Advanced Microeconometrics
Economics 682, Fall 2021
W 2:50-5:45pm, HBB 327

Professor:
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Office Hours: Tuesdays, noon-1pm and Wednesdays, 1-2pm. Please feel free to stop by my office at
any time or otherwise arrange for an (in-person or Zoom) appointment.

Course Description:
This course develops techniques for analyzing cross-section and panel data that extend those in
Economics 582 and 583. The course introduces the generalized method of moments, and builds upon
linear regression and maximum likelihood estimation techniques. Major topics covered include
advanced models for panel data, limited dependent variable models, and program evaluation methods.
While there will be discussion of econometric theory throughout the course, the focus is on applied
analysis, including issues of identification, specification, and execution.

Prerequisites:
Two semesters of Ph.D.-level Econometrics, OR instructor permission.

Learning objectives:
This will be the last econometrics course devoted to the analysis of micro-level data for many of you.
With this in mind, along the way we will refresh our memories about fundamental concepts. Please
use the class as a forum for discussing whatever econometric issues you encounter or have
encountered in your research.

After this course, you should be comfortable in determining econometric techniques for analyzing
micro data in the context of your own research, and in justifying your methods based on statistical
tests, robustness checks, identification strategies, and logical arguments. You should be able to
interpret and clearly discuss estimation results. You should be proficient in using Stata to undertake
your analyses, including situations where "canned" routines are not currently available.

Evaluative Criteria:
The course grade will be based on eight problem sets (30%), a midterm exam (30%), and a final exam
(40%). The midterm will take place on Wednesday, October 13th. The final exam will take place on
Wednesday, December 8th, 6:15-8:30pm.

Course letter grades will be determined by examining the final numeric grade distribution that results
from applying the above weights and establishing reasonable grade thresholds based on inter- and
intra-course comparisons. For most classes, earning an "A" or "A-" requires being above the class
median, and earning a "B" or lower requires being below the median. The median grade is usually a
B+, but varies depending on the overall performance of the class. Here is some data on grades (past

three offerings). Grade distribution: 19% A; 27% A-; 23% B+; 23% B; 8% B-; 0% C+ or below. Mean score: 68%. Median score: 67%.

Please keep the following in mind when completing problem sets:
(i)   Make sure to answer <u>all</u> parts to a question.
(ii)   I will sometimes ask you to implement a particular procedure referenced in a textbook or a journal article (e.g. a series of commands needed to compute a test statistic). Instead of doing this (since it may be challenging), sometimes students find a user-written Stata command or implement a procedure for a related estimator or test. Do not do this, as I am asking you to implement the referenced procedure as a learning exercise.
(iii)   When asked to interpret an estimated coefficient, please do so in a precise and informative way. For example, state 'the coefficient implies that wages are on average $5 per hour lower for men relative to women, *ceteris paribus*', rather than 'men earn less than women'. Typically, only statistically significant coefficients are interpreted in this manner.
(iv)   When conducting a test, clearly interpret the test statistic: be specific about what you conclude about the test (i.e. do not simply state "reject" or "fail to reject" the null hypothesis), and provide details such as a critical value or *p*-value to support the conclusion.
(v)   Please ask me for clarifications when it is needed.

Texts (required):
1. Wooldridge, Jeffrey M. 2010. *Econometric Analysis of Cross Section and Panel Data*, Second Edition. MIT Press.
2. Greene, William H. 2018. *Econometric Analysis*, Eighth Edition. Pearson.

Other Helpful Books (recommended):
3. Wooldridge, Jeffrey M. 2019. *Introductory Econometrics: A Modern Approach*, Seventh Edition. Cengage Learning.
4. Angrist, Joshua D. and Jörn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.
5. Baum, Christopher F. 2016. *An Introduction to Stata Programming*, Second Edition. Stata Press.

Academic Dishonesty: You are welcome to ask clarifying questions about problem sets to your classmates or me. However, the written and Stata work you turn in must be your own. Do not simply copy/paste the code or written answers from someone else. I reserve the right to take appropriate actions, as mandated by UT policies, in the event of suspected cheating or plagiarism. For your reference, the UT honor statement reads: "An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity."

Students with Disabilities: Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Disability Services (ODS) at 865-974-6087 in 100 Dunford Hall to document their eligibility for services. ODS will work with students and faculty to coordinate reasonable accommodations for students with documented disabilities. If you have a documented disability and need special accommodations, please discuss this with me as soon as possible. Special accommodations will be handled discreetly.

University Civility Statement: Civility is genuine respect and regard for others: politeness, consideration, tact, good manners, graciousness, cordiality, affability, amiability and courteousness. Civility enhances academic freedom and integrity, and is a prerequisite to the free exchange of ideas and knowledge in the learning community. Our community consists of students, faculty, staff, alumni, and campus visitors. Community members affect each other's well-being and have a shared interest in creating and sustaining an environment where all community members and their points of view are valued and respected. Affirming the value of each member of the university community, the campus asks that all its members adhere to the principles of civility and community adopted by the campus: http://civility.utk.edu/.

Copyright Policy: The instructor of this class owns the copyright to the syllabus, handouts, assignments, quizzes, and exams associated with the class. All presentations developed by the instructor, as well as the instructor's lectures, are also protected by copyright, whether these presentations and lectures are delivered live in-class, shared through Zoom or other videoconference platforms, or uploaded to Canvas or similar sites.

Sharing any of this material without the written permission of the instructor is a violation of copyright law, and is therefore also a violation of the University's policy on acceptable use of information technology resources (UT policy number IT0110). That policy states that students will not commit copyright infringement, "including file sharing of video, audio, or data without permission from the copyright owner", and that file sharing is a violation of the university's student code of conduct. I will report all such violations to the Office of Student Conduct and Community Standards.

COVID-19 Guidelines: With the spread of the Delta variant of COVID-19, students, faculty, and staff will be required to wear masks in classrooms, labs, and for indoor academic events required for students such as orientation. This requirement will remain in place until conditions improve, and the university communicates new instructions. The website utk.edu/coronavirus will continue to be updated with new information as the semester progresses.

Instructors have the right to ask those who are not complying with these requirements to leave class in the interest of everyone's health and safety. In the event that a student refuses to comply with these requirements, the instructor has the right to cancel class. The university strongly recommends that all members of the campus community be vaccinated for their own protection, to prevent disruption to the semester, and to prevent the spread of COVID-19. The Student Health Center medical staff is available to students to answer questions or discuss concerns about vaccines, and the center provides vaccines free of charge for anyone 18 years or older who would like one.

If you think you are sick or have been exposed to COVID-19, you should contact the Student Health Center or your preferred health care provider. You can also contact the university's COVID-19 support team for guidance by filling out the COVID-19 self-isolation form at covidform.utk.edu. Under no circumstance should a student who has tested positive for COVID-19, or who is in isolation or quarantine because of COVID-19 symptoms or COVID-19 exposure, come to class or participate in campus activities. Fully vaccinated students do not need to quarantine if they are exposed to COVID-19 and develop no symptoms.

The Volunteer Creed reminds us that we bear the torch in order to give light to others. As Volunteers, we commit to caring for one another and for the members of the communities in which we live, work,

and learn. This semester, the University asks that we all demonstrate the Volunteer spirit by following these and other health guidelines and requirements.

Attendance Policy: Attendance is expected, although your course grade will not be adjusted downward for poor attendance. This is a reasonably demanding course, and it is presumably in your best interest to attend. If your course grade is on the margin, I reserve the right to give you the benefit of the higher grade if you actively participate in the course.

Policy on Make-up Work: The exam dates, and due dates for problem sets, are determined well in advance. Only in circumstances outside of your control will you receive credit for late assignments or be allowed to take an exam on an alternative date. It is in your best interest to bring this to my attention prior to an assignment due date or exam date.

Course Website: This course utilizes Canvas (https://utk.instructure.com/). On our course management site, you will find a lecture schedule (which I will continually update), important handouts and articles, past exams, the syllabus and so on. I will utilize the online gradebook. I make heavy use of handouts. You are expected to read these handouts prior to lecture and bring them to class.

Additional Resources: I placed several journal articles and working papers on Canvas. These are papers referenced during lectures or in handouts. Unless directed to, you are not required to read them. Those identified as "recommended papers" are written for practitioners. While you might not be compelled to read them for class, you may want to download them for future use.

Course Outline:

Topic [number of lectures]	Readings
Mostly review material [1]	IV estimation: Wooldridge (W) 5, 6.3; Greene (G) 8 Estimating distributions: G 4.6, 15.1-15.4; W 3.5.2, 12.8
Generalized Method of Moments [2]	W 12.4-12.7, 13.6, 14; G 13, 14.6
Linear models for panel data [2]	W 10 & 11; G 11.1-11.8
Discrete choice models [3]	G 17.1-17.7, 17.9, 18.1-18.3; W 15 & 16
Truncation, censoring, corner solutions, and sample selection [2]	G 19.1-19.4; W 17, 19.1-19.6, 19.9
Program evaluation methods [4]	W 6.5.2, 21; G 6.3-6.4, 8.5, 8.10, 19.6

Notes: The preferred textbook for a given topic is listed first. To the extent the material is not exactly clear, you should read the alternative textbook for a different perspective, writing style, and in some cases coverage. We will not have time to cover all material in the required readings in detail. Nevertheless, the referenced sections of the textbooks are important for understanding the material discussed, and so you should read these sections thoroughly. Any of the referenced material is "fair game" for exams.