



OBJECTIVE

The objective of this course is to completely overview in detail the fixed income markets taking in both the commercial aspects of the market as well as the investment landscape. The course is designed to be easy to understand but will also cover pricing and valuation methodologies for fixed income instruments. The class will be exposed into best practice methods for benchmarking fixed income investments, measuring and managing risk and how the more sophisticated instruments such as swaps can be used to protect returns.

KEY AREAS

- Review fixed income instruments classes
- Understand yield curve analysis.
- How to price vanilla bonds.
- Methods for pricing bonds with options.
- Gain insight into swap operation.
- Look at methods to price swaps
- Review exotic fixed income instruments
- Completely review the credit markets and look at how they can be used to protect investments.

FOCUS

FIXED INCOME INSTRUMENTS

The program will completely review each fixed income instrument, showing its purpose, pricing and how it can be mixed in a basket of investments. Benchmarking and protecting yields will not only be discussed but shown in excel spreadsheets.

MICRO / MACRO LEVEL

At a micro level the course will detail how carryout yield curve analysis and will provide software tools to achieve this end. Processes for risks quantification will be discussed and the roles of staff in fixed income markets outlined.

WHO SHOULD ATTEND

- Treasury Staff
- Investment Managers
- Fixed Income Analysts
- Market Risk Management Teams
- Portfolio Managers
- Business Analysts involved in finance
- Business analysts involved in mixed investment baskets.

About your trainer



Martin specializes in designing risk measurement systems with a particular focus on regulatory capital frameworks. He has more than 10 years experience developing bespoke knowledge / workflow and scorecard solutions for financial institutions in both strategic and processing areas of the business. He has a particular interest in lending products and in assisting banks reduce capital arbitrage in their economic capital models. Primarily he is banker with experience in retail, commercial banking and investment banking. He is currently working with several banks throughout South East Asia where he assists these organisations build sound and structured frameworks that can quantify exposure on debt and investment grade instruments. In the capital markets arena Martin has worked closely with a stock exchange in the region assisting the exchange design a new energy instrument and futures contract. Martin is a credited trainer for the International Academy of Financial Management on structured finance, project finance, credit and operational risk.

Day 1 Agenda

FIXED INCOME MARKET PLACE

Session 1

- 08:30 **Market Overview**
 - Investment bank model
 - WACC and influence on debt
 - Risk versus return, pricing risk
 - A look at the position of the money market and fixed income markets in the context of the entire market system.
 - Role of LIBOR
- 09:30 **Foundations on bonds**
 - Fundamentals on bonds
 - How are they issued
 - A look at different types of bonds, coupon paying, discounted notes, floating rate notes, index linked and variants
 - Price yield relationship explained
- 10:30 Coffee Break
- 10:45 **Repo Markets**
 - What are repos
 - Repos and the economic levers under them.
 - Overview of the money system
 - Classic repos vs Sell buy backs
 - How are the secured
 - How to calculate hair cuts
- 12:00 **TVM and Bond Pricing**
 - Quick recap on time value of money and discounted cash flow, day counts and conventions
 - How to calculate returns using examples from bonds contracts
 - Review discount functions in the context of bonds.
 - Traditional approach of bond pricing for fair price
 - Deriving rates from duration and price on contracts with examples
 - Decay function and yield to maturity with an example.

Session 2

- 13:00 Lunch
- 14:00 **Clean, dirty prices, spreads**
 - How to calculate accrued interest for clean and dirty prices
 - Stochastic future valuation with probability of floating rates included.
 - Comparing bonds with same rates but different characteristics and their immunisation to rate change.
- 15:00 **Duration fundamentals**
 - Macaulay Duration
 - Modified Duration
 - Convexity on single contracts
 - How to compare bonds of different values, dates and rates
 - Models for different bonds
- 16:00 Coffee Break
- 16:30 **The Internal Portfolio**
 - Understand the pricing value of bonds over term with clean and dirty prices at cut out points.
 - Bring all concepts together for the day and show examples in excel
 - Define the types of risks that directly affect bond prices
 - How can these risks be measured.
 - What are the affects and an introduction into transfer pricing.
- 17:30 **Close**

OBJECTIVE

The objective of the first day is to bring all participants up to a foundational standard, introduce some important concepts around bonds that are needed for a holistic perspective of the market.

KEY LEARNING

- Gain full insight into the operation of a repo.
- Recap duration fundamentals
- Value vanilla bonds quickly.
- Understand the relationship bonds have to specific market rates and review the fundamental risks with fixed income instruments.

Day 2 Agenda • • • • •

PRICING and RISK ANALYTICS

Session 1

- 08:30 **Duration and Convexity**
 - Term structure hypothesis
 - Liquidity premium hypothesis
 - Fisher functions and their use

- 09:30 **Interest Rate Modelling**
 - Short rate processes.
 - ITOs Lemma transformation.
 - Vasieck Models single structure
 - Hull White Model
 - Cox model
 - Two factor models
 - How to choose a term structure

- 10:30 Coffee Break

- 10:45 **Term structure liquidity premiums & Yield Curves**
 - Fitting yield curves
 - How to smooth yield curves
 - Using cubic polynomials
 - Non parametric models
 - Nelson Curves

- 12:00 **Immunisation strategies**
 - How to immunise a portfolio of bonds with excel examples
 - What are the effects of bond diversity
 - How to define immunisation gaps for yield targets
 - A look at yield curve benchmarking against the zero coupon curve in the context of the portfolio – bond stripping
 - What is reinvestment risk

Session 2

- 13:00 Lunch

- 14:00 **Default adjustments**
 - Introduce the default concept
 - How to extend the immunisation model to include default.
 - Build a basic model that forms a matrix of bonds that can be default adjusted.
 - Calculate expected returns
 - Look at markov chains
 - What are payoff vectors & how are they used

- 15:00 **Rating agencies & scoring**
 - What drives credit spreads.
 - How are credit indexes used in the model.
 - How can the rating agency concept be extended in the model for non rated instruments.
 - Build a transition matrix
 - How to adjust returns for non even periods

- 16:00 Coffee Break

- 16:30 **Computing Bond Betas**
 - A look at reversing the model to calculate a bonds beta
 - How to calculate the cheapest to delivery of a treasury bond
 - Example in Excel with non option forward contracts
 - Use the CTD to plot highest and lowest duration curves.
 - How to run the simulation

- 17:30 **Close**

OBJECTIVE

The second day extends on from the first session and reviews specific important methods for modelling interest and yield curves. It workshop also looks at some complex issues around how to factor and price default into bond instruments.

KEY LEARNING

- Fit yield curves in excel and through a statistical tool provided to the class.

- Learn how to build a low volatile bond portfolio.

- Gain insight and look at an excel example for default adjustment of bonds.

- How can the models be reversed to calculate bond betas

Part 3 Agenda

EXOTIC INSTRUMENTS and DERIVATIVES

Session 1

Session 2

- 08:30 **ILBs and Forwards**
- Look at inflation linked notes
 - Relationship between forward and future prices
 - Prove forward spot parity
 - How are these contracts traded

- Why is rho so important with fixed income instruments.
- How to calculate the lambda
- The effects of caps and floors

13:00 Lunch

- 09:30 **Swaps TRS and Basis**
- Explain the concepts under swaps
 - Review the Basis Swaps
 - Explain the Total Return Swap
 - Outline the interest rate swap
 - Swap spreads and yield curves
 - Generic swap valuation
 - Calculate Forward rates and spot rate discount factors
 - Review swaptions & how to value them
 - A look at swap applications

- 14:00 **Credit notes & Swaps**
- Review credit derivative landscape
 - Define the process for a credit default swap.
 - How to Credit Linked Notes operate
 - Effects of credit spreads on fixed income instruments
 - Pricing credit notes

15:00

CDO's & MBS

- Explain the CDO product
- Why is used commercially
- What role did it play in the credit crisis?
- Mortgage backed securities
- A look at the securitisation market

10:30 Coffee Break

- 10:45 **Interest Rate Options**
- Options instrument refresher
 - Limits on option prices and payout diagrams call put parities
 - How to price options with binomial example in excel
 - How to price options using Black and Scholes
 - Interest rate options and the B&S model
 - How to create implied volatility models
 - Different option contracts
 - Various commercial examples of using option contracts to hedge interest rate risk.

15:30

Bond Options & Exotics

- Yields on index linked bonds
- Redemption payout calcs
- TIPS and cashflow calcs
- Price FRNS & Inverse FRNS
- Hedging inverse floaters
- Index Amortizing Notes
- Synthetic convertible notes

16:00 Coffee Break

16:30 **Market Risk & VaR**

- A look at the fundamentals of Value at Risk
- Value at risk example in excel from a portfolio of traded instruments.

- 12:00 **Option Risk Management**
- A review of the Greeks, delta, gama, theata, vega, rho with examples to explain the concept.

17:30 **Close**

OBJECTIVE

The workshop finishes with a look at the exotic fixed income instruments, taking in SWAPS, Options, Securitisation markets and credit linked notes. The course will provide commercial examples of the instruments and will give insight into how to price these instruments.

KEY LEARNING

- Learn how to hedge interest risk problems.
- Look at a value at risk system in excel.
- Learn how to price options using several methods.
- What are the key risk factors used for some of the exotic instruments.
- How can redemptions payouts be calculated.