Finance 6470: Derivatives Markets

Spring Semester, 2020

Course Information

- Course Dates: January 19 - April 27
- Course Time: TR 1:30 - 2:45 PM
- Course Room: Merrill-Cazier Library 421
- Slack Channel
- Course Canvas

Instructor Information

- Tyler J. Brough
- Office Hours: By Appointment over Zoom
- Office: BUS 512
- Email: tyler.brough@aggiemail.usu.edu

Syllabus

Course Description

This course covers modern derivatives markets from the economic, institutional, and quantitative perspectives. The foundational principle of all of economics is the Arbitrage Principle. We will undertake an in-depth study of the Arbitrage Principle from several perspectives including the neoclassical and Austrian schools of thought. There is currently an unfolding trend across the sciences and in the engineering disciplines towards data-driven theory enabled by modern computational methods. Some class time will be dedicated towards sketching the outlines of derivatives theory from this new perspective.

The main purpose of the course is to foster three modes of thought to enable you to become thoughtful scholars of derivatives and derivatives markets:

1. **Arbitrage Logic:** Arbitrage is the central underlying concept all of economics and finance. Developing skills in arbitrage reasoning is a central goal of the course.

2. **Computational Logic:** Computational thinking helps break a problem down and find a practical path to successful implementation. Important techniques from computational mathematics, computational statistics, and computational finance will be introduced as they pertain to derivatives markets.

3. **Statistical Logic:** one focus of the course will be learning to think statistically about problems in finance. All meaningful problems in finance and data analysis are necessarily embedded in conditions of uncertainty. There exists a core statistical logic that is distinct from the mathematical. Learning to develop this mode of thinking is an essential step in the life of any successful financial analyst. We will find that statistical reasoning is essential for proper financial reasoning.

These three ways of thinking are not independent. Quite to the contrary, we will find that they are strongly mutually reinforcing.

Textbooks

There is only one *required* textbook for this course:

- Derivatives Markets 3rd Edition by Robert McDonald.

I will also use some other books for some lecture material. Some of these other books are the following:

- Options, Futures, and Other Derivatives 9th Edition by John Hull (sometimes called the bible of option pricing)

- Risk Transfer by Christopher Culp (a gem of a book with a fresh perspective)

- The Economic Function of Futures Markets by Jeffrey Williams (entirely mind-bending perspective)

There will be many additional readings from academic articles assigned throughout the semester. **This course is reading intensive so please be prepared to read thoroughly and discuss the readings**.

Methods of Teaching and Learning

This course will be taught as a graduate seminar style course. That means that your participation is crucial. You will get out of the course what you individually and collectively put in.

I will use the Socratic method as much as feasible during class sections. I will aso present standard chalk-and-talk style lectures for background material, but here too I will employ the Socratic method.

Your preparation and participation is absolutely essential!

Assessment

The grade that you will earn will be determined by your ranking in the class based on the weighted total points accumulated. There is not a predetermined percentage of the class that will get an A or that will fail. If you all do excellent work, you will all earn exceptional grades. The weights given to each part of the class are as follows:

- Class Preparation and Participation (10%) - Your preparation is crucial! No student can earn an A without meeting these requirements!

- Homework (10%) - There will be weekly homework assignments that will consist of numerical and computational problems.

- Presentations (5%) - You will each be given the opportunity to present at least once in class. Your presentation should go for 20 minutes (15 minutes for content, and 5 minutes for discussion and questions). You must email the professor a PDF file of your presentation at least two days prior to your presentation.

- Annotated Bibliography (15%) - You will complete an annotated bibliography of the various readings assigned throughout the semester. This will become a valuable asset when completing your midterm and final exams. I will demonstrate how to create this document in class, and resources will be uploaded to Canvas.

- Midterm Exam (30%) - The midterm will be a take-home exam. You will have two weeks to complete it. You will take it at the end of Module II.

- Final Exam (30%) - The final exam will a take-home final exam. You will have two weeks to complete it. It will cover material from Module III.

Slack All class communication will take place using Slack, a messaging system that replaces email. Students will be invited to the Fin 6470 Slack channel prior to the first week of class.

Clients for most computing and mobile platforms can be downloaded from the Slack website, or students may use the web client via a desktop browser.

Topics (Subject to Change)

We will cover two broad modules:

- *Module I:* Forwards, Futures, and Swaps (hedging, speculation, trading)

- *Module II:* Options and dynamic trading

NB: I reserve the right to dynamically alter this list as the course progresses. I will announce any such changes in class and on the course Slack channel.

Import dates:

- **Jan 19** - First day of classes
- **Apr 08** - Friday class schedule
- **Apr 27** - Last day of classes
- **Apr 29 - May 05** - Final examinations