

Using Longitudinal Data in Health Economics

Doctoral Course, 14-24 June 2011, University of Bergen

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The course will show how longitudinal data can be used by health economists in panel data and duration analysis. There will be a strong emphasis on applied work, illustrating the use of relevant computer software, such as Stata. **Computing facilities** will be available but it is recommended that participants bring their own laptop computers if possible. The computing practicals will use Stata v11. The course lasts for two weeks and consists of two parts.

The requirements for the course are: Term paper, submitted by October 1. Length: 4000-6000 words.

The course will give 10 ECTS.

Participation

Application deadline is 30 May (post@econ.uib.no). There is no course fee. Funds are available to support travel and accommodation for external participants. If you have any questions concerning participation, please send a mail to post@econ.uib.no.

Part 1: Panel Data, 14-17 June (Prof Andrew Jones)

Panel datasets provide a rich source of information for health economists. Panel data offer the scope to control for individual heterogeneity and to model the dynamics of individual behaviour. However the measures of outcome used in health economics are often qualitative or categorical. These create special problems for estimating econometric models. The dramatic growth in computing power over recent years has been accompanied by the development of estimators that solve these problems.

This doctoral course will focus on the use of panel data to estimate causal models and evaluate 'treatment effects'. The emphasis is on the issues that arise in health economics in finding appropriate data and reliable identification strategies, rather than on the underlying econometric theory. Practical applications of the methods will be illustrated

using data on health from datasets such as the British Household Panel Survey (BHPS) and the European Community Household Panel (ECHP).

Part 2: Duration models, 20-24 June (Prof Maarten Lindeboom)

Econometric models of durations are used to model the length of time spent in a given state before transition to another state. Durations may, for example, consist of time to death, time spent in a health state free from ill-health, and time spent in hospital. This part starts with the basic concepts and methods. The methods include simple non-parametric methods for the analyses of duration data and simple parametric models for single spell duration data. We also introduce more flexible models and relate the duration model to the linear model and non-linear models like the logit model and the Poisson model. We move to the multiple spell-multiple state duration models and estimation of these models using fixed effects and random effects frameworks. Here we also discuss similarities with the estimation of the fixed effect panel logit and Poisson models. We finally discuss the evaluation of treatment effects in real time, both in the context of single-spell and multiple-spell duration models. Emphasis will be on the use of these methods in practice and less so on econometric theory

Reading material

Part I

The main source of material is:

Jones, A.M., "Panel data methods and applications to health econometrics", in *Palgrave Handbook of Econometrics. Volume 2*, Mills, T.C. and Patterson, K. (eds.), London Palgrave MacMillan, 2009.

This is available to download as HEDG WP #07/18 at:

<http://www.york.ac.uk/res/herc/research/hedg/wp.htm>

The practicalities of the methods are covered by the recent book *Applied Health Economics*. This focuses on specific empirical applications to the HALS, BHPS, ECHP and other datasets. The book includes extensive discussion of the Stata code and results:

A.M. Jones, N. Rice, T. Bago d'Uva and S. Balia, *Applied Health Economics*, Routledge, 2007 (ISBN: 9780415397728).

Programs and data from the book can be downloaded from:

<http://www.york.ac.uk/res/herc/research/hedg/software.htm>

Many of the methods covered during the course are reviewed more briefly in the following:

A.M. Jones, Health Econometrics, in Newhouse, J.P. and A.J. Culyer (eds.) *Handbook of Health Economics*, Elsevier, 2000 (ISBN: 0-444-50470-2).

The following general textbooks provide useful background for the microeconomic methods:

A.C. Cameron and P.K. Trivedi, *Microeconometrics. Methods and applications*, Cambridge University Press, 2005 (ISBN 0-521-84805-9)

J.M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, MIT Press, 2002, particularly chapters 15-20 (ISBN 0-262-23219-7)

Additional references will be given in the course material.

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Part II

Cameron, A.C. and P. Trivedi (2005). *Microeconometrics: Methods and Applications*, Cambridge University Press

Berg, GJ van den (2001), Duration models: estimation identification and multiple durations, *Handbook of Econometrics*, chapter 55, pages 3381-3460