

A Computational Analysis of Financial Markets response to shock events - A case study on Covid 19 Pandemic

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This research is an attempt to computationally analyse and explain the impact of a shock event on financial markets by studying the variance in stock market returns. Financial markets are complex marketplace for buying and selling of financial instruments, and the price of these instruments are influenced by several factors. Three key types of analysis, fundamental analysis in which a company's financial statements are studied, technical analysis in which flow of information related to a stock and its demand and supply in the market is believed to determine the price and finally behavioural analysis in which the investors are assumed to behave irrationally leading to hoarding at times of positive news and mass sell offs at times of panic, such as during Covid 19. Thus, a statistical approach is deployed to study if a relationship exists between shock event variable and stock returns over a period of two years from January 2020 to December 2021. Covid 19 pandemic is chosen the shock event of interest and daily infections along with log change in daily infections are selected as a proxy for the shock event. Three indexes from stable as well as emerging markets were selected as proxy for financial markets for this study, along with 14 individual firms of which five belong to Automobile, four to Pharmaceuticals, three to banking and two to IT sector. Using Panel study method, results from auto regression models build with shock variables are compared with auto regression models with 5 day lags of stock returns. While daily infections of Covid 19 was found to be not explanatory of the variance in returns for any of the 17 stocks, log change in daily infections of Covid 19 is found to be statistically significant for 3 out of the 17 stocks, that help in explaining the variability in stock returns during the Covid 19 period.