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# Asymptotic Inference for Dynamic Panel Estimators of Infinite Order Autoregressive Processes \*

Yoon-Jin Lee<sup>†</sup>, Ryo Okui<sup>‡</sup> and Mototsugu Shintani<sup>§</sup>

## Abstract

In this paper we consider the estimation of a dynamic panel autoregressive (AR) process of possibly infinite order in the presence of individual effects. We employ double asymptotics under which both the cross-sectional sample size and the length of time series tend to infinity and utilize the sieve AR approximation with its lag order increasing with the sample size. We establish the consistency and asymptotic normality of the fixed effects estimator and propose a bias-corrected fixed effects estimator based on a theoretical asymptotic bias term. Monte Carlo simulations demonstrate the usefulness of bias correction. As an illustration, the proposed methods are applied to dynamic panel estimation of the law of one price deviations among US cities.

*Key Words:* autoregressive sieve estimation; bias correction; double asymptotics; fixed effects estimator.

*JEL Classification:* C13; C23; C26.

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