F625  
Empirical Asset Pricing

My office is located in room E355, telephone number 723-5753. Sandra Berg is my secretary and her location is E372, telephone extension 723-4494.

Course Description

This course is an introduction to empirical research in asset pricing. The focus of the course is on applications of econometric methods in finance. Topics include tests of asset pricing models, return predictability in time-series and cross-section, empirical studies of asset market imperfections, studies of individual and professional investor behavior. The aim is to familiarize you with the interplay between economic theory, econometric methods, and important empirical facts, and to introduce areas of current research.

The prerequisites for F632 are MGTECON 603 - 604 and Finance 620. In particular, I will assume familiarity with large-sample theory for least-squares, generalized method-of-moments, and maximum likelihood estimation methods. We will review these methods in the context of specific applications, but there will not be time to develop them from scratch.

Textbooks

Many of the readings consist of journal articles, but for standard material we will also refer to chapters from the following books. These books should be on the bookshelf of any PhD student in Finance, and so I would recommend buying them if you do not already own them (they will also be on reserve in the GSB library):


As background reading and reference on econometrics, the following two books will occasionally be useful.


F632 must be taken for a grade (no pass fail), and auditors will not be allowed except in special circumstances.

Readings

At the end of this syllabus is a tentative list of readings. I will post working papers on the course website. The other readings can be downloaded from JSTOR or Sciencedirect. Note that this list is only tentative at this point. I may update the reading list as we go along in the course and I will post the update on the course website. When preparing for the next class, always check the updated reading list on the website. Each week I will highlight key readings for the following week.

Course requirements and grading

Homework

There will be periodic problem sets involving replication and extension of existing results in the literature. It is important that you produce a well-structured write-up, with easily readable tables and figures, and supplemented with written explanations of your results. Matlab printouts alone are not acceptable. I recommend that you use LaTeX.

Course project

The main requirement for this course is a course project. You are expected to pick a research topic, produce some thorough empirical analysis of this topic, and present it in a well-written paper. This can either involve replicating and extending some previous work of other researchers, or, if you can, some original analysis of a finance research question. Grading will be based on originality of the research question, quality of execution, and clarity of the written presentation. By April 23, you should submit to me a three-page written proposal that outlines the research question you want to look at and how you plan to analyze it. The final version of the completed project is due in the last class session (June 2).
Class participation
This is a PhD level course, so I expect you to actively contribute to the classroom discussion. It is absolutely crucial that you are prepared for class and that you have a thorough understanding of the assigned readings. There is a lot to read for this course. Make sure to plan sufficient time. I will cold-call in this class and will penalize poor preparation.

The overall grade for this course will be based on the course project (50%), problem sets (25%), and class participation (25%). All assignments must be completed in accordance with the provisions of the Stanford University Honor Code. Specific requirements and grading criteria for an assignment will be supplied when the assignment is distributed.

Course Outline
Part I: Basic statistical properties of asset returns

Week 1: Properties of Asset Returns

Returns, Present Values, and Martingales

- Review Finance 620 notes
- Singleton, Chapter 1
- CLM Chapter 7.1

Serial Correlation in Stock Returns

- Singleton, Chapter 9
- CLM, Chapters 2 and 3


**Stock Return Prediction with Valuation Ratios**

• CLM Chapter 7.2


• Cochrane Chapter 20


**Week 2: Time-Series Predictability of Returns (cont.)**

**Econometric Issues**


Learning and Predictability


Bond Return Predictability

• CLM Chapter 10


Links Across Asset Classes


**Foreign Exchange Rate Predictability**


**Week 3: Cross-Sectional Predictability of Returns**

**Cross-Sectional Predictability of Returns**


• Ang, Andrew, Robert J. Hodrick, Yuhang Xing, and Xiaoyan Zhang, 2006, The Cross-Section of Volatility and Expected Returns, Journal of Finance 61, 259–299

Volatility: ARCH/GARCH
• CLM, Section 12.2
• Singleton Chapter 7

Volatility: Realized Volatility
• Andersen, Torben G., Tim Bollerslev, Francis X. Diebold, and Paul Labys, 2003, Modeling and Forecasting Realized Volatility, Econometrica 71, 579– 625

Part II: Estimation and Evaluation of Asset Pricing Models

Week 4: Linear Factor Models

Absence of Arbitrage and Factor Models


Evidence on Factor Models


• Hou, Kewei, Chen Xue, and Lu Zhang, 2012, Digesting Anomalies, Working Paper, The Ohio State University


Estimation Methods

• Cochrane Chapters 12 and 13

• Singleton Chapter 11


**Week 5: Structural Linear Factor Models**


**CAPM and ICAPM**

• CLM 5.1 to 5.3


• Campbell, John Y., and Tuomo Vuolteenaho, 2004a, Bad Beta, Good Beta, American Economic Review 94, 1249–1275


**Production-based Approaches**


**Conditioning Information and Linear Factor Models**

• Cochrane Chapter 8


Pitfalls in Estimation and Interpretation


Week 6: Structural Linear Factor Models (cont.)

Heteroskedasticity and the Risk-Return Tradeoff


• Bansal, Ravi, Dana Kiku, Ivan Shaliastovich, and Amir Yaron, 2013, Volatility, the Macroeconomy and Asset Prices, Journal of Finance, forthcoming


Absence of Arbitrage and the Term Structure of Interest Rates


**Week 7: Nonlinear Rational Expectations Models**

**CRRA Preferences**

• Singleton Chapter 10


**Econometric Issues**


**Long-run Risks**


Disasters and Crashes
• Barro, Robert J., 2006, Rare Disasters and Asset Markets in the Twentieth Century, Quarterly Journal of Economics 121, 823–866
• Broadie, Mark, Mikhail Chernov, and Michael Johannes, 2009, Understanding index option returns, Review of Financial Studies 22, 4493–4529

Learning
• GLS...

Part III: Investor Behavior and Heterogeneity

Week 8: Investor Behavior and Heterogeneity

Limited Stock Market Participation and Consumption Risk

**Time-variation in Household Risk-taking**


**Belief Formation**

• Malmendier, Ulrike, and Stefan Nagel, 2013, Learning from Inflation Experiences, Working Paper, Stanford and UC Berkeley


**Investor Sentiment**


Part IV: Imperfect Markets and Liquidity

Week 9: Imperfect Markets and Liquidity

Limited Arbitrage and Liquidity Supply


Time-varying Liquidity Supply and Arbitrage Intensity


Liquidity, Liquidity Risk, and Expected Returns


• Adrian, Tobias, Erkko Etula, and Tyler Muir, 2012, Financial Intermediaries and the Cross-Section of Asset Returns, Journal of Finance, forthcoming

• Frazzini, Andrea, and Lasse H. Pedersen, 2011, Betting Against Beta, Working Paper, NYU