FINANCIAL DERIVATIVES
FIN 512

Department of Finance
University of Illinois at Urbana-Champaign

Professor Pirim

Class Time: Section P & R
11:00 -12:20 pm TTh
12:30-1:50 pm TTh

Location: Wohlers Hall # 243

Fall 2009

Office: 406 Wohlers Hall
Phone: (217) 244-6285
Email: bpirim@illinois.edu

Office Hours: Th: 10:00 – 11:00 am
T: 2:00 – 3:00 pm
or by appointment

Class Website: compass.illinois.edu


Course Description:

Financial derivatives have become an indispensable part in today’s economy. Examples are stock options, oil futures, currency contracts, credit derivatives and much more. They are used for compensation, speculation, yield enhancements of investments, and, most importantly, for risk management. Since every company is exposed to some risk, there is virtually no company that does not deal with derivatives in some way. Hedge Funds often play the counterpart to the companies by investing in these derivatives and thereby redistributing their market risks. Hedge funds have experienced explosive growth over the last two decades.

Financial derivatives are not uncontroversial. While former Federal Reserve chairman Alan Greenspan has called them engines of the economy, billionaire investor Warren Buffet has famously declared them weapons of mass destruction.

The purpose of this course is to give an overview of the fundamentals of derivatives. It focuses on the typical derivatives products available: forwards, futures, options and swaps. For each type of derivatives we will consider how it could be used both in risk management settings as well as for speculations. We will look at how to calculate crucial details for each contract, such as the value of an option, the fair futures price and the appropriate swap rate. These calculations are all based upon the principle of no arbitrage and although they can often be complex, our emphasis will be on a basic understanding on the methodologies involved and on applying these methodologies rather rigorous proofs or derivatives.

The course starts with a general look at using futures and options to hedge exposure to different types of risk. We then analyze each of the main types of derivatives in turn, starting with forwards and futures moving on to options and then finally on to swaps. This analysis will use no arbitrage arguments to determine how to construct a fair contract between the parties involved and how to value this contract as time and the value of the underlying asset change. As a side effect of the no arbitrage arguments we also construct arbitrage strategies to take advantage of any mispriced derivatives products.

Upon completion of the course you should have a good grasp of the practical uses of derivatives as well as being able to calculate key parameters for the contracts.
Lecture Notes: There will be lecture notes for each class. Each week, copies of these lecture notes will be available on COMPASS. Lecture notes and any other reading materials will be posted on COMPASS in the form of MS Word files, MS Power Points files, and/or *.pdf (Adobe Acrobat) files. It is your responsibility to print them out before each class.

Office Hours:

Tuesdays: 2:00 - 3:00 pm
Thursdays: 10:00 - 11:00 am
or by appointment.

I will always be in (I may have stepped out but only for 5-10 minutes) at these times. I have an open door policy at other times, but it’s wise to call (217 244-6285) just before if you intend to come by outside of these posted hours. Please note that I am unavailable (a) TTh 11:00 am – 2:00 pm because I will be teaching the two sections of this course.

Dial-a-Question: Call (217) 244-6285 for answers to brief questions: I might be able to save you some time in making a trip in to campus.

E-mails: When sending e-mail, please use bpirim@illinois.edu and make sure you write “FIN512/your section” for the subject section and do avoid hitting [Reply to All] button to a general e-mail that I have sent to all students, for obvious reasons. You should be on the class e-mail list server shortly after you register.

Grading: Your grade will be based on problem sets, project, one midterm exam and a comprehensive final exam. The final will be comprehensive.

Grading Weights will be as follows:

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<table>
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<tbody>
<tr>
<td>Problem Sets</td>
<td>15%</td>
</tr>
<tr>
<td>Project</td>
<td>15%</td>
</tr>
<tr>
<td>Midterm I</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm II</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>30%</td>
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I will use the standard grading scale, including + (plus) and – (minus).

Problem Sets: There will be five problem sets that are to be completed in groups who should consist of no more than three people. In order to encourage full participation by all members, group members will be asked to evaluate participation at the end of the course, and grades will be scaled accordingly. One problem set should be turned in for each group with the name of group members and section meeting time of the course. The problem sets will be posted on the COMPASS no later than 5:00 PM on the day indicated below in Table 1 and will be due in one week at the beginning of class on the due day given in the Table 1. Solutions will be posted on the due dates, and no late problem sets will be accepted. Problem set solutions should be typed and should explain your thought-process. If submit a print-out from a spreadsheet, please make sure to label it carefully. You must submit a paper copy of your solution. I will NOT accept electronic copies.

Project: Since the mid-1980s there have been some spectacular losses in derivatives market. Some of the losses are made by financial institutions and some of those are made by nonfinancial institutions which some of are listed below. For this project you will need to obtain information on the firm you have chosen.
The project will be completed in groups that should consist of no more than four people. This project counts 15% of your grade. The breakdown is as follows.

* Report - 10%
* Presentations - 5%

**Big Losses by Financial Institutions and Non-Financial Corporations**

- Barings ($1 billion)
- Kidder Peabody ($350 million)
- Long-Term Capital Management (LTCM) ($4 billion)
- Metallgesellschaft ($1.8 billion)
- Orange County ($2 billion)
- Procter and Gamble ($90 million)
- Shell ($1 billion)

**Directions:**

In this project, you will write a comprehensive final report of no more than 15 pages in form of double spaced, Times News Roman, #12 font size with one inch margins on top, bottom, left, and right. No excuses!

The essay should consist of information and overview of the firm, summary of the whole event, and then summary of the events by chorological order that led this firm to have a big lose, and then the last part of the paper is the lessons to be learned from this specific event.

**Criteria for evaluation:**

1. The student introduced the paper’s topic effectively through a concise and clear summary of the key conclusions that can be made based on the events presented in the reading assignment.
2. The paper demonstrated a clear understanding of the events presented in the reading assignment.
3. The paper presented an insightful perspective to the whole event. The lessons to be learned from this event were well supported with logical arguments based on the data in the paper.
4. The paper was well organized with informative topic sentences, effective transitions, and clear expression of ideas; had a logical flow; and demonstrated correct grammar and mechanics.

**Presentations:**

For the final presentation discussing the project, discuss what was discovered. What have you learned and what lessons can we drove from this event. A live demonstration of the project should be performed by all group members. Your group presentation must be professionally prepared in PowerPoint and well organized. Hard copies of the report as well as PowerPoint must precede the presentation.

**Report:**

One professional quality hard copy of the report is due by **December 1, Tuesday, 2009**. The report must be a hard copy to get full credit.

**Exams / Scheduling Conflicts:** There will be one midterm exam and one comprehensive final exam. NO MAKE-UP exam will be provided except in the case of documented emergencies such as illness or a death in the family. If you are unable to take an exam because you are ill, you must supply me with a doctor’s confirmation. If you...
have a conflict with either exam date, you MUST let me know by the second week of classes and in any case by no later than October 1. I will not reschedule exams after this date. All exams are closed-book and closed-notes however you will bring your own formula sheet, one side, single page.

**Final Exam Schedule:** Due to the possibility of Combined Final Exam for all sections of this course, the final exam schedule might have change and if it does then it will be announced in class latest in November. If the Final exam date changes, then I will announce and post the new final exam date, time, and location on COMPASS.

**Participation and Attendance:** You are strongly encouraged to participate in this class. I encourage you to ask questions and participate in discussions. This makes classes more interesting. I also encourage you to give me any suggestions that you have about improving the course. Attendance is not required but more than three unexcused absences will result in strict application of the 90/80/70 standard for an A/B/C (+, -) grade, respectively.

**Other Derivatives Courses:** Derivates is far too large a subject to be covered comprehensively in one semester. Therefore, we will concentrate here on financial futures and options, although we will naturally touch on commodities. Also most of the emphasis will be on the exchange-traded products. Those interested in the over-the-counter market and more advanced products are strongly urged to take both Finance 513 and 514. Those interested in futures trading in particular are urged to also take ACE 428.

**Classroom Behavior / Etiquette:** Individual classes will be more productive and the course more enjoyable for all if we follow the following simple rules of etiquette:

- Do not come to class late; but if you must, recognize that your entrance will disrupt. So, please be considerate of others and try not to disturb the lecture when you come in after the lecture has begun.

- Leaving class early is always disruptive to the instructor and to other students. If you plan to leave early, as a courtesy please notify the instructor of your intentions before class and sit close to an exit.

- Almost as bad as leaving early is rustling papers, thudding books shut, and unzipping bags in anticipation and preparation of the end of the lecture before this event actually occurs. Wait until the lecture is finished before preparing your exit.

- PLEASE TURN YOUR CELL PHONE OFF AND OTHER NOISE-MAKING GADGETS BEFORE CLASS.

- Poor performances in this class can be attributed to several factors. Not coming to class regularly is probably the main one. If you choose not come to class regularly do not blame the instructor for a poor performance. Also, it is your responsibility to obtain notes for missed lectures from colleagues.

**Academic Integrity:** You are expected to follow the University’s Code of Academic Integrity. You are responsible for knowing and abiding by the “Code of Policies and Regulations Applying to All Students.” The code is available at [http://www.uiuc.edu/admin_manual/code/](http://www.uiuc.edu/admin_manual/code/). In particular, any violation of academic integrity as spelled out in Rule 33 of the code (available at [http://www.uiuc.edu/admin_manual/code/rule_33.html](http://www.uiuc.edu/admin_manual/code/rule_33.html)) will be pursued according to the specified procedures.

**Class Schedule:** The following describes the tentative class schedule. The topics covered on each proposed day may change as the semester progresses, but the general order will not vary. Students are strongly urged to read the appropriate chapters **BEFORE** the lecture so as to learn more during the lectures.

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<thead>
<tr>
<th>Table 1 Assessment Timetable</th>
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<td><strong>Detail</strong></td>
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Professor Pirim

FIN 512 – Financial Derivatives
Table 2 Tentative Lecture Timetable

<table>
<thead>
<tr>
<th>Date</th>
<th>Subject</th>
<th>Reading</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction to Derivatives</td>
<td>Syllabus, McDonald Ch.1</td>
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<tr>
<td>Week 2</td>
<td>Forwards and Options</td>
<td>McDonald Ch. 2</td>
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<td>Week 3</td>
<td>Insurance, Collars, and Other Strategies</td>
<td>McDonald Ch.3</td>
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<tr>
<td>Week 4</td>
<td>Intro to Risk Management</td>
<td>McDonald Ch. 4</td>
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<tr>
<td>Week 5</td>
<td>Financial Forwards/Futures</td>
<td>McDonald Ch. 4 &amp; 5</td>
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<td>Week 6</td>
<td>Stock Index Futures</td>
<td>McDonald Ch. 5</td>
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<tr>
<td>Week 7</td>
<td>Currency Contracts / Eurodollar Futures</td>
<td>McDonald Ch. 6</td>
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<tr>
<td>Week 8</td>
<td>Eurodollar Futures</td>
<td>McDonald Ch. 6</td>
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<tr>
<td>Week 9</td>
<td>Interest Rate Futures</td>
<td>McDonald Ch. 7</td>
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<tr>
<td>Week 9 / October 22</td>
<td>MIDTERM EXAM I</td>
<td>McDonald Ch. 1-7</td>
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<td>Week 10</td>
<td>Swaps</td>
<td>McDonald Ch. 8</td>
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<td>Week 11</td>
<td>Parity and Other Option Relationships</td>
<td>McDonald Ch. 9</td>
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<td>Week 12</td>
<td>Binomial Pricing I</td>
<td>McDonald Ch. 10</td>
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<td>Week 13</td>
<td>Black-Scholes Pricing</td>
<td>McDonald Ch.11</td>
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<td>Week 14</td>
<td>Thanksgiving Break</td>
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<tr>
<td>Week 15 / December 1</td>
<td>MIDTERM EXAM II</td>
<td>McDonald Ch. 8-11</td>
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<tr>
<td>Week 15</td>
<td>Group Presentations</td>
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<tr>
<td>December 8</td>
<td>Group Presentations / Review for Final Exam</td>
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GOOD LUCK!