

ECON 715
Advanced Topics in Panel Data and Network Econometrics

This course provides an up-to-date coverage of the various econometric issues that arise in the analysis of panel data models focusing on cross-sectional dependence and regional and global interconnections. It will also cover new topics on econometrics of networks which is viewed as a type of interconnections. It is intended for those interested in getting acquainted with the econometric techniques needed to carry out analyses of time series across countries, firms regions, and/or industries. Consideration will be given to the different cases arising in practice where either the number of groups (N) or the number of time periods (T), or both, is reasonably large.

The course begins with a very brief review of the fixed and random effects static panel models, and discusses the problems of estimation and hypothesis testing in these models both when N and T are large, and when N is large but T is small. The focus of the course will, however, be on panels with both N and T large and of the same order of magnitude. Among the various estimation procedures we consider the SURE, the mean group and the pooled mean group estimators. Particularly attention will be paid to the specific issues that arise in the analysis of interdependence and networks.

Prerequisite: ECON 511 or equivalent.

LECTURE TIMES: Mondays 9:00-12:00noon, First lecture on January 8, 2017

LOCATION: KAP-319, Kapriellian Hall (KAP)

OFFICE HOURS: Mondays 2:00-3:00pm, Room KAP 324B

Assistant: Akiko Matsukiyo, Room KAP 324A, amatsu@usc.edu 213 740 6017

Readings : Books

Arellano, M. (2003), *Panel Data Econometrics*, Oxford: Oxford University Press.

Baltagi, B.H., (2008), *Econometric Analysis of Panel Data*, Fourth Edition, Wiley-Blackwell.

Di Mauro, F. and M. H. Pesaran, eds, (2013), *The GVAR Handbook: Structure and Applications of a Macro Model of the Global Economy for Policy Analysis*, Oxford University Press, Oxford.

Hsiao, C., (2014), *Analysis of Panel Data*, Third Edition, Cambridge University Press.

Pesaran, M.H., (2015), *Time Series and Panel Data Econometrics*, Oxford University Press, Oxford.

Topics:

1. An Overview of static and dynamic panels with short T and large N
2. Heterogeneous dynamic panels – relation to high dimensional econometrics
3. Lasso and OCMT variable selection for large dimensional active sets
4. Cross- Sectional dependence in panels (strong and weak CD dependence)
5. Spatial panel econometrics
6. Econometric analysis of networks
7. Unit roots and co-integration in panels
8. Aggregation in large panel data models
9. Global vector autoregressions (GVAR) and their applications to modelling interdependence