Center-Outward R-Estimation for Semiparametric VARMA Models

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Abstract

We propose a new class of estimators for semiparametric VARMA models with unspecified innovation density. Our estimators are based on the measure transportation-based concepts of multivariate center-outward ranks and signs. Root-n consistency and asymptotic normality are obtained under a broad class of innovation densities including, e.g., multimodal mixtures of Gaussians. Simulations establish the impressive performances of the resulting R-estimators, which quite significantly outperform, under non-Gaussian and non-elliptical innovation densities, the routinely-applied Gaussian quasi-likelihood method.

Based on joint work with Davide La Vecchia (University of Geneva) and Hang Liu (Lancaster University)

Keywords Multivariate ranks, Distribution-freeness, Local asymptotic normality, Measure transportation, Semiparametric inference.

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