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

PADM-GP 2902: REGRESSION AND INTRODUCTION TO ECONOMETRICS
All Sections
Spring 2013

FACULTY INFORMATION
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Mondays 11 – 12:40 Mondays 6:45 – 8:25 p.m. Tuesdays 9:00 – 10:40 a.m.
275 GCASL 306 194 Mercer 369 GCASL
(212) 998-5758 (please email) (212) 998-0800
Puck, 3098 Puck, 3045 44 West 4th Street, 8-171
Hours: Wednesdays, Hours: Thursdays Hours: Tues., Thurs., Fridays
4 – 5:30 p.m. 5 – 7 p.m. 12:30 – 1:30

RECITATIONS
You are required to register for a recitation section, and you must attend that section when you
choose to attend. You should attend the first two sessions to learn Stata, but attendance after that
is optional although recommended. The recitation prior to the exam will serve as a review
session. In other recitations you will work on problem set answers (for problems already handed
in) and textbook exercises plus have a chance to questions about any topic in the course.

Recitation Section 1: Thursday 8:00 - 9:00 am, 194 Mercer, 304
Lucas Koehler, lk1338@nyu.edu

Recitation Section 2: Tuesday 8:35 - 9:35 pm, Tisch LC 19
Tamar Hellman, tamar.hellman@nyu.edu

Recitation Section 3: Wednesday 12:30 - 1:30 pm, 194 Mercer, 304
Bingli Luo, binglie.luo@nyu.edu

Recitation Section 4: Thursday 8:35 – 9:35 pm, Waverly, 668
Colin Bottles, ceb516@nyu.edu

TUTORING HOURS
Tuesdays: 12-1pm, The Study conference room, Puck 3024, Colin Bottles, ceb516@nyu.edu

Fridays: 3-4, The Study conference room, Puck 3024, Tamar Hellman, tamar.hellman@nyu.edu *

Tuesdays: 5:30 -6:30, The Study conference room, Puck 3024, BUT you must email if you want
to meet (don’t be shy), Lucas Koehler, lk1338@nyu.edu

Fridays: 4-5, Jersey conference room, Puck 3025, Bingli Luo, binglie.luo@nyu.edu *

*There may be a room conflict on Friday, February 8th. If so, we will send notice and/or post signs advising of an alternate location.
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)**

   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.

   Solutions will be posted to NYU Classes on Wednesday after the problems and computer exercises are due. Please be sure to write your mailbox number on your submissions. 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. Graded assignments will be returned to your student mailbox by the next class.

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%) 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 your professor by Friday before Class 2 with your rankings of preferred data sets and we 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.

   Continued on next page
b) Contact your professor to meet with your group the week of **Class 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) Present your results during one of the last three class sessions to get feedback before writing.

e) Write an 8-10 page paper, including two tables, organized into five sections as follows. Tables do not count in page limit.

f) Be prepared to email to meet with your professor at least one time after your second meeting but before your presentation (**the week of class 11**), to go over your two tables (descriptive statistics and results). In addition, see your professor about your results as you go along if you want or need feedback.

**Paper Outline**

I. Introduction: What is the goal of your statistical 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 12, purchased and loaded onto your computer by week one.

You should purchase this software through NYU’s Direct-ship GradPlan in order to obtain a student discount: [http://www.stata.com/order/new/edu/gradplans/gp-direct.html](http://www.stata.com/order/new/edu/gradplans/gp-direct.html).

Purchase Stata/IC 12 (not Small Stata). The least-cost option is a 6-month license, at $65. If you are planning to take Estimating Impacts or the research capstone, you may want to consider a one-year or perpetual license. Stata 12 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/](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 2012.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/](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 Notes 1.

SUMMARY OF COURSE GRADING AND DUE DATES
1. 20% Problem Sets and Computer Exercises
2. 35% Exam
3. 45% Regression Project

COURSE SCHEDULE (S= Studenmund text; B = Baum text)

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<thead>
<tr>
<th>CLASS</th>
<th>Mon</th>
<th>Tues</th>
<th>READING</th>
<th>DUE IN CLASS</th>
<th>RECITATON</th>
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<tr>
<td>1</td>
<td>1/28</td>
<td>1/29</td>
<td>S Chs. 1 &amp; 2 (34-38 &amp; 46-57) B Ch. 1</td>
<td>See &quot;Class Topics&quot; below</td>
<td>Stata Tutorial I</td>
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<td>2/4</td>
<td>2/5</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>Stata Tutorial II</td>
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<td>3</td>
<td>2/11</td>
<td>2/12</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 Computer Exercise Class 3</td>
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<td>2/18 &amp; 2/19</td>
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<td>NO CLASS: Presidents' Day plus Tuesday off</td>
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<td>4**</td>
<td>2/25</td>
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<td>S Chs. 6 &amp; 7 (207-213, 218-220, 223-226); Appendix Ch. 5</td>
<td>Problem Set Class 4 Problem Set 4</td>
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<td>5</td>
<td>3/4</td>
<td>3/5</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>
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<td>Problem Set 5</td>
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<td>3/12</td>
<td>S Chs. 8 &amp; 9 B (5.2.9, 7.1.2, all of 7.2)</td>
<td>Problem Set Class 6 Computer Exercise Class 6</td>
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<td>3/18 &amp; 3/19</td>
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<td>7</td>
<td>3/25</td>
<td>3/26</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 7</td>
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<td>8</td>
<td>4/1</td>
<td>4/2</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 8</td>
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<td>4/8</td>
<td>4/9</td>
<td>S Ch. 13 B Ch. 9 through 9.1.3</td>
<td>Problem Set Class 9 Computer Exercise Class 9</td>
<td>Exam Review</td>
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<td>4/15 &amp; 4/16</td>
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<td>EXAMINATION</td>
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<td>11***</td>
<td>4/22</td>
<td>4/23</td>
<td>S Ch. 14 (396-97) &amp; Table 11-2 B Ch. 10 through 10.1.3</td>
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<td>5/16</td>
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<td>Regression Project Papers</td>
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* email professor before class 2 about your top three project dataset choices.
** schedule a meeting with professor week of class 4 to discuss regression analysis and at least one equation.
*** schedule a meeting with professor 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 12; download and save newschools9810.dta, Class 3 Exercise 2012.do, and Computer Exercises all one file.doc from NYU Classes. Watch video on using Stata. Print and bring Class 1 Handout.doc to class.

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; R²; Adjusted R²; 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 16:  **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.