Futures and Options (GB.3335.00)

Summer 2016

Professor Menachem Brenner

Course Description: This is a course in derivatives markets: structure, valuation and strategies. The main applications include the equities markets, foreign exchange and commodities.
It has two parts: The first part deals with the structure of forward and futures markets, pricing and hedging with such contracts. The second and larger part deals with options markets; strategies, pricing and position analysis. It includes topics like: Short Selling, Value at Risk, Exotic Options, Volatility Derivatives and Trading Volatility. The course will consist of lectures, discussions and problem solving.

Prerequisites: All core courses. This course requires a very basic knowledge of futures and options. Remind yourself of the basic features of futures, calls, puts and payoff diagrams.

Exams and Grading: Due to the intensive nature of the course, there will only be a final exam (multiple-choice exam). Class participation may improve your grade. The grade distribution is: A (25%-35%), B (50%-60%); C (5%-10%); D, F (remainder if any).

Problem Sets: Posted on NYU CLASSES. There will be 7-8 problem sets. Solutions to the problem sets will be posted after you had a chance to solve them. Additional problems will be presented and discussed in class.

Required Material: You are responsible for the material covered in class, for all announcements made in class, for material posted on NYU CLASSES and sent by e-mail. The problem sets and all handouts are part of the class material.

Required book: **Hull John** (H) Options, Futures and Other Derivatives, Prentice Hall, 9th ed.
The book is not a substitute for the lecture notes and class discussions. Some topics and details are not covered by the book.

Recommended book: Sundaram Rangarajan and Sanjiv Das, Derivatives, Principles and Practice. McCgraw-Hill/Irwin, 2010.

Market Tracking: You are expected to follow the markets on a daily basis. In particular, you should pay attention to 'fair value' of Gold, SPX and NDX futures, and implied volatility from index options (e.g. VIX, VXN). **Market tracking questions may appear on the exam.**
Your internet 'favorites' should include the exchange sites; CME, CBOE
You are also expected to read the financial press. Pay special attention to the futures and options columns in the **WSJ**&**FT.** You may also be interested in reading **RISK** and the **Economist.**

Schedule of Classes: 6 Sundays starting on July 3 to August 7. Hours: 9:00-12:00, 1:00-4:00.

E-mail: Check your email regularly for additional material, announcements, assignments.

Office Hours: Thursday 4:00-6:00 & by appointment.

Office; Rm. 9-55. KMEC

Homepage: Other information appears on the Stern Web Site (**stern.nyu.edu/~mbrenner**)

Classroom Responsibilities:

Class Attendance: Students are expected to attend all classes and be on time.

Cell phones: You should turn off your cell phone before you enter the class.

No Laptops, Blackberries, or any email/internet devices are allowed in class.

Honor Code: You are responsible for maintaining Stern's honor code.

Course Outline

Recommended Textbook: John Hull (H): Options, Futures and Other Derivatives, Prentice Hall, 2015, 9th edition.

I. Overview of Derivatives Markets (H: Ch.1)

II. Futures Markets

1. Forward and Futures: Overview/Comparison
2. The Structure of the Futures Markets (H: Ch. 2)
3. The Cost of Carry Model (H: pp. 104-109, 115-120)
   a) Arbitrage Pricing; **Gold Example**
   b) **FX** forwards , **Stock Index** Futures
4. Hedging with Futures (H: pp. 49-61)

III. Options Markets

1. Options Strategies and Markets (H: Ch. 10, 12)

2. Options Valuation

   a) Arbitrage Conditions (H: pp.238-241)

   b) Put-Call Parity (Extended) (H: pp. 241-251)

   c) The Binomial Model (+ The American Put) (H: Ch. 13)

   d) The Black-Scholes-Merton Model (H: pp.321-331, 335-339, 341-342)

   e) Options on FX, Indices, Futures (H: pp. 367-379)

   f) Volatility; “smiles” and “skews” (H: pp. 432-440)

   g) Sensitivity Analysis (the Greek letters) (H: pp. 400-421)

3. Risk Management (H: pp. 494-497)

4. Exotic Options (H: Ch. 26, optional)

5. Applications: Structured Products, Volatility Derivatives