TUFTS UNIVERSITY
Department of Economics
Economics 207: Graduate Applied Econometrics
Professors Marcelo Bianconi and Jeffrey Zabel
Syllabus - Fall Semester

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Software: STATA

Course Requirements for Part 1:
Homework (10% total) (to be handed in at a prearranged date)
One Exam (20%) on October 14
One Final Project (20%) that includes a class presentation on October 19 or October 21 and a related paper, due on October 28 (More information about the final project will be distributed)

Course Requirements for Part 2:
Homework (10% total) (to be handed in at a prearranged date)
One Exam (20%) W, November 18; in the evening 8:00-9:00PM or TBD
One Final Project (20%) that includes a class presentation on December 7 or December 9 and a related paper, due on December 14 (More information about the final project will be distributed)

LATE HOMEWORK ASSIGNMENT/PROJECT POLICY: 10% of the total homework/project score will be deducted per day for each late homework/project with the exception that the weekend will count 15% off the total score. Homework will not be accepted after 10:30 am of the following class after the homework is due. For example, if homework is due on Wednesday, September 10 at 3:00 pm then it will not be accepted after 3:00 pm on Monday, September 15.
Part 1:
Estimating Causal Impacts in Micro-Economics:
Theory and Practice

COURSE DESCRIPTION
This course focuses on the recent literature and methodology used to estimate causal impacts in micro-economics. We will start by establishing the basic framework for analyzing causal impacts – called the Rubin Causal Model. Next, we will consider 5 frameworks for data generation used to evaluate causal impacts: Randomized Controlled Trials (RCTs), Quasi-Experiments, Natural Experiments, Regression Discontinuity, and Observational Data. In the process we will also consider different estimators: Instrumental Variables, Matching Estimators, and difference-in-difference estimators. The focus is on applying these different data generation frameworks and estimators to a broad scope of economic questions and issues.

TEXTBOOKS: Mostly Harmless Econometrics: An Empiricist’s Companion
by Joshua Angrist and Stephen Pischke

by Jeffrey M. Wooldridge

Important Articles:


Part 2:
TIME SERIES ANALYSIS

COURSE DESCRIPTION

This course focuses on the modeling of economic time series, with particular attention to financial time series. Time series analysis has become one of the most important tools for the understanding and interpretation of dynamic economic processes, in particular, the ones concerning macroeconomic variables such as real output, interest rates, inflation rates, exchange rates, and so on. An important advantage of applying these methods is that, with a basic understanding of the dynamic process that underlies a certain economic time series, one is able to construct forecasts within a certain range of confidence.

Several references to specific papers will be provided.

Some Textbooks:


TOPICS (Tentative)

Univariate Time Series:
- Dynamic Stochastic Processes: The Stationary Case
- Applied Time Series Analysis and the Identification-Estimation-Diagnostic Checking Approach
- Structural Breaks; Trend and Cycle Decomposition
- ARCH, GARCH and Volatility
- Dynamic Stochastic Processes: The Nonstationary Case [Integrated Processes and the Unit Root Problem]
- Cointegration and Error Correction Models
- Markov Switching Models

Multivariate Time Series:
- VAR Models; Structural VAR Models
- Dynamic Factors Models (Dynamic Principal Components)
- VEC (Vector Error Correction)
- Multivariate ARCH-GARCH
- Dynamic Panel and Panel Unit Roots
- Instrumental Variables (IV) – Generalized Methods of Moments (GMM)
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<thead>
<tr>
<th>Monday</th>
<th>Wednesday</th>
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<tbody>
<tr>
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<td><strong>PART 1</strong></td>
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|         | 9/09  **CLASS 1 (JZ):**  
|         | Introduction  
|         | **Homework 1 Assigned** |
| 9/14   | **CLASS 2 (JZ):**  
|         | Economic Significance  
|         | **Homework 1 Due**  
|         | **Homework 2 Assigned** |
| 9/21   | **CLASS 4 (JZ):**  
|         | Regression Fundamentals  
|         | **Homework 2 Due**  
|         | **Homework 3 Assigned** |
| 9/28   | **CLASS 6 (JZ):**  
|         | Instrumental Variables  
|         | **Homework 3 Due** |
| 10/05  | **CLASS 8 (JZ):**  
|         | Natural Experiments  
|         | **Homework 3 Due** |
| 10/12  | **CLASS 10 (JZ):**  
|         | Difference-in-Difference Estimator  
|         | **Final Project Paper for Part 1 Due** |
| 10/19  | **CLASS 12 (JZ):**  
|         | Student Presentations  
|         | **Exam** |
| 10/21  | **CLASS 13 (JZ):**  
|         | Student Presentations  
| **PART 2** |  |
| 10/26  | **CLASS 14 (MB):**  
|         | Univariate Time Series  
|         | Identification-Estimation-Diagnostic Checking Approach  
|         | Forecasting, Trend and Cycle Decomposition  
<p>|         | <strong>Final Project Paper for Part 1 Due</strong> |</p>
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<tr>
<th>Date</th>
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<tr>
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<td>CLASS 17 (MB):</td>
<td>Univariate Time Series</td>
<td>Homework 2 Assigned</td>
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<td>11/09</td>
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<td>CLASS 19 (MB):</td>
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<td>11/16</td>
<td>CLASS 20 (MB):</td>
<td>Dynamic Stochastic Processes: The Nonstationary Case</td>
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<td>11/18</td>
<td>CLASS 21 (MB):</td>
<td>Multivariate Time Series</td>
<td>One-Hour Exam: In the evening, 8:00-9:00PM or TBD</td>
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<td>11/23</td>
<td>CLASS 22 (MB):</td>
<td>Multivariate Time Series</td>
<td>NO CLASSES: THANKSGIVING</td>
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<td>11/25</td>
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<td>Dynamic Stochastic Processes: The Nonstationary Case</td>
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<td>Dynamic Panel and Panel Unit Roots</td>
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MB/JZ October 2015