FNCE 235/725: Fixed Income Securities

Spring 2021

Syllabus

Instructor

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Office hours: Wednesday 12.30 – 2.00pm

I am available for office hours on my zoom channel. Just hop on, I'll see you in the waiting room, and will let you in. Office hours can be effective because you hear your peers asking questions. I am also available for individual appointments of course. Please make an appointment if you would like to meet 1-1. Teaching Assistants will also offer virtual office hours; times will be posted on the Canvas course page.

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 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.

How FNCE 235/725 relates to other classes at Wharton

Students should have taken Corporate Finance (FNCE 100/611) 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.

Class meetings

We meet 27 times, of which 24 are synchronous lectures and discussions plus 2 review sessions for the exams, plus 1 help session for the final project. You can access the sessions via the zoom link on Canvas, times are as follows:

FNCE 235, Tuesday/Thursday 9:00 - 10:20
FNCE 725, Tuesday/Thursday 10:30 - 11:50

I expect students to attend all sessions, but understand that some students won't be able to due to extenuating circumstances and time-zone conflicts. You are expected to watch the recording prior to the next class session.

Some students enrolled in FNCE 725 can attend the sessions in-person in Huntsman Hall 240, assuming the MBA Program can move forward with the limited hybrid plan. The seat management app will allocate the seats, I have no control over the process.

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.

Frank Fabozzi, Bond Markets, Analysis, and Strategies, Pearson

Suresh Sundaresan, Fixed Income Markets and Their Derivatives, Elsevier; Elsevier had announced a fourth edition to be published, but has not delivered thus far.

Pietro Veronesi, Fixed Income Securities, Wiley

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 Myth of the Credit Spread Puzzle, 2018, Feldhuetter and Schaefer, Review of Financial Studies

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

Investor Flows and Fragility in Corporate Bond Funds, 2017, Goldstein, Jiang, Ng, Journal of Financial Economics

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 March 4, and a final exam on May 4. Both exams are mandatory. Each exam will count for 25% of your final grade. The exams will be open-book and open-notes. Each exam is 2 hours long and can be taken within a 14-hour window, 8am to 10pm EST, via Canvas. University exam rules apply. 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 one week after the results have been posted.

Problem Sets and Final Project

Six problem sets will be assigned during the semester. The purpose of the problem sets is to increase your learning 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 25% 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.

Attendance & Participation

There will be many opportunities to participate live during the synchronous sessions. I will be using Piazza for additional asynchronous class discussion. The Piazza system is highly catered to interact fast and efficiently with classmates, the TAs, and the instructor. Rather than emailing questions, I encourage you to post your questions on Piazza. I understand there might be

circumstances that will not allow you to attend a class, e.g. due time zone conflicts. In that case, please watch the recording and use Piazza for asynchronous participation. I will post a score for attendance & participation at the halfway point, and at the end of the semester.

Summary

Problem sets: Six, only five will count towards your final grade, 10%
Class attendance and participation: 15%
Midterm exam: March 4, 25% of your final grade
Final exam: May 4, 25% of your final grade
Final project: Write-up due on last day of class, 25% 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	A	A			A					
Final Exam	A	A	A	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 Jan 9, 2021)

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