number of reports	(%)
Unchanged	12,328	84.25
Upgrade	1,098	7.50
Downgrade	1,207	8.25
Total	14,633	100

Table 2. Matrix of changes of recommendation (percentages in brackets)

	Previous Rating					
Current Rating	**Buy**	**Add**	**Hold**	**Reduce**	**Sell**	**Total**
Buy	**4,119**	**193**	**254**	**16**	**6**	**4,588**
	(28.15)	(1.32)	(1.74)	(0.11)	(0.04)	(31.35)
Add	**185**	**2,795**	**382**	**50**	**1**	**3,413**
	(1.26)	(19.10)	(2.61)	(0.34)	(0.01)	(23.32)
Hold	**325**	**392**	**4,444**	**143**	**40**	**5,344**
	(2.22)	(2.68)	(30.37)	(0.98)	(0.27)	(36.52)
Reduce	**24**	**32**	**164**	**687**	**13**	**920**
	(0.16)	(0.22)	(1.12)	(4.69)	(0.09)	(6.29)
Sell	**5**	**2**	**65**	**13**	**283**	**368**
	(0.03)	(0.01)	(0.44)	(0.09)	(1.93)	(2.51)
Total	**4,658**	**3,414**	**5,309**	**909**	**343**	**14,633**
	(31.83)	(23.33)	(36.28)	(6.21)	(2.34)	(100)

Table 3. Event window and Estiamtion window for Event Study 1 and Event Study 2

	ABNORMAL RETURN	
	EVENT WINDOW	ESTIMATION WINDOW
EVENT STUDY 1	[RD -1; RD +1]	[RD -2; RD -121]
EVENT STUDY 2	[PAD -1; PAD +1]	[RD -2; RD -121]
	ABNORMAL VOLUME	
	EVENT WINDOW	ESTIMATION WINDOW
EVENT STUDY 1	[RD -1; RD +1]	[RD -2; RD -61 and RD +2; RD +61]
EVENT STUDY 2	[PAD -1; PAD +1]	[PAD +2; PAD +121]
	RD = Report Date	PAD = Public Access Date

Table 4. Average abnormal returns in correspondence of the report date

ABNORMAL RETURN REPORT DATE											
	UPGRADE					DOWNGRADE					
T	AR	T-TEST		Non Parametric TEST		CAR	AR	T-TEST		Non Parametric TEST		CAR
-10	-0.0008	-1.0630		0.8208		-0.0008	0.0012	1.7203	*	-0.9671		0.0012
-9	-0.0008	-1.1268		1.0241		-0.0016	-0.0003	-0.4092		-0.5165		0.0009
-8	-0.0002	-0.3105		0.0314		-0.0019	0.0023	3.3250	***	-2.3857	**	0.0032
-7	-0.0021	-2.7663	***	1.0335		-0.0039	-0.0005	-0.6762		0.2658		0.0028
-6	-0.0007	-0.9219		0.2517		-0.0046	0.0011	1.5307		-1.7399	*	0.0038
-5	-0.0007	-0.8716		0.0120		-0.0053	0.0003	0.4943		-1.0807		0.0042
-4	-0.0008	-1.0436		-0.1111		-0.0061	-0.0006	-0.8505		0.3591		0.0036
-3	-0.0008	-1.0309		0.1023		-0.0069	-0.0004	-0.5072		-1.0181		0.0032
-2	0.0016	2.1427	**	-1.7567	*	-0.0052	-0.0007	-1.0558		-0.3964		0.0025
-1	0.0029	3.9021	***	-2.8896	***	-0.0023	-0.0044	-6.2311	***	2.1503	**	-0.0019
0	0.0065	8.6316	***	-6.2085	***	0.0042	-0.0082	-11.7013	***	5.6416	***	-0.0100
1	0.0033	4.3985	***	-3.3491	***	0.0075	-0.0050	-7.1795	***	4.3017	***	-0.0151
2	0.0010	1.2713		-0.6901		0.0084	-0.0029	-4.0732	***	2.7523	***	-0.0179
3	-0.0006	-0.7400		0.2136		0.0079	-0.0016	-2.2783	**	0.9153		-0.0195
4	0.0007	0.9655		-1.3775		0.0086	-0.0012	-1.6691	*	0.1748		-0.0207
5	0.0004	0.5813		-0.5741		0.0090	-0.0008	-1.1419		0.1497		-0.0215
6	-0.0008	-1.0049		0.6450		0.0083	-0.0003	-0.4019		-0.5637		-0.0218
7	-0.0002	-0.2735		0.0067		0.0081	-0.0005	-0.7181		0.7102		-0.0223
8	0.0009	1.1857		-1.4807		0.0089	-0.0005	-0.7085		0.1897		-0.0228
9	-0.0006	-0.8569		0.1960		0.0083	-0.0005	-0.7371		-0.2952		-0.0233
10	0.0000	0.0138		-0.3631		0.0083	0.0000	-0.0305		-0.4832		-0.0233

Statistical significance: * = 10%; ** = 5%; *** = 1%

Table 5. Average abnormal returns in correspondence of the public access date

ABNORMAL RETURN PUBLIC ACCESS DATE DATE										
	UPGRADE					DOWNGRADE				
T	AR	T-TEST		Non Parametric TEST	CAR	AR	T-TEST		Non Parametric TEST	CAR
-10	0.0005	0.4656		-0.5585	0.0005	-0.0004	-0.3808		0.6787	-0.0004
-9	0.0001	0.0662		0.6101	0.0005	-0.0003	-0.2876		1.0707	-0.0007
-8	0.0002	0.1463		0.4429	0.0007	-0.0011	-1.1189		1.0579	-0.0018
-7	0.0020	1.9856	**	-1.2042	0.0027	0.0004	0.3953		-1.0707	-0.0014
-6	0.0005	0.4586		0.0854	0.0032	-0.0003	-0.3472		0.3067	-0.0017
-5	-0.0011	-1.0516		1.5066	0.0021	-0.0014	-1.4204		1.5265	-0.0031
-4	0.0006	0.5485		-0.1192	0.0027	0.0010	0.9914		-0.4175	-0.0021
-3	0.0013	1.2822		-1.0139	0.0040	0.0014	1.3902		-0.2726	-0.0008
-2	0.0015	1.4707		-0.2953	0.0055	0.0009	0.9578		-1.8161	* 0.0002
-1	-0.0005	-0.4861		0.0996	0.0050	0.0016	1.5746		-1.3305	0.0017
0	0.0018	1.7459	*	-0.8627	0.0068	-0.0011	-1.1131		1.7295	* 0.0006
1	0.0007	0.7197		-0.3131	0.0076	-0.0015	-1.4938		1.3958	-0.0008
2	0.0022	2.1764	**	-2.3676	** 0.0098	-0.0013	-1.2645		1.5265	-0.0021
3	0.0001	0.1176		0.6564	0.0099	0.0009	0.9443		-0.1548	-0.0012
4	-0.0006	-0.5746		1.7468	* 0.0094	0.0001	0.1165		0.5467	-0.0010
5	-0.0002	-0.2111		0.0694	0.0091	0.0000	-0.0394		0.2031	-0.0011
6	-0.0006	-0.6101		0.8093	0.0085	-0.0002	-0.2291		0.6404	-0.0013
7	0.0006	0.6019		-0.8147	0.0091	-0.0007	-0.7269		0.6106	-0.0020
8	-0.0004	-0.3639		0.3291	0.0088	-0.0012	-1.2043		0.8349	-0.0032
9	-0.0004	-0.3497		1.1331	0.0084	-0.0012	-1.1740		0.5893	-0.0044
10	-0.0008	-0.7277		1.4052	0.0076	-0.0008	-0.7878		0.3493	-0.0052

Statistical significance: * = 10%; ** = 5%; *** = 1%

Table 6. Cumulative Abnormal Returns for event study 1 and event study 2

		CAR					
		Report date			Public access date		
		CAR	T-TEST	SIGN	CAR	T-TEST	SIGN
Upgrade	[-6; -2]	-0.0013	-0.7227		0.0028	1.2436	
	[-1; +1]	0.0127	11.4555	***	0.0020	1.3686	
	[+2; +6]	0.0008	0.5530		0.0009	0.3672	
Downgrade	[-6; -2]	-0.0003	-0.1341		0.0016	0.8882	
	[-1; +1]	-0.0176	-13.4553	***	-0.0010	-0.7519	
	[+2; +6]	-0.0067	-4.3376	***	-0.0005	-0.2519	

Statistical significance: * = 10%; ** = 5%; *** = 1%

Table 7. Cumulative Abnormal Returns for added-to-buy/sell and removed-from-buy/sell

	ADDED TO (REMOVED FROM) BUY & SELL		
	CAR	T-TEST	SIGN
Added to Buy	0.0182	8.1223	***
Removed from Buy	-0.0131	-7.7024	***
Added to Sell	-0.0215	-3.0515	***
Removed from Sell	-0.0049	-1.0237	

Statistical significance: * = 10%; ** = 5%; *** = 1%

Table 8. Average abnormal volumes in correspondence of the report date

ABNORMAL VOLUME REPORT DATE									
	UPGRADE				DOWNGRADE				
T	MEAN	T-TEST		Non Parametric TEST		MEAN	T-TEST		Non Parametric TEST	
-10	0.0017	0.0256		-0.3435		0.0102	0.1259		-0.3685	
-9	0.0119	0.1778		-0.4449		0.0324	0.3993		-0.4794	
-8	0.0038	0.0563		-0.3438		0.0682	0.8398		-0.8858	
-7	0.0313	0.4667		-0.6263		0.0653	0.8043		-0.8228	
-6	0.0518	0.7721		-1.0175		0.1103	1.3578		-1.2896	
-5	0.0690	1.0282		-1.0349		0.1386	1.7063	*	-1.5653	
-4	0.0474	0.7055		-0.8412		0.1717	2.1139	**	-1.9574	*
-3	0.1172	1.7466	*	-1.6446		0.1855	2.2833	**	-1.9927	**
-2	0.1550	2.3095	**	-2.2601	**	0.2313	2.8476	***	-2.3874	**
-1	0.2548	3.7972	***	-3.4348	***	0.3339	4.1108	***	-3.2667	***
0	0.3234	4.8179	***	-3.8860	***	0.4394	5.4088	***	-4.2319	***
1	0.2512	3.7434	***	-3.3494	***	0.3248	3.9989	***	-3.3738	***
2	0.1823	2.7164	***	-2.4828	**	0.2555	3.1448	***	-2.9199	***
3	0.1418	2.1125	**	-2.0431	**	0.2084	2.5654	**	-2.4657	**
4	0.1485	2.2125	**	-2.1596	**	0.1756	2.1622	**	-2.0670	**
5	0.1275	1.8998	*	-1.8481	*	0.1619	1.9934	**	-1.9757	**
6	0.1074	1.6006		-1.6336		0.1503	1.8499	*	-1.8640	*
7	0.1071	1.5960		-1.6324		0.1103	1.3574		-1.4213	
8	0.1085	1.6164		-1.5826		0.0785	0.9670		-1.2028	
9	0.0822	1.2241		-1.2233		0.0454	0.5591		-0.7503	
10	0.0551	0.8207		-0.8782		0.0584	0.7188		-0.9162	

Statistical significance: * = 10%; ** = 5%; *** = 1%

Table 9. Average abnormal volumes in correspondence of the public access date

ABNORMAL VOLUME PUBLIC ACCESS DATE									
	UPGRADE				DOWNGRADE				
T	MEAN	T-TEST		Non Parametric TEST		MEAN	T-TEST		Non Parametric TEST	
-10	0.0572	0.9735		-1.2144		-0.0166	-0.2636		-0.1524	
-9	-0.0132	-0.2250		-0.3962		-0.0408	-0.6492		0.3692	
-8	-0.0932	-1.5855		1.4210		-0.0846	-1.3452		1.1384	
-7	0.0671	1.1405		-0.9466		0.0295	0.4692		-0.5914	
-6	0.0825	1.4036		-1.8643	*	0.0698	1.1095		-1.4265	
-5	0.0350	0.5962		-1.3232		0.0657	1.0442		-1.1922	
-4	0.1001	1.7024	*	-2.1506	**	0.0893	1.4200		-1.6610	*
-3	0.1453	2.4718	**	-2.4662	**	0.1307	2.0788	**	-2.0327	**
-2	0.1270	2.1594	**	-1.9140	*	0.1239	1.9703	**	-2.0115	**
-1	0.1434	2.4395	**	-2.5105	**	0.1460	2.3219	**	-2.5955	***
0	0.1245	2.1182	**	-1.8973	*	0.1378	2.1916	**	-2.2568	**
1	0.0734	1.2484		-1.6805	*	0.1068	1.6980	*	-1.9218	*
2	0.1804	3.0692	***	-2.2517	**	0.0331	0.5263		-0.2886	
3	0.0884	1.5043		-1.4463		0.0766	1.2176		-1.0240	
4	0.0485	0.8250		-0.5750		0.0590	0.9377		-0.9487	
5	0.0822	1.3988		-1.1338		0.1612	2.5631	**	-2.2525	**
6	0.0391	0.6647		-0.6862		-0.0177	-0.2811		-0.2064	
7	0.0397	0.6746		-0.4176		0.0531	0.8438		-1.0999	
8	0.0235	0.4000		-0.6324		0.0941	1.4974		-1.5939	
9	0.0178	0.3029		-0.3821		0.1151	1.8312	*	-2.3065	**
10	-0.0412	-0.7013		0.8255		0.0901	1.4333		-1.9859	**

Statistical significance: * = 10%; ** = 5%; *** = 1%

Figure 1. Average abnormal returns in correspondence of the report date

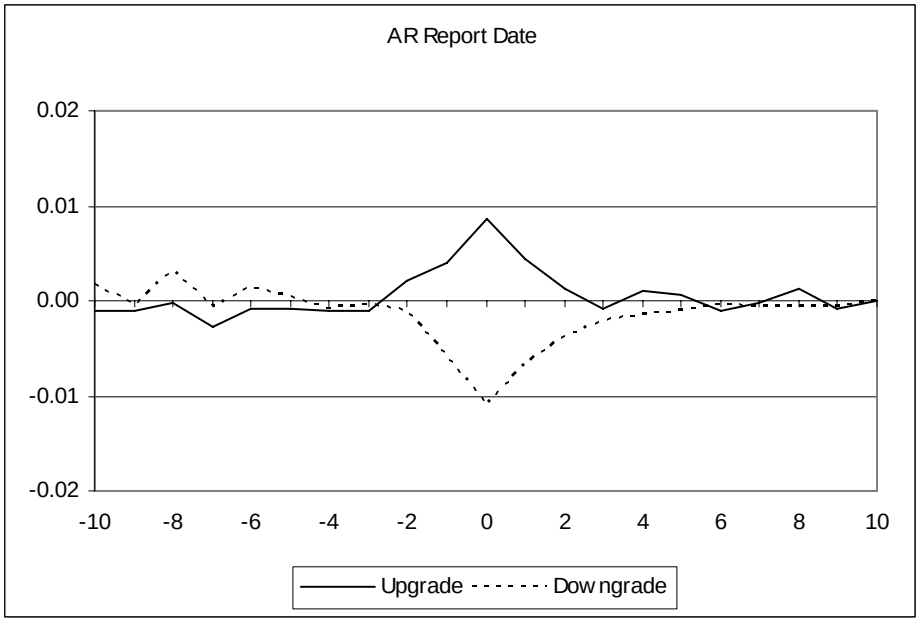

Figure 2. Number of days between the report date and the public access date

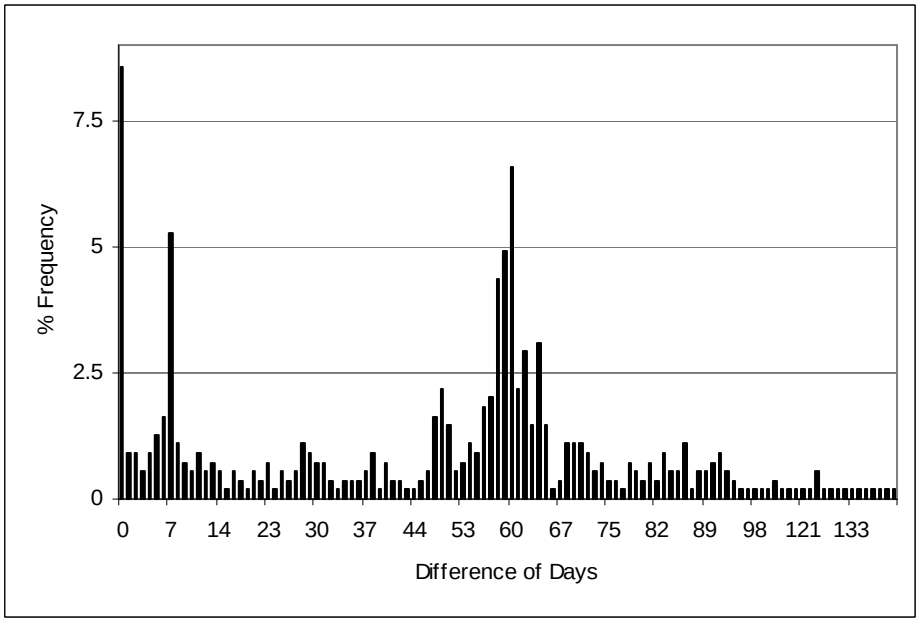

Figure 3. Average abnormal return in correspondence of the public access date

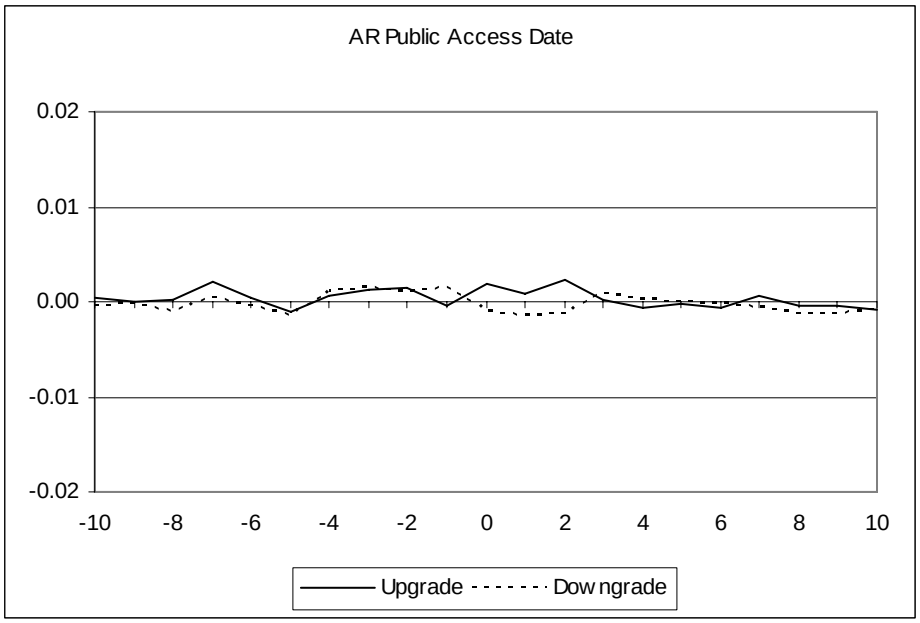

Figure 4. Cumulate abnormal returns in correspondence of the report date

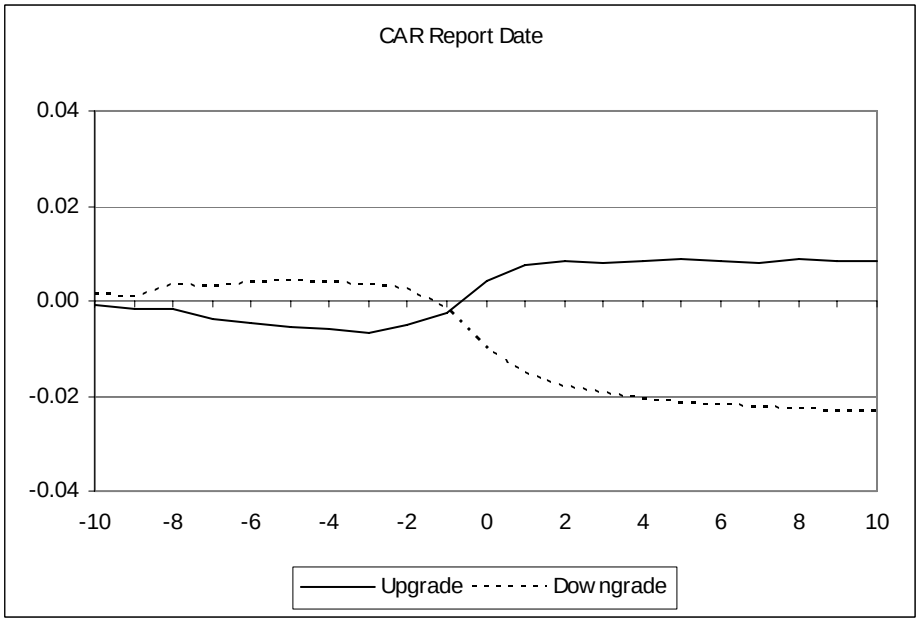

Figure 5. Cumulate abnormal returns in correspondence of the public access date

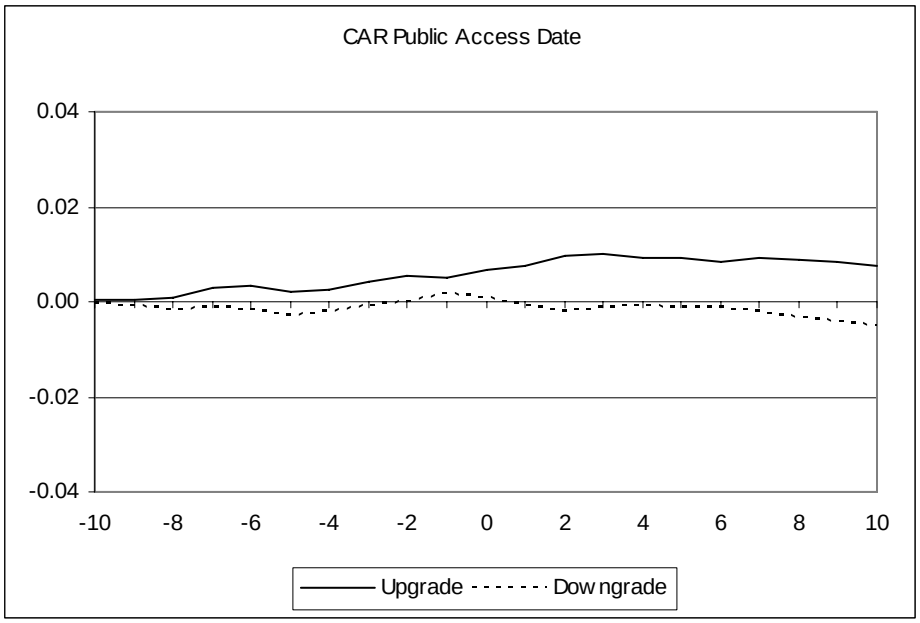

Figure 6 (part A). Average Abnormal Value around the report date – Upgrades

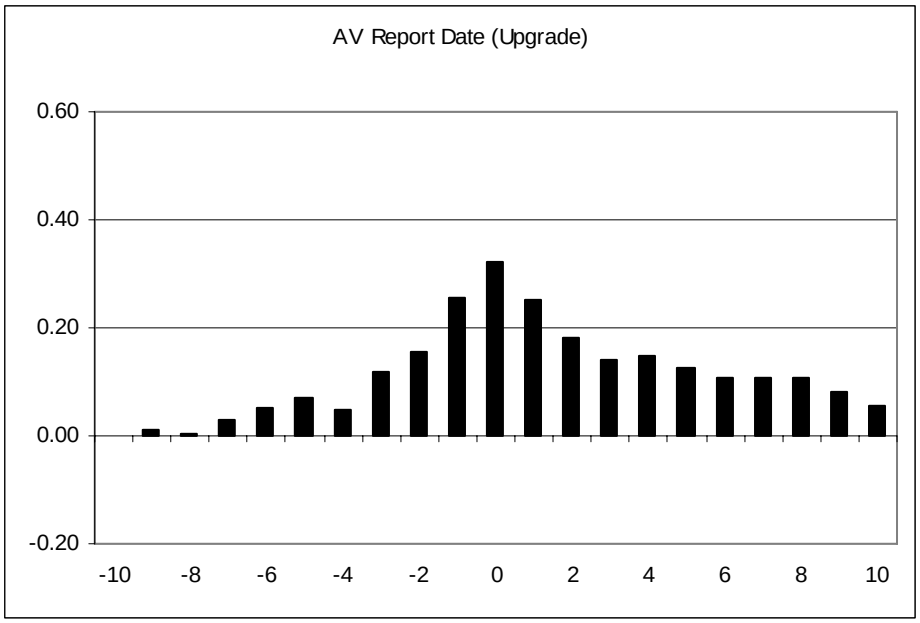

Figure 6 (part B). Average Abnormal Value around the report date – Downgrades

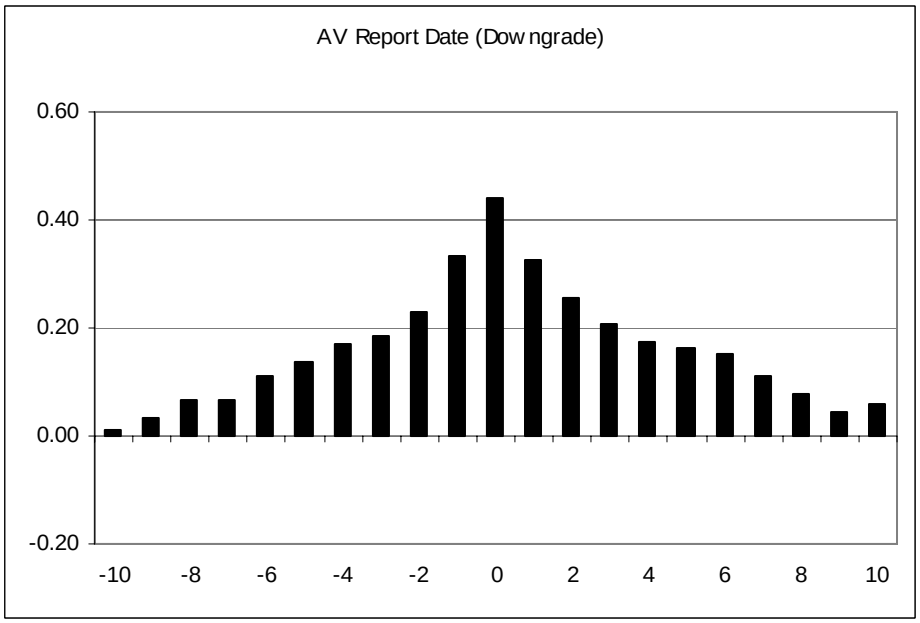

Figure 7 (part A). Average Abnormal Value around the public access date – Upgrades

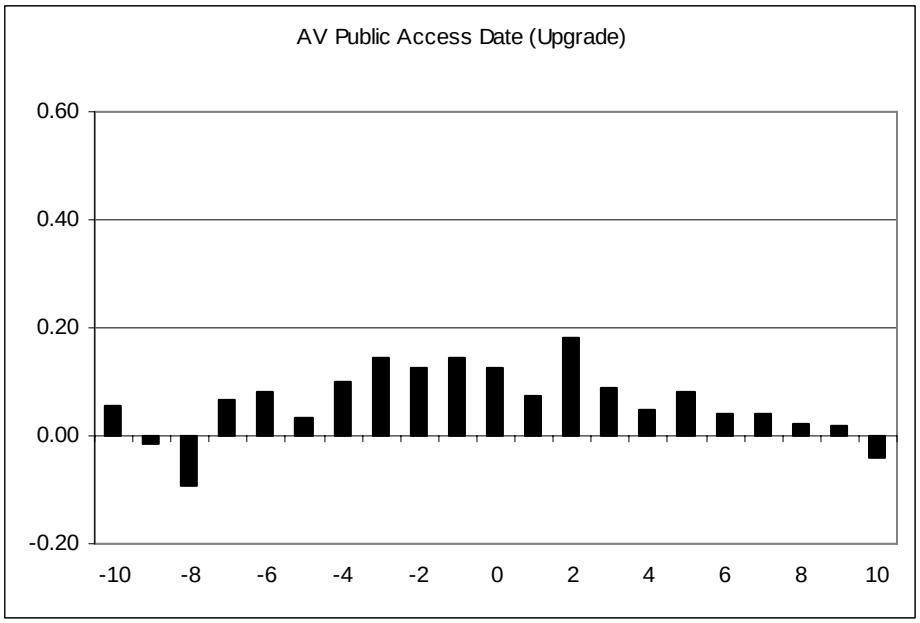

Figure 7 (part B). Average Abnormal Value around the public access date – Downgrades

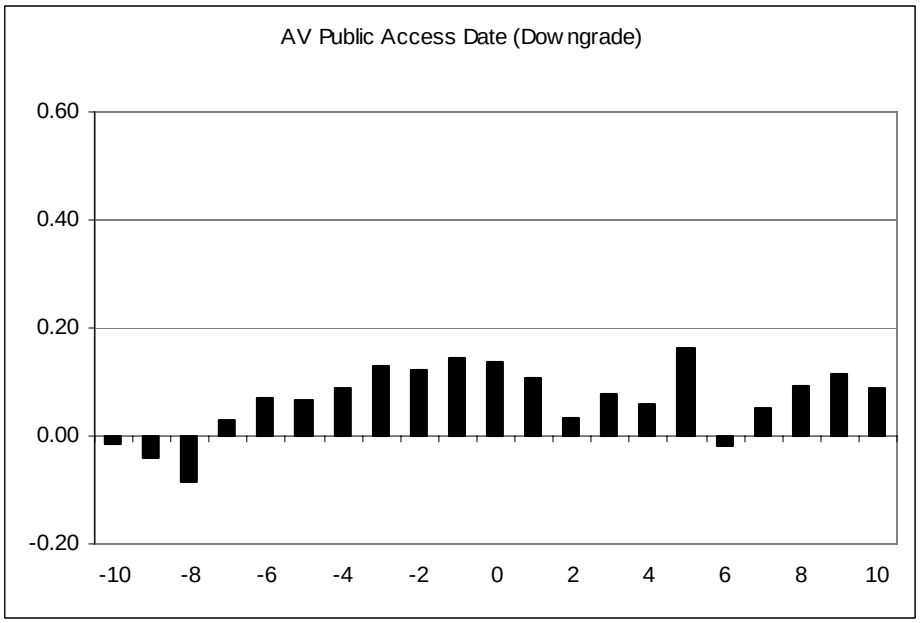

Figure 8. Cumulative Abnormal Returns (CARs) and Average Abnormal Volumes (AVs) around the report date in case of upgrade

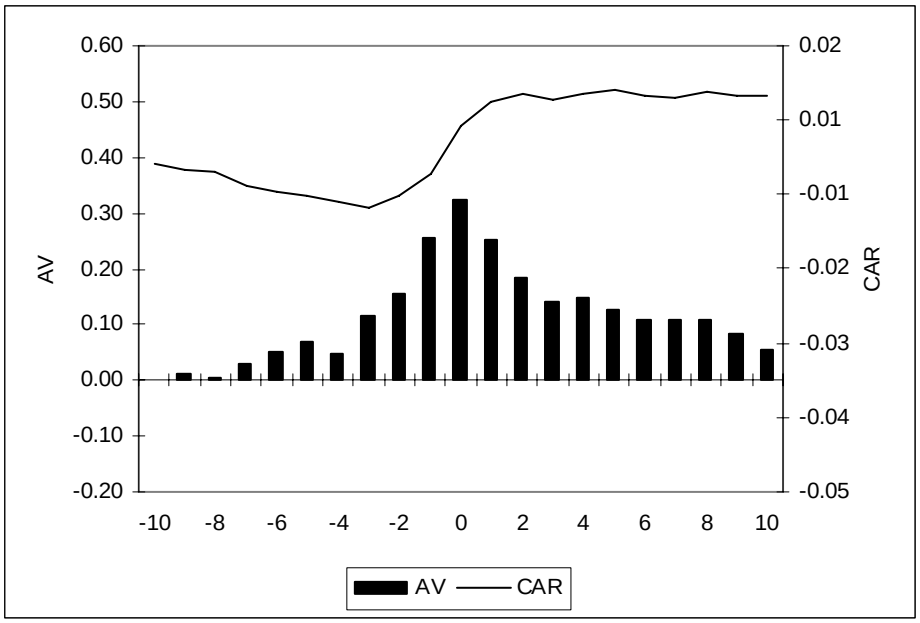

Figure 9. Cumulative Abnormal Returns (CARs) and Average Abnormal Volumes (AVs) around the report date in case of downgrade

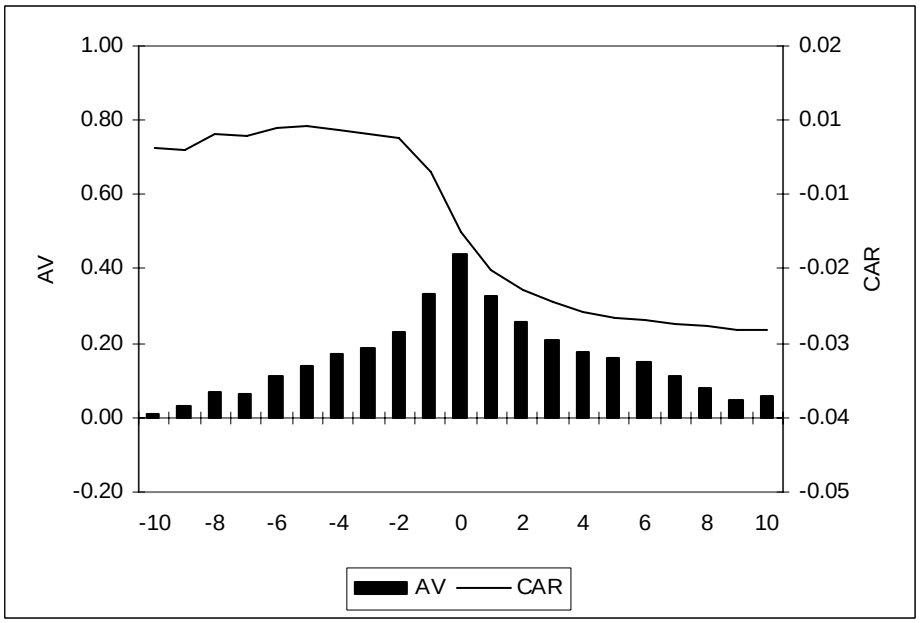

Figure 10. Cumulative Abnormal Returns (CARs) and Average Abnormal Volumes (AVs) around the public access date in case of upgrade

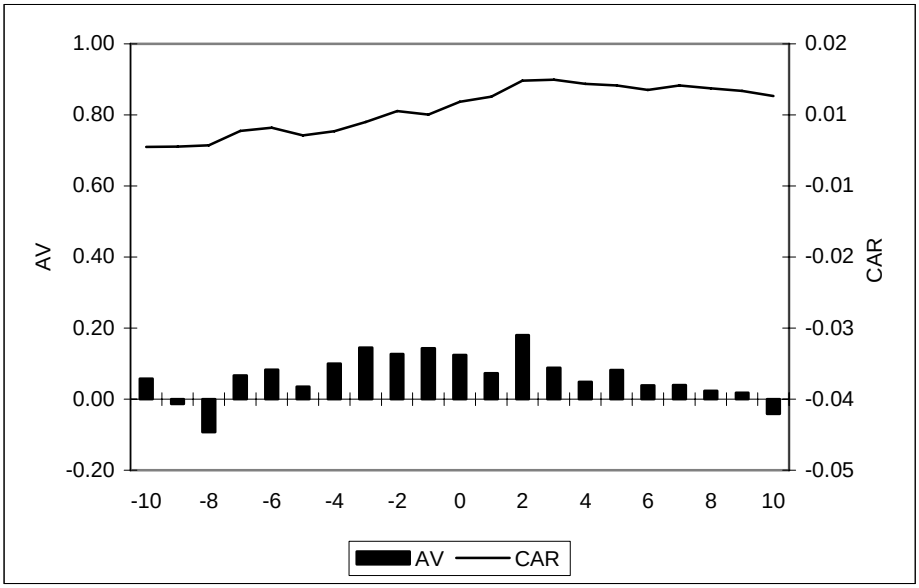

Figure 11. Cumulative Abnormal Returns (CARs) and Average Abnormal Volumes (AVs) around the public access date in case of downgrade