

## Tell me more. Analysts' Recommendations and the Market Impact of the Valuation Methods

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*Elisa Cavezzali, \* Enrico Maria Cervellati, \*\* Pierpaolo Pattitoni, \*\* Ugo Rigoni\**

### Abstract

We show that the valuation methods used in analysts' reports influence the market reaction to recommendation changes. Previous studies relying on commercial databases usually analyze the market reaction in relation to the main variables summarizing the content of analysts' reports, i.e., recommendations, target prices and earnings forecasts. Most of them overlook the full content and the main properties of the reports. This is due to an information constraint of commercial databases, normally including only the above-mentioned synthetic variables, rather than to a theoretical rationale. We show that the market reacts differently to distinct types of valuation methods, without privileging any particular method. The market reaction is larger when the analysts support their recommendation with more than one valuation method. Thus, the market pays attention to the content of the reports and analysts can have a greater influence when they use more valuation methodologies to cross check their estimates.

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\* University Ca' Foscari, Department of Management – Venice (Italy)  
Fondamenta San Giobbe 873 Cannaregio - 30121 Venice  
Tel: +39 041 2348770  
Fax: +39 041 2348701  
Emails: [elisa.cavezzali@unive.it](mailto:elisa.cavezzali@unive.it); [rigons@unive.it](mailto:rigons@unive.it). Reference author: [Ugo Rigoni](#).

\*\* University of Bologna, Department of Management, via Capo di Lucca, 34, 40126 Bologna, Italy.  
Tel: +39 051 2098103  
Fax: +39 051 246411  
Emails: [enrico.cervellati@unibo.it](mailto:enrico.cervellati@unibo.it); [pierpaolo.pattitoni@unibo.it](mailto:pierpaolo.pattitoni@unibo.it).

## 1. Introduction

In an efficient market, stock prices should discount all available information, indicating to investors the expected return on their investments. In the real world, the market is seldom fully efficient and thus investors need to improve their information set paying for information elaboration services, such as those provided by financial analysts. Sell-side financial analysts convey information to the market issuing research reports on the stocks they follow.

Analysts use their skills to process, through one or more evaluation methods, the information provided by companies into firm valuation, which in turn leads to the issuance of a target stock price and, when compared to the current trading price, results in a justifiable stock recommendation released to investors.

Financial analysts use a wide set of techniques to formulate recommendations. Investors use their reports in their decision making process. Therefore, financial analysts are important information intermediaries in the capital markets. However, despite their importance, previous studies in the literature do not thoroughly examine the informative value of analysts' valuation methods. Such a research issue is relevant, especially following recent financial scandals that raise concerns about the objectivity of analysts, as well as the scepticism about their researches. We tackle this issue testing whether important elements contained in the reports, other than recommendations and target revisions, influence the investors' reaction. Among them, we claim that the valuation methods offer an additional informative signal to the market, as they summarize the information considered as value relevant by the analysts. Thus, we expect that investors' reaction will differ not only to different combination of recommendations and target prices revisions, but also depending on the valuation methods used.

The greatest part of earlier research on financial analysts is based on commercial databases (e.g., I/B/E/S, JCF First Call, Thomson Financial, Zacks) providing just a small proportion (earnings forecasts, target prices and analysts recommendations) of the overall information that is included in a report. Therefore, many prior studies in the literature describe how investors react to the synthetic information provided in the reports (Womack, 1996; Gleason and Lee, 2000; Mikhail et al., 1997). A notable exception is Asquith et al. (2005) who investigate the association between market returns and the content of the reports. The authors use a set of about 1,100 reports issued by members of the *Institutional Investor* All-American Research Team, from 1997 to 1999. They find that there is no correlation between the specific kind of valuation methodology used by analysts and the market reaction. Their research, however, shows some evident drawbacks related to the reports selection, causing a selection bias in the analysis. First, the authors concentrate their analysis just on celebrity analysts, excluding the others. Second, they collect the reports from Thomson Financial's Investext, a commercial database collecting only those reports that investment banks are willing to make publicly available. Therefore, the sample does not include the reports of famous and market relevant investment banks, such as Goldman Sachs. Finally, their research is limited to a three-year time horizon, not allowing a wider perspective of the analysis.

We address these drawbacks, extending previous research and providing new evidence.

As analysts' reports are not usually available to the public and commercial datasets are not exhaustive, we need an alternative database to answer our research questions. In this respect, Italy represents a unique<sup>1</sup> research setting since a mandatory rule imposes to all the investment banks issuing reports on firms listed on the Italian stock exchange to submit them to the National Security and Exchange Commission, the Consob, and to the managing company of the stock exchange, Borsa Italiana. While analysts have to send their reports on the very day of issuance to Consob, they can send it to Borsa Italiana within 60 days. Once received the reports, Borsa Italiana has to publish them immediately on its website. Thereafter, they become freely available to the generality of investors.

We collect about 25,000 reports covering more than 200 companies listed on the Italian stock exchange over a time period of almost ten years (from September 1999 to April 2009). Such a long time horizon allows us to collect a huge amount of data and therefore to perform a richer analysis compared to previous studies in the literature. The only way to analyze the content of the reports and, in particular, the valuation methods used by the analysts is to read the text of the reports and to code the content by hand. Because this process is time consuming, we focus on almost 3,000 recommendation changes – that usually have a larger impact on the market, being more informative (Stickel, 1995) – issued by about 50 brokers on more than 200 firms.

To assess the informative value of analysts' valuation methods, we perform an event study, testing several models. Our results differ from the empirical evidence found by Asquith *et al.* (2005). First, we find a “method effect”: the market reacts differently to distinct types of valuation methods, without privileging one of them. The traditional finance theory affirms the conceptual superiority of the methods based on the discounted cash flows, compared to alternative approaches like market multipliers. However, the market seems not to follow this hierarchy.

In case of downgrade, financial and net asset based methods have greater impact on the market if compared to the method using market ratios. Mixed<sup>2</sup> and income methods do not have any statistically significant effect. For upgrades, instead, while the latter two methods remain not significant, the market ratios are associated with the larger market reaction when compared to the financial and net asset-based methods. Furthermore, because of the previous findings, we also find a “cross reinforcing methods effect”, i.e., a larger market reaction in correspondence to analysts' use of several methods to assess the company value. This evidence suggests that the market trusts more the analysts relying on more than one method to support their recommendations.

The structure of the paper is the following: section 2 provides a review of the literature; section 3 describes the dataset; section 4 outlines the sample selection procedures and the methodology used; section 5 reports the empirical results and section 6 concludes the paper.

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<sup>1</sup> As far as we know, the Italian regulatory system on financial analysts is unique in the world.

<sup>2</sup> By “mixed” method, we mean a methodology using both balance sheet and income statement variables (Fernandez, 2007).

## 2. Literature Review

Prior research indicates that sell-side analysts are important information intermediaries in capital markets. Regulators and market participants view analysts – and the competition among them – as enhancing the informational efficiency of market prices. Furthermore, analysts' activity is important to investors to form their expectations about firms' earnings and making investment decisions based on their recommendations (Hodge, 2003; Williams, Moyes and Park, 1996). Frankel et al. (2002) argue that financial analysts' reports are "price informative". The information value of the reports rises when volatilities, volumes and returns increase. Reports appear to be more effective when there are bad news rather than good news. The short-term market reaction is subsequently not inverted, showing that investors neither over-react nor under-react. Womack (1996) examines the price reaction to recommendation changes, highlighting that added-to-buy and added-to-sell revisions, representing extreme changes, record a greater market reaction. Lys and Sohn (1990) show that analysts' forecasts are price informative, even when preceded by other types of disclosures, including forecast revisions issued by other analysts. Francis and Soffer (1997) find that neither earnings forecast revisions nor stock recommendations completely incorporate the information of other signals. They also show that when a favorable stock recommendation summarizes the content of a report, investors rely on earnings forecast revisions. Juergens (1999) finds the recommendations to affect not only daily stock returns, but also the intra-day ones, also after taking into account potential confounding effects like the contemporary release of other news. The author argues that analysts' information is by far more effective compared to public news. Gleason and Lee (2000) detect a persistent price drift over the two years following earnings revisions. Ditmar et al. (2007) suggest that these drifts reflect a behavioral under-reaction to the information contained in the revisions. Elgers et al. (2001) find a delayed price reaction in correspondence of analysts' disclosure on their earnings forecasts or their valuation of the covered company. The delayed reaction is bigger both when the analysts' coverage is low and in the quarter following the earnings announcement. Brav and Lehavy (2003) provide evidence that investors perceive analysts' price targets as signals regarding the company's value. The authors investigate whether the market reaction to target price revisions is sensitive to recommendations revisions or reiterations. They show that target prices are informative both unconditionally and conditionally on simultaneous recommendations and earnings forecast revisions.

As briefly mentioned in the introduction, the Italian market is a peculiar case because of its "double-date" system. The two relevant dates are the so-called "report date", i.e., the one written on the report and supposedly the one in which the report has been prepared for the analyst's private clients, and the "public access date" when the report is made freely and publicly available to all investors on the Italian stock exchange website. Belcredi et al. (2003) find significant abnormal returns and volumes on the event day, with an anticipated market reaction before the report date. Using the same source of data, but a larger number of reports (more than 22,000), on a longer period (from September 1999 to July 2005), Cervellati et al. (2007) re-examine the market reaction to the recommendation changes for the Italian case. The authors confirm previous results, but they also investigate the determinants of cumulative abnormal returns like analysts' experience, firm and broker size.

To the best of our knowledge, Asquith et al. (2005) is the only research analyzing the market reaction to the report content. The authors demonstrate that other information, such as the justifications that analysts use in support of their point of view, are important and if incorporated in the analysis they reduce, and in some cases eliminate, the significance of the information available in earnings forecasts and recommendation revisions. Their analysis also controls for the simultaneous release of information showing that analysts' reports convey new and independent analysis to the market. By examining whether the market reaction differs following either a recommendation reiteration or a revision, the authors show that the information contained in the report is more influential for the latter, and more important for downgrades than for upgrades. However, they do not find any market reaction to the valuation methods used by the analysts.

### **3. Data Description**

Differently from previous studies based on commercial datasets, we collect data directly from the text of the actual financial analysts' reports. This procedure allows us to gather a rich set of information usually not included in other datasets. Commercial datasets used in previous studies catalogue just a small part of the information included in the reports, usually recommendations, target prices and earnings forecasts. To find additional information, we performed a deep and comprehensive analysis and interpretation of the reports. We read and catalogued by hand all the 25,422 reports available on the website of Borsa Italiana from September 1999 to April 2009, issued by domestic and foreign banks and brokerage houses covering the companies listed in the Italian stock exchange. Considering only the reports that present recommendation changes, the final dataset includes 2,811 revisions (1,481 downgrades and 1,330 upgrades), issued by 57 brokers on 226 companies. We evidence that the market of financial reports is highly concentrated on both the broker and the covered firm side. In our sample, ten percent of the more active intermediaries produce about 50% percent of the studies. Furthermore, the first ten percent of covered companies – that are also the biggest in terms of market capitalization – receive about 40% of the studies.

We collected many kind of information both at analyst-level and at report-level. Specifically, our dataset includes analyst' and broker's identity, report date, recommendations, target prices and evaluation methods used. Some of the data were easy to identify while others needed a further reclassification. In particular, the correct identification and classification of the evaluation methods used by analysts was complex.

Differently from Asquith et al. (2005), in the reports we analyze, the analysts seldom explicate the specific valuation methods used. Furthermore, they often combine different methods and approaches; they create new valuation techniques or personalize existing ones, probably to better fit them to the characteristics of the analyzed companies. This forced us to deduce, whenever possible, the methods from the reports. We built a structured framework to capture the variety of techniques used by analysts and to reduce the several (and more/less sophisticated) procedures to some known valuation methods. Initially, we started from the theoretical ranking proposed for the valuation methods by the majority of the finance textbooks, identifying the following five classes of methods: net assets, financial, earnings-based, mixed, market ratios. However, we eventually encountered several additional valuation methods, thus we added some specifications about

each class. Frequently, analysts use some low-cost simplifications of the traditional techniques leading to quick and less accurate value estimates than the full implementation of the original models. For instance, in the net asset methods we included the Net Asset Value approach (*NAV*), the Embedded Value (*EV*) and the Appraisal Value (*AV*) methods. We classify as “income-based method” the Discounted Shareholder Profit (*DSP*), the Discounted Earnings (*DE*), but also other heuristic methods. Among these heuristic methods, one uses the ROIC index, while other two, the Warranty Equity Valuation (*WEV*) and the Required ROE (*RR*),<sup>3</sup> use the ROE. We called “financial method”: the Dividend Discounted Model (*DDM*) and the Discounted Cash Flows (*DCF*) model, the Gordon Growth Model (*GGM*), the Adjusted Present Value (*APV*) model and a particular model based on the discounting of cash flows and used by just a small number of brokers, called *HOLT-CFROI*.<sup>4</sup> We named as “mixed models” the *EVA* and the Regulatory Asset Based methods (*RAB*), particularly used by the energy companies to estimate the value of the net invested capital. With regard to the market ratio methods, we included both the approaches of the comparable companies and the deals multiple.<sup>5</sup> We also analyze in detail several methods unnamed by the analysts, and we catalogue them in one of the five above-mentioned categories. Furthermore, because analysts often adopt two or more methods at the same time, whenever possible, we try to identify the main one, i.e., the valuation method on which the final recommendation relies more. We classify as “secondary” all methods not explicitly defined or indicated as “primary”. As for the recommendations, because we refer to the original ones issued by the analysts, we use caution in the classification of their changes.

#### 4. Research design and methodology

To assess the informative value of analysts’ reports, we focus on the market reaction to recommendation revisions. We only consider upgrades or downgrades with respect to the previous recommendation, since previous studies (Stickel, 1992, 1995) document more significant reactions in case of revisions than in case of reiterations. This reason is that a recommendation change conveys greater information compared to a reiteration that is less informative for the market.

We first calculate the market reaction to recommendation changes for each firm in our dataset, then we indicate it as the percentage market-adjusted abnormal return, ARs, at the report release date. We consider market-adjusted returns to take into account the systematic component in stock returns.<sup>6</sup> Then, we use ARs as the response variable in our regression analysis.

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<sup>3</sup> Warranty equity valuation method establishes that the value of equity (*E*) is equal to:  $E = (ROE - g) / (COE - g) * P/BV$ , where *ROE* is the return on equity, *g* is long-term growth rate of earnings, *COE* is the cost of equity and *P/BV* is price-to-book value. *Required ROE* is the same of *WEV*, but in case of no growth, i.e., when *g* is equal to zero.

<sup>4</sup> Cash Flow Return on Investment (*CFROI*) is a cash flow based valuation framework, originally developed in 2002 by *HOLT* Value Associates.

<sup>5</sup> In the comparable companies approach, the company estimated value stems from the data resulting from the stock prices on a fully representative and comparable sample of companies listed on regulated markets. Differently, in the deals multiple, the data are collected by the negotiations occurred outside the market formally recognized. The price per share can be obtained from the results of the sale.

<sup>6</sup> To take into account the systematic component in stock returns, we follow Asquith et al. (2005) who simply take the difference between the stock and the market return at the report date. However, more sophisticated models can be used to assess abnormal returns. Thus, as a robustness check, we use the market model to determine expected returns.

We run a regression analysis testing specifically the market impact of recommendations and target price revisions, as well as their interaction. We include among the regressors some dummy variables representing recommendation and target price downgrades (Rd and TPd respectively), and upgrades (Ru and TPd). This preliminary analysis allows us to compare our dataset characteristics with the ones used in previous studies, and to highlight similarities or differences in the market reaction following analysts' revisions with respect to the main findings in the literature.

As a further step in the analysis, we test whether the strength of a recommendation revision affects the short-term market reaction (Womack, 1996). To do this, we add to our regression models two dummy variables, AtS and AtB, which are equal to one in case of recommendation changes equal to, respectively, Added-to-Sell and Added-to-Buy.

We then focus on our main objective and we test several models to discern the effect of valuation methods in terms of market reaction. The theory of finance suggests that there are "superior" methods, conceptually "correct" since they are based on the discounted cash flows approach; while there are other heuristic methods (e.g., the market ratios approach) lacking robust theoretical foundations, and thus considered "incorrect". Despite this theoretical claim, analysts frequently use heuristic methods in practice. Among the methods used by analysts, the financial one represents more than a half of the overall observations (54.2%), followed by market ratios (31.8%), net assets-based (10.3%), mixed (2.4%), and income based (1.4%) methods.

We first assess whether the market reacts differently to reports based on different kind of valuation methods. We define a set of dummy variables that take the value of one when the primary valuation method in the report is, alternatively, the Net Assets (NA), Income (I), Mixed (MX), Market Ratios (MR) or Financial (F) method. Differently from Asquith et al. (2005), our model allows us to control for the potential asymmetries in market reaction, depending on the recommendation type. Since downgrades and upgrades effects could offset each other, we include in our regression *interaction* variables. These variables allow us to capture the "valuation method effect", conditionally on the recommendation type (downgrade/upgrade). In particular, we consider equation (1):

$$AR_i = \alpha_1 Rd_i \times F_i + \alpha_2 Rd_i \times MX_i + \alpha_3 Rd_i \times NA_i + \alpha_4 Rd_i \times I_i + \alpha_5 Rd_i \times MR_i + \alpha_6 Ru_i \times F_i + \alpha_7 Ru_i \times MX_i + \alpha_8 Ru_i \times NA_i + \alpha_9 Ru_i \times I_i + \alpha_{10} Ru_i \times MR_i + \varepsilon_i \quad (1)$$

If markets behave in line with the classical finance approach, we would find a significant greater reaction in correspondence of the financial methods rather than other valuation methods. However, the behavioral finance literature shows that investors often prefer to follow valuation rules they are more comfortable with, including heuristic approaches (Shefrin, 2006). Moreover, the fact that the financial method only accounts for 54% of the total seems to suggest that at least analysts are in line with the traditional approach to finance. Therefore, we do not have an *ex ante* position towards the market reaction in case of different valuation

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Coherently with previous findings in the literature on short-term event studies (Campbell et al., 1997), our results are virtually unaffected by the choice of the model, letting the qualitative interpretation of results unchanged.

methods. However, we think that there could be asymmetric reactions in correspondence of upgrades or downgrades. Analysts have been frequently accused for their excess of optimism, therefore we could argue that investors require more original and substantial estimates to justify and support positive estimations. By definition, methods based on fundamental analysis need a set of original estimates of parameters and cash flows. Thus, the market should react more strongly when fundamental methods justify the upgrades.

Following this reasoning, we introduce a second research question based on the assumption that if the market significantly reacts to a set of distinct valuation methods, then the analysts employing more than one method in their reports should exert a greater effect on the market. The underlying intuition is that analysts using a combination of different valuation techniques (a main one followed and checked by secondary methods) are issuing information that is more relevant to the market. In contrast, the traditional approach to finance claims that the only method for firm valuation that is appropriate is the one based on discounted cash flow. Thus, there is no need for secondary methods that, by definition, are second best and instead of supporting the main method, they could bias its results. The behavioral finance literature, instead, points out that naïve investors tend to think that more methods can lead to a better valuation. The intuition is that they could think that while a single method can be wrong, using more than one method can reduce the probability of error.

In this framework, investors perceive these reports as more grounded, thus they should have a greater impact on the market than those based on just one method. We call this effect “cross reinforcing methods effect” and we argue that it could also depend on the type of recommendation revision (upgrade vs downgrade). To test this hypothesis, we use equation (2) that includes the interaction variables between the recommendation revisions and the number of methods used in the reports:

$$AR_i = \alpha_1 Rd_i \times SM_i + \alpha_2 Ru_i \times SM_i + \alpha_3 Rd_i \times MM_i + \alpha_4 Ru_i \times MM_i + \varepsilon_i \quad (2)$$

In equation (2)  $SM_i$  and  $MM_i$  are dummy variables indicating, respectively, the use of single (Single Method) or multiple methods (Multiple Methods).

## 5. Empirical Results

### 5.1. Market reaction following recommendation and target price revisions

In table 1, we show the market reaction to the recommendation revisions. The results reported in the column labeled Model 1 are in line with theory and intuition: in case of downgrade, the abnormal return is negative (-0.853%), while the opposite happens in case of upgrade (0.648%). In magnitude, the market reaction to downgrades is larger than the market reaction to upgrades, in line with previous findings.<sup>7</sup>

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<sup>7</sup> We also re-estimate the model including several control variables. In particular, we take into account the size effect, the number of reports issued by analysts, and the potential confounding effects (such as earnings releases) in the window [-10; + 10] around the report date. However, none of these variables significantly affects our results.

**Table 1 - Abnormal Returns following recommendation changes**

Description	Variable	Model 1		Model 2	
Recommendation downgrade	Rd	-0.853	***	-0.832	***
		(0.086)		(0.085)	
Recommendation upgrade	Ru	0.648	***	0.632	***
		(0.078)		(0.110)	
Added-to-Sell	AtS	-		-1.096	**
				(0.436)	
Added-to-Buy	AtB	-		0.667	***
				(0.109)	
Regression F-test		86.073	***	43.228	***
N		2811		2811	
R-squared		0.058		0.058	

\*\*\*, \*\*, and \* indicate statistical significance at 1%, 5%, and 10% level, respectively. Robust Standard Errors in parentheses.

Actually, these preliminary results mirror those of Cervellati et al. (2007), based on reports issued up to July 2005. However, compared to Belcredi et al. (2003), we find a lower market reaction, in magnitude, both for upgrades and downgrades. A possible explanation is that while they analyze the reports issued between September 1999 and March 2002, i.e., the Internet bubble period on the Italian market, our research includes a broader period, including both bear and bull markets.<sup>8</sup>

In Model 2, we provide evidence that extreme revisions have a larger impact on the market. While the difference between upgrade and added-to-buy is not economically relevant (0.632% vs. 0.667%), the market reaction following an added-to-sell recommendation is definitely larger than the one associated with a generic downgrade (-1.096% vs. -0.832%).<sup>9</sup> The rational explanation to this evidence is that since negative extreme recommendation revisions are rare, the value conveyed to the market is higher, with a consequent larger price reaction. It is worth noting that of the overall 1,481 downgrades, there are only 118 added-to-sell revisions, i.e., the 8% of the total, while of the 1,330 upgrades, added-to-buy changes represent the 46% of the total number of revisions. This evidence can probably explain the greater market reaction following the rare added-to-sell revisions compared to added-to-buy changes.<sup>10</sup>

In table 2, we show the market reaction to target price changes.<sup>11</sup> In Model 3, we show that, as expected, the effect of a target price downgrade is negative (-0.885%), while the abnormal return following a target price upgrade is positive (0.305%), but of lower magnitude. While the frequency of target price upgrades (52.5%)

<sup>8</sup> Our dataset refers spans over (at least) two complete market cycles. Thus, it is important to check if our results are stable over time. To test for year-effect, we consider a regression with year dummies. A joint Wald test indicates the presence of a year-effect (F-stat = 1.6743, p-value = 0.031). In particular, the market reaction to downgrades and upgrades tends to be quite stable in the slowly growing market period from 2002 to 2006, while during crisis periods – like the Internet bubble years (1999-2001) and the recent financial crisis (2007-2009) – the market reaction tends to be amplified.

<sup>9</sup> Our results are in line with the ones reported in the quoted studies on the Italian case.

<sup>10</sup> From a behavioral point of view, instead, this is a consequence of investors' loss aversion (Kahneman and Tversky, 1979).

<sup>11</sup> Some models are based on fewer observations because not all reports include all information needed in the analysis. Only models based on the same number of observation are directly comparable. If two models are based on different observations, they can be compared only on qualitative terms.

is slightly higher than the one of downgrades (47.5%), the average price increase in case of upgrade is about 13% *versus* an average price reduction of -21% in case of downgrade. This evidence could explain the stronger market reaction in case of target price downgrade.

**Table 2 - ARs following target price changes and joint target prices/recommendations revisions**

Description	Variable	Model 3		Model 4	
Target price downgrade	TPd	-0.885	***	-	
		(0.171)			
Target price upgrade	TPu	0.305	***	-	
		(0.106)			
Recommendation downgrade & target price downgrade	Rd TPd	-		-1.280	***
				(0.185)	
Recommendation downgrade & target price upgrade	Rd TPu	-		-0.475	*
				(0.256)	
Recommendation upgrade & target price downgrade	Ru TPd	-		0.630	
				(0.399)	
Recommendation upgrade & target price upgrade	Ru Tpu	-		0.588	***
				(0.109)	
Regression F-test		21.556	***	21.754	***
N		1189		1189	
R-squared		0.035		0.068	

\*\*\*, \*\*, and \* indicate statistically significance at 1%, 5%, and 10% level, respectively.  
Robust Standard Errors in parentheses.

Model 4 provides information on the investor reaction when revisions in recommendations *and* target prices are reinforcing or countervailing each other. Consistently with Brav *et al.* (2003), we find that abnormal returns associated with recommendation upgrades (downgrades) are larger when such revisions coincide with positive (negative) target price revisions. In case of double downgrade (37.7% of the total observations in Model 4), we observe the strongest negative market reaction (-1.28%). Instead, if a report features a recommendation downgrade and a target price upgrade (14% of the cases), the effect is still negative, but reduced in magnitude (-0.475%). Thus, the effect of the recommendation downgrade prevails on the one caused by the target price upgrade. If a recommendation upgrade is accompanied by a target price downgrade (9.8% of the observations), the market reaction is not statistically different from zero, i.e., the two effects counterbalance each other. Finally, in case of double upgrade (38.5% of the cases), the market reaction is positive and statistically significant. We underline that, even if the majority of the cases include a coherent signal (i.e., recommendation and target price revision in the same direction), the frequency of contrasts are not negligible. As suggested by Brav *et al.* (2003), these results indicate that the degree of the recommendation revision conveys information to the market regarding analysts' uncertainty about the overall forecast of the company prospects.

## 5.2. The informative value of the valuation methods

Table 3 shows the results of models 5 and 6, which refer to equation 1 and 2 respectively.

**Table 3 – Abnormal returns by valuation method**

Description	Variable	Model 5	Model 6
Recommendation downgrade & financial methods	Rd F	-0.748 *** (0.137)	-
Recommendation downgrade & mixed methods	Rd MX	-0.575 (0.382)	-
Recommendation downgrade & net asset methods	Rd NA	-0.799 ** (0.383)	-
Recommendation downgrade & income methods	Rd I	1.048 (0.988)	-
Recommendation downgrade & market ratios	Rd MR	-0.676 *** (0.187)	-
Recommendation upgrade & financial methods	Ru F	0.454 *** (0.137)	-
Recommendation upgrade & mixed methods	Ru MX	0.531 (0.497)	-
Recommendation upgrade & net asset methods	Ru NA	0.537 ** (0.238)	-
Recommendation upgrade & income methods	Ru I	0.508 (0.612)	-
Recommendation upgrade & market ratios	Ru MR	0.964 *** (0.192)	-
Recommendation downgrade & one method	Rd SM	-	-0.693 *** (0.122)
Recommendation upgrade & one method	Ru SM	-	0.633 *** (0.115)
Recommendation downgrade & more than one method	Rd MM	-	-0.927 *** (0.179)
Recommendation upgrade & more the one method	Ru MM	-	0.786 *** (0.158)
Regression Wald test		9.334 ***	28.982 ***
N		1439	1829
R-squared		0.061	0.060

\*\*\*, \*\*, and \* indicate statistically significance at 1%, 5%, and 10% level, respectively.  
Robust Standard Errors in parentheses.

Model 5 refers to the market reaction to different valuation methods used by the analysts. Our results are different from previous findings by Asquith et al. (2005) in that we find a statistically significant “method effect”. Re-parameterizing model 5 in terms of differences with respect to a base case (e.g., recommendation downgrade and financial methods) allows us to test for this effect, i.e., if the difference between methods is statistically significant. A joint Wald test leads us to strongly reject the null hypothesis of inexistence of a

method effect (F-stat = 14.316, p-value < 0.001). Thus, the specific method used by analysts plays an important role in explaining abnormal returns. In case of downgrade, financial and net assets-based methods have the higher effect on the market (respectively -0.748% and -0.799%), with respect to valuation with market ratios (-0.676%), while mixed and income based methods do not have a statistically significant effect.<sup>12</sup> For upgrades, instead, while the latter two methods remain not significant, the valuation method that uses market ratios is associated with the larger market reaction (0.964%) compared to the financial (0.454%) and net assets-based (0.537%) methods. The market reaction is higher in magnitude for downgrade rather than upgrades, with the only exception of the market ratios method. This result is at odds with our hypothesis stating that the market should rely more on fundamental methods.

Model 6 refers to the equation (2). In line with our expectations, we find a larger market reaction when analysts use multiple methods to assess the value of a company. A reasonable explanation could be that investors trust more those analysts using more methods to support their recommendation. If this is true, then it can be debated whether this investors' behavior can be considered rational or not. Traditional finance claims that the best valuation method is the Discounted Cash Flow approach. Thus, there should be no need of alternative methods that, by definition, are second best. From a psychological point of view, instead, investors may feel more comfortable knowing that analysts use several methods to support their view. The behavioral finance literature (Shefrin, 2006) highlights that often analysts use multiple valuation methods to find the target price that is an average of the results found with the distinct approaches. This is a practice known as "1/n heuristic", an example of naïve approach to valuation.

To summarize, our empirical evidence shows that there is a "method effect". This means that although the traditional financial theory indicates just one category of methods as the best one, the market gives credit to the different valuation techniques (see Model 5). Because of this market behavior, reports using more than one method benefit of a sort of "cross reinforcing methods effect" and, thus, investors consider them as more informative.

## 6. Conclusions

We examine the informative value for the market of financial analysts' reports. We show how investors in the Italian stock exchange react to recommendations and target prices revisions. Then, we highlight that the market is able to recognize the informative content of the reports, reacting in a distinct way to the different valuation methods used by analysts.

In correspondence of downgrades (upgrades) of both investment recommendations and target prices, we find statistically significant negative (positive) abnormal returns. In particular, the market reaction to downgrades is larger than the market reaction to upgrades.

The strength of the recommendation revision relates to the short-term market reaction: Stocks "added-to-buy" or "added-to-sell" lists record the strongest market reactions. However, the extreme downgrades have

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<sup>12</sup> However, we take with caution the results for the income and mixed methods, given the low number of observations associated to them.

the greatest impact from an economic point of view. This evidence suggests that the market interprets the extreme negative information as more informative because they are very rare. These results hold when we substitute the target price revision with the expected returns, measured as the relative difference between target and current market price.

In contrast with previous findings in the literature (Asquith et al., 2005), we find a “method effect”, meaning that the market does react differently depending on the valuation method used by the analyst. Furthermore, we find a “cross reinforcing methods effect”, indicating that investors trust more those reports issuing recommendations based on several methods rather than those based on just one method. This evidence is independent on the type of recommendation revision (upgrade/downgrade).

In addition, conditionally on the recommendations changes, the market reacts differently to distinct types of valuation methods. In case of downgrade, financial and net asset based methods have the greatest impact on the market, with respect to market ratios methods. On the contrary, mixed and income methods do not have any statistically significant effect. For upgrades, instead, while the latter two methods remain not significant, the valuation method using market ratios is associated with the largest market reaction when compared to the financial and net asset-based methods.

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