

Advanced Econometrics: Econometrics of Panel Data
AEB 6933
University of Florida
Academic Term: Spring 2022

Class Periods: Tuesday, Period 5 - 6 (11:45 AM - 1:40 PM)
Thursday, Period 6 (12:50 PM - 1:40 PM)

Location: Tuesday: Room: [MAT0006](#); Thursday: Room: [MAEB0229](#)
[Final Exam: 4/26/2022 @ 7:30 AM - 9:30 AM](#)
All classes on [Zoom Meeting](#) will use [Zoom ID 3522562825](#)

Instructor:

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(352) 256-2825

Office Hours: Tuesday and Thursday, 10: 00 p.m. - 11:00 p.m., and by appointment, Zoom address: 3522562825.

Please text desire for meeting during office hours one day in advance to (352) 256-2825 giving name, class, and topic wished to be discussed or text asking for an appointment at another time.

Course Description: This is a core-level Ph.D. course in the area of Econometrics dealing with Panel Data. The range of topics covered in the course will span a large part of econometrics generally, though we are particularly interested in those techniques as they are adapted to the analysis of 'panel' or 'longitudinal' data sets. Topics to be studied include specification, estimation, and inference in the context of models that include individual (firm, person, region, country, etc.) effects. We shall begin with a development of the standard panel data settings involving 'fixed' and 'random' effects. We will then turn to seemingly unrelated regressions, simultaneous-equation models, instrumental variables, generalized method of moments (GMM), and two step estimation methods. The linear model will be extended to dynamic models and recently developed GMM and instrumental variables techniques. The classical methods of maximum likelihood and GMM are applied to models with individual effects. For each topic, there will be a lecture(s) followed by estimation problem sets using the GAUSS software to be made available to each student free of charge.

Prerequisites: The prerequisite for this course is successful completion of Core Methods in Econometrics, 'Econometric Methods II' (AEB7572), or an equivalent level core Econometrics course. Students, in particular, should review F-testing and simultaneous equation estimation prior to lectures on that subject.

Course Objectives/Goals: Students taking this course should leave with the ability to state the nuances of panel data estimators and the empirical implications that manifest. Furthermore, students should be able to successfully integrate data into the software of their choice and construct appropriate panel data models which they can estimate, conduct inference, and rigorously interpret to provide high quality journal articles using panel data analyses.

Materials and Supply Fees

Gauss software will be provided to each student free of charge.

Required Textbooks and software

Baltagi, Badi H. *Econometric Analysis of Panel Data*, 6th ed. Springer Text in Business and Economics, 2013. (In most topics covered, students could refer: Baltagi, Badi H. *Econometric Analysis of Panel Data*, 5th ed. John Wiley & Sons, Incorporated, 2013.)

Hsiao, Cheng. *Analysis of Panel Data*, 3rd edition. Cambridge: Cambridge University Press, 2014.

GAUSS, Each student will receive a full version of GAUSS from the company that supports it, Aptech.

Recommended Materials

Arellano, Manuel. *Panel Data Econometrics*. New York: Oxford University Press, 2003.

Baltagi, Badi H. *A Companion to Econometric Analysis of Panel Data*. John Wiley & Sons, Incorporated, 2009.

Harvey, Andrew C. *The Econometric Analysis of Time Series*, 2d edition. Cambridge, MA: The MIT Press, 1990.

Kmenta, Jan. *Elements of Econometrics*, 2d edition. New York: Macmillan Publishing Company, 1990.

Schmidt, Peter. *Econometrics*. New York: Marcel-Dekker, 1976.

Other Helpful Resources

Cramer, J.S. *Econometric Applications of Maximum Likelihood Methods*. Cambridge University Press, 1986 (Paperback edition, 1989).

Judge, George G., W.E. Griffiths, R. Carter Hill, Helmut Lutkepohl and Tsoung-Chao Lee. *The Theory and Practice of Econometrics*, 2d edition. New York: John Wiley and Sons, 1985.

Judge, George G., W.E. Griffiths, R. Carter Hill, Helmut Lutkepohl and Tsoung-Chao Lee. *Introduction to the Theory and Practice of Econometrics*, 2d edition. New York: John Wiley and Sons, 1988.

Kumbhakar, S.C. and C. A. K. Lovell. *Stochastic Frontier Analysis*. Cambridge, U.K.: Cambridge University Press, 2000.

Maddala, G.S. *Introduction to Econometrics*, 2d edition. McGraw-Hill book Company, 1993.

Matyas, Laszlo and Patrick Sevestre, eds., *The Econometrics of Panel Data: A Handbook of the Theory with Applications*, 2nd revised ed. Boston, MA: Kluwer Academic Publishers, 1996.

Raj, Baldev and Badi H. Baltagi, eds., *Panel Data Analysis*. New York: Springer-Verlag, 1992.

Theil, Henri, Ching-Fan Chung and James L. Seale, Jr. *International Evidence on Consumption Patterns*. Greenwich, CT: JAI Press, Inc., 1989.

Theil, Henri. *Principles of Econometrics*. New York: John Wiley and Sons, 1971.

Course Outline:

(*⊞ - denotes required reading, and ⊞ – denotes recommended reading)

Self Review

Matrix Algebra

⊞ Theil, Chapter 1

⊞ Harvey (1990), Appendix on Matrix Algebra

⊞ Greene, Chapter 2

⊞ Kmenta, Appendix.

⊞ Judge et al (1985), Appendix A

Probability and Distribution Theory

® Greene, Chapter 3

® Kmenta, Chapter 1-4.

Statistical Inference

® Greene, Chapter 4.1 - 4.6

® Kmenta, Chapter 5-6.

® Theil, Chapter 2

Regression Analysis

® Harvey (1990), Chapter 2.1 - 2.5

® Kmenta, Chapter 7-10.

1 Introduction

⊖ Baltagi, Chapters 1

⊖ Hsiao, Chapters 1, 2

⊖ Seale, James L., Jr. "Estimating Stochastic Frontier Systems with Unbalanced Panel Data: The Case of Floor Tile Manufactories in Egypt." *Journal of Applied Econometrics* 5 (1990): 59-74.

2 The One-way Error Component Regression Model

⊖ Hsiao, Chapters 3

⊖ Baltagi, Chapters 2

⊖ Seale, James L. Jr., *Journal of Applied Econometrics* (1990).

® Kmenta, Chapter 12-1 and 12-2.

3 The Two-way Error Component Regression Model

⊖ Baltagi, Chapters 3

⊖ Hsiao, Chapters 3.6.2

4 Test of Hypotheses with Panel Data

⊖ Hsiao, Chapters 2

⊖ Baltagi, Chapters 4

⊖ Seale, James L. Jr., *Journal of Applied Econometrics* (1990).

5 Heteroskedasticity and Serial Correlation in the Error Component Model

⊖ Baltagi, Chapters 2

⊖ Hsiao, Chapters 3.7

⊖ Seale, James L. Jr., *Journal of Applied Econometrics* (1990).

6 Seemingly Unrelated Regressions with Error Components

⊖ Baltagi, Chapters 6

⊖ Hsiao, Chapters 3.7

⊖ Seale, James L., Jr., and Alexis A. Solano. "The Changing Demand for Energy in Rich and Poor Countries over 25 Years." *Energy Economics* 34 (2012):1834-1844.

7 Simultaneous Equations with Error Components

⊖ Baltagi, Chapters 7

⊖ Hsiao, Chapters 5

® Schmidt, Chapters 4 and 5

8 Dynamic Panel Data Models

⊖ Baltagi, Chapters 8

⊖ Hsiao, Chapters 4

® Kmenta, Chapter 13-7.

9 Unbalanced Panel Data Models

- ⊞ Baltagi, Chapters 8
- ⊞ Hsiao, Chapters 4

10 Rotating and Pseudo Panels

- ⊞ Baltagi, Chapters 10.1-10.3
- ⊞ Hsiao, Chapters 11

11 Rotating and Pseudo Panels

- ⊞ Baltagi, Chapters 10.6
- ⊞ Hsiao, Chapters 12.2

12 Count Panel Data

- ⊞ Baltagi, Chapters 10.5
- ⊞ Hsiao, Chapters 7.3

13 Spatial Panel Data Models

- ⊞ Baltagi, Chapters 13
- ⊞ Hsiao, Chapters 9

Disclaimer:

The syllabus is a general plan for the course; deviations may be necessary. I hold the right to make changes to this syllabus as circumstances warrant.

Attendance Policy, Class Expectations, and Make-Up Policy

Students are encouraged to attend all classes. Frequent absences will reflect negatively on class participation evaluation. No make-up mid-term exams will be administered. If a student misses a mid-term exam, the lower grade of the other mid-term and final exams will be awarded for the grade of the missed examination. A final exam must be taken in order to receive a final grade.

Excused absences must be consistent with university policies in the Graduate Catalog (<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#attendance>) and require appropriate documentation. Additional information can be found here: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Evaluation of Grades

Students are expected to prepare for class meetings by completing assigned readings and problem sets. Two mid-term exams (30%) and a final exam (40%) will be administered. The remainder of the class grade will depend on class participation and problem sets (30%).

Grading Policy

Percent	Grade	Grade Points
93-100%	A	4.00
92-90%	A-	3.67
87-89%	B+	3.33
83-86%	B	3.00
80-82%	B-	2.67
77-79%	C+	2.33
73-76%	C	2.00
70-72%	C-	1.67
67-69%	D+	1.33

63-66%	D	1.00
60-62%	D-	0.67
Below 60%	E	0.00

More information on UF grading policy may be found at:

<http://gradcatalog.ufl.edu/content.php?catoid=10&navoid=2020#grades>
<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://gatorevals.aa.ufl.edu/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.