

Bootstrapping Realized Bipower Variation

Gang Feng*

Technische Universitaet Braunschweig, Braunschweig, Germany g.feng@tu-bs.de

Jens-Peter Kreiss

Technische Universitaet Braunschweig, Braunschweig, Germany j.kreiss@tu-bs.de

Realized bipower variation as a consistent estimator of integrated volatility is often used to measure the volatility in financial markets with high frequency intraday data. Considering a nonparametric volatility model in discrete time, we propose a nonparametric i.i.d. bootstrap procedure by resampling the noise innovations based on discrete time returns, and a nonparametric wild bootstrap procedure by generating pseudo-noise that imitates correctly the first and second order properties of the ordinary noise, in order to approximate the distribution of the realized bipower variation. Asymptotic validity of the proposed procedures is proved. Furthermore, the finite sample properties of the proposals are investigated in a simulation study and are also compared to the standard normal approximation. It suggests that both bootstrap methods improve upon first-order asymptotic theory in finite samples.

Key Words: high frequency data, volatility, resampling, central limit theorem