An Empirical Study applying Chart Patterns to Indian Realty Market Crashes based on Predictive Efficiency

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The realty market worldwide has seen a huge upsurge in the last decade. When compared with the stock market the realty market is less volatile but nonetheless the uptrend in it is also followed by downtrend. When there is an exponential rise in price of real estate assets and the prices loose correlation with the actual cost price of the assets then the market generally falls and these huge falls are known as crashes. This study evaluates the movement of the realty market using one of the very old chart patterns namely Head and Shoulders based on quantitative parameter – Predictive Efficiency. Out of the total three major falls in the realty market, Head and Shoulders pattern were able to predict only one.

Keywords: Crashes, head and shoulders, realty market, predictive efficiency.

Introduction

India is very well connected with the global markets and the growth of the commercial real estate is closely complemented by the trade India does with the rest of the World. The global developments should be imbibed in the developments taking place in the real estate market. The economic growth of cities in India is highlighted by the report of McKinsey's which lays emphasis on building inclusive cities and sustaining economic growth. The foundation for a smooth development process is ensured by a strong foundation for urban growth.

The economy of India is expected to grow despite the turbulence it faces. The reason for the same can be attributed to an ever-increasing per capita income and domestic consumption rate. The investments specifically done to the infrastructure sector has further enhanced its attractiveness for investment purposes. The growth potential offered by the Indian Real Estate industry indicates huge opportunities for the entire sector. The retail market of India will emerge as a major driving force behind the real estate sector's growth. The demand of the real estate by 2020 can very well be imagined due to the aspirations of the Indian shoppers, development of residential apartments, townships and cities. It is anticipated that nearly 215 million people will be added to the population of India by 2025. India enjoys a distinct reputation as a hospitality hub. The rising levels of GDP and unstoppable pace of global alliances have further aided in driving the hospitality market. The travel and tourism market of India is expected to grow from $144 billion to $431 billion by 2020. The growth of the industrial sector of the economy is going to reach a value of $225 billion by 2020.

Improving the real estate sector in India is going to help improve the overall perception of the sector. The Indian Real estate sector is going to emerge as a promising one heralding a long era of growth. The markets have better informed customers and due to increased competition long term success will only be seen by people who strive for overall excellence.

Literature Review

Stock Market crashes personify the class of phenomenon that is often referred to as the "extreme events". Sornette referred to the cooperative phenomenon leading to specific detectable critical signals as power laws. The same concept was then applied to earthquakes (Sornette and Sammis, 1995 and Newman et.al., 1995). It was later suggested that the same concept be applied to financial market crashes also (Feigenbaum and Freund, 1996 and Sornette et.al, 1996). Changes in regimes and predictions of trend reversals are important in all domains of applications like finance, economy, climate etc. The same assumes all the more significance in the case of finance when people's expectations, greediness and fear all construct the indefinite future.

Blanchard (1979) and Blanchard and Watson (1982) introduced the concept of rational expectations bubbles, which refers to arbitrary deviations from fundamental prices while keeping the anchor point of economic modeling well in place. Evans (1991) has explored the explosive trends in the time series of asset prices and foreign exchange rates.

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Lillo and Mantegna (2002) have characterized the observed non-stationary behavior of the index returns when it exceeds beyond a threshold. This kind of a characterization is similar to the Omori law of geophysics. Further, the results show that it is not possible to model the non linear behavior by a GARCH (1, 1) model.

Zhou and Sornette (2003) have found stronger presence of herding than in other mature markets inspite the immature nature of the Chinese equity markets and the strong Government policy. The probable reason for the same could be the immature nature of the Chinese markets which helps in attracting the short term investors who are pretty interested in gaining short term profits.

The head and shoulders pattern involves three peaks and the highest out of them is the middle one. It has been in use since 1930 when it was described by Shabacker and is also considered to be one of the most promising ones out of all chart patterns. The studies carried out by Jegadeesh and Titman (1993) and Carhart (1997) point out that the non-linear nature of Head and Shoulders pattern makes it quite different from the simple trend following rules or momentum strategies. This chart patterns form is even distinct from the previous studies of non linearity like CHAOS and ARCH as indicated in a study conducted by Scheinkman and LeBaron, 1989.

The head and shoulders traders are also known as noise traders since their activity increases the aggregate trading volume also. Also the kind of trading is not linked to trading backed by information but rather trading activity supported by speculation wherein the noise is often considered to be information mistakenly. Noise trading models can be motivated realistically by appealing to departures from rationality (Shiller, 1984; Shleifer and Summers, 1990 and De Long et. al. 1990b). Head and shoulders trading affect the returns and the level of noise trading since sales is having an immediate effect upon the reduction of prices.

Head and Shoulders trading can be profitable in the opinion of Brown and Jennings (1990) and Grundy and McNichols (1990) since they indicate in their studies that even valuable information can be provided in the times of asymmetric information. The studies related to technical trading rules in foreign exchange markets find themselves to be profitable after adjusting for transactions costs, opportunity costs and risk associated (Chang and Osler, 1997; LeBaron, 1996; Levich and Thomas, 1993; Sweeney, 1986; Dooley and Shafer,1984).

Head and Shoulders is a very efficient technical analysis chart pattern. The same has been used in the study to predict the crashes in the realty market of India.

Research Methodology

Head and Shoulders pattern identifies three price peaks and the highest among them is the middle one. A head and shoulders pattern predicts a downward trend wherein an inverse pattern predicts an uptrend. The occurrence of a head and shoulder pattern after an uptrend is called a "head and shoulder top" wherein a pattern where the roles of peaks and troughs are reversed is attributed as a "head and shoulder bottom".

The analysis of Realty Market crashes is done using Head and Shoulders Pattern based on the quantitative parameter of Predictive Efficiency. Predictive Efficiency - Efficiency of a technique depends on how many times it predicts a downfall correctly i.e., lesser the number of false signals generated by the technique, more efficient it is. Therefore, "Predictive Efficiency" of a signal is defined as the percentage of "True Signals" generated out of "Total Signals" generated by a technique. Thus, Predictive Efficiency is the capacity of the technique to predict the trend reversal correctly.

Thus,

PE = (St *100)

Sn

Where, PE = Predictive Efficiency

St = Number of True signals generated in time (t)

Sn = Total Number of Signals Generated in time (t).

The Index used for analysis is BSE Realty Index. A crash is defined as a drop of 25% or above from the peak value of Index within a duration of 60 days from the peak. The crashes taken for the study are huge falls which started on 23rd July 2007 (fall of –19.41%), 14th January 2008 (fall of –50.13%) and 21st October 2009 (fall of –27.17%) and continued for about next 60 days from the date of the peak.
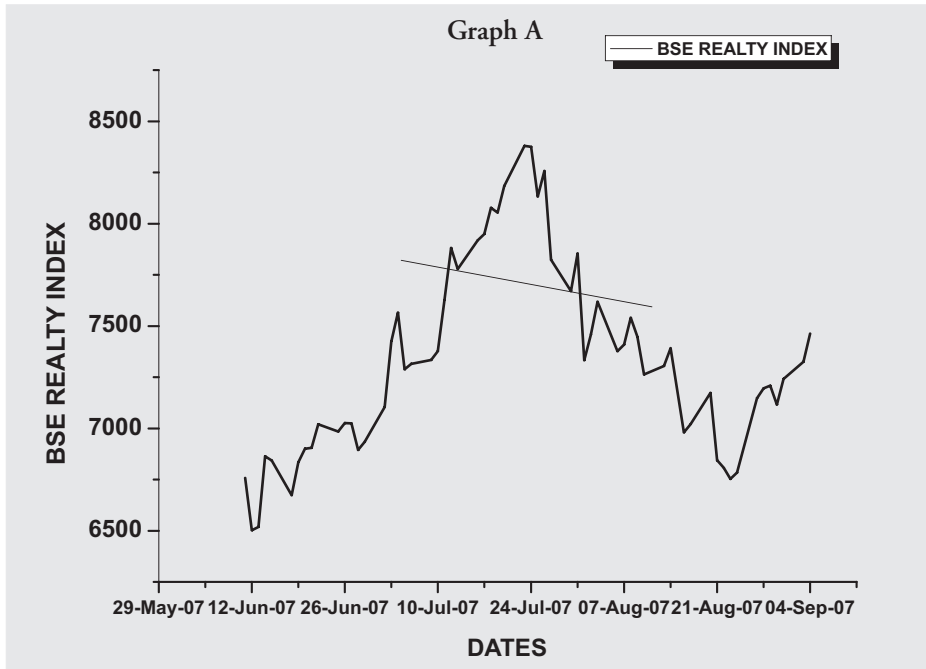
Findings and Discussion

A. Analysis of Realty Market Crashes using Head and Shoulders Pattern

Analysis of crash which started on 23rd July 2007 on BSE Realty Index

For analyzing the crash using Head and Shoulders Pattern, data of 30 days pre and post the start date of the crash is plotted. Following graph shows the BSE Realty Index data.
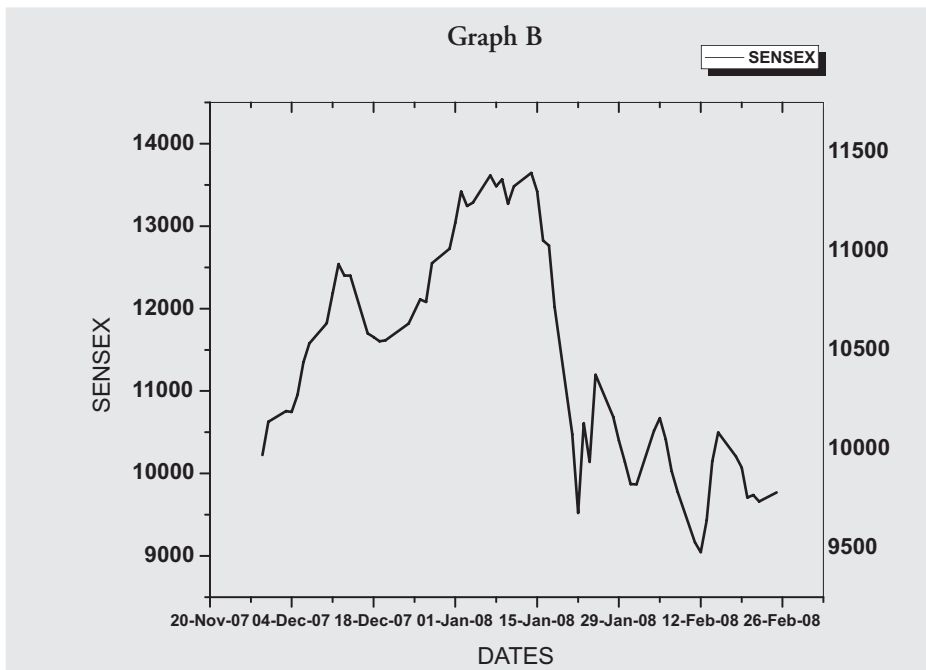
In the graph A Head and shoulders pattern is visible. The corroboration of a new down-trend occurs when the neckline is penetrated on 01st August. Thus it may be said that head and shoulders pattern was able to signal this crash.

Graph A

B. Analysis of crash which started on 14th January 2008 on BSE Realty Index

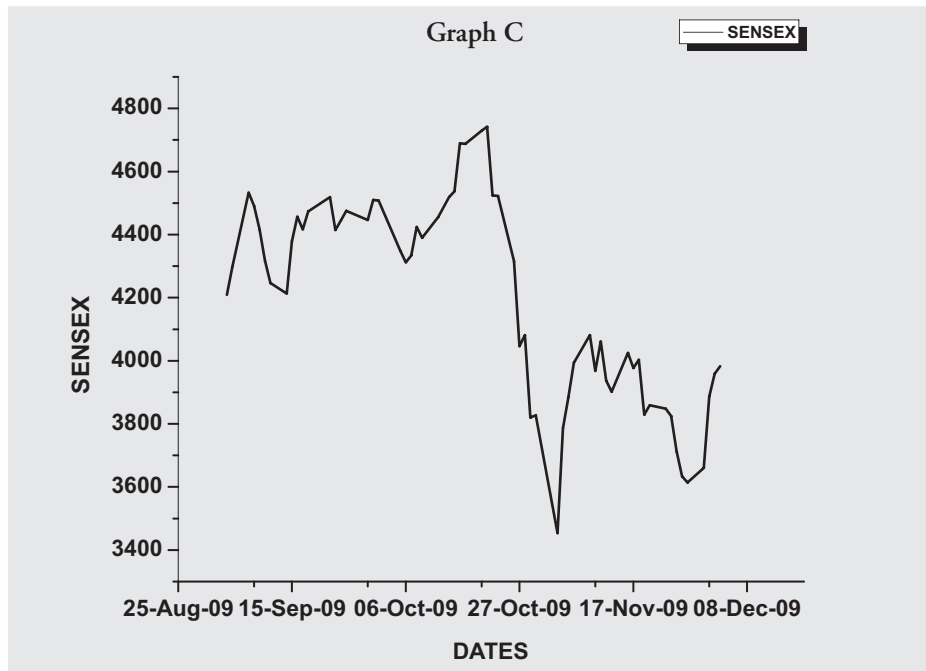For analyzing the crash using Head and Shoulders Pattern, data of 30 days pre and post the start date of the crash is plotted. Following graph shows the BSE Realty Index data.

Graph B

In the above graph B Head and shoulders pattern is not visible prior to the date of crash. Thus it may be said that head and shoulders pattern was not able to signal this particular crash.

C. Analysis of crash which started on 21st October 2009 on BSE Realty Index

For analyzing the crash using Head and Shoulders Pattern, data of 30 days pre and post the start date of the crash is plotted. Following graph shows the BSE Realty Index data.

Graph C

In the above graph Head and Shoulders pattern is not visible prior to the date of crash. Thus it may be said that head and shoulders pattern was not able to signal this particular crash.

4.2 Study of signals generated on Indian Real Estate Market prior to a downfall using Head and Shoulders Chart Pattern based on "Predictive Efficiency"

Period Of Crash	Value of Crash	Particulars	Predictive Efficiency using Head and Shoulders
23rd July 2007 to 23rd August 2007	19.41%	**Predictive Efficiency**= (Number of True signals generated in a particular time/Total Number of Signals Generated in a particular time)*100	100%
14th January 2008 to 24th March 2008	50.13%		No signal generated
21st October 2009 to 3rd November 2009	27.17%		No signal generated

Conclusion

There are various technical analysis chart patterns to analysis the movements of the financial markets. Head and Shoulders pattern is considered to be one of the most reliable amongst them. Therefore it was used to analyze the Realty market crashes in India. Predictive Efficiency has been used as the quantitative parameter to measure how many times Head and Shoulders have predicted the signal correctly. Out of the three falls in the Realty market in India analyzed in the study, the Head and Shoulders pattern were able to predict only one. This crash was predicted by Head and Shoulders pattern with 100% predictive efficiency. Further evaluation may be done for larger time period

and also with other chart patterns and even other quantitative parameters.

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