EduTap

SUMMARY SHEET

Basics of Derivatives - Futures Forwards and Swaps

EduTap

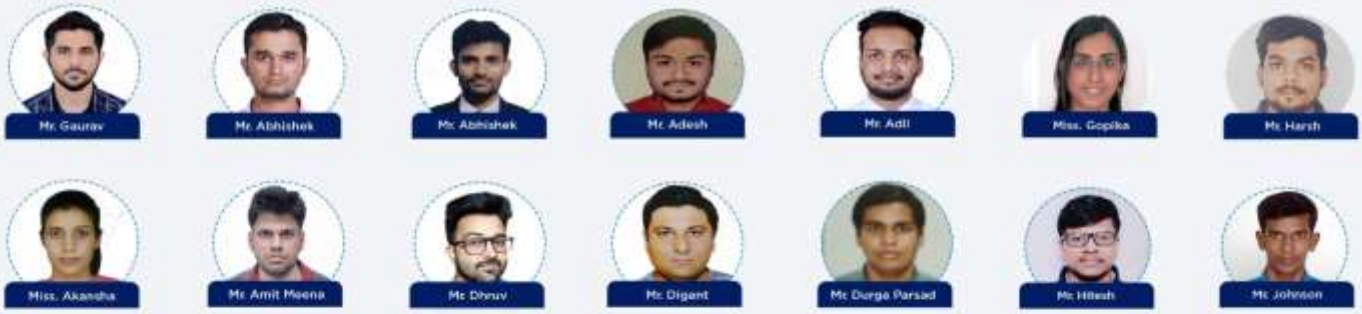
EduTap Hall of Fame

RBI Grade B 2020 - 21

198 Selections Out of 257

SEBI Grade A 2020

63 Selections Out of 80



NABARD Grade A 2020

65 Selections Out of 69

Important Points

1. This Summary Sheet shall only be used for Quick Revision after you have read the Complete Notes

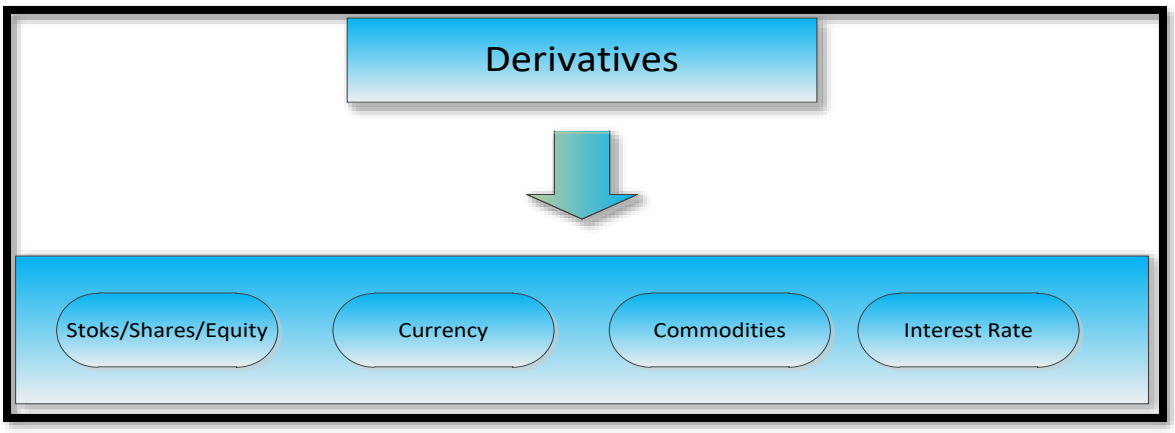
2. For Building Concepts, along with examples/concept checks you should rely only on Complete Notes

3. It would be useful to go through this Summary sheet just before the exam or before any Mock Test

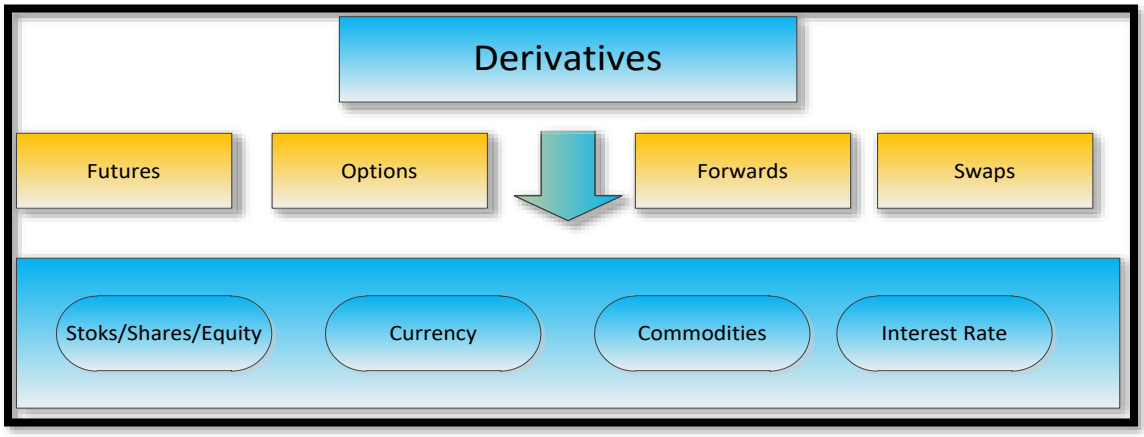
4. Questions in the exam are concept based and reading only summary sheets shall not be sufficient to answer all the questions

1 Summary Points

- **Cash Market/ Spot Market:** A marketplace for the **immediate settlement of transactions** involving commodities and securities. In this, exchange of goods and money between the seller and the buyer takes place in the present.
- **Derivatives:** Used to refer to financial instruments that derive their value from some underlying asset
- Derivatives derive their names from the underlying asset. E.g. Equity derivatives, Commodity derivatives, etc.
- **Following are the Underlying's in derivatives:**



- We can say that trading in gold and silver derivatives is of type Commodity derivatives as these derivatives have gold and silver as underlying which is a commodity. A **market** through which buyers and sellers trade gold and silver as well as associated derivatives is called **bullion market**. The London **Bullion Market** is known as the primary global **bullion market** trading platform for gold and silver
- Derivatives is a **risk management tool** where the risk arises due to an unknown future value of the underlying asset
- **Types of Derivatives:**



1. There are mainly 4 types of derivatives: **Futures**, **Options**, **Forwards** and **Swaps**
2. **Futures, Forwards** and **Options** can have underlying asset as Stocks, Currency, Commodities and Interest Rate
3. **Swaps** can only have Currency and Interest Rate as underlying asset

- **Forwards:**
  1. It is a **bilateral contract** between 2 parties –Buyer and Seller Wherein Buyer agrees to buy the underlying asset at a **future date** on **a price agreed upon today**
  2. **Spot Price** refers to the current price of the underlying asset
  3. **Future Price** refers to the price at which the two participants in the forwards contract agree to transact at on the Settlement Date
  4. **Final Settlement Date/ Expiry Date** refers to the date at which two parties have agreed to execute the forwards contract i.e. to buy or sell the underlying asset
  5. **Contract Size** refers to the quantity of the underlying asset considered in the contract
  6. **Contract Value** refers to the product of Future Price and Contract Size
  7. Contract Size, Future Price and Settlement Date are agreed between the 2 parties
  8. Forward's Contract is a **customized contract** formulated according to the needs of the both the transacting parties
  9. It is also called as OTC (Over the Counter) Contract

- **Example:** Ram would get 10 shares of Reliance from his father on November 25. The price of Reliance Share is Rs. 2000 as of today (November 1). Ram is worried that price may come down in future so; he agrees to sell his Reliance Shares on November 25 (future date) at price of Rs. 2000 to Sham. This contract in which Ram agrees to sell his Reliance Shares in future date to Sham at some agreed price is an example of Forward.
  - ✓ In this example, the underlying asset is Stock or Equity
  - ✓ Spot Price = 2000
  - ✓ Future Price = 2000 (Price on the last date of contract i.e. 25th November)
  - ✓ Settlement Date/ Expiry Date = 25th of November
  - ✓ Contract Size= Number of shares = 10
  - ✓ Contract Value = Future Price * Contract Size = 2000 * 10 = 20000

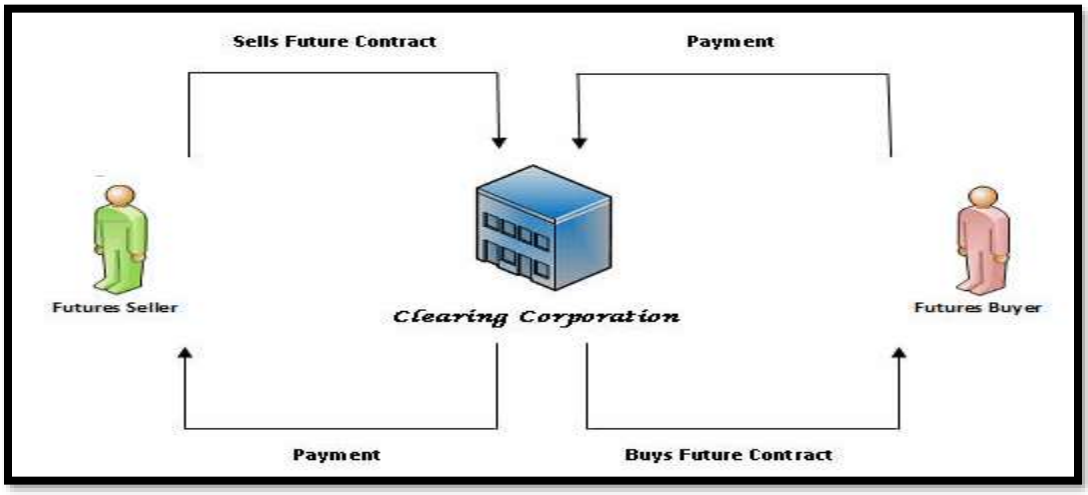
- **Zero Sum Game:** In all derivatives including forwards, the contract parties who enter into the contract have opposing views and needs. The seller of the underlying asset think that the prices of the asset would go down, hence hedges against the price drop risk. While, the buyer of the contract thinks that the prices of the asset would surge, hence hedges against price risk. The loss of one party's position is profit of the others. That is, the sum of the two positions is zero.
- **Example:** Assume that A is the buyer and B is the seller who agrees to exchange 10 grams of gold at a price of Rs. 30,000 one year from now. This is a forward contract with Gold (Commodity) as an underlying. Their loss or profit will depend on the gold prices one year from now. They will have following 3 possibilities one year from now:

Price of Gold	Outcome	Outcome for A	Outcome for B
Price of gold remains unchanged at Rs. 30,000	Neither party loses. They buy and sell at Rs. 30,000.	No gain or loss for A as he buys at 30,000 which is same as market price	No gain or loss for B as he sells at 30,000 which is same as market price
The price of gold moves up to Rs. 35,000	The buyer gains and Seller loses	A gains as he pays only Rs. 30,000 while the market price is Rs. 35,000	B loses as B must sell at 30,000 while the market price is Rs. 35,000
The price of gold falls to Rs. 25,000	Seller gains and Buyer loses	A loses as A pays Rs. 30,000 while he could have bought 10gms of gold in the market at a lower price at 25,000	B gains as B can get Rs. 30,000 for 10gms of gold while the market price is lower at 25,000

- **OTC (Over the Counter) Derivatives:**
  1. Are the contracts in which all the things like price of the contract, Quantity, future date at which it needs to be executed are agreed and contract is traded between two parties only

2. It contains **Counter Party Risk**, i.e. the party that might suffer loss may not honor the contract since there is no mediator in such contracts to regulate such risk
3. **Forwards Contracts** are OTC derivative contracts

- **Exchange Traded Derivatives:**



1. Exchange traded derivatives **mitigate the counter party risk** faced in OTC derivatives
2. These are standard derivatives contracts i.e. Quantity, Price, Future Date are designed by the Exchange and settled through a clearing house usually
3. Buyers and Sellers need to maintain margin money with the exchange to participate in trade which hedges counter party risk
4. Exchange maintains anonymity of Buyer and Seller due to the settlement process of the clearing house
5. **Futures Contracts** are an example of Exchange Traded Derivatives

- **Futures:**
  1. **Futures contracts are like Forward contracts** as in in it also the contract obligates the buyer to purchase an asset or the seller to sell an asset at a predetermined future date and price with the **only difference that these are traded on futures exchanges**
  2. In this, contract is not set directly between the parties as in forwards
  3. Contract Size, Future Date, Price are set by the exchange
  4. Futures Contract is a **standardized contract** designed by the Exchange
  5. Settlement Date is always the **last Thursday of the Month**
  6. Also called Exchange Traded Contracts
  7. Futures **mitigate Counter Party Risk**. Exchange takes **margin money or initial margin (performance bond margin)** from the seller as well as buyer to participate in the futures trade. This could be equal to 16% or 20% of the trade value
  8. There are always 3 contracts available with the exchange. One expiring in current month and the other two expiring in next two months

9. Loss is deducted from the margin money and Gain is added to the margin money of the respective Buyer or Seller and if the margin money is reduced than the prescribed maintenance margin then respective party is asked to deposit more money with the exchange

- **Example of Futures Contract on Exchange:** An exchange has contract for Reliance shares. The quantity of shares in the contract fixed by the exchange is 500 and price of the Reliance share in the contract mentioned is 1000. The contract will expire on the last Thursday of the month

  - ✓ **Future Price** (Price on the last date of Contract i.e. last Thursday of month) – Rs 1000
  - ✓ **Final Settlement Date/Expiry Date** – Last Thursday of the month
  - ✓ **Contract size /Number of Shares in Contract** (**Also known as Lot Size)** – 500
  - ✓ **Contract Value (Future Price * Number of Shares)** = 500*1000 = 50000
  - ✓ This whole deal is called **Future Contract**
  - ✓ In actual Contract Size (Number of Shares in the Contract) is fixed by Exchange and is different for different stocks. Normally the number of shares is decided in such a way that total contract value becomes around Rs. 5 lakhs. So, if the price of share is 1000 then the number of shares would be approx. = 5 lakh/1000 = 500. If the So if the price of share is 5000 then the number of shares would be approx. = 5 lakh/5000 = 100
  - ✓ There are always 3 contracts available. One expiring in the current month and others expiring in the next two months. Final Settlement Date/Expiry Date is always the last Thursday of the month in which contract is expiring
  - ✓ There is **no counterparty risk** as exchange assures that contract is settled by both the parties. Exchange takes money upfront from both the buyer and the seller know as **Margin Money or Initial Margin.** Initial Margin is sometimes called as **Performance Bond Margin**
  - ✓ Margin Money is usually **16%** of the contract value but it can vary based on perceived volatility of share. If the share is more volatile, then margin money might be **20%** of the contract value.
  - ✓ In our example, the contract value is 5000*100 = Rs. 5, 00,000. So, the margin money would be around 16% of Rs. 5,00,000 = 80000
  - ✓ The losses are directly deducted from the margin money on daily basis, or the gain is added to the margin money on daily basis. When the margin money decreases to a certain level i.e., becomes lower than **maintenance margin** then the margin call is made. In the **margin call** the party to contract is asked to add more money for the margin. For example, Ram bought a futures contract of 2000 shares at Rs. 100 by giving Initial margin of 20% i.e., 40,000. If the **maintenance margin** is 10% (in this case

20,000) then as soon as Initial Margin reduces to 20,000, Ram would be asked to deposit the money to take the margin back to Initial Margin. So, in our example when price becomes 90, Ram will suffer a loss of 2000*10 = 20,000. After this loss of 20,000 the initial margin will reduce to 40,000 – 20,000 = 20,000. Now when initial margin becomes 20,000, it means that maintenance margin has been reached. Hence Ram will asked to put more money through margin call.

- ✓ Sometimes trade use the term Margin to Equity ratio which means the same thing as Initial Margin Percentage. **If Initial Margin Percentage is 10% then it means Margin to Equity Ratio is 10%**
- ✓ Calculation of margin call –

A margin call occurs when the value of a margin account falls below the account's maintenance margin requirement. It is a demand by a brokerage firm to bring the margin account's balance up to the minimum maintenance margin requirement. To satisfy a margin call, the investor of the margin account must either deposit additional funds or sell current positions.

Please be informed that, there are two ways via which we can calculate the price at which margin call would be made. The two methods are

A – **Normal application method**

B – **Textbook Method**

Let's understand both the methods with the help of numerical

Numerical 1 (Normal Application Method) – Currently the stock price of XYZ company is trading at Rs. 960. The initial margin requirement is 8%, whereas the maintenance margin is 4%. Assume lot size to be 1 only. Calculate the stock price at which margin call would be made.

Solution 1 – As we all know that margin call will be made only when the level of initial margin fall up to the level of maintenance margin.

Let's use, **Normal application method**

Stock price = 960,
Initial Margin = 8%, which will be 960*8/100 = 76.8
Maintenance margin 4%, which will be 960*4/100 = 38.4

So, margin call will only be made when initial margin becomes equal to the maintenance margin, and for that to happen, stock price of XYZ should fall by Rs 38.4 (76.8-38.4)

After the fall of Rs. 38.4, the stock price of XYZ will be 960-38.4, which will be Rs. 921.6

So, an investor will get the margin call at Rs. 921.6

Numerical 2 (Textbook method) **-** Currently the stock price of XYZ company is trading at Rs. 960. The initial margin requirement is 8%, whereas the maintenance margin is 4%. Assume lot size to be 1 only. Calculate the stock price at which margin call would be made.

Solution 2 – let's solve this question with a different approach

Herein, we will use a **formula**

$$\text{Margin Call Price} = \text{Initial Purchase Price} \times \frac{1-\text{Initial Margin}}{1-\text{Maintenance Margin}}$$

Stock price = 960, initial margin is 8% and maintenance margin is 4%, putting the value in formula

Step 1 - 960*(1-0.08)/ (1-0.04)

Step 2 – 960*(0.92/0.96)

On solving further, you will get the answer as Rs 920.

Which means that an investor will get margin call at Rs. 920.

Students, please be informed that, both the methods are correct and there is no point in debating now. Therefore, **the million-dollar question is, which method should a student use in the exam?**

For your clear understanding, let's assume three real life exam situations.

CASE 1 – When Textbook method is giving you the exact answer

Question - Currently the stock price of XYZ company is trading at Rs. 960. The initial margin requirement is 8%, whereas the maintenance margin is 4%. Assume lot size to be 1 only. Calculate the stock price at which margin call would be made.

Option A – Rs. 850
Option B – Rs. 866
Option C – Rs. 920
Option D – Rs. 933
Option E – Rs. 940

Here, the correct answer is option C, that Rs. 920

CASE 2 – When the Textbook Method is not giving you the exact answer

Question - Currently the stock price of XYZ company is trading at Rs. 960. The initial margin requirement is 8%, whereas the maintenance margin is 4%. Assume lot size to be 1 only. Calculate the stock price at which margin call would be made.

Option A – Rs. 880.8
Option B – Rs. 921.6
Option C – Rs. 930.6
Option D – Rs. 940.5
Option E – Rs. 945.5

Correct answer is option B.

Here**, if you apply textbook method, then obviously you will not get the required answer**. Therefore, in this case, you will have to use the Normal Application Method.

And if you apply normal application method, then the correct answer is option B

CASE 3 – This case is very – very rare in nature and no student should come to this level of thinking

Question - Currently the stock price of XYZ company is trading at Rs. 960. The initial margin requirement is 8%, whereas the maintenance margin is 4%. Assume lot size to be 1 only. Calculate the stock price at which margin call would be made.

Option A – Rs. 920
Option B – Rs. 921.6
Option C – Rs. 930.6
Option D – Rs. 940.5
Option E – Rs. 945

Here, the correct answer will be option A.

Reason being, you can clearly see that if you apply textbook method, the answer will be Rs.920 but if you apply normal application method, then you will get Rs 921.6 as the answer. **So, please note that, when both the answers are present in the option. Preference must be given to the Textbook method.**

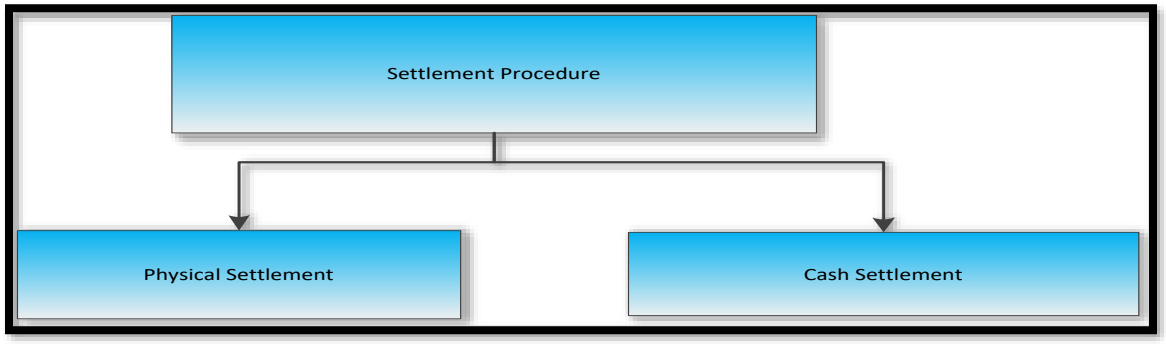
Moreover, we have already told you that, when textbook method is giving you the correct answer, then there is no use of moving toward normal application method.

So, overall –

If you are able to get the desired and required answer with the help of Textbook method, **then there is no use to apply normal application method.**

But in case, textbook formula is not giving you the answer, **then for backup**, use the normal application method.

➢ **Settlement of Forwards (OTC)**



1. **Physical Settlement:** Requires the actual underlying asset to be delivered upon the specific delivery date, rather than being traded out with offsetting contracts
2. **Cash Settlement:** In such settlement procedure, upon the expiration or exercise of the contract, the seller of the financial instrument does not deliver the actual underlying asset but instead transfers the associated cash position.
   - ✓ **Example:** The purchaser of a cash-settled cotton futures contract is required to pay the difference between the spot price of cotton and the futures price, rather than having to take ownership of physical bundles of cotton
3. Mostly the **forwards are physically settled** that is delivery of underlying is made to the buyer
4. The forwards are settled on the last day of the contract i.e. they cannot be settled before the date mentioned in the contract

➢ **Settlement of Futures**

- **Prior to 2018, all the futures contracts were settled with cash in India, and by cash settlement we mean at expiry of the contract, buyers or sellers had to settle their position in cash.**

For example

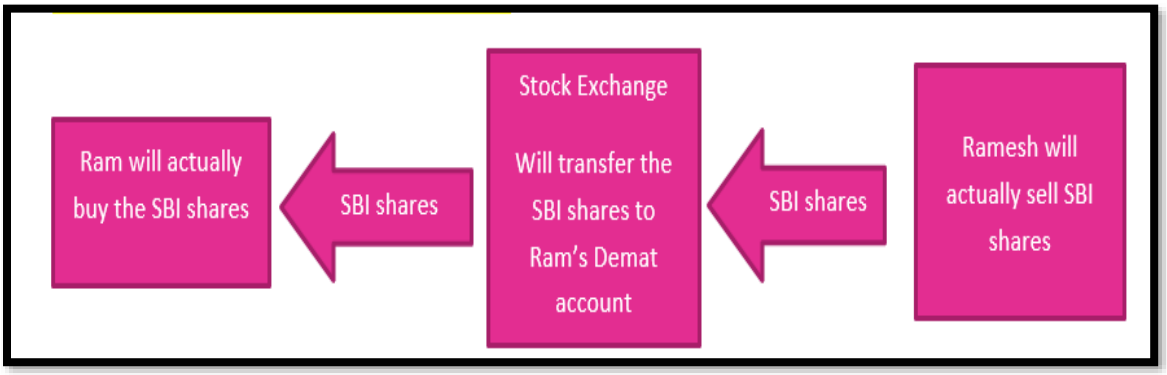
- **Ram and Ramesh get into a futures contract and they decided trade SBI shares. Here, Ram is the buyer and Ramesh is the seller of the contract. Currently the prices of the SBI shares are Rs. 100 and the maturity of the contract between these two parties is of 3 months.**
- **Now, after 3 months, let's assume that prices of the SBI shares have appreciated to Rs. 110, which means Ram (who bought the shares at Rs 100) is making profits. Total profit to Ram will be Rs. 10 (110-100) and Ramesh is making an equal amount of loss.**
- **Now in the case of cash settlement, the stock exchange will transfer only Rs. 10 to Ram's account and they will deduct Rs.10 from the Ramesh account.**

- **The modus operandi is explained below**

- **The above example, shows that how cash settlement work, In this settlement, the buyer or seller had to settle their position in cash without actually taking the delivery of the underlying security on the expiry of the contract**
- **But post 2018, SEBI released a circular making physical delivery of stocks for all futures contracts mandatory. SEBI cited that physical settlement is compulsory if a trader holds futures contracts that are eligible for physical delivery "upon expiry".**
- **A physical settlement means that on the expiry of futures & options contract, actual physical delivery of stocks or commodities should be made in your Demat account instead of cash settlement.**

Please don't get confused, Let's understand this case with the same example,

- **Ram and Ramesh get into a futures contract and they decided trade SBI shares. Here, Ram is the buyer and Ramesh is the seller of the contract. Currently the prices of the SBI shares is Rs. 100 and the maturity of the contract between these two parties is of 3 months.**
- **Now, after 3 months, let's assume that prices of the SBI shares have appreciated to Rs. 110. Again Ram is in profit. Now, here at the expiry of the contract. Ramesh will be required to deliver the SBI shares from his Demat account to the Ram's Demat account. The transfer of shares from Ramesh to Ram will take place at Rs. 100 only.**
- **Basically, it means, Ram will have the physical shares worth of Rs.100 and as we know the current market price is appreciated to Rs 110. Thereby, he can sell those shares in the market and make a profit of Rs. 10.**
- **The whole modus operandi is explained below**



- **To sum, at expiry of the contract earlier you were not getting the delivery of shares in your Demat account, but now you will receive shares in your Demat account.**

NOTE - Maximum of time you will see that, generally futures are settled in cash settlement only, generally traders wind-up (close) their trades well before the expiry and in the case when traders forget to wind-up their trade, then in that case their broker does the task of winding-up the trade. So, it's the cash settlement which prevails in future.

But to reduce the excess cash movement only on "expiry", SEBI introduced the Physical delivery system which prevents cash settlement and makes actual movement of the underlying asset and therefore, the physical delivery settlement had a significant impact on the derivatives market and helped in reducing the volatility in the market.

➢ **Difference between Forwards and Futures**

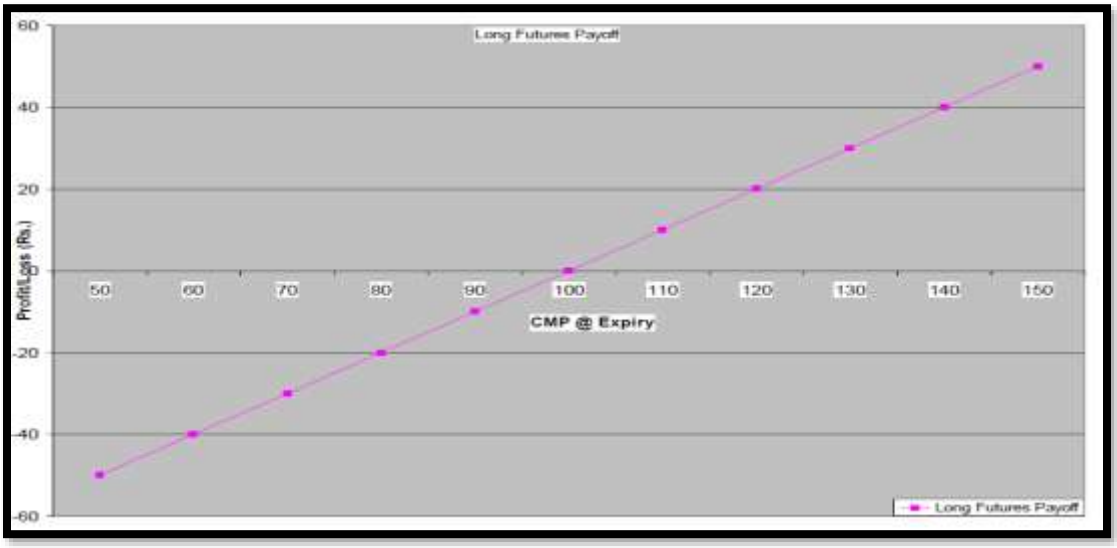
Feature	**Forward contracts**	**Futures contracts**
Operational mechanism	It is not traded on the exchanges.	It is an exchange-traded contract.
Contract specifications	Terms of the contracts differ from trade to trade (tailor made contract) according to the need of the participants.	Terms of the contracts are standardized.
Counter-party risk	Exists.	Exists but the clearing agency associated with exchanges becomes the counter-party to all trades assuring guarantee on their settlement.
Liquidation profile	Low, as contracts are tailor made catering to the needs of the parties involved. Further, contracts are not easily accessible to other market participants.	High, as contracts are standardized exchange-traded contracts.
Price discovery	Not Efficient, as markets are scattered.	Efficient, centralized trading platform helps all buyers and sellers to come together and discover the price through common order book.
Quality of information and its dissemination	Quality of information may be poor. Speed of information dissemination is week.	Futures are traded nationwide. Every bit of decision related

		information is distributed very fast.
Settlement Date	Settlement on Expiry Date	Settlement on or before Expiry Date
Settlement Mode	Physical or Cash Settlement	If you close your position before expiry, then cash settlement is still possible. But, If you close your position exactly on expiry, then there will be mandatory physical settlement

- **Participants in Futures/Forwards Market**
  1. **Hedgers:**
     - ✓ They are generally the commercial producers and consumers of the traded commodities.
     - ✓ They participate in the market to manage their spot market price risk.
     - ✓ Commodity prices are volatile and their participation in the futures market allows them to hedge or protect themselves against the risk of losses from fluctuating prices.
     - ✓ For e.g. a copper smelter will hedge by selling copper futures, since he is exposed to the risk of falling copper prices.
  2. **Speculators:**
     - ✓ They are traders who speculate on the direction of the futures prices with the intention of making money.
     - ✓ For the speculators, trading in commodity futures is an investment option.
     - ✓ Most Speculators do not prefer to make or accept deliveries of the actual commodities; rather they liquidate their positions before the expiry date of the contract
  3. **Arbitrageurs:**
     - ✓ They are traders who buy and sell to make money on price differentials across different markets (difference between the future price and Spot price to make guaranteed profits)
     - ✓ Arbitrage involves simultaneous sale and purchase of the same commodities in different markets.
     - ✓ Arbitrage keeps the prices in different markets in line with each other.
     - ✓ Usually such transactions are risk free
- The **fluctuation in commodity prices** represents both, a **risk** and a potential for **profit**
  1. The hedgers **transfer this risk** by foregoing the associated profit potential.
  2. The speculators **assume this risk** in the hope of realizing profits by predicting price movements.
  3. The arbitrageurs make the process of **price discovery** more efficient

- **Leveraging in Futures Market**
    1. It means with a relatively small amount of cash (margin money) you can enter in to a futures contract rather than paying the whole amount for the underlying asset as needed to be done in cash market
    2. **Futures positions are highly leveraged** because the initial margins that are set by the exchanges are relatively small compared to the cash value of the contracts in question
    3. The **smaller the margin** in relation to the cash value of the futures contract, the **higher the leverage**
    4. **Example:** For an initial margin of $5,000, you may be able to enter into a long position in a futures contract for 30,000 pounds of coffee valued at $50,000, which would be considered highly leveraged investments

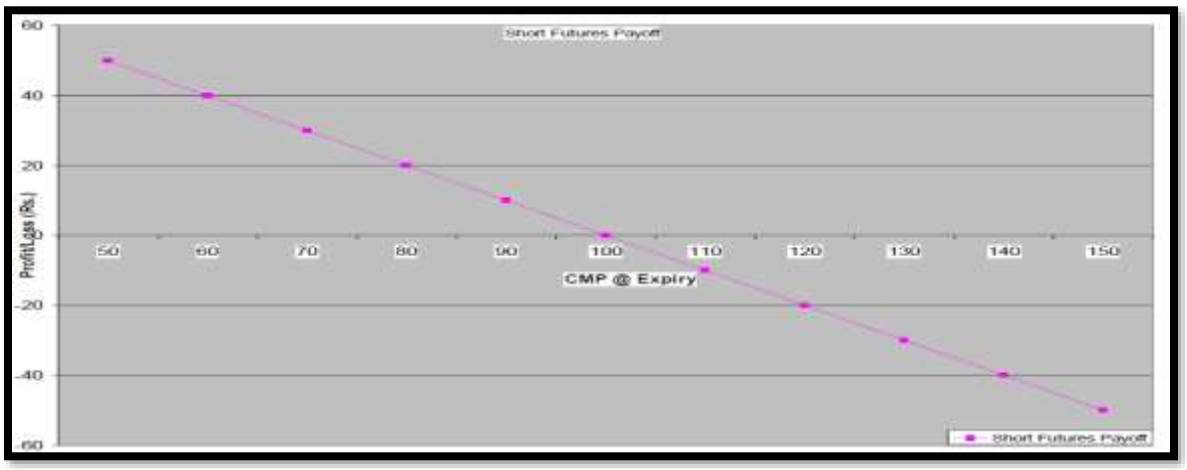
- **Long Position in Futures/Forwards**
    1. Long Position in Futures refers to the phenomena of entering into contract to buy the underlying asset in the expectation the **price of the asset will rise** in the future
    2. In Futures contract, **Buyer always takes a Long Position**
    3. **Example:** If a person goes long on some share called CMP at Rs 100 then he will receive **payoff** (profit or loss in the futures contract) as per the below graph



    4. In Long position, **Profit increases as the price of the underlying asset increases** and vice-versa

- **Short Position in Futures/Forwards**

1. Short Position in Futures refers to the phenomena of entering into contract to sell the underlying asset in the expectation that the **price of the asset will fall** in the future
2. In Futures Contract, **Seller always takes a Short Position**
3. **Example:** If a person goes short on some share called CMP at Rs 100 then he will receive **payoff** (profit or loss in the futures contract) as per the below graph



4. In Short Position, **Profit increases as the price of the underlying asset decreases** and vice-versa

- ***Note: In Long position, Profit is unlimited and loss is limited, while in Short position profit is limited and loss is unlimited***

- **Pricing of Futures:** This is done by two simple pricing models for futures contracts:
  1. The Cost of Carry Model
  2. The Expectancy Model
- **The Cost of Carry Model**
  1. According to the model,

Future Price = Spot Price + Cost of Carry – Return Expected

2. **Cost of Carry** refers to the cost of holding the asset till the futures contract matures. This could include storage cost, interest paid to acquire and hold the asset, financing costs etc.
3. **Return Expected** refers to any income derived from the asset while holding it like dividends, bonuses
4. Variations of the Cost Carry Formula:

Cost of Financing and Return is given in % terms and Future price needs to be calculated in annual terms	$FP = S (1+r-q)^T$ Where FP is fair price of the futures contract S is the Spot price of the underlying asset Q is expected return or Dividend Yield T is holding period (in years) R is cost of carry or Cost of Financing or Risk-free rate of return e is always standard as 2.718
If we consider as compounding as continuous then	$FP = S * e^{(r-q)T}$ Where FP is fair price of the futures contract S is the Spot price of the underlying asset Q is expected return or Dividend Yield T is holding period (in years) R is cost of carry or Cost of Financing or Risk-free rate of return e is always standard as 2.718

Note: If nothing is mentioned in the question, always use continuous compounding equation of future pricing: $FP = S * e^{(r-q)T}$

- **Example:** Current NIFTY is at 930. Futures expire after 3 months. The dividend yield is expected to be 5%. Risk free rate of return is 10%. What is value of NIFTY after 3 months?

Solution: We will use the formula $FP = S * e^{(r-q)\,T}$

S = 930
e = 2.718
r = 10% or .1
q = 5% 0r .05
T =3 months or 3/12 = .25

$F = 930 * 2.71^{(.25*.05)}$
= 941.69

- **Expectancy Model:**
  1. This model of futures contract pricing simply states that future price of an asset is basically what the spot price of the asset is expected to be in future

2. If the market sentiments are bullish then the price of the asset in future will be higher; also, the futures price will be higher. This expectedly rising market is called "**Contango Market**"
3. Similarly, if the market sentiments are bearish on the stock then the future price will be lower. This expectedly falling market is called "**Backwardation Market**".
4. It is observed that traders analyze the past trends in the future prices to determine the future expectancy trends

- **Example:** An investor buys 5 lots of Sensex Future at 1700 with a market lot of 200 futures. On the settlement date, the Sensex is at 1730. Find out his profit or loss
  Solution: Here person will make Profit because person has bought the contract and then price has increased

  Profit per single unit = 1730-1700 = 30

  Profit per lot = 30*200 = 6000

  Profit for 5 lots = 6000*5 = 30000

- **Currency Futures or Forwards:**
  1. Forward rate in currency futures depends up on the interest rate differential between the two currencies.
  2. The forward rate is either at premium or discount to the spot rate
  3. The currency carrying higher interest rate is always at discount
  4. Normally In case of freely trading currencies forward premium or discount is exactly equal to the difference between risk-free rate of two currencies
  5. **The standard contract size in India is 1000 USD for USDINR pair in currency futures**
- **Example**: Ram enters a currency future to sell 1000 USD at 65 rupees at the end of the month. At expiry, the USDINR rate is 64. What would be the profit or loss to Ram?

  Solution: Ram will sell USD 1000 at 65 though at expiry the rate is 64. So, he is making a profit of 1 rupee per USD. In other words, his profit would be 1000* 1= 1000 rupees

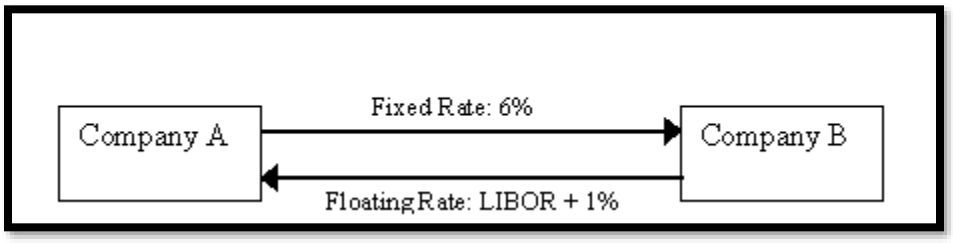
- **Basis Risk** in finance is the risk associated with imperfect hedging. It arises because of the difference between the price of the asset to be hedged and the price of the asset serving as the hedge.
- **Example:** Suppose you are an exporter who is due to receive 990 dollars from a US company in a month. Today the exchange rate is 65 but you are worried that it might decrease to 63 in future. So, you want to hedge the same by entering current futures. You enter into a contract where in you agree to sell 1000 USD at 65 after 1 month. Here, **Basis Risk** = 1000-990 = 10

- **Regulation of Derivatives:**

1. **Currency and Interest Rate Derivatives are regulated by RBI and SEBI**
2. But **regulation of Stocks and Commodity Derivatives is done by only SEBI**
3. Trading of all the derivatives (currency, stock, commodity, and Interest rate) is governed by the provisions contained in the Securities Contracts (Regulation) Act-1956, the Securities Exchange Board of India Act-1992. Till 2014, derivatives in commodities were regulated by Forward Market Commission. On 28 September 2015, the FMC was merged with the Securities and Exchange Board of India (SEBI) to make the regulation of commodity futures market strong
4. The Securities Contracts (Regulation) Act-1956 aims to prevent undesirable transactions in securities. It governs the trading of securities in India
5. SEBI Act, 1992 provides for establishment of Securities and Exchange Board of India (SEBI) with statutory powers for (a) protecting the interests of investors in securities (b) promoting the development of the securities market and (c) regulating the securities market
6. **Foreign Exchange Management Act, 1999 regulates Currency Derivatives** which comes under the purview of RBI
    - ✓ Under FEMA, only a person resident in India may enter into a currency future in a stock exchange recognized under section 4 of the Securities Contract (Regulation) Act, 1956, to hedge an exposure to risk or otherwise, subject to such terms and conditions specified by RBI
    - ✓ The Scheduled Banks need to obtain permission from the respective Regulatory Departments of RBI to participate in Currency Futures Market
    - ✓ The membership of the currency futures market of a recognized stock exchange shall be separate from the membership of the equity derivative segment or the cash segment
    - ✓ Banks authorized by the Reserve Bank of India under section 10 of the Foreign Exchange Management Act, 1999 as 'AD Category - I bank' who can participate in Currency Futures need to,
        - Minimum net worth of Rs. 500 crores
        - Minimum Capital adequacy ratio (CAR) of 10 per cent
        - Net NPA should not exceed 3 per cent
        - Made net profit for last 3 years
7. For Interest Rate Derivatives also, there are additional acts/provisions for regulation which comes under purview of RBI
8. FIMMDA also plays a key role as an association for the participants in Fixed Income (**Interest Rate) Derivatives**
    - ✓ **Fixed Income Money Market and Derivatives Association of India (FIMMDA)** is an association of Scheduled Commercial Banks, Financial Institutions, Primary Dealers and Insurance Companies
9. Residents (as defined in Foreign Exchange Management Act 1999) can freely buy or sell interest rate futures for hedging and speculation

10. RBI-supervised entities should obtain prior permission from the RBI to deal in interest rate futures
11. Naked short sale is allowed only for banks and primary dealers
12. Entities such as Mutual Funds, Insurance Companies, Housing Finance Companies, NBFCs who are supervised by other regulators need to obtain prior permission of the concerned regulator
13. **For FII's, in Long/Buyer position,** total position in cash and interest rate futures should not exceed the limit specified for investment in government securities
14. **For FII's, in Short/Seller position,** short position can be maintained only for hedging and the gross short position should not exceed the total long position in government securities in cash and interest rate futures

- **Swaps**
  1. A swap is an agreement between two parties to exchange sequences of cash flows for a set period of time
  2. At least one of these series of cash flows is determined by a random or uncertain variable, such as an **interest rate, foreign exchange rate**
  3. There are basic 2 types of swaps: the **plain vanilla interest rate and currency swaps**
  4. swaps are customized contracts
  5. Swaps are traded in the **over-the-counter (OTC) market between private parties**
  6. Swap contains **Counter Party risk**
- **Plain Vanilla Interest Rate Swap**
  1. In this swap,
     - ✓ Party A agrees to pay Party B a predetermined, **fixed rate of interest** on a notional principal (never changes hands in the transaction, which is why it is considered **notional)** on specific dates for a specified period
     - ✓ Party B agrees to make payments based on a **floating interest rate** to Party A on that same notional principal on the same specified dates for the same specified period
     - ✓ In this, the two cash flows are paid in the same currency
     - ✓ Swaps are customized contracts, interest payments may be made annually, quarterly, monthly, or at any other interval determined by the parties
     - ✓ Swaps consists of **Currency or Exchange Rate risks and Interest Rate Risks**
  2. **Example:** On Dec. 31, 2006, Company A and Company B enters into a five-year swap with the following terms:
     - ✓ Company A pays Company B an amount equal to 6% per annum on a notional principal of $20 million
     - ✓ Company B pays Company A an amount equal to one-year LIBOR + 1% per annum on a notional principal of $20 million



3. The **fixed rate payer is called the buyer of the swap and fixed rate receiver is called the seller of the swap**

- **Floating to Floating Rate Swap/ Basis Swap:** A floating to floating rate swap involves different benchmark rates for both the parties
- **Coupon Swaps:** It refers to floating rate in one currency exchanged to fixed rate in another currency
- **FRA (Forward Rate agreement):** In this, interest payable for the future period is committed under the agreement. FRA's is for a single payment in future. E.g. Fixing the interest rate on a loan until a future date
- **Plain Vanilla Foreign Currency Swap**
    1. The plain vanilla currency swap involves exchanging principal and fixed interest payments on a loan in one currency for principal and fixed interest payments on a similar loan in another currency
    2. Unlike an interest rate swap, the parties to a currency swap will exchange principal amounts at the beginning and end of the swap
    3. Satisfies each company's need for funds denominated in another currency
    4. As with interest rate swaps, the parties actually nets the payments against each other at the then-prevailing exchange rate
    5. At the end of the swap, the parties re-exchange the original principal amounts
    6. Principal payments are unaffected by exchange rates at the time
    7. **Example:**

- **Credit Default Swaps:** It is a particular type of swap designed to transfer the credit exposure of fixed income products between two or more parties
    1. In CDS, the buyer of the swap makes payments to the swap's seller up until the maturity date of a contract
    2. In return, the seller agrees that, in the event that the debt issuer defaults or experiences another credit event, the seller will pay the buyer the

security's premium as well as all interest payments that would have been paid between that time and the security's maturity date

3. The buyer of the CDS mitigates the risk of their investment by shifting all or a portion of that risk onto an insurance company or other CDS seller in exchange for a periodic fee

- Interest Rate Swaps (IRS) and Forward Rate agreements (FRA's) were first allowed by RBI in 1998. **Indian banks are allowed only to trade in Plain Vanilla Interest Rate Swaps** and other Interest rate swaps are not allowed