DEPARTMENT OF SOCIOLOGY 2012-13

Students taking this module should consult the **POSTGRADUATE STUDENTS' HANDBOOK** for general information about coursework and assignments. Your assignment(s) must be submitted by the deadline(s) published in this module outline. You are required to hand in ONE watermarked paper copy of your coursework to the General Office (6.339) by the published deadline. In order to produce a watermarked paper copy you must first upload your work onto the Online Coursework Submission (OCS) system. **PLEASE NOTE THAT, IN LINE WITH THE UNIVERSITY'S POLICY, THE DEPARTMENT OPERATES A PENALTY SYSTEM FOR LATE WORK. Two per cent (2%) of the total mark for the assignment will be deducted for each 24 hours after the deadline up to seven days. Thereafter, work will receive a mark of zero**. Marks are entered into the database and students will receive their individual mark by email as soon as the marks have been entered. Students are advised to check the coursework marks carefully against their own record, and report any discrepancy immediately to the General Office. For further information please refer to the section in the Handbook headed 'Coursework', and the University's guidelines available at:

http://www2.essex.ac.uk/academic/students/pgt/crswk_polPG.htm

Where coursework has a permanent output, a student may request a formal re-marking of the piece of work if he/she is unhappy with the original mark. However, before submitting a request to have an essay re-marked, a student is required to discuss the original mark awarded with his/her module tutor who marked the essay. If, following this discussion, the student is still dissatisfied with the mark, the essay can then be submitted for re-marking.

In response to a request, the work will be second marked by another member of staff and the marks will be reconciled. A request for remarking must be submitted within 7 days of the marks being released. A form is available from the General Office.

As a result of this process, students should be aware that the new mark may not change, or it may be higher or lower than the original mark, and that the new mark will replace the original mark. The University's assessment and marking policies are published at:

http://www.essex.ac.uk/quality/pages/examinationsandassessment.htm

Module Code	**SC968-7-SP (Spring term)**
Module Title	Panel Data Methods
Module Supervisor	**Dr Maria Iacovou(ISER)**
E-mail and Office Number	maria@essex.ac.uk Room 2N2.6.04 (ISER Building)

Assessment	**Coursework: 50%** **Examination 50%**		
Coursework	**Assessment**	**Weighting**	**Category**
	Coursework	**50%**	**coursework**
	Exam	**50%**	**2 hour written exam**

Weighting of Coursework	Whichever is the Greater: EITHER 50 per cent Coursework Mark, 50 per cent Exam Mark OR 100 per cent Exam Mark
Submission Dates	**Tuesday 23 April 2013**
Moderator	**TBC**
Return of marked coursework	**14 May 2013**

Learning & Teaching Methods
Two hours of lectures and two hours of practical lab sessions per week for five weeks.

Coursework
One piece of directed applied coursework using Stata

Exam Duration and Period
2 hour exam during Summer Examination period

Other information
Compulsory for MA in Sociology and Panel Data Analysis

Course website
http://www.iser.essex.ac.uk/iser/teaching/module-sc968
All course materials are downloadable from this site

Aims of the course
This course gives students a practical grounding in the theory and methods of panel data analysis. It has the following key aims:

- To allow students to interpret and critically assess published studies using panel data
- To provide students with the skills and confidence to manipulate panel datasets on their own in the future
- To give an overview of different approaches to panel data analysis
- To develop practical skills in selecting and conducting different types of panel data analysis
- To provide an opportunity for students to compare results of analysing the same data with different panel methods
- The course reviews standard regression methods (OLS, logit and probit) and covers longitudinal data manipulation, transition matrices, continuous and discrete fixed and random effects models, and survival analysis.

LAB SESSIONS

Each lecture is followed by a lab-based session where students will use Stata to implement the methods covered in the lectures. Please note that this is an intensive course, and most students will need to spend one or two hours in the lab each week, in addition to these scheduled sessions, in order to cover the work.

The data used will be a subset from the British Household Panel Survey (BHPS), and the exercises will involve the sort of analysis that professional social scientists might need to undertake.

Most sessions will build on the work of a previous session; it is therefore important that students keep copies of all their do-files and outputs.

Students should already be familiar with the fundamentals of Stata, including:

- basic data management techniques
- working in interactive and batch mode
- basic analytical techniques such as OLS, logit and probit

If you are unsure about your competence in Stata, please talk to the course tutors well before the start of the course.

LECTURE OUTLINE

Week 16
A review of concepts for regression modeling, or what you should know already

Week 17
Understanding and using panel data; transition matrices

Week 18
Fixed effects and random effects models

Week 19
Fixed and random effects models – properties, tests and specification issues

Week 20
Introduction to survival/ event history analysis

Week 16 – A Review of concepts for regression modeling, or what you should know already

This lecture reviews the material with which students should already be familiar: basic regression techniques including OLS, logit and probit models, plus the associated assumptions and the various notations used for writing these down. The focus is on specifying models correctly: we cover theoretical and empirical considerations, and stepwise and other specification techniques. We discuss measures of fit, regression diagnostics, and simple post-estimation commands. Finally, we discuss intelligent inspection and interpretation of results, spotting "rogue" results, and common errors in specification.

Reading list

STATA Reference Manual Release 10, Stata Press, Texas, 2007. Sections relating to regress, logit, probit, mfx, test, and lrtest commands [for regression modelling] and sort, merge, append and reshape [for data management]. The manuals are organised alphabetically; an earlier release will do if Release 10 is not available.

Greene, William H. *Econometric Analysis*, Prentice-Hall, 5th Edition. For linear regression model: Chapter 2 and 3; for Logit and Probit models: Chapter 21, up to section 21.4.5.

Taris, T. (2000) *A Primer in Longitudinal Data Analysis* Sage, Chapter 4

Week 17 - Introducing and using panel data

In this lecture we introduce longitudinal data in many forms, including time series data; repeated cross sections, and panel data. We discuss the types of analysis possible with cross sectional and longitudinal data, including time-lagged models; models of change and auto-regressive models.
We discuss the management of panel data in wide and long formats, and different types of variables (time- invariant, time-varying and trend variables). We discuss the use of transition matrices as a descriptive technique, the use of probability/decision trees, and difficulties associated with measurement error.

Reading list

Richard Berthoud & Jonathan Burton (2008) In Praise of Panel Surveys. ESRC:Swindon. Available from https://www.iser.essex.ac.uk/files/in-praise-of-panel-surveys.pdf

STATA manuals, sections on xtset, xtsum, xttab and xtreg.

David Rose (Ed) (2000) Researching Social and Economic Change. Routledge: London Chapter 1 (and Chapter 2 if you are interested); Chapters 6,9,10.

Formby, John P., W. James Smith, Buhong Zheng, (2004) Mobility measurement, transition matrices and statistical inference, Journal of Econometrics. 120(1), 181-205.

Worrall, John L. (2008) *Handbook of Longitudinal Research*, Elsevier, Chapter 15

Week 18 - Fixed effects and random effects models

This lecture begins by examining heterogeneity and the nature of variation between and within individuals, and how these may be captured in different types of variables. We derive and discuss fixed and random effects models for continuous and discrete dependent variables, the assumptions underlying the models, and how the models deal with different types of variables. We discuss the mechanics of running fixed and random effects regression in Stata, and the art of interpreting the results.

Reading list

STATA manuals: sections on xtregress, xttest0, xtlogit, xtprobit xttobit and hausman.

STATA website: http://www.stata.com/support/faqs/stat/xt.html - an excellent article on the conceptual differences between within and between estimators.

STATA website: http://www.stata.com/support/faqs/stat/#models – more lucid explanation of things you might want to know about panel data models

Greene, William H. *Econometric Analysis*, Prentice-Hall, 5th Edition. Chapter 13 and Chapter 21, section 21.5.1. A more mathematical and less intuitive exposition!

Menard, Scott (ed) 2008 Longitudinal Research: Design, measurement and analysis. Elsevier. Chapter 30.

Booth, Alison L. and Frank, Jeff (1999), "Earnings, Productivity, and Performance-Related Pay", Journal of Labor Economics, 17(3): 447-463. One of the few journal articles which presents estimates from the between and fixed and random effects models (in Table 4).

Nimumbona, A-D and Vencatachellum, D (2007), "Intergenerational educational mobility of black and white South Africans", Journal of Population Economics, 20(1): 149-182. Don't worry too much about the technical detail; enjoy comparing fixed effects, random effects and OLS estimates.

Week 19 - Fixed and random effects models – properties, tests and specification

This lecture returns to fixed and random effects models, discussing the properties of the two estimators, and how to decide which model to use, based on a range of considerations including formal tests. We focus on the correct specification and intelligent interpretation of these models, and the inferences which one may draw from one's results. Finally, we touch on random coefficients/multilevel models as an extension of random effects models.

Week 20 - Introduction to survival/ event history analysis

This lecture provides an introduction to time-to-event data; states, events, duration, and risk period; censoring; summarising time to event data using incidence rates; the Kaplan-Meier graph; survival curves and hazard functions; interpreting estimates from the Kaplan-Meier graph; survival curves for more than one group; the log rank test; hazard function and hazard ratios; the Cox proportional hazards model; assumptions of the Cox proportional hazards model; testing if assumptions are met; overcoming the problem when assumptions are not met; and extensions to the Cox regression model.

Reading list

Allison, Paul D. (1984) *Event History Analysis: Regression for Longitudinal Event Data*, Sage.

Blossfeld, H., K. Golsch, and G. Rohwer. 2007. Event History Analysis with Stata. Mahwah, NJ: Lawrence Erlbaum.

Cleves, M., W. Gould, and R. Gutierrez. 2004. An Introduction to Survival Analysis Using Stata. Rev. ed. Stata Press: College Station, Texas.

Hutchison, Dougal.(1988) Event history and survival analysis in the social sciences. I. background and introduction. Quality and Quantity. 22, 203-219

Scott Menard (ed) (2008) Handbook of longitudinal research. Elsevier: Amsterdam. pp 405-463

Toon Taris (2000) A primer in longitudinal data analysis. Sage: London pp 93-118

Jay D. Teachman (2002) Stability across Cohorts in Divorce Risk Factors. Demography, 39(2) , 331-351.
Singh-Manoux, Archana, Gueguen, Alice, Martikainen, Pekka, Ferrie, Jane, Marmot, Michael, Shipley, Martin (2007)Self-Rated Health and Mortality: Short- and Long-Term Associations in the Whitehall II Study *Psychosom Med* 69: 138-143

STATA RESOURCES

STATA Reference Manual Release 12, Stata Press, Texas, 2011. The manuals are organised alphabetically; an earlier release will do if Release 12 is not available.

WEBSITES

ESDS (The Economic and Social Data Service): http://www.esds.ac.uk/

The Data Archive: http://www.data-archive.ac.uk/

Tutorials on Longitudinal Data Analysis for Social Science Researchers:
http://www.longitudinal.stir.ac.uk/

Stephen Jenkin's materials for EC968
http://www.iser.essex.ac.uk/teaching/degree/stephenj/ec968/