Empirical Analysis of Realized GARCH and Realized SV Models

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Abstract

This study aims to estimate the return volatility by realized GARCH and realized stochastic volatility models, in which daily returns and high frequency realized volatilities data are incorporated simultaneously. Maximum likelihood and Markov chain Monte Carlo methods are applied for estimation, respectively. Evaluation of Predictive ability on volatility and quantile forecasts is also given to make comparison between the investigated models. Empirical research on NASDAQ-100 stock index shows that the realized GARCH model is superior to the realized stochastic volatility model, even though the latter is based on a more realistic assumption that volatility is unobservable and is not predetermined.

Keywords: Realized GARCH Model; Realized Stochastic Volatility Model; Realized Volatility; Markov chain Monte Carlo; Value-at-risk; Expected Shortfall.