

Panel Data Models with Potentially Misspecified Unknown Factors

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Abstract: While studying panel data models with interactive fixed effects, majority works focus on generalizing how regressors and the associated marginal effects enter the models (e.g., non-/semi- parametric form, heterogeneity setting, etc). However, few effort has been made to generalise the unobservable factor structure and relax the corresponding assumptions. In this study, we investigate the consequences of misspecifying the property of unknown factors of a parametric panel data model. We show that the interactive fixed effects estimator still achieves the global minimum even when the properties of unknown factors are misspecified. Some rates of convergence and an asymptotic normality are established accordingly. In addition, we find that nonstationarity of the factors can help reduce the requirement of the sample size along the time dimension. Moreover, the investigation on misspecification extends the discussions of Section 4.2 of Bai et al. (2009). Finally, we verify our findings through extensive simulation studies, and investigate income elasticity of health care expenditure using data of OECD countries.