National University of Singapore Business School
Department of Finance
FIN 3131 – Fixed Income Securities (Semester 2, AY 2015-2016)

Instructor: Ganesh Ramchandran
Office: BIZ2 #02-22
Office Hours: By appointment via email
Email: bizgar@nus.edu.sg
Lecture Times: Tuesday, 8:00-11:00
Location: Classroom TBD / CAMRI Lab (3rd Floor, BIZ1)

Course Description

This course provides insight into the valuation of fixed income (FI) securities, including bonds, bond derivatives, and interest rate derivatives (swaps, futures, options). We will also study credit instruments as a special sub asset class within the larger fixed income world. In general, the wide spectrum of FI products will be covered, with a focus on pricing, trading, and risk management. Real-life "war stories" from the hedge fund and banking worlds will be used to supplement conventional textbook analysis.

Prerequisites

You should have taken one basic finance module and one module in Investment Analysis or the equivalent. You should have a good understanding of basic financial theory such as arbitrage concepts and efficiency.

Fixed Income is a quantitative field, so students will be expected to be comfortable with data analysis tools, with a working knowledge of Microsoft Excel.

Textbooks/Reading Materials

Presentation material from class (as well as homework and other reading materials) will be provided on IVLE. Bloomberg screens/industry research will also be distributed throughout the term.

There is no required textbook for this class, but there are two recommended textbooks:

Fixed Income Securities: Tools for Today's Markets, by Bruce Tuckman and Angel Serrat, Wiley, 3rd edition

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

You may find these books helpful (even though they are not required), since most of the material we will cover is included in these books, especially in Tuckman & Serrat.

In addition, select chapters from the following book may be useful as a reference for credit products:

Credit Derivatives: A Primer on Credit Risk, Modeling, and Instruments by George Chacko, Anders L. Sjoman , Hideto Motohashi, Vincent Dessain,1st Edition

Learning Approach

We will study fixed income pricing models using the usual textbook approach. In addition, we will draw upon real-life examples/case studies of risk-mismanagement in Wall Street from a practictioner's perspective to supplement our learning.

Subject to class size, some or all lectures may be conducted in the CAMRI lab, using Bloomberg for practical applications. Further, the trading strategy project is a unique component of this module that will provide students with essential trading and risk management skills.

There will also be two guest speakers from the industry who will provide the latest insight into the financial markets. Finally, there will be an additional mini-lecture (TBD) in which students can learn about career opportunities in fixed income and the finance world in general.

Grading and Assessment (% below may be amended after 1st lecture)

40% Exams (2 tests in class, each worth 20%)
25% Trading Project
25% Homework Sets
10% Class Participation

Tests

Tests will be closed-book in class. Further details on the exam format will be provided in class. The first test will be on 1st March (after recess week), and the 2nd test will be 12th April.

Assignments/Trading Project

Students will be pre-assigned into groups of no more than 4 members by the instructor – a handout with all the group details will be distributed at the end of the 1st lecture. These groupings will be applicable for all homework assignments and the trading game. All members of a group will receive the same grade for a given project or assignment.

The time period for the trading project is 6 weeks from Monday 15th February through Friday 1st April inclusive. A separate handout for this project will be given out during the 1st lecture, and all information needed will be given in advance. As part of this assignment, students are required to make a brief presentation (in groups) in class on 5th April.

Acknowledgements

The module contents are based heavily on previous versions of the same course offered by Professor Andrew Lim, Professor Robert Kimmel, and Professor Anand Srinivasan. In addition, the course draws on material from previous lectures/MBA module taught by the instructor at NUS.

Selected Course Topics *(including but not restricted to the following)*

Adjustments may be made during the course if the pace is faster/slower than expected)

(1) Overview of Fixed Income Markets
- Brief snapshot of the history and current state of fixed income securities
- Main players, different FI markets, risks

(2) The Relative Pricing of Securities with Fixed Cash Flows
- Price Yield Conventions, Discounting, and Arbitrage restrictions
- Calculation of Zeroes, Forwards and Par Curves
- Returns and Yield Spreads

(3) Analytics of Fixed Income Markets – Measurement/Hedging of Risks
- Bond Mathematics – DV01, Duration, Convexity
- Yield Curve and the Term Structure
- Combination Strategies and hedging techniques

(4) Pricing/Hedging of FI Derivatives NOT requiring dynamic modelling of interest rates
- Derivatives on Short-term Rates (FRAs/Eurodollar contracts, etc)
- Interest Rate Swaps / Bond Futures

(5) Dynamic Term Structure Modelling
- Evolution of Short Rates
- Binomial Tree Approach to Pricing
- Models of Yield Curve and Term Structure

(6) Credit Products
- Pricing – Reduced Form versus Structural Approach
- Range of different products with trading examples – CDS, Indexes, Tranches, etc

Please note that the following other topics may also be covered (time-permitting):

- Fixed Income Arbitrage Hedge Funds (Long Term Capital Management)
- Fixed Income Options
- Mortgages/CMOs
- Municipals/Inflation Products
- Structured Products
- ALM/Risk Management Techniques in Fixed Income