Accepted Manuscript

Nonparametric testing for smooth structural changes in panel data models

Bin Chen, Liquan Huang

PII: S0304-4076(17)30221-X
DOI: https://doi.org/10.1016/j.jeconom.2017.10.004
Reference: ECONOM 4436

To appear in: *Journal of Econometrics*

Received date : 4 January 2016
Revised date : 18 October 2017
Accepted date : 23 October 2017

Please cite this article as: Chen B., Huang L., Nonparametric testing for smooth structural changes in panel data models. *Journal of Econometrics* (2017), https://doi.org/10.1016/j.jeconom.2017.10.004

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Nonparametric Testing for Smooth Structural Changes in Panel Data Models

Bin Chen[a] University of Rochester

Liquan Huang[b] University of Rochester

Abstract: Detecting and modeling structural changes in time series models have attracted great attention. However, relatively little effort has been paid to the testing of structural changes in panel data models despite their increasing importance in economics and finance. In this paper, we propose a new approach to testing structural changes in panel data models. Unlike the bulk of the literature on structural changes, which focuses on detection of abrupt structural changes, we consider smooth structural changes for which model parameters are unknown deterministic smooth functions of time except for a finite number of time points. We use nonparametric local smoothing method to consistently estimate the smooth changing parameters and develop two consistent tests for smooth structural changes in panel data models. The first test is to check whether all model parameters are stable over time. The second test is to check potential time-varying interaction while allowing for a common trend. Both tests have an asymptotic $N(0,1)$ distribution under the null hypothesis of parameter constancy and are consistent against a vast class of smooth structural changes as well as abrupt structural breaks with possibly unknown break points alternatives. Simulation studies show that the tests provide reliable inference in finite samples and two empirical examples with respect to a cross-country growth model and a capital structure model are discussed.

JEL Classifications: *C12, C14, C23*

Key words: Local smoothing, Panel data, Parameter constancy, Smooth structural changes

---

We thank the co-editor, Jianqin Fan, the associate editor and two referees for careful and constructive comments. We also thank Zongwu Cai, Cheng Hsiao, Hiro Kasahara, Guido Kuersteiner, Ingmar Prucha and seminar participants at the University of Maryland, Rutgers University, Syracuse University, the 2013 International Symposium on Analysis of Panel Data, the 23rd Annual Meeting of the Midwest Econometrics Group and the 31st Meeting of the Canadian Econometric Study Group for their useful comments and discussions. Any remaining errors are solely ours. Chen acknowledges support from the National Science Foundation of China, reference number 716283021.

a: Department of Economics, University of Rochester, Rochester, NY 14627, USA. E-mail: binchen@rochester.edu.

b: Department of Economics, University of Rochester, Rochester, NY 14627, USA. E-mail: l.huang@rochester.edu.

Download English Version:

https://daneshyari.com/en/article/7358155

Download Persian Version:

https://daneshyari.com/article/7358155

Daneshyari.com