

Rational Bubbles in the Indian Stock Market: Empirical Evidence from the NSE 500 Index

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Abstract

The objective of this paper is to test the presence of 'rational bubbles' in the equity market of India represented by the National stock exchange (NSE), using monthly stock prices and dividends data. The period of the study spans over nearly two decades, viz., January, 1996 to April, 2014 and the sample comprises of the 500 companies that constitute the NSE 500 index, based on their market capitalization. The methodologies employ a range of linear (symmetric adjustment) and non-linear (asymmetric adjustment) cointegration approaches. The findings suggest that there is no cointegration between stock prices and dividends based on the linear approaches, indicative of the presence of 'rational bubbles'. However, based on the non-linear approaches (which have greater significance than their linear counterparts) the hypothesis of the existence of 'rational bubbles' in the Indian equity market is rejected.

I. Introduction

"RATIONAL BUBBLES" IN the stock markets have assumed significance, especially, after the sub-prime crises of 2008. They can be defined as 'self-fulfilling expectations that push stock prices towards a level, which is unrelated to the change in the market fundamentals'. It is usually characterized by a rapid increase in prices followed by a drastic fall, after which the prices return back to their mean level (Blanchard and Watson, 1982).

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"mean reverting", "volatility clustering", "leverage effect" and "stationarity" in returns, which merited further probe. Hence, due to this nature of returns, the non-linear cointegrating techniques were also applied to determine the state of efficiency.

The non-linear M-TAR approach was able to reject the null hypothesis of cointegration, because it is flexible enough to identify non-linear adjustment patterns with sharp movements. Also, M-TAR has higher power than other linear tests in presence of asymmetric adjustment and then TAR in presence of sharp movements in the time series. The results of this test indicate that 'rational bubbles' do not exist in the Indian stock market. There are evidences of sharp movements in the time series; however, they are adjusted rapidly towards the mean values. In other words, even though there was volatility in the market, it remained clustered and the returns moved back towards the mean at a fast pace.

In order to explain the same, the findings could be seen in the light of Topol's (1991) necessary assumption for the existence of "rational bubbles". According to him, low interest rates form a necessary precursor to "rational bubbles"; the Indian economy, on the other hand, has a prevalence of high interest rates.

Further, a cointegrating relationship between the prices and the dividends, with an asymmetric adjustment characterized by sharp movements, is established. The results indicate that the negative deviations from the fundamental value are adjusted faster as against positive deviations and the price (and not the dividend) is responsible for most of the adjustments. This is an evidence of the "leverage effect" which was also reported in the findings of Singh, Vats, Jain and Yadav (2015).

In sum, the findings of this paper suggest that there is no cointegration between stock prices and dividends based on the linear approaches, indicative of the presence of "rational bubbles". However, based on the non-linear approaches (which have greater significance than their linear counterparts) the hypothesis of the existence of 'rational bubbles' in the Indian equity market is rejected. Further, it is observed that the negative deviations (from the mean) are eliminated at a faster pace compared to the positive deviations; above all, the stock price (and not the dividend) is responsible for most of the adjustments back to the equilibrium.

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Annexure I Brief Definition of Theories and Terms

Name of Theory	Definition
'Greater Fool' Theory	A theory that states it is possible to make money by buying securities, whether overvalued or not, and later selling them at a profit because there will always be someone (a bigger or greater fool) who is willing to pay the higher price.
'Herding' Theory	A mentality characterized by a lack of individual decision-making or thoughtfulness, causing people to think and act in the same way as the majority of those around them think and act.
'Extrapolation' Theory	Extrapolation is the process of estimating, beyond the original observation range, the value of a variable on the basis of its relationship with another variable.
'Moral Hazard' Theory	The risk that a party to a transaction has not entered into the contract in good faith, has provided misleading information about its assets, liabilities or credit capacity, or has an incentive to take unusual risks in a desperate attempt to earn a profit before the contract settles.
'Animal Spirits'	A term used by John Maynard Keynes used in one of his economics books. In his 1935 publication, 'The General Theory of Employment, Interest and Money', the term 'animal spirits' is used to describe human emotion that drives consumer confidence. According to Keynes, animal spirits also generate human trust.

Source: The Investopedia and Wikipedia Websites