Instructor: Daniele Paserman
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Office hours:  Wednesday, 2:00-3:30pm,
             Thursday, 4:00-5:30pm

Teaching Assistant: Julian TszKin Chan
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Office hours:  TBA
Office location: TBA

Classes: Tuesday-Thursday, 12:30-2:00, CAS 237
There will also be discussion sessions with the teaching assistant, on
Fridays 2:00-3:00 (SOC B61). The exact schedule of the sessions will
be announced. Sessions are complementary to the lectures. Their
function is to refresh old material, clarify points that came up in class,
and help with computer software.

Course Homepage
http://blackboard.bu.edu

All course materials (lecture notes, problem sets, data sets, etc.) will be found on the
course homepage.

Overview
This part of the course introduces students to advanced methods in econometrics that
are frequently used in applied work. The first part presents the econometric tools and
techniques for the analysis of panel data, i.e., data that combine time series and cross-
sectional information. The second part of the course presents an overview of recent
developments in the analysis of treatment effects in econometrics. Throughout the
course, emphasis will be placed on issues of identification of causal effects.

The goal is not only to acquaint students with the theoretical tools, but also to provide
hands-on experience on how to implement these tools in practice. Therefore, there
will be two computer-intensive homework assignments, which will have a relatively
large weight on the final grade.

Even though many of the examples discussed come from applied microeconomics, the
models presented in this course may prove attractive to students interested in applied
work in both macro and microeconomics.

Assignments
There will be 2 (two) homework assignments that will be handed out throughout the
semester. Each homework assignment will require rather intensive computer work.
While cooperation on the homework assignments is tolerated and even encouraged,
every student should hand in a separate write-up. To emphasize this point, effort will be taken in consideration when grading the homework.

**Grades**

Each assignment will count for 10% of the final grade. There will be a closed-book final exam, which will count for 30% of the final grade. (The remaining 50% of the final grade will be based on your grades in Professor Qu’s part of the course).

**Textbook**

We will use a set of lecture notes and material drawn from various book chapters and papers. I will hand out readings as they become relevant. The following books are useful references, although the students are not required to purchase them. The primary textbook for the course is:

- Jeffrey W. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, Second Edition, MIT Press, 2011. Almost all of the basic material can be found in the first edition as well. However, since the book is likely to be a useful reference for you throughout your career, and there are always new developments in the field, it may make sense to buy the newer edition.

Other textbooks that may also prove useful:
- A. Colin Cameron and Pravin K. Trivedi. *Microeconometrics Using Stata, Revised Edition*, Stata Press, 2010. [Particularly useful for those that will be using Stata for their empirical work].

**Outline and Readings**

(Starred readings will be discussed in class in some depth. Non-starred readings may be discussed in class, and in general will be useful for those interested in learning more about the topics).

1. **Basic Linear Unobserved Effects Panel Data Models**

   Individual effects in panel data. Fixed effects estimator, the Least Squares Dummy Variable model, first differences, pooled least squares, within and between estimators, the random effects estimator. Serial correlation and robust variance estimation. Comparison of estimators.

   * Wooldridge, Chapter 10.

2. **More Topics in Linear Unobserved Effects Models**
   Differences in differences and its relationship with panel data, group-specific trends. Unobserved effects models with measurement error.

   * Wooldridge, Chapter 6.5:
     Chapter 10.6;
     Chapter 11.5;
   


3. **Cluster samples, grouped data, and peer effects.**

   * Wooldridge, Chapter 20.3 (Second Edition).


4. **Dynamic Models**

   Strict Exogeneity. Sequential Exogeneity. GMM estimation. The Arellano-Bond estimator for dynamic models.

   * Wooldridge, Chapter 11.6


5. **Panel Data in Non-linear Models**

* Wooldridge, Chapter 15.8


6. **Causal Effects: Introduction**

* Wooldridge: Chapter 18.1-18.2


7. The Heckman Selection Model

* Wooldridge, Chapter 17.1-17.4


8. Estimation of Average Treatment Effects under Ignorability of Treatment (unconfoundedness)

Unconfoundedness (ignorability of treatment, selection on observables, conditional random assignment). Matching estimators. Propensity score methods. The differences in differences estimator under a different light.

* Wooldridge: Chapter 18.3.


9. Nonparametric methods: Basics


10. Instrumental Variables

Linear instrumental variables with constant coefficients. Treatment effect heterogeneity. Local average treatment effect. Weak instruments.

* Wooldridge, Chapter 18.4


11. **Regression Discontinuity**


