NPTEL

Course Name: Security Analysis and Portfolio Management

Department: VGSOM, IIT Kharagpur

Instructors: Dr. Chandra Sekhar Mishra & Dr. Jitendra Mahakud

---

Session 37: Introduction to Derivatives

1. What is Derivative and explain the ways Derivatives are used?

- Derivative is a financial instrument or security whose payoffs depend on a more primitive or fundamental good.
- Examples: grains, coffee, orange, gold, silver, foreign exchange, bonds and stocks
- Financial derivative is a financial instrument whose payoffs depend on the financial instruments or security

Ways Derivatives are used

- To hedge risks
- To speculate (take a view on the future direction of the market)
- To lock in an arbitrage profit
- To change the nature of a liability
- To change the nature of an investment without incurring the costs of selling one portfolio and buying another

2. How to use Of Derivatives in Portfolio Management?

The Use of Derivatives In Portfolio Management

- Restructuring asset portfolios with forward contracts
  - shorting forward contracts
  - tactical asset allocation to time general market movements instead of company-specific trends
  - hedge position with payoffs that are negatively correlated with existing exposure
  - converts beta of stock to zero, making a synthetic T-bill, affecting portfolio beta
- Protecting portfolio value with put options
  - purchasing protective puts
  - keep from committing to sell if price rises
  - asymmetric hedge
  - portfolio insurance
- Caution on Use: Either hold the shares and purchase a put option, or sell the shares and buy a T-bill and a call option
-

Factors Contributing Growth of Derivatives

- Increased volatility in asset prices in financial markets

- Increased integration of national financial markets with the international markets
- Marked improvement in communication facilities and sharp decline in their costs
- Development of more sophisticated risk management tools, providing economic agents a wider choice of risk management strategies
- Innovations in the derivatives markets, which optimally combine the risks and returns over a large number of financial assets leading to higher returns, reduced risk as well as transactions costs as compared to individual financial assets.

3. Write short note on: Forward and Futures Contracts

Forward and Futures Contracts:

- Forwards: A forward contract is a customized contract between two entities, where settlement takes place on a specific date in the future at today's pre-agreed price.
- Futures: A futures contract is an agreement between two parties to buy or sell an asset at a certain time in the future at a certain price. Futures contracts are special types of forward contracts in the sense that the former are standardized exchange-traded contracts
-

Difference between Forward and Futures Contracts

FORWARDS	FUTURES
Private contract between 2 parties	Exchange traded
Not standardized	Standardized
Settled at maturity	Range of delivery dates
Usually one specified delivery date	Settled daily
Delivery or final cash settlement usually occurs	Contract usually closed out prior to maturity
Some credit risk	Virtually no credit risk

4. Write a short note on Long & Short Hedges

Ans.

- A long futures hedge is appropriate when you know you will purchase an asset in the future and want to lock in the price
- Long Hedge Example:
  Suppose that
  F_1 : Initial Futures Price
  F_2 : Final Futures Price
  S_2 : Final Asset Price

You hedge the future purchase of an asset by entering into a long futures contract

Cost of Asset=$S_2 - (F_2 - F_1) = F_1$ + Basis

- A short futures hedge is appropriate when you know you will sell an asset in the future & want to lock in the price
- Short Hedge Example:

Suppose that

F_1 : Initial Futures Price

F_2 : Final Futures Price

S_2 : Final Asset Price

You hedge the future sale of an asset by entering into a short futures contract

Price Realized=S_2+ ($F_1 - F_2$) = F_1 + Basis

5. Write a short note on Swaps

Ans.

- Swaps: Swaps are private agreements between two parties to exchange cash flows in the future according to a prearranged formula. They can be regarded as portfolios of forward contracts. The two commonly used swaps are :
- *Interest rate swaps*: These entail swapping only the interest related cash flows between the parties in the same currency.
- *Currency swaps*: These entail swapping both principal and interest between the parties, with the cash flows in one direction being in a different currency than those in the opposite direction