
Financial Derivatives

Overview

This course presents and analyzes derivatives, such as forwards, futures, swaps, and options. It defines the main kind of derivatives, shows how they are used to achieve various hedging and speculating objectives, introduces a framework for pricing derivatives, and studies several applications of derivative-pricing techniques outside of the derivative markets.

Learning Outcome Statements

- Gain a firm foundation of the underlying concepts behind derivatives
- Gain a detailed understanding of the main characteristics of financial derivatives and their relationships with the underlying assets
- Gain a detailed understanding of the valuation principles and models for derivatives
- Be able to use derivatives for a wide range of hedging, trading and arbitrage purposes

Key Contents

- Cash Markets
 - The foreign exchange market
 - The money markets
 - The bond markets
 - The equities markets
 - Cash instrument versus derivatives
- Financial Derivatives
 - What are derivative products
 - General risks in these products
 - Gearing and leverage
 - Reasons for existence and proliferation of derivatives
 - General concepts behind derivative transactions
- Forward Transactions
 - Forward exchange rates
 - Forward interest rates
 - Spot and Forward rates in practice
 - General principles for trading and hedging

- Pricing

- Forward Rate Agreement (FRAs)
 - What is an FRA?
 - The settlement process
 - Hedging with FRAs
 - Pricing FRAs
 - Behaviour of FRA rates

- Financial Futures
 - What is a financial future?
 - The clearing mechanism
 - Futures margins
 - Physical delivery versus cash settlement
 - The advantages of futures

- Currency Futures
 - Creating FX hedges & their evaluation

- Bond Futures
 - Definition of bond futures contracts
 - Cash and carry pricing for bond futures
 - The implied repo rate
 - The delivery mechanism
 - Basic hedging with bond futures
 - Market practice

- Currency and Interest Rate Swaps
 - Definition of interest rate and cross currency swaps
 - Development of the swap market
 - Interest Rate swaps
 - Non-standard interest rate swaps
 - Cross currency swaps
 - Basic applications for swaps
 - Zero-coupon swap pricing
 - Discount factors and the discount function
 - Relationship between zero, par, swap, and forward rates
 - Valuation and pricing of interest rate swaps
 - Valuation and pricing of currency swaps

- Financial Options
 - Why options are different
 - Options terminology
 - Understanding Delta, Gamma, Vega, Theta, Rho
 - Value and profit profiles at maturity
 - Pricing options
 - Black Scholes model
 - Binomial approach

- Hedging
- Applying Greeks to manage risks

- Currency Options
 - Using options to manage currency risk
 - Premium reduction strategies

- Interest Rate Options
 - The decision making process
 - Setting up strategies
 - Premium reduction strategies

- Other types of options
 - Caps, floors and collars
 - Swaptions
 - Exotic options
 - Pricing exotic options
 - Pricing comparisons between exotic options
 - Embedded options