FNCE 725: Fixed Income Securities
Spring 2022
Syllabus

Instructor

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Office hours:
Wednesday 12.30 – 2.00pm (in-person room in SHDH 2252),
Friday 9.00 – 10.30am (zoom)

I am available to meet with you during office hours in-person and on my zoom channel. Please make an appointment if you want to meet outside of these times, either in-person or virtual. Teaching Assistants will also hold office hours; their 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 derivatives. Among topics not covered in the course are taxes, foreign exchange rate risk, the relations between macroeconomic variables and interest rates, as well as multi-factor models.

How FNCE 725 relates to other classes at Wharton

Students must have taken Corporate Finance (FNCE 611) and Statistics (STAT 613/621) before enrolling into Fixed Income Securities. It is also useful to know the material covered in Macroeconomics and the Global Economy (FNCE613), but the course is not a prerequisite.

Financial Derivatives (FNCE 717) also covers derivative securities outside of the area of fixed income. Capital Markets (FNCE 738) covers some bond market segments that I do not cover plus of course other asset classes such as equity. International Financial Markets (FNCE 719) also deals with some of the interest rate derivatives that you learn about in my class, though major topics are exchange rates, money markets, and currency derivatives.

Class meetings

We meet Tuesdays and Thursdays in JMHH F45. All standards in our Learning Agreement apply. Please turn off and put away your phones, they are too distracting for you and the students around you. You may use tablets for notetaking purposes. We will follow all COVID19 University guidelines, and students must be wearing masks indoors at all times. The start of the Spring semester is virtual with the expectation to resume in-person classes on January 24.

Students are expected to attend all sessions. Please respect the classroom as an inclusive learning environment where diverse points of view and experiences can be shared to facilitate everyone’s learning. If you can’t attend a session due to extenuating circumstances then we can make a recording available. In that case, please watch the recording prior to the next class session.

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 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

Attendance & Participation

My goal is to make the classroom environment as engaging as possible. Your focused attention and active involvement are important. In addition, we will be using Piazza for some asynchronous class discussion. Rather than emailing questions, I encourage you to post your questions on Piazza. I will post a score for attendance & participation at the halfway point, and at the end of the semester.

Exams

There are two exams, a midterm exam on March 1, and a final exam on April 28. 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 12-hour window, 8am to 8pm EST, via Canvas.

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 may 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 15% 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 Spring. 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 may 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

Class attendance and participation: 10%
Midterm exam: 25%
Final exam: 25%
Problem sets: 15%
Final project: 25%

Enjoy the course! I look forward to teaching you, SD.

Ethics Matrix

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	Materials							People				
FNCE 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.

FNCE 725 Course Schedule (tentative as of Jan 1, 2022)

Class	Date	Topic
1	Jan 18 – Tuesday	Overview of Fixed Income Securities Bond Valuation using Synthetics
2	Jan 20 – Thursday	Interpreting Bond Yields
3	Jan 25 – Tuesday	Bond Values and the Passage of Time / Theta
4	Jan 27 – Thursday	Forward Rates / Contracts
5	Feb 1 – Tuesday *	Risk Measurement / Delta
6	Feb 3 – Thursday	Risk Measurement / Gamma
7	Feb 8– Tuesday	Delta, Gamma, and Theta
8	Feb 10 – Thursday *	Term Structure Modeling I
9	Feb 15 – Tuesday	Term Structure Modeling I, including Vasicek model (equilibrium model)
10	Feb 17 – Thursday	Term Structure Modeling II, including Black-Derman-Toy (No-Arbitrage model)
11	Feb 22 – Tuesday	Yield Curve Developments
12	Feb 24 – Thursday *	Review for Midterm
	Mar 1 – Tuesday	Midterm Exam (8am to 8pm EST)
13	Mar 15 – Tuesday	Orange County
14	Mar 17 – Thursday	Overview of Interest Rate Derivatives Bonds with Embedded Options
15	Mar 22 – Tuesday	Floating Rate Notes, Interest Rate Swaps, Goodbye LIBOR
16	Mar 24 – Thursday *	Options on Yields, Black's Model for Caps and Swaptions
17	Mar 29 – Tuesday	Management of Callable Debt
18	Mar 31 – Thursday	Corporate Bonds
19	Apr 5 – Tuesday *	Modeling Credit Risk, including the Merton Model
20	Apr 7 – Thursday	Illiquidity in Bond Markets
21	Apr 12 – Tuesday	Securitization I
22	Apr 14 – Thursday *	Securitization II / Sukuk
23	Apr 19 – Tuesday	Credit Derivatives & Current Events
24	Apr 21 – Thursday	Wrap Up & Review
	Apr 28 – Thursday	Final Exam (8am – 8pm EST)