Panel Data Analysis

Location: CIQSS, 3535 Queen-Mary, Suite 420, Montréal
Dates: July 7-11, 2008

Financial support for this Data Training School is provided by the Social Sciences and Humanities Research Council of Canada, the Fonds québécois de recherche sur la société et la culture and the universities affiliated to QICSS[1].

Course objectives
This intensive training session deals with longitudinal (panel) data analysis. The course will cover topics in static and dynamic model specifications, as well as topics in duration data analysis. Emphasis will be placed both on theory and computer application of the methods using data from the *Survey of Income and Labour Dynamics (SLID)*. During the course, we will gradually build an empirical specification that models four major decisions for women: (1) Working; (2) Marriage/cohabiting; (3) Fertility; and (4) Receiving social assistance. The decisions will in the end be modeled jointly and the aim is to estimate how these decisions are related and assess the importance of one decision on the other decisions.

Course content
Part 1: Static panel data analysis
The first part of this course will introduce the concept of panel data and derive estimation methods suitable for this type of data in a static environment. Both linear and non-linear model specifications (such as Probit and Logit) will be considered.

Part 2: Dynamic panel data analysis
The second part of this course will introduce dynamic models (for example, models containing a lagged dependent variable) and describe appropriate estimation methods. As for static models, both linear and non-linear model specifications will be considered.

Part 3: Duration data analysis
The third part of this course will deal with continuous and discrete time duration data.

Trainer
This training session will be under the responsibility of **Jorgen Hansen**, associate professor, Department of Economics, Concordia University.

General course information
The sessions are in English. Morning sessions will be used for theoretical presentations and afternoon sessions will be reserved for computer exercises. Workshops are given using SAS and STATA.

Schedule
The seminar is scheduled from 9:30am to 4:30pm, July 7.
The seminar is scheduled from 9:00am to 4:30pm, July 8-11.

Day 1 :
- Introduction to and estimation of static, linear regression models in both cross-sectional data and panel data.
- Presentation of the Survey of Income and Labour Dynamics (SLID).
- Workshop: Extracting and organizing SLID data. Applying linear regression methods to SLID data. Exercise 1.

[1] Université de Montréal, INRS-UCS, McGill University, Concordia University, Université Laval, Université du Québec à Montréal, Université de Sherbrooke.

Day 2 :

- Introduction to and estimation of static, non-linear models in both cross-sectional data and panel data.
- Workshop: Applying non-linear estimation methods to SLID data. Exercise 2.

Day 3 :

- Introduction to and estimation of dynamic models in panel data.
- Workshop: Estimation of a dynamic, linear regression model using SLID data. Exercise 3.

Day 4 :

- Estimation of dynamic models in panel data.
- Introduction to and estimation of duration data models, with an emphasis on discrete-time data
- Workshop: Estimation of a dynamic, non-linear regression model using SLID data. Exercise 4.

Day 5 :

- Estimation of duration data models
- Estimation of multiple, correlated outcomes in panel-data
- Workshop: Estimation of a specification that models: (1) Working; (2) Marriage/cohabiting; (3) Fertility; and (4) Receiving social assistance jointly. Exercise 5.

Readings

Arellano, Manuel and Stephen Bond (1991) "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations" *Review of Economic Studies*, 58, 277-297.

Arellano, Manuel and Bo Honore (2001) "Panel Data Models: Some Recent Developments" in *Handbook of Econometrics*, Vol. 5, eds. Heckman, J. and E. Leamer, North-Holland, 3229-3296.

Cameron, Colin A. and Pravin K. Trivedi (2005) *Microeconometrics: Methods and Applications*. Cambridge University Press, New York, NY.

Card, David and Daniel Sullivan (1988) "Measuring the Effect of Subsidized Training Programs on Movements In and Out of Employment" *Econometrica*, 56, 497-530.

Chay, Kenneth Y. and Dean R. Hyslop (2000) "Identification and Estimation of Dynamic Binary Response Panel Data Models: Empirical Evidence using Alternative Approaches" Working paper, UC Berkeley.

Hansen, Jorgen (2006) "The Effects of Human Capital and Earnings Supplements on Income Assistance Dependence in Canada" SRDC working paper 06-06 (downloadable at www.srdc.org)

Hansen, Jorgen and Magnus Lofstrom (2006) "Immigrant-Native Differences in Welfare Participation: The Role of Entry and Exit Rates" unpublished working paper

Heckman, James J. (1981a) "Statistical Models for Discrete Panel Data" Chapter 3 in Manski, Charles and Daniel McFadden (eds.), *Structural Analysis of Discrete Data*, MIT Press, Cambridge, MA.

Heckman, James J. (1981b) "The Incidental Parameters Problem and the Problem of Initial Conditions in Estimating a Discrete Time-Discrete Data Stochastic Process" Chapter 4 in Manski, Charles and Daniel McFadden (eds.), *Structural Analysis of Discrete Data*, MIT Press, Cambridge, MA.

Honoré, Bo E. and Ekaterini Kyriazidou (1998) "Panel Data Discrete Choice Models with Lagged Dependent Variables" *Econometrica*, 68, 839-874.

Hyslop, Dean R. (1999) "State Dependence, Serial Correlation and Heterogeneity in Intertemporal Labor Force Participation Behavior of Married Women" *Econometrica*, 67, 1255-1294.

Semykina, Anastasia and Jeffrey M. Wooldridge (2006) "Estimating Panel Data Models in the Presence of Endogeneity and Selecetion: Theory and Application" unpublished working paper, Michigan State University.

Wooldridge, Jeffrey M. (2002) *Econometric Analysis of Cross Section and Panel Data*. MIT Press, Cambridge, MA.

Wooldridge, Jeffrey M. (2005) "Simple Solutions to the Initial Conditions Problem in Dynamic, Nonlinear Panel Data Models with Unobserved Heterogeneity," *Journal of Applied Econometrics*, 20(1), 39-54.

Participants profile

The course is open to graduate students and postdoctoral fellows as well as to professors and practising researchers. Participants should have some working knowledge of regression models prior to the course and a practical knowledge of a statistical package such as SAS, STATA or SPSS. The course is open to a maximum off 15 participants who will be selected on the basis of the relevance of the course to their curriculum, research, or teaching.

Application procedure

Those wishing to attend the course are invited to register on our website (http://www.ciqss.umontreal.ca/) by completing a registration form and describing the relevance of the course to their research and/or teaching activities.

Graduate students and postdoctoral fellows who are selected to participate will be eligible for a fellowship covering registration fees and, if they live outside the greater Montreal area, transportation costs as well as lodging in the student residences of the Université de Montréal.

Registration fees are **$200 for students and postdoctoral fellows, $300 for professors and researchers affiliated with QICSS, $500 for other university professors and researchers and $750 for individuals from any other category.** Registration fees must be paid by money order or cheque made out to: QICSS – Université de Montréal; by debit or credit card.

The online registration period will run from March **14th, 2008 to April 11th, 2008**. The results will be announced during the week of **April 21st, 2008**.

ATTENTION !

Please note that this workshop uses detailed confidential SLID data, protected by the *Statistic Act*. In order to have access to these data, workshop participants have to complete security procedures necessary to become a *deemed* Statistics Canada employee before beginning the training session.

This procedure, the same used for all Statistics Canada employees, involves completing a security check consent form and a data confidentiality protection agreement. Participants should begin this process as soon as they are informed that they have been selected, during the week of April 21st. The QICSS analysts will guide participants through the procedure. Thank you for your comprehension.

INFORMATION

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