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Identification and estimation of nonseparable single-index models in panel data with correlated random effects*

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Abstract

The identification in a nonseparable single-index models with correlated random effects is considered in panel data with a fixed number of time periods. The identification assumption is based on the correlated random effects structure. Under this assumption, the parameters of interest are identified up to a multiplicative constant and could be estimated by an average difference of derivatives estimator based on the local polynomial smoothing. We suggest to linearly combine the estimators obtained for different orders of differences and derive the variance-minimizing weighting scheme. The asymptotic distribution of the proposed estimators are derived both for stationary and non-stationary explanatory variables along with a test of the stationarity. Finally, Monte Carlo experiments reveal finite sample properties of the proposed estimator.

JEL codes: C13, C14, C23

Key words: average derivative estimation, correlated random effects, local polynomial smoothing, nonlinear panel data, nonseparable models

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