An Empirical Study applying
Log Periodic Structures for Prediction of
Crashes in Indian Stock Market

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Abstract

A huge amount of funds of small investors are invested in stock markets throughout the world. A large amount of fluctuations in the stock markets are generally attributed to the news in the financial markets and largely these small investors are the last ones to react to these news and are thus more prone to losses. If a method is designed which can predict the upcoming large downfall or crash then this can help evade losses of many investors and life of a few of them. The present study tries to analyze crashes in the Indian Stock market by applying Log periodic structures. The period of the study is from 1997 to 2011. The study finds out that Log periodic structures generate signals prior to Crashes in Indian Stock Market. The results also showed that Log periodic structures can differentiate between a steep fall in the prices and a minor downward move.

I. Introduction

THE LEVEL OF BSE Sensex on 1st July 1997 was 4300.86 and the same as on 1st August 2011 was 18314.33. The market capitalization of BSE Sensex as on 21st April 2011 was ₹ 29,733 billion, which was 47.68% of total market capitalization of BSE. The market value of BSE has augmented from a meagre ₹ 560325 Crore in the year 1997-1998 to ₹ 6,836,878 Crore in 2010-2011. Figure 1 shows the movement of BSE Sensex from July 1997 to August 2011. Stock market consists of large number of participants having different views

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occurred on 8th February 2007) of less than 15%, even then the parameters generated using this crash data used to predict precisely the beginning of the next crash of 2008were indeed able to do it.

VI. Conclusion

Erratic movements of bourses are reason of deep stress for investors specially the not so big ones. Sudden draw downs create turmoil in the stock market particularly spoiling lives of some of them. Various works are available in literature related to stock these unpredictable moves nonetheless very little studies are available on crashes broadly, and applying Log periodic power law specifically, with regard to Indian stock market. This study has analyzed several crashes (using the definition given by Bree and Joseph (2007)) of Indian financial market. In above analysis, when the Log periodic power law projected curve starts moving closer to the plot of the index, it is suitable for investors to sell the stock and exit the market and if the peak of the price touches or crosses the Log periodic structures projected curve then the crash is in the offing. The outcomes of the current work illustrate that by using Log periodic power law it may be predicted that a signal is indicating a crash and not just a sell signal. They also show that the Log periodicity was capable of predicting both the crashes on BSE Sensex having the parameters from earlier crashes and greater than 25% as Log periodic power law are capable of generating signals for crashes greater than 25%. In one of the cases where crashes are less than 25%, as expected Log periodic structures have not generated signal for the crash. Thus this may be a concluding remark that Log periodicity may be applied for analyzing of Stock Markets of India for forecasting financial market crashes.

6.1 Boundaries of current work and Possibility for advance research

As duration of the current work was from 1997 to 2011, it can further be conducted for a larger duration of time and therefore a lot of outliers will also be taken into consideration. The daily close prices of the Index was taken, instead if data based on size of tick be used for analysis, then the robustness of the results can be enhanced.

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