

FINA 551: Options and Futures Markets

Spring 2005, HKUST

Venue: Room #3008; Time: 9:00-12:20 Saturdays

Instructor: Prof. K.C. John Wei, Ph.D.

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Office Hours: 13:00-14:00 Saturdays and by appointment.

WebCT: All relevant materials and announcements will be uploaded to WebCT

Teaching Assistant: Mr. Yuanto Kusnadi (email: yuanto@ust.hk)

Required Textbook

John C. Hull, *Options, Futures, & Other Derivatives*, Fifth edition, Prentice-Hall, 2003.

Students are urged to read chapters before each class. Further readings will be assigned from time to time. Students are also urged to learn a spreadsheet program such as Microsoft Excel.

Course Objectives

This course will cover financial futures and options, although it will also cover some futures and options on commodities. Roughly 60%-65% of the course will be devoted to options and 35%-40% to futures. The primary objective of the course is to understand the pricing theories, the trading strategies, and the use of futures and options in risk management. Though this course does not require sophisticated skills, the materials do tend to be somewhat rigorous.

Evaluation

Category	Weight
1. Four Homework Assignments	15%
2. One Project (presentation and written report)	15%
3. One Case (presentation and written report)	10%
4. One Stock-Trak exercise and written report	10%
5. Final Exam	50%
6. Participation (bonus may be given for margin cases)	
Total	100%

The time and venue for the final exam will be announced later. Any conflicts with other final exams must be reported immediately.

Assignments: General

There will be four homework assignments, one Stock-Trak exercise, one case, and one project. Groups of no more than four members are allowed for all assignments except Stock-Trak. Each member of the group will receive the same grade. Due to the threat of viruses, email submissions of assignments are not allowed. But you can use fax to submit the assignments, if it is necessary. Late hand-in assignments will be subject to penalty. The penalty for homework and Stock-Trak assignments for each passing day is 10 points (with a full mark of 100 points). Once the solutions for homework assignments are provided, a zero score will be assigned. For the case and the project, no late hand-in is allowed. Participation (including attendance) is highly encouraged. Students with borderline cases with very active

participation may be upgraded to the next higher letter grade.

Homework Assignments and Final Exam

The homework assignments are designed to help you prepare your final exam. Final will be consisted of (1) calculation questions related to homework assignments, (2) non-calculation essay questions, and (3) multiple-choice questions.

Detailed Description of Stock-Trak Simulation Exercise

I guess that most of you have experience in trading stocks. However, majority of you (including me) have little experience in trading options and futures. This is because trading options and futures is very risky and we do not want to risk our own money. To provide you with the opportunity to trade options and futures with OPM (other people money), I believe that Stock-Trak exercise is a compromised good way for you to gain feeling and experience. In the first class, I will get your opinion about to decide whether it is an individual, a two-persons, or a group exercise. This is a fee for each account and the fee is dependent on the level of service. I will get your opinion to decide the level of service.

The major purpose of this trading exercise is for you to practice all trading or hedging strategies and risk management we discuss in the class. The grade will be based on how you design each trading strategies and what you learn from each trading strategies. Your trading performance has no effect on your grade. In addition, I will not dictate what strategies you need to trade. You have all freedom to design what you want to trade. Just enjoy your trading and relax.

A three-to-five-page report to summarize your strategies and the experiences you have learned is good enough. The page format: single space, Times New Roman with font 12, and a margin of one inch on each side. Please attach your trading reports from Stock-Trak in an appendix. Your initial capital will be US\$1,000,000.

Description of Case

The case is related to an application to option pricing. The grade will be consisted of (1) the approach or the logic you use to price the option is reasonable, (2) the quality of your case written (which is independent of whether or not the answer or the approach is in the right direction, (3) the quality of presentation. The written report for case needs to be hand in right after the discussion. The format of the report is the same as Stock-Trak exercise except the number of pages. Please attach all you calculations from your spread sheets in an appendix.

Description of Project

Due to the uncertainty environments in the global markets and in particular in Hong Kong since Asian financial crisis, capital guaranteed funds have become the most popular funds in Hong Kong. This project involves in pricing a capital guaranteed fund offered by a bank in Hong Kong. The objective is how you apply what you learn form the course to price a real product. Since it is a real product, you can learn a real experience on how difficult it is in pricing a real product. I do not expect you get an exact solution. You can make reasonable assumptions to price the product. The grading criterion is the same as the Case.

Comments and suggestions: I would like you to enjoy the class as much as possible. If you have any comments and suggestions that can improve the quality of the class and your enjoyment, please feel free to let me know.

Schedule (Tentative and is subject to changes)

Week 1 (February 5, 2005)

- Topic 1: Introduction (Chapter 1)
- Topic 2: The Basics of Options (Chapters 7 and 8)
- ◇ Enjoy the first class
- ◇ Supplementary reading: (1) Asian crisis and excessive currency speculation and (2) Procter and Gamble case: Donald J Smith, 1997 (Summer), “Aggressive corporate finance: A close look at the Procter & Gamble-Bankers Trust leveraged swap,” *Journal of Derivatives*, 67-79.

Week 2 (February 12, 2005): Remember we have class right after Chinese New year

- Topic 2: The Basics of Options (Chapters 7 and 8)
- ◇ Homework Assignment #1 is given
- ◇ Supplementary reading: Why is covered-call writing so popular?
- ◇ Start your Stock-Trak exercise: Registration and set up and account

Week 3 (February 19, 2005)

- Topic 2: The Basics of Options (Chapters 7 and 8)
- Topic 3: Option Trading Strategies (Chapter 9)
- ◇ Supplementary reading: Tips for trading options
- ◇ Stock Trak: Start your option trading

Week 4 (February 26, 2005)

- Topic 3: Option Trading Strategies (Chapter 9)
- Topic 4: Binomial Option Pricing Model (Chapters 10 and 18)
- ◇ The Case is given
- ◇ Stock-Trak: Continue your option trading

Week 5 (March 5, 2005)

- Topic 4: Binomial Option Pricing Model (Chapters 10 and 18)
- Topic 5: The Black-Scholes Option Pricing Model (Chapters 11-13)
- ◇ Supplementary reading: Real world practice in options pricing
- ◇ Homework Assignment #1 is due
- ◇ Homework Assignment #2 is given
- ◇ Stock-Trak: Continue your option trading

Week 6 (March 12, 2005)

- Topic 5: The Black-Scholes Option Pricing Model (Chapters 11-13)
- Topic 6: Dynamic Hedging Strategies
- ◇ Stock-Trak: Continue your option trading and start dynamic hedging

Week 7 (March 19, 2005)

- Topic 6: Dynamic Hedging Strategies
- Topic 7: Option applications: CGF and ELN
- ◇ The Case is due
- ◇ The Project is given
- ◇ Supplemental reading: Leland O'Brien Rubinstein Associates Incorporated: Portfolio Insurance
- ◇ Stock-Trak: Continue your option trading and dynamic hedging

Week 8 (March 26, 2005): Spring break, no class**Week 8 (April 2, 2005)**

- Topic 7: Option applications: CGF and ELN
- Topic 8: Risk Parameters for Options (Chapter 14)
- ◇ Stock-Trak: Continue your option trading and dynamic hedging and try to manage your option risk

Week 9 (April 9, 2005)

- Topic 8: Risk Parameters for Options (Chapter 14)
- Makeup materials due to delayed
- ◇ The Project is due
- ◇ Stock-Trak: Continue your option trading and dynamic hedging and managing your option risk

Week 10 (April 16, 2005)

- Topic 9: Futures Markets and the Use of Futures for Hedging (Chapter 2)
- Topic 10: Forward and Futures Prices and Hedging (Chapters 3-4)
- ◇ Homework Assignment #2 is due
- ◇ Homework Assignment #3 is given
- ◇ Supplemental reading: (1) Forward discount puzzle and (2) Defensive strategy hurts gold producers
- ◇ Stock-Trak: Continue your option trading and dynamic hedging and managing your option risk

Week 11 (April 23, 2005)

- Topic 10: Forward and Futures Prices and Hedging (Chapters 3-4)
- Topic 11: Interest Rates and Duration (Chapter 5)
- ◇ Supplemental reading: The Orange County Bankruptcy
- ◇ Stock-Trak: Continue your option trading and dynamic hedging and managing your option risk

Week 12 (April 30, 2005)

- Topic 11: Interest Rates and Duration (Chapter 5)
- ◇ Homework Assignment #3 is due
- ◇ Homework Assignment #4 is given
- ◇ Close your Stock-Trak and start to write a report

Week 13 (May 7, 2005)

- Topic 11: Interest Rates and Duration (Chapter 5)
- Topic 12: Swaps (Chapter 6)
- ◇ Supplemental reading: A financial engineering case study Stock-Trak report is due

Week 14 (May 14, 2005)

- Topic 12: Swaps (Chapter 6)
- Makeup due to delay

Week 15 (May 21, 2005)

- Review session
- ◇ Homework #4 is due

Week 16 (May 28, 2005): Final Exam

- Materials covered: Topics 1 - 12
- ◇ A 4-page cheat of formulas only is allowed
- ◇ Time: 9:00 – 12:20
- ◇ Enjoy the course