

# Financial Derivatives

## Part-2

### 1.5 Difference between Forward contract and Futures Contract

<b>Basis</b>	<b>Forward Contract</b>	<b>Futures Contract</b>
<b>1. Definition</b>	A forward contract is an agreement between two parties to buy or sell an asset (which can be of any kind) at a pre-agreed future point in time at a specified price.	A futures contract is a standardized contract, traded on a futures exchange, to buy or sell a certain underlying instrument at a certain date in the future, at a specified price.
<b>2. Structure &amp; Purpose</b>	Customized to customer needs. Usually no initial payment required. Usually used for hedging.	Standardized. Initial margin payment required. Usually used for speculation.
<b>3. Transaction method</b>	Negotiated directly by the buyer and seller.	Quoted and traded on the Exchange.
<b>4. Market regulation</b>	Not regulated.	Government regulated market (the Commodity Futures Trading Commission or CFTC is the governing body).
<b>5. Institutional guarantee</b>	The contracting parties.	Clearing House.
<b>6. Risk</b>	High counterparty risk.	Low counterparty risk.
<b>7. Guarantees</b>	No guarantee of settlement until the date of maturity only the forward price, based on the spot price of the underlying asset is paid.	Both parties must deposit an initial guarantee (margin). The value of the operation is marked to market rates with daily settlement of profits and losses.
<b>8. Contract Maturity</b>	Forward contracts generally mature by delivering the commodity.	Future contracts may not necessarily mature by delivery of commodity.
<b>9. Expiry date</b>	Depending on the transaction.	Standardized.

<b>10.Method of pre-termination</b>	Opposite contract with same or different counterparty. Counterparty risk remains while terminating with different counterparty.	Opposite contract on the exchange.
<b>11.Contract size</b>	Depending on the transaction and the requirements of the contracting parties.	Standardized.

## 1.6 Difference between Futures and Options

<b>BASIS FOR COMPARISON</b>	<b>FUTURES</b>	<b>OPTIONS</b>
Meaning	Futures contract is a binding agreement, for buying and selling of a financial instrument at a predetermined price at a future specified date.	Options are the contract in which the investor gets the right to buy or sell the financial instrument at a set price, on or before a certain date, however the investor is not obligated to do so.
Obligation of buyer	Yes, to execute the contract.	No, there is no obligation.
Execution of contract	On the agreed date.	Anytime before the expiry of the agreed date.
Risk	High	Limited
Advance payment	No advance payment	Paid in the form of premiums.
Degree of profit/loss	Unlimited	Unlimited profit and limited loss.

## 1.7 Option Terminology

The following are the key terms used in options:

- 1. Buyer of an option:** The option buyer is the person who acquires the rights conveyed by the option: the right to purchase the underlying futures contract if the option is a call or the right to sell the underlying futures contract if the option is a put.
- 2. Writer of an option:** The option seller (also known as the option writer or option grantor) is the party that conveys the option rights to the option buyer. In other words, the writer of a call/put option is the one who receives the option premium and is thereby obliged to sell/buy the asset if the buyer exercises on him.
- 3. Option price/Premium:** Option price is the price which the option buyer pays to the option seller. It is also referred to as the option premium. The option holder has to pay a premium to the option writer for availing the right.
- 4. Expiration date:** The date specified in the options contract is known as the expiration date, the exercise date, the strike date or the maturity. The expiration date is the last date when the option can be exercised.
- 5. Strike Price (K):** Also known as the “exercise price,” this is the stated price at which the buyer of a call has the right to purchase a specific futures contract or at which the buyer of a put has the right to sell a specific futures contract. The exchanges decide the strike price at which call and put options are traded. Generally, to simplify matters, the exchanges specify the strike price interval for different levels of underlying prices, meaning the difference between one strike price and the next strike price over and below it.

## 1.8 Types of Options

**1. Call option:** A call option gives the holder the right but not the obligation to buy an asset by a certain date for a certain price. In simple words, a call option gives the holder the right to buy an asset at a certain price within or at the end of a specific period of time. The option holder will make money if the spot price is higher than the strike price. But if the spot price is lower than the strike, the option holder can simply ignore the option. It will be cheaper to buy from the market. The option holder loss is to the extent of premium he has paid. But if the spot price increases dramatically then he can make wind fall profits. Thus the profits for an option holder in a call option are unlimited while losses are

capped to the extent of the premium. Conversely, for the writer, the maximum profit he can make is the premium amount. But the losses he can make are unlimited.

**2. Put option:** A put option gives the holder the right but not the obligation to sell an asset by a certain date for a certain price. In simple words, a put option gives the holder the right to sell an asset at a certain price within or at the end of a specific period of time. The option holder will make money if the spot price is lower than the strike price. The pay off assumes that the option holder will buy at spot price and sell at the strike price. But if the spot price is higher than the strike, the option holder can simply ignore the option. It will be beneficial to sell to the market. The option holder loss is to the extent of premium he has paid. But if the spot prices fall dramatically then he can make wind fall profits.

**3. American options:** American options are options that can be exercised at any time up to the expiration date. Most exchange-traded options are American.

**4. European options:** European options are options that can be exercised only on the expiration date itself. European options are easier to analyse than American options, and properties of an American option are frequently deduced from those of its European counterpart.

**5. Index options:** These options have the index as the underlying. Some options are European while others are American. Like index futures contracts, index options contracts are also cash settled.

**6. Covered and naked options:** Covered options are contracts sold by traders who actually own the underlying assets. In contrast, naked options are those where the writer does not own the underlying assets. Writers of naked options are thus unprotected or 'naked' from an unlimited loss.

**7. Moneyness:** In finance, moneyness is a measure of the degree to which a derivative is likely to have positive monetary value at its expiration, in the risk-neutral measure. There are three positions in options: In-the-money; At-the-money; and Out-of-the-money.

a) In-the-money option: An in-the-money (ITM) option is an option that would lead to a positive cash flow to the holder if it were exercised immediately. A call option on the index is said to be in-the-money when the current index stands at a level higher than the strike price (i.e. spot price > strike price). If the index is much higher than the strike price, the call is said to be deep ITM. In the case of a put, the put is ITM if the index is below the strike price.

b) Out-of-the-money option: An out-of-the-money (OTM) option is an option that 'leads to a negative cash flow if it were exercised immediately. A call option on the index is out-of-the-money when the current index stands at a level which is less than the strike price (i.e. spot price < strike price). If the index is much lower than the strike price, the call is said to be deep OTM. In the case of a put, the put is OTM if the index is above the strike price. An out-of-the-money option currently has no intrinsic value e.g. a call option is out of the-money if the strike price ("the strike") is higher than the current underlying price. An in-the-money option conversely does have intrinsic value.

c) At-the-money option: An at-the-money (ATM) option is an option that would lead to zero cash flow if it were exercised immediately. An option on the index is at-the money when the current index equals the strike price (i.e. spot price = strike price). In other words, an option is at-the-money if the strike price, i.e., the price the option holder must pay to exercise the option, is the same as the current price of the underlying security on which the option is written.