



FIN 3131—Fixed Income Securities

Instructor:	Prof. Robert L. Kimmel	Module Name:	Fixed Income Securities
Office:	BIZ1 #07-62	Module Number:	FIN 3131
Office Hours:	By appointment	Module Term:	Semester 2, AY 2014–2015
Email:	robert.kimmel@nus.edu.sg	Lecture Times:	Monday, 8:00–11:00, 14:00–17:00
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THIS MODULE DESCRIPTION IS CURRENT AS OF DECEMBER 17, 2014.

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; at a minimum, familiarity with a program such as *Microsoft Excel* (or the spreadsheets of *OpenOffice* or *LibreOffice*) 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.

CONTACTING THE INSTRUCTOR

If you need to contact me regarding the module (or other matters as may be appropriate), the best method is to send an email to robert.kimmel@nus.edu.sg—this will generally receive a faster response than a voice mail. Also, tables, equations, and other such information can be included in an email if they are helpful in answering your questions.

If you ask a question that may be of interest to the rest of the class, I may email the question (as well as my answer) to the entire class. If you prefer that any questions you ask remain private, simply say so in your initial email.

You are also free to speak with me in person. In the past, I have held fixed consultation hours, and the usual outcome was that very few people came. So this semester, consultation will be by appointment. The easiest way to schedule an

appointment is to send an email, possibly suggesting some times which are good for you. If there is heavy demand, we will establish some fixed time each week when no appointment is necessary.

You are also free to discuss matters other than the module with me (e.g., your honours thesis, other topics in finance, career opportunities in banking/finance, etc.). If I know the answer to your question(s), I will be glad to provide it.

REQUIRED MATERIALS

MODULE NOTES

Module notes, assignments, and possibly other supplemental materials (e.g., spreadsheet examples) will be posted on IVLE.

TEXTBOOK

There is no required textbook, as the module will be based primarily on the lectures and notes which are provided. However, you may find a textbook helpful.

In the past, both I and the previous instructor have used *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.

LECTURES

There are two sections of this class, Monday 8:00–11:00 and Monday 14:00–17:00. The lectures are scheduled each week from January 12 until April 13, except for February 23 (mid-semester break).

Although it might be tempting, please do not attend a section for which you are not registered, especially at the beginning of the semester. First, the two sections may not have exactly the same pace, so if you attend the morning section some weeks, and the afternoon section the other weeks, you may receive double coverage of some topics, and no coverage of others. Furthermore, there may be a capacity constraint for the classroom. If it becomes clear that there is no problem with capacity, we may relax this restriction as the module progresses. However, you should always take in-class tests with the section for which you are registered.

Although class notes are provided, attendance at lectures is still important; the class discussion may include material not

in the notes or the textbook (e.g., numeric examples). You are encouraged to ask questions about points which are not clear.

GRADING

Grading is based on the following components.

- (i) Problem sets/projects/cases: 50%—Students may do the assignments individually or in groups of up to three. No extra credit is given for working individually or in smaller groups.
- (ii) In-class tests: 50%—there are 2 in-class tests, each worth 25%.

Although there is no formal assessment for attendance, it is important to attend the lectures, and if you miss many of them, you will likely be disadvantaged both in the assignments and in the tests.

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 March 2 class session (after the mid-semester break). The second in-class test is scheduled for the April 13 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. There is no requirement that you remain in the same group throughout the module, i.e., your group may consist of different members for different assignments or case studies. Each group should submit a single copy of the work, containing the names of all group members. Any disputes within a group must be resolved by the group members themselves.

Solution to an assignment should include a correct answer to the question which was asked, and enough information to show how it was derived. However, you should not submit extraneous material, particularly if this material is lengthy.

Inclusion of prints outs of lengthy data series used in analysis, extended verbatim quotes or extracts from books or class notes, and other such materials is strongly discouraged.

You may submit assignments electronically through IVLE or in paper form in class. (Please submit each assignment by only *one* method.) If you submit electronically, and have the ability to produce PDF files, please use it. If you are unable to produce a PDF file, you may submit something in Microsoft Word, OpenOffice, or LibreOffice format; however, my past experience is that differences in the host systems (e.g., different versions of the software installed, or different fonts installed) can cause the assignment which appears on my computer screen to look radically different than the one which appears on your computer screen. For this reason, you should submit in PDF form if you are able to do so. Spreadsheets are powerful tools for solving many kinds of problems, but are, in my opinion, a terrible way to submit a class assignment; submission of anything in a spreadsheet form is strongly discouraged. When a question is marked wrong because the grader was unable to find that the answer appeared in cell CK953 of the fourth spreadsheet tab, you will probably understand why I discourage submission of assignments in spreadsheet form.

ACKNOWLEDGEMENTS

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

MODULE CONTENTS

We will cover most or all of the following topics. Chapter references for the textbook are included, using the designation “TS” (for Tuckman and Serrat). The assignments will be due throughout the semester. The planned outline may be subject to change, but will be finalised prior to the first class on January 12th; any further revisions will be adjustments necessary if the pace of the class is faster or slower than expected.

(I) Overview of Fixed Income Markets

(a) TS—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) TS—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, returns, yields, and yield spreads.

(III) Measurement and Hedging of Fixed Income Risk

(a) TS—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) TS—Chapters 15 and 16.

Discussion of specific fixed income derivative securities, whose pricing/hedging does not require dynamic modelling of interest rate behaviour.

(V) Dynamic Term Structure Modelling

(a) TS—Chapters 7, 8, 9, 10, and 13.

Methods for modelling the evolution of interest rates and the yield curve, and pricing/hedging fixed income derivatives using those models.

(VI) Fixed Income Options

(a) TS—Chapter 18.

Methods for pricing and hedging of interest rate-related options, including embedded options.

(VII) Mortgages, CMOs, Credit and Credit Derivatives

(a) TS—Chapters 19 and 20.

More complex fixed income derivatives.