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Modeling and Forecasting Multifractal Volatility
Established upon the Heterogeneous Market Hypothesis

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Abstract

We construct a new type of multifractal volatility models based on heterogeneous market hypothesis. Similar to the model setting of heterogeneous autoregressive model for realized volatility (HAR-RV), we replace the variables utilized in the HAR-RV model with daily, weekly and monthly multifractal volatility. To evaluate the performance of our new multifractal volatility models, we compare the volatility forecasting accuracy of our models to that of other traditional benchmarks. The model confidence set (MCS) test shows that, although the autoregressive fractionally integrated moving average models for realized volatility (ARFIMA-RV) are the best forecasting ones, under several loss functions, our new multifractal volatility models outperform other traditional ones. In addition, our new models survive the MCS test in many cases.

Keywords: Realized volatility; Multifractal volatility; HAR-RV; ARFIMA-RV; MCS test
JEL classifications: G1; G17

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