Econ 5525: Research Problems and Methodology Winter, 2024

Professor: Casey Warman

Class Time: Monday/Wednesday 16:05-17:25

Class Location: MCCAIN ARTS&SS 2019
Office Hours: By appointment

Office: 6214 University Avenue, A14

Prerequisite: Algebra and Calculus as well as **MA Econometrics (5575)**

Objective of Course: The focus of the course will be on how to undertake creating an empirical paper of academic journal quality using applied econometric techniques as well as cover theoretical and applied techniques of modern Econometrics. This course covers cross sectional and panel data techniques and does **NOT** cover time series or finance. The term paper has to be related to microeconomic data, either cross-sectional or panel data and NOT time series techniques. **Do not use pooled timeseries for your paper (example: what is the impact of exchange rate on these 15 countries)**. The focus will be on labour and health related data sets, although other datasets, such as development related data are acceptable for the course.

Evaluation of Course

- Attendance/Assignments/Participation/Tests - 35%
- Presentation - 25%
- Final Paper - 40%

Letter Grade	Numerical (%) Equivalent
A+	$90 - 100$
A	$85 - 89$
A-	$80 - 84$
B+	$77 - 79$
B	$73 - 76$
B-	$70 - 72$
F	< 70

Tentative Dates

- **Proposal**: January 26^{th}
- **2 or 3 Assignments/Tests**: $\sim$ February and March
- **Presentation**: $\sim$ Last couple weeks (presentations may start earlier than the normal class time to accommodate all of the students)
- **Final Paper**: $\sim$April

Term Paper: The term paper can be written in either Microsoft Word or LaTeX. The term paper should be between 20 to 25 pages 12 point font (including everything - Tables/Figures etc). The term paper **cannot** be used from or for another course in any form. However, the term paper may be used as the start of your MA/MDE/PHD Thesis/Essay. If you have any questions regarding this, please contact me before starting your term paper.

Presentation: MAs 18 to 20 minute presentation and 3 minutes of questions. (subject to change)
PhDs 25 to 30 minute presentation and 3 minutes of questions. (subject to change)

Some subjects we will examine:

Econometric Methods (time permitting):

Exploring Common Data Problems and Issues

Panel Data

- Pooled Data
- Fixed Effects
- Random Effects
- Synthetic cohorts
- Dynamic Panels

Binomial and Multinomial Models

- Linear Probability Models
- Probit
- Logit
- Multinomial/Ordinal data
- Count data (Poisson and Negative Binomial Regressions etc.)

Causal Inference with Observational Data

- Instrumental Variables
  - IV
  - Hausman-Taylor estimator
- Difference-in-Difference Models
- Synthetic Control Models
- Regression discontinuity design
- Matching methods

Obtaining Correct Inference

- Bootstrapping, Weighting and Survey Data
- Clustering and related issues

Nonparametric and Semiparametric Methods

- Kernel Density Estimates
- Counterfactual Density Estimates
- Nonparametric Regressions
- Quantile Regressions

Other Potential Topics (time permitting)

- Factor Analysis
- Blinder-Oaxaca Decomposition
- Panel Data: Long and Narrow Panels
- Machine learning
- Other requested topics...
- Heckit and Selection bias (probably not)
- Survival Analysis (probably not)

Other things quickly covered:

- Writing a paper
- Using LaTeX(if people are interested)

STATA

- No prior knowledge of STATA is required.

Subjects covered

- An introduction to STATA
- Simple programming techniques
- Panel Data
- Manipulating data
- MATA (STATA's built in Matrix program) will also be taught throughout the term.

Students are expected to learn the rest of the STATA codes required for their term paper on their own.

STATA can be downloaded through the university
`https://libraries.dal.ca/help/software-downloads.html`

Public use microdata is available from many sites, including:
IPUMS
`http://usa.ipums.org/usa/`
`https://international.ipums.org/international/`

Canadian Data through library

https://libraries.dal.ca/find/data.html
https://www.youtube.com/watch?v=022yiKxgSIg

Confidential Canadian data from the RDCs:
https://www.dal.ca/faculty/ardc.html → takes too long to get access to but if you are doing your Phd may want to use.

Suggested Technical References

Angrist, Joshua and Jörn-Steffen Pischke (2009) Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.

Asteriou, Dimitrios and Stephen G. Hall (2016) Applied Econometrics. Red Globe Press

Angrist, Joshua and Jörn-Steffen Pischke (2014) Mastering Metrics: The Path from Cause to Effect. Princeton University Press.

Baltagi Badi H. (2005) Econometric Analysis of Panel Data. John Wiley and Sons.

Cameron, A. Colin and Pravin K. Trivedi (2005) Microeconometrics: Methods and Applications. Cambridge University Press.

Cameron, A. Colin and Pravin K. Trivedi (2022) Microeconometrics Using Stata. Stata Press. https://www.stata.com/bookstore/microeconometrics-stata/

Davidson, Russell and James G. MacKinnon (2003) Econometric Theory and Methods. Oxford University Press.

Kennedy, Peter (2008) A Guide to Econometrics, 6th edition. Blackwell Publishing.

Wooldridge Jeffrey M. (2010) Econometric Analysis of Cross Section and Panel Data, 2nd edition. The MIT Press.