

Fixed Income instruments

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Course description

The course is designed to provide a solid framework for the practical analysis of fixed income instruments. While the primary focus is the valuation of cash and derivative instruments and their real world applications, the course also applies to the general principles of the credit analysis & basic concepts of the portfolio management.

We'll cover three major topics: Bonds, Forwards/Swaps and Credit instruments. More specifically we'll cover

- ✓ Basic money market instruments and bonds;
- ✓ Basic fixed income derivatives: swaps and forwards;
- ✓ Valuation of fixed income instruments (is a MUST). Following the lectures you should be able to calculate bond and swap prices, duration, understand swap and zero curves, nature of shifts in the yield curve, applications to hedging;
- ✓ Concepts of no-arbitrage for the derivative pricing;
- ✓ Corporate, credit spreads and basic credit derivatives;
- ✓ Floating rate and inflation linked bonds;
- ✓ Structured bonds;
- ✓ Bond portfolio and indices;
- ✓ Bond portfolio management strategies.

Course requirements, grading, and attendance policies

Your course grade will be determined by results of your quizzes, case preparation, class participation & final exam.

(15%) Quizzes. You'll have a 10-min quiz at the beginning of each class. Don't be shy, don't panic, it is just a simple check of the lecture materials we discussed the class before.

(35%) Homeworks

(50%) Final exam covers core topics from the course. It'll test your ability to apply the basic concepts of fixed income theory we discussed to practical problems.

Course contents

Class 1. Intro to debt and Bond fundamentals

Types and features of debt securities
Discounting
Fundamentals of bonds
Bond's math: yield, duration and convexity
Bootstrapping zero curve
REPO and reverse REPO
Bond strategies

Class 2. Bond math contd + Fundamentals of swaps and forwards

Interest rate and FX forwards
Basic derivative instruments: IR and FX (CS) swaps
Fundamentals of swap valuation
Applications and hedging

Class 3. Advanced bonds and swaps

Swap valuation contd.
REPO, Bond and Swap strategies
Interest rate risk bucketing
Floating rate and inflation linked bonds
Applications and hedging

Class 4. Basic credit instruments: bonds and derivatives

Structured and corporate bonds
Credit spreads explained
Asset swaps
Credit default swaps and survival curve bootstrapping

Class 5. Bond portfolios

Bond portfolio fundamentals
Yield and risk metrics
Introduction to bond indices
Bond portfolio risk management

Class 6. Bond trading game

Class 7. Interesting cases, commodity instruments, non-linear instruments

Commodity instrument features
Basics of non-linear fixed income instruments
Applications and hedging

Course materials

For bonds and basic fixed income instruments the Fabozzi's book (1) is a good one-stop shop. For derivative instruments the book by Hull (2) is a standard go-to textbook for the introductory course on financial instruments and derivatives. The other book (3) though less known is written with passion for the subject of derivatives and a bit more practical.

1. F.J. Fabozzi, The handbook of Fixed Income Securities, McGraw Hill
2. Hull, Options, Futures, and Other Derivatives, Prentice-Hall
3. Neftci, Principles of Financial Engineering, Elsevier

Academic integrity policy

Cheating, plagiarism, and any other violations of academic ethics at NES are not tolerated.