Understanding Futures and Options

Table of contents

DEFINITION OF FUTURES

A futures contract is a standardized contract between two parties to buy or sell a specified asset of standardized quantity and quality for a price agreed upon today (the futures price) with delivery and payment occurring at a specified future date, the delivery date.

MAJOR USES OF FUTURES

Trading

- Speculative or position trading
- Spread Trading

Hedging

A hedge is an investment position intended to offset potential losses/gains that may be incurred by a companion investment.

- Short Hedge
- Long Hedge

Arbitrage

- Buying or selling a commodity in one market and
  transacting an opposite trade of an equal amount of the same commodity in another
  market simultaneously to capture a risk-free profit.

PRICING HSI FUTURES

- HSI Future Contracts serve as a substitute for owning the constituting Stocks of HSI. Instead of paying the full value of the stock basket, the futures buyers need to deposit a Margin only. He can then save the remaining value to earn interest

- Cost of Carry: Futures Holders Receive No Dividends
  Therefore, HSI Futures Theoretical Value = Current HSI + Financing Cost - Dividend

DEFINITION OF OPTIONS

An Option gives the holder the right, but not the obligation, to Buy or Sell an agreed amount of the underlying asset at a stipulated price on or before a specified date. The seller has the corresponding obligation to fulfill the transaction- that is to sell or buy if the holder exercises the option.

CALL OPTIONS vs PUT OPTIONS

Call Options

By paying a premium to the seller, the call option buyer has the right, but not the obligation to buy a specified quantity of the underlying at the predetermined (Strike) price on or before a specific date.
The Call Writer/Seller is Obligated to Sell (fulfill the transaction)

Put Options

By paying a premium to the seller, the put option buyer has the right, but not the obligation to sell a specified quantity of the underlying at the predetermined (Strike) price on or before a specific date.
The Put Writer / Seller is obligated to buy (fulfill the transaction)

EXERCISE STYLES

European Style - Options Can Only be exercised on the Expiry Day
American Style - Options Can be exercised at Any Time On or Before the Expiry Day

SETTLEMENT OF OPTIONS

Physical Delivery

- Call buyer – receives underlying, pays strike price
- Call seller – delivers underlying, receives strike price
- Put buyer – delivers underlying, receives strike price
- Put seller – receives underlying, pays strike price

Cash Settlement

Buyer receives intrinsic value, seller pays intrinsic value

TERMS

- Exercise price (Strike Price)
- Option Price (Premium)
- Intrinsic Value
- Time Value
- In the Money, At the Money, Out of the Money
- Risk Parameters: Delta, Vega, Gamma, Rho, Theta

Risk Parameters

Delta = $ Change in Option Price / $ Change in Underlying Stock Price

Vega = $ Change in Option Price / 1% Change in Volatility

Gamma = Change in Delta / $ Change in Underlying Stock Price

Rho = Change of Option Value with respect to Interest Rate

Theta = $ Change in Option Price / Time to Expiration

PRICING OPTIONS

Price of the Underlying Instrument

Risk Free Interest Rate

Volatility

Dividend Flow

Time to Expiry

MAJOR USES OF OPTIONS

Speculation

Insurance

Income Enhancement

Leverage