THE UNIVERSITY OF MELBOURNE
Department of Economics

ECOM 30003/90003: Applied Microeconometric Modelling

Semester 2 2017

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Subject Website: http://www.lms.unimelb.edu.au/login/

Subject Lectures: Tuesday from 9:00 to 11:00am in Spot Building 1022 (Level 1 Theatre)

Tutorials: Monday & Wednesday 9:00-10:00am in Alan Gilbert 111

Subject Description

This subject examines estimation and testing of microeconometric models based on cross-sectional and panel data and quantitative and limited dependent variables. We will also discuss methods of establishing causal relationships. Illustrative applications will be drawn from development economics, labour economics, health economics, and consumer demand. The computer software used is *Stata*.

Subject website

Copies of lecture notes, additional readings, tutorials, tutorial answers and assignments will be available on the LMS web site. I will post announcements, such are assigned additional reading, on LMS as well. LMS will also contain access to data to be used for tutorial questions. You should first refer to LMS for any and all questions about the subject, as I will do my best to post all relevant material and information there.

Email and Office Hours

As a general rule, you should contact me via email as a last resort. You should aim to ask questions in class, tutorial, or my office hours. If it is a general question clarifying the requirements of an assignment, other students would likely benefit for this. Please use the class website or your peers to resolve quick questions such as "ahh! what's the reading for this week again?" For larger, more conceptual issues, such as "I don't understand the main point about difference-in-difference regressions at all," email is not a good way to reach me. I urge you instead to come to tutorials and my office hours. For you, these times can be very useful to hash out specific questions; to clarify concepts that remain a bit hazy; and to discuss ideas for extending the material in class to what is going on in the world.

To curb bad habits and to be sure I'm treating all students fairly, I will not answer emails sent to me asking for clarification the night before an assignment is due. I will also not answer emails asking clarifying questions that I have addressed/answered in class. If you missed a lecture, lecture capture is there for you, as are your peers.

Please note that we are only able to respond to student emails coming from a University email address. Please do not use personal email addresses such as Gmail, Hotmail or even business email addresses. Emails

from non-University email addresses may be filtered by the University's spam filter, which means that we may not receive your email. All correspondence relating to this subject will only be sent to your University email address.

Course Requirements

Prerequisites

The official prerequisites for this course are ECOM30002/ECOM90002 (econometrics) or ECOM30001/ ECOM90001 (basic econometrics). This course requires a degree of comfort with working through formal arguments (mathematical, logical, and graphical).

Reading List

The main textbook for this subject, which we will follow closely, will be

1. *Introductory Econometrics: A Modern Approach*, by Wooldridge, 5e

Copies of this text have been ordered for the book store and the library. In addition to the textbook, there will be some readings for journal articles posted on LMS.

In addition to the above, I recommend getting a copy of *Mastering Metrics*, by Angrist & Piscke. As suggested reading for more advanced concepts, I highly recommend *Mostly Harmless Econometrics: An Empiricist's Companion*, also by Angrist and Pischke.

Software: Stata

We will use *Stata* 14 in the labs. It is also available

- On campus in tutorial rooms and the Faculty computer lab
- Off campus via the citrix server

I recommend purchasing a 6 month GradPlan *Stata*/IC 15 license for $61:
http://www.surveydesign.com.au/buygradplan.html

Grading

Your grade for the subject will be determined as follows:

- **60%: Final exam (2-hour).** The exam is cumulative and will contain mathematical exercises. It will also require you to interpret *Stata* output and/or results tables from required journal readings. Material for the exams will be derived from homework assignments, lecture, and readings. It will be scheduled for the exam period.
- **40%: Assignments.** There will be 2 assignments expanding upon material covered in lectures.
    - Review Assignment: To effectively read a journal article, review hypothesis testing and inference and to ensure you have gained some familiarity with Stata.
        - Problem Set: Due before class in Week 3. **(5%)**
    - Replication project: Use the techniques of the subject to conduct empirical research. This project asks you to review, replicate, and extend an empirical paper that has been assigned to you. You will be assigned a paper in week 2 of the semester.
        - Part (I): Review & Replication, due before class in Week 9. **(20%)**

- Part (II): Extension, due before class in Week 12. **(15%)**

LATE ASSIGNMENTS WILL NOT BE ACCEPTED. Students with a genuine and acceptable reason for not completing an assignment, such as illness, can apply to the lecturer to have their marks for that assignment transferred to the final exam. Suitable evidence, such as a doctor's certificate is required. Applications made more than 3 days after the assignment is due will not be considered.

Students who have been significantly affected by illness or other serious circumstances during the semester may be eligible to apply for Special Consideration. The following website contains detailed information relating to who can apply for Special Consideration and the process for making an application: http://www.ecom.unimelb.edu.au/students/special/

Replication Project

At the end of the term, you will deliver a completed replication project that consists of an overview, replication, and extension. You will hand in (via Turnitin on LMS) these parts consecutively, so that each part contains the previous as well.

PART I: Overview (up to 3 pages) & **Replication** (up to 7 pages)

Identify the research question, the overall contribution of the paper, and the key identifying variation used in the analysis. Specifically:

- 1. What questions does the study ask? Why are these questions of economic interest? What are the most important findings in the paper?
- 2. Where does this paper fit in the relevant literature? What were the findings at the time the paper was written? What is the contribution of this particular paper?
- 3. Discuss the data used. Why are they useful or well suited for answering the key questions of the paper? Describe the data using tables (means etc), and if appropriate graphs.
- 4. Describe (using graphs or tables as appropriate) the relationship between the outcome of interest and the key explanatory variable. Does this analysis provide evidence for or against the key hypothesis (or hypotheses) put forth in the paper?

Identify the main findings and use the authors' data to replicate these results. Summarize and compare your replication results to the original results in a table. Specifically:

- 5. Discuss the empirical model. How does it relate to the hypothesis being tested?
- 6. Discuss the empirical challenges faced in obtaining reliable estimates of the parameters of interest and how they are addressed by the estimation methodology employed. What is the identification strategy? What assumptions does a causal interpretation rely on? Are (any) these assumptions testable? If so, how?
- 7. Identify the main findings and use the authors' data to replicate these results. Interpret your findings. How do the results inform us about the key questions asked in the paper? Compare your replication results to the original results in a table. Discuss why you think your results differ from the original (if they do).

PART II: Extension (up to 5 pages)

Extend the work in some way, using the same dataset. Consider this to be like a mini-research paper based on the data with which you have become familiar from Part I, but you do not necessarily need to stay on the same topic. Find a secondary hypothesis that could be tested using the data, and elaborate. This is your new research question. Do a short literature review

to explain why we care about this hypothesis and explain what the predictions are from economic theory. Explain the relevant empirical exercise you will conduct to test your hypothesis, and actually do that analysis in Stata. Use graphical evidence in addition to regression results to support your findings. Equally important to discussing and interpretting your results, you should also discuss the limitations of your approach.

In an appendix to your submission, please include all Stata programs used to generate your results, findings, descriptive stats etc. I should be able to replicate all of your descriptive statistics as well as econometric modelling with the stata code. The appendix does not count towards the page limit. The length of the research report should be between 12 and 15 pages including all graphs and tables.

You may NOT work in a group. Assistance from any source must be acknowledged and all programs included as an appendix (not part of the word limit).

Additional instructions:

1. For the "Submission Title" in Turnitin, please put your student ID and your last name. Eg, "123456-Baranov".
2. Please, please, for the love of all that is holy, include PAGE NUMBERS.
3. Please make sure your paper is legible. That means, ensure that your font is no less than 12 point font, and that your compiler is not creating a fuzzy mess of your paper (those using LaTeX or LyX, please sort this out).
4. Keep the margins free of borders.
5. Minimum of 2cm borders.
6. This is a PAPER not an assignment. As such, it should read like a paper, with sections that have explicit headings like "Introduction", "Data and Summary Statistics", "Empirical Approach", "Discussion", and "Extension". And, of course, the extension portion should also have similar headings, e.g. "Motiviation and Previous Literature", "Empirical Approach", and "Discussion".
7. For your Stata code appendix, please make sure the font is something that is `fixed width (such as courier new)`, as it makes reading code a lot easier (and hence why Stata uses it for your do file and output...).

Plagiarism and Collusion

Presenting material from other sources **(including Stata code)** without full acknowledgement (referred to as plagiarism) is heavily penalised. Penalties for plagiarism can include a mark of zero for the piece of assessment or a fail grade for the subject. Plagiarism is the presentation by a student of an assignment identified as his or her own work even though it has been copied in whole or in part from another student's work, or from any other source (e.g. published books, web-based materials or periodicals), without due acknowledgement in the text.

How to Succeed in This Subject

The first step is perhaps obvious: you must attend lecture and tutorials to do well in this subject. Moreover, you must come to lecture prepared (having read the relevant chapters in the book) and tutorials having tried the problems. The lecture and tutorial will be a lot more interesting to you that way, but you will also get a deeper understanding of the material. While I stick fairly closely to the textbook/readings in designing problem sets and exams, some fraction of the required material will be presented in class alone. The second step is to not only keep up with the readings, but to take excellent notes and think carefully about the issues. The third step is to take the problem sets and end-of-chapter exercises in the textbook seriously. Working on these questions, in addition to the graded material, will help you develop the insights, intuitions, and skills necessary to succeed in the subject.

The best way to do well on assignments is to spend time on them. Carefully review your lecture notes and the textbook. Make all attempts to come to consultation hours—if the scheduled times don't work, email me and I'll try to set new ones. Work with your classmates—study groups can be invaluable in economics subjects—but be sure that you are turning in your own work. Here is a general strategy for preparing for exams (in order of importance):

1. Review your lecture notes and make sure you have mastered the key concepts highlighted in class.
2. Review previous problem sets/tutorial exercises. Create exercises for yourself, modeled on the problem set questions, and practice solving them in a timely fashion.
3. Review the required readings. Do relevant end-of-chapter exercises in the textbook.

Schedule of Topics

This schedule is approximate. We may decide to replace or reschedule topics as the class proceeds. Any updates will be announced in class as well as on the subject website. The following provides a guide to the topics covered in this subject.

1. An Introduction to Stata (week 1)
2. Refresher on OLS part 1: notation, assumptions, interpretation (week 2)
3. Refresher on OLS part 2: more on interpretation & omitted variable bias (week 2)
4. Pooling cross-sectional data: the difference in difference estimator (week 3)
5. Two Period Panel Data Analysis (week 4)
6. Panel data techniques for more than two periods (week 5)
7. Instrumental Variables and Two Stage Least Squares Estimation (weeks 6-8)
8. Binary outcomes model: the Linear Probability Model, Logit and Probit (week 9)
9. Tobit Models and the models for Censored data (week 10)
10. Truncation and Selection Correction (week 11)
11. Selection correction & Wrap up (week 12)

Schedule of Required Reading from the textbook *Introductory Econometrics: A Modern Approach*, by Wooldridge, 5e. Additional reading from papers will be posted as well.

Week1: Chapter 2 (review)

Week2: Chapter 3

Week3: Chapters 7, 8, & 13

Week4: Chapter 13

Week5: Chapter 14

Week6: Chapter 15

Week7: Chapter 15

Week8: Chapter 15

Week9: Chapters 7 & 17

Week10: Chapter 17

Week11: Chapter 17