Course Syllabus

Eco 6391
Financial Econometrics
Summer I, 2016

Prof. Tom Fomby
TTH 6:00 – 8:50 PM and Sat. 12:00 – 2:50 PM
110 Dedman Life Sciences Building

Learning Objectives:

- To learn the basic characteristics of financial time series data
- To learn some of the tools of econometrics used in investigating various hypotheses in finance including the efficiency of markets, parity conditions, stock market anomalies, and behavioral biases
- To learn various metrics for evaluating the performance of securities and market portfolios
- To learn various econometric models used to model financial returns and their volatility

Textbook for Course: Introductory Econometrics for Finance (3rd ed.) by Chris Brooks (Cambridge University Press, 2014, paperback). The resources website for this book can be found at http://www.cambridge.org/us/academic/textbooks/introductory-econometrics This website includes the data sets, PPTs, and programs used in the book.

Computer Usage: We will primarily be using the EVIEWS software package in this course although on occasion we will use the computer program MATLAB. They can be found on SMU's Apps.smu link that provides virtual access to EVIEWS among several other software programs. To use EVIEWS on the Apps.smu system you will first need to download the **Citrix Receiver**. You can go to the website http://www.smu.edu/BusinessFinance/OIT/Services/AppsSMU and then, being a first time user, you will be prompted to download Citrix Receiver to your PC or laptop. Citrix Receiver provides you with "virtual" access to the EVIEWS software in that Citrix makes it appear that you have EVIEWS installed on your own computer when, in fact, it is being accessed from an SMU server on campus. After you install the Citrix Receiver on your computer, you can then logon to the Citrix Receiver by entering your student ID and personal password. Thereafter you can work on your homework assignments, etc.

Evaluation of Student:

The evaluation of the student consists of two parts:

- Exercises (30%)
- Two Mid-term Exams (30% each)
- 5-page Precis on an article in the Financial Economics Literature (10%). This assignment is to be turned in on **Saturday, June 25 in class.**

Additional Information on Homework Exercises:

With respect to **homework exercises**, students can confer with each other with respect to programming advice and discussion of basic ideas but in the final analysis each student is expected to write up his/her own homework answers and not make copies of others' homework. Copying someone else's homework to hand in as one's own work is a violation of the SMU Honor Code and will be dealt with according to the rules of the SMU Honor Code. It is important to know that the homework assignments are very important in that the basic ideas covered by them invariably show up on mid-term exams. If you know you are going to be missing a class on the day a homework exercise is due, hand in your homework **in advance** to receive full credit for your work. Any homework that is handed in late will be given a one letter grade reduction for each day of tardiness. It is my policy to drop your lowest exercise score before calculating your exercise average.

Additional Information on 5-page Precis:

If you look up the word "precis" in dictionary.com it defines "precis" as "a short summary." What I want you to do in this assignment is pick out an article in one of the following journals that has significant econometric content in it and summarize it in 5-pages or less. You should **not** copy the abstract of the paper and put it in as your summary. I want you to describe to me what you learned by reading the article and how the paper's analysis might lead to additional research on the topic discussed in the paper. For your reference, you can go to **Table 14.1** in your textbook and there you will find a list of journals publishing papers in finance and econometrics.

Note: After 4 unexcused class absences, I reserve the right to administratively drop students from the class.

My grading scale in this course is as follows:

92-100	A
90-91	A-
88-89	B+
82-87	B
80-81	B-
78-79	C+
72-77	C
70-71	C-
68-69	D+
62-67	D
60-61	D-
0-59	F

Classroom Website: http://faculty.smu.edu/tfomby/

Office: Room 301M, Umphrey Lee, 214-768-2559. E-mail address: tfomby@smu.edu.

Office Hours: TTH 5:00 – 6:00 PM and Sat. 11:00 – 12:00 AM or by appointment.

My Graduate Teaching Assistant: Igor Zhadan. His E-mail address is: izhadan@smu.edu.
If you should need extra tutorials or help outside of my office hours, contact Mr. Zhadan and he will be happy to go over concepts that you may not fully understand.

Important Dates to Remember:

First Day of Class: Tuesday, May 31
Last Day of Class: Tuesday, June 28

Exam Dates:
First Midterm – Tuesday, June 14.
Second Midterm – Tuesday, June 28.

General comments on work and class etiquette:

In order to succeed in this class, constant work is essential. Come to class. Read all assigned readings, and complete all exercises on time. Don't get behind. Things move pretty quickly during summer sessions. If there is something in class discussion or homework assignments that you don't understand, don't hesitate to ask me in class, after class, during office hours, or through e-mail.

Obviously, general rules of etiquette apply: cell phones are to be turned off during class and miscellaneous reading material stowed away.

Some Standard Stuff You Should Know

Excused Absences for University Extracurricular Activities:

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (University Undergraduate Catalogue)

Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit http://www.smu.edu/Provost/ALEC/DASS to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

Religious Observance:

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (See University Policy No. 1.9.)

Honor Code:

All SMU students are bound by the Honor Code (see SMU Student Handbook for a complete discussion of the SMU Honor Code). The code states that "any giving or receiving of aid on academic work submitted for evaluation, without the express consent of the instructor, or the toleration of such action shall constitute a breach of the Honor Code." A violation can result in an "F" for the course and an Honor Code Violation on your transcript.

TOPICS

I. Introduction to EVIEWS Software

A. APPS.SMU and how to use it
B. Downloading Data from Yahoo Finance
C. A run through with a sample EVIEWS program

Reference: Brooks, Section 1.8

II. Financial Returns

A. Simple Returns
B. Log (Continuous) Returns
C. Comparison of functions log(1+x) and x
D. Adjustment for Dividends
E Constant Expected Returns (CER) Model
F. Characteristics of Financial Returns
   i. Skewness
   ii. Kurtosis
   iii. Bera-Jarque test for normality
   iv. Autocorrelation
   v. Ljung-Box Q statistic test of independence
   vi. Geometric Random Walk
   vii. Clustered Volatility

Reference: Brooks, Sections 1.4, 2.5.3, 5.7.1 – 5.7.3, 6.2, and 9.2 - 9.6

III. Portfolio Theory - I

A. Portfolio Mean Return
B. Variance of Portfolio Return
C. Estimation of Portfolio Mean, Variance, and Standard Deviation
D. Minimum Variance Portfolio
E. Efficient Frontier
E. Tangency Portfolio
F. Capital Market Line (CML)
G. Quadratic Utility
H. Optimal Portfolio Choice
I. Fragility of Optimal Portfolio Weights

Reference: Brooks, Sections 2.3.6, 2.3.7, and classroom discussion using MATLAB

IV. Portfolio Theory - II

A. CAPM
B. Security Market Line (SML)
C. Security Characteristic Line (SCL)
D. Portfolio and Security Performance Measures
  i. Jensen's alpha
  ii. Appraisal Ratio
  iii. Information Ratio
  iv. Sharpe's Ratio
  v. Treynor's Ratio
E. Factor Models of Returns
  i. Fama-French 3-Factor Model
  ii. Carhart Model
  iii. Other Factor Models
F. Fragility of Coefficients of Return Model

Reference: Brooks, Sections 3.11, 3.12, 14.10, and classroom discussion

V. Event Study Analysis

A. Typical Event Study Time Line
B. Market Model with Pulse Dummies
C. Joint Test of Significance of Pulse Dummies
D. An Application

Reference: Brooks, Sections 5.7.4, 14.9 and classroom discussion

VI. Efficient Market Hypothesis

A. Definition
  i. Weak Form
  ii. Semi-Strong Form
  III. Strong Form
B. Evidence For
C. Evidence Against – Behavioral Economics

D. The Over-reaction Hypothesis
E. The Momentum Effect – Carhart model
F. Smart Beta Portfolios

Reference: Brooks, Sections 3.11. 3.12, 3.13, and classroom presentation

VII. Term Structure of Interest Rates

A. Definition of Term Structure
B. Deriving Forward Rates from the Term Structure
C. The Expectations Hypothesis of the Term Structure of Interest Rates
D. Testing the Expectations Hypothesis

Reference: Brooks, Section 8.12 and classroom presentation

VIII. Cointegration of Time Series

A. Definition of Cointegration
B. Engle-Granger Residual – based tests of Cointegration
C. The Error Correction Model
D. Applications
   i. Expectations Hypothesis of the Term Structure
   ii. Spot and Futures prices
   iii. Paired Investments

Reference: Brooks, Chapter 8

IX. Modeling Volatility of Returns

A. ARCH and GARCH models
B. Forecasting Volatility
C. Multivariate GARCH models
D. Applications
   i. Black-Scholes Model
   ii. Simulating the Price of a Financial Option
   ii. RiskMetrics
   iii. Value at Risk computations
   iv. Conditional Betas and Dynamic Hedge Ratios

Reference: Brooks, Chapter 9 and Sections 13.5 - 13.9

X. Miscellaneous Topics – Time Permitting

A. Optimal Hedge Ratio
B. Logit Models of Financial Distress of Firms, Mergers and Acquisitions, Pecking Order Hypothesis
C. Ordered Probit Analysis of Bond Ratings

Reference: Brooks, Sections 3.5, 9.22.2, and Chapter 12