NEW YORK UNIVERSITY
ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE

PADM-GP 2902: REGRESSION AND INTRODUCTION TO ECONOMETRICS
Spring 2014, Section 001

FACULTY
Leanna Stiefel
leanna.stiefel@nyu.edu
Mondays 11 – 12:40
25 West 4th, Room C-20

Hours: Thursdays, 2-3:30
Puck, 3098

RECITATIONS
You are required to register for a recitation section, and you must attend that section when you choose to attend. You are not required to attend, however. Each recitation will primarily discuss the learning objectives of the problem set that is due the following week. In addition, they will allow time for follow-up questions from the week’s lecture as well as questions about Stata.

Recitation Section 2: Tuesday 8:35 - 9:35 pm, Tisch Hall, Room LC11, Hani Kfouri, hani.kfouri@nyu.edu
Recitation Section 3: Wednesday 12:30 - 1:30 pm, Tisch Hall LC11, Davin Reed, davin.reed@nyu.edu
Recitation Section 4: Thursday 8:35 – 9:35 pm, 194 Mercer, Room 305, Suvam Paul, sp1491@nyu.edu

TUTORING
All tutoring sessions are located in the study, on the 3rd floor of Puck

Thursdays, 10-11 am, Hani Kfouri, hani.kfouri@nyu.edu
Fridays, 10-11 am, Davin Reed, davin.reed@nyu.edu
Saturdays, 10-11 am, Suvam Paul, sp1491@nyu.edu

COURSE DESCRIPTION
Multiple regression (econometrics) is the core statistical technique used by policy and finance analysts in their work. In this course, you learn the theory and practice of econometric analysis. Specifically, you learn how to evaluate whether regression coefficients are biased, whether standard errors (and thus t statistics) are valid, and whether regressions used in policy and finance studies support causal arguments.

In addition, employing one consistent dataset for all your computer exercises, you perform statistical analyses discussed in class using Stata, an econometric statistical package, and you see how the results reflect econometric concepts. Finally, with a group of your classmates and project datasets provided by your professors, you do a project that involves estimating your own regression model and applying the techniques we learn in class.
COURSE REQUIREMENTS AND GRADING

1. **(20%) Nine Problem sets and computer exercises (100 possible points each assignment, where problem sets and computer exercises are counted as one assignment.)**

   Note that if your grade on the midterm is higher than the average of the problem sets, you will receive the midterm grade instead of the average for the problem sets. If, however, the average of the problem sets is higher than the midterm grade, then you will receive the problem set average. Thus the problem set grades can only help your grade and they will definitely help you do well on the midterm!

   Answers to problem sets and computer exercises must be submitted at the beginning of the class for which they are listed in the course schedule below and in hard copy. No late assignments or emailed assignments will be accepted. For Stata output, submit only the last “run” of the analysis. For problem sets, submit your answers on the answer sheet provided for each set. Please be sure to write your mailbox number on your submissions. Graded assignments will be returned to your student mailbox by the next class.

   Solutions will be posted to NYU Classes on Wednesday after the problems and computer exercises are due.

2. **(35%) Exam (100 possible points)**

   An in-class exam will be given during Class 10 (see Course Schedule below). You may bring a non-graphing calculator and two pages (single-sided) of notes.

3. **(45%) Group Project (100 possible points)**

   In groups of four to five, conduct a regression analysis, present your results, and write a paper. (Note: All group members will complete peer evaluations that will factor into grades.)
   a) Email me by Friday before Class 2 with your rankings of preferred data sets and I will put you in groups. See datasets and their descriptions in NYU Classes, Resources, Project Descriptions and Datasets. These datasets are all “donated” from Wagner professors’ and doctoral students’ research projects.
   b) Contact me to meet with your group the week of Class 3 or 4 to discuss the project, including at least one specification that will be estimated.
   c) Read chapter 11, “Running Your Own Regression Project,” in the course text.
   d) See me during office hours or after class for quick check-ins on your work.
   e) Contact me by the week of class 11, to go over your two tables (descriptive statistics and results), with your group. In addition, see me about your results as you go along if you want or need feedback.
   f) Present your results during one of the last three class sessions to get feedback before writing. Note: All students are expected to attend each day of presentations.
   g) Write an 8-10 page paper, including two tables, organized into five sections as follows below, under Paper Outline. Tables do not count in page limit.
Paper Outline

I. Introduction: What is the goal of your regression study? Why is it interesting? Why do we care? (This does not have to be momentous – but you should explain why the results could be interesting or valuable to someone.)

II. Data: Describe your sources and discuss the descriptive statistics that are presented in Table 1.

III. Model and Empirical Strategy: What is your model (equation), and how does it achieve the goal of your analysis? Why are the specific variables used and measured as they are? Do you have any prior expectations about the signs of coefficients? How will you estimate this model? (Usually OLS with fixed effects.)

IV. Results: Discuss the results that are presented in Table 2.

V. Conclusions: What does your model say about your goal or issue? What is the next step in this research?

Appended at end of paper:

i) Table 1 (with title): Descriptive statistics of all the variables in your model(s).

ii) Table 2 (with title): Results of your models, presented in four or five columns.

iii) Final cleaned up Stata log file of your results.

COURSE MATERIALS


2. Required: Stata/IC 13, purchased and loaded onto your computer by week one.

You should purchase this software here in order to obtain a student discount:

Purchase Stata/IC 13 (not Small Stata). The least-cost option is a 6-month license, at $69. If you are planning to take Estimating Impacts, Advanced Empirical Methods, or the Research Capstone, you may want to consider a one-year or perpetual license. Stata 13 is not platform-dependent and will run on either Windows or Mac operating systems.
No previous knowledge of Stata is necessary. In addition to learning Stata through the problem sets and computer exercises and in class, the Data Services Studio in Bobst (http://library.nyu.edu/dataservice/) offers short courses (tutorials) and on-site help.

Finally, recitations during the first two weeks of class will serve as Stata tutorials. *If you have a laptop, please bring it with the Stata installed.*


4. **Required:** Computer Exercises and Data Set to download from NYU Classes. See the course schedule below for when assignments are due in class.

By the first week of class, download from NYU Classes, saving them to a folder on your computer reserved for PADM-GP 2902 work:

- Computer Exercises all one file.doc;
- newschools9810.dta;
- Class 3 Exercise 2014.do;

Then, watch video one (and video two if you have time) on using Stata (also on NYU Classes, Stata Learning Materials).

**NYU CLASSES**

You will need to have access to the NYU Classes found under “Academics” on your NYU Home site (https://home.nyu.edu/). All announcements and class related documents (problem sets, computer exercises, databases, solutions, optional exercises, class notes, etc.) will be posted here.

**CLASS NOTES**

Before each class, class notes will be available on NYU Classes. *You should print them, bring them to class*, and use them to organize your notes. Download Class 1 Handout new.

**STATA TUTORIALS**

In addition to video tutorials posted to NYU Classes, we will offer two *optional* in-person tutorials:

1. Friday, January 31st, 5:30–7 p.m., Meyer 121
2. Friday, February 7th, 5:30-7 p.m., Meyer 121

The dates, time, and location of the tutorials are based on course enrollment and room availability. *We recommend that you bring to these sessions a laptop with Stata installed, and we ask that students who bring a laptop to these sessions allow their classmates without a laptop to follow along with them.*
**SUMMARY OF COURSE GRADING AND DUE DATES**
1. 20% Problem Sets and Computer Exercises (or Midterm grade if that is higher)
2. 35% Midterm Exam
3. 45% Regression Project

**COURSE SCHEDULE** (S = Studenmund text; B = Baum text -- optional)

<table>
<thead>
<tr>
<th>CLASS</th>
<th>Mon</th>
<th>Tues</th>
<th>READING</th>
<th>DUE IN CLASS</th>
<th>RECITATION</th>
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<tbody>
<tr>
<td>1</td>
<td>1/27</td>
<td>1/28</td>
<td>S Chs. 1 &amp; 2 (34-38 &amp; 46-57) B Ch. 1</td>
<td>See &quot;Class Topics,&quot; next pg</td>
<td>Problem Set 2</td>
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<td>2*</td>
<td>2/3</td>
<td>2/4</td>
<td>S Chs. 2 (39-45) &amp; 4 B Ch. 2 (2.1.1-2.1.13; 2.2.1-2.2.4)</td>
<td>Problem Set Class 2</td>
<td>Problem Set 3</td>
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<td>3</td>
<td>2/10</td>
<td>2/11</td>
<td>S Chs. 3 &amp; 5 (not including appendix) B (3.9.1; 4.3.1-4.3.4; 4.6 stop at 4.6.1)</td>
<td>Problem Set Class 3</td>
<td>Computer Exercise Class 3</td>
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<td>2/17 &amp; 2/18</td>
<td>NO CLASS: Presidents' Day plus Tuesday off</td>
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<td>4**</td>
<td>2/24</td>
<td>2/25</td>
<td>S Chs. 6 &amp; 7 (207-213, 218-220, 223-226); Appendix Ch. 5</td>
<td>Problem Set Class 4</td>
<td>Problem Set 5</td>
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<td>5</td>
<td>3/3</td>
<td>3/4</td>
<td>S Ch. 7 (213-218, 220-223, 226-232) B (4.5.1-4.5.3; 5.2.2; 7.1 intro., 7.11, 7.12 until interactions)</td>
<td>Problem Set Class 5</td>
<td>Problem Set 6</td>
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<td>3/10</td>
<td>3/11</td>
<td>S Chs. 8 &amp; 9 B (5.2.9, 7.1.2, all of 7.2)</td>
<td>Problem Set Class 6</td>
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<td>3/17 &amp; 3/18</td>
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<td>7</td>
<td>3/24</td>
<td>3/25</td>
<td>S Ch. 10 B (4.3.7, 6.1.4, 6.3)</td>
<td>Problem Set Class 7 Computer Exercise Class 7</td>
<td>Problem Set 8</td>
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<td>8</td>
<td>3/31</td>
<td>4/1</td>
<td>S Ch. 16 B (6.2, 6.1.2, 6.1.3)</td>
<td>Problem Set Class 8 Computer Exercise Class 8</td>
<td>Problem Set 9</td>
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<td>4/7</td>
<td>4/8</td>
<td>S Ch. 13 B Ch. 9 through 9.1.3</td>
<td>Problem Set Class 9 Computer Exercise Class 9 Exam Review</td>
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<tr>
<td>10</td>
<td>4/14 &amp; 4/15</td>
<td>EXAMINATION</td>
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<td>11***</td>
<td>4/21</td>
<td>4/22</td>
<td>S Ch. 14 (396-97) &amp; Table 11-2 B Ch. 10 through 10.1.3</td>
<td>Computer Exercise Class 11 Exam Q&amp;A</td>
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<td>5/12 &amp; 5/13</td>
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<td>5/15</td>
<td>Regression Project Papers</td>
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* email me before class 2 about your top three project dataset choices.
** schedule a meeting with me week of class 3 or 4 to discuss regression analysis and at least one equation.
*** schedule a meeting with me week of class 11 to go over Tables 1 and 2 of projects.
CLASS TOPICS

Class 1: **OLS Bivariate Regression Model with Error Term**
Theoretical regression line; deterministic versus stochastic relationships; population versus sample regression line; error and residual; OLS estimators

**Note:**
- Purchase and install Stata/IC 13;
- Download and save, from NYU Classes: newschools9810.dta, Class 3 Exercise 2014.do, Computer Exercises all one file.doc.
- Watch videos on using Stata, on NYU Classes.
- Print and bring to class: Class 1 Handout new.doc

Class 2: **OLS Multiple Regression and Assumptions about Error Term**
Reducing bias; interpretation of coefficients; BLUE assumptions

Class 3: **Hypothesis Testing in Multiple Regression Context**
Significance tests; confidence intervals; F test; $R^2$; Adjusted $R^2$; interpretation of computer output

Class 4: **Functional Form Part I: Polynomials and Dummy Variables**
Functional form; using qualitative data (dummies); joint tests of significance; curvilinear relationships

Class 5: **Functional Form Part II: Interactions and Logarithmic Transformations**
Interactions of dummies; interactions of continuous and dummy variables; continuous by continuous interactions; logarithmic transformations (percent change or elasticity transformations)

Class 6: **Multicollinearity and Autocorrelation**

Class 7: **Heteroskedasticity**

Class 8: **Panel Data Estimation Part I**
Pooled cross-sectional and time series data; panel data; fixed effects estimation.

Class 9: **Panel Data Estimation Part II; Introduction to Linear Probability Models**

Class 10: **Exam**

Class 11: **Qualitative Dependent Variables; Simultaneous Equation Models**

Class 12-14: **Presentations**

Th. May 15: Papers Due in Professor’s Mailbox (Puck, 3rd Floor) by 5 p.m.
STUDENT INFORMATION SHEET
Bring to first class

Name___________________________________________________________________

Name of undergraduate institution and year of graduation:

Previous experience in statistics? When?

Previous professor for statistics if Wagner?_____________________________________

Program (circle one) Health Public and Nonprofit Urban Planning International Other

Expected specialization (circle) Finance Policy Management International Other

Fulltime Part time

Brief description of work experience (if any):

Specific areas of interest in public policy, finance, planning or international:

What do you hope to learn or gain from taking this course?

Other information of interest, especially to help me get to know you faster.