

Parametric inference and forecasting for continuously invertible volatility models

Sixiang Cai

We introduce the notion of continuous invertibility on a compact set for volatility models driven by a Stochastic Recurrence Equation (SRE). We prove in this context the strong consistency and the asymptotic normality of the M-estimator associated with the Quasi-Likelihood criteria. We recover known results on univariate and multivariate GARCH type models where the estimator coincides with the classical QMLE. In EGARCH type models, our approach gives a strongly consistent and asymptotically normal estimator when the limiting covariance matrix exists. We provide a necessary and sufficient condition for the existence of this limiting covariance matrix in the EGARCH(1,1) model introduced in Nelson1991. We exhibit for the first time sufficient conditions for the asymptotic normality of the estimation procedure used in practice since Nelson1991.