

PhD Course Syllabus – Introductory Econometrics

COURSE VENUE

Zoom.

COURSE DATES

Classes will run 1pm to 4pm on Thursday via Zoom over 13 weeks between July 23 and October 22.

COURSE COORDINATOR

Professor Daniel Smith
QUT

COURSE PRESENTER BACKGROUND

Daniel is an empirical asset pricing research with a strong interest in financial econometrics. Daniel's work includes applications of regime switching models, nonlinear time series econometrics, conditional asset pricing, return predictability, and financial risk measurement and management.

COURSE OBJECTIVES

The goal of the course is to develop the technical skills required to undertake cutting-edge empirical work in asset pricing and related fields. The course will expose students to both theoretical econometric concepts and illustrate how those tools can be applied in modern contexts. Students will develop key insights into Least Squares Regression, Maximum Likelihood, Generalized Method of Moments, Regime Switching, Kalman Filtering, and Quantile Regression.

This is the first time the course has run so some of the topics can be substituted based on student interest or needs.

COURSE CONTENT

Module 1.

Will develop an overview of the econometric skills required to undertake modern empirical work. We will start with an overview of Matrix Algebra, relevant Probability Theory especially Asymptotic Theory. We will then consider the main tools of:

- Probability Theory, including an introduction to asymptotic methods
- Linear Models
- Nonlinear Least Squares
- Maximum Likelihood

- GARCH Models

Module 2.

- Generalized Method of Moments
- Testing asset pricing models, both conditional and unconditional
- Introduction to log-linearization of returns.

Module 3.

Look at applications of models developed in Modules 1 and 2, including: “No News is Good News”, and “Good-Beta, Bad-Beta”

The final day will consider two extra topics, possibly including (2 of)

- Applications of the Kalman Filter
- Regime Switching Models
- Dynamic Asset Allocation
- Dynamic models of the shape of returns. (Subject to time constraints.)

ASSESSMENT

Three equally weighted assignments will be given at the end of each module. Both theoretical and practical issues will be assessed. Practical questions can be done in Matlab and code will be provided for GMM and Maximum Likelihood, but students are not required to use Matlab.

FIRN GRADING POLICY

A standardised grading system has been implemented across all FIRN endorsed PhD courses and applies to ALL PhD students undertaking the course. Course presenters are asked to calculate final assessment grades using a percentage basis which can then be converted to a grading of 1-7 as follows:

7	85-100%	– Pass with High Distinction/H1 Honours
6	75-84%	– Pass with Distinction/H2 Honours
5	65-74%	– Pass with Credit/H3 Honours
4	50-64%	– Pass
3	<50%	– Pass at Masters Level
2	-	– Did Not Pass - all assessments not completed
1	-	– Did Not Pass – course not completed

LIST OF TEXTS AND READINGS

There are no required texts for this course. The following books are useful references:

Greene, 2018, *Econometric Analysis, Eight Edition*, Prentice Hall.

MacKinnon and Davidson, 2004, *Econometric Theory and Methods*, Oxford.

Davidson and MacKinnon, 1993, *Estimation and Inference in Econometrics*, Oxford.

Hamilton, 1994, *Time Series Analysis*, PUP.

Cochrane, 2004, *Asset Pricing*, PUP.

Relevant chapters from the *Handbook of Econometrics*.

Readings (not exhaustive)

Module 1

French, K.R., Schwert, G.W., and Stambaugh, R.F. (1987), Expected stock returns and volatility, *Journal of Financial Economics*, 19: 3-29.

Module 2

- Scruggs, J. T. (1998), Resolving the Puzzling Intertemporal Relation between the Market Risk Premium and Conditional Market Variance: A Two-Factor Approach. *The Journal of Finance*, 53: 575-603.
- Guo, H. and Whitelaw, R. F. (2006), Uncovering the Risk–Return Relation in the Stock Market. *The Journal of Finance*, 61: 1433-1463.
- Chan, K. C., Karolyi, G. A., Longstaff, F. A. and Sanders, A. B. (1992), An Empirical Comparison of Alternative Models of the Short-Term Interest Rate. *The Journal of Finance*, 47: 1209-1227.
- Dittmar, R. F. (2002), Nonlinear Pricing Kernels, Kurtosis Preference, and Evidence from the Cross Section of Equity Returns. *The Journal of Finance*, 57: 369-403.
- Savov, A. (2011), Asset Pricing with Garbage. *The Journal of Finance*, 66: 177-201.

Module 3

- Campbell, J., & Vuolteenaho, T. (2004). Bad Beta, Good Beta. *The American Economic Review*, 94: 1249-1275.
- John Y. Campbell, Ludger Hentschel, (1992). No news is good news: An asymmetric model of changing volatility in stock returns, *Journal of Financial Economics*, 31: 281-318.
- John H. Cochrane, (2008). The Dog That Did Not Bark: A Defense of Return Predictability, *The Review of Financial Studies*, 21: 1533–1575.

STATEMENT ON PLAGIARISM

Plagiarism is a broad term referring to the practice of appropriating someone else's ideas or work and presenting them as your own without acknowledgment. Plagiarism is literary or intellectual theft. It can take a number of forms, including:

- copying the work of another student, whether that student is in the same class, from an earlier year of the same course, or from another tertiary institution altogether
- copying any section, no matter how brief, from a book, journal, article or other written source, without duly acknowledging it as a quotation
- copying any map, diagram or table of figures without duly acknowledging the source
- paraphrasing or otherwise using the ideas of another author without duly acknowledging the source.

Whatever the form, plagiarism is unacceptable both academically and professionally. By plagiarising you are both stealing the work of another person and cheating by representing it as your own. Any instances of plagiarism can therefore be expected to draw severe penalties.

Cheating means to defraud or swindle. Students who seek to gain an advantage by unfair means such as copying another student's work, or in any other way misleading a lecturer about their knowledge or ability or the amount of work they have done, are guilty of cheating. Students who condone plagiarism by allowing their work to be copied will also be subject to severe disciplinary action.