



APPLIES TO ACADEMIC YEAR 2016/2017

GRA 6539 Fixed Income Securities

Programme

Master of Science in Business, Master of Science in Business (Finance), Master of Science in Finance, Specialization Course

Responsible for the course

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Department

Department of Finance

Term

According to study plan

ECTS Credits

6

Language of instruction

English

Introduction

A fixed income security is a security for which the rule determining future cash flows is set, when the security is issued. The classical example of a fixed income security is a treasury bond, which offers fixed interest payments. As long as the government can be trusted to avoid default, there is no uncertainty about the future cash flows from the bond. That simplifies analysis of sovereign bonds: there is only one major source of uncertainty, future interest rates.

While pricing of some fixed-income instruments is simpler, it is never simple. This course and jobs in fixed income are some of the most technically demanding within finance. While learning about fixed income may seem dry at times, good understanding is paramount. Indeed, the fixed income market dwarfs the equity market. Knowledge of fixed income is in high demand in the job market.

Due to its complexity, detailed analysis of fixed income securities is often nearly omitted from academic programs. Yet fixed-income instruments (and their derivatives) form the majority of the capital markets in the developed economies. Importance of understanding fixed-income instruments by a wider audience of investors/households has been repeatedly brought to light in the recent years of financial turmoil.

The recent global crisis was brought about by troubles in the fixed-income markets. The words on everyone's tongue were 'mortgages' and 'mortgage-backed securities,' fixed-income instruments. More close to home, the Terra Securities scandal of 2007 has hopefully taught us, that investing in fixed-income instruments without proper analysis and knowledge is a bad idea.

Learning outcome

By the end of the course, the students will gain understanding of the major institutional characteristics and some key technical know-how of the design and the valuation of fixed-income instruments. To that end, in addition to understanding the economic intuition, the students will be expected to solve problems, which will go into the formal modeling issues, including interest rate modeling.

Acquired Knowledge includes:

1. Ability to identify the determinants of risk and return of debt securities. The emphasis is on pricing of fixed-income securities, including fixed income derivatives.
2. Fixed income portfolio management techniques
3. The role of fixed-income securities in risk management.

Acquired Skills include:

1. The students will use and/or develop certain quantitative skills, e.g. will learn to utilize Excel tools for solving simple but realistic problems that may arise in the fixed income market, will learn to apply binomial tree and Monte Carlo simulation approaches to asset valuation and risk assessment.
2. The students will also be able to explain interdependencies of risk factors

Reflection:

1. Students should gain a unified understanding of the interdependencies of factors affecting fixed income securities
2. Students should be able to analyze problems that go beyond those explicitly covered in class/the required book

Prerequisites

GRA 6543 Introduction to Asset Pricing or equivalent

All courses in the Masters programme will assume that students have fulfilled the admission requirements for the

programme. In addition, courses in second, third and/or fourth semester can have specific prerequisites and will assume that students have followed normal study progression. For double degree and exchange students, please note that equivalent courses are accepted.

Compulsory reading

Books:

Veronesi, Pietro. 2010. Fixed income securities : valuation, risk, and risk management. Wiley

Other:

During the course there may be hand-outs and other material on additional topics relevant for the course and the examination.

A list of compulsory readings will be provided on Its learning or in class.

Recommended reading

Books:

Benninga, Simon. 2014. Financial modeling. 4th ed. MIT Press

Cusatis, Patrick J., Martin Thomas. 2005. Hedging instruments and risk management. McGraw-Hill

Sengupta, Chandan. 2010. Financial analysis and modeling : using Excel and VBA. 2nd ed. Wiley

Sundaresan, Suresh. 2014. Fixed income markets and their derivatives. 4th ed. Elsevier

Tuckman, Bruce, Angel Serrat. 2012. Fixed income securities : tools for today's market. 3rd ed. Wiley

Course outline

The following gives an overview of the key topics to be covered in the course. The required textbook is good in some aspects, but is not detailed enough in others. It will therefore be supplemented by a number of articles and/or teaching materials.

The following topics will be covered:

- Institutional details: An overview of debt securities markets
- Tools: Bond pricing and arbitrage
- Tools: Measures of price sensitivity: Duration and convexity
- Institutional details: bond auctions
- Tools: Forwards and swaps; Options and futures
- Institutional details and Tools: Central Banks, Inflation, Monetary Policy
- Tools: Term Structure of Interest Rates in discrete and continuous time
- Tools: Binomial trees (term structure and pricing, European and American options, Monte Carlo simulation)
- Mortgage backed securities

Additional topics may be covered as time permits, including:

- Securitization
- Agency debt market
- Institutional details and Tools: Corporate debt and fixed income options

Quantitative methods applied within the context of the course include:

- Probability distributions (discrete and continuous)
- Regression analysis (time series and cross section, hypothesis testing)
- Binomial trees and Monte Carlo simulation

Computer-based tools

Learning process and workload

A course of 6 ECTS credits corresponds to a workload of 160-180 hours.

Students are expected to read the assigned chapters before class. Active class participation is expected during lectures, in the interactive regime.

There will be problem sets. The questions are to be answered by students prior to class and discussed together with the lecturer during classes.

Examples highlighting and demonstrating often-used, practical applications of fixed-income-securities' pricing are used extensively in the class.

There will be other written assignments during the semester. Those will be compulsory and graded as outlined below.

Please note that while attendance is not compulsory in all courses, it is the student's own responsibility to obtain any information provided in class that is not included on the course homepage/Itslearning or textbook. Notice also that the course homepage and/or Itslearning are not designed for the purpose of accommodating the needs of students choosing not to attend classes.

Examination

The course grade will be based on the following activities and weights:

65% Final written examination (3 hours)

10% Class participation

25% Take-home examination

Class participation is an integral part of the successful progression in the course.

There will be a mandatory take-home mid-term exam, which can be worked on and submitted either individually or in pairs.

Form of assessment	Weight	Group size
Written examination 3 hours	65%	Individual
Class participation	10%	
Take home examination	25%	

Specific information regarding student assessment will be provided in class. This information may be relevant to requirements for term papers or other hand-ins, and/or where class participation can be one of several components of the overall assessment. This is a course with continuous assessment (several exam components) and one final exam code. Each exam component is graded using points on a scale from 0-100. The final grade for the course is based on the aggregated mark of the course components. Each component is weighted as detailed in the course description. Students who fail to participate in one/some/all exam components will get a lower grade or may fail the course. You will find detailed information about the points system and the mapping scale in the student portal @bi. Candidates may be called in for an oral hearing as a verification/control of written assignments.

Examination code(s)

GRA 65391 continuous assessment accounts for 100% of the final grade in the course GRA 6539.

Examination support materials

All support materials are allowed

BI approved exam calculator

Bilingual dictionary

Permitted examination support materials for written examinations are detailed under examination information in the student portal @bi. The section on support materials and the use of calculators and dictionaries should be paid special attention to.

Re-sit examination

It is only possible to retake an examination when the course is next taught. The assessment in some courses is based on more than one exam code. Where this is the case, you may retake only the assessed components of one of these exam codes. All retaken examinations will incur an additional fee. Please note that you need to retake the latest version of the course with updated course literature and assessment. Please make sure that you have familiarised yourself with the latest course description.

Additional information

Honour code. Academic honesty and trust are important to all of us as individuals, and are values that are integral to BI's honour code system. Students are responsible for familiarising themselves with the honour code system, to which the faculty is deeply committed. Any violation of the honour code will be dealt with in accordance with BI's procedures for academic misconduct. Issues of academic integrity are taken seriously by everyone associated with the programmes at BI and are at the heart of the honour code. If you have any questions about your responsibilities under the honour code, please ask. The learning platform itslearning is used in the teaching of all courses at BI. All students are expected to make use of itslearning.