**BPHD 8130-001: Econometrics I**

Term: Spring 2015  
Classroom: Friday 207 on Tuesday and Thursday 11:00AM-12:15PM  
Instructor: Dr. Stephen Billings  
Office: 340A Friday (704-687-7625)  
Email: sbillin2@uncc.edu  
Web Site: There is a Moodle page for this course, accessible through 49er Express. Materials will be posted to the website as the semester progresses.  
Office Hours: T/Th 10-11am or by appointment

**Course Objectives:** This course aims to help students become researchers in empirical microeconomics. It covers modern methods in econometrics for cross-sectional and panel data, with emphasis on applying these methods to data in practical contexts and strategies for designing and implementing research questions.

**Learning Goals:** Obtain scholarship and research skills in empirical microeconomics; begin the process of conducting research in empirical microeconomics.

**Assessment:**  
Problem Sets (10%). A few problem sets/data exercises during the term. Credit is mainly for completing them in a timely manner. Students will have at least 1 weeks’ notice of due dates.

Paper discussion (30%). Choose three papers from the list of published articles below for which you will act as a discussant. You will give a 10-20 minute powerpoint presentation to the class (summarizing and commenting on the paper) and then lead a discussion that focuses on the papers research design and econometric analysis.

Exam (30%). March 31st.

Empirical methods paper (30%). Write a 10 page paper regarding some particular research question in empirical microeconomics. The paper should state the research question, identify data that could be used for analysis, and describe the econometric methods that would be applied and the advantages and disadvantages of these methods. If possible, suggest at least two methods and compare them. Due at the end of the semester (May 4th at 5pm), but please submit a tentative title and abstract by February 5th.

This paper should be limited to no more than eight pages double-spaced pages, using a 12 point font, of text plus an additional two pages for tables. I will not read more than eight pages of text. While eight pages may sound short, I will not require a theoretical section or literature review, both of which are relatively lengthy and fundamental sections of most published academic papers. I will also not require a conclusion section in which you would generally discuss extensions for future work. I suggest the following structure: (The articles we discuss in class will largely conform to this structure so see them for good examples)
a. Introduction (1-2 pages): This is the section in which you clearly define the question that your paper will address and why we should care about this topic. The introduction is the most important part of your paper, please make sure it is the most polished in terms of clarity and exposition. Here is the suggested structure for an academic paper

1. 1st paragraph) Motivate your topic. In essence, grab the reader’s attention and introduce your topic and why we should care about it.
2. 2nd and 3rd paragraphs) Summarize the relevant literature and discuss its shortcomings
3. 4th paragraph) State your research question and how it address the literature’s shortcomings
4. 5th paragraph) Outline what your paper will do
5. 6th paragraph) Discuss expected results

b. Empirical Model (3 pages): This section provides a formal presentation of the statistical model, including an equation or equations written in basic notation, a discussion of the properties of the variables used in estimation, and a statement about the error structure. You should also clearly indicate key hypotheses and your approach to testing them. Please write the key structure of the model in generic terms (Y, X, Z, etc.) using very simple notation (for example, \( P_i \) to indicate the profit of firm i in year t). **Be sure to discuss the strengths and weaknesses of your empirical model and any robustness checks that may help address any weaknesses.**

c. Data (2 pages): You should describe the data source and variables used in the analysis. You should also note where your data may not be ideal but can be accommodated given specific econometric techniques. Be sure to fully disclose how you arrived at the sample used for estimation.

d. Results (3 pages): Provide some basic results (max=two tables of estimated results) and discuss future results you plan to incorporate. All tables (tables may be single spaced) of results should be self-explanatory, not requiring the reader to look up acronyms or abbreviated variable names. I suggest that you peruse assigned articles, to get a sense of the appropriate format for tables. Note that the tables do not just look like tables of output from Stata. In the discussion of empirical results, it is common to discuss model fit, the extent to which signs and magnitudes match hypotheses, and any remaining specification issues.

**Website:** The course has a Moodle 2 website that will have presentations, and other course materials.

**Recommended Texts:**
Other recommended sources for the entire course:
(good basic econometrics test for undergraduates)


Readings: For the most part, we will use textbooks for reading about methodology. Most of the articles are applications of the methods or at least methodological articles that emphasize applications. Links to the journal readings can be found on the moodle 2 site.

Software: We will do some exercises in Stata. Stata is available on networked computers in the Belk College of Business. You may purchase Stata at a reduced rate through the Direct-ship GradPlan for UNC-Chapel Hill. Follow this link for more information:  http://stata.com/order/new/edu/gradplans/gp-direct.html I will support Stata for use in econometric estimation in this course, but you are welcome to use other software for estimation.

Economics and Finance Seminar Series: Attending these workshops is strongly recommended. Nothing will help you develop as an empirical researcher as much as participating in a discussion of current research. The schedule is available under the Workshops link on the Economics Department website (http://belkcollegeofbusiness.uncc.edu/EconomicsSeminar/ ) as well as the Finance Department website (http://belkcollegeofbusiness.uncc.edu/ichiang1/seminars/dept_seminars.htm ).

Course outline and readings: The reading list below is in progress and may be updated during the semester, particularly with more papers as applications of the methods. Please let me know if there are

Proposed Course Outline: While there are no guarantees on how well I will be able to follow this outline, it should give you some idea of the material that I intend to cover and of the intended rate of progress. Keeping up with deviations from the outline is your responsibility
Week 1) Introduction (1/8)

Read Wooldridge Ch 1.
Review Wooldridge Ch. 2 & 3.
Sign-up for articles
Discussion on Causality (Angrist & Pischke Ch 2)


Introduction

Week 2) Introduction cont. & Linear Panel Models (1/13 & 1/15)

Discussion on Causality (Angrist & Pischke 3.1 & 3.2)

Wooldridge Ch. 4 & 10

ESTIMATE SLIDES 1 (Wooldridge)

Work on Problem Set 1

*Fixed Effects Papers*


Week 3) Linear Panel Models continues (Large Small N/T) (1/20 & 1/22)

Wooldridge Ch. 10

Angrist & Pischke 5

ESTIMATE SLIDES 2 & 3 (Vogel)
Work on Problem Set 2

*Fixed Effects Papers cont.*


*Week 4 & 5) Research Design and Difference-in-Difference Estimator (1/27, 1/29, 2/3, 2/5)*

Research Paper Title and Abstract Due – 2/5

Class Slides

Angrist & Pischke (parts of Ch 2,3,5)

*Empirical D-in-D Papers*


Week 6) Individual Meetings Regarding Research Project (2/10 & 2/12)

Week 7 & 8) Instrumental Variables (2/17, 2/19, 2/24, 2/26)

Class Slides

Angrist & Pischke Ch. 4

Work on Problem Set 3

Empirical IV


Week 9) Spring Break (3/3 & 3/5)

Week 10) Matching Models (3/10 & 3/12)


**Week 11 & 12) Regression Discontinuity (3/17, 3/19, 3/24, 3/26)**

Angrist & Pischke (Ch. 6)

Class Slides


**Empirical RD Papers**


**Week 13** Exam (3/31)

Go over exam and consultation about paper - 4/2

Week 14) No Class (4/7, 4/9)

Week 15 & 16) Quasi-Experimental (4/14, 4/16, 4/21)

**PRESENTATION** of


**Empirical Papers**


Week 17) Basics of Nonlinear Models (time remaining)

Angrist & Psicheke (ch. 3.4.2) – Explains why we do not cover this topic in much detail

Week 18) Paper Due Monday May 4th at 5pm. Email submission.