FNCE 394/894: Managing Fixed-Income Portfolios

Spring 2012

Syllabus

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Classroom: JMHH G55???

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: Fixed Income Securities: Valuation, Risk, and Risk Management, 2010, by Pietro Veronesi

I have also written extensive class notes and spreadsheet models which will be given to all class members free of charge.

Recommended Texts:

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

Bond Markets, Analysis, and Strategies, 7th Edition, by Frank J. Fabozzi

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, sovereign, corporate and mortgage bonds. We develop three basic models for the yield curve, for credit spreads, and for mortgage spreads. We use these models to find value in the bond market. To implement the concepts learned in class, students form teams to manage a paper portfolio using Barclays Point, a state-of-the-art portfolio management system. Your team trades a $500 million portfolio of bonds for which your goal is to outperform the Barclays Aggregate Index. You trade real securities at real prices – only the money is fake.

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 credit. 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, credit default swaps (CDS), and sovereign debt. Understanding Merton's model allows us to link market forecasts in the credit 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 20, from 9:00 to 12:00.

Course Materials

1. I will make course notes and spreadsheets available to you electronically before each class.

2. There is a textbook for the course, available at the bookstore Fixed Income Securities: Valuation, Risk, and Risk Management, 2010, by Pietro Veronesi. The book is meant as preliminary background reading for the lectures so you will find it most helpful if you read the relevant chapter before class.

Grades

There are two team presentations shown on the schedule below. Each presentation will last 30 minutes and will determine 20% of your grade. You are also required to analyze two trades of your choosing. Each written trade analysis is worth 30% of your grade. I will use class participation to move up or down students who are on the cusp of two grades.

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

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