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INFORMATIVE VALUE OF EQUITY ANALYST RECOMMENDATIONS IN INDIA

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Abstract

This research paper examined the informative value of equity analyst recommendations in the Indian stock market. The informative value was analysed by assessing the significance of abnormal stock returns, subsequent to the release of analyst recommendations. The results showed that analyst recommendations resulted in statistically significant stock price impact, which sustains over a period of at least six months, after the recommendations. Hence analyst recommendations are informative and contribute towards making the stock market more efficient by bringing new information. However, the stock price impact was asymmetric, being greater in the case of sell recommendations, which indicated that at least the informed investors were aware of the optimism bias in the distribution of analyst recommendations.

Keywords: Stock Analysts, Indian Stock Market, Behavioural Finance, Event Study

JEL Classifications: G11, G14

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1. Introduction

Stock analysts provide investment recommendations to the investors. There are two preconditions for the success of these recommendations. One, stocks must be adequately mispriced to offer 'windows of opportunity' to earn abnormal returns. Two, the stock analysts must possess superior ability to identify the mispriced stocks. The Efficient Market Hypothesis (EMH) and the behavioural

finance theories, offer different predictions for the relevance of stock recommendations. According to the EMH, stock prices must instantaneously and fully reflect all available information (**Fama, 1970**). Thus, EMH precludes any opportunity to identify mispriced stocks and hence does not support the proposition that analyst recommendations can be used to earn abnormal returns. On the other hand, behavioural finance theories argue that

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stocks may be persistently mispriced, given the behavioural biases of the investors and the arbitrage constraints (**Barberis and Thaler, 2003**). The differing viewpoints, between the behavioural theories and the EMH, motivated empirical investigation into the relevances of equity analysts' research. One aspect of the usefulness is informative value, that is, whether analyst recommendations provide new information to the stock market, thus enabling stock markets to become more efficient. The other aspect of usefulness is predictive value, that is, whether analyst recommendations predict stock prices and can, therefore, help investors earn buy-and-hold returns. The informative value of stock analyst recommendations is consistent with the EMH in its weak form but the predictive value is inconsistent with the EMH. This research paper examined the informative value of analyst recommendations in India. Though there has been previous research, studying the stock price impact of analyst recommendations, this is the first research paper to use an extensive sample of around 30,000 recommendations, to investigate the usefulness of analyst research in the Indian stock market.

2. Review of Literature

Empirical research, largely focused on the US and other developed markets, has provided ambiguous evidence of the usefulness of equity research. Several studies have shown that analyst recommendations result in an immediate stock price impact, without subsequent mean reversion. However, there is limited evidence of holding period returns, after considering the transaction costs.

For example, **Stickel (1995)** analysed the impact of analyst recommendations, up to 120 days for US, using the data during 1988 to 1991. Measuring Cumulative Average Abnormal Returns (CAAR), using market returns by size deciles as benchmark, he found returns at -0.80 per cent and 0.90 per cent, in response to sell and buy recommendations respectively, over a period of 10 days after the recommendation.

Womack (1996) also studied the impact for US, using the data during 1989 to 1991. Measuring buy and hold abnormal returns (BHAR), using market returns by size as benchmark, he found returns of nearly three per cent around the event (three days around the event from one day before to one day after the event), in the case of buy recommendations and -4.7 per cent in the case of sell recommendations. Using data, over a longer period for US, during 1985 to 1996, **Barber et al. (2001)** reported three day returns around the event, between 0.6 per cent and 1.5 per cent, in the case of upgrades and between -3.0 and -0.6 per cent in the case of downgrades. Using data for US market, for the period 1993 to 2006, **Loh and Stulz (2011)** measured buy and hold abnormal returns (BHAR), three days around recommendation changes. After removing the effect of outliers and recommendation changes that coincided with earnings announcements, they reported BHAR of approximately 1.2 per cent in the case of maximum upgrade and -1.3 per cent in the case of maximum downgrade. With respect to buy and hold strategies, however, **Barber et al. (2001)** found that the abnormal returns were not adequate, to cover the estimated transaction costs involved in implementing a trading strategy, in the US market of buying the highest rated stocks and selling the lowest rated stocks, based on analyst recommendations. Other empirical research revealed that analysts are vulnerable to behavioural biases such as overconfidence and self-attribution (**Daniel, Hirshleifer and Subrahmanyam, 1998**), style preferences (**Jegadeesh, Kim, Krische and Lee, 2004**) and herding (**Trueman, 1994; Welch, 2000**). Moreover, there is enough evidence that the research objectivity of stock analysts could be affected by conflicts of interest, as documented by **Dugar and Nathan (1995)** and **Lin and McNichols (1998)**.

The evidence from empirical research provides a mixed picture, regarding the usefulness of analyst activity. However, much

of the empirical research is focussed on the developed markets and there are fewer studies that examined the value of analyst activity in the emerging markets.

3. Statement of the Problem

The stock analysts are assumed to have significant advantages, over investors, due to their specialisation: an information advantage since they collect data actively from multiple sources and an information processing advantage, by virtue of their focus, skills and experience. However, the stock market is also very competitive and trading activity continuously incorporates new information into stock prices. In this context, do analyst recommendations add new information to the stock prices?

4. Objectives of the Study

This study aimed at finding whether analyst recommendations have informative value in the Indian stock market, in an emerging markets context. The research was empirical in nature and it was based on an event study of stock price returns in India, following stock analyst recommendations. The emerging market context was of relevance since previous research in this area had focussed mainly on the developed markets.

5. Hypothesis of the Study

The informative value of analyst recommendations should become apparent in the stock price impact immediately, following the release of analyst recommendations. Strong price impact would suggest that the analyst recommendations did provide new information to the markets. Conversely, absence of statistically significant price impact, would suggest that the recommendations did not convey valuable information.

NH1: Analyst recommendations do not have an impact on stock prices.

6. Methodology

Stock price impact of analyst recommendations was estimated by using a short

term event study methodology. The relevant events in this case were the release of analyst recommendations and the variable to be measured was the abnormal stock returns, subsequent to the release of the recommendations. The methodology involved the estimating of Buy-and-Hold Abnormal Returns (BHAR), for cross-section of securities, categorized by analyst recommendations. The test of the hypothesis was based on the significance of BHAR, around the release of the recommendation. Further, informative value implies that the stock price impact should be permanent and there should be no reversal in the abnormal stock returns. Hence the test of the hypothesis also included confirmation of no statistically significant reversal, in abnormal return, over the post-recommendation period.

6.1 Sample Selection

The sample consisted of historical recommendations issued, for 200 actively traded companies (constituents of BSE 200 index), for a period of five years.

6.2 Data Collection

Broker-specific recommendations were sourced for each company, for a sample of 28 leading brokers, including a mix of domestic and foreign brokers (**Table-1**). The recommendations were collected from the broker websites, broker reports or summaries of the reports uploaded on aggregator **websites of myiris.com and reuters.com**. This provided a total of 29,325 stock recommendations.

6.3 Period of the Study

The study was based on broker recommendations, issued during the five year period, from April 2009 to March 2014.

6.4 Tools used in the Study

Analyst recommendations (RECO) were translated into an interval scale of 1 to 5, where 5 was the most favourable recommendation and 1 was the least favourable recommendation.

However, since some of the brokers used a 3-point rating scale, homogenisation between scales was achieved by grouping together the highest two levels (4 and 5) as Buy Category and the lowest two levels (1 and 2) as Sell Category. Revisions in analyst recommendations were categorized as Upgrades (UP), Downgrades (DN), or Reaffirmations (REAFF), depending upon the direction of change in recommendation. **Table-2** provides the details of transition of recommendations between various levels. As is evident from the Table, there was a strong optimism bias, in the distribution of

recommendations, with a high proportion of favourable recommendations (levels 5 and 4) in comparison with unfavourable recommendations (levels 1 and 2). Following **Womack (1996)** and **Barber et al (2001)**, each event was defined as the release of a RECO and the event date t was taken in the interval $(-1 \text{ to } 1)$, that is from one day before to one day after the RECO date, in order to take into account imprecision in data regarding exact time of recommendation release and the possibility of leakage of information prior to the formal release.

6.5 Estimation of Abnormal Returns and Hypothesis Tests

The methodology involved the estimating of buy-and-hold abnormal returns (BHAR), for a cross-section of securities, categorized by RECOs as outlined below. First, the abnormal return on each security i was estimated by decomposing the total return R_{it} into an expected component and an unexpected component or abnormal return (AR_{it}). Return on a matched reference portfolio (R_{bt}) was used as a proxy for the expected component of return. Nine reference portfolios were formed by dividing the 200 sample stocks into three categories each, based on size (market capitalisation) and value (ratio of book value to market capitalisation). For this purpose, the stocks were sorted in descending order first by size and divided into three categories. For forming both size and value categories, 30 and 70 percentile cut-offs were used. The abnormal return (AR_{it}) for each event stock was then derived by subtracting R_{bt} from R_{it} .

$$AR_{it} = R_{it} - R_{ibt} \quad (1)$$

The cumulative return for each security, $BHAR_{it}$, was then estimated over a holding period t from t_1 to t_2 as follows.

$$BHAR_{it} = \prod_{t=t_1}^{t=t_2} (1 + R_{it}) - \prod_{t=t_1}^{t=t_2} (1 + R_{bt}) \quad (2)$$

For the event date, t_1 and t_2 were taken as -1 day and $+1$ day respectively whereas the post-event holding period was m trading days, where values for m were taken in multiples of 21 days up to 126 days, since 21 trading days approximately corresponds to a month and 126 trading days approximately corresponds to six months. For a cross-section of N securities belonging to a portfolio, cross-sectional mean abnormal return ($BHAR_p$), over the holding period, was then estimated.

$$BHAR_p = \frac{1}{N} \sum_{i=1}^N BHAR_{it}; \text{ where, } i = 1 \text{ to } N \text{ events in recommendation category } p \quad (3)$$

The above equation was estimated by forming separate portfolios of stocks belonging to Buy, Hold and Sell categories as well as for Upgrades and Downgrades revision categories. For each portfolio, the null hypothesis that BHAR is equal to 0, was tested by using the test-statistic J_1 as follows:

$$J_1 = \frac{BHAR_p}{\sigma(BHAR_{it}) / \sqrt{N}} \quad (4)$$

J_1 was estimated over the event as well as the various post-event periods (m of 21 to 126 days). A non-parametric rank test (**Corrado, 1989**) was used to validate the results. The first step in the rank test is to estimate the rank of abnormal returns K_{it} of each security for each day in the event window of length L days from 1 to L . The test then involves comparing K_{i0} on the event day with its expected value $\bar{K}_i = 0.5 + L/2$. The test statistic J_2 is, therefore, given by:

$$J_2 = \frac{\frac{1}{N} \sum_{i=1}^N (K_{it} - \bar{K}_i)}{s(\bar{K})} \quad (5)$$

$$\text{where, } s(\bar{K}) = \sqrt{\frac{1}{L} \sum_{i=1}^L \frac{1}{N^2} \sum_{i=1}^N (K_{it} - \bar{K}_i)^2} \quad (6)$$

7. Analysis and Discussion

The results of the analysis are presented in **Table-3**. The results have been reported, based on the transition from previous RECO for the same firm by the same broker. For example, a (Buy to Buy) event would be a reaffirmation of a buy recommendation for the same firm by the same broker whereas a (Hold to Buy) event would be an upgrade from a Hold to a Buy recommendation. Further, the results were averaged across all Buy, Hold and Sell recommendations as well as across all upgrades and downgrades. The results show that both upgrades and downgrades had an impact on stock returns, at 0.70 per cent and -0.92 per cent respectively, which was statistically significant ($p < 0.05$), as confirmed by both the parametric test-statistic J_1 and non-parametric test-statistic J_2 . As expected, the impact of reaffirmations (Buy to Buy, Hold to Hold and Sell to Sell) was lesser than that in the case of recommendation changes. The magnitude of the abnormal return was greater in the case of Sell recommendations on an average (-0.61 per cent) than in the case of Buy recommendations (0.24 per cent). Further, even Hold recommendations resulted in statistically significant negative stock price impact (-0.33 per cent). The behaviour of post-

recommendation returns, over the period, up to six months, are shown in **Figure-1** and **Figure-2**. The long term BHAR, shown in **Figure-1**, are incremental to those for hold recommendations, while the BHAR, shown in **Figure-2**, are incremental to those for reaffirmations. The figures show that there was no reversal in the buy-and-hold abnormal returns over a period of six months after the event, thus confirming the permanence of the informative value. Cumulatively, the results showing significance of the test-statistics J_1 and J_2 and the permanence of the stock price impact, lead to the rejection of the null hypothesis that analyst recommendations have no stock price impact.

8. Findings and Suggestions

The key finding of this research was that analyst recommendations did have a statistically significant price impact. Recommendation changes signal new information to the investors and consequently, they were found to result in the stock price impact. Reaffirmations of the same recommendations were found to be less informative. The market reaction to analyst recommendations was found to be asymmetric. The greater magnitude of event day return, in response to 'Sell' than to 'Buy' and the negative return, in response to 'Hold' recommendations, indicate that at least the informed investors were

aware of analysts' optimism and adjusted their reactions for the bias. These results are also consistent with other studies including **Stickel (1995)**, **Womack (1996)**, **Barber et al. (2001)** and **Loh and Stulz (2011)**. Based on the findings, two suggestions could be made for the benefit of the investors. Firstly, they should consider whether a recommendation is an upgrade or a downgrade since recommendation changes are more informative than reaffirmations. Secondly, the less informed investors, especially the retail investors, should be made aware of the likelihood of optimism bias in analyst recommendations and hence should make a considered judgement about the stock and not rely entirely on analyst recommendations.

9. Limitations of the Study

In this research, only those stocks were considered that had continuous analyst coverage. The universe of such stocks in the Indian stock market being limited, the sample size was restricted to 200, which was statistically representative of stocks that were actively traded and regularly covered by analysts. Though the sample size was adequate for hypothesis testing and the sample represented more than 70 per cent of the analyst recommendations in India, the results may not hold for small capitalization stocks which were sparsely covered by analysts.

10. Conclusion

This research paper investigated whether stock analyst recommendations in India are useful, by examining whether they incorporated new information in the stock prices. The analysis of stock price behavior, following analyst recommendations, clearly established that analyst views in Indian stock market did have informative value. The change in stock price around the event date was statistically significant and there was no reversal in the same, up to six months, after the event. This conclusion is consistent with the efficient market hypothesis.

It establishes that analysts enable market efficiency by providing investors incremental information and by processing available information, forecasting firms' cash flows and estimating intrinsic values of stocks. As anticipated, upward or downward revisions in ratings had a higher impact than reaffirmations. The magnitude of price change, immediately following the event, was higher for 'Sell' recommendations than for 'Buy' recommendations. In fact, even 'Hold' recommendations had a statistically negative impact around the event date. This asymmetry in price impact could be attributed to the fact that a large proportion of the recommendations were 'Buy' while a very small proportion was 'Sell'. Since the informed investors are expected to be aware of the skew and its diluting effect on the value of 'Buy' recommendations, they would be expected to show lower response to buy ratings than to sell ratings. The influential role of the informed investors on stock trades may, therefore, explain the asymmetric market price response.

11. Scope for Further Research

Further research is suggested in studying the impact of stock recommendations in the case of smaller capitalization stocks and comparing the stock price impact by size and other characteristics. This would extend the analysis to segmentation of the stock market, based on stock characteristics and deepen the understanding of the value provided by analysts in different segments.

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Table 1: Sample Size: Broker-wise Recommendations

S. No.	Broker/Investment Bank	RECOs	S. No.	Broker/Investment Bank	RECOs
1	Anand Rathi Securities	750	15	HDFC Securities	409
2	Angel Broking	2,909	16	HSBC Securities	344
3	Axis Capital	1,671	17	ICICI Securities	1,534
4	Barclays	556	18	India Infoline	1,318
5	Bank of America Merrill Lynch	791	19	JP Morgan	1,318
6	Citigroup	540	20	Kotak Securities	735
7	CLSA	641	21	Morgan Stanley	736
8	Credit Suisse	340	22	Motilal Oswal	1,537
9	Deutsche Securities	1,288	23	Nirmal Bang	1,125
10	Edelweiss Securities	2,018	24	Nomura Securities	1,217
11	Emkay	2,243	25	Prabhudas Liladhar	1,014
12	Espirito Santos	443	26	Sharekhan Securities	2,359
13	Firstcall	499	27	Standard Chartered Securities	236
14	Goldman Sachs	483	28	UBS Securities	271

Source: Broker websites, www.myiris.com, www.reuters.com

Table-2: Recommendations: Transition Statistics

From\To	Recommendations					Aggregate Transitions			
	5 (Best)	4	3	2	1 (Worst)	RE	UP	DN	Total
5 (Best)	9,202	404	882	20	107	9,202	-	1,413	10,615
4	397	2,064	416	79	17	2,064	397	512	2,973
3	912	370	4,873	63	362	4,873	1,282	425	6,580
2	16	77	66	359	41	359	159	41	559
1 (Worst)	128	24	326	28	1,558	1,558	506	-	2,064
Total	10,655	2,939	6,563	549	2,085	18,056	2,344	2,391	22,791
Others ^a	3,210	549	1,694	163	918				6,534
All Recos	13,865	3,488	8,257	712	3,003				29,325

Note. RE: Reaffirmations, UP: Upgrades, DN: Downgrades, Recos: Recommendations

^a Recommendations whose previous transition history was not available

Source: Authors' calculations based on stock recommendations of 28 brokers

Table-3: Abnormal Returns around Recommendation Release

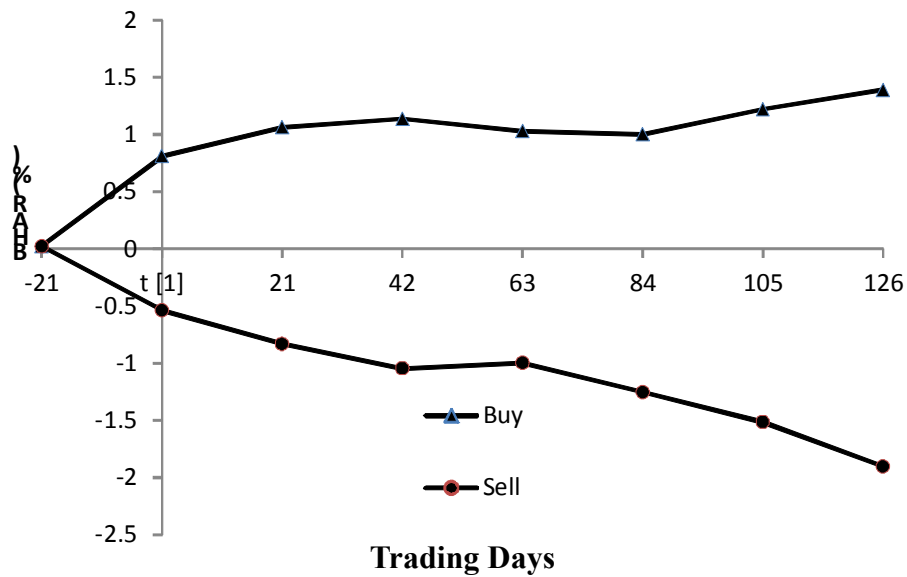
From		To		
		Buy (5 or 4)	Hold (3)	Sell (1 or 2)
Buy (5 or 4)	Abnormal Return	0.10%	-0.74%	-2.17%
	J1 (BHAR)	2.12 *	-4.51 **	-3.63 **
	J2 (rank test)	1.43	-2.98 **	-3.33 **
Hold (3)	Abnormal Return	0.81%	-0.33%	-1.42%
	J1 (BHAR)	5.88 **	-3.40 **	-4.27 **
	J2 (rank test)	3.20 **	-1.45	-3.04 **
Sell (1 or 2)	Abnormal Return	1.08%	0.62%	-0.34%
	J1 (BHAR)	2.64 **	2.46 *	-2.94 **
	J2 (rank test)	2.02 *	1.72 ~	-1.03
All Recommendations		Buy	Hold	Sell
	Abnormal Return	0.24%	-0.33%	-0.61%
	J1 (BHAR)	6.05 **	-4.79 **	-6.53 **
	J2 (rank test)	2.89 **	-2.65 **	-2.80 **
Recommendation Changes		Upgrades		Downgrades
	Abnormal Return	0.70%		-0.92%
	J1 (BHAR)	6.86 **		-7.09 **
	J2 (rank test)	2.99 **		-3.32 **

~ p value = 0.10, * p value = 0.05, ** p value = 0.01

Note. Abnormal return was measured over 3 days centered around the date of recommendation based on BHAR, with size and value matched portfolios as benchmark.

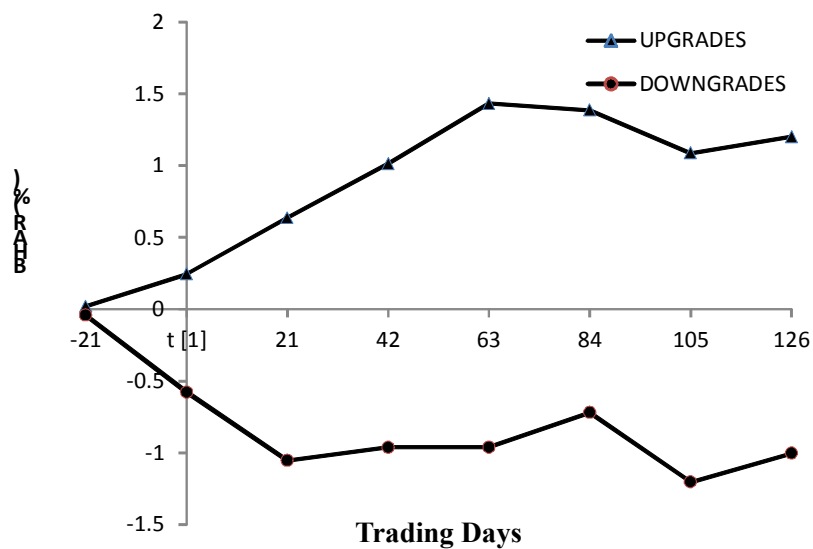
Source: Authors' calculations based on stock recommendations of 28 brokers

Figure - 1
Abnormal Returns on RECOs over Six Months



Source: Authors' calculations based on stock recommendations of 28 brokers

Figure - 2
Abnormal Returns on RECO Changes over Six Months



Source: Authors' calculations based on stock recommendations of 28 brokers