

**FINA 790C, Empirical Finance**  
Hong Kong University of Science and Technology  
Spring 2008, Wed 14:00-16:50, Room 3584

Instructor: Dr. Du Du and Dr. Michael Lemmon  
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Office hour: by appointment

Instructor: Dr. Du and Dr. Michael Lemmon

### **Course Description**

- This course provides both an introduction to empirical methods that have played important roles in finance researches, and an introduction to empirical research in finance as exemplified by publications in peer-reviewed journals. We will talk about the widely used econometric methods such as, maximum likelihood estimation and general moment method; and we will go over various topics in finance such as consumption-based asset pricing, asset pricing with conditioning information, multifactor asset pricing models and momentum. In each topic, we discuss a set of empirical studies and highlight the methodological issues that are associated with the studies.
- The goal is not to provide a complete survey of the entire literature. Instead, we will focus on i) the basic methodology to help one get a sound foundation of the empirical studies, and ii) more recent research to help one quickly see what researchers care about in recent years.
- The first 10-11 classes will be taught by Du which will mainly cover topics related to asset pricing; the last 3-4 classes will be taught by Lemmon which will mainly cover topics related to corporate finance.

### **Grading**

- The course grade will be based on homework assignment, class participation, and a term paper. The relative weights are as follows:

Participation:	30%
Homework	30%
Term project	40%

### **Participation**

- Everyone should be prepared to participate actively in class discussion
- Readings are one of the most important components of the course. I will assign a few papers/chapters of books for each class. Everyone is expected to read the pre-assigned materials before the class and come prepared to discuss them with the focus on the methodologies that are used.

- You will be asked to present some of the selected papers in class. Your presentation will take a maximum of forty minutes, and will be an important part of your class participation

## **Homework**

- There will be about 4 homework assignments, and the objective is to give you the opportunity to apply the techniques discussed in class to the actual data. You will have two to three weeks to complete each assignment
- Coding is an important part of the training. Each of you is supposed to be familiar with at least one software package, such as matlab and SAS. I (Du) will use matlab.
- Please do not hand in unedited computer outputs. Instead, present carefully-edited results to allow me to identify your analysis and conclusions quickly.

## **Term project**

- There will be a term project, which requires you to write a research paper. You may choose to replicate the results of an existing paper or slightly extend one of results to make an interesting point. Of course, you may explore a new idea, and I would greatly appreciate your efforts in search for new ideas.
- Do not write a very long paper. The paper should be at most 12 pages long including some tables or figures.
- Be brief and to the point, especially in your literature review (which should be short). Make your main points very clear in the introduction and/or conclusion part of your paper.

## **Course Materials**

- Campbell, John, Andrew W. Lo, and A. Craig MacKinlay, 1997 (CLM henthforth), The econometrics of financial markets, Princeton University Press
- Cochrane, John H., 2001, Asset pricing, Princeton University Press
- Papers assigned

## **Readings**

**(Tentative; will be updated as we proceed)**

### **Week 0, background preparation**

- Chapter 1 of CLM
- The posted review slides on i) basics about stock returns, ii) multivariate regressions.
- The Posted problem set 0 and its answers including the matlab codes. This course requires computer skills so choose one computer language. I will use matlab. You should feel comfortable with writing codes to solve some empirical problems.
- Try to get an account at WRDS and know how to get data from it

### **Week 1, (Feb. 6) Consumption-based asset pricing**

- Cochrane's book, Ch1-2 and Ch21.1 for equity premium
- Lucas, Robert E. Jr, 1978, "Asset pricing in an exchange economy", *Econometrica* 46, 1429-1455. (This the famous paper that launched the consumption-based model and endowment-economy framework)
- Fama, Eugene and Kenneth French, 2002, the equity premium, *Journal of Finance* 57, 637-659
- Campbell, John, and John Cochrane, 2000, explaining the poor performance of consumption-based asset pricing models, *Journal of Finance* 55, 2863-2878

### **Week 2, (Feb. 13) CAPM and multifactor asset pricing models**

- Cochrane's book, Ch 9.1, Ch 20.2
- Fama, Eugene and Kenneth R. French, 1992, The cross-section of expected stock returns, *Journal of Finance*
- Fama, Eugene and Kenneth R. French, 1996, "Multifactor explanations of asset pricing anomalies", *Journal of Finance* 51, 55-84
- Fama, Eugene and Kenneth R. French, 1993, "Common risk factors in the returns on stocks and bonds", *Journal of Financial Economics* 33, 3-56

### **Week 3, (Feb. 20) GMM**

- Cochrane's book, Ch 10-11
- Hansen, Lars Peter, 1982, "Large sample properties of generalized method of moments estimators", *Econometrica* 50, 1029-1054
- Hansen, Lars Peter, and Kenneth J. Singleton, 1982, "Generalized instrumental variables estimation of nonlinear rational expectations models", *Econometrica* 50, 1269-1286

### **Week 4, (Feb. 27) Regression tests, GRS and GMM**

- Cochrane's book, Ch 12, 14

### **Week 5, (Mar. 5) conditional asset pricing**

- Harvey, Campbell R., 1989, Time-varying conditional covariance in tests of asset pricing models, *Journal of Financial Economics* 24, 289-317
- Jagannathan, Ravi, and Zhenyu Wang, 1996, the conditional CAPM and the cross-section of expected returns, *Journal of Finance* 51, 3-53

- Ferson, Wayne E., and Campbell R. Harvey, 1999, Conditioning variables and the cross-section of stock returns, *Journal of Finance* 54, 1325-1360
- Ghysel, Eirc, 1998, On stable factor structures in the pricing of risk: Do time varying betas help or hurt? *Journal of Finance* 53, 549-574

### **Week 6, (Mar. 12) momentum**

- Jegadeesh, Narasimhan, and Sheridan Titman, 1993, Returns to buying winners and selling losers: implications for stock market efficiency, *JF*, 48, 65-91
- Jegadeesh, Narasimhan, and Sheridan Titman, 2001, Profitability of momentum strategies: an evaluation of alternative explanations, *Journal of Finance* 56, 699-720
- Moskowitz, Tobias J., and Mark Grinblatt, 1999, Do industries explain momentum? *Journal of Finance* 54, 1249-1290

### **Week 7, (Mar. 19) factors vs characteristics**

- Berk, Jonathan B., 1995, A critique of size-related anomalies, *Review of Financial studies* 8, 275-286
- Daniel, Kent, and Sheridan Titman, 1997, Evidence on the characteristics of cross-sectional variation in stock returns, *Journal of Finance* 52, 1-33
- Davis, James L., Eugene E. Fama, and Kenneth R. French, 2000, Characteristics, covariances, and average returns: 1929-1997, *Journal of Finance* 55, 389-406
- Zhang Chu, 2003, Factor-mimicking portfolios from return-predictive firm-specific variables, working paper

### **Week 8, (Apr. 2) Betas vs SDFs**

- Kan, Raymond, and Guofu Zhou, 2000, A critique of the stochastic discount factor methodology, *Journal of Finance* 54, 1021-1048
- Jagannathan, Ravi, and Zhenyu Wang, 2002, Empirical evaluation of asset pricing models: a comparison of SDF and beta methods, *Journal of Finance* 57, 2337-237
- Cochrane, John., 2001, A rehabilitation of stochastic discount factor methodology, working paper
- Kan, Raymond, and Guofu Zhou, 2001, Empirical asset pricing: the beta method versus the stochastic discount factor method, working paper

### **Week 9, (Apr. 9) Term structure and bond return predictability**

- Cochrane's book, Ch 19
- Campbell, John Y. and Shiller, Robert J. "Yield spreads and interest rate movement: a bird's eye view", *Review of Economic Studies*, 1991, 58(3), 495-514

- Fama, Eugene F. and Bliss, Robert R. “The information in long-maturity forward rates”, *American Economic Review*, 1987, 77(4), 680-92
- Cochrane, John H. and Monika Piazzesi, 2005, “Bond risk premia”, *American Economic Review* 95:1

### **Week 10, (Apr. 16) maximum likelihood applied in bond pricing**

- Neil D. Pearson, and Tong-sheng Sun, 1994, “Exploiting the conditional density in estimating the term structure: an application to the Cox, Ingersoll, and Ross model, *Journal of Finance*
- Darrell Duffie, and Kenneth J. Singleton, 1997, “An econometric model of the term structure of interest-rate swap yields”, *Journal of Finance*
- Bing Han, 2007, “Stochastic volatility and correlations of bond yields”, *Journal of Finance*

### **Possible Topics to be covered in the remaining classes**

- **Simulated maximum likelihood estimation**
- **ARCH/GARCH Methods**
- **Bayesian Methods**