Long Memory in Stock Market Returns, Liquidity and Volatility: A Fractionally Integrated Approach

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Abstract: The phenomenon of long memory in the stock market implies that the stock markets are inefficient, thus providing scope for possible earnings above-normal returns. This also means a contradiction of the efficient market hypothesis. The present study encompasses the estimation of the long memory model with fractional integration using the Autoregressive Fractionally Integrated Moving Average (ARIMA) model. It examines the spectral densities of the estimated models. The models are estimated at an autoregressive and moving average component of order 1. The study tests the presence of long memory in stock market returns, liquidity, and volatility using the data in daily frequencies of stock market indices from India for the period since the inception of the index till 31st March 2020 extracted from the official website of NSE. The broader indices include the Nifty 50 Index, Nifty Midcap 50 Index, and Nifty Smallcap 50 Index. The study also involves an analysis of sectoral indices like Nifty Auto Index, Nifty Bank Index, Nifty FMCG Index, Nifty FS Index, Nifty IT Index, Nifty Media Index, Nifty Metal Index, Nifty Pharma Index, Nifty PSU Bank Index, Nifty Private Bank Index, and Nifty Realty Index. The required analyses have been performed using the econometric software STATA and E-views. The results indicate the presence of long memory in returns of the Nifty Midcap 50 Index and Nifty Smallcap 50 Index with the model inclusive of autoregressive and moving average component of order 1. This shows that although the risk level of trading and investment is high in Midcap and Smallcap indices, the high returns opportunities exist as evident from the results of long memory. Consequently, the findings from the present study will be useful for stock market participants to devise trading and investment strategies and stock market regulators to evaluate the role of long memory in stock market indices during policy decisions.

Keywords: long memory; stock market returns; stock market liquidity; stock market volatility; ARFIMA