

National University of Singapore Business School

Department of Finance

FIN 3131 – Fixed Income Securities (Semester 1, 2015-1026)

Instructor: Professor Andrew Lim

Office: BIZ1, #08-70

Email: andrewlim@nus.edu.sg

Telephone: 66013141

Lecture Times: Tuesday 2pm—5pm.

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: Tools for Today's Markets*, by Bruce Tuckman and Angel Serrat, Wiley, 3rd edition (2011). The module outline below includes chapter references for material from this book related to each topic. You may find the book helpful (even though it is not required), since most of the material we will cover is included in this book. However, one drawback of Tuckman/Serrat is that there are no practice problems at the end of each chapter.

There are several other books with similar coverage of topics, by authors such as Frank Fabozzi, Pietro Veronesi, or Suresh Sundaresan. You are certainly free to procure one of these books if you find it helpful, or an older edition of Tuckman's book (earlier editions did not include Serrat as an author).

However, in this case, you would need to identify the relevant chapters which correspond to each topic we cover, and may occasionally find some material missing.

Grading:

- Problem sets/projects/cases: 40% - students may do assignments individually or in groups of up to 4 members. No extra credit is given for working individually or in smaller groups.
- In-class tests: 50% - There are two in-class tests, each worth 25%.
- Class participation: 10%

The tests 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 test or homework have already been distributed or discussed in class, then either a make-up test or assignment will be given, or the credit will be added to another component of the grade, depending on the particular situation. Obviously certain problems such as illness are not always predictable, but if you have some issue which prevents you from taking an in-class test at the scheduled time, please inform me as soon as you are aware of the situation. It is usually much easier to deal with such situations before the test than after.

Tests:

The first in-class test is scheduled for the 29 September class session (after the Recess Week). The second in-class test is scheduled for the 2 November class session.

The in-class tests are closed-book. However, you may bring with you two pages (i.e., both sides of a single sheet, or one side each of two sheets) of A4 paper with any information you like written on them. A calculator may be used, and is likely to be helpful.

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. (It can be difficult to find a solution in an Excel file).

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 Tuckman and Serrat. Adjustments might be made during the course if the pace is faster/slower than expected.

- (I) Overview of Fixed Income Markets
 - a. Overview chapter
A brief overview of the history and current state of fixed income securities and the markets in which they trade
- (II) Properties of Securities with Fixed Cash Flows
 - a. Chapters 1, 2 and 3
Properties of and basic analysis of securities whose cash flows are fixed. Discussion of prices, discounting, absence of arbitrage restrictions, spot and forward rates, yields, and yield spreads.
- (III) Measurement and Hedging of Fixed Income Risk
 - a. Chapters 4, 5 and 6
Discussion of the risk of fixed income securities, and techniques for mitigating or managing that risk, with and without specific models for price evolution.
- (IV) Forward Rate Agreements and Swaps
 - a. Chapters 15 and 16.
Discussion of specific fixed income derivative securities, whose pricing/hedging does not require dynamic modeling of interest rate behavior.
- (V) Dynamic Term Structure modeling
 - a. Chapters 7, 8, 9, 10 and 13
Methods for modeling the evolution of interest rates and the yield curve, and pricing/hedging fixed income derivatives using those methods.
- (VI) Fixed Income Options
 - a. Chapter 18
Methods for pricing and hedging of interest-rate related options, including embedded options
- (VII) Mortgages, CMOs, Credit and Credit Derivatives
 - a. Chapters 19 and 20
More complex fixed income 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:

<http://emodule.nus.edu.sg/ac/>