EMPIRICAL METHODS IN FINANCE
MFE, Spring 2010
Haas School of Management

Instructor: Professor Rossen Valkanov.
E-mail: rvalkanov@ucsd.edu. Office Phone (858) 534-0898.

T.A.: Pratish Patel (pratish_patel@haas.berkeley.edu)

Course Description

This course is designed to help students bridge the gap between theoretical financial models and the real world. The 8 weeks, high-paced two-unit class will take students through the major accomplishments (and failures) of empirical finance during the last quarter of a century. Students will have to read some of the truly seminal works in empirical finance. Empirical exercises, which will require students to write their own procedures and to use real market data, will help us all to truly appreciate the content of the course. In addition to the empirical exercises, students will have to produce a research project on a topic of their choice, which will extend the previous literature in a non-trivial fashion. Upon completion of this course, students should:

- Have a complete picture of the empirical finance literature
- Be able to implement most methods in modern empirical finance
- Have an in-depth knowledge in an area of their choice.

Prerequisites

- A quantitatively-based “Investments” class is a prerequisite for the course.
- Familiarity with computers. Students should be able to download and manipulate data.
- Knowledge of a programming language (Fortran or C) or statistical package (Matlab or Gauss) are required. Knowledge of “canned” statistical programs such as Eviews or Stata is not enough. Students will be expected to build their own library of routines and procedures from the ground up.

Schedule

Class will meet once a week on Thursdays (11:00am to 1:00pm and 2:00pm to 4:00pm) for a total of 30 hours in a room TBA. Office hours will be held in my office, before and after class. If you cannot see me during office hours, please call me or e-mail me for an appointment. I welcome questions via email.
Materials

Required Text:


Very Helpful Text:


Assignments and Grading

The grading policy is as follows:

1. Written Exercises / Computer Exercises (30%)—may be done in groups of no more than 4 people. One written assignment per group must be turned in on time.

2. Class participation (10%) – Students are required to read the assigned material before each lecture. Good class participation consists of asking informed questions or making informed comments, as well as answering well the questions asked in class.

3. Research Proposal (10%)—During week 4-5 students should start thinking about a research idea that extends, in a non-trivial way, some of the research topics that are/will be discussed in class. A short research proposal of no more than 500 words, outlining the exact goals (hypotheses, conjectures, etc.) of the research, the tools that will be employed, and the data that will be needed to achieve those goals, should be submitted during week 5. Students may work in research teams of no more than 4 people and may turn in one proposal per team.

4. Research Paper (30%)—Once the research proposal has been approved, students will have approximately one month to carry out their research. Each research team should turn in a final research paper of no more than 30 pages (excluding tables and figures) by the end of the course.

5. Final Examination (20%)—The final examination will be conducted during the last 2 hours of course.
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Syllabus

We may deviate from the schedule depending on the pace of the class.

Week 1

Class 1: Overview of course. Distribution of Stock Returns. Elementary Statistics and Econometrics (Estimation: OLS, GLS, ML)
Class 2: More Econometrics and Statistics (Estimation: GMM. Testing: Wald, LM, LR, etc.)

Week 2

Class 4: Conditional and Unconditional Variation in Stock Returns (ARCH and GARCH, Stochastic Volatility, etc.) Estimation and Testing. Applications in Asset and Options Pricing.

Week 3


Week 4


Week 5


Week 8  Class 15:  Estimation of Non-Linear Models. Artificial Neural Networks. Sophisticated Data Snooping “Techniques.”

Class 16:  Final Examination. Research Papers Due.