Derivatives

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The first leap towards an organized derivatives market came in 1848, when the Chicago Board of Trade (CBOT), the largest derivative exchange in the world, was established.

Today, equity and commodity derivative markets are rapidly gaining in size in India. In terms of popularity too, these markets are catching on like a forest fire. So, what are these markets all about? What are the products that they trade in? Why do people feel the need to trade in such products and what sort of traders benefit from such trades? Do these markets hold scope for retail investors too? And if so, how exactly can you go about trading in them?

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What are derivatives?

Derivatives, as the name suggests, are financial instruments that derive their value from an underlying security or asset. The underlying could be equity shares or an index, a commodity, a currency or the exchange rate, bonds, etc. Sounds complicated? In a way, it is. But once you are clear about how a derivative product derives its value from an underlying asset

and yet has a price and an identity of its own, it will become just another financial product to you. Then again, derivative products have more variants than any other financial products since they have been created to meet a variety of niche needs.

Dependent on other products, yet a life of their own...
Here's a little story about a sugarcane contract. There is a farmer who will be harvesting a crop of sugarcane three months down the line. As he is uncertain about how high or low the price of sugarcane will be then, he decides to negotiate a price with his purchase agent right now. They fix a price per quintal, which is suitable to both of them and ink it into a contract that specifies how much the farmer will supply, on what date and at what price.

Now, suppose after one month, the purchase agent decides that he does not want to be a counter party to this contract anymore, he may find another agent who is ready to relieve him of the contract. However, if the price of sugarcane has already begun to fall in the market, the second agent may not be one hundred percent comfortable with the terms printed in the contract. He may feel that the contracted price is too high. So, to compensate him, the first agent may pay him the difference between the original contracted price and the price that he feels is right.

If you can imagine that this contract can be traded over and over again, between agents or any intermediaries, replicating the transaction described above, until its expiry date, you have envisaged a derivative product. You have understood how the value of the contract depends upon the price of sugarcane but the actual price that the contract commands could keep changing every time it changes hands, for a variety of other reasons too.

There are various derivative products, which derive their value from equity shares or an index, a commodity, a currency or the exchange rate, bonds, etc. These derivative products vary according to their structure and terms and conditions. The most popular derivative products are Forwards, Futures, Options, Warrants and Swaps. Some of these are short term in nature while others are long term. For example stock and index options that can be traded on stock exchanges are short term in nature, while options like warrants and rights have a longer term.

Who benefits from such trades?

The first category of people who benefit from such trades are people who wish to mitigate their risk, more specifically, the risk originating from

potential future adverse price movements. The 'sugarcane farmer' in the story would fall into this category and could be considered a hedger, as he is hoping to avoid risks. The second category of people that participate in this market are people with an appetite for risk. These are speculators who take over the risk from the hedgers in anticipation of good returns. The 'purchase agents and intermediaries' who traded on the sugarcane contract typify this class of derivative market participants. The third popular category of people who stand to gain from the market are arbitrageurs. These are participants who try to gain from differences in the price of the derivative product and its underlying asset. Both speculators and arbitrageurs help to improve market liquidity since they buy products with the intention of selling as soon as they see a suitable price.

Is there scope for retailers to participate in these markets?

Since the introduction of futures and options segments on stock exchanges and the setting up of commodity futures markets, even retail investors can participate in these markets. In order to participate in either market, you have to go through a broker who is affiliated with the exchange on which you plan to trade. You will be required to deposit an appropriate amount of token Margin money with your broker and fill in requisite forms, before you begin to trade. However, the most important prerequisite in order to trade in derivative products is, understanding how each one works and the risks and potential returns associated with them.

Derivative markets in India

Globally, the last four decades have seen phenomenal growth in derivative markets. In the process, many new products have been developed and this has also led to a sharp rise in volumes over the years. Today, derivative markets have become an integral feature of financial markets in developed countries and this phenomenon is gaining momentum in developing countries, too.

Since the introduction of futures and options in the Indian equity markets, the turnover in this segment has increased manifold. For instance, in the case of the National Stock Exchange (NSE), the average daily turnover in the futures and options segment stood at Rs 410 crore for the financial year 2001-02. By fiscal 2004-05, it increased 24 times over to more than Rs 10,000 crore! In the financial year 2005-06, the average daily turnover stood at a whopping Rs 19,000 crore!

Commodity derivatives in India are another active segment of the derivative

markets in India. Currently, we have around 25 commodity derivative exchanges with around 100 commodities available for trading.

FREQUENTLY ASKED QUESTIONS ON DERIVATIVES

I. Basics Of Derivatives

1. **What are derivative instruments?**

A derivative is an instrument whose value is derived from the value of one or more underlying, which can be commodities, precious metals, currency, bonds, stocks, stocks indices, etc. Four most common examples of derivative instruments are Forwards, Futures, Options and Swaps.

2. **What are Forward contracts?**

A forward contract is a customized contract between two parties, where settlement takes place on a specific date in future at a price agreed today. The main features of forward contracts are

* They are bilateral contracts and hence exposed to counter-party risk.

* Each contract is custom designed, and hence is unique in terms of contract size, expiration date and the asset type and quality.

* The contract price is generally not available in public domain.

* The contract has to be settled by delivery of the asset on expiration date.

* In case, the party wishes to reverse the contract, it has to compulsorily go to the same counter party, which being in a monopoly situation can command the price it wants.

3. **What are Futures ?**

Futures are exchange-traded contracts to sell or buy financial instruments or physical commodities for Future delivery at an agreed price. There is an agreement to buy or sell a specified quantity of financial instrument/ commodity in a designated Future month at a price agreed upon by the buyer and seller. To make trading possible, the exchange specifies certain standardized features of the contract.

4. **What is the difference between Forward contracts and Futures contracts ?**

Sr. No.	Basis	Futures	Forwards
1	Nature	Traded on organized exchange	Over the Counter
2	Contract terms	Standardized	Customised
3	Liquidity	More Liquid	Less Liquid
4	Margin Payments	Requires Margin Payments	Not required
5	Settlement	Follows daily settlement	At the end of the period.
6	Squaring off	Can be reversed with any member of the exchange.	Contract can be reversed only with the same counter-party with whom it was entered into.

II. Index Futures

1. What is the underlying for INDEX futures ?

The underlying for the INDEX futures is the corresponding BSE Index. For e.g. the underlying for SENSEX futures is BSE Sensitive Index of 30 scrips, popularly called the SENSEX.

2. What is the contract multiplier ?

The contract multiplier is the minimum number of the underlying - index or stock that a participant has to trade while taking a position in the Derivatives Segment. As of May 2008, the contract multiplier for SENSEX is 15. This means that the Rupee notional value of a sensex futures contract would be 15 times the contracted value. The following table gives a few examples of this notional value.

Contracted Price of Futures	Notional Value in Rs. (based on Market Lot of 15)
17800	267000
17850	267750
17900	268500
17950	269250
18000	270000

It may be mentioned here that the market lot may be changed by the Exchange in consultation with the NSE as per the SEBI guidelines on the same.

3.What is the ticker symbol and trading hours ?

The ticker symbol is the selected alphabets of the underlying for e.g. the ticker for BSE Sensex is BSX while that for the Sensex 'mini' contract is MSX, for Reliance Industries Ltd., it is RIL, etc.

The trading timings for the Derivatives Segment of BSE are the same as that in the Equity Segment - from 9:55 a.m. to 3:30 p.m. (except in cases of Sun Outage when the timings are extended on account of a halt in trading during the day). Trading session's timings can be viewed at the Calendars Section.

4. What is the maturity of the futures contract ?

Presently, SEBI has permitted Exchanges to offer futures products of 1 month, 2 months and 3 months maturity only on a rolling basis- e.g. say for May, June and July months. When the May contract expires there will be a fresh contract month available for trading viz. the August contract. These months are called the Near Month, Middle Month and Far Month respectively.

On 9th June 2000, when Equity Derivatives were first introduced in India at the Bombay Stock Exchange, we started with the three monthly series for June, July and August 2000.

5. What is the tick size ?

This means that the minimum price fluctuation in the value of a contract the tick size is presently "0.05" or 5 paisa. In Rupee terms, this translates to a minimum price fluctuation of Rs. 0.75 for a single transaction of SENSEX Futures Contract (Tick size X Contract Multiplier = 0.05 X Rs. 15).

6. How is the final settlement price determined ?

The closing value of underlying Index of the cash market is taken as the final settlement price of the futures contract on the last trading day of the contract for settlement purposes.

7. What is margin money ?

The aim of collecting margin money from the client / broker is to minimize the risk of settlement default by either counterparty. The payment of margin ensures that the risk is limited to the previous day's price movement on each outstanding position. However, even this exposure is offset by the initial margin holdings. Margin money is like a security deposit or insurance against a possible Future loss of value. Once the transaction is successfully settled, the margin money held by the exchange is released / adjusted against the settlement liability.

8. Are there different types of Margin ?

Yes, there are different types of margin like Initial Margin, Variation margin (commonly called Mark to market or M -T- M) Exposure Margin and Additional Margin, if any.

9. What is the objective of Initial margin ?

The basic aim of Initial margin is to cover the largest potential loss in one day. Both buyer and seller have to deposit margins. The initial margin is deposited before the opening of the position in the futures transaction. This margin is calculated by SPAN by considering the worst case scenario.

10. What is Variation or Mark-to-Market Margin ?

Variation or mark to market Margin is the daily profit or loss obtained by marking the member's outstanding position to the market (closing price of the day) and receiving or paying the difference from / to him in cash on the succeeding working day.

11. What are long / short positions ?

In simple terms, long and short positions indicate whether you have a buy position (long) or sell position (short).

12. Is there a theoretical way of pricing Index Future ?

The theoretical way of pricing any Future is to factor in the current price and holding costs or cost of carry. A Futures contract is normally by its very definition for a specified period of time, at the end of which it is settled. In order to compensate the seller for waiting till expiry for realizing the sale proceeds the buyer has to pay some interest which is reflected in the form of cost of carry.

In general, the Futures Price = Spot Price + Cost of Carry.

Theoretically, the Cost of carry is the sum of all costs incurred if a similar position is taken in cash market and carried to maturity of the futures contract less any revenue which may result in this period. The costs typically include interest in case of financial futures (also insurance and storage costs in case of commodity futures). The revenue may be dividends in case of index futures.

Apart from the theoretical value, the actual value may vary depending on demand and supply of the underlying at present and expectations about the future. These factors play a much more important role in commodities, especially perishable commodities than in financial futures.

In general, the futures price is greater than the spot price (in case of a bullish sentiment in the market). In special cases, when cost of carry is negative (on account of a bearish view in the market), the futures price may be lower than Spot prices.

13. What is the concept of Basis?

The difference between Spot price and Futures price is known as Basis. Although the Spot price and Futures prices generally move in line with each other, the basis is not constant. Generally basis will decrease with time and on expiry, the basis is zero as the Futures price equals Spot price.

14. What are the profits and losses in case of a futures position ?

The profits and losses would depend upon the difference between the price at which the position is opened and the price at which it is closed. Let us take some examples.

Example 1

Position : Long - Buy June Sensex Futures @ 15500

Payoff :Profit - if the futures price goes up Loss - if the futures price goes down

Calculation : The profit or loss would be equal to fifteen times the difference in the two rates.

If June Sensex Futures is sold @ 15600 there would be a profit of 100 points which is equal to Rs. 1500 (100 X 15).

However if the June Sensex is sold @ 15450 there would be a loss of 50 points which is equal to Rs. 750 (50 X 15)

Example 2

Position : Short Sell June Sensex Futures @ 15500

Payoff :Profit - if the futures price goes down Loss - if the futures price goes up

Calculation : The profit or loss would be equal to fifteen times the difference in the two rates.

If June Sensex Futures is bought @ 15700 there would be a loss of 200 points which is equal to Rs. 3,000 (200 X 15).

However if the June Sensex Futures is bought @ 15400, there would be a profit of 100 points which is equal to Rs. 15, 00 (100 X 15).

15. What happens to the profit or loss due to daily settlement ?

In case the position is not closed the same day, the daily settlement would alter the cash flows depending on the settlement price fixed by the exchange every day. However the net total of all the flows every day would always be equal to the profit or loss calculated above. Profit or loss would only depend upon the opening and closing price of the position, irrespective of how the rates have moved in the intervening days.

Let us take the illustration where a long position is opened at 15550 and closed at 15650 resulting in a profit of 100 points or Rs. 1500

Let us assume that the daily closing settlement prices are as shown.

Example 3

Daily Closing Settlement Prices

Case 1

Day 1: 15500

Day 2: 15580

Day 3: 15560

Day 4: 15600

Position Closed: 15650

Case 1

Settlement Prices Calculation Profit/Loss

Position Opened - Long @ 5550

Day 1

15500

15500 - 15550

-50

Day 2

15580

15580 - 15500

+80

Day 3

15560

15560 - 15580

-20

Day 4

15600

15600 - 15560

+40

Position Closed - Short @ 15650

15650 - 15600

+50

Profit / (Loss)

100

In all the cases the net result is a profit of 100 points, which is the difference

between the closing and opening price, irrespective of the daily settlement price and different MTM flows.

16. How does the Initial Margin affect the above profit or loss ?

The initial margin is only a security provided by the client through the clearing member to the exchange. It can be withdrawn in full after the position is closed. Therefore it does not affect the above calculation of profit or loss.

However there would be a funding cost / transaction cost in providing the security. This cost must be added to the total transaction costs to arrive at the true picture. Other items in transaction costs would include brokerage, stamp duty etc.

17. What is a spread position ?

A calendar spread is created by taking simultaneously two positions

1. A long position in a futures series expiring in any calendar month

2. A short position in the same futures as 1 above but for a series expiring in any month other than the 1 above.

Examples of Calendar Spreads

1. Long June Sensex Futures Short July Sensex Futures

2. Short July Sensex Futures Long August Sensex Futures

A spread position must be closed by reversing both the legs simultaneously. The reversal of 1 above would be a sale of June Sensex Futures while simultaneously buying the July Sensex Futures