

Panel Models with Interactive Effects*

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Abstract

The multiplication of individual specific effects, λ_i , and time-specific effects, f_t , $\lambda_i' f_t$, provides a more general formulation than the traditionally used additive form to capture unobserved heterogeneity in panel data modeling. It is also a useful approach for dimension reduction or for modeling cross-section dependence. However, λ_i and f_t are unobservable. We review various formulations of the interactive effects models that have been suggested in the literature and explore their implications for panel econometric modeling when the regressors are strictly exogenous or predetermined. To the extent possible, we also suggest a quasi maximum likelihood approach for estimating the regression model parameters under different assumptions about λ_i and f_t , and under different combinations of the data size of cross-sectional dimension, N , and time series dimensions, T . Monte Carlo studies are conducted to highlight the issues involved.

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