National University of Singapore Business School

Department of Finance

FIN 3131 – Fixed Income Securities (Semester 1, 2017-2018)

Instructor: Professor Andrew Lim

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Lecture Time: Thursday 8am-11am

Location : BIZ1 03-05

Office hours: By appointment.

Module Description:

This module focuses on the valuation of fixed income securities, such as bonds, bond derivatives, interest rate derivatives, interest rate swaps, mortgages, and asset-backed securities. We will focus mainly on the valuation of these instruments and on interest rate risk. We may also discuss issues related to credit risk.

Prerequisites

Fixed income is a quantitative field. You should be comfortable with tools for the analysis of data; familiarity with *Microsoft Excel* will be needed. Knowledge of standard financial concepts such as market efficiency and arbitrage will be assumed. You should have taken one basic finance module and one module in Investment Analysis or the equivalent.

Class Materials

Presentation material from class will be provided on IVLE, as will homework and supplementary materials.

Textbook: The recommended text for this class is *Fixed Income Securities*, by Pietro Veronesi, Wiley (2010). The (tentative) module outline below includes chapter references for material from this book related to each topic. The book is pretty good.

There are several other books with similar coverage of topics, by authors such as Frank Fabozzi, Tuckman and Serrat, or Suresh Sundaresan. You are certainly free to look at these books if you find it helpful.

Grading:

Approximate grading policy

- ☐ Take-home problem sets/projects/cases: 25% - students may do assignments individually or in groups of up to 3 members. No extra credit is given for working individually or in smaller groups.

- ☐ In-class projects: 60% - There are two in-class projects, each worth 30%.

- ☐ Class participation: 15%

The final weighing that is used might vary modestly from that stated above (e.g. +/- 10%)

The in-class projects are to be taken at the scheduled time, and late assignments cannot be accepted. In case of exceptional circumstances (e.g., illness/injury, family bereavement, etc.), if solutions to a given piece of assessment have already been distributed or discussed in class, then some other arrangement will be made depending on the particular situation. Obviously, even with the best made plans, "life" may not cooperate, so if you have some issue which prevents you from taking an in-class project at the scheduled time, please inform me as soon as you are aware of the situation and we will try to adjust. It is usually much easier to deal with such situations before rather than after.

In-class projects:

The first in-class project is scheduled for the class session on September 18 (the week before Recess Week). The second in-class project is scheduled for the November 16 class session (the last one of semester).

Assignments:

All members of a group will receive the same grade for a given case or assignment. Each group should submit a single copy of the work, containing the names of all group members.

Submit assignments electronically through IVLE. If the solution requires use of Excel, submit the spreadsheet as well as a separate document that summarizes the solution. Identify where the solution can be found in the Excel file (It can be difficult to find a solution in an Excel file; try not to antagonize the grader).

Acknowledgements:

The module description and contents are based heavily on a previous version of the module offered by Professor Anand Srinivasan and Professor Robert Kimmel of the NUS Business School Department of Finance.

Module contents:

Chapter references are from Veronesi. Adjustments might be made during the course if the pace is faster/slower than expected.

(I)   Overview of Fixed Income Markets

   a. Chapter 1

       A brief overview of the history and current state of fixed income securities and the markets in which they trade

(II)   Basics of Fixed Income Securities

   a. Chapter 2

       Discount factors, interest rates, term structure of interest rates, coupon bonds, floating rate bonds

(III)   Basics of Interest rate risk management

   a. Chapter 3: Duration, interest rate risk management with dynamic immunization

   b. Chapter 4: Convexity, duration-convexity hedging, barbell-bullet strategy

(IV)   Forwards and swaps

   a. Chapter 5: Forward rates and forward discount factors, forward rate agreements, forward contracts, interest rate swaps, risk management with swaps

(V)   Interest rate derivatives and one-step binomial trees

   a. Chapter 6

   b. Chapter 9: single-period binomial model, arbitrage, pricing via replication, state-prices, risk-neutral pricing

(VI)   Multi-period pricing and applications

   a. Chapters 10 & 11: multi-period trees, dynamic replication, risk-neutral pricing, applications to various derivatives.

ACADEMIC HONESTY & PLAGIARISM

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. **In case of any doubts, you should consult your instructor.**

Additional guidance is available at:

http://www.nus.edu.sg/registrar/adminpolicy/acceptance.html#NUSCodeofStudentConduct

Online Module on Plagiarism:

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