

ECO 6375
ECONOMETRICS III
Fall 2018

Professor: Daniel Millimet

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web page: <http://faculty.smu.edu/millimet/classes/eco6375/main.html>

Time: MW 10:00 – 11:20

Office Hours: MW 11:30 – 1:00 and by appointment

Description: This course extends ECO 6374 by way of providing an introduction to additional econometric methods and models. The course will cover topics such as maximum likelihood, GMM, Bayesian methods, limited dependent variables, time series, and panel data.

Prerequisite: ECO 6374, or its equivalent.

Requirements: Two textbooks are required. From ECO 6374, we will continue to use Econometric Analysis, 6th edition, by W. Greene. Corrections and other information for the text can be found at <http://pages.stern.nyu.edu/~wgreene/Text/econometricanalysis.htm>. In addition, we will use Applied Econometric Time Series, 2nd Edition, by W. Enders. Depending on your ultimate interests, other worthwhile books to have include:

- Hamilton, J.D. (1994), Time Series Analysis
- Baltagi, B. (2005), Econometric Analysis of Panel Data, 3rd Edition
- Wooldridge, J.M. (2002), Econometric Analysis of Cross Section and Panel Data
- Cameron, A.C. and P.K. Trivedi (2009), Microeconometrics Using Stata
- Gould, W., J. Pitblado, and W. Sribney (2006), Maximum Likelihood Estimation with Stata, 3rd Edition
- Hyndman, R.J. and G. Athanasopoulos, Forecasting: Principles and Practice, <https://www.otexts.org/book/fpp>

Grades will be based on approximately 8 problem sets (40%) and three in-class presentations (60%).

Presentations: Guidelines for Presenters

For the presentations, each student will select one paper from the papers contained in each of the “READING” sections of the syllabus for Sections 2-4. The student will be responsible for giving a (strictly enforced) 20 minute presentation of the paper. The presentation should include slides in PowerPoint or Beamer (strongly preferred). You should view it as a presentation that one typically gives at conferences. You need to figure out how to convey the motivation and right mix of details in the given time constraint (although given the class, you should focus more on methodology and potential problems and very little on the results). A rough guide is as follows:

1. One slide on the motivation and research question.
2. One (brief) slide on the literature review to highlight what is new in the presentation paper.
3. One (brief) slide on the data source(s) and any peculiarities that are relevant for the econometric model.
4. Two to three slides on the empirical model and estimation technique, focusing on why the author(s) made the choices they did and what the key identifying assumptions are for consistency, inference, etc.
5. One (brief) slide on the major findings of the paper.
6. One slide on your criticisms or shortcomings of the econometrics. **DO NOT SKIP!**
7. One slide on what you would do differently or future extensions. **DO NOT SKIP!**

Important Idea #1: Your slides must be in your own words! Do not cut and paste directly from the article and read to us. Treat the slides like normal plagiarism rules apply.

Important Idea #2: The point of a presentation is communication to an audience. If the audience does not understand the paper after your presentation, then you have failed.

Important Idea #3: Nothing should be included in your slides that you do not understand. Complete understanding of the paper and coherent presentation of the econometric methodology may require you to read additional papers cited in the paper! You should then consult me prior to the presentation if you are still unclear about something.

Presentations: Guidelines for Audience

The audience is required to actively pay attention to the presentation. You should interrupt with questions if anything is unclear. No one should be on electronics OR reviewing their presentation!

Learning Objectives

- Understand and be able to apply different estimation methods such as ML, GMM, and Bayesian
- Be able to derive the likelihood function for a wide class of models
- Obtain a basic understanding of univariate and multivariate time series models
- Understand the differences between fixed and random effects, as well as other panel data estimators
- Be able to estimate and interpret dynamic panel data models
- Obtain a basic understanding of limited dependent variable models applied to panel data

Class Schedule

- First day of class: Mon, Aug 20
- No class: Mon, Sep 3; Mon, Oct 8; Wed, Nov 21
- Last class: Mon, Dec 3

* **Disability Accommodations:** Students needing academic accommodations for a disability must first contact Disability Accommodations & Success Strategies (DASS) at 214-768-1470 or www.smu.edu/alec/dass to verify the disability and to establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4; an attachment describes the DASS procedures and relocated office.)

* **Religious Observance:** Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

* **Excused Absences for University Extracurricular Activities:** Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

OUTLINE: (*) Required reading; (P) Papers for presentations (website only)

I. Maximum Likelihood Estimation

- (*) Greene: Chapter 16 (16.1 – 16.7)

II. Limited Dependent Variable Models, Bayesian Estimation

- (*) Greene: Chapter 18 (18.1 – 18.6); Chapter 23 (except 23.5 – 23.9); Chapter 24 (24.1 – 24.3); Chapter 25 (25.1 – 25.2, 25.4)
- (*) Horowitz, J.L and N.E. Savin (2001), “Binary Response Models: Logits, Probits, and Semiparametrics,” *Journal of Economic Perspectives*, 15, 43-56
- (*) Karaca-Mandic, P., E.C. Norton and B. Dowd (2012), “Interaction Terms in Nonlinear Models,” *Health Services Research*, 47, 255-274
- (*) Chay, K.Y. and J.L. Powell (2001), “Semiparametric Censored Regression Models,” *Journal of Economic Perspectives*, 15, 29-42
- (*) Moffitt, R. (1999), “New Developments in Econometric Methods for Labor Market Analysis,” in O. Ashenfelter and D. Card (eds.) *Handbook of Labor Economics*, Vol. 3A, Elsevier B.V.

III. Time Series Methods

- (*) Greene: Chapter 19 (19.1 – 19.9); Chapter 20 (20.1 – 20.5); Chapter 21 (21.1 – 21.2); Chapter 22 (22.1 – 22.3) ... although Enders and/or Hamilton are preferred.
- (*) Lechner, M. (2010), “The Relation of Different Concepts of Causality Used in Time Series and Microeconometrics,” *Econometrics Review*, 30, 109-127
- (*) Granger, C.W.J. (2010), “Some Thoughts on the Development of Cointegration,” *Journal of Econometrics*, 158, 3-6
- (*) Stock, J.H. and M.W. Watson (2001), “Vector Autoregressions,” *Journal of Economic Perspectives*, 15, 101-115
- (*) Qin, D. (2011), “Rise of VAR Modelling Approach,” *Journal of Economic Surveys*, 25, 156-174
- (*) Luetkepohl, H. (2011), “Vector Autoregressive Models,” European University Institute WP 2011/30
- (*) Christiano, L.J. (2012), “Christopher A. Sims and Vector Autoregressions,” *Scandinavian Journal of Economics*, 114, 1082-1104
- (*) Stock, J.H. and M.W. Watson (2018), “Identification and Estimation of Dynamic Causal Effects in Macroeconomics,” *Economics Journal*, 128, 917-948
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IV. Panel Data, GMM

- (*) Greene: Chapter 9; Chapter 12 (12.8 only); Chapter 15; Chapter 23 (23.5 only); Chapter 24 (24.4 only); Chapter 25 (25.3 only)
- (*) Mundlak, Y. (1978), “On the Pooling of Time Series and Cross Section Data,” *Econometrica*, 46, 69-85
- (*) Wooldridge, J.M. (2001), “Applications of Generalized Method of Moments Estimation,” *Journal of Economic Perspectives*, 15, 87-100
- (*) Bond, S.R. (2002), “Dynamic Panel Data Models: A Guide to Micro Data Methods and Practice,” *Portuguese Economic Journal*, 1, 141-162
- (*) Roodman, D. (2009), “A Note on the Theme of Too Many Instruments,” *Oxford Bulletin of Economics and Statistics*, 71, 135-158
- (*) Judson, R.A. and A.L. Owen (1999), “Estimating Dynamic Panel Data Models: A Guide to Macroeconomists,” *Economics Letters*, 65, 9-15
- (*) Lancaster, T. (2000), “The Incidental Parameter Problem Since 1948,” *Journal of Econometrics* 95, 391-413
- (*) Honoré, B.E. (2002), “Nonlinear Models with Panel Data,” *Portuguese Economic Journal*, 1, 163-179