

Does 'sell' recommendation induce further bearishness? Empirical evidence from Indian Stock Markets

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Abstract

Stock analysts provide investors with recommendations of stocks that they track. Recommendations cover information and insights into particular companies the analyst follows with the intention of guiding investors to taking relevant investment decisions. This paper aims to analyse the impact of stock 'sell' recommendations from reputed foreign brokerage houses on stocks' returns using event study methodology. 100 firms listed on National Stock Exchange and Bombay Stock Exchange, which had 'sell' recommendations till March 31, 2016, were considered in this study. The stocks in the sample were further categorized into large cap, mid cap and small cap stocks. With reference to 'sell' recommendations, the impact of event study on average abnormal

returns was found to be negative and significant in the event period for mid cap stocks and positive and significant for small cap stocks. In terms of cumulative average abnormal returns, the impact of 'sell' recommendations was found to be negative but insignificant for all categories of stocks. The results indicate market inefficiency of mid and small cap stocks and are therefore, an addition to Indian capital market literature.

Keywords: *Sell Stock recommendation, event study, average abnormal returns, cumulative average abnormal returns*

JEL Classification: *G29, G14, G15, M41, M47*

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Introduction

Individual investors have access to an incredible variety of sources for investment guidance. These include the more traditional sources of information such as financial newspapers, magazines, newsletters, etc. There is the more sophisticated and costly option of engaging a financial advisor who may have CFP, CFA, Ph.D. or any other combination of professional designations. There are endless financial websites brimming with data and financial blogs providing opinions on every tradable security known to man. There is research presented in academic journals testing various investment strategies. And there is television, a super-convenient source of visio-centric information. The information is voluminous and sometimes becomes contrasting where if one source recommends buy/sell, the other has an altogether different opinion. Individual investors, in present times, face a deluge of news, opinions, recommendations, etc. Some sources of information are free and therefore accessible to all, thereby cancelling their advantage in terms of informational content. Some of the information sources are paid; for example, recommendations from brokerage houses. These are specifically recommended to clients where due diligence and reputation of the recommending agency is at stake. Such recommendations are charged and accessible only to the clients and therefore, may add value to the information requirement of investors for investment decision making.

Investment houses have financial professionals who constantly research investments and make 'buy' or 'sell' or 'hold' recommendations related to stocks. The investors could benefit from analysts' recommendations if they consider the price levels of recommendations across stocks, or if they pay attention to changes in recommendations. Normally these recommendations consist of detailed analysis including earnings forecast, valuation methods and target stock prices. These target prices provide market

participants with analysts' most concise and explicit statements on the magnitude of the firms' expected value. The investors in general rely on one word summary of the recommendation which may be in the form of 'buy' or 'sell' or 'hold'.

Analysts' recommendations depend upon a variety of causes like mergers and restructuring; unfriendly takeovers; leverage buyouts; new strategic directions and various other corporate actions which can also lead to changes in recommendations from time to time. A 'sell' recommendation implies that the firm is overvalued and its price is likely to decrease in the near future whereas a 'buy' recommendation implies that the investment house believes that the firm is undervalued and its price is likely to increase in the near future. The recommendations in general have an investment value, a notion that has been empirically supported by many researchers (Barber, Lehavy, McNichols, & Trueman, 2001; Jegadeesh & Kim, 2006; Stickel, 1995; Womack, 1996).

The efficient market hypothesis states that investors should not be able to trade profitably based on the information available, such as the analysts' recommendations, as markets react quickly to the information before any abnormal profits can be earned out of it. The strongest form of the Efficient Market Hypothesis (EMH) predicts that the analysts' recommendations would result in no adjustment at all whereas a weaker form allows the recommendation to carry information and predict that prices will adjust as soon as the analysts' clients have access to the information. Under this version, the investors purchase (sell) undervalued (overvalued) stocks in anticipation of abnormal returns. As long as the stock is undervalued (overvalued), investors continue to purchase (sell) till the information contained in the recommendations is completely reflected in the price. Studies conducted to typically examine the market reactions to specific kinds of announcements are

called event studies. These basically examine how fast stock prices adjust to specific significant economic events. A large group of similar announcements, for example, 'sell' recommendations are analysed using a statistical methodology that measures returns different from what would be expected given no new information. These returns are called abnormal returns. The magnitude of abnormal returns at the time of event is a measure of the impact of the event on the stock price. Over a short horizon, these studies show that abnormal returns imply an inconsistency of the event with market efficiency, but over a longer horizon, these show a consistency with market efficiency. The main objective of the event study methodology is to examine the stock markets' response to events that are often related to the release of information to the stock market. The event study methodology seeks to determine whether there is an abnormal stock price effect associated with an event. The method deducts the 'normal return' from the 'actual return' to receive 'abnormal returns' attributed to the event. Researchers have also found impact of event on stock volatility (Jayaraman & Shastri, 1993); stock trading volume (Karafiath, 2009); accounting performance, etc. (Barber & Lyon, 1997).

Event study methodology is widely applied in the fields of finance (Kothari & Warner, 2008); management (McWilliams & Siegel, 1997; Yang, Zheng, & Zaheer, 2015); economics (Lee & Mas, 2012); accounting (Jiang, Wang, & Xie, 2015); policy analysis (Bhagat & Romano, 2001); marketing (Sorescu, Warren, & Ertekin, 2017); legal studies (Mitchell & Netter, 1994); operating systems (Yang, Lim, Oh, Animesh & Pinsonneault, 2012) and other miscellaneous events like corporate name changes (Horsky & Swyngedouw, 1987). The methodology has been so popular in finance that a review conducted by Kothari and Warner (2008) has identified over 500 event studies published between 1974 and 2004. Among financial studies, various firm specific events that have been

studied are completion of takeover bid (Bruner 1999); initial public offer (Espanlaub, Goergen, & Khurshid, 2001); seasoned equity offerings (Carlson, Fisher & Giammarino, 2006); auditor selection (Weber, Willenborg, & Zhang, 2008); new CEO appointment (Defond, Hann & Hu, 2005); top executive changes (Dahya, Lonie & Power, 1998); sudden CEO vacancy (Lambertides, 2009), internet name change (Mase, 2009), etc.

Even among marketing studies, event study has been extensively studied (Natarajan, Kalyanaram, & Munch, 2010) especially in events related to announcement of new products (Borah & Tellis, 2014); brand acquisitions and disposals (Wiles, Morgan, & Rego, 2012); channel expansions (Homburg, Vollmayr & Hahn, 2014) and marketing alliances (Swaminathan & Moorman, 2009). Event study methodology has also been helpful in studying the impact on firms' value due to external announcements like competitors' announcement (Gielens, Van De Gucht, Steenkamp, Dekimpa, 2008); positive or negative news (Xiong & Bhardwaj, 2013); quality reviews (Tellis & Johnson, 2007); third party reviews (Chen, Liu & Zhang, 2012) and other regulatory actions like regulatory approvals (Rao, Chandy & Prabhu, 2008); and product recalls (Gao, Xie, Wang & Wilbur, 2015), etc.

The researchers have been investigating whether stock prices are impacted by analysts' recommendations. Cowles (1933) initially analyzed analysts' performance and concluded that analysts' recommendations have no impact on stock prices, but thereafter, many researchers have found that stock prices decrease after being added to a firm's 'sell' list and stock prices rise prior to removal from the 'sell' list, and an opposite pattern is observed for the 'buy' list. Womack (1996) observed that as new recommendations change, particularly 'added to the buy list' and 'removed from the buy list' creates

significant price and volume changes in the market. Short-term price reactions are found to be a function of the strength of the recommendation, the magnitude of the change in recommendation, the reputation of the analyst, the size of the brokerage house, the size of the recommended firm, and contemporaneous earnings forecast revisions. If the market responds by revaluing a firm's stock by reflecting the information in investment houses' recommendations, it can be concluded that the recommendation affects the market value of the firm and that the excess returns can be earned, and vice-versa.

The focus of this study is to examine the market reaction to 'sell' recommendations or the influence of investment houses on stock prices using a comprehensive set of 'sell' recommendations from major foreign investment houses. The recommendations, along with the target prices, have been considered from only reputed foreign investment houses to avoid the bias in recommendations that a country specific investment house can have towards domestic stocks.

This paper is divided into five sections namely – Section I, which includes the introduction, setting the theme of the paper, and presents a brief introduction to the topic. Section II deals with the review of literature, which highlights the results of several studies performed in this direction of financial research. Section III presents the research methodology performed to achieve the objectives of the study. Section IV discusses the results and Section V presents the conclusion of the study.

Review of Literature

Increasing participation of retail investors in the stock market worldwide has been coupled with a dramatic increase in production and consumption of financial

information. This financial information includes company reports, analysis and recommendations from brokerage houses, investment banks and financial analysts (Blandon & Bosch, 2009). Financial analysts throughout the world provide numerous recommendations in order to create value for their clients in a variety of asset markets. Naturally, a question arises that whether there exists a potential conflict between analyst recommendation performance and efficient market hypothesis. The proponents of the efficient market hypothesis argue that if markets are fully efficient, no impact on the rates of return of the stocks should be observed because information is already available to a number of investors. But there is another viewpoint that if costs are associated with the collection of information, significant returns should be earned by those investors having possession of information, to bear for the cost involved to acquire the information (Grossman & Stiglitz, 1980); therefore, according to the authors, abnormal returns do not contradict the Efficient Market Hypothesis since these returns must be earned in order to attract investors to assume the cost involved to acquire the information. Some of the researchers cite that recommendations typically contain more information than what can be conveyed by the normal categories of 'buy', 'sell' and 'hold' and the extra information might be exploited by the investors in their trading strategies (Asquith, Mikhail & Au, 2005). Analysts issue recommendations when they face greater demand from investors, when the relative supply of information available on earnings announcements is higher and when they detect inappropriate pricing (Yezeagal, 2015). Analysts' recommendations can be relative or change with revision of target prices. Brav and Lehavy (2003) found that target price revisions contain information regarding future abnormal returns above and beyond that which is conveyed in stock recommendations.

Nevertheless recommendation literature is huge; it

started with Cowles (1933) who first assessed the value of recommendations by measuring abnormal returns in relation to the recommendations. Later, several studies were conducted on this aspect (Anderson, Jones & Martinej, 2016; Diefenbach, 1972; Green, 2006; Jegadeesh, Kim, Krische & Lee, 2004; and Stickel, 1995). The results have been found to be mixed; while some studies reported the occurrence of abnormal profits after the recommendation was made, some reported the occurrence of abnormal profits before the date of recommendation. The time for reaction also varied in the studies ranging from a

few minutes to months, depending on the depth of the market and its price discovery efficiency. The extent of reaction was observed to be different depending on whether the recommendation was made to 'buy' or to 'sell'. The resulting abnormal returns have been attributed either to 'price pressure hypothesis' because of naïve buying pressure or because of 'information content hypothesis' because of information content of analysts' recommendation (Barber & Loeffler, 1993). Table 1 highlights some of the research studies done in this regard.

Table 1: Research studies on Impact of Recommendations on Stock Prices

Study Performed By	Sources of Recommendations	Results and Findings
Davies and Canes (1978)	Recommendations appearing in Wall Street Journal's "Heard on the Street" column in 1970 and 1971	Abnormal price movements detected on day of publication and day afterwards. Authors also observed much stronger reaction for 'sell' as compared to 'buy' recommendations.
Dimson and Marsh (1984)	Extensively reviewed stock recommendations in Australia, Canada, Hong Kong, United Kingdom and United States	Authors noted that following stock recommendations only provides modest profitability.
Elton, Gurber, & Grossman (1986)	Use data of 720 analysts for period 1981 to 1983	Authors observed that abnormal returns happen in the month of change of recommendation and the impact remains till the subsequent two months.
Liu, Smith & Syed (1990)	For period 1982-85	Abnormal price movements detected on day of publication and day afterwards. The authors supported the findings of David and Canes (1978)
Beneish (1991)	For years 1978 and 1979	Abnormal price movements detected on day of publication and day afterwards. The authors supported the findings of David and Canes (1978)
Barber and Loeffler (1993)	Investigated stock recommendations published in the monthly "Dartboard" column of Wall Street Journal from 1988 to 1990	Authors found 4% average abnormal return and doubling of average traded volume for two days following publication.

Study Performed By	Sources of Recommendations	Results and Findings
Pieper, Schiereck & Weber (1993)	Investigated 'buy' recommendations published in "Effekten-Spiegel" for years 1990 and 1991 in German Stock Exchange Market	Authors concluded that abnormal returns could only be realized by buying the stock prior to publication of recommendation.
Womack, 1996	Investigated returns for the period from 1989-1991	Reported asymmetric behaviour in stock returns. Found significant negative returns for the six months following 'sell' recommendation and no significant abnormal returns after 'buy' recommendation.
Barber <i>et al</i> , 2001	Analysed consensus forecast from Zacks database for the period 1985-1996	Authors documented that purchase (sell short) after consensus 'buy' (sell) recommendation yielded annual abnormal gross returns of greater than 4 per cent. But non-significant abnormal returns were obtained after considering transaction cost.
Gonzalo and Inurrieta (2001); Menendez, 2005	Investigated the performance of brokerage recommendations in Spanish Market	Reported positive and significant risk adjusted returns the days before the recommendation is made public.
Schmid and Zimmerman (2003)	Investigated price and volume behaviour of Swiss stocks around recommendations published in a major financial newspaper in Switzerland	Authors found significant price reaction in the week of recommendation publication. Authors also observed systematic increase in trading volume the week before the announcement, as well as a significant and systematic decrease afterwards.
Gomez and Lopez (2006)	Investigated the performance of consensus recommendations in Spanish Market	Reported positive and significant risk adjusted returns on the days before the recommendation is made public.
Jegadeesh and Kim, 2006	Investigated the impact of stock recommendations in G7 countries	Authors observed significant price reaction in all countries except Italy. Authors also found largest price reactions around recommendation revisions and the largest post revision price drift in the US market.
Blandon and Bosch, 2009	Analysed five types of recommendations namely 'buy', 'outperform', 'hold', 'underperform' and 'sell'	Authors found that positive (negative) abnormal returns are associated to positive (negative and neutral) recommendations, the day of the publication of the recommendation and the day before, but not the day after publication. Authors also observed asymmetry in the effect of recommendation on the stock trading volume, following the signs of the recommendation.

Study Performed By	Sources of Recommendations	Results and Findings
Niehaus and Zhang, 2010		Authors found that the optimistic recommendations increase the level of market shares by an additional 0.3% on average which is consistent with the notion that analysts have an incentive to issue optimistic recommendations.
CAI and Zilan, 2015	Authors studied industry specific recommendations sourced from database EASTMONEY from 2011 to 2013 in Chinese stock market	Authors found that industries with favourable recommendations in general outperform those with unfavourable recommendations and this performance discrepancy magnifies over time.

Source: Authors' compilation

What causes these recommendations to impact prices is explained by the price-pressure hypothesis and information hypothesis. The price-pressure hypothesis states that recommendations cause temporary buying pressure by naïve investors, which leads to abnormal returns that reverse quickly. Price-pressure effects will be temporary as the abnormal returns will diminish as initial buying pressure dissipates. On the other hand, information hypothesis states that recommendations disclose relevant information to the market, resulting in abnormal returns that do not reverse and resulting in a permanent revaluation of the firm's stock. Ryan and Taffler (2006) found that share prices are significantly influenced by analysts' recommendation changes, not only at the time of the recommendation change, but also in subsequent months. The price reaction to new 'sell' recommendations is greater than the price reaction to new 'buy' recommendations, and exhibits post-recommendation drift, which is consistent with initial under-reaction to bad news. If investors prefer to go for costly information by subscribing to brokerage house recommendations, the abnormal returns of brokerage house recommendations should be significantly higher and sustainable till sufficient time in the post-recommendation period (Jayadev & Chetak, 2015).

Many researchers cite that abnormal price reaction to the recommendations occurs before the event and not after it. They attributed this effect to information leakage before the public release of recommendations (Irvine, Lipson & Puckett, 2007; Kadan, Michaely & Moulton, 2015; Mikhail, Walther & Willis, 2007; Womack, 1996). The impact before the release of recommendations is so high that half of the abnormal profits are made before the recommendations are released (Anderson *et al*, 2016; Christophe, Ferri & Hsieh, 2010; Juergens & Lindsey 2009). Moreover, research has also cited that traders profit more from upgrades as compared to downgrades, as the latter are uninformative or arrive too late (Conrad, Cornell, Landsman & Rountree, 2006) as analysts are particularly likely to downgrade stocks following a large decline in the stock price. Analysis of impact of recommendations becomes more meaningful for some categories of stocks like small cap stocks, which are typically less liquid and relatively more expensive to trade (Keim & Madhavan, 1997). But there is far better incentive in detecting mis-pricing in these categories of stocks (Green, 2006; Stickel, 1992). In studies on recommendation changes, Jiang and Kim (2016) used large discontinuous changes such as jumps in stock prices as proxy for significant events and examined the information content of analyst revisions. Authors found that although recommendation

revisions are more likely to be clustered around stock price jumps, they still contain significant information, especially those issued prior to jumps. In a similar study, in examining post-return drift, it was observed that average post-return drift is no longer significantly different from zero. These observations pointed towards improving market efficiency (Altinkilic, Hansen & Ye 2016).

Dheinsiri & Sayrak (2010) used event study and ordinary least square regressions to test the hypotheses and found that there is a significant and positive price reaction at the time of the announcement of analyst coverage initiations. He, Grant & Fabre (2013) found that stocks with favourable (unfavourable) recommendations, on average, outperformed (underperformed) the benchmark index. Also, analysts' recommendations issued in the opposite direction of recent stock price movements are called contrarian recommendations. Bradley, Liu & Pantzalis (2014) found that upgrade and downgrade contrarian recommendations induce larger market reactions than non-contrarian recommendations, consistent with the view that they are more informative.

The Indian stock market is one of the largest stock markets in the world. The practice of issuing recommendations and following these has only recently gained momentum in India. Kumar, Chaturvedula, Rastogi & Bang (2009) studied the impact of 'buy' and 'sell' recommendations issued by analysts on the stock prices of companies listed on the National Stock Exchange (NSE) of India. Event study methodology was used to compute the abnormal returns around the event window, which is taken as -10 to +10. The study found that 'sell' recommendations do not show significant negative abnormal returns. Although many Indian studies have been conducted on 'buy' recommendations, literature concerning 'sell' recommendations is scarce. This

study aims to analyze the impact of 'sell' stock recommendations on stock returns.

Research Methodology

This paper attempts to study the impact of 'sell' recommendations on stock prices. The scope of this study was limited to shares listed on National Stock Exchange (NSE) and Bombay Stock Exchange (BSE). For the purpose of the study, 'sell' recommendations that occurred prior to March 31, 2016 were taken till a sample of 100 stock recommendations was reached. The day of announcement of recommendation was considered to be an event day. The stocks were further categorized on the basis of market capitalization into large cap (greater than Rs.10,000 crores), mid cap (market capitalization of more than Rs.2,000 crores but less than Rs.10,000 crores) and small cap stocks (market capitalization of less than Rs.2,000 crores). Only 'sell' recommendations from reputed foreign brokerage houses that have in-house research facilities and whose recommendations are easily accessible to Indian equity investors were considered. Such foreign brokerage firms are present in India and their research reports can be easily accessed either by registering on their websites or by procuring the same from third party vendors. In the list of 100 'sell' recommendations, 32 stocks were large caps, 27 mid caps and 41 stocks were small caps. The stock prices of selected stocks were collected from www.bseindia.com or www.nseindia.com for the period ranging from e-100 to e+5, where 'e' is the date of announcement of 'sell' recommendation. The corporate actions, namely information for bonus and stock split, were noted for each of the stocks for the event period including e-100 to e+5 days. Further, the prices of the stocks were adjusted for corporate actions for the calculation of actual returns on stocks. For the purpose of avoiding complexity, dividend announcements in the stocks were not considered.

The method chosen to analyze the impact of

recommendations on the stock price is the event study methodology. This method measures the stock price reaction to the announcement of the event. This methodology is based on the efficient market hypothesis (Fama 1970), which states that if market faces an unanticipated event, (here 'event' is a financial event, which is likely to have a financial impact on the firm and provides new information that is unanticipated by the market) abnormal negative or positive returns may emanate out of stock prices, if prices reflect all the available information. Abnormal returns, which possibly could be due to the event under study, may be tested for their statistical significance either using parametric or non-parametric statistics. Perhaps, the most widely used parametric test statistics are an ordinary t-test statistic and tests statistics derived by Patell (1976) and Boehmer, Musumeci & Poulsen (1991). One of the disadvantages using parametric test statistic is stringent assumption about normality, which is not required in use of non-parametric test statistic. Non-parametric test statistics commonly applied are rank test (Corrado, 1989); sign tests (Brown & Warner, 1980) etc. Researchers have strongly argued that parametric tests are often used in case of individual events while in case of samples of the events, both parametric and non-parametric tests can be used. Further, many studies have advocated the use of t-test parametric statistic because of its simplicity in execution and interpretation (Muller, 2015).

There exists substantial literature in finance, which postulates that stock returns in the announcement period are more volatile (Bhagat & Romano, 2001). So whenever there is increase in return variance due to an event in the announcement period, use of cross sectional tests statistics have been advocated (Brown & Warner 1980) as the cross sectional t-test is robust to an event induced variance increase. The standard error of the announcement period returns for the sample firms is used as an estimate of the standard

error of the average abnormal return thereby making the estimates of event study methodology statistically significant. In a landmark study, Brown and Warner (1985) observed that methodologies based on OLS market model and using standard parametric tests are well specified under a variety of conditions. Further, the authors have observed that daily data present few difficulties in the context of event study methodologies. Researchers have also observed that daily data is often used for short term studies (Small et al, 2007) and monthly data is normally chosen for long term studies (Ritter 1991). Some other studies have also highlighted the importance and power of standardized cross sectional test (Boehmer et al., 1991).

For the purpose of this study, event day corresponded to the day a 'sell' recommendation was made by a foreign brokerage house. Further, if the markets are fully efficient, the impact would occur on the event day (day 0 or e) or the day following the event day (e+1), but practically, the event window including days -5 to +5 and estimation window including -100 to -5 days before the event have been considered. In this study, the post-event window as suggested by some researchers has not been included as the authors believe that 5 days post-event period is sufficient to get the prices adjusted, irrespective of strength of recommendation. Also as stated in literature, in order to make the event study meaningful, a precise definition of 'event window' is required (Brown & Warner, 1985; Fornell, Mithas, Morgeson & Krishnan, 2006). In present times, the speed of adjustment and information processing is really fast and there is very little incentive to carry out research in the post-event period. Inclusion of days before and after the event day allows for the possibility that the arrival of information regarding the 'sell' recommendation has been leaked before the event day (so days before the event day have been included) and also allows the possibilities of rigidities and lagged response behaviour by the

investors (so days after the event day have been included). The impact of the event was studied by measuring the abnormal rate of return during the event window or afterwards. The abnormal return was obtained by deducting the normal rate of return from the actual rate of return in the same period. The normal return is defined as the expected return in the absence of the event. For firm i and time t , abnormal rate of return is defined as (MacKinlay, 1997)

$$AR_{it} = R_{it} - E(R_{it} | X_t) \quad (1)$$

Where AR_{it} , R_{it} and $E(R_{it} | X_t)$ are the abnormal, actual and normal (or expected) returns respectively for the firm i in time period t . Normal (or expected) returns were estimated using market model as

$$E(R_{it}/X_t) = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (2)$$

where X_{it} is commonly defined as the market rate of return; R_{it} is the return on share price of firm i on day t , R_{mt} is the market rate of return i.e. return on the stock market index on day t , α_i is the intercept term, β_i is systematic risk of stock i and ε_{it} is error term such that $E(\varepsilon_{it}) = 0$. So abnormal returns have been estimated as

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (3)$$

Where α_i and β_i are the ordinary least square (OLS) parameter estimates obtained from regression of R_{it} on R_{mt} over estimation period preceding event day including returns from estimation window (e-5 to e-100 days).

Suitable market indices for assessment of R_{mt} were considered for stocks under various categories of market capitalization. Once the returns were estimated using current rate of return on the market in the event period, α and β coefficients with respect to individual stocks, it was deducted from the actual rate of return on stocks (R_{it}) to arrive at the abnormal rate of return on each stock for each day in the event period. The abnormal returns thus represent returns earned

by the firm after adjustments for the normal expected return, which is determined by market model. Null hypothesis (H_0) states that 'sell' recommendation has no impact on return behaviour during the event window (e-5 to e+5 days). The distribution of the sample abnormal return of a given observation in the event window is

$$AR_{it} \sim N(0, \sigma^2(AR_{it}))$$

For the purpose of drawing overall inferences, average daily abnormal returns were calculated for all the firms for each day of the event window (i.e., 11 days starting from e-5, e to e+5 days). These average daily abnormal returns were tested with the help of 't' statistics for each of the market capitalization stocks. Further, aggregation of abnormal returns was done through time (days in the event window) for each firm and across firms. Cumulative abnormal returns for the firm i is defined and computed as

$$CAR_i (e-5 \text{ to } e+5 \text{ days}) = \sum_{t=e-5}^{e+5} AR_{it} \quad (4)$$

For aggregation across firms, CAR was computed using

$$CAR_{ifirm} (-5 \text{ to } +5 \text{ days}) = 1/N \sum_{i=1}^{55} \quad (5)$$

Student 't' test was applied on both abnormal returns and cumulative abnormal returns with null hypothesis that 'sell' recommendation has no impact on the rate of return (abnormal or cumulative abnormal return) during the stated event window.

The event study suffers from some limitations. First, stock prices may not fully or immediately reflect all information due to market inefficiency thereby questioning the assumptions of event study. Further, coexisting events can influence the return, which becomes difficult to isolate and attribute to the event of interest. Second, return variations in estimation and test periods are commonly found in event studies. In addition, the estimation period is difficult to control for other confounding events. Lack of trading in the

event period, presence of outliers in the data, problems of cross sectional dependence in the calendar time clustering of events also act as problems in conduct of event study methodology. In spite of all these limitations, event study methodology is still the most popular and followed strategy to learn about the impact of an event. The results of the study are presented in the next section.

Results and Discussion

Abnormal returns before the event day were analyzed in the event period for each stock with 'sell' recommendation. Abnormal returns and cumulative average abnormal returns were analyzed for each stock with a 'sell' recommendation using the difference between actual returns and expected returns. Average abnormal returns were calculated by

aggregating the abnormal returns for each stock on a particular day and further divided by the number of days.

Table 2 presents the result of our parametric tests on the abnormal returns in each of the 11 days (e-5 through e+5 days) under the study and also cumulative abnormal returns in the event window (-5, +5) with respect to large cap stocks having 'sell' recommendation. The results show that cumulative average abnormal returns in the event window [-5, +5] was negative (-8.2207%). The strongest positive average abnormal return was found on t = +4, but is statistically insignificant at 5% level. Similarly, the strongest negative return was found on e+2 day, but is again statistically found to be insignificant.

Table 2: Parametric tests for AAR and CAAR (Large Cap Stocks)

t (day)	AAR* (%)	p value	CAAR [§]	p value
-5	0.0854	0.867	-3.2674	0.466
-4	-0.2878	0.491	-3.5552	0.464
-3	-0.3444	0.418	-3.8995	0.453
-2	-0.3228	0.475	-4.2224	0.445
-1	-0.8170	0.073	-5.0395	0.393
0 (event day)	-0.0608	0.901	-5.1004	0.416
+1	-0.4671	0.271	-5.5675	0.397
+2	-1.4751	0.307	-7.0426	0.243
+3	-0.5228	0.065	-7.5652	0.226
+4	0.6933	0.227	-6.8721	0.275
+5	-0.3488	0.365	-7.2207	0.262
[-5,+5]			-7.2207	

*AAR = Average abnormal return

§ CAAR = Cumulative average abnormal returns (calculated since e-100 day)

Source: Authors' own calculations

On the day of the event, the average abnormal return was -0.0608% and is found to be statistically insignificant at 5% level, implying that the effect of the recommendation on return was insignificant on the event day. The cumulative average abnormal return was observed to be negative for the entire event window period and is found to be statistically insignificant on any of the days in the event period. The overall results do not present evidence of rejecting the null hypothesis of no abnormal returns or cumulative abnormal returns in the event window. Therefore, there is particularly no evidence that a sell recommendation has a significant negative impact on large cap's firm value.

Table 3 presents the result of our parametric tests on abnormal returns in each of the 11 days (e-5 through e+5 days) under the study and also cumulative abnormal returns in the event window (-5, +5) with respect to mid cap stocks having 'sell' recommendation.

The results depict that cumulative average abnormal returns in the event window [-5, +5] was negative (-2.8795%). The strongest positive average abnormal return was found on e+3 day, but is statistically insignificant at 5% level. On the day of the event, the average abnormal return was -0.3818% and is found to be statistically insignificant at 5% level, implying that the effect of the recommendation on return was insignificant on the event day.

However, on t = -3 day and t = +4 days, the average abnormal return was found to be -1.0140% and -1.0710% respectively, and is statistically significant at 5% level. Also, the cumulative average abnormal return was negative for the entire event window and is statistically insignificant at 5% level. Overall, the results do not present the evidence of rejecting the null hypothesis of no significant cumulative average abnormal returns on all days and of no significant average abnormal returns for days except for t = -3 and t = +4 in the event window.

Table 3: Parametric tests for AAR and CAAR (Mid Cap Stocks)

t (day)	AAR* (%)	p value	CAAR [§]	p value
-5	-0.0417	0.924	-1.9374	0.413
-4	-0.3695	0.450	-2.3071	0.328
-3	-1.0140	0.019	-3.3210	0.132
-2	0.1280	0.781	-3.1931	0.166
-1	0.3426	0.488	-2.8505	0.212
0 (event day)	-0.3818	0.442	-3.2320	0.176
+1	0.4035	0.324	-2.8284	0.279
+2	-0.0481	0.939	-2.8763	0.335
+3	0.5622	0.430	-2.3144	0.477
+4	-1.0710	0.025	-3.3853	0.317
+5	0.5058	0.313	-2.8795	0.395
[-5,+5]			-2.8795	

*AAR = Average abnormal return

§ CAAR = Cumulative average abnormal returns (calculated since e-100 day)

Source: Authors' own calculations

Therefore, there is particularly no evidence that a 'sell' recommendation has a negative impact on mid cap returns with respect to cumulative average abnormal returns. However, the evidence shows a significant negative impact that can be seen of 'sell' recommendation with respect to average abnormal return on three days prior to and four days after the event day on mid cap stock returns.

Table 4 presents the result of parametric tests on the average abnormal returns in each of the 11 days (e-5 through e+5 days) under the study and also cumulative average abnormal returns in the event window (-5, +5) with respect to small cap stocks having 'sell' recommendation.

The results depict that cumulative average abnormal return in the event window [-5, +5] was found to be negative (-0.1615%). The strongest positive average

abnormal return was found on a day prior to the event day i.e. $t = -1$, and is statistically significant at 5% level. On the day of the event, the average abnormal return was -0.0846% and is found to be statistically insignificant at 5% level, implying that the effect of recommendation on return was insignificant on the event day.

However, on $t = -1$ day and $t = +2$ days, the average abnormal return was found to be 0.9565% and 0.8410% respectively, and is statistically significant at 5% level. Also, the cumulative average abnormal return was found to be negative for all days in the event window except on $t = +4$ but is statistically insignificant at 5% level for the entire event window. Overall results do not present the evidence of rejecting the null hypothesis of no cumulative average abnormal returns on all days and of no average abnormal returns for days except for $t = -1$ and $t = +2$ in the event window.

Table 4: Parametric tests for AAR and CAAR (Small Cap Stocks)

t (day)	AAR* (%)	p value	CAAR [§]	p value
-5	-0.0165	0.965	-1.9188	0.584
-4	0.2499	0.491	-1.6690	0.635
-3	0.0385	0.920	-1.6307	0.646
-2	-0.4420	0.127	-2.0724	0.541
-1	0.9565	0.001	-1.1159	0.738
0 (event day)	-0.0846	0.811	-1.2006	0.722
+1	-0.5419	0.197	-1.7425	0.605
+2	0.8410	0.025	-0.9015	0.789
+3	0.5311	0.134	-0.3703	0.913
+4	0.5912	0.148	0.2209	0.949
+5	-0.3824	0.381	-0.1615	0.963
[-5,+5]			-0.1615	

*AAR = Average abnormal return

§ CAAR = Cumulative average abnormal returns (calculated since e-100 day)

Source: Authors' own calculations

Conclusion

Event study, which is considered as a reasonable method to assess the impact of an isolated event on a stock's return was used in this study to find the impact of 'sell' recommendation by a foreign brokerage house on a stock's return. The stocks have been divided into large cap, mid cap and small cap stocks. For all three categories of stocks, overall cumulative average abnormal returns have been found to be negative, but not statistically different at 5% level of significance. In terms of average abnormal returns for individual days within the event window, null hypothesis was not rejected for large cap stocks for any of the days, but it was rejected for e-3 and e+4 days for mid cap stocks (depicting significant negative average abnormal returns) and was rejected for e-1 and e+2 days (surprisingly depicting significant positive average abnormal returns) for small cap stocks. The results are consistent with the previous studies, which provide mixed evidence of recommendations on firm value, resulting from 'sell' recommendation.

Managerial insights and implications

In this study, although no significant negative impact of cumulative average abnormal return was found, evidence for isolated cases of significant negative

average abnormal returns in case of mid cap stocks and very surprising evidence of isolated cases of significant positive average abnormal returns in case of small cap stocks was found. However, these isolated results cannot be considered as necessarily conclusive as one impact may occur either before e-5 day (information may be leaked to the market before the official announcement) or impact may be seen after e+5 day depending upon the information processing capabilities of the participants involved. If we assume that the markets are efficient and do not respond to simply 'sell' recommendations exercises, then such efficiency is missing in mid cap stocks. Further, the strange behaviour of small cap stocks, which have depicted opposite results to the expected ones of the recommendations, demand further enquiry. These findings are in addition to the existing Indian capital market literature. These findings are also important for investors as they can exploit these recommendations and may earn abnormal rate of return by going short on mid cap stocks. They have to keep in mind that small cap stocks behave differently, rather in an opposite direction to such 'sell' recommendations. The answer to the question - do 'sell' recommendations induce further bearishness? – is that it is not true in large cap stocks, true in mid cap stocks, but opposite in small cap stocks.

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