COURSE AND CONTACT INFORMATION

Course: PPPA 6022 Econometrics for Policy Research II
Semester: Fall 2012
Time: Wednesday, 6:10PM-8:40PM
Location: 1957 E Street, Room 112

INSTRUCTOR

Name: Jonathan Smith
Campus Address: MPA Bldg, Suite 607
e-mail: 
Office Hours: By appointment

TEACHING ASSISTANT

Name: Ehraz Refayet
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COURSE DESCRIPTION AND STUDENT LEARNING OBJECTIVES

This course covers more advanced econometric methods in public policy research. Topics include: qualitative dependent variable estimators; multi-level modeling; developing the formal, statistical basis for drawing causal inferences from non-experimental data; “causal” estimators (instrumental variables, matching estimators, panel data estimators, regression discontinuity); quantile regression, simple time series models; and event-history analysis. Students will develop capabilities in more advanced empirical modeling and analysis by critically reading research, completing a series of empirical assignments and an empirical research paper.

COURSE REQUIREMENTS

Prerequisites: PPPA 6013 or equivalent course. In general, the course is accessible to students who do not have an extensive mathematical background (e.g. calculus and matrix algebra are not required). Nonetheless, there will be use of algebra throughout the course.

Required texts and software:
- Joshua Angrist and Rolf Pischke, *Mostly Harmless Econometrics*
- A copy of Stata installed where you can use it. Because GWU is a participant in Stata’s GradPlan, you are eligible to purchase various full versions of Stata 11 (not stripped down student versions) at a substantially reduced cost.

GRADING

- Problem sets (40%)
- Research replication/extension and presentation (50%)
- Class participation and discussion (10%)
**Problem sets:** There will be five problem sets. I will drop your lowest score such that the top four scores each count for 10% of your final grade. They will be assigned at least a week in advance and due at the beginning of class on the specified due date. All problem sets will involve Stata so as to prepare you for your independent research project. You are permitted to work in groups but each person must hand in his or her own write-up. Do not just copy another person’s work. It is strongly encouraged that you type your problems sets.

**Research project and presentation:** Each student will complete his or her own research project. The project includes writing a paper and presenting your findings to the class. The research should replicate an existing study of your choosing and extend upon it with your own analysis. More explanation will be provided in class.

**Class participation and discussion:** You are expected to attend all classes and contribute to the discussions. Most weeks I will ask you to read an important paper in the field and we will discuss the paper in depth. I will pose several questions and you are expected to speak up.

**LEARNING STATA, TA, AND PERIODIC LABS**

Your TA is available to answer questions on both homework and course content. At the beginning of the semester (time TBD), he will hold a session on Stata basics. There may be periodic TA sessions if it becomes evident that students need a review of a recent topic. These sessions are optional but organized for your convenience.

**COURSE SCHEDULE**

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<thead>
<tr>
<th>Date</th>
<th>Class</th>
<th>Topic</th>
<th>Due</th>
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<tbody>
<tr>
<td>8.28</td>
<td>1</td>
<td>Introduction, Causality, Regression Analysis</td>
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<tr>
<td>9.5</td>
<td>2</td>
<td>Regression Review, Threats to Validity, Binary Dependent Variables</td>
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<td>9.12</td>
<td>3</td>
<td>Panel Data, Fixed Effects, Random Effects</td>
<td>Problem Set #1</td>
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<td>9.19</td>
<td>4</td>
<td>Differences-in-Differences</td>
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<td>9.26</td>
<td>5</td>
<td>Instrumental Variables</td>
<td>Problem Set #2</td>
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<td>10.3</td>
<td>6</td>
<td>Instrumental Variables Issues</td>
<td>Research Paper Proposal</td>
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<td>10.10</td>
<td>7</td>
<td>Regression Discontinuity</td>
<td>Problem Set #3</td>
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<td>10.17</td>
<td>8</td>
<td>Regression Discontinuity Issues</td>
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<td>10.24</td>
<td>9</td>
<td>Matching Estimators</td>
<td>Problem Set #4</td>
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<td>10.31</td>
<td>10</td>
<td>Presentations</td>
<td>Research Paper Outline</td>
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<td>11.7</td>
<td>11</td>
<td>Presentations</td>
<td></td>
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<td>11.14</td>
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<td>Limited Dependent Variables, Selection Models</td>
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<td>11.28</td>
<td>13</td>
<td>Quantile Regressions</td>
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<td>12.5</td>
<td>14</td>
<td>Time Series, Survival Analysis, Miscellaneous</td>
<td>Problem Set #5</td>
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<td>12.13</td>
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<td>Research Paper</td>
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Policies and Procedures for this Course

The Syllabus: This syllabus is your guide to the course. If any questions arise, please check the syllabus before contacting me or the TA. Sound educational practice requires flexibility and I may revise content and requirements during the semester.

Late or Missed Class: If you are late or absent from class, it is your responsibility to obtain all announcements, assignments, and handouts from Blackboard or from your classmates.

Submission of Written Work Products Outside of the Classroom: It is your responsibility to ensure that I receive your assignment on time. It is not permissible to submit assignments on the digital dropbox of Blackboard unless I tell you so.

Collaboration on Assignments: The statistical work for the problem sets can be conducted in groups; however, you are expected to write up your answers individually.

Submission of Written Work Products after Due Date: All work must be submitted by the assigned due date in order to receive full credit. Only extreme circumstances warrant exceptions. Late assignments will be marked down for each day that they are late.

Academic Honesty: All examinations and other graded work products are to be completed in conformance with the George Washington University Code of Academic Integrity (see http://www.gwu.edu/~ntegrity/code.html). Note especially the definition of plagiarism: “intentionally representing the words, ideas, or sequence of ideas of another as one’s own in any academic exercise; failure to attribute any of the following: quotations, paraphrases, or borrowed information.”

Incompletes: You must consult with me to obtain an incomplete no later than the last day of classes in the semester. At that time, we will both sign the CCAS contract for incompletes and submit a copy to the School Director. Please consult the TSPPPA Student Handbook or visit http://www.gwu.edu/~ccas/faculty/files/Incomplete_poli0.pdf for the complete CCAS policy on incompletes.

Changing Grades After Completion of Course: No changes can be made in grades after the conclusion of the semester, other than in cases of clerical error.

Accommodation for Students with Disabilities: If you need extra time on exams or assignments due to a disability, let me know in the first week of class. In order to receive accommodations on the basis of disability, you'll need to provide proper documentation to the Office of Disability Support Services, Marvin Center 436, 202-994-8250. Accommodations will be made based upon the recommendations of the DSS Office.

University Counseling Center: The University Counseling Center (UCC), 202-994-5300, offers 24/7 assistance and referral to address students’ personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations; confidential assessment, counseling services (individual and small group), and referrals http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupportServices.
Readings:

Aug. 29th & Sep. 5th -- Introduction, Causality, Regression Analysis & Regression Review, Threats to Validity, Binary Dependent Variables

- Required
  - MHE - 1, 2, 3.1-3.2
  - Wooldridge - 1-4, 7, 8.1-8.3, 9.4, 17.1

- Optional Review
  - Wooldridge – Appendix A, B, C (review of math, probability, and statistics)

- Randomized Experiments

- Natural Experiments

- Regression Issues

- Logits and Probits Overview

- Logits and Probits

Sep. 12th & Sep. 19th -- Panel Data, Fixed Effects, Random Effects, and Differences-in-Differences

- Required

- Panel Data/Differences-in-Differences/Fixed Effects


- Random Effects

**Sep. 26th & Oct. 3rd -- Instrumental Variables**

- Required
  - Wooldridge – 15, 16
  - MHE – 4.1

- Instrumental Variables Examples

- Instrumental Variables Issues
Oct. 10th & Oct. 17th -- Regression Discontinuity

- Required
  - MHE - 6

- Regression Discontinuity Examples

- Regression Discontinuity Issues

Oct. 24th - Matching Estimators

- Required
  - MHE - 3.3.1, 3.3.3

- Optional
  - MHE - 3.3.2

- Matching Examples


- Matching Issues

**Oct. 31st - Presentations of research projects**

**Nov. 7th - Presentations of research projects**

**Nov. 14th - Limited Dependent Variables, Selection Models**

- Required
  - Wooldridge - 17.2, 17.4-17.5

- Multinomial Logit

- Conditional Logit

- **Selection Model**

- **Ordered Logit**

- **Ordered Probit**

**Nov. 28th - Quantile Regressions**

- **Required**
  - MHE – 7-7.1

- **Quantile Regression Examples**

**Dec. 5th - Time Series, Survival Analysis, Miscellaneous**

- **Time Series**
Research Replication/Extension Assignment
PPPA 6022 – Fall 2012

Overview: This project is the culmination of the course. You are responsible for finding an existing research paper and replicating the results. You also have to extend, if only slightly, the research you are replicating. The topic and paper is your choice, but should be something you are interested in. If you plan on producing research, this may be the beginnings of your dissertation or a paper. If you only plan on consuming research, this will give you a great understanding of how the process works and what makes for good and bad research. Sometimes getting your hands dirty is the best way to understand the process.

It is not easy to replicate someone’s results. Chances are you will not get identical estimates. Getting data can be a challenge in itself and you only have a semester. You have to start thinking about this project immediately!

Topic: You are responsible for choosing a topic. The reading list has many papers, which is where you can start your search and it always helps to look at the papers’ references. You can also ask me for suggestions or advice, but it should be on a topic that interests you and one that is feasible!

Data: Try to get your data as soon as possible. Without the data, there is no project! You need not get the same data from the paper you are replicating. Lots of good research is replication using different sample (e.g. different years or types of people). Exploring the differences in results because of data differences is a great topic and in some cases, can be the extension. Some journals require that data be made available. Sometimes you can directly contact the author and request the data. Other times, the data is publicly available. A big part of research is having good data so learning what is out there and how to get it is part of the process.

Remember, data come in all forms of readiness for analysis. Sometimes it needs to be cleaned or merged and this requires time and knowledge of some software package. Make sure the data you use are appropriate for your skill set.

Proposal: You must write a one-page proposal by September 26th. I will promptly give you feedback. You need not wait until the 26th because the sooner you get feedback the sooner you can get into the details. You also do not want to spend a lot of time trying to get data on an idea that may ultimately fail or change. The proposal should describe the paper you are trying to replicate, the methodologies and data you are going to use, how you will get the data, and your extension.

Outline and Data Update: You must provide me with an outline of your paper on October 31st. It should be a detailed outline and ideally, a section or two actually written (perhaps the introduction and methodology). Writing the introduction may seem premature, but it can help you think about the direction of the paper and what you need to do. I also want an explicit paragraph or more on the data. I want to know what data you are using and if you received it and if not, when do you expect it.
**Presentation:** We will take some time out in the middle of the semester (October 31st and November 7th) to present your research proposal. This will introduce students to new papers, topics, and methodologies but will also serve as an opportunity to receive feedback from both your classmates and me. This will help you with the direction of the paper and you will receive constructive criticism.

You will have approximately 15 minutes to discuss the topic, your analysis and methodology, and answer questions. The paper is not expected to be written (you may just be getting the data) so you probably can’t comment on your results. But you cannot just stand up and ask for advice. You must provide us with context and understand your topic. Please prepare slides. Everyone should be prepared to present on October 31st, despite half the class actually presenting on November 7th.

You must show up to both classes even if you present in the first class. You will benefit from classmates’ feedback, so you should extend the same courtesy. Students are expected to speak up with constructive criticism as this is part of your class participation.

**Paper:** Your paper does not have to replicate the entire paper. You can focus on the portion that you are planning to extend. There is no set length to the paper, but it should probably be about 12-15 pages and have supporting tables.

Some authors post their code on their websites. You are encouraged not to use it. It is okay if you do use the code but you should write that in the paper and you are then expected to put more emphasis on the extension. A paper that copies someone else’s code and has a small extension with little though will not receive a good grade.

Your paper should have the following information:

- **Paper Background** - Describe the paper you are replicating. What is the paper about? What question is the author trying to answer? What is the contribution?
- **Methodology** - What methods do the authors use? Was this an appropriate method? Why was it better or worse than other potential methods? Should other methods have been used? What is the causal identification strategy (if any)? What are some threats to the identification strategy?
- **Data** - What data do you use? Is it the same as the author’s? How do the data differ? Summary statistics should be presented. Please also describe how you got the data.
- **Replication Results** - Were you able to reproduce the author’s results? If not, how do they differ? Why do they differ? Interpret your results? Are they sensitive to your choice of methodology?
- **Extension** - What is the question you are trying to answer? How are you approaching it (new variables or data or different methods)? What are your results? What are the weaknesses to your extension? In light of these results, how could future research proceed?
- **Tables** - Include summary statistics and results of the replication and extension.
- **References** - Include any references used. You do not need to copy the references from the paper you are replicating, but if you rely on other people’s work, give them credit.

**Due Dates and Check-ins:**
• September 26th - Research proposal
• October 31st - Outline and data update
• October 31st - November 7th - Presentations
• December 13th - Paper

Grading:
• Successful (and on time) completion of proposal and outline - 10%
• Attending both presentations and offering comments - 10%
• Your presentation - 10%
• Paper - 70%

Potential Data Sources:
• National Center for Education Statistics. Education data for all grades. Used in a lot of education research. Large scale surveys on students in high schools and college and the transition. Datasets at school level (elementary, secondary, and postsecondary). http://nces.ed.gov/
• Josh Angrist’s Website. Datasets from most or all of his papers. Lots on education and several from our text MHE that use methodologies covered. http://nces.ed.gov/
• American Economic Association Journals (American Economic Review, American Economic Journal). Data available for most recent articles on website. Many of these papers are on topics we discussed. http://www.aeaweb.org/aea_journals.php
• Website Aggregators. There are many websites that have compiled links to other data sources. Here are a few:
  o http://www.ciser.cornell.edu/ASPs/datasource.asp
  o http://www.lib.ncsu.edu/data/socialscienceandhumsets.html
  o http://rfe.org/showCat.php?cat_id=5
  o http://www.econdata.net/