

INVESTMENT VALUE OF RECOMMENDATIONS IN THE ITALIAN STOCK EXCHANGE

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Abstract

Financial analysts' research activity seems to be important for investors in their investment decisions. Understanding if financial analysts' reports can influence the market and the degree of reliability of their forecasts has been a theme lively debated in the academic literature but also in the press, mainly because of recent financial scandals. The main objective of the paper is to calculate the investment value of financial analysts' recommendations on companies listed in the Italian Stock Exchange and to verify the possibility of profiting from relying on the average consensus of recommendations. We have enclosed in the analysis all the 16,634 reports issued between the 1st January 1999 and the 23rd July 2004 and available on the website of the Italian Stock Exchange, constructing a unique database for Italy. After classifying companies by quarter, five portfolios are formed based on analysts' average consensus to calculate the excess returns of each portfolio in each quarter. Our results suggest that analysts' recommendations have indeed investment value, even if investors should carefully consider neutral recommendations that can be considered as negative ones. These results, furthermore, give some interesting regulatory suggestions for a policy maker that wants to ensure transparency in the markets.

Keywords: stock market, information, investments

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1. Introduction

Financial analysts' research activity seems to be very important for investors in deciding in which companies allocate their wealth. This is mainly due by the fact that gathering all the information necessary for investment decisions involves very high costs for single unsophisticated investors. Understanding if analysts' reports can influence the market and the degree of reliability of their forecasts has been a theme lively debated in the academic literature but also in the press, mainly because of recent financial scandals (See, for example, the analysis of the Parmalat case proposed by Ferrarini and Giudici (2005) and the implications in terms of reliability of the information disseminated by financial analysts).

The paper calculate the investment value of analysts' recommendations on companies listed in the Italian Stock Exchange and verify the possibility of profiting from relying on the average consensus of recommendations. We have enclosed in the analysis all the 16,634 reports issued between the 1st January 1999 and the 23rd July 2004 and available on the website of Borsa Italiana (Borsa Italiana S.p.A. is the

managing company of the Italian Stock Exchange). Our database is unique, since it includes all the publically available reports in the considered period. Following art. 69 of the Consob (Consob (Commissione Nazionale per le Società e la Borsa) is the authority responsible of supervising the Italian Stock Exchange and the listed companies) Regulation on Issuers, in fact, all the reports issued by analysts must be transmitted to the Consob and, simultaneously, to Borsa Italiana that publish them. The archive of Borsa Italiana can be accessed on a free basis and includes reports issued from January 1999. To verify the value of the recommendations we have classified companies by quarter, based on the average consensus by analysts, and we have formed five portfolios based on this consensus. Furthermore, we have calculated the excess returns of each portfolio in each quarter. As far as we know, this is the first paper that proposes for Italy such an analysis. The results seem to support the hypothesis of the investment value of a portfolio strategy based on the average consensus of financial analysts. In the

period considered, in fact, the portfolio that includes the stocks with more favourable recommendations records an average performance of 6.92% if calculated with the buy-and-hold returns (BHR) methodology and of 4.24% if we use the cumulative abnormal return (CAR) methodology, while the portfolio that includes the stocks with less favourable recommendations records a performance of -9.70% and -12.37% with BHR and CAR respectively. The strategy of an hypothetical investor that, following analysts' recommendations, buy the most recommended stocks and sell the less recommended ones, would yield about the 16.6% (both using the BHR and the CAR methodologies). It is interesting to note the behavior of the portfolio that only includes the stock that receives neutral recommendations. Whereas, theoretically, this portfolio should record an abnormal return close to zero, empirically we find that its performance is -2.27% with BHR and -4.55% with CAR. Investors seem therefore to recognize the potential conflict of interests of financial analysts; in particular when negative recommendations can damage the relationships with the covered company.

The rest of the paper is organized as follows: the second paragraph gives a survey of the literature, the third presents the methodology applied and the database used, the fourth comments the results obtained and concludes.

2. Survey of the literature

Several empirical studies in the academic literature have focused on the predicting power of financial analysts, among others Diefenbach (1972), Bidwell (1977), Groth, Lewellen, Schlarbaum, Lease (1979), Copeland and Mayers (1982), Dimson and Marsh (1984).

Womack (1996) analyzes a sample of 1,573 analysts' recommendation changes, issued between 1989 and 1991, with respect to 822 companies, listed in the US stock market.¹ The analysis uses the information contained in the database of First Call Corporation (now Thomson Financial), a company that records in real time all reports issued by analysts. The empirical evidence shows that the stocks subject to a recommendation change records an abnormal return significantly different from zero: positive (+ 2.4%) in case of upgrade, negative (-9.1%) in case of downgrade.² The asymmetry between the two values can be explained with the greater frequency with which analysts tend to issue

upgrades and with the greater cost of issuing a negative report. Several cases are known both in the academic literature and in the financial press of analysts that have been excluded from informative meeting or that have not received relevant information from the management of a company on which they issued a negative recommendation. Thus, an analyst face a trade-off between the need of issuing reports that are reliable, to defend her reputation, and the necessity to maintain good relationships with the management of the covered companies.³ The empirical results clearly show that stocks prices and volumes are influenced by recommendation changes. The author highlights that analysts are particularly good in stock picking but also in market timing, however they mostly issue positive reports and focus on companies with higher capitalization.

Barber, Lehavy, McNichols and Trueman (2001) assess the effective profitability of portfolio's strategies based on the average consensus of analysts' recommendations. Whereas Womack's perspective is "analyst-oriented and event-time" (e.g. to measure average price reaction to changes in analysts' recommendations), the perspective of Barber et al. is "investor-oriented and calendar-time". In other terms, while the first study investigates the analysts and time is measured with the classical event study methodology, the second one focuses on investors and the analysis is performed in real calendar time. This approach permits the authors to measure directly the abnormal gross returns to a number of investment strategies and to estimate portfolio turnover and the associated transactions costs incurred in implementing them. The data used in the paper come from the Zacks database for the period 1985 to 1996, which includes over 360,000 recommendations from 269 brokerage houses and 4,340 analysts. For the sample period, Barber et al. find that buying the stocks with the most favorable consensus recommendations earns an annualized geometric mean return of 18.8%, whereas buying those with the least favorable consensus recommendations earns only 5.78%. After controlling for market risk, size, book-to-market, and price momentum effects, a portfolio that includes the most highly recommended stocks provides an average annual abnormal gross return of 4.13% while a portfolio of the least favorably recommended ones yields an average annual abnormal gross return of 24.91%. Thus, purchasing the securities in the top portfolio and selling short those in the lowest portfolio yields an average abnormal gross return of 75 basis points per month.

In a subsequent research Barber et al. (2003) extend the sample period including 2000-2001, highlight that the more highly recommended stocks

¹ Womack's work is subsequent to the study of Stickel (1995) that is based on a sample of 17,000 changes of recommendations issued by brokerage analysts between 1988 and 1991.

² The Cumulative Abnormal Return (CAR) on a three days window centered on the event day and adjusted for the size of the companies considered is 3% for buy recommendations and -4.7% for sell recommendations.

³ See, the cases reported in Belcredi, Bozzi and Rigamonti (2003).

earned greater market-adjusted returns during the 1996-1999 period than did the less highly favored stocks. For the 2001-2000 period, the opposite is true. The poor returns of most favored stocks prevailed during most months of 2000 and 2001 and characterized both tech and non-tech stocks. The authors found evidence consistent with the possibility that this reversal was a result of analysts' reluctance to turn away from small-cap growth stocks during this period, a time when such stocks significantly underperformed the market.⁴

The technique of consensus-based portfolios is also used by Boni and Womack (2003) which examine the competition between analysts. To add value to the recommendations, analysts specialize in the study of few stocks. The period considered is from 1996 to 2001. This work highlights that the returns achievable through strategies based on their reports and on changes of recommendations, record a Sharpe ratio that is five times greater than the one associated with a "price momentum" strategy. In particular, 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 change of recommendation, the returns from the stocks recommended by analysts are positive for 53 firms out of 59. Analysts' competition reduces the opportunity to profit from changes of recommendation: portfolios formed with stocks followed by a great number of analysts generates lower returns.

These results are also coherent with the broad definition of market efficiency given by Grossman and Stiglitz (1980), since positive returns are necessary to compensate for the costs needed to collect information. It seems, thus, that analysts' recommendations have investment value to investors. Using the theoretical framework proposed by Grossman and Stiglitz, and with regard to the Scandinavian countries, Von Nandelstadh (2003) investigates the investment value in analyst recommendations. If the stock market is efficient in the Grossman and Stiglitz sense, then investors should not earn net abnormal returns by using analyst recommendations. In 1994-2001, the financial analyst community's covered universe has outperformed the corresponding market index portfolio. The results show that a strategy based on the average consensus has value for investors and that excluding from the analysis the recommendations issued by investment banks the investment value grow even further. Furthermore,

⁴ See also the recent research of Jegadeesh, Kim, Krusche, Lee (2004). According to these authors' framework the level of the analysts' consensus does not contain incremental information when it is issued in correspondence with other predictive signals. It is the change in the analysts' consensus, rather than the level, to be informative.

the companies that have received the greatest number of positive recommendations are generally characterized by high market capitalization, international coverage and market-to-book ratio as well as by a positive trend of the prices in previous months. However taking into account the transaction costs arising from trading, the analysis does not find abnormal returns that are reliably different from zero, unless we do not exclude from the sample the banks.

3. The investment values of analysts recommendations

3.1 Description of the dataset

The database contains all the reports issued between the 1st January 1999 and the 23rd July 2004 and available on the website of Borsa Italiana. However, we would like to highlight the fact that at the end of July 2004, the archive on the website contained about 17,000 reports,⁵ while the number of studies received by Consob was about 25,000.⁶ There can be different explanation of this difference. The reports online, for instance, can be only a part of the reports available at Borsa Italiana.⁷ An alternative explanation is that intermediaries send all the reports to Consob, but only a part to Borsa Italiana. Of course, this behavior would result in contrast with the Consob Regulation on Issuers. It would be desirable to solve this "dilemma", and we believe that Consob, as the authority supervising the Italian Stock Exchange should verify this anomaly and make available the results of this inquiry.⁸ Starting from the whole sample, we have cleaned it eliminating reports that were not useful for our analysis, i.e. eliminating reports that were double, non monographic, without any recommendation or where it was ambiguous.

The final sample includes by 12,791 reports issued by 68 financial intermediaries on 235 listed companies. In the Appendix, we propose the main descriptive statistics of the sample of reports with recommendation, that constitutes the starting point of subsequent analysis. Comparing the number of reports received by each company with its size, it is evident that analysts focus their attention on bigger

⁵ Precisely, 16,634 reports.

⁶ In Consob, at the end of 2003 there were 21,032 reports, while at the end of 2004, 28,646. The arithmetic average is 24,839, almost 25.000 reports therefore. Clearly, this is not the exact number of studies received by Consob at the end of July 2004, since not necessarily the reports are issued uniformly during the year; however it can serve to compare with the number of reports available in the Stock Exchange website.

⁷ Emanuela Conti (R&D Office Borsa Italiana - Borsa Italiana Group), however, assured that it seems that only few studies (about 150) are available only in paper version.

⁸ To the best of our knowledge there is no such clarification available.

companies. Observing table 1, it is clear that the companies belonging to the first quartile of

capitalization received more than 57% of the reports, compared to a 7% of the last quartile.

Table 1. Distribution of reports per quartile of market capitalization (size)

Quartile of capitalization	Average capitalization	No. of reports
Q1	9,776.4	6,716
Q2	836.15	2,804
Q3	187.56	1,353
Q4	46.69	821

We find support to the empirical evidence presented in the literature that financial analysts focus their attention on stocks with higher market capitalization (See Womack (1996) on the American market. For Italy, see Fabrizio (2000) and Cervellati, Della Bina (2004). A possible explanation is that analysts work more on big companies, since they are characterized by higher volumes of transactions on which the financial intermediary for which they

work can earn higher trading and brokering commissions. A simple analysis of the degree of correlation between the number of reports issued and the number of covered companies, highlights that a small number of intermediaries produce the greatest part of studies, showing the an high degree of concentration in the sector (see table 2).

Table 2. Concentration of market shares

	Number of reports issued in the entire sample	
First intermediary	1,176	9.19%
First two intermediaries	2,332	18.23%
First three intermediaries	3,338	26.09%
First four intermediaries	4,181	32.68%
First five intermediaries	4,903	38.32%
First ten intermediaries	7,682	60.04%
Remaining 58 intermediaries	5,109	39.96%
Total number of intermediaries	68	
Total number of studies	12,791	100%

Furthermore, we highlight that only few intermediaries cover most of the companies, while the remaining prefer to focus just on few listed companies. Comparing the number of report issued by financial intermediaries with the number of companies, it is clear that the subjects that are more active in issuing reports are also the ones that cover the greatest number of companies. This highlights the importance of checking for potential conflict of interests of intermediaries that have a relevant position in the research sector. Analysts use a variety of systems in their recommendations: five, six or three points scale, or even numeric systems. For this reason, it is difficult to compare ratings issued by different analysts. Since, furthermore, few intermediaries report the rating systems they use, it is necessary to pay attention to compare recommendations that seem to be similar, but that are issued by analysts for different financial intermediaries that use different rating system. In other words, the same recommendation could mean different things in different rating systems. To

compare different rating systems it is opportune to use a homogeneous scale (In Italy, Belcredi, Bozzi and Rigamonti (2003) use a eight-points scale, while Fabrizio (2001) a four-points scale). We decided to use both a three-points and a five-points scale, to uniform our analysis to the prevailing international literature in this field. The first scale represents the simplest type of rating system since it divides the recommendations in positive, neutral and negative, using the ratings buy, hold and sell. The second scale, the most used in the literature and by analysts, is instead a five-points scale: buy, add, hold, reduce and sell. This rating system permits a wider range of ratings adding a moderate positive rating (add) and a moderate negative judgment (reduce) (Sometimes, the terms *add* and *reduce*, are used as synonymous of *outperform* and *underperform*. See Cervellati, Della Bina and Giulianelli (2005). Classifying the different types of recommendations with respect to the chosen systems, in tables 3 and 4 we present the annual distribution of recommendations between 1999 and 2004.

Table 3. Annual distribution of reports by type of recommendation (five points scale)

Year	Buy	Add	Hold	Reduce	Sell	Total
1999	14 (0.11%)	28 (0.22%)	6 (0.05%)	3 (0.02%)	0 (0%)	51 (0.40%)
2000	514 (4.02%)	300 (2.35%)	337 (2.63%)	59 (0.46%)	49 (0.38%)	1,259 (9.84%)
2001	1,006 (7.86%)	547 (4.28%)	1,028 (8.04%)	182 (1.42%)	112 (0.88%)	2,875 (22.48%)
2002	966 (7.55%)	601 (4.70%)	1,011 (7.90%)	202 (1.58%)	74 (0.58%)	2,854 (22.31%)
2003	1,072 (8.38%)	1,034 (8.08%)	1,369 (10.70%)	270 (2.11%)	126 (0.99%)	3,871 (30.26%)
2004	584 (4.57%)	446 (3.49%)	698 (5.46%)	95 (0.74%)	58 (0.45%)	1,881 (14.71%)
Total	4,156 (32.49%)	2,956 (23.11%)	4,449 (34.78%)	811 (6.34%)	419 (3.28%)	12,791 (100%)

Table 4. Annual distribution of reports by type of recommendation (three points scale)

Year	Buy	Hold	Sell	Total
1999	42 (82.35%)	6 (11.76%)	3 (5.88%)	51 (0.40%)
2000	814 (64.65%)	337 (26.77%)	108 (8.58%)	1,259 (9.84%)
2001	1,553 (54.02%)	1,028 (35.76%)	294 (10.23%)	2,875 (22.48%)
2002	1,567 (54.91%)	1,011 (35.42%)	276 (9.67%)	2,854 (22.31%)
2003	2,106 (54.40%)	1,369 (35.37%)	396 (10.23%)	3,871 (30.26%)
2004	1,030 (54.76%)	698 (37.11%)	153 (8.13%)	1,881 (14.71%)
Total	7,112 (55.60%)	4,449 (34.78%)	1,230 (9.62%)	12,791 (100%)

From the above tables it is possible to note how the reporting activity of analysts is increased in the last years, and the percentage of positive recommendations is always greater than the percentage of negative ones (In 2004 the number decreases, but this is due to the fact that we have reports just until the 23rd July).

Considering table 4, in fact, it is evident that, in the whole period considered, 7,112 reports (55.6% of the total) report a positive recommendation, while only 1,230 (9.62% of the total) a negative one. This evidence is well known and debated in the literature. Usually researchers have advanced two main explanations: analysts' excessive optimism or conflict of interests. The first hypothesis refers to the

fact that analysts seem to be too optimistic on the perspectives of the stocks they follow. The second one argues that analysts prefer not issuing any report instead of issuing a negative one.

Classifying the recommendations based on the current and previous rating it is possible to form a matrix of the changes of recommendations, highlighting the frequency of upgrades and downgrades. As it is possible to see from tables 5 and 6, the greatest part of the reports does not contain changes of recommendation: in the five-points scale the unchanged reports are the 84.06%, while in the three-points scale are the 86.94%.

Table 5. Summary table of changes of recommendations (five-points scale)

Changes of recommendation	Number of reports	Percentage
Unchanged	9,253	84.06%
Upgrade	851	7.73%
Downgrade	904	8.21%
Total	11,008	100%

Table 6. Summary table of changes of recommendation (three-points scale)

Changes of recommendation	Number of reports	Percentage
Unchanged	9,570	86.94%
Upgrade	687	6.24%
Downgrade	751	6.82%
Total	11,008	100%

Not every report contains the previous rating, since some of them are initiation of coverage and others are preceded by reports in which there is no recommendation. Considering this fact, the sample size reduces to 11,008 reports for which we also have the previous rating.

Table 7 presents the selection criteria of the reports with current and previous rating, that constitutes the basis for construct the matrices of changes of recommendations.

Table 7. Summary table of reports with current and previous ratings

Total number of monographic studies	16,634	100%
Studies that are double, without rating, with ambiguous rating	(3,843)	(23.10%)
Total number of monographic studies with rating	12,791	76.90%
Studies without previous rating	(1,235)	(7.42%)
Total number of monographic studies with previous rating	11,556	69.47%
Studies without current rating*	(548)	(3.29%)
Total number of monographic studies with previous and current rating that form the sample of observations	11,008	66.18%

* In this category we consider monographic studies for which it does exist a previous rating, but that have not been included in the matrices of changes of recommendation since, for example, the valuation of the stock has been temporarily suspended or since the analyst that initially covered the stock is changed.

Observing the matrices of the changes of recommendations, it is possible to note that the greatest part of unchanged positions is referred to, in a five-points system (table 8), to *buy* (28.98%), *add* (18.85%) and *hold* (29.51%) recommendations; and in a three-points system (table 9) to *buy* (50.50%) and *hold* (29.51%) recommendations. The

percentage of upgrades, furthermore, is less, even if slightly, to that of downgrades. Considering the five-points scale, the upgrades are the 7.73%, while the downgrades are the 8.21%. With reference to the three-points scale, the upgrades are only the 6.24%, while the downgrades are the 6.82%.

Table 8. Matrix of changes of recommendation (five points scale)

		Previous Rating					
		Buy	Add	Hold	Reduce	Sell	Total
Current Rating	Buy	3,190 (28.98%)	152 (1.38%)	198 (1.80%)	14 (0.13%)	5 (0.05%)	3,559 (32.33%)
	Add	142 (1.29%)	2,075 (18.85%)	280 (2.54%)	47 (0.43%)	1 (0.01%)	2,545 (23.12%)
	Hold	239 (2.17%)	274 (2.49%)	3,248 (29.51%)	111 (1.01%)	31 (0.28%)	3,903 (35.46%)
	Reduce	20 (0.18%)	30 (0.27%)	130 (1.18%)	507 (4.61%)	12 (0.11%)	699 (6.35%)
	Sell	5 (0.05%)	2 (0.02%)	51 (0.46%)	11 (0.10%)	233 (2.12%)	302 (2.74%)
	Total	3,596 (32.67%)	2,533 (23.01%)	3,907 (35.49%)	690 (6.27%)	282 (2.56%)	11,008 (100%)

Table 9. Matrix of changes of recommendation (three points scale); percentages in parentheses

		Previous Rating			
		Buy	Hold	Sell	Total
Current Rating	Buy	5,559 (50.50%)	478 (4.34%)	67 (0.61%)	6,104 (55.45%)
	Hold	513 (4.66%)	3,248 (29.51%)	142 (1.29%)	3,903 (35.46%)
	Sell	57 (0.52%)	181 (1.64%)	763 (6.93%)	1,001 (9.09%)
	Total	6,129 (55.68%)	3,907 (35.49%)	972 (8.83%)	11,008 (100%)

This result seems in contrast with the previous studies in the literature, but it is possible to explain it considering the fact that the greatest part of the period considered refers to bear markets. It is, furthermore, coherent with the hypothesis of overoptimism of the analysts.⁹

3.2 Methodology

In this paragraph, we describe the methodology used to determine the value of an investment strategy based on the average consensus of analysts' recommendations. As a first step, we have calculated, for each period and company, the average consensus. As time period of reference we have chosen the quarter. The reason is twofold: on a practical ground, to have enough recommendations in each portfolio in every period, we could not use a monthly basis as it has been used in other studies in the literature;¹⁰ from a theoretical point of view we argue that the quarter constitutes for many portfolio managers the right period for performance evaluation and portfolio rebalancing, more often if the investment is managed through banks or mutual funds. To determine the average consensus on a company, in a given quarter, it has been necessary to attribute a numeric value to each rating.

The scale that we have used is the following: Buy = 1; Add = 2; Hold = 3; Reduce = 4; Sell = 5. The average consensus per quarter for a company is calculated as the sum of all the ratings issued by analysts on that company in the quarter, and diving by the number of reports in the same period. Formally:

$$\bar{A}_{i,t} = \frac{1}{n_{i,t}} \sum_{j=1}^{n_{i,t}} A_{i,j,t} \quad (1)$$

where: $\bar{A}_{i,t}$ is the average consensus on company "i" in quarter "t"; $A_{i,j,t}$ is the individual ratings contained in each of the $n_{i,t}$ reports issued in the quarter on the considered stock; $n_{i,t}$ is the number of reports issued on stock i in quarter t .

The average consensus thus calculated, however, does not allow to have an idea of the degree of agreement or disagreement among analysts that have issued ratings on the considered company. We have, therefore, decided to introduce a simple measure of dispersion of the recommendations around the average consensus.

As a measure of dispersion we have used the standard deviation:

$$D_{i,t} = \sqrt{\frac{\sum_{j=1}^{n_{i,t}} (A_{i,j,t} - \bar{A}_{i,t})^2}{n_{i,t}}} \quad (2)$$

where: $D_{i,t}$ dispersion level, for quarter "t", around the average consensus; $\bar{A}_{i,t}$ average consensus on company "i" in quarter "t"; $A_{i,j,t}$ is the individual ratings contained in each of the $n_{i,t}$ reports issued in the quarter on the considered stock; $n_{i,t}$ is the number of reports issued on stock i in quarter t .

Once classified the companies following the average consensus in each quarter, it is possible to form portfolios based on this consensus.

Five portfolios have been formed, for each quarter:

⁹ See Cervellati, Della Bina, Giulanelli (2005).

¹⁰ See Barber et al. (2001).

- portfolio 1:** companies with the highest ratings, i.e. those with average consensus in between 1 and 1.5
- portfolio 2:** companies with positive ratings, i.e. those with average consensus in between 1,5 and 2,5
- portfolio 3:** companies with an intermediate consensus, i.e. those with consensus between 2,5 and 3,5
- portfolio 4:** companies with a slight negative consensus, i.e. those with consensus between 3,5 and 4,5
- portfolio 5:** companies with a very negative consensus, i.e. those with consensus between 4,5 and 5

To evaluate the performances for every quarter of these portfolios we have used two distinct methodologies: CAR (*Cumulative Abnormal Return*) and BHR (*Buy and Hold Return*). CAR methodology consists in summing the excess returns recorded in the considered period. More formally:¹¹

$$CAR_{i,s} = \sum_{t=1}^T (R_{i,t} - E(R_{i,t})) \quad (3)$$

where: $CAR_{i,s}$ is the cumulate abnormal return of company "i" in quarter "s"; $R_{i,t}$ is the return of company "i" in day "t"; $E(R_{i,t})$ is the expected return of company "i" in day "t". The difference $R_{i,t} - E(R_{i,t})$ represents, therefore, the abnormal return of company "i" in day "t". Once obtained the CAR for every company, we have computer CARs for the portfolios as an average of the CARs of the companies in each portfolio for every quarter.¹² More formally, the portfolio CAR in each quarter is given by:

$$CAR_{p,s} = \frac{\sum_{i=1}^n CAR_{i,s}}{n} \quad (4)$$

where: $CAR_{p,s}$ is the abnormal return of portfolio "p" in quarter "s"; n is the number of stocks forming the portfolio p .

A limitation of the CAR methodology, however, is that it assumes that one should periodically adjust the portfolio to equally distribute the wealth invested in the portfolio among different stocks. Using the BHR methodology, the return in each quarter of a stock is expressed as:

$$BHR_{i,s} = \prod_{t=1}^T (1 + R_{i,t}) - \prod_{t=1}^T (1 + E(R_{i,t})) \quad (5)$$

where: $BHR_{i,s}$ is the excess return of stock "i" in quarter "s"; $R_{i,t}$ is the return of stock "i" in day "t"; $E(R_{i,t})$ is the expected return of stock "i" in day "t".

The portfolio BHR is just the average of single stocks BHRs:

$$BHR_{p,s} = \frac{\sum_{i=1}^n BHR_{i,s}}{n} \quad (6)$$

where: $BHR_{p,s}$ is the excess return of portfolio "p" in quarter "s"; n is the number of stocks in portfolio p . Following Barber and Lyon (1997) we consider as an estimate of the expected return $E(R_{i,t})$ the return of a market index $R_{m,t}$.¹³

To calculate daily returns for individual stocks we have decided, following the main contribution in the literature, to use different methods for CAR and BHR. For CAR we have used a continuously compounded return¹⁴, whereas for BHR a discrete compounded return.

Lastly, to test the null hypothesis that the returns calculated with BHR or CAR are equal to zero for the sub-sample of n companies forming the portfolio, we use the standard parametric tests proposed by Barber and Lyon¹⁵.

3.3 Results

In this paragraph, we examine the investment value of a strategy based on the average consensus of analysts' recommendations. For each portfolio and every quarter, we have determined the average consensus of ratings issued on each stock from analysts that have outstanding recommendations on that stock in the considered quarter. We have also calculated excess returns, adjusted by the market returns, using CAR and BHR methodologies. If analysts' recommendations have value, ordering the portfolios from 1 to 5, with 1 representing the portfolio containing the best ratings and 5 the portfolio containing the worst ones, we would expect to observe the following effects:

- portfolio 1 should have the most positive adjusted excess return;
- portfolio 2 should have a positive excess return, but lower than portfolio 1;
- portfolio 3 should have adjusted excess returns close to zero;
- portfolio 4 should have a negative adjusted excess return;
- portfolio 5 should have the most negative adjusted excess return.

¹³ The market index used here is the Mibtel (Milano Indice Borsa Telematica), a global index representing the general trend of the stocks listed in the Italian Stock Exchange.

¹⁴ Using the continuously compounded return one assumes that $P_t = P_{t-1}e^{R_t}$, where R_t is the rate of return during the period $(t - 1, t)$.

¹⁵ See Barber and Lyon (1997).

¹¹ See Barber, Lyon (1997) and Lyon, Barber, Tsai (1999).

¹² The underlying assumption here is that the total amount invested in each portfolio is equally divided among all the stocks.

Table 10 shows the total return in each quarter for every portfolio. The returns are all statistically significant and reflect the expectations, confirming our hypothesis. The “Average Dispersion”, reported in second column of table 10, measures the degree of agreement between analysts within each class of

rating. By construction, it represents the standard deviation, adding additional information with respect to the mere average consensus in the class. It would be possible to have the same average consensus, but a different dispersion and, therefore, a rather different degree of agreement.

Table 10. Summary results for every portfolio in quarter t

Portfolio [Class]	Average Dispersion	Total number of reports	BHR(t)	t-Stat	CAR(t)	t-Stat
Portfolio 1 [1 - 1.5]	0.21	1,942	6.92%	4.5033***	4.24%	5.3385***
Portfolio 2 [1.5 - 2.5]	0.70	6,898	2.01%	3.6426***	0.55%	1.0205
Portfolio 3 [2.5 - 3.5]	0.39	3,366	-2.27%	3.1332***	-4.55%	6.1156***
Portfolio 4 [3.5 - 4.5]	0.52	531	-5.29%	2.3631**	-8.56%	3.9064***
Portfolio 5 [4.5 - 5]	0.00	54	-9.70%	3.2324***	-12.37%	3.5922***

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

With reference to table 10, take for example portfolio 1, that presents a low average dispersion, equal to 0.21. However, it should be considered that the range of the class is only 0.5, from 1 to 1.5, therefore the incidence of the average dispersion is 42%. Portfolio 2 is the one in which single ratings are more dispersed, 70%, followed by portfolios 3 and 4 with, respectively, 52% and 39%. Portfolio 5 has no dispersion.

Table 10 contains other interesting results. Considering the number of reports in each portfolio, it is evident that the portfolios that have the greater number of reports are those containing non-negative ratings.

This result can be addressed using different explanation. The first one supports the hypothesis of

an “optimistic bias” of analysts that tend to view the stocks that they follow too favorably (This explanation is proposed by the behavioral approach to finance, that relate psychology and finance).

The second hypothesis claims that analysts are reluctant to issue negative ratings, to avoid problems with the management of the covered companies. A third explanation can be that analysts simply follow, on average, stocks with better performances.

Figure 1 clearly show that the adjusted returns of the five portfolios are in line, both considering the BHR and the CAR methodology, with the level of average consensus of analysts’ recommendations. This seems to confirm the investment value of a strategy based on analysts’ consensus.

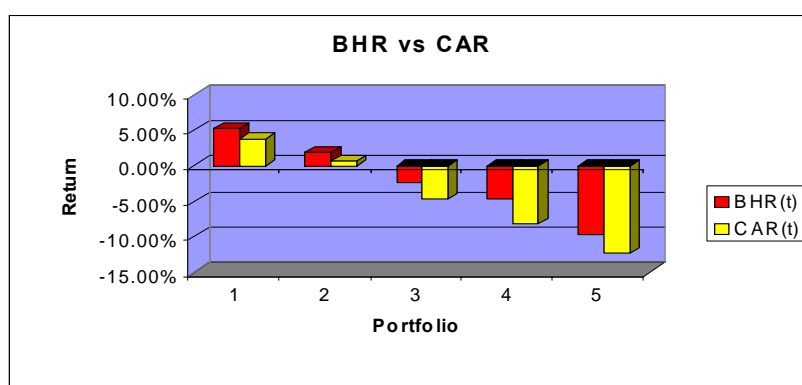


Figure 1. Total average return computed for every portfolio in quarter t

Portfolio 1 has recorded an average return of 6.92%, with reference to all the quarters considered, using BHR and 4.24% with CAR. Portfolio 5, instead, had a performance of -9.7% with BHR and -12.37% with CAR.

Adopting a portfolio strategy based on the consensus of financial analysts, i.e. buying the stocks with the more favorable recommendations and selling the least recommended ones, an investor could gain an abnormal return of about 16.6%, both with BHR and CAR, as highlighted in table 11 that

contains the differences between quarterly average returns. It seems, therefore, that analysts' recommendations have real investment value for investors. However, the present analysis does not take into account transaction costs. It is necessary to take into account the commissions, as well as the bid-ask spread and the other costs related to transactions to calculate the net return for investors.

The paper by Barber et al (2001) shows, in fact, that taking into account these costs, the abnormal returns recorded following analysts' recommendations tend to disappear.

Von Nandelstadh (2003), with reference to Scandinavian markets, finds no abnormal returns, once that it takes into account transaction costs. It is interesting, however, to highlight that investors can obtain positive abnormal returns if they follow only the recommendations of analysts that do not work for a bank.

The results for portfolios 2 and 4 seem to be in line with expectations as well.

The former has recorded an average return of 2.01% with BHR and 0.55% with CAR, while the latter has realized -5.29% with BHR and -8.56% with CAR (This value (0.55%), however, it is not statistically significant). The results for Portfolio 3 are instead somehow surprising, or at least of difficult interpretation. This portfolio should theoretically have an excess return close to zero, while for our sample it recorded a -2.27% with BHR and a -4.55% with CAR. A possible explanation of these negative returns can be advanced referring to the incentives that analysts have to issue a neutral rating, instead of a negative one. Several studies in the

literature, but also articles in the financial press, have shown that analysts can face several problems after issuing a negative recommendation. There have been cases in which analysts have been excluded from meetings with the managers of a company or from receiving relevant information after having issued a negative recommendation. Analysts therefore face a trade-off between issuing correct ratings, to build their own reputation, and maintain good relationships with the management of the companies they follow to have access to the necessary information they need for their research activity. It seems that this trade-off pushes analyst to be upward biased, i.e. the tendency to issue neutral ratings while instead they should issue negative ones, or even not to issue negative reports at all (The bias induced by omitting to issue negative reports is well illustrated by Fabrizio (2001).

In table 11 we provide the differences between annual returns on the five portfolios, for BHRs and CARs, referred to the whole period considered. The differences in terms of annual returns among portfolios are of relevance and statistically significant, in particular the difference between "extremes" (portfolio 1 and 5) is large (16.61% with BHR and 16.60% with CAR) and significant at the 1% confidence level. It is worth to notice that only the differences between portfolios 3 and 4 for BHR and between portfolios 4 and 5 for CAR are not statistically significant, probably due to the fact, already discussed in the paper and in literature, that hold and reduce ratings can be considered as negative recommendations, not significantly different from sell ratings.

Table 11. Differences between average quarterly returns for each portfolio (t-Stat in brackets)

Part A. Comparison between the five portfolios using average BHR

	Portfolio 1 [1 - 1.5]	Portfolio 2 [1.5 - 2.5]	Portfolio 3 [2.5 - 3.5]	Portfolio 4 [3.5 - 4.5]	Portfolio 5 [4.5 - 5]
Portfolio 1 [1 - 1.5]	0.00%	-	-	-	-
Portfolio 2 [1.5 - 2.5]	4.91% (3.0069)***	0.00%	-	-	-
Portfolio 3 [2.5 - 3.5]	9.19% (5.4101)***	4.28% (4.6990)***	0.00%	-	-
Portfolio 4 [3.5 - 4.5]	12.21% (4.4967)***	7.30% (3.16630)***	3.02% (-1.2817)	0.00%	-
Portfolio 5 [4.5 - 5]	16.61% (4.9297)***	11.71% (3.8380)***	7.42% (2.4052)**	4.41% (-1.1777)	0.00%

Part B. Comparison between the five portfolios using average CAR

	Portfolio 1 [1 -- 1.5]	Portfolio 2 [1.5 -- 2.5]	Portfolio 3 [2.5 -- 3.5]	Portfolio 4 [3.5 -- 4.5]	Portfolio 5 [4.5 -- 5]
Portfolio 1 [1 -- 1.5]	0.00%	-	-	-	-
Portfolio 2 [1.5 -- 2.5]	3.68% (3.8273)***	0.00%	-	-	-
Portfolio 3 [2.5 -- 3.5]	8.78% (8.0774)***	5.10% (5.5398)***	0.00%	-	-
Portfolio 4 [3.5 -- 4.5]	12.80% (5.4904)***	9.12% (4.0372)***	4.01% (1.7338)*	0.00%	-
Portfolio 5 [4.5 -- 5]	16.60% (4.6991)***	12.92% (3.7074)***	7.82% (2.2201)**	3.81% (0.9331)	0.00%

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

To test the hypothesis that neutral ratings can be associated with negative judgments by the analysts, we furthermore divide the stocks in two portfolios, respectively formed by companies with non-negative consensus (1 |--| 3), including the hold ratings as non-negative, and the ones with negative average consensus (3 |--| 5). Observing table 12, it is possible to note that the first portfolio, with an average

dispersion of the ratings equal to 0.45, has recorded a positive average excess return of 2.10% with BHR and 0.13% with CAR (this value (CAR= 0.13%), however, is not statistically significant) while the second portfolio has realized, with an average dispersion of ratings of 0.57, a negative excess return (-4.46% with BHR and -7.73% with CAR).

Table 12. Total average return per quarter calculated dividing among stock with non negative recommendations (1 |--| 3) and with negative ones (3 |--| 5)

Class of Recommendations	Average Dispersion	Total number of reports	BHR(t)	t-Stat	CAR(t)	t-Stat
Non negative [1 -- 3]	0,45	11,463	2.10%	3.8964***	0.13%	0.31586
Negative [3 -- 5]	0,57	1,328	-4.46%	3.0099***	-7.73%	5.2196***

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

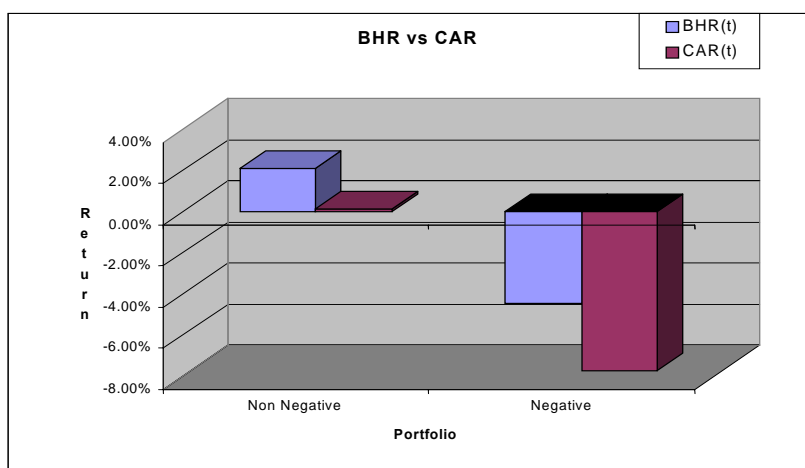


Figure 2. Total average return per quarter calculated dividing among stock with non negative recommendations (1 |--| 3) and with negative ones (3 |--| 5)

Note: the rating hold is included in the portfolio of “Non Negative” recommendations (1|--|3)

Coherently with the hypothesis that neutral recommendations should be considered as negative

ratings, in table 13 and figure 3 e present an alternative classification.

The first portfolio now includes only strict positive ratings ([1 |-- 3]), excluding neutral recommendations, while the second portfolio

includes non positive ratings ([3 |--| 5]), including this time the hold rating.

Table 13. Total average return per quarter calculated dividing among stocks with positive recommendations (1 |-- 3) and with non positive ones (3 |--| 5)

Class of Recommendations	Average Dispersion	Total number of reports	BHR(t)	t-Stat	CAR(t)	t-Stat
Positive [1 -- 3]	0,54	10,593	3.37%	5.3497***	1.42%	3.28006***
Non Positive [3 -- 5]	0,29	2,198	-3.48%	4.3206***	-6.00%	7.39231***

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

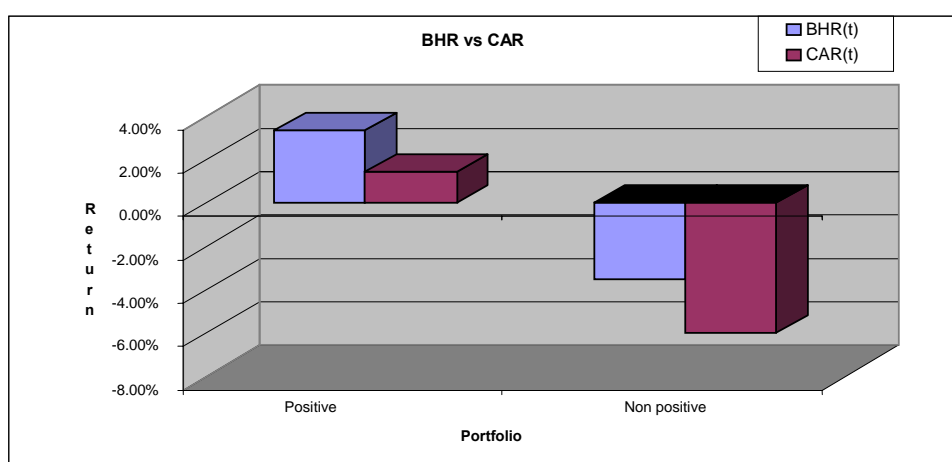


Figure 3. Total average return per quarter calculated dividing among stock with positive recommendations (1 |-- 3) and with non positive (3 |--| 5)

Note: the rating hold is included in the portfolio of “Non positive” recommendations (3|--|5)

In this alternative definition, the first portfolio records an adjusted return of 3.37% with BHR and 1.42% with CAR, with an average dispersion of ratings of 0.54; whereas the second portfolio realizes a performance of -3.48% with BHR and -6% with CAR, with an average dispersion of 0.29. We should highlight that the positive returns associated with the “Positive” ratings portfolio are higher than before.

At the same time, the returns of the “Non Positive” portfolio are better than before, since now we have added the neutral recommendations to this second portfolio and eliminated from the first one. First of all, we should note that the number of reports in the second portfolio increases, with benefits in terms of robustness of the results. In fact, whereas in the first classification (non negative “vs” negative) the CAR was not statistically significant, in this alternative definition, not only is significantly different from zero, but it is also higher in magnitude. Furthermore, while the average dispersion in the positive portfolio almost remains the same, the one associated with the second portfolio dramatically decreases, suggesting a higher degree of agreement between non-positive ratings, once neutral and negative recommendations are

pooled together (It slightly increases in absolute terms for the positive portfolio, but since the range of ratings narrows, in relative terms it decreases. For the non positive portfolio the decrease is even bigger if we consider the wider range of ratings that are now included in the non positive portfolio).

Conclusions

The paper examines the possibility of profiting from an investment strategy based on the average consensus of analysts’ recommendations.

If on one hand individual and institutional investors can be willing to bear the cost for analysts’ reports, on the other hand market efficiency tells us that those reports should have no value. Therefore, it remains to be verified if analysts recommendations have or not investment value.

We have then created a database including the recommendations issued by analysts in monographic studies issued between the 1st January 1999 and the 23rd July 2004 and publicly available on the website of the Italian Stock Exchange. First of all, we have performed a descriptive analysis of the sample,

highlighting some interesting features of the reporting activity in the Italian stock market.

From a comparison between the number of reports received from each company and its size, we have shown that analysts prefer to issue reports on bigger companies. An explanation of this phenomenon is that, since bigger companies are characterized by a higher number of transactions, they could allow for some economic benefits deriving from the commissions on trading and brokering activity.

Few intermediaries produce the majority of reports and the more active in issuing studies are also the ones covering the majority of firms. This evidence highlights the importance of controlling for potential conflict of interests of intermediaries that have a relevant position in the market of reports.

Considering the distribution of recommendations issued by analysts, we have also shown that the percentage of positive ratings is always greater than the fraction of negative ones. This evidence can be explained in two alternative ways: analysts can show excessive optimism in their reporting activity, or they can just omit to issue a negative report to avoid problems with the management of the companies, that is the main source of the information they use.

Apart from this preliminary and descriptive analysis of the sample, to verify if analysts' reports have any investment value, we have formed five portfolios, dividing stocks on the base of the average consensus for each quarter of the sample. We used the CAR and BHR methodologies to calculate average abnormal returns of the five portfolios for each quarter and for the period as a whole. Comparing excess returns of each portfolio in the entire period of time that we have considered with the level of average consensus of analysts' rating, we found results in line with our intuition.

Portfolio formed by very or moderately positive ratings record a positive excess return, while portfolios with very or moderately negative ratings have shown negative excess returns. The portfolio containing neutral ratings gives instead ambiguous results. From a theoretical point of view, it should record excess returns close to zero. The results, instead, show negative excessive returns both with the CAR and BHR methodologies. An explanation, well-accepted in literature, is that neutral ratings can be considered as negative ones, since in general analysts tend to issue very few reduce or sell ratings.

After having performed the proper tests for statistical significance, we find that analysts' recommendations have indeed investment value if we consider a horizon that is at least annual, or that take into consideration the whole sample.

The results shown thus far have not considered transaction costs. We should include these costs in the analysis to see if analysts' recommendations really convey investment value or if they, even if positive, would not be sufficient to cover those costs.

Future research will have to consider this aspect. More generally, however, we can conclude that seems that investors can rely on analysts' average consensus, with a caution, to consider very carefully neutral recommendations that, as shown in the literature, can be considered as negative ones. The reporting activity seems therefore to significantly influence the investment decisions of investors, and under this light it can be seen the increasing amount of regulation of the Italian and European legislators. The main objective of these regulations on reporting activity is in fact to favor the diffusion of transparent and timely relevant and price sensitive information to help investors in their decisions.

In this regard, we argue that legislators should impose more precise criteria on the more delicate aspect contained in the recommendations, i.e. the neutral rating.

If one objective of regulation is to enhance transparency and disclosure, then it is necessary that investors really understand the meaning of every recommendation.

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Appendix: descriptive statistics of the monographic studies included in the database constructed from the Borsa Italiana S.p.A. website, 1999-2004

The number of listed companies (column 2) includes all the companies for which the stocks are negotiated on regulated markets managed by Borsa Italiana S.p.A., for every year of reference. The number of covered companies (column 3) is the number of companies with at least one valid recommendation with rating for year of reference recorded in the database of Borsa Italiana S.p.A. The number of covered companies (column 4) is furthermore expressed in percentage with respect to the number of listed companies. The market capitalization of the covered companies (column 5) is the percentage ratio between the sum of capitalizations of the covered companies and the sum of capitalizations of the listed companies, calculated at the end of the reference period. The average and median number of intermediaries that issue recommendations with rating per every covered company (columns 6 and 7) is highlighted, as well as the average and median number of covered companies per intermediary for every year of reference (columns 8 and 9). The last column presents the number of intermediaries with at least one recommendation during the year. We consider the listed companies that are objective of a monographic study, recorded in the database of Borsa Italiana S.p.A. and issued between September 1999 and July 2004.

Year	No. of Listed Companies	N. di Covered Companies	Covered companies		Intermediaries		Covered companies per intermediary		Number of intermediaries
			% of Listed Companies	% of the Market Capitalization	Average	Median	Average	Median	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1999	270	44	16%	39%	1.2	1	8	5	7
2000	297	148	50%	85%	4.4	3	16	11	40
2001	294	183	62%	84%	6.4	4	23	11	50
2002	295	178	60%	85%	6.7	4	23	15	51
2003	279	181	65%	92%	6.5	4	27	21	43
2004	276	166	60%	90%	5.2	3	25	18	34