A Study on the Equity Analyst Recommendations, Usefulness, Determinants and Biases

Harshita Agarwal

Abstract

This research examines the usefulness of brokerage analyst recommendations in the Indian stock market. Usefulness of recommendations has been assessed in terms of informative value, that is, informational contribution to the stock market, as well as predictive value, that is, enabling investors to earn abnormal returns on their stock investments. Further, we investigated two key determinants of usefulness, information uncertainty and analyst behaviour. The first determines the opportunity as well as the challenge faced by equity analysts, while the second impacts the quality of their research. The research is based on empirical research of brokerage analyst recommendations in India using a large representative sample of individual broker recommendations as well as average recommendations of a cross-section of 200 firms over a period of six years (April 2009 to March 2015). Informational contribution was measured by estimating abnormal returns around the release of the recommendation, while the ability to predict investment returns was analysed over a long investment horizon using the event study methodology.

Keywords: *Biases in Forecasts and Recommendations, Effect of Information Uncertainty on Biases, Effect of Information Uncertainty on Usefulness, Information Uncertainty, Informative Value of Analyst Recommendations, Usefulness of Equity*

Introduction

A primary function of financial markets is to enable efficient allocation of financial resources to alternative uses. Since the late 1990s, certain events in the global financial markets, especially in the US, have shaken the confidence of the investors in the financial markets and its intermediaries. These have included the accounting scandals of Enron in 2001 and of WorldCom in 2002, the boom and bust cycle in internet-based stocks during 1999-2002, and the global financial crisis of 2007-2008. The frequency and the far-reaching impact of these events raise questions about the competence, integrity and usefulness of financial service providers and professionals, including stockanalysts. For instance, sell-side analysts in US came under regulatory scrutiny and severe criticism in 2001-2002 for misusing their influence

Harshita Agarwal, Research Scholar, Faculty of Management, Pacific Academy of Higher Education and Research University, Udaipur, Rajasthan, India

(Michaely and Womack, 2005). Parallel to these developments, there has developed a significant body of literature in behavioural finance, which provides counterpoints to the efficient market hypothesis. Efficient market hypothesis implies that mispricing of stocks is random, thus precluding any opportunity to earn abnormal returns using skill (Fama, 1970). Behavioural finance propositions, on the other hand, credit the occurrence of mispricing to the more persistent behavioural biases of the investors and the limited capacity of the informed traders to arbitrage away such mispricing (Barberis and Thaler, 2003). Though behavioural finance theories imply that stocks may be persistently mispriced, empirical research has found limited evidence of persistence in abnormal returns earned by predicting and exploiting such mispricing (Fama, 1991). Attribution of this success or failure to chance, skill, human behaviour or ethics in investment research and management is likely to be of interest to empirical researchers as well practitioners and market regulators. This is because if other problems can be controlled (for instance of ethics by policy actions, and of human behaviour by awareness and discipline), returns on skill can hypothetically be earned in markets where assets are mispriced. Alternatively, if the skills remain unproven, or if the behavioural problems appear insurmountable, costs of active money management and research should be reduced, and the investors may then rely more on passive strategies, such as investing in index funds, and less on active investment management and research.

Equity research analysts provide investment recommendations to investors. Investors using these recommendations presume that the analysts have a superior ability to identify mispriced stocks, since they specialise in collecting and processing all the relevant information in a systematic manner. The investors also presume that the mispricing of the stocks is prevalent, identifiable, and sufficient to let them earn abnormal returns net of transaction and advisory costs. The utility of equity research is, thus, premised on the existence of a 'window of opportunity' wherein securities could be predictably mispriced, thereby enabling analysts to predict the direction of stock prices and hence make valuable recommendations. The efficient market hypothesis (EMH) and behavioural finance propositions provide alternative viewpoints regarding the window of opportunity premise. The EMH, according to Fama (1970), states that available information is immediately and fully reflected in stock prices. The information set that is available to the market and is promptly incorporated in the prices determines the form of efficiency. The delay with which public information is incorporated in market prices is crucial for the usefulness of stock analyst research. If public information is not promptly and fully transmitted through informed trades (a condition described as weak-form efficiency), analysts could play a useful role in dissemination of this information. Consistent with weak-form market efficiency, analyst recommendations can then also provide holding period abnormal returns. On the other hand, under the semi-strong form of EMH, analyst recommendations cannot provide persistent abnormal returns, if such recommendations are based only on public information. In the strong form of EMH, analyst recommendations can never result in persistent abnormal returns.

However, based on behavioural theories of judgement under uncertainty, analysts may themselves make prediction errors and thus fail to capitalise on the mispricing opportunities. For instance, according to Tversky & Kahneman (1974), not only novices but even experienced researchers, statisticians and experts tend to rely on heuristics (that is, simple but inaccurate intuitive approaches such as representativeness and anchoring) to make judgements under

uncertainty. Johnson (1988) found that across diverse domains that involved decision under uncertainty, predictions by experts were inferior to those provided by simple linear models, as experts tended to overweigh interpretation of rare events and under-utilise a large amount of mundane information.

Literature Review

Grossman and Stiglitz (1980) argued that since information is costly, prices cannot perfectly reflect all the available information, since if they did, those who spent resources to obtain information would receive no compensation. They built a model of equilibrium of security prices, based on the assumption that all traders have rational expectations, but are divided into two categories, the informed traders, who spend money to gather information and the uninformed traders, whose only source of information is historical stock prices.

Fama (1970) further categorised the tests of efficient market hypothesis into three forms based on subsets of available information. Weak form of EMH pertains to the adjustment of security prices to historical prices, semi-strong form of EMH pertains to all public information while strong form of EMH suggests that market price of a security price reflects even insider information. Since equity analysts estimate the intrinsic value of stocks on all public and some legally permissible non-material non-public information, the usefulness of equity research is inconsistent with the semi-strong and strong forms of EMH, but is consistent with the weak form of EMH.

The greater challenge to the EMH comes from the field of behavioural finance. According to Shleifer and Summers (1990) and Barberis and Thaler (2003), the two lines of arguments against market efficiency include psychological biases and arbitrage constraints. We review here two significant contributions towards the research on psychological biases, as applied to the stock market context. The first one is by Daniel, Hirshleifer and Subramanyam (1998) and the second one is by Barberis, Shleifer and Vishny (1998); and two significant contributions regarding arbitrage limits, first one by DeLong, Shleifer, Summers and Waldmann (1990) and the second one by Shleifer and Vishny (1997).

Data on performance of local funds across developed and emerging markets is available from SPIVA scorecards for individual regions prepared by Dow Jones Indices. According to SPIVA India Scorecard, June 2015 (Agrawal, 2015), though 60 per cent of the large cap funds underperformed their benchmark, a majority of the small/mid-cap funds (57%) outperformed their benchmark over the same period. Further, both equal and asset-weighted returns were more than the benchmarks, though the outperformance was higher in the small/midcap category. The relatively superior performance of funds covering mid-size and smaller companies in India appears to have beenpersistent as evident from the performance during the previous 5 year period also. According to S&P CRISIL SPIVA Indices Versus Active Funds Scorecard, India, June 2010 (S&P, CRISIL (2010)), 64 per cent of the large cap funds underperformed their benchmark. However, a majority of the diversified funds (55%) outperformed their benchmark. One reason for the relative outperformance of small and mid-sized funds in India may be relatively low analyst coverage for small and mid-sized corporates, which is consistent with the findings of Griffin et al. (2010). The SPIVA scorecards for other regions however, did not show any consistent difference in performance between emerging and developed markets.

According to Zhang (2006a), information uncertainty is the ambiguity regarding a firm's valuation, which stems from both poor information and volatility of the firm's fundamentals. Jiang et al (2005) also defined information uncertainty in terms of value ambiguity, or precision with which a firm's value can be estimated at a reasonable cost. Like Zhang (2006a), Francis et al (2007) stated that information uncertainty can arise from both inherent uncertainty in a firm's operating environment and from management's own errors in financial disclosures. Damodaran (2006) identified complexity arising out of diversified business mix and complex corporate structure as a potential source of ambiguity in valuation

According to Hirshleifer (2001), psychological biases are expected to be higher in stocks that have greater information uncertainty. Daniel et al (1998) predicted that overconfidence about private information would be higher for stocks which have greater information asymmetry and this would increase the likelihood of mispricing of such stocks. Zhang (2006a) confirmed these predictions by empirically testing the effect of news on prices of stocks grouped by information uncertainty using different proxies. He found that uncertainty delayed the flow of information in the stock prices. Zhang (2006b) also found evidence that under-reaction of stock analysts to news increased with information uncertainty as predicted by the behavioural theories.

Baker and Wurgler (2006) argued and empirically demonstrated that the firm's whose returns were more likely to be affected by investor sentiments were those which were smaller, younger, had higher stock volatility, were not paying dividends, growth companies or in financial distress, because they were more difficult to value. The characteristics and the difficulty in valuation referred to by Baker and Wurgler (2006) are similar to the characteristics and valuation ambiguity associated with information uncertainty.

Objectives of the Study

- To estimate the significance of abnormal returns earned by investing based on analyst recommendations

- To determine the preferences and biases of analysts

- To analyse the effect of information uncertainty on the usefulness of analyst recommendations

Methodology

Usefulness of equity analyst recommendations in this study has been defined in terms of two roles, informative and predictive. In the informative role, analyst recommendations facilitate incorporation of information into stock prices and thus enable market efficiency. In the predictive role, the recommendations predict the performance of the stock returns relative to the overall stock market returns, thus enabling investors to earn abnormal returns. The informative value of analyst research is directly visible through their impact on the stock prices. Hence, informative value of analyst recommendations has been measured in research literature by ascertaining exceptional price impact using a short-term event study methodology.

Results

With respect to buy and hold strategies, analyst recommendations have been found to provide

abnormal returns before adjusting for transaction costs for instance by Elton et al. (1986), Barber et al. (2001) and Boni and Womack (2006). On the other hand, the evidence regarding abnormal returns adjusted for transaction costs is mixed: while Dimson and Marsh (1984) estimated significant net returns adjusted for trading costs, whereas, Barber et al. (2001) estimated that the transaction costs would reduce abnormal returns to insignificant levels. Analysts have been shown to display behavioural biases such as overconfidence and self-attribution resulting from overestimating the value of private information according to Daniel et al (1998), style preferences according to Jegadeesh et al. (2004), herding according to Trueman (1994) and Welch (2000) and use of heuristic methods for valuation according to Bradshaw (2004). Further, there is overwhelming evidence of conflicts of interest affecting the objectivity of analyst recommendations, as documented by Dugar and Nathan (1995), McNichols and O'Brien (1997), Lin and McNichols (1998), Dechow, Hutton and Sloan (2000) and Jegadeesh and Kim (2006). In summary, while the behavioural finance theories support the premise that there is a window of opportunity for stock analysts to make valuable recommendations under uncertainty, behavioural decision theories and empirical research testing outcomes and processes of analyst decision-making indicate that behavioural biases and conflicts of interest affect the success of analyst predictions.

In spite of the mixed prognosis of value-addition by stock analysts in literature, research has continued in this area motivated by several factors. Firstly, analyst activity has sustained and grown worldwide, instead of reducing in the face of unfavourable evidence of its utility. For instance, the US Bureau of Labour has forecasted a 24.8 per cent increase in the employment of financial analysts by security and commodity intermediaries and brokers in the US, between 2012 and 2022. Secondly, new propositions from behavioural finance and further developments in asset pricing models have necessitated revisiting the evidence with newer hypotheses and methods. Thirdly, it has become necessary to extend this research to markets other than US including emerging markets, which differ in terms of information environment, breadth and depth of trading activity, trading mechanism, institutional structure, analyst coverage and regulations from the developed markets. Fourthly, further research is required to understand the causes of inaccuracy in analyst predictions. If the failure of analysts' predictions is attributed either to behavioural biases or information availability, rather than market efficiency, prescriptions can be provided for the benefit of the research houses and the regulators. In the context of the research literature and research motivations mentioned above, this research concentrates on two themes - one, the usefulness of analyst recommendations in India with emphasis on the role of analyst behaviour, and two, the effect of uncertainty on the predictive value of analyst recommendations.

Discussion on Stock Analysts and their Research

Stock analysts specialize in collecting and analysing the business and financial information of the firm and using the same to arrive at a notional fair value on which they base their investment recommendations. Valuation of a stock using fundamental analysis is commonly based upon present value or relative valuation methods, both of which involve forecasting the future financial statements of the firm. On the basis of the fair value estimate, stock analysts determine a target price which the stock should achieve over a time horizon (usually around one year), assuming that stock price will tend to converge with the fair value. An investment

recommendation summarises the entire analysis in one quantitative measure on an ordinal scale (for example, buy, hold or sell on a three-point scale). A research report is prepared to justify the recommendation usually detailing the quantitative forecasts, assumptions for valuation and a descriptive assessment of the prospects of the company integrating the analysis of the business prospects, financial position and management. The analysts may be employed by institutional investors (buy-side analysts), brokerages (sell-side analysts) or by independent research organisations. Brokerage firms constitute the largest employers of stock analysts, and these may be differentiated by size, dominant client segment (institutional or retail) or jurisdiction.

Figure 1: Work Flow of Stock Analyst's Research

Usefulness of Analyst Research

While stock analysts face the same imperfect information environment as the investors, they are assumed to have two significant advantages over the investors, due to their specialization

- **Information Advantage:** Stock analysts compile information actively from multiple sources and hence can build private information. For instance, they may obtain field information from a visit to the firm's plant location or obtain additional information from the firm's competitors, suppliers or distributors. This would be in addition to assimilating public information from the firms' financial reports, media releases, analyst meets and conference calls. In several jurisdictions, regulations have permitted stock analysts to even source fragments of non-material non-public information from corporate insiders and create a 'mosaic' of information in order to value securities. For instance, the US courts in the past have upheld the legality of 'mosaic theory' and the Securities and Exchange Commission of US allows firms to provide non-material pieces of information to stock analysts, though the progressive tightening of insider trading regulations in recent years is marking a shift in the judiciary's stance (Davidowitz, 2015).

- **Information-processing Advantage:** By virtue of their focus, skills and experience, analysts are assumed to be able to arrive at more accurate forecasts and investment decisions than investors. For instance, in case of an information overload, they can sift through and identify more relevant and accurate source of information, and in case of constrained information they can draw inferences from limited information. Investors are affected by cognitive bias and limited attention given constraints of time and processing abilities (Hirshleifer and Teoh, 2003). Analysts are expected to display greater attention (due to their responsibility to track specific sectors and firms) than investors and use quantitative cash flow projections and formal valuation models that enable them to reduce subjectivity and cognitive bias.

Determinants of Usefulness

Usefulness of analyst recommendations depends on the stock price behaviour and quality of analyst research, which in turn depends on analyst skills and biases. Since investment decisions are made based on judgement under uncertainty, the level of uncertainty plays a role in determining both the stock price behaviour as well as the quality of analyst research. Stock analysts make an implicit assumption that stock prices will tend to revert to intrinsic or fair value in the future. This assumption is explained by the analogy that stock markets work like voting machines in the short term but weighing machines in the longer term (Buffett, 1994). According to EMH, the divergences of stock prices from a rationally determined fair value are random (Fama, 1970). According to behavioural finance propositions on the other hand, the price divergences are not just random, rather they are persistent (Barberis and Thaler, 2003). The information availability about firms has a bearing on the usefulness of analyst research. Availability of relevant information depends upon the accounting standards, mandatory and voluntary disclosures (both in terms of quality and timeliness) and dissemination of the available information through the media and analyst research itself.

Information Uncertainty

Information uncertainty is a concept related to the information environment of the firms researched by the analysts. Information uncertainty is defined as a measure of absence of timely and relevant information required to value firms and thereby make investment decisions. Information uncertainty may arise from imperfect disclosure and dissemination of information as well as complexity and volatility of a firm's business. (It is presumed that higher business complexity may result in need for more information, for example if the complexity arises from multiplicity of product-markets, changing trends in technology, regulations and competitor actions. Similarly, it is presumed that higher volatility would increase need to collect information more frequently and in a timely manner.) It is pertinent to note that information uncertainty, as defined here, is different from and more comprehensive than information asymmetry. Information asymmetry differentiates between private (including insider) and public access to relevant data about the firm. On the other hand, information uncertainty arises not only from asymmetry, but also inefficiency of information transmission and complexity and volatility of firm's business. In other words, information asymmetry is one among several causes of information uncertainty and the latter subsumes information asymmetry. Information uncertainty may vary between different stock markets and between firms listed on the same stock market. High information uncertainty increases the challenge in making predictions and therefore rational investment decisions. Stock analysts are presumably better equipped to handle information uncertainty than investors because they collect information from multiple primary and secondary sources to build a mosaic of information, as explained earlier, and because they are expected to have relative expertise in making inferences even with limited information or even where there is greater business complexity or cash flow volatility.
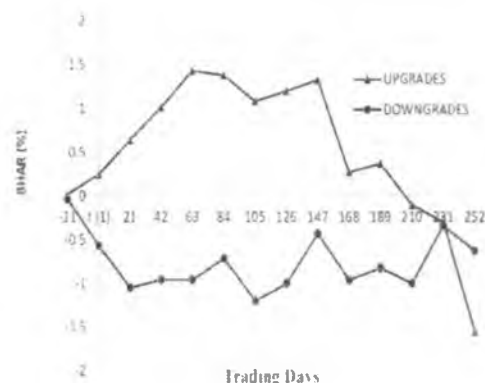
Informative Value of Analyst Recommendations

Following Womack (1996) and Barber et al (2001), the event was defined as the release of a RECO and the event date t was taken as [-1,1], that is from one day before to one day after the RECO date, in order to take into account, the absence of information about the exact time of

RECO release and the possibility of selective release to some clients on the previous day. In order to remove the effects of other events such as earnings releases, all recommendations for a firm that occurred within +/- 1 trading days of an earnings release of the firm were removed from the sample for testing. In order to analyse the stock price impact, the recommendation announcements were categorised on the basis of rating as Buy, Hold or Sell. Since a large number of brokers used a 3-point rating scale, homogenisation with 5-point scale with other brokers was achieved by grouping together the highest two categories (on the 5-point scale as Buy and the lowest two categories (1, 2) as sell. The releases were also categorised on the basis of change in rating as upgrades (UP), downgrades (DN), or reaffirmations (RE). The analysis was conducted which consisted of recommendations issued by 28 brokers during the period April 2009 to March 2014. Since the recommendations issued prior to this period were not known, it was not possible to identify new initiations. Hence, all the first entries for each stock by broker were not considered while analysing the rating changes. Events where the release of analyst recommendation coincided with simultaneous release of earnings news were discarded, as was done by Loh and Stulz (2011), to distinguish the effects of recommendations from those of earnings news. This reduced the dataset of recommendations to 20,413 observations over the period April 2009 to March 2014.

Figure 2: Abnormal Returns on RECOs over 12 Months   Figure 3: Abnormal Returns on RECOs change over 12 Months

Predictive Value of Analyst Recommendations

The predictive value of analyst recommendations is measured as the post-recommendation abnormal returns over a holding period. Significant positive or negative abnormal returns, earned over a holding period subsequent to buy or sell recommendations respectively, indicate that the recommendations were valuable to the investors. Conversely, insignificant abnormal returns would prove that the recommendations did not have predictive value. Consistency of abnormal returns for each strategy was also tested over time, by splitting the sample into two equal sub-periods. Apart from statistical significance, economic significance of the abnormal returns was also evaluated by comparing the abnormal returns to the estimated transaction costs and calculating the Sharpe ratios of the various strategies.

Method 1: Event-Time Abnormal Returns using BHAR

Following Womack (1996), BHARs over a period of 6 months were estimated from the recommendation date [1,126] similar to the way described under hypothesis testing for informative value. Due to the problem of cross correlation associated with overlapping event timeframes, standard error of the BHAR was estimated using the covariance consistent estimates.

Method 2: Calendar-Time Abnormal Returns

Consistent with the methodology described by Barber et al (2001) and Boni and Womack (2006), investment strategies of holding the best portfolio (A), short-selling the worst portfolio (E), and a zero investment long-short strategy of buying A and selling E were evaluated over a period of 6 years (April 2009 to March 2015). Similarly based on change in recommendations, investment strategies of holding CHG+ portfolio, and a long-short strategy of buying CHG+ and selling CHG- were evaluated.

If the perceived value of analyst research is measured by its stock market impact, the analysis of stock price behaviour following analyst recommendations clearly establishes that analyst views in Indian stock market have an informative value. The change in stock price around the event date was statistically significant and there was no reversal in the same up to 2 months after the event. 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 downward revisions and sell recommendations than for upward revisions and buy recommendations. In fact, even neutral recommendations had a statistically negative impact.

Common investment strategies (as commonly used in empirical tests of analyst research) were tested based on both individual and average recommendations. Using individual analyst-wise recommendations, the returns were statistically significant only in the case of buy recommendations and upgrades one month after the recommendation date and then too were inadequate relative to the estimated transaction costs. Further, investing post-recommendation based on individual recommendations does not constitute a practical strategy. Predictive value was therefore also tested based on average recommendations. The use of rankings by average or consensus recommendations in the research design was deliberate. The use of rankings to define portfolio transformed recommendation levels from absolute values to relative values. This would be consistent with the anticipated behaviour of informed investors who being aware of analyst biases would treat only that portion of buy recommendations as reliable where the consensus was very high. On the other hand, they would consider even some portion of mid-range recommendations as equivalent to sell.

Analyst Preferences

Equity analysts provide stock recommendations after estimating the intrinsic value of the stocks and comparing the same with the current stock prices. This process usually involves a quantitative approach as well as analysts' judgement. However, based on previous empirical literature, analysts tend to rely mechanically on trends and stock characteristics and not only upon rigorous estimation and judgement based on fundamentals of the stock (for example, see Jegadeesh et al. (2004)). In addition to the well-established valuation methodologies, such as discounted cash flow method, analysts tend to use heuristics, for example ratio of price/earnings to forecasted growth (Bradshaw, 2004). Secondly, like investors, analysts face

parametric uncertainty since the theoretical asset pricing models such as the CAPM do not adequately explain or predict the cross-section of stock returns. Thirdly, the behaviour of stock prices in the short term is affected by sentiment, which in the absence of perfect arbitrage trading results in persistent and predictable patterns such as stock price momentum. Analysts cannot afford to ignore these patterns since it can affect their short term performance, and hence their remuneration and career progression. Fourthly, like investors, analysts are vulnerable to behavioural biases like representativeness, self-attribution and overconfidence (Daniel et al. 1998).

The tilt towards high price momentum stocks has some basis in empirical findings regarding price momentum and its theoretical explanations. A number of behavioural models explain why there is continuation of price momentum in the short term (up to 1 year) but reversal in the long term (3 years or more). Since analysts are likely to be concerned about short term performance, which in practice is measured against a relevant market index, the decision to favour high momentum stocks appears to be rational. Analysts being aware of the short-term momentum effect on relative stock returns are, therefore, likely to complement their judgement, which should theoretically be based only on stock fundamentals and valuations, with a consideration for stock price momentum. Conversely, analysts may fear that ignoring the momentum effect could result in underperformance of the recommended stocks relative to the market index in the short term. According to the empirical research literature, for example Jegadeesh et al. (2004), analysts tend to prefer growth stocks, which are associated with high revenue and earnings growth as well as low book to market capitalisation (or high price to book value). According to Lakonishok, Shleifer and Vishny (1994), investors tend to extrapolate past performance, resulting in overestimation of future growth rates for growth stocks in comparison with value stocks. Further, institutional investors find it easier to justify growth stocks as prudent investments to their sponsors. Analysts, like investors, too tend to be vulnerable to the judgement bias of placing excessive weight on recent trends and preference for glamour stocks. A second explanation, proffered by Jegadeesh et al. (2004) is that growth stocks are more likely to generate investment banking business and, therefore, conflicts of interests would result in more optimistic recommendations for such stocks.

The characteristics of firms that were preferred by analysts were examined. The preference for high price momentum, high earnings growth was comparable to findings of other studies, while the preference for low price to earnings ratio was theoretically consistent. The exceptional result, was the aversion to stocks with high promoter holding. Plausible reasons for this aversion could be concerns related to corporate governance (separation of ownership and management) and information asymmetry, which could be associated with high promoter holding. However, the skill-based component of analyst recommendations still provided incremental predictive value, controlling for the predictive contribution of stock characteristics. This was contrary to the findings of Jegadeesh et al (2004), who reported that consensus recommendations did not add meaningful value to key momentum and contrarian characteristics of the stocks recommended by the analysts.

The linkage between analyst bias and usefulness of analyst research was explicitly established in the research, by comparing the returns earned by strategies that adjusted for the optimism bias with those earned by simple strategies that did not adjust for the optimism. This implies that for the uninformed investors, using broker recommendations at face value could be highly

misleading. The skew in analyst recommendations was very high. On an average 59 percent of the recommendations issued during 2009-10 to 2013-14 were buy recommendations and only 14 per cent were sell recommendations. While it is possible to justify a high proportion of 'Buy' recommendations due to favourable return expectations in some periods, it is difficult to justify why the proportion would consistently exceed 50 per cent. Even after adjusting for market conditions, the skew was statistically significant. Moreover, a rising ratio of aggregate buy recommendations to sell recommendations appeared to signal lower returns in value-weighted index of the sample stocks over the following six months. The skew in analyst recommendations in India is not exceptional. As reported by Barber et al (2006), the proportion of buy recommendations in the US increased from 60 per cent at the end of first quarter of 1996 to 74 per cent at the end of second quarter of 2000 and then steadily reduced to 42 per cent at the end of second quarter of 2003. The main reason identified by previous research for biased recommendations is conflicts of interest. These may arise since favourable recommendations may help increase income from stock trading, proprietary trading and investment banking businesses of the brokerage firms in the short term. Further, analysts may tacitly use favourable recommendations to incentivise companies being researched to provide them privileged access to their managements. Further, even informed investors may not be immune to being misled by analyst research. As the internet bubble episode in the US market in 1999- 2000 period and subsequent investigation by US Securities Exchange Commission illustrated, influential analysts can sometimes play a disruptive role in the stock market, even though in general they may help to enhance market efficiency.

Information Uncertainty

Information uncertainty arises either from absence of firm-specific information or from the volatility inherent in firm's business model and complexity of its operations, leading to ambiguity in the firm's valuation. This delays the learning process of the investors regarding firm's value and increases noise trading, which results in mispricing of the firm's stock. In the presence of information uncertainty, analysts have both the ability, owing to their relative information advantages, and the opportunity available due to mispricing, to provide valuable recommendations. Extending the argument further, the predictive value of analyst recommendations should increase with rise in information uncertainty.

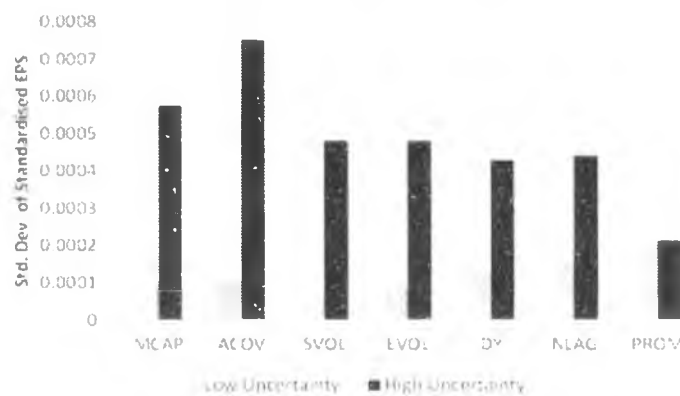Figure 4: Trend in Volatility of Earnings with Uncertainty

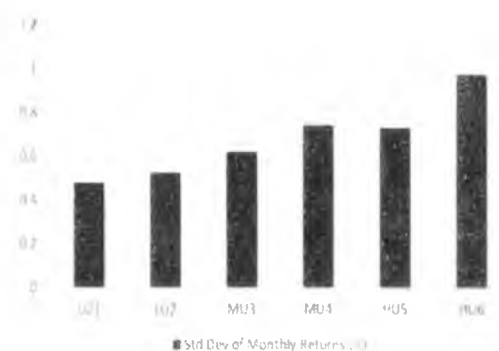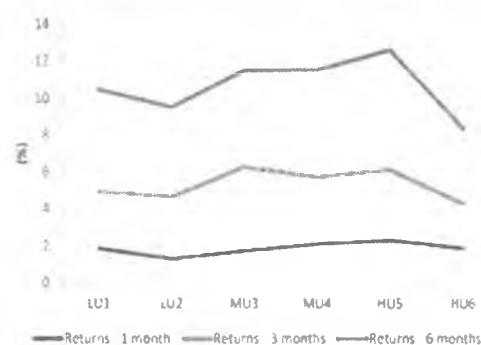**Figure 5: Trend in Volatility of Returns with Uncertainty**   **Figure 6: Trend in Stock Returns with Uncertainty**

While market capitalisation levels decreased with rising uncertainty by construction, the daily average turnover ratio actually increased, partly mitigating the effect of lower firm size on trading volumes. The increase in average turnover ratio can be explained by the increase in trades due to differences of views among investors with rising uncertainty. The price to book value decreased with rising uncertainty, since the low uncertainty firms were associated with higher and more consistent returns than the high uncertainty firms which were associated with more cyclical and lower returns. On the other hand, both earnings growth and price to earnings ratio did not show any meaningful trend with increasing uncertainty. It can be noted that the analyst coverage and institutional holdings declined steadily with rising information uncertainty. Thus, low IU stocks would be associated with high level of information diffusion and competitive trades, whereas the information diffusion and informed trading activity is expected to be low for high IU stocks. The rising volatility of earnings was expected to result in increasing unpredictability of future earnings. In order to confirm this relationship, the data of quarterly mean absolute forecast errors (MAFE) in earnings per share was partitioned into the six-information uncertainty sub-levels. Adequate numbers of quarterly forecasts were available only from June 2010 onwards, providing 20 quarterly values of MAFE for each uncertainty sub-level.

Figure 7: Trend in Mean Absolute Forecast Error (MAFE) with Uncertainty
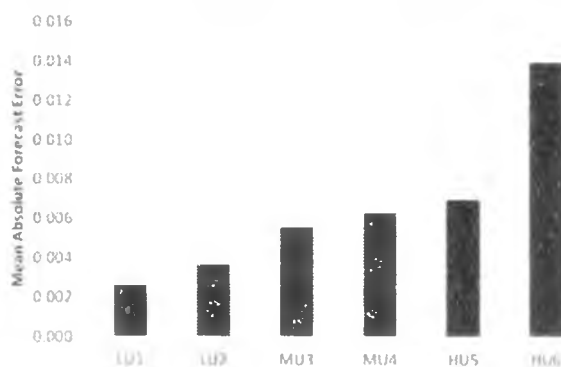
The increasing earnings and return volatility, and increasing earnings forecast errors, without a simultaneous increase in realised returns establish the validity of the information uncertainty construct.

The abnormal returns were also compared with the estimated transaction costs. The transaction costs were estimated separately for low and high uncertainty portfolios, not only to account for the differing portfolio turnovers, but also differences in percentage trading costs. For instance, the impact cost in the case of high IU stocks was estimated to be much greater than in the case of low IU stocks. However, even after adjusting for the higher impact costs, the transaction costs in the case of high IU portfolios were much lower than the abnormal returns earned by such portfolios. On the other hand, the abnormal returns earned by the low and medium IU portfolios were inadequate in comparison estimated transaction costs.

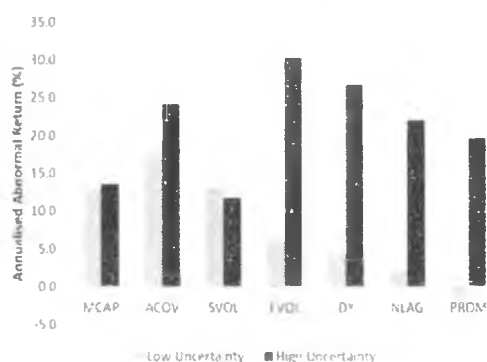Figure 8: Abnormal Returns by Uncertainty Proxy   Figure 9: Abnormal Returns on RECOs by Uncertainty Category
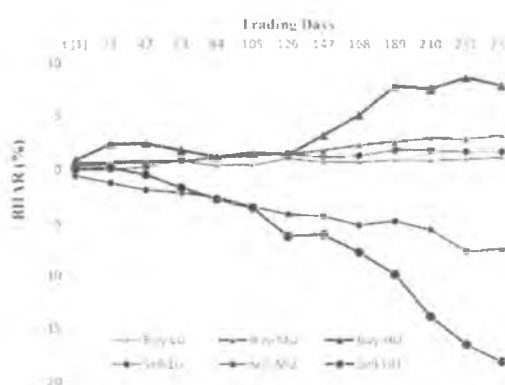

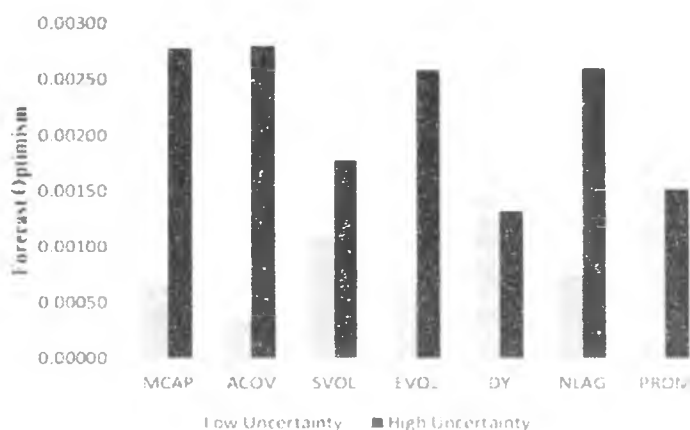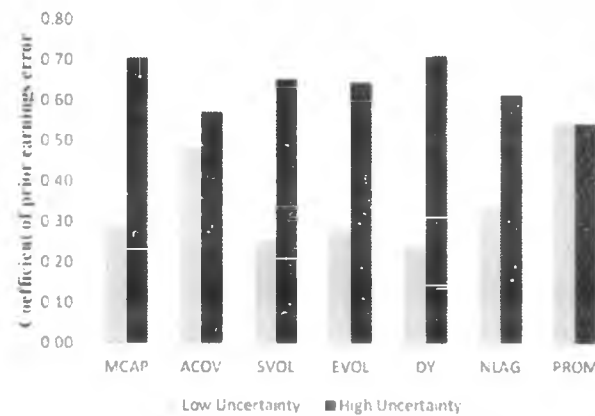Figure 10: Comparison of Forecast Optimism by Uncertainty Proxy

Figure 11: Responsiveness to Prior News by Uncertainty Proxy

This finding was consistent with Zhang (2006b) who had reported that analysts under-reacted more to earnings news in the case of higher uncertainty. Referring to the research literature that attributed analysts' under-reaction to use of judgement heuristics and biases under uncertainty such as conservatism or overconfidence, Zhang contended that since these behavioural biases were associated with uncertainty, they should increase with rising uncertainty, thereby increasing the analysts' under-reaction. Greater under-reaction of analysts under uncertainty can also be supported using the structural uncertainty model of Brav and Heaton (2002), if we assume that analysts like investors are unable to ascertain whether the recent earnings surprise constituted a structural change or was just an aberration due to high uncertainty rather than due to a behavioural reason.

Conclusion

Usefulness was defined firstly in terms of informative value, or new information content provided by the recommendations to the investors, which was measured through the immediate stock price impact. Usefulness was defined secondly in terms of predictive value, the ability of analysts to predict stock returns and thereby provide recommendations that can help investors earn abnormal returns. Predictive value was measured through the abnormal returns earned by investment strategies that were based on analyst recommendations. The study found strong evidence of informative value, that is, recommendation changes impacted stock prices around the release date. This finding highlights the important role of stock analysts in enabling the stock market to become more efficient. There was also evidence of abnormal returns available to investment strategies based on best and worst ranked stocks by average recommendations during the study period. The results remained valid after adjusting for estimated transaction costs and were robust to a number of tests, including variations in investment strategy. This established that analyst recommendations can potentially be valuable to investors.

The reliance of analysts on common stock characteristics was also tested. Analyst recommendations appeared to be tilted in favour of stocks which had high price momentum, high earnings growth, and low promoter holding. However, further tests showed that analyst

skills provided incremental predictive ability, even after controlling for the common stock characteristics. The results, indicating predictive value of analyst recommendations, were inconsistent with efficient market theory, according to which stock prices fully reflect all available information, and therefore analyst recommendations cannot persistently provide abnormal returns. However, the existence of predictive value was consistent with behavioural models of several authors including Daniel et al. (1998), Barberis et al. (1998), DeLong et al. (1990) and Shleifer and Vishny (1997), and structural uncertainty model of Brav and Heaton (2002) and parametric uncertainty model of Lewellen and Shanken (2002). These models explain why stocks may be persistently mispriced and why predictable return patterns such as momentum in stock prices occur. Equity analysts collect information from a variety of sources, apart from information disclosed by firms, or reported in the media. Further, they apply cash flow forecasting and valuation models formally.

Investment strategies based on broker-wise recommendations were not successful, unlike those based on average recommendations across analysts. The difference in results was more significant in the case of favourable than unfavourable recommendations. This difference was attributed to the effect of optimism bias in recommendations. The study confirmed that analyst recommendations are highly and persistently optimistic. On an average the proportion of buy recommendations during the study period was high, at 59 per cent, which diluted the value of favourable recommendations. According to research literature the bias in recommendations is likely to result from conflicts of interest, including need to generate more trading business and investment business. Uninformed investors are likely to be misled if they consider analyst recommendations at face value, though higher price impact of sell recommendations than of buy recommendations suggests that the informed investors take the bias into account. However, sorting recommendations on the basis of the rank of average recommendations and allocating only top quintile to the buy portfolio neutralised this bias, and the buy portfolio thus constructed earned statistically significant abnormal returns. This showed that recommendations become valuable only based on relative ranking, but not when they were used individually and literally, at their stated levels.

References

Abarbanell, J. S. & Bernard, V. L. (1992). Tests of analyst's over-reaction/ under-reaction to earnings information as an explanation for anomalous stock price behaviour. The Journal of Finance, 47 (3), 1181-1207.

Agrawal, U. (2015). S&P Indices Versus Active Funds Scorecard (SPIVA India Scorecard). Mid-Year 2015. S&P Dow Jones Indices. S&P Dow Jones Indices LLC.

Bae, K. H., Stulz, R. M., & Tan, H. (2008). Do local analysts know more? A cross-country study of the performance of local analysts and foreign analysts. Journal of Financial Economics, 88(3), 581-606.

Barber, B. M., & Lyon, J. D. (1997). Detecting long-run abnormal stock returns: The empirical power and specification of test statistics. Journal of Financial Economics, 43(3), 341-372.

Barberis, N., Shleifer, A., &Vishny, R. (1998). A model of investor sentiment. Journal of Financial Economics, 49 (3), 307-343.

Bhushan, R. (1989). Collection of information about publicly traded firms: Theory and evidence. Journal of Accounting and Economics, 11(2-3), 183- 206.

Clement, M. B. (1999). Analyst forecast accuracy: Do ability, resources and portfolio complexity matter? Journal of Accounting and Economics, 27 (3), 285-303

Damodaran, A. (2015). Equity risk premiums (ERP): Determinants, estimation and implications-The 2015 Edition. (March 14, 2015). Available at SSRN: http://ssrn.com/abstract=2581517

De Bondt, W. F., & Thaler, R. H. (1990). Do security analysts overreact? The American Economic Review, 52-57.

Dimson, E., & Marsh, P. (1984). An analysis of brokers' and analysts' unpublished forecasts of UK stock returns. The Journal of Finance, 39 (5), 1256-1292.

Dugar, A., & Nathan, S. (1995). The effect of investment banking relationships on financial analysts' earnings forecasts and investment recommendations. Contemporary Accounting Research, 12 (1), 131-160.

Eling, M., & Faust, R. (2010). The performance of hedge funds and mutual funds in emerging markets. Journal of Banking & Finance, 34(8), 1993- 2009.

Elton, J. E., Gruber, M. J., & Grossman, S. (1986). Discrete expectational data and portfolio performance. The Journal of Finance, 41 (3), 699-713.

Fama, E. F. (1965). The behaviour of stock-market prices. The Journal of Business, 38(1), 34-105.

Francis, J., Lafond, R., Olsson, P., & Schipper, K. (2007). Information uncertainty and post-earnings-announcement-drift. Journal of Business Finance and Accounting, 34 (3-4), 403-433.

Hilary, G., & Hsu, C. (2013). Analyst forecast consistency. The Journal of Finance, 68(1), 271-297.

http://hdl.handle.net/10603/208786

Huij, J., & Post, T. (2011). On the performance of emerging market equity mutual funds. Emerging Markets Review, 12(3), 238-249.

Irvine P. J. (2004). Analysts' forecasts and brokerage-firm trading. The Accounting Review, 79 (1), 125-149

Jegadeesh, N., &Karceski, J. (2009). Long-run performance evaluation: Correlation and heteroscedasticity-consistent tests. Journal of Empirical Finance, 16(1), 101-111.

Jiang, J., Lee, C.M.C., & Zhang Y. (2005). Information uncertainty and expected returns. Review of Accounting Studies, 10 (2-3), 185-221.

Johnson, E. J. (1988). Expertise and decision under uncertainty: Performance and process. In M.T.H. Chi, R. Glaser, & M.J. Farr (Eds.), The nature of expertise. (pp. 209-228) NY. Psychology Press.

Kadan, O., Madureira, L., Wang, R., & Zach, T. (2009). Conflicts of interest and stock recommendations - The effects of the global settlement and related regulations. Review of Financial Studies, 22 (10), 4189-4217.

Lakonishok, J., Shleifer, A., &Vishny, R. W. (1994). Contrarian investment, extrapolation, and risk. The Journal of Finance, 49(5), 1541-1578.

Lambert, R., Leuz, C., &Verrecchia, R. E. (2007). Accounting information, disclosure, and the cost of capital. Journal of Accounting Research, 45(2), 385-420.

Malmendier, U., &Shanthikumar, D. (2007a). Are small investors naïve about incentives? Journal of Financial Economics, 85 (2), 457-489.

Nagarajan, H. K., Pradhan, K. C., Mukherjee, S., & Singh, S. K. (2011). How households save and invest: Evidence from NCAER household survey. National Council of Applied Economic Research.

Rajan, R., &Servaes, H. (1997). Analyst following of initial public offerings. The Journal of Finance, 52(2), 507-529.

S&P & CRISIL (2010). SPIVA Indices Versus Active Funds Scorecard, India (June 2010). Retrieved from http://www.spindices.com/documents/ spiva/ spiva-crisil-mid-year-2010.pdf on 10 August, 2015.

Shleifer, A., & Summers, L. H. (1990). The noise trader approach to finance. The Journal of Economic Perspectives, 4(2), 19-33

Shleifer, A., &Vishny, R. W. (1997). The limits of arbitrage. The Journal of Finance, 52(1), 35-55

Trueman, B. (1994). Analyst forecasts and herding behaviour. Review of Financial Studies, 7 (i), 97-124.

Tversky, A., & Kahneman, D (1974). Judgement under uncertainty: Heuristics and biases. Science, 185 (4157), 1124-1131.

Welch, I. (2000). Herding among security analysts. Journal of Financial Economics, 58 (2000), 369-396

Zhang, X. F. (2006). Information uncertainty and analyst forecast behaviour. Contemporary Accounting Research, 23 (2), 565-590