

NEW YORK UNIVERSITY STERN SCHOOL OF BUSINESS
Debt Instruments and Markets
Syllabus for FINC-GB.3333.70
Summer 2014

Professor Brian P. Lancaster

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Classroom: TBD
Classes: Tues & Thurs, 6:00PM – 9:00PM

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Course Description

The purpose of this course is to teach students to analyze the largest and most important fixed income bond instruments and markets (coupon Treasuries, Treasury zeroes, forward markets, Agency MBS and other securitizations such as CLOs), as well as key associated derivatives, such as swaps. It will enable students to understand and use key tools and concepts to value these securities including yield, various durations, convexity, Z-spreads, option adjusted spread, total rate of return, stress testing, roll-down, breakeven analysis and Monte Carlo simulations. In addition, interest rate risk and portfolio optimization will be covered. Leveraging the 25 years of the professor's Wall Street background, the course will cover both the theory of these instruments and markets as well as the reality (trading strategies, such as barbells and bullets, curve trades, squeezes, fail penalties, etc). The course will become increasingly "irreverent" towards the end.

While all who are interested in learning about these markets are welcome to take the course, the course is particularly recommended for those wishing to pursue careers in fixed income trading, sales, research, risk, regulation and/or buy-side portfolio management. It is likely that a Bloomberg session in a trading room at Bloomberg headquarters will be included to enable students to get hands on experience valuing bonds and to help them have a readily applicable skill should they pursue a career in the debt markets.

The course has a fair amount of math (e.g. first and second derivatives are used to discuss interest risk and hedging, simultaneous equations in discussing portfolio optimization) but based on the professor's experience, it is being restructured from last summer to be somewhat more qualitative and applied. Because of the faster pace of a summer course (two three-hour lectures per week versus the more leisurely pace of two one and one half hour lectures per week in the fall and summer), the breadth of the course has also been reduced a bit to allow students to gain a deeper understanding of the most important concepts in the debt markets.

Mid term and final exams will be based on problem sets (which will be done as teams) to give students ample time to practice their newly learned skills and knowledge and prepare for

the mid term and final. A guest lecturer (trader or portfolio manager) may speak at one of the sessions. Powerpoints of lectures will be sent to students before classes so students may prepare beforehand.

Schedule of Lectures

July 1 Course Overview, Coupon bonds and zeroes

Lectures:

Overview of Debt Markets (01zero) – size of markets, types of markets, why fixed income, the players (banks, insurance companies, money managers, hedge funds);

Yield to Maturity (02yield) – Yield to maturity of bonds, coupon effects, par rates, internal rate of return, term structure of interest rates, yield curves.

Readings:

Tuckman, An Overview of Global Fixed Income Markets; Ch. 1, Prices Discount Factors, Arbitrage; Ch. 2 Spot, Forward and Par Rates

or

Veronesi; Ch. 2 (thru p. 60) Basics of Fixed Income Securities, Discount Factors, Interest Rates, Term Structure of Interest Rates

July 3 Yield to maturity, Duration, Immunization

Lectures:

Duration (03duration) – Interest rate sensitivity, dollar duration, duration;

Immunization (04immunization) – Asset liability management, portfolio management at banks and insurance companies, dedication, immunization.

Readings:

Tuckman, Ch. 3; p. 119 - Ch. 4, Ch. 5, 6

Or

Veronesi, Ch. 3, Basics of Interest Rate Risk Management – Duration

July 8 Convexity, Rate of Return

Lectures:

Convexity (05convexity) – Dollar convexity, curvature, Taylor series, barbell and bullet trade strategies.

Total Rate of Return (06ror) - Rate of return over a holding period, how to value terminal prices, impact of reinvestment rates, roll down effects, stress testing, break even portfolio manager trade strategies.

Readings:

Tuckman, Ch. 2, 3, 16

Veronesi, Ch. 4 Basic Refinements in Interest Rate Risk Management – Convexity
Ch. 5 and 7

July 10 Rate of Return (cont'd), Forward Contracts

Lectures:

Total Rate of Return (06ror) - Rate of return over a holding period, how to value terminal price, impact of reinvestment rates, roll down effects, stress testing, break even portfolio manager trade strategies.

Forward Contracts (07forward) - Forward contracts, forward prices, forward rates – what they tell us and what they don't, expectations theory, settlement dates, delivery, term premiums

Readings:

Tuckman, Ch. 12, 15, 18

Veronesi, Ch. 1

Acharya and Oncu (2012) article on NYU classes

July 15 Repurchase Agreements, Floating Rate Notes

Lectures:

Repurchase Agreements (08repo) – Repurchase agreements, reverse REPO, uses of REPOs in practice, REPO, systemic crisis and the recent crash, haircuts, margin.

Floating Rate Instruments (09floater) – Valuation of floating rate notes, duration, convexity, interest rate sensitivity

Readings:

Veronesi, Ch 5, 9

Tuckman, Ch. 9

Schoenholtz and White, Taking the L-I-E Out of LIBOR

July 17 Midterm, Guest Lecture

July 22 Floating Rate Instruments (cont'd), Interest Rate Swaps

Floating Rate Instruments (09floater) – Valuation of floating rate notes, duration, convexity, interest rate sensitivity

Interest Rate Swaps (10swap) – Swaps, swap spreads, credit risk of swaps, swap spreads versus credit spreads, counterparty plain vanilla swaps, synthetic duration, swaps – one of the portfolio managers best friends; making the complex simple,

Readings:

Tuckman, Ch. 12, 15, 18

Veronesi, Ch. 1

Acharya and Oncu (2012) article on Blackboard

Lectures: 10swap;

Schoenholtz and White, Taking the L-I-E Out of LIBOR

July 24 Interest Rate Swaps (continued); Hedging, Options

Readings:

Lectures:

Interest Rate Swaps (10swap) – swaps, swap spreads, credit risk of swaps, swap spreads versus credit spreads, counterparty plain vanilla swaps, synthetic duration, use of swaps in portfolio management;

Options (17option) – put-call parity, puts, calls, volatility effects, European and American options

Schoenholtz and White, Taking the L-I-E Out of LIBOR

Veronesi, Ch. 6

Tuckman, Ch. 18

July 29 Options (cont'd); US Securitized Products (MBS, CMBS, CLOs, ABS)

Lectures:

Options (17option) – put-call parity, puts, calls, volatility effects, European and American options

US Securitized Products (21mbsmkt; 22mbsval); agency and non-agency securitization techniques, residential mortgage backed securities, commercial mortgage backed securities,

Veronesi, Ch. 6

Tuckman, Ch. 18

Additional Readings as posted on NYU classes.

July 31 US Securitized Products (cont'd) (MBS, CMBS, CLOs, ABS)

Lectures:

How to be a bond trader - let's manipulate and undermine what we've learned in the course. Permutations and combinations of durations and convexities. Disruptive derivatives. The fallacy of diversification and "Tragedy of the Commons", securitization creator and destructor of economies.

21mbsmkt; 22mbsval

Readings:

Tuckman: Ch. 19

Additional readings as posted on NYU Classes

Aug 5

Final Exam

Aug 7

Bloomberg Session – In a trading room at Bloomberg headquarters, students analyze, value and develop trade strategies for various fixed income instruments such as Treasuries and Agency MBS.

Course Materials

Required

Lecture notes and problem sets

B. Tuckman, Angel Serrat, *Fixed Income Securities*, Tools for Today's Markets, Wiley, Third Edition

P. Veronesi, *Fixed Income Securities: Valuation, Risk, and Risk Management*, Wiley, 2010.

Course Requirements

Grades will be based on the following.

Class Participation (10%)

Problem Sets (10%)

Midterm (40%)

Final (40%)

Exams

Please bring a calculator.

Problem Sets

Because the material is technical and new concepts build on old ones, it will be essential to do the problem sets in order to follow the lectures and do well on the exams. To facilitate learning, help students use their time most efficiently in a fast paced course and recreate a professional work situation, students will work together in teams on these problem sets. Groups of students working together should submit just one assignment. All students in the same group will get the same grade.

Academic Integrity

Integrity is critical to the learning process and to all that we do here at NYU Stern. All students are expected to abide by the **NYU Stern Student Code of Conduct**. A student's responsibilities include, but are not limited to:

- A duty to acknowledge the work and efforts of others when submitting work as one's own. Ideas, data, direct quotations, paraphrasing, creative expression, or any other incorporation of the work of others must be clearly referenced.
- A duty to exercise the utmost integrity when preparing for and completing examinations, including an obligation to report any observed violations.

Please see www.stern.nyu.edu/uc/codeofconduct for more information.

Students with Disabilities

Students whose class performance may be affected due to a disability should notify the professor early in the semester so that arrangements can be made, in consultation with the Henry and Lucy Moses Center for Students with Disabilities, to accommodate their needs.

Please see www.nyu.edu/csd for more information.