A Unified Approach to Efficient Estimation of Short Linear Panel Regression Models

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Abstract

In this paper, we propose a new approach to estimate short panel regression models. The model considered is general enough: the model can be either static or dynamic, the time-varying regressor can be either endogenous, predetermined or strictly exogenous variable, and time invariant regressors can also be included. The errors can contain standard fixed effect and/or interactive fixed effects. We propose the minimum distance(MD) estimator to estimate these models in a unified way by utilizing the covariance structure analysis. The distinctive feature of our approach is that we do not need to use instrumental variables even in the presence of endogenous regressors. Theoretical investigation demonstrates that an identification problem arises when there are endogenous regressors, and a simple solution to address that problem is proposed. Test for endogeneity is also discussed. Monte Carlo simulation results reveals that the proposed MD estimator outperforms most of the existing estimators such as GMM estimators.