

NATIONAL STOCK EXCHANGE OF INDIA LIMITED**DEPARTMENT : SBU - EDUCATION****NCFM – COURSE OUTLINE****DERIVATIVES (ADVANCED) MODULE****Derivatives & Quantitative Fundamentals – A Backgrounder**

- A. Derivative Types
- B. Beta
- C. R-Square
- D. Continuous Compounding
- E. Option Valuation
 - 1. Historical Volatility (σ)
- F. Normal Distribution
- G. Share Prices – Lognormal Distribution
- H. Volatility (σ)
 - 1. ARCH(m) Model
 - 2. Exponentially Weighted Moving Average (EWMA)
 - 3. GARCH Model
 - 4. Implied Volatility

Fundamentals of Equity Futures

- A. Contracts
- B. Selection Criteria
 - 1. Stock Selection Criteria
 - 2. Criteria for Continued Eligibility of Stock
 - 3. Criteria for Re-inclusion of Excluded Stocks
 - 4. Index Selection Criteria
- C. Price Steps and Price Bands for Contracts
- D. Quantity Freeze for Futures Contracts
- E. Novation
- F. Margins
- G. Daily Mark-to-Market Settlement

- H. Final Settlement
- I. Cost of Carry
- J. Determining Stock Futures Price (without Dividend)
- K. Determining Stock Futures Price (with Dividend)
- L. Determining Index Futures Price (without Dividend)
- M. Determining Index Futures Price (with Dividend)
- N. Cash & Carry Arbitrage
- O. Reverse Cash & Carry Arbitrage
- P. Convergence of Spot & Futures
- Q. Contango & Backwardation
- R. Cost of Carry - Commodities

Investment with Equity Futures

- A. Relation between Futures and Spot Price
- B. Payoff Matrix from Futures
 - 1. Long Futures
 - 2. Short Futures
- C. Hedging with Futures
- D. Basis Risk
- E. Modifying the Portfolio Beta with Futures
- F. Rolling Hedges
- G. Investment Strategies Using Futures

Interest Rate Futures

- A. Interest Risk Management through Futures
- B. Contracts & Eligible Securities
- C. Conversion Factor
- D. Cheapest to Deliver (CTD)
- E. Contract Structure & Mechanics of FUTIRD
- F. Contract Structure & Mechanics of FUTIRT

Black-Scholes Option Pricing Model

- A. European Call Option
- B. European Put Option
- C. Dividends
- D. American Options

Option Greeks

- A. Delta
 - 1. European Call on non-dividend paying stock
 - 2. European Put on non-dividend paying stock
 - 3. European Call on asset paying a yield of q
 - 4. European Put on asset paying a yield of q
- B. Gamma
 - 1. European Call / Put on non-dividend paying stock
 - 2. European Call / Put on asset paying a yield of q
- C. Theta
 - 1. European Call on non-dividend paying stock
 - 2. European Put on non-dividend paying stock
 - 3. European Call on asset paying yield of q
 - 4. European Put on asset paying yield of q
- D. Vega
 - 1. European Call / Put on non-dividend paying stock
 - 2. European Call / Put on asset paying yield of q
- E. Rho
 - 1. European Call on non-dividend paying stock
 - 2. European Put on non-dividend paying stock

Currency Futures & Options

- A. Currency Futures Contracts
- B. Calculation of Daily Settlement Price of Currency Futures
- C. Transactions in Currency Futures
- D. Currency Futures or Forward Rate Agreement
- E. Currency Options Contracts
- F. Valuation of Currency Options
 - 1. European Call Option
 - 2. European Put Option
- G. Transactions in Currency Options

Swaps

- A. OTC Products
- B. Interest Rate Swap
- C. Valuing Interest Rate Swaps
 - 1. Valuation based on Bonds

- 2. Valuation based on Forward Rate Agreements (FRAs)
- D. Currency Swap
- E. Valuing Currency Swaps
- F. Swaption

Embedded Options in Debt Instruments

- A. Warrants
- B. Convertible Bonds
- C. Call Option in a Debt Security
- D. Put Option in a Debt Security
- E. Put & Call Option in a Debt Security
- F. Caps
- G. Floors
- H. Collars

Credit Risk & Derivatives

- A. Credit Risk & Rating
- B. Default History & Recovery Rates
- C. Calculation of Default Risk
 - 1. Simple Approach
 - 2. Present Value Approach
- D. Mitigating Credit Risk
- E. Credit Default Swaps
- F. Collateralised Debt Obligation (CDO)