

Quantile Regression for Dynamic Panel Data

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Abstract

This paper studies estimation and inference in a quantile regression dynamic panel model with fixed effects. Panel data fixed effects estimators are typically biased in the presence of lagged dependent variables as regressors. To reduce the dynamic bias in the quantile regression panel data model I develop an instrumental variables approach that employs lagged regressors as instruments. I show that the proposed estimators are consistent and asymptotically normal. In addition, I suggest Wald and Kolmogorov-Smirnov type tests for general linear restrictions. Monte Carlo studies are conducted to evaluate the finite sample properties of the estimators and tests. The simulation results show that the instrumental variables approach sharply reduces the dynamic bias, and turns out to be especially advantageous in terms of the bias, root mean square error, and power of the tests statistics when innovations are non-Gaussian and heavy-tailed. I illustrate the new approach by testing for the presence of time non-separability in utility using household consumption panel data. The results show evidence of asymmetric persistence in consumption dynamics, and important heterogeneity in the determinants of consumption.

Key Words: Quantile regression, dynamic panel, fixed effects, instrumental variables

JEL Classification: C14, C23

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