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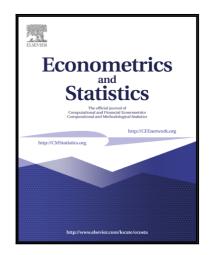
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Composite Quantile Regression For GARCH Models Using High-Frequency Data

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Abstract

The composite quantile regression (CQR) method is newly proposed to estimate the generalized autoregressive conditional heteroskedasticity (GARCH) models, with the help of high-frequency data. High-frequency intraday log-return processes are embedded into the daily GARCH models to generate the corresponding volatility proxies. Based on proxies, the parameter estimation of GARCH model is derived through the composite quantile regression. The consistency and the asymptotic normality of the proposed estimator are obtained under mild conditions on the innovation processes. To examine the finite sample performance of our newly proposed method, simulation studies are conducted with comparison to several existing estimators of the GARCH model. From the simulation studies, it can be concluded that the proposed CQR estimator is robust and more efficient. An empirical analysis on high-frequency data is presented to illustrate the new methodology.

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