FNCE 394/894: Managing Fixed-Income Portfolios

Spring 2011

Syllabus

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Classroom: TBA

Office hours are 1.30 – 3.00 pm on Tuesday. Please make an appointment by email if you like to meet with me outside of regular office hours.

Prerequisite: FNCE 235/725 Fixed Income Securities

Required Text: Bond Markets, Analysis, and Strategies**,** 7th Edition, by Frank J. Fabozzi

Recommended Texts:

Fixed Income Markets and Their Derivatives, 3rd edition, 2009 by Suresh Sundaresan

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

Quantitative Management of Bond Portfolios, 2007, by Dynkin, Gould, Hyman, Konstantinovsky, and Phelps.

Course Description: The goal of this course is to teach you how to manage a real portfolio of Treasury, corporate and mortgage bonds. We begin by learning how to infer market forecasts from current bond prices. We use analytical models to find the market forecasts and the prices the market is offering for bearing the different types of risks. To implement the concepts learned in class, students will form teams to manage a paper portfolio using Barclays Point (formerly Lehman Point) a state-of-the-art portfolio management system. Your team will trade a $100 million portfolio of bonds for which your goal will be to outperform the Barclays Aggregate Index.

We begin by relating the term structure of interest rates to the market's view of the fundamental macroeconomic states of growth and inflation. To do this we need to understand a multifactor term structure model, which extends the Vasicek model you studied in the prerequisite course.

Any bond which is not a Treasury has an embedded option, either to default, prepay, or in some other way reduce the promised payments to bondholders. After we review the Black-Scholes model, we turn to Merton's model of corporate liabilities. Merton's model, and its extensions, is currently the state of the art in asset management firms for valuing bonds which have default risk. We apply Merton's model to the valuation of corporate bonds and CDS. Understanding Merton's model allows us to link market forecasts in the corporate bond market (or CDS market) with forecasts in the stock market. If there is a discrepancy in these forecasts, there is usually a profit opportunity.

Next, we turn to the valuation of agency MBS which requires you to learn about Monte Carlo simulation and homeowner prepayment modeling. The agency MBS market is second only to the US Treasury market in size, liquidity and economic importance. Because a government agency guarantees the timely payment of principle and interest, the dominant risk in a MBS is prepayment risk, i.e., that homeowners will choose to prepay when you do not want them to.

Finally, we bring everything together to analyze how to construct portfolios with desirable risk/return profiles. We will emphasize building the cheapest portfolio in which we bear risks that are offering an unusually high expected return.

Barclays POINT System:

Barclays Capital has generously offered Wharton a rare opportunity to use a real-world state-of-the-art bond portfolio system in the classroom. Your investment team will begin with a portfolio that mimics the Barclays Aggregate Index of investment grade US dollar denominated bonds. You will be able to trade this portfolio every day at real world prices. Your goal is to outperform the Barclays Aggregate Index over the semester. You will have the full use of the Barclay analytics to help you analyze potential trades. In a departure from real world money management, you will be graded on your analysis rather than your performance. (Even the best designed portfolio can suffer setbacks in only four months.) This is the key feature of this course so please make sure you attend the training session and become familiar with the POINT system.

Lectures and Presentations: The course is a combination of lectures by me and presentations by you. We meet 29 times during this semester, of which 21 are lectures and discussions, and 8 in-class team presentations. Class participation is encouraged and will affect your grade.

FNCE 894 Tu/Th 9:00 -10:20 am
FNCE 394 Tu/Th 10:30 -11:50 am

There is a MANDATORY Tutorial on Barclays POINT system on Friday, January 21, from 9:00 to 12:00.

Course Materials

1. I will make course notes available to you electronically before each class. (Both PowerPoint and PDF.)

2. There is a textbook for the course, available at the bookstore Bond Markets, Analysis, and Strategies**,** 7th Edition, by Frank J. Fabozzi. The book is meant as preliminary background reading for the lectures so you will find it most helpful if you browse the chapter.

Grades

There are two mandatory team presentations shown on the schedule below. Each presentation will last 30 minutes and will determine 30% of your grade. Your written analysis of a trade of your choosing will determine another 30% of your grade. The remaining 10% will be based on your class participation.

Class	Date	Topic
1	Jan 13	Overview of this course. Review of basic fixed income markets. The Barclays Aggregate Index Portfolio Guidelines Organize investment teams.
2	Jan 18	US Macroeconomic Data
3	Jan 20	Estimating a model of the US Economy I
4	Jan 21 FRIDAY	MANDATORY Tutorial on Barclays POINT system 9:00 to 12:00.
5	Jan 25	Estimating a model of the US Economy II
6	Jan 27	Review of Initial Portfolios
7	Feb 1	The Taylor Rule.
8	Feb 3	Trade Ideas and Stylized Term structure Facts
9	Feb 8	A Multifactor Normal Model of the Term Structure I
10	Feb 10	A Multifactor Normal Model of the Term Structure II
11	Feb 15	Team Meetings to Discuss Potential Trades
12	Feb 17	Extracting Market Forecasts of Inflation and Growth from the Term Structure
13	Feb 22	LIBOR, ED futures, Treasury Futures & Swaps
14	Feb 24	Team Presentations
15	Mar 1	Team Presentations
16	Mar 3	Team Presentations
17	Mar 15	Credit: The Merton Model
18	Mar 17	Credit: Extensions of the Merton Model
19	Mar 22	Credit Default Swaps
20	Mar 24	The US Agency and Mortgage Markets
21	Mar 29	Mortgage Backed Securities (MBS)
22	Mar 31	Evaluation of MBS: Prepayment Models
23	Apr 5	Evaluation of MBS: Simulation Models
24	Apr 7	Team Meetings to Discuss Potential Trades
25	Apr 12	Portfolio Construction
26	Apr 14	Risk Management
27	Apr 19	Team Presentations
28	Apr 21	Team Presentations
29	Apr 26	Team Presentations

This schedule is tentative. We will revise it as necessary as the course progresses.