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The factor analytical approach in near unit root interactive effects panels. (English)

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Summary: In a recent study, *J. Bai* [Econometrica 81, No. 1, 285–314 (2013; Zbl 1274.62404)] proposes a new factor analytical (FA) method for estimation of stationary dynamic panel data models with fixed effects. Our interest in this method originates with the fact it does not require explicit demeaning of the data, a practice that is known to cause problems of bias and low power in near unit root panels. The purpose is to study the properties of FA when applied to such panels when the common component admits to a interactive effects representation, which is more general than fixed effects. It is shown that the estimator of the autoregressive parameter is consistent with a well centered asymptotic normal distribution, leading to unit root tests with maximal achievable power. In fact, FA is consistent and asymptotically normal regardless of whether the data are near unit root non-stationary or stationary. It is therefore very general and hence widely applicable.

MSC:

- 62M10 Time series, auto-correlation, regression, etc. in statistics (GARCH)
- 62F12 Asymptotic properties of parametric estimators
- 62H25 Factor analysis and principal components; correspondence analysis
- 62M07 Non-Markovian processes: hypothesis testing
- 62P20 Applications of statistics to economics

Keywords:

factor analytical method; interactive effects; common factors; local-to-unity asymptotics; bias; panel unit root test

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