

FNCE 235/725: Fixed Income Securities
Spring 2010
Syllabus

Instructor

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Office hours are Tuesday, 1.30 – 3.00 pm. Please make an appointment by email if you like to meet with me outside of office hours. Teaching Assistants and TA office hours, to be held in the TA cubicles in the Finance Department, will be posted on the course webCafe page.

Course Description

This course covers the valuation of a wide variety of fixed income securities and their derivatives including pure discount bonds, coupon bonds, forwards and options on fixed income securities, interest-rate swaps, floating-rate notes, interest rate options, and mortgages. The course focuses on the analytic tools used in bond portfolio management and interest rate risk management. These tools include yield curve construction, duration and convexity, and formal term structure models.

Among topics not covered in the course are the relation between macroeconomic variables and interest rates, taxes, and multi-factor models.

Lectures

The course is in lecture format. We meet 27 times during this semester, of which 25 are lectures and discussions, and 2 in-class exams. Class participation is encouraged and can affect your grade at the margin.

FNCE 235 001 Mon/Wed 10:30 - 12:00 pm

FNCE 725 001 Mon/Wed 12:00 - 1:30 pm

FNCE 725 002 Mon/Wed 1:30 - 3:00 pm

Location of lectures: to be announced

Prerequisites

Students must have taken introductory finance and statistics.

FNCE 235: FNCE 100-101 and STAT 101

FNCE 725: FNCE 601 and STAT 621

Course Materials

1. The course pack contains lecture notes and is available online. The pack was created by Prof. Michael Gibbons during the many years he taught this course. See the course schedule below for outline of the chapters that I will cover. To assist students who have not yet decided to take the course, the first five chapters of the course pack will be posted on the course webCafe page. Please bring the relevant chapters to class.

2. There is a textbook for the course, available at the bookstore:

Suresh Sundaresan, 2009. Fixed Income Markets and Their Derivatives.
Third edition.

The book's way of presenting the material differs somewhat from the way it is done in the course pack. Although students are not responsible directly for the material in this book that is not covered in class, it is very helpful in mastering the material and solving homework/exam problems, as well as a general reference on the subject.

Please refer to the textbook for class topics which are not covered in the course pack. Those include for example a discussion of alternative term structure models, Black's model for interest rate options, and an introduction to corporate bonds.

3. Announcements, problem sets, solutions, and additional lecture material will be available via the course webCafe page at <http://webcafe.wharton.upenn.edu>.

4. For students who find it helpful to see the material presented in different ways, the following textbooks are suggested:

Pietro Veronesi, 2009. Fixed Income Securities: Valuation, Risk, and Risk Management.

John C. Hull, 2005. Options, Futures, and Other Derivative Securities. Sixth edition.

Bruce Tuckman, 2002. Fixed Income Securities: Tools for Today's Markets. Second edition.

Grades and Exams

There are two mandatory mid-term exams. The exams will be given in-class on February 17 and April 19, 2010. You must come to the section you are registered for. Each exam will count for 1/3rd of your final grade. The remaining 1/3rd of your grade will be determined by a final project. There are no verbal appeals of grades. Please provide a written statement to us as to why there is a problem. All re-grade requests must be submitted within one week after handing back the exams. Based on previous years' grade distributions, the average final grade is a B+.

The exams will be closed-book. For the first exam, you may bring an 8 ½ x 11 piece of paper of notes. For the second exam, you may bring two such pieces of paper. The second exam concentrates on material taught since the first exam, but material presented earlier may also appear. You may bring a calculator to the exam, but not a computer. University exam rules apply.

Problem Sets

Several problem sets will be assigned during the semester, on a near-weekly basis. All problem sets (and the final project) can be solved in groups of up to five students, and to be handed in as one write-up per group.

Solutions to each problem set will be made available after your answers have been turned in. Your graded answers will be returned to a file cabinet in the Finance Department. The problem sets will be graded by giving a "check-plus," "check," "check-minus," or "no credit." The purpose of the problem sets is to increase your understanding of the material, provide feedback, and help you prepare for the exams.

Course Schedule (tentative as of December 31, 2009)

| Class | Date | Topic (Chapters refer to the Coursepack) |
|-------|--------|---|
| 1 | Jan 13 | Ch 1: Overview of Fixed Income Securities Ch 2: The Grammar of Fixed Income Securities |
| 2 | Jan 20 | Ch 3: Data for a Recurring Illustration Ch 4: Bond Valuation Using Synthetics |
| 3 | Jan 25 | Ch 5: Interpreting Bond Yields |
| 4 | Jan 27 | Ch 6: Bond Values and the Passage of Time Ch 7: Forward Contracts |
| 5 | Feb 1 | Ch 8: Dollar Delta 1: Risk Measurement |
| 6 | Feb 3 | Ch 9: Dollar Delta 2: Risk Measurement Ch 10: Dollar Gamma |
| 7 | Feb 8 | Ch 11: Delta, Gamma, and Theta Ch 12: Time-Adjusted Performance Profiles |
| 8 | Feb 10 | Ch 13: Vasicek 1: Properties of the Short-Term Rate |
| 9 | Feb 15 | Ch 14: Vasicek 2: The Term Structure |
| 10 | Feb 17 | Exam 1 |
| 11 | Feb 22 | Ch 15: Vasicek 3: More Term Structure Ch 16: Vasicek 4: The Greeks |
| 12 | Feb 24 | Ch 17: Valuation by Monte Carlo Methods |
| 13 | Mar 1 | Alternative Term Structure Models, including Black Derman Toy |
| 14 | Mar 3 | Ch 18: Introduction to Bond Options |
| 15 | Mar 15 | Ch 19: European Bond Options |
| 16 | Mar 17 | Ch 20: American Bond Options Ch 21: Déjà vu |
| 17 | Mar 22 | Ch 22: Bonds with Embedded Options 1 |
| 18 | Mar 24 | Ch 23: Bonds with Embedded Options 2 |
| 19 | Mar 29 | Ch 24: Floating Rate Notes |
| 20 | Mar 31 | Ch 25: Interest Rate Swaps |
| 21 | Apr 5 | Ch 26: Options on Yields |
| 22 | Apr 7 | Cap, Floor and Swaption, including Black Model |
| 23 | Apr 12 | Ch 27: Floating Rate Notes with Embedded Options Final Project distributed |
| 24 | Apr 14 | Ch 28: Home Mortgages Mortgage-Backed Securities |
| 25 | Apr 19 | Exam 2 (in class) |
| 26 | Apr 21 | Introduction to Corporate Bonds |
| 27 | Apr 26 | Modeling Credit Risk and Corporate Debt Securities Final Project due date |