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Uniform bias study and Bahadur representation for local polynomial estimators of the conditional quantile function

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This paper investigates the bias and the weak Bahadur representation of a local polynomial estimator of the conditional quantile function and its derivatives. The bias and Bahadur remainder term are studied uniformly with respect to the quantile level, the covariates and the smoothing parameter. The order of the local polynomial estimator can be higher than the differentiability order of the conditional quantile function. Applications of the results deal with global optimal consistency rates of the local polynomial quantile estimator, performance of random bandwidths and estimation of the conditional quantile density function. The latter allows to obtain a simple estimator of the conditional quantile function of the private values in a first price sealed bids auctions under the independent private values paradigm and risk neutrality.

Submission history

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