# Does Introduction of Single Stock Options Impact Stock Volatility: Empirical Evidence from Underlying Stocks in Indian Market

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## Abstract

*Several studies on the effect of listing of index futures and index options on the volatility and efficiency of underlying spot market have been conducted in developed and emerging markets. The results suggest that introduction of derivatives contracts improve liquidity and efficiency of the underlying spot market. However, empirical evidences do not provide conclusive results for the underlying asset's volatility. Present study addresses this concern and investigate the impact of single stock option trading on the volatility of the underlying stocks in an emerging market using data of companies listed on National Stock Exchange (NSE) of India. The daily stock price data for a period of 1 year prior and post option introduction is extracted for 166 companies which offer options trading on the platform of NSE. Pre and post volatility of the underlying stocks is measured using standard deviation and GARCH (1, 1) model. Then the sample was split into three groups based on the market capitalization of the stocks, i.e., large cap, mid cap, and small cap. Pre and post option listing volatility was tested for three groups separately. Using GARCH (1, 1) model highest average volatility is recorded for large cap stocks, followed by mid cap, and lowest for small cap stocks. This contrasts with the results of daily variance, as variance is highest for the small cap, followed by large cap and lowest for mid cap firms. Results show that for the large cap firms, volatility increases after the option listing, using both the measure of measures of volatility; and statistically insignificant decline is recorded in the daily variance and average long-run volatility measure ($V_L$) using GARCH (1, 1) model for mid cap, and small cap firms.*

**Key Words:** Single Stock Options, Volatility, GARCH (1, 1), Random Walk.

**JEL Classification:** G13, C58.