FNCE 235/725: Fixed Income Securities

Fall 2016

Syllabus

Instructor

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My office hours are Wednesday, 1.30 pm – 3.00 pm. I know this might be conflicting with some of your own classes, please feel free to schedule an appointment if you like to meet with me outside of these office hours. The teaching assistants for this course are Betty Dai and Robert Gormisky, their availability will be posted on the course page on Canvas.

Course Description

This course covers the valuation and application of a wide variety of fixed income securities and their derivatives. Fixed income securities are financial claims including pure discount bonds, coupon bonds such as Treasury notes and corporate bonds, floating rate notes, callable bonds, among many others, issued by public or private entities. In the first half of the course, we focus on yield curve construction, duration and convexity, and formal term structure models. The goal is to introduce you to at least one equilibrium model and one no-arbitrage model, and to analytical tools used in interest rate modeling and risk management.

In the second half of the course, we first focus on interest rate derivatives such as interest rate swaps, bond options and interest rate options, including caps, floors and swaptions, and the management of callable debt. We then look beyond interest rate risk, and study other risks that can be inherent in fixed income securities such as credit risk, illiquidity risk, and the risks stemming from securitization. The course concludes with a discussion about credit default swaps – a fixed income derivative that is very popular for transferring credit risks among market participants. Among topics not covered in the course are taxes, foreign exchange risk, the relations between macroeconomic variables and interest rates, as well as multi-factor models.

Class meetings

We meet 28 times during this semester, of which 27 are lectures and discussions, and 1 mid-term exam taking place in class. There will also be a final exam.

FNCE 235 001 Tuesday/Thursday 9:00 am - 10:20 am, JMHH 365
FNCE 725 001 Tuesday/Thursday 10:30 am – 11.50 am, JMHH 365

Please come to the section you are registered for. Attending the alternate section if you have a conflict is fine with me, but it should be the exception.

I expect students to attend all classes, and to not use electronic devices in class for non-educational purposes. 10% of your final grade is composed of class attendance and participation.

How FNCE 235/725 relates to other classes at Wharton

Students should have taken Corporate Finance (FNCE 100/611/612) and Statistics (STAT 101/102/111/613/621) before enrolling into Fixed Income Securities. It is also useful to know the material covered in Macroeconomics and the Global Economy (FNCE101/613).

Other classes that relate to Fixed Income Securities: Financial Derivatives (FNCE 206/717) also covers derivative securities outside of the area of fixed income. Capital Markets (FNCE 238/738) covers several bond market segments that I do not cover (e.g. the Repo Market and the Municipal Market) plus of course other asset classes such as equity. Managing Fixed Income Portfolios (FNCE894, offered in the Spring) is an ideal follow-up class to this one, and to which completing FNCE 235/725 is a prerequisite.

Course Materials

1. I will post lecture slides and reading material on the course page on Canvas.

2. ‘Adventures in Debentures’ is a course pack created by Deputy Dean Prof. Michael Gibbons during the many years he taught this course. I will make it available to you via Canvas. Please note, we will not cover all chapters of this course pack. I will outline which chapters are relevant.

3. This course does not have a required textbook, but I am suggesting three textbooks that cover most of the material we will cover in class. The textbooks are very different in pedagogy and cater towards a certain student clientele.

Frank Fabozzi, Bond Markets, Analysis, and Strategies, Seventh or Eighth Edition, Pearson

Suresh Sundaresan, Fixed Income Markets and Their Derivatives, 2009, Third edition, Elsevier; Elsevier had expected the fourth edition to be published on June 30 this year, but the publication date is now being pushed back to later in the Fall.

Pietro Veronesi, Fixed Income Securities, 2010, Wiley

I will bring samples of those books to the first class and explain the differences. All three books are very helpful in mastering the material as well as a general reference on the subject. I will show you how topics covered in this class map into 'Adventures in Debentures' and 'Fixed Income Markets and Their Derivatives.'

4. Academic articles. I will expose you to some important academic articles in this class. The list of academic articles includes …

Common Factors Affecting Bond Returns, 1991, Robert Litterman and Jose Scheinkman, Journal of Fixed Income

On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, 1973, Robert Merton, Journal of Finance

The Determinants of Credit Spread Changes, 2001, Collin-Dufresne, Goldstein and Martin, Journal of Finance

The Illiquidity of Corporate Bonds, 2011, Bao, Pan and Wang, Journal of Finance

Default Risk of Advances Economies: An Empirical Analysis of Credit Default Swaps during the Financial Crisis, 2011, Dieckmann and Plank, Review of Finance

Exams

There are two exams, a midterm exam on October 18, and a final exam on December 19. Each exam will count for 25% of your final grade. If you would like to appeal a grade, please provide a written statement to me or the teaching assistants as to why there is a problem. All re-grade requests must be submitted within two weeks 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 midterm exam, you may bring an 8 ½ x 11 piece of paper of notes. For the final exam, you may bring two such pieces of paper. You may bring a calculator to the exams, but not a computer. University exam rules apply.

Problem Sets and Final Project

Six problem sets will be assigned during the semester. The purpose of the problem sets is to increase your understanding of the material, provide feedback, and help you prepare for the exams. Problem sets can be solved in groups (up to four students), and to be handed in as one write-up per group. The five best problem sets will count for 10% of your final grade, equally weighted. Tentative due dates are marked with an asterisk in the course schedule.

And then there is a final project, worth the remaining 30% of your final grade, due on the last day of class. In the past I have given a final project consisting of two parts, equally weighted, and my plan is to do the same this Fall. The first part is typically about bond pricing and interest rate risk, the second part is typically about another risk inherent in fixed income securities that we cover in the second part of the class. Students should prepare a write-up in groups (up to four students), and the submission should be joint as well. Please limit the write-up to four pages of text; you can add tables or graphs.

Summary

Problem sets: Six, only five will count towards your final grade, 10%

Class attendance and participation: 10%

Midterm exam: October 18, in class, 25% of your final grade

Final exam: December 19, 25% of your final grade

Final project: Write-up due on last day of class, 30% of your final grade

Enjoy! I look forward to the course, SD.

Ethics Matrix

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	Materials							People				
FNCE 235/725 Fixed Income Securities	Calculator	Laptop / other electronics	Summary sheet	Textbooks / Class Notes	Past notes / summaries	Past exams / problems	Internet content / other outside materials	Group of 4	Other student(s) in same section	Student(s) in other sections (same term)	Wharton student not taking the class this term	Person outside of Wharton
Problem Sets	A	A		A			A	W	D	D		
Final Project	A	A		A			A	W	D	D		
Exam Preparation	A	A	A	A		A	A	W	W	W		
Midterm Exam	A		A									
Final Exam	A		A									
	A = Allowed material Shaded Cell = Not allowed							W = Allowed to work together D = Discussion of general concepts and procedures is allowed but no sharing of specific answers. Shaded Cell = Not allowed				

The information above covers many common situations but will not cover every circumstance. Remember:
The Wharton Code of Ethics that you accepted requires, among other things, that you represent yourself and your work honestly, don't try to gain unfair advantage over other students, follow the instructor's guidelines and respect confidentiality of your work and the work of others.

Should you have questions, please contact your ethics liaison or professor.

Course Schedule (tentative as of Aug 24, 2016)

Class	Date	Topic
1	Aug 30 – Tuesday	Overview of Fixed Income Securities
2	Sept 1 – Thursday	Bond Valuation using Synthetics
3	Sept 6 – Tuesday	Interpreting Bond Yields
4	Sept 8 – Thursday	Bond Values and the Passage of Time / Forward Contracts
5	Sept 13 – Tuesday	Forward Rates / Contracts
6	Sept 15 – Thursday *	Risk Measurement / Delta
7	Sept 20 – Tuesday	Risk Measurement / Gamma
8	Sept 22 – Thursday	Yield Curve Developments
9	Sept 27 – Tuesday *	Term Structure Modeling I
10	Sept 29 – Thursday	Term Structure Modeling I, including Vasicek model (equilibrium model)
11	Oct 4 – Tuesday	Term Structure Modeling II, including Black-Derman-Toy (No-Arbitrage model)
	Oct 6 – Thursday	Fall Break – no class
12	Oct 11 – Tuesday *	Negative Interest Rate Environments
13	Oct 13 – Thursday	Review for Midterm
14	Oct 18 – Tuesday	Midterm Exam
15	Oct 20 – Thursday	Orange County
16	Oct 25 – Tuesday	Overview of Interest Rate Derivatives Bonds with Embedded Options
17	Oct 27 – Thursday	Floating Rate Notes, Eurodollar Market and LIBOR, Interest Rate Swaps
18	Nov 1 – Tuesday *	Options on Yields, Black's Model for Caps and Swaptions
19	Nov 3 – Thursday	Management of Callable Debt
20	Nov 8 – Tuesday	Introduction to Corporate Bonds
21	Nov 10 – Thursday *	Modeling Credit Risk, including the Merton Model
22	Nov 15 – Tuesday	Illiquidity in Bond Markets
23	Nov 17 – Thursday	Securitization I
24	Nov 22 – Tuesday *	Securitization II
	Nov 24 – Thursday	Thanksgiving – no class
25	Nov 29 – Tuesday	Buffer Class
26	Dec 1 – Thursday	Credit Default Swaps
27	Dec 6 – Tuesday	Credit Default Swaps / Current Events in Sovereign Risk
28	Dec 8 – Thursday	Review for Final Exam
	Dec 19, Monday, 3 – 5pm	Final Exam