Finance 5330: Financial Econometrics

Spring Semester, 2019

Course Information

- Course Dates: January 7 - April 23
- Course Time: TR 4:30 - 5:45 PM
- Course Room: Huntsman Hall 126
- Slack Channel
- Course Canvas

Instructor Information

- Tyler J. Brough
- Office Hours: TBD & By Appointment
- Office: BUS 605
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Syllabus

Course Description

This course covers modern financial econometrics and data analysis. We will cover conventional time series models as well as modern algorithmic models. We will cover applications to risk management and trading (among other topics).

Prerequisites

- ECN 4330 or equivalent
- ***Strong economic and statistical logic***

Textbooks

The *required* textbook is the following:

- Applied Econometric Time Series - 4th Edition by Walter Enders.

Other books that we may draw from:

- The Econometrics of Financial Markets by Campbell, Lo, and MacKinlay.
- Analysis of Financial Time Series - 3rd Edition by Ruey Tsay.

- Introduction to Statistical Learning by James, Witten, Hastie, and Tibshirani.

Methods of Teaching and Learning

This course will be taught as a graduate seminar-style course. That means that your participation is crucial. You will get out of the course what you individually and collectively put in.

Most lectures will consist of Jupyter notebooks and slides covering the material, though wherever possible I will use the Socratic method.

Assessment and Grading

Students will be assessed according to the following:

- Class Preparation and Participation (10%) - Much has been said about this already above. Let me just emphasize that no student can earn an A in the course who does not take this component of their grade seriously!
- Weekly Assignments (10%) - There will be approximately weekly assignments that cover the numerical and computational aspects of modeling.
- Replication Study (20%) - Students must select a study from the literature on empirical finance to replicate.
- Midterm Exam (30%) - This will be a take-home exam. Students will be given two weeks to complete this exam.
- Final Exam (30%) - This will be a take-home exam. Students will be given two weeks to complete this exam (including finals week).

Slack

All class communication will take place using Slack, a messaging system that replaces email. Students will be invited to the Fin 5330 Slack channel prior to the first week of class.

Clients for most computing and mobile platforms can be downloaded from the Slack website, or students may use the web client via a desktop browser.

Programming

I will be presenting code in the Python programming language throughout the course. Occasionally, I might present some code in R. You are expected to complete your programming assignments and exams in one of these programming languages.

Schedule of Topics

We will attempt to cover the following list of topics:

1. ***Module I***: Foundations: financial data, difference equations, programming, mathematics and statistics, Monte Carlo studies
2. ***Module II***: Linear time series analysis, volatility models, unit roots and cointegration
3. ***Module III***: Multivariate time series models
4. ***Module IV***: Backtesting trading strategies, data snooping bias, and the bootstrap

NB: I reserve the right to dynamically alter this list as the course progresses. I will announce any such changes in class and on the course Slack channel.

Import dates:

- **Jan 8** - First day of classes
- **Mar 11 - 15** - Spring break
- **Apr 23** - Last day of classes
- **Apr 25 - May 1** - Final exams

The weekly schedule will be updated on the course Google Spreadsheet