

abstract: In this paper we propose instrumental variable (IV) estimators for linear panel data models with interactive effects in the error term and regressors. The IVs are transformed regressors and it is not necessary to search for external IVs. We consider the models with homogeneous slopes and heterogeneous slopes. Our approach asymptotically eliminates interactive effects in the error term and in the regressors separately. Asymptotic properties of the proposed estimators are investigated, which reveal that: (i) our \sqrt{NT} -consistent second-step estimator is free from asymptotic bias which could arise due to the correlation between the regressors and estimation errors of interactive effects; (ii) under the same condition other existing estimators, which asymptotically eliminate interactive effects in the error term only or in the regressors and error term jointly, can suffer from asymptotic biases, and; (iii) our estimator is asymptotically as efficient as the latter estimator after the bias-correction, but the relative efficiency to the former estimator after the bias-correction is indeterminate.