

Event Study Methodology Development and Its Application in Assessing the impact of Derivatives Introduction in the National Stock Exchange (NSE), India

Abstract

Event Studies are one of the predominant themes of research in finance and accounting prevailing for the last eight decades. They provide a powerful setting to examine whether and to what extent a firm's valuation is affected in reaction to an event. In this study, we first develop short horizon event study methodologies under both the frequentist and Bayesian paradigms and then apply both existing and the newly developed methods to the particular event of derivatives introduction in the National Stock Exchange (NSE), India. First frequentist tests are developed based on the standard Method of Moments (MM) and method of Maximum Likelihood (ML) approaches which are so far lacking in the literature. Bayesian solutions for the same are developed next, by deriving the Bayes Factors (BF). The performances of these newly developed tests along with the existing ones are compared in terms of their specifications and powers through a simulation experiment using returns data of all of the 1231 stocks that have been listed and traded in the NSE from April 1998 to January 2016. The simulations reveal that the existing non-parametric tests are the best specified ones in case of Abnormal Returns (AR), while the new BF based tests are the best specified ones in case of Cumulative Abnormal Returns (CAR). In terms of Powers, again for AR, the non-parametric tests, the new method of moments based test and the new likelihood based tests exhibit greatest power in case of only change in mean, only change in variance and simultaneous change in mean and variance of AR respectively. However, in case of CAR, the new BF based tests emerge as the most powerful in case of both only change in mean as well as simultaneous change in mean and variance, while the new method of moments based test retains its position of being most powerful in case of only change in variance.

The study next focuses on applying these newly developed event study tests along with the existing ones to understand the effect of introduction of derivatives on the price of the underlying stocks listed in NSE. The findings suggest that there is a temporary positive price effect just before the commencement of derivatives trading. Further investigation of the impact of derivatives on the risk and liquidity is carried out considering a long horizon event study. The effect on risk is studied by considering all its three components namely the total risk, the systematic risk and the unsystematic risk. The findings suggest that the total risk has declined, while the systematic risk has increased post derivatives introduction. In contrast, no change was observed in the unsystematic risk following derivatives introduction. A similar investigation of the impact on liquidity is carried out by considering five different liquidity measures namely Relative Trading Volume, Net Turnover, Liquidity Ratio, Price Range and Trading Frequency. The findings convey a general improvement in the liquidity post the introduction of derivatives. In summary, derivatives have been beneficial to the underlying market in case of their introduction in NSE, India.