Asymptotic distribution of the bias corrected LSEs in measurement error linear regression models under long memory

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Abstract: This paper derives the consistency and asymptotic distribution of the bias corrected least squares estimators (LSEs) of the regression parameters in linear regression models when covariates have measurement error and errors and covariates form mutually independent long memory moving average processes. In the structural ME linear regression model, where the unobservable predicting variables are random, the nature of the asymptotic distribution of suitably standardized BC-LSEs depends on the values of $D_{max} = \max \{d\_X + d\_vep, d\_X + d\_u, d\_u + d\_vep, 2d\_u \},$ where $d\_X, d\_u,$ and d_vep are the LM parameters of the covariate, ME and regression error processes, respectively. This limiting distribution is Gaussian when $D_{max} \quad 1/2$. In the former case some consistent estimators of the asymptotic variances of these estimators and a log(n)-consistent estimator of an underlying LM parameter are also provided. They are useful in the construction of the large sample confidence intervals for regression parameters.

In the functional measurement error linear regression models, where the unobservable covariates are non-random, the limiting distribution of the BC-LSEs is always a Gaussian distribution, padetermined by the range of the values of d_vep-d_u.