Understanding Futures and Options

Table of contents

DEFINITION OF FUTURES

- An agreement to buy or sell a commodity (or financial instrument) at a price agreed now but delivery on a specified date in the future(expiry day)
- Both quality and quantity of the commodity specified in the futures contract are predetermined (standardized)

MAJOR USES OF FUTURES

- Trading
  - Simple Trading
  - Spread Trading

- Hedging (the use of futures with an existing or planned market investment to offset the change in value of the equity position)
  - Short Hedge
  - Long Hedge

- Arbitrage (the buying or selling a commodity in one market and immediately transacting an opposite trade of an equal amount of the same commodity in a different market, in order to capture a riskless profit)

PRICING H S I 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

<u>DEFINITION OF OPTIONS</u>

- An Option Gives the Holder the Right to Buy or Sell an Agreed Amount of the Underlying Instrument at a Stipulated Price on or Before an Agreed Future Date

<u>CALL AND PUT OPTIONS</u>

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

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

<u>EXERCISE STYLES</u>

- 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

<u>SETTLEMENT OF OPTIONS</u>

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

- Cash Settlement
  - Buyer receives intrinsic, seller pays intrinsic

SOME 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

- Riskiness
- Profit
- Insurance
- Income Enhancement
- Leverage