

**Empirical Research Methods in Finance**

Prof. Christopher S. Jones

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## Course Syllabus

This syllabus describes the policies, procedures, and content of this course. Please read it.

### 1 Contact Information

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### 2 Course Objective

The objective of the course is to review a number of important literatures in empirical finance, predominantly within the field of asset pricing, and to help you develop tools for conducting your own empirical research.

### 3 Prerequisites and Expectations

This course is aimed at second year finance PhD students who have taken a PhD-level course in theoretical asset pricing. I am also assuming that you have some prior exposure to the empirical asset pricing literature. In particular, I am assuming that you are familiar with the following topics:

- The Fama-Macbeth two-pass regression approach
- The characteristics of portfolios sorted on the basis of size, book-to-market, and past returns (e.g. Fama and French (1992), Jegadeesh and Titman (1993))
- The equity premium puzzle (e.g. Mehra and Prescott (1985))

In addition, I expect a solid background in microeconomics and econometrics, where the latter subject is particularly important. In addition, I expect that you should have a basic understanding of finance lingo, such as what you would pick up in FBE 555 or in the first chapter of the book by Campbell, Lo, and MacKinlay.

The primary goal of the course is to learn how to read academic papers. We will average two to four papers per week in addition to background textbook material. I anticipate that the course will be extremely time intensive.

This course will be highly interactive, and all students will be expected to participate in every session. It is therefore mandatory that you complete *all* required reading before each class. In most cases, reading a given paper once will not be sufficient for you to understand the material at a sufficient level, so I advise you to study with your classmates as well as on your own. Taking a lot of notes in class may not be optimal for this course, especially if you have made notes on the papers beforehand. Feel free to experiment with what works best for you.

## 4 Textbooks

The following books are on the bookshelves of most recent finance PhDs. You would benefit from owning all of them. Although I will occasionally assign required reading from these books, they are primarily for your own reference. It is inevitable that the journal articles that we will discuss in class are frequently difficult to understand at first. Seminal articles are often difficult to comprehend, as the best way to illustrate an idea is often not what occurred to the first authors to come up with that idea. These references, authored by academics with more hindsight and experience, often present the same ideas much more clearly - use them when you get stuck, and don't give up.

### Recommended Texts:

- Campbell, Lo, and MacKinlay, *The Econometrics of Financial Markets* (hereafter "CLM")
- Cochrane, *Asset Pricing*

### Additional Reference Texts:

- Greene, *Econometrics*
- Hamilton, *Time Series Analysis*

## 5 Course Requirements and Grading

The course grade will be based on class participation, paper presentations, problem sets, a midterm, and a final. Each will be worth 20% of your grade.

Class participation will not be competitive and is included in your grade primarily to insure that you do all the reading on time. As long as you come prepared to class, this will not be a problem. Ideally, you will have the assigned papers outlined and have a list of questions/issues that you'd like to discuss in class.

Each student will be required to present a paper at some point during the semester. These should be from the list of readings below (chosen from the papers marked with a ◊). It is important that the presenters are not only authoritative in their knowledge of the paper, but that they understand the paper's relation to the finance literature. In addition, the presentation must should meet the standards of a formal academic presentation, except that it need not be quite as long - plan on taking one hour. (Note that I won't be meeting these standards myself - hopefully I don't need the practice as badly!)

There will be about four problem sets, and all will be computer-based. To complete them, you will need to learn basic SAS and Matlab or similar statistical programming languages. You can get access to SAS by signing up for an account on WRDS ([wrds.wharton.upenn.edu](http://wrds.wharton.upenn.edu)), and Matlab sells a relatively inexpensive student version. I will allow you to use a different language if you prefer, but I may not be able to provide much help or to give you as much feedback on your assignments.

The midterm will be held during class at a time to be scheduled later. The final exam will be held during the assigned exam period and will have an emphasis (not complete) on the second half of the course. For both exams, you should know the primary results in all the papers, have some intuition for them, and be able to provide informal derivations of the main theoretical/econometric results. My grading bias is always towards responses that display intuition and understanding rather than precise technical recollection.

## 6 Course Outline and Tentative Reading List

The following lists the specific topics that will be covered in the course. Most, but not all, of the papers listed under each topic will be covered, and I will let you know at least a week in advance which papers to read. Papers marked with an open circle (◦) are eligible to be presented by students. Finally, this list is subject to change.

### Topic 1: *Sources of statistical bias in asset pricing tests*

- CLM 3.0, 3.1, 3.2, 3.4.0, 3.4.1, and 3.4.2
- “Biases in Computed Returns: An Application of the Size Effect,” Marshall Blume and Robert Stambaugh, 1983
- “Risk Measurement when Shares are Subject to Infrequent Trading,” Elroy Dimson, 1979
- “Predictive Regressions,” Robert Stambaugh, 1999
- “The Information in Forward Rates: Implications of Models of the Term Structure,” Robert Stambaugh, 1988

### Topic 2: *Linear factor models*

- CLM Chapter 6
- Cochrane Chapter 12
- “Risk and Return in an Equilibrium APT: Application of a New Test Methodology,” Gregory Connor and Robert Korajczyk, 1988
- “Extracting Factors from Heteroskedastic Asset Returns,” Christopher Jones, 2001
- “A Test of the Efficiency of a Given Portfolio,” Michael Gibbons, Stephen Ross, and Jay Shanken, 1989
- “Movements in the Term Structure of Interest Rates,” Robert Bliss, 1997

### Topic 3: *Predicting market returns*

- CLM Chapters 1-2
- “Expected Stock Returns and Volatility,” Kenneth French, William Schwert, and Robert Stambaugh, 1987
- “Business Conditions and Expected Returns on Stocks and Bonds,” Eugene Fama and Kenneth French, 1989
- “The Equity Premium,” Eugene Fama and Kenneth French, 2002
- “Efficient Tests of Stock Return Predictability,” John Campbell and Motohiro Yogo, 2006

### Topic 4: *Consumption-based asset pricing models*

- CLM Chapter 8
- Cochrane Chapters 10 and 11

- “Generalized Instrumental Variables Estimation of Nonlinear Rational Expectations Models,” Lars Hansen and Kenneth Singleton, 1982 (also 1984 errata)
- “Asset Pricing with Heterogeneous Consumers and Limited Participation: Empirical Evidence,” Alon Brav, George Constantinides, and Chris Geczy, 2002
- “Housing, Consumption, and Asset Pricing,” Monika Piazzesi, Martin Schneider, and Selale Tuzel, 2006
- “A Consumption-Based Explanation of Expected Stock Returns,” Motohiro Yogo, 2006

Topic 5: *Explanations of the value premium*

- “Evidence on the Characteristics of Cross Sectional Variation in Stock Returns,” Kent Daniel and Sheridan Titman, 1997
- “Equilibrium Cross-Section of Returns,” Joao Gomes, Leonid Kogan, and Lu Zhang, 2003
- “Good Beta, Bad Beta,” John Campbell and Tuomo Vuolteenaho, 2004
- “Cash-Flow Risk, Discount Risk, and the Value Premium,” Tano Santos and Pietro Veronesi, 2005

Topic 6: *Long run risk*

- “Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles,” Ravi Bansal and Amir Yaron, 2002
- “Consumption Strikes Back?: Measuring Long-Run Risk,” Lars Hansen, John Heaton, Nan Li, 2005
- “Consumption Risk and the Cross Section of Expected Returns,” Jonathan Parker and Christian Julliard.

Topic 7: *Behavioral models*

- “Prospect Theory and Asset Prices,” Nicholas Barberis, Ming Huang, and Tano Santos, 2001.
- “Are Investors Reluctant to Realize Their Losses?” Terrance Odean, 1998.
- “Basic Principles of Asset Pricing Theory: Evidence from Large-Scale Experimental Financial Markets,” Peter Bossaerts and Charles Plott, 2000.

Topic 8: *Event studies*

- CLM Chapter 4
- “Using Daily Stock Returns: The Case of Event Studies,” Stephen Brown and Jerold Warner, 1985
- “Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics,” Brad Barber and John Lyon, 1997
- “Endogenous Events and Long Run Returns,” S. Viswanathan and Bin Wei, 2004

Topic 9: *The term structure of interest rates*

- CLM Chapters 10 and 11
- “Bond risk premia,” John Cochrane and Monika Piazzesi, 2005
- “Term Premia and Interest Rate Forecasts in Affine Models,” Greg Duffee, 2002
- “A No-Arbitrage Vector Autoregression of Term Structure Dynamics with Macroeconomic and Latent Variables,” Andrew Ang and Monika Piazzesi, 2003
- “Forecasting the Yield Curve in a Data-Rich Environment: A No-Arbitrage Factor-Augmented VAR Approach,” Emanuel Monch, 2006

Topic 10: *Liquidity*

- CLM 3.3

- “Estimating the Components of the Bid-Ask Spread,” Lawrence Glosten and Lawrence Harris, 1988
- “Common Factors in Prices, Order Flows and Liquidity” Joel Hasbrouck and Duane Seppi, 2001
- “Liquidity Risk and Expected Stock Returns,” Lubos Pastor and Robert Stambaugh, 2003
- “Asset Pricing with Liquidity Risk,” Viral Acharya and Lasse Pedersen, 2005

Topic 11: *The Bayesian approach*

- Hamilton Chapter 12
- “On the Predictability of Stock Returns: An Asset Allocation Perspective,” Shmuel Kandel and Robert Stambaugh, 1996
- “Explaining the Gibbs Sampler,” George Casella and Edward George, 1992
- “Mutual Fund Performance with Learning Across Funds,” Christopher Jones and Jay Shanken, 2005
- “Trading Costs and Returns for US Equities: Estimating Effective Costs from Daily Data,” Joel Hasbrouck, 2006

Topic 12: *Options*

- CLM Chapter 9 and Section 12.3
- “A Closed-Form Solution for Options with Stochastic Volatility with Applications to Bond and Currency Options,” Steven Heston, 1993
- “Recovering Probability Distributions from Option Prices,” Jens Carsten Jackwerth and Mark Rubinstein, 1996
- “Empirical Performance of Alternative Option Pricing Models,” Gurdip Bakshi, Charles Cao, and Zhiwu Chen, 1997
- “Dynamic Estimation of Volatility Risk Premia and Investor Risk Aversion from Option-Implied and Realized Volatilities,” Tim Bollerslev, Michael Gibson, and Hao Zhou, 2006
- “Earnings Announcements and Equity Options,” Andrew Dubinsky and Michael Johannes, 2006