NPTEL

Course Name: Security Analysis and Portfolio Management

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Session 38: Future and Option Pricing

1.How to price financial contracts?
Ans.

Assumptions for Pricing of Financial Contracts:

- The markets are perfect.
- There are no transaction costs
- There is no bid-ask spread
- There are no restrictions for short selling

Carry Pricing Model:

- Forward or Future Price = Spot price + Carry Costs – Carry Return
- Carry Cost: Holding costs including interest charges on borrowings, Insurance cost storage cost etc.
- Carry Return: Incomes such as dividends on shares etc.

Pricing of Forward Contracts:

- For securities providing no income
- For securities providing a given amount of income
- For securities providing a known yield

2. Give an Example of valuing a forward contract.
Ans.

Suppose that
K is delivery price in a forward contract &
F_0 is forward price that would apply to the contract today

- The value of a long forward contract, f, is
- $f = (F_0 - K)e^{-rT}$
- Similarly, the value of a short forward contract is
$(K - F_0)e^{-rT}$

3. What is the difference between Forward vs Futures Prices?
Ans.

- Forward and futures prices are usually assumed to be the same.

- When interest rates are uncertain : A strong positive correlation between interest rates and the asset price implies the futures price is slightly higher than the forward price, A strong negative correlation implies the reverse

Futures and Forwards on Currencies:

- A foreign currency is analogous to a security providing a dividend yield
- The continuous dividend yield is the foreign risk-free interest rate
- It follows that if r_f is the foreign risk-free interest rate

$$F_0 = S_0 e^{(r - r_f)T}$$