Econometrics III
BPHD 8140-001, Fall 2015

Location: Friday 207, T, 11:00pm – 1:45pm
Instructor: Professor Chris Kirby
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Office hours: By appointment

Course Description
Econometrics III provides an introduction to empirical methods in finance. It is designed to familiarize you with the models and econometric techniques that underpin modern empirical research in asset pricing and financial derivatives. We will use recent working papers along with classic journal articles to illustrate the interplay between theory, statistical assumptions, and estimation strategies. In addition to reviewing standard results from asset pricing theory, we will discuss empirical findings that appear to be at odds with these results (“anomalies” and asset pricing “puzzles” in the parlance of the literature). Our analysis will address both the time-series and cross-sectional behavior of asset returns. Topics of discussion will include return predictability, time-varying volatility, market efficiency, testing single period and multi-period asset pricing models, and estimating dynamic term structure models.

Requirements
Problem Sets (20%): I will assign a number of problem sets, most of which will require empirical work using Matlab. You are encouraged to work in groups on the assignments; however, you must turn in an individual solution. Late assignments are not acceptable and will receive a grade of zero.

Referee Report (15%): Consists of preparing a concise, cogent evaluation of the strengths/weaknesses of a recent working paper. I intend to give this out during the 6th or 7th week of class on a Thursday. You will have until the following Thursday to complete the report.

Research Paper (30%): This is an empirical study on a topic selected in consultation with me. It could be original research, or a replication of an existing study with minor extensions. In either case, it must apply an econometric technique discussed in the lectures (something beyond OLS). It is due on the last day of class.

Final Examination (35%): Consists of problems similar to those that will be on the comprehensive exam for finance Ph.D. students. The exam will be held at the regularly scheduled time, which is Thursday, Dec 11 at 11:00 am. You will have 2.5 hours to complete the exam.

Textbooks
The required textbook for the course is The Econometrics of Financial Markets, by Campbell, Lo, and MacKinlay. For some of the topics, you may find it useful to review the relevant material in Asset Pricing, by John Cochrane, 2nd edition, Time Series for Macroeconomics and Finance, by John Cochrane (downloadable from his website), or Time Series Analysis, by James Hamilton.
**Prerequisites**

This course is intended for Ph.D. students in finance. Thus I will assume knowledge of first-year Ph.D.-level macroeconomics and econometrics. The formal prerequisite for the course is BPHD 8130 – Econometrics II.

**Tentative Course Outline and Reading List**

A list of topics for the course along with a list of required readings is shown below. The readings will be posted to the course web page prior to each lecture.

I encourage you to refresh your knowledge of time series econometrics before the class begins. Reviewing the material in chapters 1 – 7, 10, and 11 of *Time Series for Macroeconomics and Finance* would be a good place to start. It can be downloaded at [http://faculty.chicagobooth.edu/john.cochrane/research/papers/time_series_book.pdf](http://faculty.chicagobooth.edu/john.cochrane/research/papers/time_series_book.pdf)

Course Outline:

1. **Distributional and Intertemporal Characteristics of Equity Returns**
   1.1. The Efficient Markets Hypothesis
       Readings: CLM, Chapter 1
   1.2. Random Walks, Martingales, and Fat-Tailed Distributions
       Readings: CLM, Chapter 2
   1.3. Measurement Errors, Statistical Biases, and Related Issues
       Readings: CLM, Chapter 3
   1.4. Stock Return Predictability
1.5. Time-Varying Volatility: Models and Econometric Methods

Readings: CLM, Chapter 12.1 – 12.2


1.6. Leverage Effects, Asymmetry, and Mean-Variance Linkages


2. The Capital Asset Pricing Model (CAPM) and Event Study Methodology

2.1. Unconditional Tests

Readings: CLM, Chapter 5


2.2. Conditional Tests with Time Varying Means and Variances


2.3. Event Studies and the Cumulative Abnormal Returns (CAR) Methodology

Readings: CLM, Chapter 4


3. Multifactor Asset Pricing Models

Readings: CLM, Chapter 6

4. Consumption Based Asset Pricing and the Stochastic Discount Factor Framework

4.1. Generalized Method of Moments (GMM) Estimation
Readings: CLM, Appendix

4.2. Tests of the C-CAPM and the Equity Premium Puzzle
Readings: CLM, Chapter 8.1 – 8.2

4.3. Habit Formation, State Non-separability, and Other Preferences
Readings: CLM, Chapter 8.4

5. Present Value Relations

5.1. VAR and Cointegration Based Procedures
Readings: CLM, Chapter 7

5.2. Volatility Tests

6. The Term Structure of Interest Rates

6.1. Forward Rates as Predictors of Future Spot Rates
Readings: CLM, Chapter 10.2

6.2. Fitting Term Structure Models
Readings: CLM, Chapter 11.1 – 11.2