Analysts' Recommendations: Evidence from a Portuguese Investment Bank

João Martins Ribeiro [a]

Rúben Barreto [b]

Ana Paula Serra [c] [*]

[a] *joao.ribeiro@aveiro-digital.pt*

[b] *ruben.barreto@bta.pt*

[c] *aserra@fep.up.pt*

Faculdade de Economia do Porto, Rua Dr. Roberto Frias – 4200-424 Porto

Tel.+0351 225571255   Fax. +0351 225505050

* *Presenting Author*

Analysts' Recommendations:

Evidence from a Portuguese Investment Bank

Abstract

We assess the performance of a few trading strategies based on a sample of 139 analysts' recommendations made public by a Portuguese investment bank' research department. We address whether stock picking strategies on the basis of these recommendations were effective tools for stock selection. Our results suggest that these recommendations have not been useful for stock selection. Most of the recommendation-based strategies we have built generated negative significant performance. We tested the robustness of these findings over time and across industries. We find that the recommendations-based strategies appear to be more effective for selection of Portuguese stocks, which can reflect a comparative home advantage: Portuguese analysts may have better skills in selecting Portuguese stocks rather than foreign stocks.

Analysts' Recommendations:

Evidence from a Portuguese Investment Bank

1. Introduction

There is still a lot of controversy on the forecasting ability of analysts. On one hand, if markets are efficient in its semi-strong (or even strong) form, in the sense of Fama (1970), there would be no ground for the existence of research departments as it would be impossible to implement a profitable strategy on the basis of the publicly available information. Yet, some authors claim that evidence of analysts' forecasting ability in itself should not be interpreted as a violation of market efficiency if one cannot implement that strategy effectively. In others words, finding that research analysts play an important role in disseminating information may be consistent with market efficiency; only evidence of effective trading strategies on the basis of public information, such as research reports or analysts' recommendations, should be accepted as contradictory evidence. Recent research (see Wermers, 2000, as an example) suggests that the performance of active management is not superior to a passive strategy due to trading costs. Our research can thus also inform on the value created in active management done on the basis of stock picking skills.

On the other hand, in the last few years, there is growing suspicion on the information value of analysts' recommendations (particularly for sell side-analysts) motivated by anecdotal evidence on lack of independence of research departments due to pressures by other investment bank departments such as brokerage or M&A.

The main purpose of this study is to evaluate the effectiveness of several trading strategies built on the basis of the recommendations produced by a team of research analysts in a Portuguese investment bank. Analysts identify undervalued assets for which they issue a buy recommendation. These investment recommendations are regularly published.

All recommendations refer to stocks traded in markets for which the investment bank offers brokerage services. Analysts also issue recommendations on other kind of securities, but we exclude them from our sample.

We design simple trading strategies on the basis of these recommendations. Stocks are bought at the time of the recommendation disclosure, held for a certain period and then sold. We create different strategies for an array of holding periods and analyze the results over time and for subgroups of stocks.

The rest of the paper is organized as follows. Section 2 provides a brief literature review on analysts' recommendations. Section 3 presents the methodology, explains the different recommendation-based trading strategies and describes our data. Section 4 presents our main results and section 5 concludes.

2. Literature Review

The literature on analysts' recommendations has focused on three different questions: (1) the type of analysis used by financial analysts to evaluate stocks; (2) the stock price reaction to the analysts' recommendations (3) the value of analysts' recommendations as effective tools for stock selection from an investor perspective.

Our paper addresses this last question. In a competitive and rational world, investors will only follow analysts' recommendations if the expected benefits are greater than the cost of advice, in other words, when analysts' recommendations are expected to have (informational) value. Financial theory tells us that the most economically rational benefits extracted from an investment recommendation are the positive excess returns following recommendations. Moreover, analysts' recommendations have (informational) value if the analysts have superior or inside information on the financial asset, and/or if the advice service is cost-free[1].

Even if our central approach is from an investor point of view perspective, our evidence could also shed some light on the impact of this public information (published investment recommendations) on prices and therefore inform about semi-strong or strong market efficiency in the sense of Fama (1970). However, the implications of our study in terms of the impact on stock prices and on market efficiency are limited because these recommendations are disseminated to a small number of investors[2].

2.1 Evidence on Analysts' Recommendations

The debate over the value of analysts' recommendations to stock selection is not settled and the existing empirical evidence that supports the hypothesis of real superior returns from investing on the basis of analysts' recommendations is not consensual.

The seminal article on investment recommendations was written by Alfred Cowles III (1933) who studied investment recommendations of 16 financial services companies, 25 financial periodicals and The Wall Street Journal editors. Cowles showed that recommended stocks had, on average, a negative performance when compared against a market benchmark, and concluded that investment recommendations didn't add (informational) value.

Until Womack (1996), there was little evidence on whether analysts' recommendations would yield abnormal returns. In spite of some findings suggesting that recommended stocks had positive excess returns, there were criticisms of sample bias or imprecise data. Womack (1996) looks at stock prices' daily reactions to changes in the 14 biggest U.S. brokerage house analysts' recommendations and finds statistically significant positive excess returns from investments on recommended stocks. However, these excess returns show strong mean reversion in the six months following the announcement. Their main focus is to determine the impact of changes in analysts' recommendations on stock prices

---

[1] Another possible benefit is social status: an investor can be better off if she publicizes her investments following professional advice. That is why paying for research may be a form of consumption rather than an investment, because investing in a professional way may be perceived as prestigious.

[2] The clientele of this investment bank represented a mere 0,7% of total Portuguese stock market volume, both in 2001 and in 2002 (Reference: *Boletins CMVM*). For foreign stock recommendations, we anticipate that these analysts' recommendations are in fact non-events.

(and evaluate semi-strong form of market efficiency) rather than to assess the usefulness of these recommendations from an investor's perspective.

Yet, Jaffe and Mahoney (1999) conclude that common stock recommendations made by investment newsletters do not outperform appropriate benchmarks (control firms). Moreover, there is no evidence of performance persistence, when performance is measured by abnormal returns.

Barber, Lehavy, McNichols and Trueman (2001) show that buying (selling short) stocks with the most (least) favourable consensus recommendations, together with daily portfolio rebalancing and a timely response to recommendation changes, would allow a monthly abnormal return of 0.75 percent. The data used in their paper included over 360 000 investment recommendations from 269 brokerage houses and 4340 analysts, from 1985 to 1996. The authors conclude that these results reflect market semi-strong inefficiency, and exclude the data-snooping or pricing model weakness hypotheses. However, this trading strategy inherently assumed high trading levels, so when transaction costs were considered, the abnormal returns were no longer statistically different from zero. Even though, analysts' recommendations provide value, because, ceteris paribus, investors would be better off investing in the most favoured stocks rather than in the least favoured stocks.

In a more recent article, these same authors re-evaluate the returns of analysts' recommendations using a new sample from the 1996-2001 period. Barber et al. (2003) confirm their previous findings for the period of 1996 to 1999, i.e., the most favoured stocks had a better performance. Yet, in the years 2000 and 2001 (distinguished by rising doubts on the independence of some analysts' recommendations), these most favoured stocks turn out to have a negative performance.

In sum the literature suggests that, on average, financial analysts show forecasting ability skills but there remain many doubts on the profitability of recommendation-based strategies.

3. Methodology and Data

We test the forecasting ability of a research department in a Portuguese investment bank and we examine the profitability of strategies based on stock recommendations designed by these analysts. If we find that these recommendations are valuable for stock selection, the results will be consistent with analyst forecasting ability and inconsistent with market efficiency. Otherwise, our results will support one of two views: either analysts have no forecasting skills or they do but stock prices immediately adjust when recommendations become public.

Womack (1996) uses the traditional event study methodology to measure stock price reaction to changes in analysts' recommendations and to draw implications in terms of market efficiency. Barber et al. (2001, 2003) focus their study on the design of investment portfolios based on analysts' recommended stocks. Barber et al. (2001 and 2003) use stocks whose rating is periodically reviewed, so their portfolios have to be reviewed or rebalanced every time those stocks' recommendations are changed. We cannot replicate their methodology on our sample, as the stock recommendations are randomly published depending on trading opportunities detected by the investment bank' financial analysts, and as such we wouldn't be able to review our portfolio periodically. Instead, we analyze the recommendations as individual investments and use an event study methodology that is similar to Desai, Liang and Singh (2000), based on buy-and-hold returns. We compute the abnormal performance of each recommended stock for different holding-periods. The profitability of these recommendation-based strategies is then assessed looking at the simple average abnormal returns. These averages can be interpreted as the payoff to a stock picking recommendation-based strategy for a particular holding period. Desai et al. (2000) compare the performance of the recommended stock's performance with the performance of a matching company to control for size and industry effects. In our event study, we use a simple market-model where the normal returns are given by market returns of relevant stock indexes. Our stock recommendations comprise Portuguese and non-Portuguese (other European countries and American) stocks. We first look at the entire sample of stocks. The analysis is then repeated for the two sub-samples. We use different benchmarks for the aggregate and for the two sub-samples.

3.1 Methodology

We analyse buy-and-hold returns for each recommended stock:

$$R_{i,T} = \prod_{t=1}^{T}(1 + r_{it}) - 1 \qquad (3.1)$$

where:

$R_{i,T}$ Buy-and-hold return for stock i, for T days

r_{it} Raw total return (with dividends)[3] for stock i on day t

---

[3] Where the raw return is a continuously compounded return given by $\ln\left(\dfrac{P_t}{P_{t-1}}\right)$.

We assume that returns are jointly normal, and (temporarily) identically and independently distributed (IID). Without assuming normality, all results would be asymptotic[4].

We analyse the performance of recommendations-based strategies for different holding-periods (in calendar time), so we can evaluate the returns obtained by investors with different profiles (short-term, medium-term and long term-oriented investors). Alternatively, the different holding period averages show how a strategy performs over time. Each holding-period starts in the day after the event day[5]. We thus assume that the publication day is day 0 and that each investment could only start after that day. In other words, we buy the stock at event day closing price. We examine six holding-periods of 3, 10, 25, 125, 250 and 500 days.

The log excess return of stock i, HPARiT, for holding-period T, is given by:

$$HPAR_{i,T} = R_{i,T} - R_{m,T} \qquad (3.2)$$

where:

$R_{m,T}$ Buy-and-hold return for the passive benchmark for T days

For its liquidity and representativeness, we choose the MSCI World[6] as the general benchmark, the PSI20 for Portuguese stocks, the DJ Eurostoxx 50 for other non-Portuguese European stocks, the S&P500 for American stocks and the Nasdaq 100 for TMT stocks. By analyzing abnormal returns computed as excess returns to the relevant benchmark we can evaluate if a trading strategy outperforms an alternative passive trading strategy. So, for each holding-period, we calculate the abnormal average return of the recommended stocks, AART, using a simple arithmetic average:

$$AAR_T = \frac{1}{n}\sum_{i=1}^{n} HPAR_{i,T} \qquad (3.3)$$

where:

n   Number of active recommendations for T days

---

[4] Brown and Warner (1985) considered that this was generally not a problem for event studies since the test statistics converge to their asymptotic distributions rather quickly. However, the assumption would be reasonable in many cases.

[5] The event day is the day when the recommendation is published.

[6] The MSCI World Index is calculated by Morgan Stanley Dean Witter. It is a free-float adjusted market index that tries to represent the developed countries' stock markets performance. In April 2002, the MSCI World Index was based on the most representative stock market index of the following 23 developed countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, The Netherlands, United Kingdom and USA.

We test the null hypothesis that there are no abnormal returns associated with analysts' recommendations. We calculate the statistical significance of AART using a t-statistic[7] computed as:

$$t = \frac{AAR_T}{SE_T} \qquad (3.4)$$

where:

SE_T Estimated standard error of AAR_T

To compute the SE_T we need to specify the kind of relationship between the abnormal returns of the recommended stocks.

The assumption of independent abnormal returns may be reasonable in many cases (Brown and Warner, 1985). However, it may exist stock cross-section return interdependence that can create interdependencies in the abnormal returns (AAR_T) series. If in our sample this cross-section returns interdependence effect is real[8], it can influence our inference results because our time period of analysis is short (3 and a half years). To account for this possibility we compute SE_T allowing for cross-section dependency in abnormal returns, using an approach similar to Desai et al. (2000).
We compute the correlation coefficient of daily abnormal returns, ρ_{ij}, for 751 days (from day -250 to day +500, in event time), for all pairs of i and j of recommended stocks. COV_{ij} for any period T is given by $\rho_{ij}\, \sigma_i\, \sigma_j$, where i is the standard deviation of abnormal returns for stock i over time period T. For an equally weighted portfolio of n stocks, the dependence-adjusted standard error of portfolio abnormal returns SE_T is given by:

$$SE_T = \sqrt{\frac{VAR_T + \dfrac{1}{n^2}\displaystyle\sum_{i=1}^{n}\sum_{j=1}^{n} COV_{ij}}{n-1}} \qquad (3.5)$$

where:

VAR_T Cross-section variance for the average abnormal returns for T days
COV_{ij} Covariance between r_{it} and r_{jt} for that same period

To compare the several strategies for different holding-periods, we compute annualized abnormal returns, $HPAR_T$ (a.p.):

$$HPAR_T(a.p.) = HPAR_T \times \frac{250}{T} \qquad (3.6)$$

---

[7] Based on the Central Limit Theorem, and depending on the size of our sample, we used the normal distribution for samples with n >30 and the t-student distribution for samples with n<30.
[8] This is plausible because in our sample we observe that, in a particular moment of calendar time, more than one recommendation suggests the same stock.

3.2 Data

Table 3.1 shows the number of analysts' recommendations by geographical region and by year of publication. It is notorious the increase of the number of published recommendations (although in 2003 we only have 4 months of data) and of the number of stocks covered by this research team.

Table 3.1 – Sample of recommendations - Descriptive statistics

The table presents, in several samples, the "buy" recommendations issued by a Portuguese investment bank research team over the period from 1999 to 2003.

Year	Portuguese	Other European	American	Total Sample	Nr. Firms
1999	1	0	0	1	1
2000	11	2	7	20	17
2001	14	7	16	37	29
2002	13	30	23	66	41
2003	2	9	4	15	14
Total	41	48	50	139	66

The recommendations were published in the investment bank's website therefore avoiding ex-post selection bias in the sense that, the investment bank could publicize only the short list of stock recommendations that indeed proved to be valuable[9]. There is thus no ambiguity on the recommended stocks or on the publication date.

Of a total of 194 recommendations published by the investment bank, between December 1999 and May 2003, we kept 139 for our sample. We removed the analysts' recommendations on Warrants, Cobatrackers (QQQ) and ADR's. We have also removed any recommendation on a stock that had already been recommended in less than a month and whose acquisition price was higher than the previous recommendation acquisition price[10].

Stock prices data are from *Datastream*.

---

[9] Selection bias could result given the commercial nature of most of these investment firms' research activity.

[10] This type of recommendations is normally used, not to recommend a stock, but to update stop-loss prices.

4. Results

We evaluate our trading strategies by comparing the total returns of each strategy with the total returns of a comparable benchmark. In fact, we are comparing our trading strategies against a passive strategy.

Table 4.1 summarises the results for the entire sample of recommendations. Average abnormal returns are all negative and often significant: on average an investor who follows a recommendations-based trading strategy, buying the recommended stock and selling it later, obtains negative abnormal returns, regardless of the holding period. For holding-periods greater than a month, the investor gets annualised abnormal losses of 20 percent, significant at the 1 percent level (except for the 2-years trading strategy, that yields a smaller loss of 9.44 percent). For the 3 and 10-day holding-periods, we observe shorter negative abnormal returns of around 1 percent. The percentage of recommendations that result in positive abnormal returns is small, always below 50 percent, and we notice a decrease on the percentage of profitable recommendations as the holding period increases.

Table 4.1 – Recommendations-based Strategies Performance – Total Sample

The table presents the buy-and-hold average annualised abnormal returns (HPAR) of the recommendations-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	$HPAR_T$	t-Statistic	$HPAR_T$ (a.p.)	Positive (%)
0	139	0,86 %	2,88	215,00 %	57,55 %
1 – 3	139	-0,98 %	-2,13[*]	-81,67 %	43,17 %
1 – 10	139	-1,28 %	-1,73	-32,00 %	48,20 %
1 – 25	136	-2,01 %	-1,68	-20,10 %	48,53 %
1 – 125	114	-11,33 %	-4,30[***]	-22,66 %	35,96 %
1 – 250	76	-22,42 %	-6,47[***]	-22,42 %	22,37 %
1 – 500	31	-18,87 %	-3,60[***]	-9,44 %	25,81 %

[*]   Statistically significant at the 10% level.
[***] Statistically significant at the 1% level.

Analysts' recommendations seems to affect stock prices but only on day 0: the 139 recommendations earned average annualised positive excess returns of 0.86 percent (57.55 percent of the strategies yielded positive excess returns) on the event day, the day the recommendation is disseminated. These results are similar to Dimson and Marsh (1984) and are consistent with market efficiency. Yet the negative significant performance associated to these strategies is puzzling. We should stress again that it is erroneous to jump to implications of these results in terms of market efficiency relative to this particular information set, because as mentioned above these recommendations are disseminated to few investors: Further, we do not control for any other information made public around the event day that may in fact be truly informative.

4.1 Analysis by Stock Market

We now divide the entire sample in three sub-samples, Portuguese, Other non-Portuguese European stocks and American stocks, and analyse each one separately. If this team of Portuguese analysts has some kind of comparative home advantage in selecting Portuguese stocks rather than foreign stocks, then we may observe a different performance between the samples. Table 4.2 shows the results for this specific analysis.

Table 4.2 – Recommendations-based Strategies performance – Portuguese stocks

The table presents, the buy-and-hold average annualised abnormal returns (HPAR) and t-statistics of the Portuguese stocks-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	$HPAR_T$	t-Statistic	$HPAR_T$ (a.p.)	Positive (%)
0	41	0,40 %	0,91	100,00 %	58,54 %
1 – 3	41	-0,28 %	-0,59	-23,33 %	58,54 %
1 – 10	41	0,55 %	0,70	13,75 %	63,41 %
1 – 25	41	2,07 %	1,46	20,70 %	65,85 %
1 – 125	38	7,69 %	2,43[**]	15,38 %	65,79 %
1 – 250	26	8,58 %	1,89[*]	8,58 %	69,23 %
1 – 500	19	9,56 %	1,84[*]	4,78 %	78,95 %

[*] Statistically significant at the 10% level.
[**] Statistically significant at the 5% level.

If we look at Portuguese stock recommendations separately, the outlook for the recommendations-based strategies substantially improves: the buy-and-hold abnormal returns are positive for almost all the holding-periods (the exception is the 3-day holding period that yields negative, although not statistically significant, returns). For the medium and long term investment horizons, strategies built on the basis of Portuguese favoured stocks, obtain annualised abnormal returns between 7.69 percent and 9.56 percent (the 6-month holding-period returns are statistically significant at the 5 percent level, and the 1-year and 2-year holding-periods returns are statistically significant at the 10 percent level). The percentage of analysts' recommendations that result in positive abnormal returns is higher than 50 percent for any holding period, and increases to 78.95 percent for the 2-year holding period.

The positive performance of Portuguese stocks' recommendations strategies may be explained by some kind of comparative "Home Advantage". Bjerring, Lakonishok and Vermaelen (1983) suggest that a Canadian brokerage house may have had comparative advantages in obtaining information about local companies. Coval and Moskowitz (1999) refer that because local researchers can talk to employees, managers, and suppliers of the local firms, and may obtain important information from the local media, and have close personal ties with local executives, they may have an information advantage.

The existence of this "Home Advantage" for the particular case of Portuguese analysts and Portuguese stocks could arise not only because of the closeness of information but also because the number of Portuguese stocks is small. Alternatively, the positive returns of Portuguese stocks' recommendations may also be related to the relative inefficiency of the Portuguese stock market and to slower dissemination of information.

Tables 4.3 and 4.4 show the results for the non-Portuguese stocks subsamples. Trading strategies based on the recommendations for Other European and American stocks have negative abnormal returns (Tables 4.3 and 4.4, respectively). The 1-year and 2-years holding-periods investments on Other European stocks yield very large negative annual abnormal returns, and none of the recommended stocks earns positive excess returns with a 2-year holding-period trading strategy. For shorter holding-periods, we observe mixed and statistically insignificant results. Trading strategies for American stocks also have negative abnormal returns for holding periods greater than 6 months, and none of the recommended stocks earns positive excess returns over a 2-year holding-period trading strategy. Again, any value of the recommendation is rapidly eroded on the publication day. Surprisingly,

given that this should be a non-event, there is a significant positive impact on stock prices for American stocks when recommendations are published.

Table 4.3 – Recommendations-based Strategies performance – Other non-Portuguese European Stocks

The table presents, the buy-and-hold average annualised abnormal returns (HPAR) and t-statistics of Other European stocks-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	47	0,35 %	1,01	87,50 %	59,57 %
1 – 3	47	-0,65 %	-1,01	-54,17 %	42,55 %
1 – 10	47	0,13 %	0,12	3,25 %	55,32 %
1 – 25	44	-0,60 %	-0,34	- 6,00 %	47,73 %
1 – 125	34	-3,13 %	-0,61	- 6,26 %	44,12 %
1 – 250	16	-15,71 %	-2,29[**]	-15,71 %	37,50 %
1 – 500	4	-33,37 %	-7,03[***]	-16,69 %	0,00 %

[**] Statistically significant at the 5% level.
[***] Statistically significant at the 1% level.

Table 4.4 – Recommendations-based Strategies performance – American Stocks (investments in USD)

The table presents, the buy-and-hold average annualised abnormal returns (HPAR) and t-statistics of American stocks-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	51	1,87 %	3,50[***]	467,50 %	66,67 %
1 – 3	51	-1,02 %	-1,14	-85,00 %	45,10 %
1 – 10	51	-2,34 %	-1,65	-58,50 %	43,14 %
1 – 25	51	-3,32 %	-1,45	-33,20 %	49,02 %
1 – 125	42	-21,79 %	-5,11[***]	-43,58 %	23,81 %
1 – 250	34	-33,95 %	-6,63[***]	-33,95 %	14,71 %
1 – 500	8	-43,55 %	-7,37[***]	-21,78 %	0,00 %

[***] Statistically significant at the 1% level.

Looking at the European investors' perspective, any currency gains/losses (valuation/devaluation of the dollar against the euro) should to be taken into account.

We ignore the USD brokerage commissions received by the investment bank paid by investors to buy/sell foreign currency (€10 per quarter). The modified abnormal return, MHPART, is now written as:

$$MHPAR_T = HPAR_T +/- \text{Currency Gain/Loss}_T \qquad (4.1)$$

The USD/EUR performance was positive in 1999 and 2000, virtually flat in 2001 and negative in 2002 and 2003. As the number of recommendations increased in the most recent years, and because we assume that one invest the same amount in each recommendation (a simple arithmetic average), the more recent years have more weight in the average abnormal returns' calculation. As the dollar devaluated in the most recent years, the (euro) abnormal returns in Table 4.5 are even more negative. The best trading strategy assumed a 2-years horizon, registering annualised abnormal returns of -25.42 percent.

Table 4.5 – Recommendations-based Strategies performance – American stocks (investments in EUR)

The table presents, the buy-and-hold average annualised abnormal returns in Euros (HPAR) and t-statistics of the American stocks-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	$HPAR_T$	t-Statistic	$HPAR_T$ (a.p.)	Positive (%)
0	51	1,87 %	3,57[***]	467,50 %	66,67 %
1 – 3	51	-1,02 %	-1,10	-85,00 %	43,14 %
1 – 10	51	-2,48 %	-1,77[*]	-62,00 %	43,14 %
1 – 25	51	-4,55 %	-1,97[**]	-45,50 %	41,18 %
1 – 125	42	-26,23 %	-5,85[***]	-52,46 %	19,05 %
1 – 250	34	-45,60 %	-8,68[***]	-45,60 %	8,82 %
1 – 500	8	-50,84 %	-8,99[***]	-25,42 %	0,00 %

[*] Statistically significant at the 10% level.
[**] Statistically significant at the 5% level.
[***] Statistically significant at the 1% level.

4.2 Analysis by Year of Publication

The three and a half years sample period includes a 3-year bear market (one of the longest bear markets in the history of world stock markets). We checked the recommendations-based strategies performance over that period. Tables B1 to B5 in appendix B show the results for each year in the sample period. The six recommendations published until April 2000, a short period of time marked by the highest peaks of the speculative stock market bubble, had, on average, a negative performance regardless of the holding-period. Even short-term horizons (25-days holding-periods or shorter), that could have permited investors to lock their gains before the beginning of the bear market, show negative abnormal returns. Results are similar for the years 2000, 2001, 2002 and 2003: all trading strategies show negative abnormal returns. Again there are positive excess returns in the event day.

The performance of our trading strategies is consistently negative along the sample period. Our results in 2000 and 2001 are similar to Barber et. al. (2003), who found that «after a string of years in which security analysts' top stock picks, significantly outperformed their pans, (…) during the years 2000 and 2001, the stocks least favoured by analysts earned an average annualised market-adjusted return of 13.44 percent whereas the stocks most highly recommended underperformed the market by 7.06 percent, a return difference of more than 20 percentage points». In our study, the negative performance is also observed for the years 2002 and 2003.

4.3 TMT vs. Non-TMT

We further divided the sample in two sub-samples: 67 TMT stocks that belong to Telecommunications, Media and Technology sectors (Table 4.6) and the remaining 72 Non-TMT stocks that belong to other sectors (Table 4.7).

We first use the usual benchmark to compute abnormal returns, the MSCI World Index.

Table 4.6 – Recommendations-based Strategies performance – TMT stocks

The table presents, the buy-and-hold average annualised abnormal returns (HPAR) and t-statistics of TMT stocks-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	$HPAR_T$	t-Statistic	$HPAR_T$ (a.p.)	Positive (%)
0	67	1,28 %	2,36**	320,00 %	64,18 %
1 – 3	67	-1,17 %	-1,42	-97,50 %	41,79 %
1 – 10	67	-1,85 %	-1,41	-46,25 %	47,76 %
1 – 25	66	-2,99 %	-1,39	-29,90 %	51,52 %
1 – 125	59	-18,67 %	-4,32***	-37,34 %	33,90 %
1 – 250	46	-37,51 %	-10,09***	-37,51 %	6,52 %
1 – 500	16	-34,36 %	-5,54***	-17,18 %	12,50 %

** Statistically significant at the 5% level.
*** Statistically significant at the 1% level.

TMT stocks trading strategies show annual negative market-adjusted returns that range from -17.18 percent to -97.5 percent. Only the long-term holding period returns are statistically significant. Non-TMT stocks' recommendations-based strategies show better results than TMT stocks, although they are still negative (and not statistically significant). Our results are similar to Barber et al. (2003), who find a worst performance of tech-stocks recommendations, in the years 2000 and 2001.

Table 4.7 – Recommendations-based Strategies performance – Non-TMT stocks

The table presents, the buy-and-hold average annualised abnormal returns (HPAR) and t-statistics of non-TMT stocks-based strategies over several holding periods. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	$HPAR_T$	t-Statistic	$HPAR_T$ (a.p.)	Positive (%)
0	72	0,47 %	1,71*	117,50 %	51,39 %
1 – 3	72	-0,80 %	-1,80*	-66,67 %	44,44 %
1 – 10	72	-0,75 %	-1,00	-18,75 %	48,61 %
1 – 25	70	-1,08 %	-0,95	-10,80 %	45,71 %
1 – 125	55	-3,46 %	-1,37	- 6,92 %	38,18 %
1 – 250	30	0,73 %	0,19	0,73 %	46,67 %
1 – 500	15	-2,34 %	-0,37	- 1,17 %	40,00 %

* Statistically significant at the 10% level.

We repeat the analysis for the TMT sub-sample using another benchmark, the Nasdaq 100, to control for the historically higher volatility and risk of these stocks. Table 4.8 shows the results.

Table 4.8 – Recommendations-based Strategies performance – TMT stocks (Nasdaq 100 as the benchmark)

The table presents, the buy-and-hold average annualised abnormal returns (HPAR) and t-statistics of TMT stocks-based strategies over several holding periods, using NASDAQ 100 as the benchmark market return. The last column shows the percentage of profitable recommendations.

Days	Nº of Recommendations	$HPAR_T$	t-Statistic	$HPAR_T$ (a.p.)	Positive (%)
0	67	1,27 %	2,56**	317,50 %	71,64 %
1 – 3	67	-0,82 %	-1,00	-68,33 %	46,27 %
1 – 10	67	0,02 %	0,01	0,50 %	50,75 %
1 – 25	66	1,22 %	0,55	12,20 %	62,12 %
1 – 125	59	-5,71 %	-1,62	-11,42 %	44,07 %
1 – 250	46	-14,83 %	-3,94***	-14,83 %	30,43 %
1 – 500	16	3,22 %	0,53	1,61 %	43,75 %

** Statistically significant at the 5% level.
*** Statistically significant at the 1% level.

The results are mixed: some trading strategies provide positive results, while others provide negative results. The only statistically significant performance (at the 1 percent level) is obtained by a 1-year trading strategy and yields negative returns of -14.83 percent. Thus, after controlling for the TMT industry performance, we cannot clearly say that TMT investment recommendations yielded a bad performance by itself.

4.4 The Impact of Transaction Costs

One of the advantages of our trading strategies is the inexistence of portfolio rebalancing allowing a small turnover ratio, and thus transactions costs. We only consider the impact of explicit transaction costs, ignoring the implicit costs (liquidity premium, impact on stock prices and opportunity costs).

The total explicit cost of a transaction in Euronext Lisbon is 0.12 percent of the investment, while the total costs of a transaction in other European or American markets is 0.3 percent of an investment[11]. If we consider round trip transactions (buy and sell), the total transaction costs of an investment in the Euronext Lisbon is 0.24 percent, while the total transaction costs of an investment in other European or American markets is 0.6 percent of the investment. As we can see, the transactions costs of our trading strategies are small. However, these small transaction costs may turn some strategies to the red line (specially the short-term horizons).

Another "cost" that should be considered is the Capital Gains Tax[12].

---

[11] The explicit total transactions costs were calculated by summing the investment bank's trading commissions (0.10 percent for trading in Euronext Lisbon and 0.2 percent for the remaining European and North American stock markets, according to the pricelist of the investment bank), the stock market commissions and taxes (0.02 percent for transactions in Euronext Lisbon and 0.1 percent in the remaining European and North American stock market).

[12] In the Portuguese stock market, if the capital gain is obtained from a 12-month (or higher length) stock investment then this gain is exempt from taxes. But if the capital gain is a return of a shorter length stock investment then the gains are subject to taxes. As a result, we would have a tax advantage for the longer-term strategies (250 and 500 days).

5. Summary and Conclusions

The main purpose of this study is to evaluate the performance of trading strategies based on the recommendations of a Portuguese investment bank research department. Our results show that the performance of these recommendations-based strategies is negative in most cases, regardless of the investment horizon. We also find a positive significant return on the day the recommendations are published. This positive impact is partially consistent with market efficiency and supports that analysts have forecasting skills. Yet the negative performance observed for recomendations-based strategies is puzzling and suggests that, from the investors (and asset managers)' point of view, these recommendations are useless.

The analysis of the Portuguese stock' recommendations sub-sample shows that the analysts' recommendations appear to be more effective for selection of Portuguese stocks. These results suggest that there may exist some kind of "home advantage" explaining the higher performance of Portuguese stock' recommendations-based strategies relative to the one observed for foreign stock' recommendations. Alternatively, these results may reflect that the Portuguese market is relatively less efficient.

Evidence of profitable stock picking strategies on the basis of analysts' recommendations may provide insights on the value of analyst recommendations and have implications in terms for market efficiency and on the value of active management. Yet, in the case of the present work, results only inform on the value of this particular research team and on the effectiveness of the strategies based on their recommendations.

Appendix A

STOCKS' CLASSIFICATION BY INDUSTRY

Stock	Industry		Stock	Industry
3 Com	TMT		KPN	TMT
Amgen	Other		Lafarge	Other
Alcatel	TMT		Lagardère	TMT
Allianz	Other		Lucent Tech.	TMT
AOL	TMT		Merck	Other
Apple	TMT		Microsoft	TMT
Aventis	Other		Nokia	TMT
Axa	Other		Nvidia	TMT
Banco Popular	Other		Palm	TMT
BASF	TMT		Pepsi Co	Other
BMW	Other		Peugeot	Other
BNP Paribas	Other		Pfizer	Other
BPI	Other		Portucel	Other
BPSM	Other		Portugal Telecom	TMT
Brisa	Other		PT Multimédia	TMT
Ciena	TMT		Royal Dutch	Other
Cimpor	Other		SAG	Other
Cisco	TMT		Santander	Other
Citigroup	Other		SAP	TMT
Coca Cola	Other		SBC Communications	TMT
Cofina	Other		Schering-Plough	Other
Deutsche Telecom	TMT		Siebel	TMT
E.On	Other		Sogecable	TMT
EDP	Other		SONAE	Other
France Telecom	TMT		Telecel	TMT
Honeywell Int	Other		Telefónica	TMT
IBM	TMT		Terra Networks	TMT
Impresa	TMT		Verizon	TMT
ING Groep	Other		Vivendi Universal	TMT
Intel	TMT		Volkswagen	Other
JDS Uniphase	TMT		Wyeth	Other
Jerónimo Martins	Other		Yahoo	TMT
Juniper Networks	TMT			

Appendix B

ADDITIONAL TABLES

Table B1 – Recommendations-based Strategies performance in1999-April 2000

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	6	2,60 %	1,05	650,00 %	50,00 %
1 – 3	6	-1,94 %	-0,66	-161,67 %	33,33 %
1 – 10	6	-2,72 %	-0,57	-68,00 %	50,00 %
1 – 25	6	-5,40 %	-0,78	-54,00 %	50,00 %
1 – 125	5	-17,85 %	-1,89[*]	-35,70 %	40,00 %
1 – 250	5	-33,72 %	-4,44[***]	-33,72 %	0,00 %
1 – 500	5	-28,59 %	-2,60[**]	-14,30 %	20,00 %

[*] Statistically significant at the 10% level.

[**] Statistically significant at the 5% level.

[***] Statistically significant at the 1% level.

Table B2 – Recommendations-based Strategies performance in May 2000-December 2000

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	15	1,45 %	0,90	362,50 %	53,33 %
1 – 3	15	-0,62 %	-0,24	- 51,67 %	66,67 %
1 – 10	15	-4,75 %	-1,25	-118,75 %	40,00 %
1 – 25	15	-0,23 %	-0,06	- 2,30 %	60,00 %
1 – 125	15	-22,81 %	-2,51[**]	- 45,62 %	40,00 %
1 – 250	15	-31,37 %	-3,71[***]	- 31,37 %	20,00 %
1 – 500	15	-21,73 %	-2,56[**]	- 10,87 %	26,67 %

[**] Statistically significant at the 5% level.

[***] Statistically significant at the 1% level.

Table B3 – Recommendations-based Strategies performance –2001

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	37	1,30 %	2,25**	325,00 %	70,27 %
1 – 3	37	0,17 %	0,27	14,17 %	45,95 %
1 – 10	37	-0,96 %	-0,70	-24,00 %	40,54 %
1 – 25	37	-0,61 %	-0,26	- 6,10 %	54,05 %
1 – 125	37	-7,15 %	-1,73*	-14,30 %	37,84 %
1 – 250	37	-13,51 %	-2,59***	-13,51 %	35,14 %
1 – 500	11	-10,53 %	-1,36	- 5,27 %	27,27 %

* Statistically significant at the 10% level.

** Statistically significant at the 5% level.

*** Statistically significant at the 1% level.

Table B4 – Recommendations-based Strategies performance –2002

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	66	0,45 %	1,48	112,50 %	54,55 %
1 – 3	66	-1,52 %	- 2,46**	-126,67 %	39,39 %
1 – 10	66	-0,56 %	- 0,61	- 14,00 %	56,06 %
1 – 25	66	-3,09 %	-1,75*	- 30,93 %	45,45 %
1 – 125	57	-10,43 %	- 2,79***	- 20,86 %	33,33 %
1 – 250	20	-27,80%	- 5,03***	- 27,80 %	10,00 %

* Statistically significant at the 10% level.

** Statistically significant at the 5% level.

*** Statistically significant at the 1% level.

Table B5 – Recommendations-based Strategies performance –2003

Days	Nº of Recommendations	HPAR$_T$	t-Statistic	HPAR$_T$ (a.p.)	Positive (%)
0	15	0,25 %	0,44	62,50 %	46,67 %
1 – 3	15	-1,38 %	-1,87[**]	-115,00 %	33,33 %
1 – 10	15	-1,22 %	-0,75	-30,50 %	40,00 %
1 – 25	12	-0,85 %	-0,43	- 8,50 %	33,33 %

[**] Statistically significant at the 5% level.

References

- **Barber**, B., R. Lehavy, M. McNichols e B. Trueman, 2001, Can Investors Profit from the Prophets? Consensus Analyst Recommendations and Stock Returns, *The Journal of Finance* 56 (2), 531-563.
- **Barber**, B., R. Lehavy, M. McNichols e B. Trueman, 2003, Reassessing the Returns to Analysts' Stock Recommendations, *Financial Analysts Journal* 59 (2), 88-96.
- **Bjerring**, J., J. Lakonishok e T. Vermaelen, 1983, Stock Prices and Financial Analysts' Recommendations, *The Journal of Finance* 38 (1), 187-204.
- **Brown**, S. e J. Warner, 1985, Using Daily Stock Returns: The Case of Event Studies, *Journal of Financial Economics* 14, 3-31.
- **Campbell**, J., A. Lo e A. MacKinlay, 1997, *The Econometrics of Financial Markets* (Princeton University Press).
- **Coval**, J. and T. Moskowitz, 1999, Home Bias at Home: Local Equity Preference in Domestic Portfolios, *The Journal of Finance* 54 (6), 2045-2073.
- **Cowles**, A., 1933, Can Stock Market Forecasters Forecast?, *Econometrica* 1.
- **Desai**, H. e P. Jain, 1995, An Analysis of the Recommendations of the "Superstar" Money Managers at Barron's Annual Roundtable, *The Journal of Finance* 50 (4), 1257-1273.
- **Desai**, H., B. Liang e A. Singh, 2000, Do All-Stars Shine? Evaluation of Analyst Recommendations, *Financial Analyst Journal* 56 (3), 20-29.
- **Dimson**, E. and P. Marsh, 1984, An Analysis of Broker' and Analysts ' Unpublished forecasts of UK Stock Returns, *The Journal of Finance* 39 (5), 1257-1292.
- **Fama**, E., 1970, Efficient Capital Markets: A Review of Theory and Empirical Work, *The Journal of Finance* 25, 383-417.
- **Fama**, E. and K. French, 1993, Common Risk Factors in The Returns on Stocks and Bonds, *Journal of Financial Economics* 33, 3-56.
- **Gruber**, M., 1996, Another Puzzle: The Growth in Actively Managed Mutual Funds, *The Journal of Finance* 51 (3), 783-810.
- **Jaffe**, J.F. e J.M. Mahoney, 1999, The Performance of Investment Newsletters, *Journal of Financial Economics* 53, 289-307.
- **Wermers**, R., 2000, Mutual Fund Performance: An Empirical Decomposition into Stock-Picking Talent, Style, Transaction Costs, and Expenses, *Journal of Finance* 55 (4), 1655-1695.
- **Womack**, K., 1996, Do Brokerage Analysts' Recommendations Have Investment Value?, *The Journal of Finance* 51 (1), 137-167.