Statistics 520: Applied Econometrics I

Fall 2013

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Office hours: MTuTh, 4:30–6, and by appointment

Class hours and location: TuTh 3:00−4:20

Teaching Assistant:

Course web site

Statistics 520 is using Canvas. You can gain access by going to https://wharton.instructure.com/courses/. All notes, homework assignments and data sets for the course will be distributed and managed via the website.

Note for non-Wharton students: If you do not have a Wharton computing account, you will need to establish one to access the website. The account also provides access to the computing labs in Wharton and to the intranet. To get an account, go to

   http://apps.wharton.upenn.edu/accounts/class

After you have requested your account, allow some time for activation.

Wharton students and students who have recently taken a Wharton course have existing accounts.

Materials

Class notes. As noted above, these will be available on Canvas. I will post notes in advance of the lectures. Each posting will provide material for one or more lectures.

Econometric Analysis of Cross Section and Panel Data, 2nd ed., by Jeffrey M. Wooldridge, MIT Press, 2010 . This is the main course text. I expect to cover Chapters 1–6 and parts of Chapters 7, 8, 12, and 15.

Mostly Harmless Econometrics, An Empiricist's Companion, by Joshua D. Angrist and Jörn-Steffen Pischke, Princeton University Press, 2009. I highly recommend you read this book carefully. It is written in a refreshing and entertaining style. However, don't be fooled—it assumes a good deal of statistical understanding and is quite sophisticated and challenging . I expect to cover much of the material in Chapters 1–4 and part of Chapter 5.

Applied Econometrics with R, by Christian Kleiber and Achim Zeileis, Springer, 2008. This is a good reference for R basics and examples of the use of R. I have also posted on Canvas six documents which give R information and instruction.

(Optional) *Econometrics*, by Fumio Hayashi, Princeton University Press, 2000. Hayashi's treatment differs substantially from that of Wooldridge. His presentation tends to be more mathematical, and it addresses concepts and topics from time series as it proceeds (we will consider only a few issues from time series). Moreover, Hayashi introduces generalized method of moments (GMM) estimation early in his presentation, noting that ordinary least squares and two-stage least squares are special cases. If your interests are mathematical, I encourage you to do some reading in Hayashi. It is instructive and very helpful to see an alternative presentation of econometrics.

Software

The R package will be used in lectures and for homework. R is free software and is available at www.r-project.org.

Course overview

The aims of this course are to study basic econometric techniques. The emphasis will be upon the understanding and use of econometric methodology, and the written communication of the results of data analysis. Topics we will cover include conditional expectation, linear projection, potential outcomes, ordinary least squares estimation, instrumental variables estimation, systems of equations, panel data models, difference-in-differences methodology, discrete response models, and some issues in time series analysis. We will explore mathematical and statistical foundations, as well as the application of statistical methodology. We will employ linear algebra extensively throughout, and we will discuss and apply results from probability and statistics theory.

Course requirements

There will be about five homework assignments. These will include theoretical exercises and the analysis of data and interpretation of the findings, and the presentation of well-organized and clearly written reports. The homework is designed to teach and to give experience in the use of econometric methodology. You are encouraged to consult with each other in doing the homework, and also to contact me and/or the teaching assistant for help. ***You must submit your own proofs, calculations, and your own writeup***. Homework must be submitted by the due date specified for the assignment.

There will be a final project. This will involve replicating the analysis presented in an empirical paper, and possibly presenting further analyses of the data set used in the paper. As an alternative, you may use a data set of your own choosing and carry out an original analysis, using your own research. A major goal of this exercise is organization and presentation of a carefully written report. Prior to starting the project, you will submit a brief (not more than one page) project proposal for my review. ***This proposal is required***.

There are no examinations. The course grade will be calculated as 80 per cent homework and 20 per cent final project.

Calendar

There are 28 classes (Tuesday–Thursday schedule).

The first class is Thursday, 29 August.

The drop period ends 4 October.

There is no class Thursday, 10 October (Fall break).

The withdrawal deadline is 8 November.

There is no class Thursday, 28 November (Thanksgiving).

The last class is Tuesday, 10 December.