Are Stock Markets Always Volatile? Alternative Approaches for Analyzing Volatility in BSE, India

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Abstract

The paper is an attempt to analyse alternative approaches for analyzing volatility assumes normal distribution of price indices to propose new concept / measure of temporal volatility. Stochastic Diffusion Models and alternative Models of Volatility Index are used to evaluate differences of empirical results of these approaches, which use variances of Indices of all prices of the day as volatility. SENSEX is used extensively for analyzing volatility in India. All movements in price Indices are not volatile. This study uses variances of Indices of all prices in the day as volatility index to lend empirical support for Kendall's hypothesis that monthly prices conceal true magnitudes of price oscillations. Significant difference in results of regression models of Stochastic Diffusion Models (SDM) and Volatility Index (VI) based on SDM is found. The different approaches for measuring volatility furnish different results, sensitive to method and models used in analysis. NAVI(New Approach of Volatility Index) is another dimension of viewing volatility which is the highlight of the paper.

I. Introduction

WALRAS (1774) USED the concept of volatility for high degree of oscillations in price bids by buyers and sellers for different quantities of goods, which resulted in prices that equalized proposed quantities of purchase and sale. The concept was subsequently used by Hicks (1939) and Samuelson (1948). The concept is now used extensively in the context of equity price oscillations in stock markets.

As volatility is an indicator of inefficiency of the market, it is an important aspect for analysts and investors for assessing risks of investment. In volatile market, risk averters invest in safe but low returns options to avert risk. High risk takers invest in risky options with high expected returns. Risk takers are willing and able to bear/losses for high expected returns in the short run. But long run investors wait for returns over the long period and are, therefore, not affected by volatility of the market.

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— NAVI which is innovative volatility index in this paper which incorporates all indexes of the day may be considered as another way of looking at this concept. When this index is used, time explains both volatile and non-volatile changes.
— Further experiments are required to validate the gap in the literature of volatility as this papers experiment with magnitude of volatility raised many questions on traditional thoughts.
— Time as a determinant of change furnishes results significantly different for those of V_{1t} (variance) and VI_{1t} (Volatility Index) and V_{5t} from VI_{5t}. Time as the determinant of non-volatile changes provides significantly different results for V_{2t} and VI_{2t}; and V_{5t} from VI_{5t}; V_{2t} and V_{4t} and VI_{4t}.
— Change in approach of considering volatility will lead to different result, hence investor should not consider, frequent change as volatility, whereas, magnitude of volatility has to be considered.

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