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Workbook for

NISM-Series-VIII: Equity Derivatives Certification Examination

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Equity Derivatives
Certification Examination

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This workbook has been developed to assist candidates in preparing for the National Institute of Securities Markets (NISM) NISM-Series-VIII: Equity Derivatives Certification Examination (NISM-Series-VIII: ED Examination).

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Foreword

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NISM Certification programs aim to enhance the quality and standards of professionals employed in various segments of the financial services sector. NISM's School for Certification of Intermediaries (SCI) develops and conducts certification examinations and Continuing Professional Education (CPE) programs that aim to ensure that professionals meet the defined minimum common knowledge benchmark for various critical market functions.

NISM certification examinations and educational programs cater to different segments of intermediaries focusing on varied product lines and functional areas. NISM Certifications have established knowledge benchmarks for various market products and functions such as Equities, Mutual Funds, Derivatives, Compliance, Operations, Advisory and Research.

NISM certification examinations and training programs provide a structured learning plan and career path to students and job aspirants who wish to make a professional career in the Securities markets. Till May 2017, NISM has certified nearly 6 lakh individuals through its Certification Examinations and CPE Programs.

NISM supports candidates by providing lucid and focused workbooks that assist them in understanding the subject and preparing for NISM Examinations. The book covers basics of the equity derivatives, trading strategies using equity futures and equity options, clearing, settlement and risk management as well as the regulatory environment in which the equity derivatives markets operate in India. It will be immensely useful to all those who want to have a better understanding of various derivatives products available in Indian equity derivatives markets.

Sandip Ghose
Director

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Acknowledgement

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NISM gratefully acknowledges the contribution of the Examination Committee for NISM-Series-VIII: Equity Derivatives Certification Examination consisting of representatives of the Equity Derivatives Exchanges.

About NISM

National Institute of Securities Markets (NISM) was established by the Securities and Exchange Board of India (SEBI), in pursuance of the announcement made by the Finance Minister in his Budget Speech in February 2005.

SEBI, by establishing NISM, articulated the desire expressed by the Government of India to promote securities market education and research.

Towards accomplishing the desire of Government of India and vision of SEBI, NISM delivers financial and securities education at various levels and across various segments in India and abroad. To implement its objectives, NISM has established six distinct schools to cater to the educational needs of various constituencies such as investors, issuers, intermediaries, regulatory staff, policy makers, academia and future professionals of securities markets.

NISM is mandated to implement Certification Examinations for professionals employed in various segments of the Indian securities markets.

NISM also conducts numerous training programs and brings out various publications on securities markets with a view to enhance knowledge levels of participants in the securities industry.

About NISM Certifications

The School for Certification of Intermediaries (SCI) at NISM is engaged in developing and administering Certification Examinations and CPE Programs for professionals employed in various segments of the Indian securities markets. These Certifications and CPE Programs are being developed and administered by NISM as mandated under Securities and Exchange Board of India (Certification of Associated Persons in the Securities Markets) Regulations, 2007.

The skills, expertise and ethics of professionals in the securities markets are crucial in providing effective intermediation to investors and in increasing the investor confidence in market systems and processes. The School for Certification of Intermediaries (SCI) seeks to ensure that market intermediaries meet defined minimum common benchmark of required functional knowledge through Certification Examinations and Continuing Professional Education Programmes on Mutual Funds, Equities, Derivatives Securities Operations, Compliance, Research Analysis, Investment Advice and many more.

Certification creates quality market professionals and catalyzes greater investor participation in the markets. Certification also provides structured career paths to students and job aspirants in the securities markets.

About the Workbook

This workbook has been developed to assist candidates in preparing for the National Institute of Securities Markets (NISM) Equity Derivatives Certification Examination. NISM-Series-VIII: Equity Derivatives Certification Examination seeks to create common minimum knowledge benchmark for associated persons functioning as approved users and sales personnel of the trading member of an equity derivatives exchange or equity derivative segment of a recognized stock exchange.

The book covers basics of the equity derivatives, trading strategies using equity futures and equity options, clearing, settlement and risk management as well as the regulatory environment in which the equity derivatives markets operate in India.

About the NISM-Series-VIII: Equity Derivatives Certification Examination

The examination seeks to create a common minimum knowledge benchmark for associated persons functioning as approved users and sales personnel of the trading member of an equity derivatives exchange or equity derivative segment of a recognized stock exchange.

The examination aims to enable a better understanding of various derivatives products available in equity derivatives markets, regulations and risks associated with the products and the exchange mechanisms of clearing and settlement. The examination also covers knowledge competencies related to the understanding of the financial structure in India and the importance of the different rules and regulations governing the Indian securities market, especially those related to the equity derivatives segment.

Examination Objectives

On successful completion of the examination the candidate should:

- Know the basics of the Indian equity derivatives market.
- Understand the various trading strategies that can be built using futures and options on both stocks and stock indices.
- Understand the clearing, settlement and risk management as well as the operational mechanism related to equity derivatives markets.
- Know the regulatory environment in which the equity derivatives markets operate in India.

Assessment Structure

The NISM-Series-VIII: Equity Derivatives Certification Examination (NISM-Series-I: ED Examination) will be of 100 marks consisting of 100 questions of 1 mark each, and should be completed in 2 hours. There will be negative marking of 25% of the marks assigned to each question. The passing score for the examination is 60%.

How to register and take the examination

To find out more and register for the examination please visit *www.nism.ac.in*

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Chapter 1: Basics of Derivatives

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Meaning of derivatives and types of derivatives products
- History of derivatives market
- Significance of derivative markets
- Risks in derivatives trading

1.1 Basics of Derivatives

Derivative is a contract or a product whose value is derived from value of some other asset known as underlying. Derivatives are based on wide range of underlying assets. These include:

- Metals such as Gold, Silver, Aluminium, Copper, Zinc, Nickel, Tin, Lead etc.
- Energy resources such as Oil (crude oil, products, cracks), Coal, Electricity, Natural Gas, etc.
- Agri commodities such as wheat, Sugar, Coffee, Cotton, Pulses etc, and
- Financial assets such as Shares, Bonds and Foreign Exchange.

1.2 Derivatives Market – History & Evolution

History of Derivatives may be mapped back to the several centuries. Some of the specific milestones in evolution of Derivatives Market Worldwide are given below:

12th Century- In European trade fairs, sellers signed contracts promising future delivery of the items they sold.

13th Century- There are many examples of contracts entered into by English Cistercian Monasteries, who frequently sold their wool up to 20 years in advance, to foreign merchants.

1634-1637 - Tulip Mania in Holland: Fortunes were lost in after a speculative boom in tulip futures burst.

Late 17th Century- In Japan at Dojima, near Osaka, a futures market in rice was developed to protect rice producers from bad weather or warfare.

In 1848, The Chicago Board of Trade (CBOT) facilitated trading of forward contracts on various commodities.

In 1865, the CBOT went a step further and listed the first ‘exchange traded” derivative contract in the US. These contracts were called ‘futures contracts”.

In 1919, Chicago Butter and Egg Board, a spin-off of CBOT, was reorganised to allow futures trading. Later its name was changed to Chicago Mercantile Exchange (CME).

In 1972, Chicago Mercantile Exchange introduced International Monetary Market (IMM), which allowed trading in currency futures.

In 1973, Chicago Board Options Exchange (CBOE) became the first marketplace for trading listed options.

In 1975, CBOT introduced Treasury bill futures contract. It was the first successful pure interest rate futures.

In 1977, CBOT introduced T-bond futures contract.

In 1982, CME introduced Eurodollar futures contract.

In 1982, Kansas City Board of Trade launched the first stock index futures.

In 1983, Chicago Board Options Exchange (CBOE) introduced option on stock indexes with the S&P 100® (OEX) and S&P 500® (SPXSM) Indexes.

Factors influencing the growth of derivative market globally

Over the last four decades, derivatives market has seen a phenomenal growth. Many derivative contracts were launched at exchanges across the world. Some of the factors driving the growth of financial derivatives are:

- Increased fluctuations in underlying asset prices in financial markets.
- Integration of financial markets globally.
- Use of latest technology in communications has helped in reduction of transaction costs.
- Enhanced understanding of market participants on sophisticated risk management tools to manage risk.
- Frequent innovations in derivatives market and newer applications of products.

1.3 Indian Derivatives Market

As the initial step towards introduction of derivatives trading in India, SEBI set up a 24–member committee under the Chairmanship of Dr. L. C. Gupta on November 18, 1996 to develop appropriate regulatory framework for derivatives trading in India. The committee submitted its report on March 17, 1998 recommending that derivatives should be declared as 'securities' so that regulatory framework applicable to trading of 'securities' could also govern trading of derivatives. Subsequently, SEBI set up a group in June 1998 under the Chairmanship of Prof. J.R.Verma, to recommend measures for risk containment in derivatives market in India. The committee submitted its report in October 1998. It worked out the operational details of margining system, methodology for charging initial margins, membership details and net-worth criterion, deposit requirements and real time monitoring of positions requirements.

In 1999, The Securities Contract Regulation Act (SCRA) was amended to include "derivatives" within the domain of 'securities' and regulatory framework was developed for governing derivatives trading. In March 2000, government repealed a three-decade-old notification, which prohibited forward trading in securities.

The exchange traded derivatives started in India in June 2000 with SEBI permitting BSE and NSE to introduce equity derivative segment. To begin with, SEBI approved trading in index futures contracts based on Nifty and Sensex, which commenced trading in June

2000. Later, trading in Index options commenced in June 2001 and trading in options on individual stocks commenced in July 2001. Futures contracts on individual stocks started in November 2001. Metropolitan Stock Exchange of India Limited (MSEI) started trading in derivative products in February 2013.

Products in Derivatives Market

Forwards

It is a contractual agreement between two parties to buy/sell an underlying asset at a certain future date for a particular price that is pre-decided on the date of contract. Both the contracting parties are committed and are obliged to honour the transaction irrespective of price of the underlying asset at the time of delivery. Since forwards are negotiated between two parties, the terms and conditions of contracts are customized. These are Over-the-counter (OTC) contracts.

Futures

A futures contract is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties. Indeed, we may say futures are exchange traded forward contracts.

Options

An Option is a contract that gives the right, but not an obligation, to buy or sell the underlying on or before a stated date and at a stated price. While buyer of option pays the premium and buys the right, writer/seller of option receives the premium with obligation to sell/ buy the underlying asset, if the buyer exercises his right.

Swaps

A swap is an agreement made between two parties to exchange cash flows in the future according to a prearranged formula. Swaps are, broadly speaking, series of forward contracts. Swaps help market participants manage risk associated with volatile interest rates, currency exchange rates and commodity prices.

1.4 Market Participants

There are broadly three types of participants in the derivatives market - hedgers, traders (also called speculators) and arbitrageurs. An individual may play different roles in different market circumstances.

Hedgers

They face risk associated with the prices of underlying assets and use derivatives to reduce their risk. Corporations, investing institutions and banks all use derivative products to hedge or reduce their exposures to market variables such as interest rates, share values, bond prices, currency exchange rates and commodity prices.

Speculators/Traders

They try to predict the future movements in prices of underlying assets and based on the view, take positions in derivative contracts. Derivatives are preferred over underlying asset for trading purpose, as they offer leverage, are less expensive (cost of

transaction is generally lower than that of the underlying) and are faster to execute in size (high volumes market).

Arbitrageurs

Arbitrage is a deal that produces profit by exploiting a price difference in a product in two different markets. Arbitrage originates when a trader purchases an asset cheaply in one location and simultaneously arranges to sell it at a higher price in another location. Such opportunities are unlikely to persist for very long, since arbitrageurs would rush in to these transactions, thus closing the price gap at different locations.

1.5 Types of Derivatives Market

In the modern world, there is a huge variety of derivative products available. They are either traded on organised exchanges (called exchange traded derivatives) or agreed directly between the contracting counterparties over the telephone or through electronic media (called Over-the-counter (OTC) derivatives). Few complex products are constructed on simple building blocks like forwards, futures, options and swaps to cater to the specific requirements of customers.

Over-the-counter market is not a physical marketplace but a collection of broker-dealers scattered across the country. Main idea of the market is more a way of doing business than a place. Buying and selling of contracts is matched through negotiated bidding process over a network of telephone or electronic media that link thousands of intermediaries. OTC derivative markets have witnessed a substantial growth over the past few years, very much contributed by the recent developments in information technology. The OTC derivative markets have banks, financial institutions and sophisticated market participants like hedge funds, corporations and high net-worth individuals. OTC derivative market is less regulated market because these transactions occur in private among qualified counterparties, who are supposed to be capable enough to take care of themselves.

The OTC derivatives markets – transactions among the dealing counterparties, have following features compared to exchange traded derivatives:

- Contracts are tailor made to fit in the specific requirements of dealing counterparties.
- The management of counter-party (credit) risk is decentralized and located within individual institutions.
- There are no formal centralized limits on individual positions, leverage, or margining.
- There are no formal rules or mechanisms for risk management to ensure market stability and integrity, and for safeguarding the collective interest of market participants.
- Transactions are private with little or no disclosure to the entire market.

On the contrary, exchange-traded contracts are standardized, traded on organized exchanges with prices determined by the interaction of buyers and sellers through

anonymous auction platform. A clearing house/ clearing corporation, guarantees contract performance (settlement of transactions).

1.6 Significance of Derivatives

Like other segments of Financial Market, Derivatives Market serves following specific functions:

- Derivatives market helps in improving price discovery based on actual valuations and expectations.
- Derivatives market helps in transfer of various risks from those who are exposed to risk but have low risk appetite to participants with high risk appetite. For example hedgers want to give away the risk where as traders are willing to take risk.
- Derivatives market helps shift of speculative trades from unorganized market to organized market. Risk management mechanism and surveillance of activities of various participants in organized space provide stability to the financial system.

1.7 Various risks faced by the participants in derivatives

Market Participants must understand that derivatives, being leveraged instruments, have risks like counterparty risk (default by counterparty), price risk (loss on position because of price move), liquidity risk (inability to exit from a position), legal or regulatory risk (enforceability of contracts), operational risk (fraud, inadequate documentation, improper execution, etc.) and may not be an appropriate avenue for someone of limited resources, trading experience and low risk tolerance. A market participant should therefore carefully consider whether such trading is suitable for him/her based on these parameters. Market participants, who trade in derivatives are advised to carefully read the Model Risk Disclosure Document, given by the broker to his clients at the time of signing agreement.

Model Risk Disclosure Document is issued by the members of Exchanges and contains important information on trading in Equities and F&O Segments of exchanges. All prospective participants should read this document before trading on Capital Market/Cash Segment or F&O segment of the Exchanges.

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Chapter 2: Understanding Index

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Meaning of Index and its significance
- Different types of stock market indices
- Index management and maintenance
- Application of indices

2.1 Introduction to Index

Index is a statistical indicator that measures changes in the economy in general or in particular areas. In case of financial markets, an index is a portfolio of securities that represent a particular market or a portion of a market. Each Index has its own calculation methodology and usually is expressed in terms of a change from a base value. The base value might be as recent as the previous day or many years in the past. Thus, the percentage change is more important than the actual numeric value. Financial indices are created to measure price movement of stocks, bonds, T-bills and other type of financial securities. More specifically, a stock index is created to provide market participants with the information regarding average share price movement in the market. Broad indices are expected to capture the overall behaviour of equity market and need to represent the return obtained by typical portfolios in the country.

2.2 Significance of Index

- A stock index is an indicator of the performance of overall market or a particular sector.
- It serves as a benchmark for portfolio performance - Managed portfolios, belonging either to individuals or mutual funds; use the stock index as a measure for evaluation of their performance.
- It is used as an underlying for financial application of derivatives – Various products in OTC and exchange traded markets are based on indices as underlying asset.

2.3 Types of Stock Market Indices

Indices can be designed and constructed in various ways. Depending upon their methodology, they can be classified as under:

Market capitalization weighted index

In this method of calculation, each stock is given weight according to its market capitalization. So higher the market capitalization of a constituent, higher is its weight in the index. Market capitalization is the market value of a company, calculated by multiplying the total number of shares outstanding to its current market price. For example, ABC company with 5,00,00,000 shares outstanding and a share price of Rs 120 per share will have market capitalization of 5,00,00,000 x 120 = Rs 6,00,00,00,000 i.e. 600 Crores.

Let us understand the concept with the help of an example: There are five stocks in an index. Base value of the index is set to 100 on the start date which is January 1, 1995. Calculate the present value of index based on following information.

Sr. No.	Stock Name	Stock price as on January 1, 1995 (in Rs.)	Number of shares in lakhs	Today's stock price (in Rs.)
1	AZ	150	20	650
2	BY	300	12	450
3	CX	450	16	600
4	DW	100	30	350
5	EU	250	8	500

Old Price	Shares in Lakhs	Old M. Cap (in lakhs)	Old weights	Old Value of Portfolio(price * weightage)	New price	New M. Cap	New weight	New Value of portfolio (price * weightage)
150	20	3000	0.16	23.94	650	13000	0.31	198.82
300	12	3600	0.19	57.45	450	5400	0.13	57.18
450	16	7200	0.38	172.34	600	9600	0.23	135.53
100	30	3000	0.16	15.96	350	10500	0.25	86.47
250	8	2000	0.11	26.60	500	4000	0.09	47.06
		18800	**1**	**296.28**		**42500**	**1**	**525.06**
Market capitalization (Mcap) = Number of Shares * Market Price								
Old value of portfolio is equated to 100. Therefore, on that scale new value of portfolio would be (525.05/ 296.27)*100 = **177.22**								

Thus, the present value of Index under market capitalization weighted method is 177.22.

Popular indices in India Sensex and Nifty were earlier designed on market capitalization weighted method.

Free-Float Market Capitalization Index

In various businesses, equity holding is divided differently among various stake holders – promoters, institutions, corporates, individuals etc. Market has started to segregate this on the basis of what is readily available for trading or what is not. The one available for immediate trading is categorized as free float. And, if we compute the index based on weights of each security based on free float market cap, it is called free float market capitalization index. Indeed, both Sensex and Nifty, over a period of time, have moved to free float basis. SX40, index of MSEI is also a free float market capitalization index.

Price-Weighted Index

A stock index in which each stock influences the index in proportion to its price. Stocks with a higher price will be given more weight and therefore, will have a greater influence over the performance of the Index.

Let us take the same example for calculation of price-weighted index.

Sr. No.	Stock Name	Stock price as on January 1, 1995 (in Rs.)	Number of shares in lakhs	Today's stock price (in Rs.)
1	AZ	150	20	650
2	BY	300	12	450
3	CX	450	16	600
4	DW	100	30	350
5	EU	250	8	500

Computation of the index would be as follows:

Stock Name	Stock price as on January 1, 1995 (in Rs.)	Price weights	Price weighted Prices	Today's stock price (in Rs.)	Price weights	Price weighted Prices
AZ	150	0.12	18	650	0.254902	166
BY	300	0.24	72	450	0.176471	79
CX	450	0.36	162	600	0.235294	141
DW	100	0.08	8	350	0.137255	48
EU	250	0.2	50	500	0.196078	98
	1250		**310**	**2550**		**532**
We equate 310 to 100 to find the current value, which would be (532/310)*100 = **171.7268**						

Dow Jones Industrial Average and Nikkei 225 are popular price-weighted indices.

Equal Weighted Index

An equally-weighted index makes no distinction between large and small companies, both of which are given equal weighting. The value of the index is generated by adding the prices of each stock in the index and dividing that by the total number of stocks.

Let us take the same example for calculation of equal weighted index.

Sr. No.	Stock Name	Stock price as on January 1, 1995 (in Rs.)	Number of shares in lakhs	Today's stock price (in Rs.)
1	AZ	150	20	650
2	BY	300	12	450
3	CX	450	16	600
4	DW	100	30	350
5	EU	250	8	500

Base level of this index would be (150+300+450+100+250)/5 = 250. We equate this to 100.

Current level of this index would be (650+450+600+350+500)/5 = 510. It means current level of index on the base of 100 would be (510/250)*100 = 204.

2.4 Attributes of an Index

A good market index should have following attributes:

- It should reflect the market behaviour
- It should be computed by independent third party and be free from influence of any market participant
- It should be professionally maintained

Impact Cost

Liquidity in the context of stock market means a market where large orders are executed without moving the prices.

Let us understand this with help of an example. The order book of a stock at a point in time is as follows:

Buy			Sell		
Sr. No.	Quantity	Price (in Rs.)	Price (in Rs.)	Quantity	Sr. No.
1	1000	4.00	4.50	2000	5
2	1000	3.90	4.55	1000	6
3	2000	3.80	4.70	500	7
4	1000	3.70	4.75	100	8

In the order book given above, there are four buy orders and four sell orders. The difference between the best buy and the best sell orders is 0.50 - called bid-ask spread. If a person places a market buy order for 100 shares, it would be matched against the best available sell order at Rs. 4.50. He would buy 100 shares for Rs. 4.50. Similarly, if he places a market sell order for 100 shares, it would be matched against the best available buy order at Rs. 4 i.e. the shares would be sold at Rs.4.Hence, if a person buys 100 shares and sells them immediately, he is poorer by the bid-ask spread i.e. a loss of Rs 50. This spread is regarded as the transaction cost which the market charges for the privilege of trading (for a transaction size of 100 shares).

Now, suppose a person wants to buy and then sell 3000 shares. The sell order will hit the following buy orders:

Sr. No.	Quantity	Price (in Rs.)
1	1000	4.00
2	1000	3.90
3	1000	3.80

While the buy order will hit the following sell orders:

Quantity	Price (in Rs.)	Sr. No.
2000	4.50	1
1000	4.55	2

There is increase in the transaction cost for an order size of 3000 shares in comparison to the transaction cost for order for 100 shares. The "bid-ask spread" therefore conveys transaction cost for small trade.

Now, we come across the term called impact cost. We have to start by defining the ideal price as the average of the best bid and offer price. In our example it is (4+4.50)/2, i.e. Rs. 4.25. In an infinitely liquid market, it would be possible to execute large transactions on both buy and sell at prices that are very close to the ideal price of Rs.4.25. However, while actually trading, you will pay more than Rs.4.25 per share while buying and will receive less than Rs.4.25 per share while selling. Percentage degradation, which is experienced vis-à-vis the ideal price, when shares are bought or sold, is called impact cost. Impact cost varies with transaction size. Also, it would be different for buy side and sell side.

Buy Quantity	Buy Price (in Rs.)	Sell Price (in Rs.)	Sell Quantity
1000	9.80	9.90	1000
2000	9.70	10.00	1500
3000	9.60	10.10	1000

To buy 1500 shares, Ideal price = (9.8+9.9)/ 2 = Rs.9.85
Actual buy price = [(1000*9.9)+(500*10.00)]/1500 = Rs.9.93
Impact cost for (1500 shares) = {(9.93 - 9.85)/9.85}*100 = 0.84 %

2.5 Index management

Index construction, maintenance and revision process is generally done by specialized agencies. For instance, NSE indices are managed by a separate company called "India Index Services and Products Ltd." (IISL).

Index construction is all about choosing the index stocks and deciding on the index calculation methodology. Maintenance means adjusting the index for corporate actions like bonus issue, rights issue, stock split, consolidation, mergers etc. Revision of index deals with change in the composition of index as such i.e. replacing some existing stocks by the new ones because of change in the trading paradigm of the stocks / interest of market participants.

Index Construction

A good index is a trade-off between diversification and liquidity. A well diversified index reflects the behaviour of the overall market/ economy. While diversification helps in reducing risk, beyond a point it may not help in the context. Going from 10 stocks to 20 stocks gives a sharp reduction in risk. Going from 50 stocks to 100 stocks gives very little reduction in risk. Going beyond 100 stocks gives almost zero reduction in risk. Hence, there is little to gain by diversifying beyond a point.

Stocks in the index are chosen based on certain pre-determined qualitative and quantitative parameters, laid down by the Index Construction Managers. Once a stock satisfies the eligibility criterion, it is entitled for inclusion in the index. Generally, final decision of inclusion or removal of a security from the index is taken by a specialized committee known as Index Committee.

Index Maintenance and Index Revision

Maintenance and Revision of the indices is done with the help of various mathematical formulae. In order to keep the index comparable across time, the index needs to take into account corporate actions such as stock splits, share issuance, dividends and restructuring events. While index maintenance issue gets triggered by a corporate action, index revision is an unabated phenomenon to ensure that index captures the most vibrant lot of securities in the market and continues to correctly reflect the market.

2.6 Major Indices in India

These are few popular indices in India:

- S&P BSE Sensex
- S&P BSE Midcap
- S&P BSE 100
- S&P BSE 200
- S&P BSE 500
- Nifty
- Nifty Next 50
- Nifty 100
- Nifty 200
- Nifty 500
- SX 40

2.7 Application of Indices

Traditionally, indices were used as a measure to understand the overall direction of stock market. However, few applications on index have emerged in the investment field. Few of the applications are explained below.

Index Funds

These types of funds invest in a specific index with an objective to generate returns equivalent to the return on index. These funds invest in index stocks in the proportions in which these stocks exist in the index. For instance, Sensex index fund would get the similar returns as that of Sensex index. Since Sensex has 30 shares, the fund will also invest in these 30 companies in the proportion in which they exist in the Sensex.

Index Derivatives

Index Derivatives are derivative contracts which have the index as the underlying asset. Index Options and Index Futures are the most popular derivative contracts worldwide. Index derivatives are useful as a tool to hedge against the market risk.

Exchange Traded Funds

Exchange Traded Funds (ETFs) is basket of securities that trade like individual stock, on an exchange. They have number of advantages over other mutual funds as they can be bought and sold on the exchange. Since, ETFs are traded on exchanges intraday transaction is possible. Further, ETFs can be used as basket trading in terms of the smaller denomination and low transaction cost. The first ETF in Indian Securities Market was the Nifty BeES, introduced by the Benchmark Mutual Fund in December 2001. Prudential ICICI Mutual Fund introduced SPIcE in January 2003, which was the first ETF on Sensex.

Chapter 3: Introduction to Forwards and Futures

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Meaning of Forward and Futures Contracts
- Terminology related to futures contract
- Payoff for futures contract
- Pricing of futures contract
- Uses of futures contract and its application by speculators, hedgers and arbitrageurs

3.1 Introduction to forward and futures Contracts

Forward contract is an agreement made directly between two parties to buy or sell an asset on a specific date in the future, at the terms decided today. Forwards are widely used in commodities, foreign exchange, equity and interest rate markets.

Let us understand with the help of an example. What is the basic difference between cash market and forwards? Assume on March 9, 2018 you wanted to purchase gold from a goldsmith. The market price for gold on March 9, 2018 was Rs. 30,425 for 10 gram and goldsmith agrees to sell you gold at market price. You paid him Rs. 30,425 for 10 gram of gold and took gold. This is a cash market transaction at a price (in this case Rs. 30,425) referred to as spot price.

Now suppose you do not want to buy gold on March 9, 2018, but only after 1 month. Goldsmith quotes you Rs. 30,450 for 10 grams of gold. You agree to the forward price for 10 grams of gold and go away. Here, in this example, you have bought forward or you are long forward, whereas the goldsmith has sold forwards or short forwards. There is no exchange of money or gold at this point of time. After 1 month, you come back to the goldsmith pay him Rs. 30,450 and collect your gold. This is a forward, where both the parties are obliged to go through with the contract irrespective of the value of the underlying asset (in this case gold) at the point of delivery.

Essential features of a forward are:

- It is a contract between two parties (Bilateral contract).
- All terms of the contract like price, quantity and quality of underlying, delivery terms like place, settlement procedure etc. are fixed on the day of entering into the contract.

In other words, Forwards are bilateral over-the-counter (OTC) transactions where the terms of the contract, such as price, quantity, quality, time and place are negotiated between two parties to the contract. Any alteration in the terms of the contract is possible if both parties agree to it. Corporations, traders and investing institutions extensively use OTC transactions to meet their specific requirements. The essential idea of entering into a forward is to fix the price and thereby avoid the price risk. Thus, by entering into forwards, one is assured of the price at which one can buy/sell an underlying asset.

In the above-mentioned example, if on April 9, 2018 the gold trades at Rs. 30,500 in the cash market, the forward contract becomes favourable to you because you can then purchase gold at Rs. 30,450 under the contract and sell in cash market at Rs. 30,500 i.e. net profit of Rs. 50. Similarly, if the spot price is 30,390 then you incur loss of Rs. 60 (buy price – sell price).

Major limitations of forwards

Liquidity Risk

Liquidity is nothing but the ability of the market participants to buy or sell the desired quantity of an underlying asset. As forwards are tailor made contracts i.e. the terms of the contract are according to the specific requirements of the parties, other market participants may not be interested in these contracts. Forwards are not listed or traded on exchanges, which makes it difficult for other market participants to easily access these contracts or contracting parties. The tailor made contracts and their non-availability on exchanges creates illiquidity in the contracts. Therefore, it is very difficult for parties to exit from the forward contract before the contract's maturity.

Counterparty risk

Counterparty risk is the risk of an economic loss from the failure of counterparty to fulfil its contractual obligation. For example, A and B enter into a bilateral agreement, where A will purchase 100 kg of rice at Rs.20 per kg from B after 6 months. Here, A is counterparty to B and vice versa. After 6 months, if price of rice is Rs.30 in the market then B may forego his obligation to deliver 100 kg of rice at Rs.20 to A. Similarly, if price of rice falls to Rs.15 then A may purchase from the market at a lower price, instead of honouring the contract. Thus, a party to the contract may default on his obligation if there is incentive to default. This risk is also called default risk or credit risk.

In addition to the illiquidity and counterparty risks, there are several issues like lack of transparency, settlement complications as it is to be done directly between the contracting parties. Simple solution to all these issues lies in bringing these contracts to the centralized trading platform. This is what futures contracts do.

Futures contract

Futures markets were innovated to overcome the limitations of forwards. A futures contract is an agreement made through an organized exchange to buy or sell a fixed amount of a commodity or a financial asset on a future date at an agreed price. Simply, futures are standardised forward contracts that are traded on an exchange. The clearinghouse associated with the exchange guarantees settlement of these trades. A trader, who buys futures contract, takes a long position and the one, who sells futures, takes a short position. The words buy and sell are figurative only because no money or underlying asset changes hand, between buyer and seller, when the deal is signed.

Features of futures contract

In futures market, exchange decides all the contract terms of the contract other than price. Accordingly, futures contracts have following features:

- Contract between two parties through Exchange

- Centralised trading platform i.e. exchange
- Price discovery through free interaction of buyers and sellers
- Margins are payable by both the parties
- Quality decided today (standardized)
- Quantity decided today (standardized)

Futures terminologies

Let us understand various terms in the futures market with the help of quotes on Nifty futures from NSE:

Quotes given on the NSE website for Nifty futures as on March 7, 2018

1. Instrument type	:	Future Index
2. Underlying asset	:	Nifty 50
3. Expiry date	:	March 28, 2018
4. Open price (in Rs.)	:	10200.00
5. High price (in Rs.)	:	10254.00
6. Low price (in Rs.)	:	10155.00
7. Closing price (in Rs.)	:	10171.55
8. No of contracts traded	:	1,98,900
9. Turnover (in Rs. Lakhs)	:	15,21,894.99
10. Underlying value (in Rs.)	:	10154.20

Spot Price: The price at which an asset trades in the cash market. This is the underlying value of Nifty on March 7, 2018 which is 10154.20.

Futures Price: The price of the futures contract in the futures market. The closing price of Nifty in futures trading is Rs. 10171.55. Thus Rs. 10171.55 is the future price of Nifty, on a closing basis.

Contract Cycle: It is a period over which a contract trades. On March 7, 2018, the maximum number of index futures contracts is of 3 months contract cycle- the near month (March 2018), the next month (April 2018) and the far month (May 2018). Every futures contract expires on last Thursday of respective month or the day before if the last Thursday is a trading holiday (in this case since Thursday, March 29, 2018 is a trading holiday, the March contract expires on the day before i.e., on March 28, 2018). And, a new contract (in this example - June 2018) is introduced on the trading day following the expiry day of the near month contract.

Expiration Day: The day on which a derivative contract ceases to exist. It is last trading day of the contract. Generally, it is the last Thursday of the expiry month unless it is a trading holiday on that day. If the last Thursday is a trading holiday, the contracts expire on the previous trading day. For the March 2018 contract, the expiry date is given as March 28, 2018 since March 29, 2018 (Thursday) is a trading holiday. On expiry date, all the contracts are compulsorily settled. If a contract is to be continued then it must be rolled to the near future contract. For a long position, this means selling the expiring contract and buying the next contract. Both the sides of a roll over should be executed

at the same time. Currently, all equity derivatives contracts (both on indices and individual stocks) are cash settled.

Tick Size: It is minimum move allowed in the price quotations. Exchanges decide the tick sizes on traded contracts as part of contract specification. Tick size for Nifty futures is 5 paisa. Bid price is the price buyer is willing to pay and ask price is the price seller is willing to sell.

Contract Size and Contract Value: Futures contracts are traded in lots and to arrive at the contract value we have to multiply the price with contract multiplier or lot size or contract size.

Basis: The difference between the spot price and the futures price is called basis. If the futures price is greater than spot price, basis for the asset is negative. Similarly, if the spot price is greater than futures price, basis for the asset is positive. On March 7, 2018, spot price < future price thus basis for Nifty futures is negative i.e. (10154.20 - 10171.55 = - Rs 17.35).

Importantly, basis for one-month contract would be different from the basis for two or three month contracts. Therefore, definition of basis is incomplete until we define the basis vis-a-vis a futures contract i.e. basis for one month contract, two months contract etc. It is also important to understand that the basis difference between say one month and two months futures contract should essentially be equal to the cost of carrying the underlying asset between first and second month. Indeed, this is the fundamental of linking various futures and underlying cash market prices together.

During the life of the contract, the basis may become negative or positive, as there is a movement in the futures price and spot price. Further, whatever the basis is, positive or negative, it turns to zero at maturity of the futures contract i.e. there should not be any difference between futures price and spot price at the time of maturity/ expiry of contract. This happens because final settlement of futures contracts on last trading day takes place at the closing price of the underlying asset.

It may be noted that derivatives trading based on the on global indices was also launched by India derivatives exchanges. These contracts are denominated in Indian Rupees. For example, NSE introduced derivative contracts on FTSE100, S&P 500 and Dowjones and BSE introduced derivative contracts on iBovespa (Brazilian index), MICEX (Russian index), Hang Seng (Hongkong index)& FTSE/JSE Top40 (South African index).

The National Stock Exchange has also launched future contracts on India Volatility Index (VIX) enabling traders to hedge market risk arising out of volatility.

Cost of Carry

Cost of Carry is the relationship between futures prices and spot prices. It measures the storage cost (in commodity markets) plus the interest that is paid to finance or 'carry' the asset till delivery less the income earned on the asset during the holding period. For equity derivatives, carrying cost is the interest paid to finance the purchase less (minus) dividend earned.

For example, assume the share of ABC Ltd is trading at Rs. 100 in the cash market. A person wishes to buy the share, but does not have money. In that case he would have to borrow Rs. 100 at the rate of, say, 6% per annum. Suppose that he holds this share for one year and in that year he expects the company to give 200% dividend on its face value of Rs. 1 i.e. dividend of Rs. 2. Thus his net cost of carry = Interest paid – dividend received = 6 – 2 = Rs. 4. Therefore, break even futures price for him should be Rs.104.

It is important to note that cost of carry will be different for different participants.

Margin Account

As exchange guarantees the settlement of all the trades, to protect itself against default by either counterparty, it charges various margins from brokers. Brokers in turn charge margins from their customers. Brief about margins is as follows:

Initial Margin

The amount one needs to deposit in the margin account at the time of entering a futures contract is known as the initial margin. Let us take an example - On March 8, 2018 a person decided to enter into a futures contract. He expects the market to go up so he takes a long Nifty Futures position for March expiry. On March 7, 2018, Nifty March month futures contract closes at 10171.55.

The contract value = Nifty futures price * lot size= 10171.55 * 75 = Rs 7,62,866.

Therefore, Rs 7,62,866 is the contract value of one Nifty Future contract expiring on March 28, 2018.

Assuming that the broker charges 10% of the contract value as initial margin, the person has to pay him Rs. 76,287 as initial margin. Both buyers and sellers of futures contract pay initial margin, as there is an obligation on both the parties to honour the contract.

The initial margin is dependent on price movement of the underlying asset. As high volatility assets carry more risk, exchange would charge higher initial margin on them.

Marking to Market (MTM)

In futures market, while contracts have maturity of several months, profits and losses are settled on day-to-day basis – called mark to market (MTM) settlement. The exchange collects these margins (MTM margins) from the loss making participants and pays to the gainers on day-to-day basis.

Let us understand MTM with the help of the example. Suppose a person bought a futures contract on March 8, 2018 when the Nifty futures contract was trading at 10171.55. He paid an initial margin of Rs. 76,287 as calculated above. At the end of that day, Nifty futures contract closes at 10242.95. This means that he/she benefits due to the 71.4 points gain on Nifty futures contract. Thus, his/her net gain for the day is Rs 71.4 x 75 = Rs 5355. This money will be credited to his account and next day his/her position will start from 10242.95 (for MTM computation purpose).

Open Interest and Volumes Traded

An open interest is the total number of contracts outstanding (yet to be settled) for an underlying asset. It is important to understand that number of long futures as well as number of short futures is equal to the Open Interest. This is because total number of long futures will always be equal to total number of short futures. Only one side of contracts is considered while calculating/mentioning open interest. The level of open interest indicates depth in the market.

Volumes traded give us an idea about the market activity with regards to specific contract over a given period – volume over a day, over a week or month or over entire life of the contract.

Contract Specifications

Contract specifications include the salient features of a derivative contract like contract maturity, contract multiplier also referred to as lot size, contract size, tick size etc. An example contract specification is given below:

NSE's Nifty Index Futures Contracts	
Underlying index	Nifty 50
Contract Multiplier (Lot size)	75
Tick size or minimum price difference	0.05 index point (i.e., Re 0.05 or 5 paise)
Last trading day / Expiration day	Last Thursday of the expiration month. If it happens to be a holiday, the contract will expire on the previous business day.
Contract months	3 contracts of 1, 2 and 3 month's maturity. At the expiry of the nearest month contract, a new contract with 3 months maturity will start. Thus, at any point of time, there will be 3 contracts available for trading.
Daily settlement price	Settlement price of the respective futures contract.
Final settlement price	Settlement price of the cash index on the expiry date of the futures contract.

Price band

Price Band is essentially the price range within which a contract is permitted to trade during a day. The band is calculated with regard to previous day closing price of a specific contract. For example, previous day closing price of a contract is Rs.100 and price band for the contract is 10% then the contract can trade between Rs.90 and Rs.110 for next trading day. On the first trading day of the contract, the price band is decided based on the closing price of the underlying asset in cash market. For example, Today is first trading day of a futures contract for an underlying asset i.e. company A. The price band for the contract is decided on the previous day's closing price of company 'A' stock in cash market. Price band is clearly defined in the contract specifications so that all market participants are aware of the same in advance.

Sometimes, bands are allowed to be expanded at the discretion of the exchanges with specific trading halts.

Positions in derivatives market

As a market participant, you will always deal with certain terms like long, short and open positions in the market. Let us understand the meanings of commonly used terms:

Long position

Outstanding/ unsettled buy position in a contract is called "Long Position". For instance, if Mr. X buys 5 contracts on Sensex futures then he would be long on 5 contracts on Sensex futures. If Mr. Y buys 4 contracts on Pepper futures then he would be long on 4 contracts on pepper.

Short Position

Outstanding/ unsettled sell position in a contract is called "Short Position". For instance, if Mr. X sells 5 contracts on Sensex futures then he would be short on 5 contracts on Sensex futures. If Mr. Y sells 4 contracts on Pepper futures then he would be short on 4 contracts on pepper.

Open position

Outstanding/ unsettled either long (buy) or short (sell) position in various derivative contracts is called "Open Position". For instance, if Mr. X shorts say 5 contracts on Infosys futures and longs say 3 contracts on Reliance futures, he is said to be having open position, which is equal to short on 5 contracts on Infosys and long on 3 contracts of Reliance. If next day, he buys 2 Infosys contracts of same maturity, his open position would be – short on 3 Infosys contracts and long on 3 Reliance contracts.

Naked and calendar spread positions

Naked position in futures market simply means a long or short position in any futures contract without having any position in the underlying asset. Calendar spread position is a combination of two positions in futures on the same underlying - long on one maturity contract and short on a different maturity contract. For instance, a short position in near month contract coupled with a long position in far month contract is a calendar spread position. Calendar spread position is computed with respect to the near month series and becomes an open position once the near month contract expires or either of the offsetting positions is closed.

A calendar spread is always defined with regard to the relevant months i.e. spread between August contract and September contract, August contract and October contract and September contract and October contract etc.

Opening a position

Opening a position means either buying or selling a contract, which increases client's open position (long or short).

Closing a position

Closing a position means either buying or selling a contract, which essentially results in reduction of client's open position (long or short). A client is said to be closed a position

if he sells a contract which he had bought before or he buys a contract which he had sold earlier.

Limitations of Futures Contract

As futures are standardized contracts introduced by the exchanges, they too have certain limitations in the context of limited maturities, limited underlying set, lack of flexibility in contract design and increased administrative costs on account of MTM settlement etc.

Differences 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, but at times gets reduced by a guarantor.	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 standardised exchange-traded contracts.
Price discovery	Not Efficient, as markets are scattered.	Efficient, centralised 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.
Examples	Currency markets are an example of forwards. Today currency futures and options have been introduced in India, but yet a market for currency forwards exists through banks.	Commodities futures, Currency futures, Index futures and Individual stock futures in India.

3.2 Pay off Charts for Futures contract

Pay off Charts

Pay off on a position is the likely profit/ loss that would accrue to a market participant with change in the price of the underlying asset at expiry. The pay off diagram is graphical representation showing the price of the underlying asset on the X-axis and profits/ losses on the Y-axis.

Pay off charts for futures

In case of futures contracts, long as well as short position has unlimited profit or loss potential. This results into linear pay offs for futures contracts. Futures pay offs are explained in detail below:

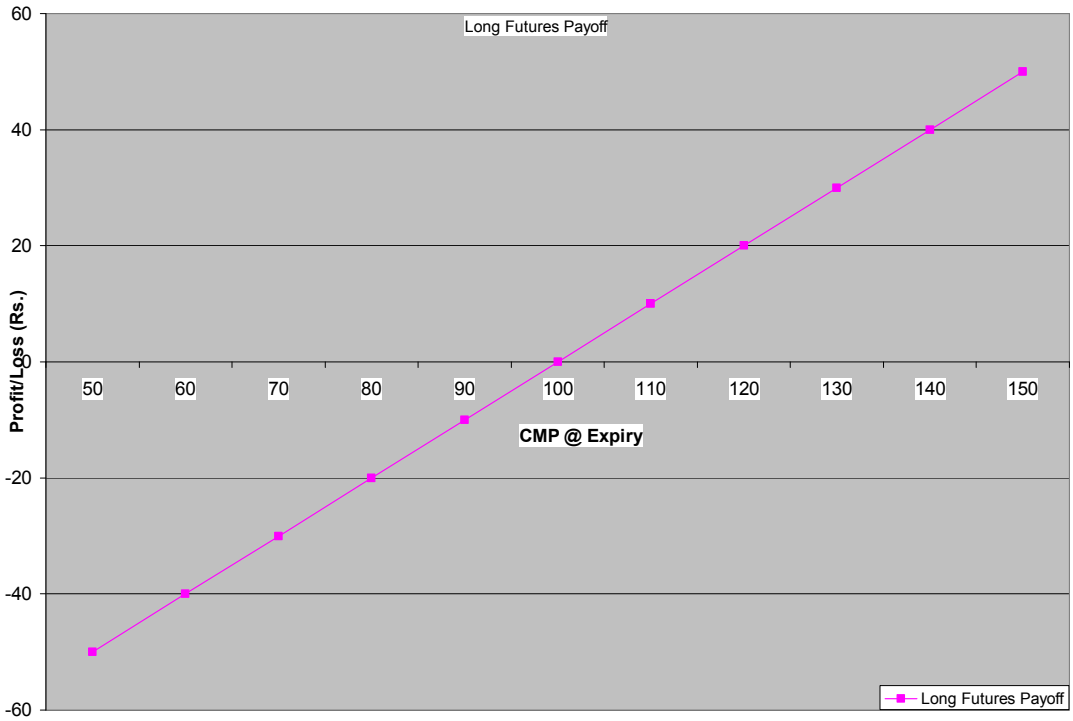
Pay off for buyer of futures: Long futures

Let us say a person goes long in a futures contract at Rs.100. This means that he has agreed to buy the underlying at Rs. 100 on expiry. Now, if on expiry, the price of the underlying is Rs. 150, then this person will buy at Rs. 100, as per the futures contract and will immediately be able to sell the underlying in the cash market at Rs.150, thereby making a profit of Rs. 50. Similarly, if the price of the underlying falls to Rs. 70 at expiry, he would have to buy at Rs. 100, as per the futures contract, and if he sells the same in the cash market, he would receive only Rs. 70, translating into a loss of Rs. 30.

This potential profit/ loss at expiry when expressed graphically, is known as a pay off chart. The X Axis has the market price of the underlying at expiry. It increases on the Right Hand Side (RHS). We do not draw the X Axis on the Left Hand Side (LHS), as prices cannot go below zero. The Y Axis shows profit & loss. In the upward direction, we have profits and in the downward direction, we show losses in the chart.

The below table and pay off chart show long futures pay offs:

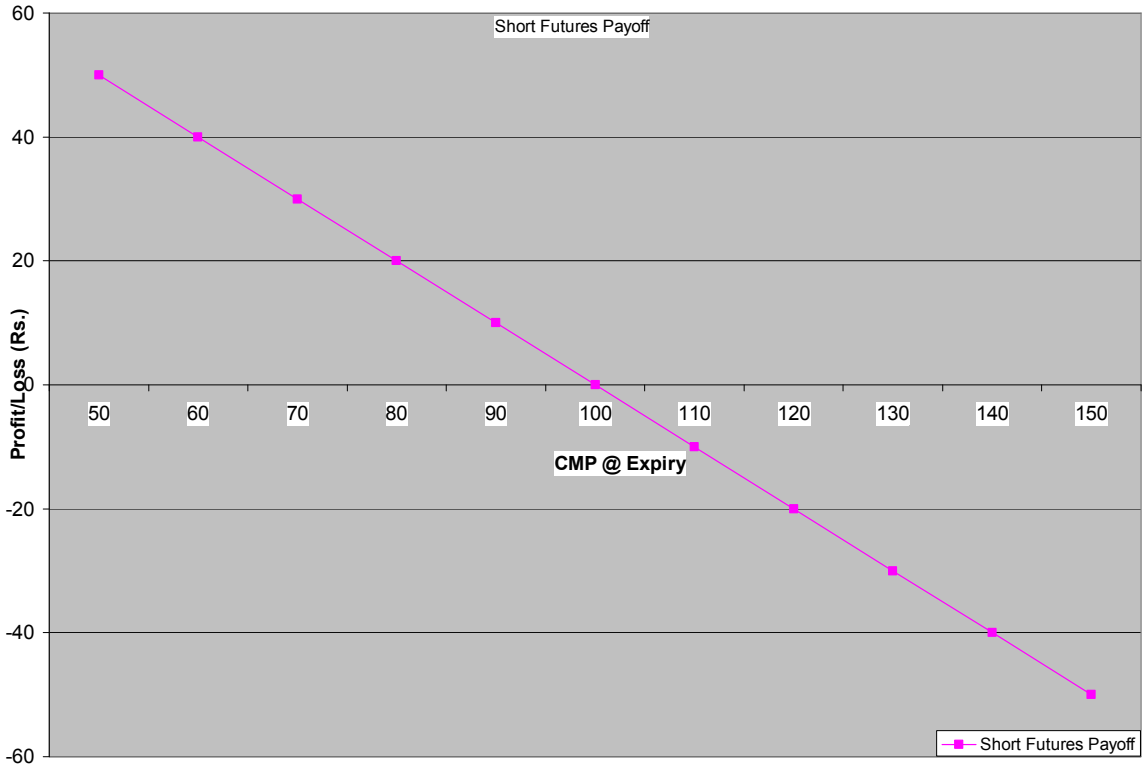
Long Futures at 100	
Market price at expiry	Long Futures Pay off
50	-50
60	-40
70	-30
80	-20
90	-10
100	0
110	10
120	20
130	30
140	40
150	50



Short Futures pay off

As one person goes long, some other person has to go short, otherwise a deal will not take place. The profits and losses for the short futures position will be exactly opposite of the long futures position. This is shown in the below table and chart:

Short Futures at 100	
Market price at expiry	Short Futures Pay off
50	50
60	40
70	30
80	20
90	10
100	0
110	-10
120	-20
130	-30
140	-40
150	-50



As can be seen, a short futures position makes profits when prices fall. If prices fall to 60 at expiry, the person who has shorted at Rs.100 will buy from the market at 60 on expiry and sell at 100, thereby making a profit of Rs. 40. This is shown in the above chart.

3.3 Futures pricing

Pricing of a futures contract depends on the characteristics of underlying asset. There is no single way to price futures contracts because different assets have different demand and supply patterns, different characteristics and cash flow patterns. This makes it difficult to design a single methodology for calculation of pricing of futures contracts. Market participants use different models for pricing futures. Here, our discussion is limited to only two popular models of futures pricing - Cash and Carry model and Expectancy model.

Cash and Carry Model for Futures Pricing

Cash and Carry model is also known as non-arbitrage model. This model assumes that in an efficient market, arbitrage opportunities cannot exist. In other words, the moment there is an opportunity to make money in the market due to mispricing in the asset price and its replicas, arbitrageurs will start trading to profit from these mispricing and thereby eliminating these opportunities. This trading continues until the prices are aligned across the products/ markets for replicating assets.

Let us understand the entire concept with the help of an example. Practically, forward/ futures position in a stock can be created in following manners:

- Enter into a forward/futures contract, or

- Create a synthetic forward/futures position by buying in the cash market and carrying the asset to future date.

Price of acquiring the asset as on future date in both the cases should be same i.e. cost of synthetic forward/ futures contract (spot price + cost of carrying the asset from today to the future date) should be equivalent to the price of present forward/ futures contract. If prices are not same then it will trigger arbitrage and will continue until prices in both the markets are aligned.

The cost of creating a synthetic futures position is the fair price of futures contract. Fair price of futures contract is nothing but addition of spot price of underlying asset and cost of carrying the asset from today until delivery. Cost of carrying a financial asset from today to the future date would entail different costs like transaction cost, custodial charges, financing cost, etc whereas for commodities, it would also include costs like warehousing cost, insurance cost, etc.

Let us take an example from Bullion Market. The spot price of gold is Rs 15000 per 10 grams. The cost of financing, storage and insurance for carrying the gold for three months is Rs. 100 per 10 gram. Now you purchase 10 gram of gold from the market at Rs 15000 and hold it for three months. We may now say that the value of the gold after 3 months would be Rs 15100 per 10 gram.

Assume the 3-month futures contract on gold is trading at Rs 15150 per 10 gram. What should one do? Apparently, one should attempt to exploit the arbitrage opportunity present in the gold market by buying gold in the cash market and sell 3-month gold futures simultaneously. We borrow money to take delivery of gold in cash market today, hold it for 3 months and deliver it in the futures market on the expiry of our futures contract. Amount received on honouring the futures contract would be used to repay the financer of our gold purchase. The net result will be a profit of Rs 50 without taking any risk. (In the entire process, we have not considered any transaction cost-brokerage etc.)

Because of this mispricing, as more and more people come to the cash market to buy gold and sell in futures market, spot gold price will go up and gold futures price will come down. This arbitrage opportunity continues until the prices between cash and futures markets are aligned.

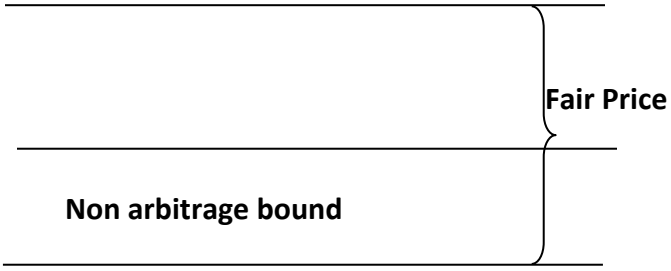
Therefore, if futures price is more than the future fair price of asset/ synthetic futures price, it will trigger cash and carry arbitrage, which will continue until the prices in both the markets are aligned.

Similarly, if futures prices is less than the future fair price of asset/ synthetic futures price, it will trigger reverse cash and carry arbitrage i.e. market participants start buying gold in futures markets and sell gold in cash market. Now people will borrow gold and deliver it to honour the contract in the cash market and earn interest on the cash market sales proceeds. After three months, they give gold back to the lender on receipt of the same in futures market. This reverse arbitrage will result in reduction of gold's

spot price and increase of its futures price, until these prices are aligned to leave no money on the table.

Cost of transaction and non-arbitrage bound

Cost components of futures transaction like margins, transaction costs (commissions), taxes etc. create distortions and take markets away from equilibrium. In fact, these cost components create a non-arbitrage bound in the market i.e. if the futures price is within that bound around the future fair value/ synthetic futures value, arbitrage will not take place. In other words, because of the frictions in the market, for arbitrage to get triggered, it is important for the futures price to fall beyond the non arbitrage bound in either direction for the arbitragers to make profit from the arbitrage opportunities.



Practically, every component of carrying cost contributes towards widening this non-arbitrage bound. Here, we should appreciate that wider the non-arbitrage bound, farther the markets are from the equilibrium. In other words, for markets to be efficient, different costs of operating in the markets should be as low as possible. Lower costs would narrow down the non-arbitrage bound, which in-turn would ensure the efficient price alignment across the markets.

Extension of cash & carry model to the assets generating returns

Let us extend the concept of cash and carry model by adding the inflows during the holding period of underlying assets. For instance, underlying asset like securities (equity or bonds) may have certain inflows, like dividend on equity and interest on debt instruments, during the holding period. These inflows are adjusted in the future fair price. Thus, modified formula of future fair price or synthetic futures price is:

Fair price = Spot price + Cost of carry - Inflows

In mathematical terms, $F = S\ (1+r-q)^T$

Where F is fair price of the futures contract, S is the Spot price of the underlying asset, q is expected return during holding period T (in years) and r is cost of carry.

If we use the continuous compounding, we may rewrite the formula as: $F= Se^{(r-q)*T}$

Let us apply the above formula to the index futures market to find the synthetic futures price/ future fair price of an index. Suppose , you buy an index in cash market at 10000 level i.e. purchase of all the stocks constituting the index in the same proportion as they are in the index, cost of financing is 12% and the return on index is 4% per annum (spread uniformly across the year). Given this statistics, fair price of index three months down the line should be:

= Spot price (1+cost of financing – holding period return) ^ (time to expiration/365)

= 10000 (1+0.12-0.04)^(90/365)
= Rs. 10,191.58
[Alternatively, we could use exponential form for calculating the futures value as spot price * $e^{(r-q)T}$. Value in that case would have been 10000 * $e^{((0.12-0.04)*90/365)}$ = Rs. 10,199.22].

If index futures is trading above 10199.22, we can buy index stocks in cash market and simultaneously sell index futures to lock the gains equivalent to the difference between futures price and future fair price (the cost of transaction, taxes, margins etc. are not considered while calculating the future fair value).

Note: Cost of borrowing of funds and securities, return expectations on the held asset etc. are different for the different market participants. The number of fair values of futures can be equal to the number of market participants in the market. Perhaps the difference among the fair values of futures contracts and non-arbitrage bound for different market participants is what makes the market on continuous basis.

Assumptions in cash and carry model
Cash and carry model of futures pricing works under certain assumptions. The important assumptions are stated below:*

- Underlying asset is available in abundance in cash market.
- Demand and supply in the underlying asset is not seasonal.
- Holding and maintaining of underlying asset is easy and feasible.
- Underlying asset can be sold short.
- No transaction costs.
- No taxes.
- No margin requirements.

[*This is not an exhaustive list of the assumptions of the model but is the list of important assumptions]

The assumption that underlying asset is available in abundance in the cash market i.e. we can buy and/or sell as many units of the underlying assets as we want. This assumption does not work especially when underlying asset has seasonal pattern of demand and supply. The prices of seasonal assets (especially commodities) vary drastically in different demand-supply environments. When supplies arrive to the market place, prices are generally low whereas prices are generally high immediately before the supply of the underlying.

When an underlying asset is not storable i.e. the asset is not easy to hold/maintain, then one cannot carry the asset to the future. The cash and carry model is not applicable to these types of underlying assets.

Similarly, many a times, the underlying may not be sold short. This is true in case of seasonal commodities.

Even though this simple form of cash and carry model does not discount for transaction cost, taxes etc. we can always upgrade the formula to reflect the impact of these factors in the model. Margins are not considered while delivering the fair value/ synthetic

futures value. That is why this model is suitable for pricing forward contracts rather than futures contracts.

Thus, no generalized statement can be made with regard to the use of cash and carry model for pricing futures contracts. Assumptions of the model and characteristics of underlying asset can help us in deciding whether a specific asset can be priced with the help of this model or not. Further, suitable adjustments are made in the model to fit in the specific requirements of the underlying assets.

Convenience Yield

Let us touch one more concept in futures market called Convenience Yield. We need to go back and have a look at the formula for fair price of futures contract.

Fair price of futures contract = Spot price + Cost of carry – Inflows

As seen earlier inflows may be in the form of dividend (in case of equity) and interest (in case of debt). However, sometimes inflows may also be intangibles. Intangible inflows essentially mean values perceived by the market participants just by holding the asset. These values may be in the form of just convenience or perceived mental comfort by holding the asset.

For instance, in case of natural disaster like flood in a particular region, people start storing essential commodities like grains, vegetables and energy products (heating oil) etc. As a human tendency we store more than what is required for our real consumption during a crisis. If every person behaves in similar way then suddenly a demand is created for an underlying asset in the cash market. This indirectly increases the price of underlying assets. In such situations people are deriving convenience, just by holding the asset. This is termed as convenience return or convenience yield.

Convenience return for a commodity is likely to be different for different people, depending on the way they use it. Further, it may vary over a period. In fact, convenience is a subjective issue and may be very difficult to price.

Convenience yield sometimes may dominate the cost of carry, which leads futures to trade at a discount to the cash market. In this case, reverse arbitrage is also not possible because no one lends traders the assets to sell short in the cash market. In such situations, practically, the cash and carry model breaks down and cannot be applied for pricing the underlying assets.

Expectancy model of futures pricing

According to the expectancy model, it is not the relationship between spot and futures prices but that of expected spot and futures prices, which moves the market, especially in cases when the asset cannot be sold short or cannot be stored. It also argues that futures price is nothing but the expected spot price of an asset in the future. This is why market participants would enter futures contract and price the futures based upon their estimates of the future spot prices of the underlying assets.

According to this model,

- Futures can trade at a premium or discount to the spot price of underlying asset.

- Futures price give market participants an indication of the expected direction of movement of the spot price in the future.

For instance, if futures price is higher than spot price of an underlying asset, market participants may expect the spot price to go up in near future. This expectedly rising market is called “Contango market”. Similarly, if futures price are lower than spot price of an asset, market participants may expect the spot price to come down in future. This expectedly falling market is called “Backwardation market”.

Price discovery and convergence of cash and futures prices on the expiry

It is important to understand what actually futures prices indicate? For instance, if say May 2018 index futures contract is trading today (in March 2018) at 10200, what does it mean. We can explain this by saying that that market expects the cash index to settle at 10200 at the closure of the market on last Thursday of May (i.e., on the last trading day of the contract which is May 31, 2018). Point is that every participant in the market is trying to predict the cash index level at a single point in time i.e. at the closure of the market on last trading day of the contract, which is Thursday in our example. This results in price discovery of cash index at a specific point in time. Now, we may also state that futures prices are essentially expected spot price of the underlying asset, at the maturity of the futures contract. Accordingly, both futures and spot prices converge at the maturity of futures contract, as at that point in time there cannot be any difference between these two prices. This is the reason why all futures contracts on expiry settle at the underlying cash market price. This principal remains same for all the underlying assets.

3.4 Commodity, Equity & Index Futures

The basic concept of a derivative contract remains the same for all the underlying assets, whether the underlying happens to be a commodity or equity or index futures. Some features are very peculiar to commodity derivative markets. In the case of financial derivatives, most of these contracts are cash settled whereas in the case of commodity derivatives, some contracts may settle with physical delivery. Even in the case of physical settlement, financial assets are not bulky and do not need special facility for storage, whereas in commodity market, due to the bulky nature of the underlying assets, physical settlement in commodity derivatives creates the need for warehousing. The varying quality of asset does not really exist as far as financial underlying is concerned but in case of commodities, the quality of the asset underlying a contract can vary significantly.

3.5 Uses of futures

Role of different participants in derivatives markets

Hedgers

Corporations, Investing Institutions, Banks and Governments all use derivative products to hedge or reduce their exposures to market variables such as interest rates, share values, bond prices, currency exchange rates and commodity prices. The classic example is the farmer who sells futures contracts to lock into a price for delivering a crop on a

future date. The buyer might be a food-processing company, which wishes to fix a price for taking delivery of the crop in the future. Another case is that of a company due to receive a payment in a foreign currency on a future date. It enters into a forward transaction with a bank agreeing to sell the foreign currency and receive a predetermined quantity of domestic currency.

Speculators/Traders

Derivatives are very well suited to trading on the prices of commodities and financial assets and on key market variables such as interest rates, stock market indices and currency exchange rates. It is much less expensive to create a speculative position using derivatives than by actually trading the underlying commodity or asset. As a result, the potential returns are much greater. A classic application is the trader who believes that increasing demand or scarce production is likely to boost the price of a commodity. He has two options with him - first option is to buy and store the physical commodity whereas other option is to go long futures contract. Trader chooses the second option to go long futures contract on the underlying asset. If commodity price increases, the value of the contract will also rise and he can reverse back position to book his profit.

Arbitrageurs

An arbitrage is a deal that produces risk free profits by exploiting a mispricing in the market. A simple arbitrage occurs when a trader purchases an asset cheaply in one location/ exchange and simultaneously arranges to sell it at another location/ exchange at a higher price. Such opportunities are unlikely to persist for very long, since arbitrageurs would rush in to buy the asset in the cheap location and simultaneously sell at the expensive location, thus reducing the pricing gap.

As mentioned above, there are three major players in derivatives market – Hedgers, Traders, and Arbitrageurs. Hedgers are there to hedge their risk, traders take the risk which hedgers plan to offload from their exposure and arbitragers establish an efficient link between different markets.

Traders take naked positions in the futures market i.e. they go long or short in various futures contracts available in the market. Indeed, capacity of derivatives market to absorb buying/selling by hedgers is directly dependent upon availability of traders, who act as counter-party to hedgers. Accordingly, Traders form one of the most important participants of the derivatives market, providing depth to the market. Hedgers will not be able to hedge if traders were not present in the system. Therefore, for futures market to click, presence of both hedgers and traders is a must.

For instance, assume, a farmer expects the price of wheat to fall in near future. He wants to hedge his price risk on wheat produce for next 3 months till the time he has actual produce in his hands and so would like to lock at the forward/ futures price now. Accordingly, farmer can sell futures contracts on the expected quantity of produce. In order to sell this futures contract, he needs a buyer. This buyer may be someone who needs wheat after three months, may be a flour mill or a bakery. However, most of the times, there is a demand supply mismatch in the market and the trader fills the gap between demand and supply.

Here trader, counterparty to the farmer, is thinking in contrary i.e. this buyer would buy only if he thinks that actual price of wheat is going to be higher than the contract price for futures three months down the line. Further, the profit of trader would depend upon actual wheat price being more than the contracted futures price at the maturity of futures contract. If it is so, trader would make money otherwise he would lose money.

In addition to hedgers and traders, to establish a link between various markets like spot and derivatives, we need a third party called arbitragers. These arbitragers continuously hunt for the profit opportunities across the markets and products and seize those by executing trades in different markets and products simultaneously. Importantly, arbitragers generally lock in their profits unlike traders who trade naked contracts.

For example at the end of day (1st March 2018):

Market price of underlying asset (in Rs.)	100
March futures	110
Lot size	50

Here an arbitrageur will buy in the cash market at Rs. 100 and sell in the Futures market at Rs. 110, thereby locking Rs. 10 as his profit on each share.

On the expiration date, suppose price (in Rs.) of the underlying asset is 108.

	Cash Market	Futures	
Buy	100	Sell	110
Sell	108	Buy	108
	+8		+2

Total profit would therefore be 10*50 = Rs. 500.

Suppose price (in Rs.) of the underlying asset is 95 on the expiration date.

	Cash Market	Futures	
Buy	100	Sell	110
Sell	95	Buy	95
	-5		+15

Total profit is 10*50 = Rs. 500.

In the entire activity, the transaction cost and impact cost have not been considered. In real life, the transaction cost has to be considered like the brokerage, service Tax, Securities Service Tax etc.

Here, it may be interesting to look at the risks these arbitragers carry. As seen before, arbitragers are executing positions in two or more markets/products simultaneously. Even if the systems are seamless and electronic and both the legs of transaction are liquid, there is a possibility of some gap between the executions of both the orders. If either leg of the transaction is illiquid then the risk on the arbitrage deal is huge as only one leg may get executed and another may not, which would open the arbitrager to the naked exposure of a position. Similarly, if contracts are not cash settled in both or one of the markets, it would need reversal of trades in the respective markets, which would result in additional risk on unwinding position with regard to simultaneous execution of the trades.

These profit focused traders and arbitrageurs fetch enormous liquidity to the products traded on the exchanges. This liquidity in turn results in better price discovery, lesser cost of transaction and lesser manipulation in the market.

Uses of Index futures

Equity derivatives instruments facilitate trading of a component of price risk, which is inherent to investment in securities. Price risk is nothing but change in the price movement of asset, held by a market participant, in an unfavourable direction. This risk broadly divided into two components - specific risk or unsystematic risk and market risk or systematic risk.

Unsystematic Risk

Specific risk or unsystematic risk is the component of price risk that is unique to particular events of the company and/or industry. This risk is inseparable from investing in the securities. This risk could be reduced to a certain extent by diversifying the portfolio.

Systematic Risk

An investor can diversify his portfolio and eliminate major part of price risk i.e. the diversifiable/unsystematic risk but what is left is the non-diversifiable portion or the market risk-called systematic risk. Variability in a security's total returns that are directly associated with overall movements in the general market or economy is called systematic risk. Thus, every portfolio is exposed to market risk. This risk is separable from investment and tradable in the market with the help of index-based derivatives. When this particular risk is hedged perfectly with the help of index-based derivatives, only specific risk of the portfolio remains.

Therefore, we may say that total price risk in investment in securities is the sum of systematic risk or market risk and unsystematic risk or specific risk.

Before we get to management of systematic risk with index futures, we need to understand Beta - a measure of systematic risk of a security that cannot be avoided through diversification. It measures the sensitivity of a stock / portfolio vis-a-vis index movement over a period of time, on the basis of historical prices. Suppose a stock has a beta equal to 2. This means that historically a security has moved 20% when the index moved 10%, indicating that the stock is more volatile than the index. Stocks / portfolios having beta more than 1 are called aggressive and having beta less than 1 are called conservative stocks / portfolios.

In order to calculate beta of a portfolio, betas of individual stocks are used. It is calculated as weighted average of betas of individual stocks in the portfolio based on their investment proportion. For example, if there are four stocks in a portfolio with betas 0.5, 1.1, 1.30 and 0.90 having weights 35%, 15%, 20% and 30% respectively, the beta of this portfolio would be 0.87 (0.5*0.35 +1.10*0.15 +1.30*0.20 +0.90*0.30).

A generalized formula for portfolio beta can be written as $W1\ \beta1+W2\ \beta2+\ldots+ Wn\ \beta n= \beta p$

Where, W1 is weight of stock 1, β1 is the β of stock 1, W2 is weight of stock 2, β2 is the β of stock 2, Wn is weight of stock n, βn is the β of stock n and βp is the β of portfolio.

Information on beta of individual stocks is readily available in various financial newspapers, magazines and information vending networks like Bloomberg, Reuters etc.

Now, let us get to management of systematic risk. Assume you are having a portfolio worth Rs.9,00,000 in cash market. You see the market may be volatile due to some reasons. You are not comfortable with the market movement in the short run. At this point of time, you have two options: (1) sell the entire portfolio and buy later and (2) hedge by the use of Index futures to protect the value of this portfolio from the expected fall in the market.

As an investor you are comfortable with the second option. If the prices fall, you make loss in cash market but make profits in futures market. If prices rise, you make profits in cash market but losses in futures market.

Now, the question arises how many contracts you have to sell to make a perfect hedge? Perfect hedge means if you make Rs. 90,000 loss in cash market then you should make Rs. 90,000 profit in futures market. To find the number of contracts for perfect hedge 'hedge ratio' is used. Hedge ratio is calculated as:

Number of contracts for perfect hedge = Vp * βp / Vi
Vp – Value of the portfolio
βp– Beta of the portfolio
Vi – Value of index futures contract

Value of index futures contract or contract size = futures index level * contract multiplier. Readers may note that for simplification purpose, beta of futures index vis-a-vis cash index is taken as one.

Let us assume, Beta of your portfolio is 1.3 , portfolio value is Rs 9,00,000 and benchmark index level is 8000, then hedge ratio will be (9,00,000*1.3/8000) = 146.25 indices. Assume one Futures contract has a lot size of 75.You will have to hedge using 146.25/ 75 = 1.95 contracts. Since you cannot hedge 1.95 contracts, you will have to hedge by 2 futures contracts. You have to pay the broker initial margin in order to take a position in futures.

Hedge against the systematic risk mainly depends upon the relationship of portfolio with the index, which is measured by beta. A portfolio has different relationships with different indices used for hedge hence the hedge ratio would change with the change in the index. Further, there is an assumption that the past relationship between the stock's or portfolio's movement and the index movement would continue in future. This may result in some difference between actual and expected numbers.

Similarly, we can use single stock futures to manage the risk of the equity investment in cash market. For instance, use of single stock futures would hedge the market participant against the whole risk in the equity investment because these futures are comparable with underlying positions. Only difference between an underlying position

and single stock futures is on settlement front; in case of cash transactions, settlement takes place immediately and in case of single stock futures contracts, settlement is deferred.

Important terms in hedging

Long hedge: Long hedge is the transaction when we hedge our position in cash market by going long in futures market. For example, we expect to receive some funds in future and want to invest the same amount in the securities market. We have not yet decided the specific company/companies, where investment is to be made. We expect the market to go up in near future and bear a risk of acquiring the securities at a higher price. We can hedge by going long index futures today. On receipt of money, we may invest in the cash market and simultaneously unwind corresponding index futures positions. Any loss due to acquisition of securities at higher price, resulting from the upward movement in the market over intermediate period, would be partially or fully compensated by the profit made on our position in index futures.

Further, while investing, suitable securities at reasonable prices may not be immediately available in sufficient quantity. Rushing to invest all money is likely to drive up the prices to our disadvantage. This situation can also be taken care of by using the futures. We may buy futures today; gradually invest money in the cash market and unwind corresponding futures positions.

Similarly, we can take an example from the commodity market, if there is a flour mill and it is expecting the price of wheat to go up in near future. It may buy wheat in forwards/ futures market and protect itself against the upward movement in price of wheat. This would also be an example of long hedge.

Short hedge: Short Hedge is a transaction when the hedge is accomplished by going short in futures market. For instance, assume, we have a portfolio and want to liquidate in near future but we expect the prices to go down in near future. This may go against our plan and may result in reduction in the portfolio value. To protect our portfolio's value, today, we can short index futures of equivalent amount. The amount of loss made in cash market will be partly or fully compensated by the profits on our futures positions.

Let us take an example from currency market. Assume Company C is into export and import business. Company expects some dollars to flow in after say 6 months. Director Finance of the company is expecting the depreciation in dollar vis-a-vis local currency over this period of time. To protect against this risk of adverse movement in exchange rate of currency, company C may sell dollars in forward /futures market. This selling would protect company against any fall of dollar against the local currency.

Cross hedge: When futures contract on an asset is not available, market participants look forward to an asset that is closely associated with their underlying and trades in the futures market of that closely associated asset, for hedging purpose. They may trade in futures in this asset to protect the value of their asset in cash market. This is called cross hedge.

For instance, if futures contracts on jet fuel are not available in the international markets then hedgers may use contracts available on other energy products like crude oil, heating oil or gasoline due to their close association with jet fuel for hedging purpose. This is an example of cross hedge.

Indeed, in a crude sense, we may say that when we are using index futures to hedge against the market risk on a portfolio, we are essentially establishing a cross hedge because we are not using the exact underlying to hedge the risk against.

Hedge contract month: Hedge contract month is the maturity month of the contract through which we hedge our position. For instance, if we use August 2018 contract to hedge our portfolio's market risk, our hedge contract month would be August 2018 contract. Similarly, if we hedge say risk on crude oil price with the help of March 2019, hedge contract month would be March 2019.

Trading in futures market

Traders are risk takers in the derivatives market. And they take positions in the futures market without having position in the underlying cash market. These positions are based upon their expectations on price movement of underlying asset**.** Traders either take naked positions or spread positions.

A trader takes a naked long position when he expects the market to go up. Money comes by reversing the position at higher price later. Similarly, he takes a short position when he expects the market to go down to book profit by reversing his position at lower price in the future. For instance, if one month Sensex futures contract is trading at 27900 and trader expects the cash index at the maturity of the one month contract should settle at a level higher than this, he would take a long position in index futures at a level of 27900. If his expectation comes true and index on maturity settles beyond 27900, this trader will make money to the extent of the difference between buy and sell/settlement price of the index.

Traders may also take long/short positions in single stock futures. When they expect the market to go up, they may take long position in these futures and when they expect the market to go down, they may take short position in single stock futures.

Similarly, if someone wants to trade upon say steel prices, he may take long or short position on steel futures depending upon his view – long position, if he expects the market to move upwards and short position, if he expects the market to go downward. If market moves in the expected direction, trader would end up making profit. Here, it may be noted that if market does not move in the expected direction, trader may also incur a loss. Because, a position is as exposed to loss as profit, it is called the speculative position.

Naked position is long or short in any of the futures contracts but in case of a spread, two opposite positions (one long and one short) are taken either in two contracts with same maturity on different products or in two contracts with different maturities on the same product. Former is inter-commodity or inter-product spread and latter is calendar spread/time spread or horizontal spread. Exchanges need to provide the required inputs

to the system for it to recognize any kind of spread. At present, in equity market, the system recognizes only calendar spreads. In commodities market, system recognizes inter-commodity spread between specific commodities like Gold and Silver; Soybean, Soybean meal and Soybean oil, etc.

Calendar spread position is always computed with respect to the near month series. For instance, if Mr. A has say 3 contacts short in one month futures contract, 2 contracts long in two months futures contract and 3 contracts long in three months futures contract, he would be said to have 2 calendar spreads between first and second months and 1 calendar spread between first and third month. Further, his position in remaining 2 three months contracts would be treated as naked. A calendar spread becomes a naked/open position, when the near month contract expires or either of the legs of spread is closed. As spread positions are hedged to a large extent because they are combinations of two opposite positions, they are treated as conservatively speculative positions.

Arbitrage opportunities in futures market

Arbitrage is simultaneous purchase and sale of an asset or replicating asset in the market in an attempt to profit from discrepancies in their prices. Arbitrage involves activity on one or several instruments/assets in one or different markets, simultaneously. Important point to understand is that in an efficient market, arbitrage opportunities may exist only for shorter period or none at all. The moment an arbitrager spots an arbitrage opportunity, he would initiate the arbitrage to eliminate the arbitrage opportunity.

Arbitrage occupies a prominent position in the futures world as a mechanism that keeps the prices of futures contracts aligned properly with prices of the underlying assets. The objective of arbitragers is to make profits without taking risk, but the complexity of activity is such that it may result in losses as well. Well-informed and experienced professional traders, equipped with powerful calculating and data processing tools, normally undertake arbitrage.

Arbitrage in the futures market can typically be of three types:

- Cash and carry arbitrage: Cash and carry arbitrage refers to a long position in the cash or underlying market and a short position in futures market.
- Reverse cash and carry arbitrage: Reverse cash and carry arbitrage refers to long position in futures market and short position in the underlying or cash market.
- Inter-Exchange arbitrage: This arbitrage entails two positions on the same contract in two different markets/ exchanges.

These three positions are elaborated with the help of examples. To simplify the calculations, it is assumed that there is no resistance like transaction costs, impact cost, taxes etc., but in reality, arbitrage may not be as easy and costless as presumed in these simplified examples. In a simplified world of the kind described by our assumptions, actual futures prices are assumed to be exactly equal to the fair price or theoretical price, which is spot price plus cost of carry.

In the language of simple mathematics, Fair futures price F = S + C

where S stands for Spot price and C stands for Holding costs/carrying costs.

If cost of carry is defined in the percentage terms, we may redefine the formula as:

$F = S(1+r)^T$

Where r is the carrying cost (in percentage) and T is the Time to expiration (in years).

If we use continuous compounding for computation of the cost, the same formula reduces to:

$F= Se^{rT}$

If futures price is higher than fair/theoretical price, there would exist profitable, risk-free, cash and carry arbitrage opportunity. Thus, unless there are obstacles to such arbitrage the activities of the arbitrageurs would cause spot-futures price relationships to conform to that described by the cost of carry formula. On rare occasions, however, there is an arbitrage opportunity that exists for some time. Practically, an arbitrage is feasible and will be undertaken only if it provides net cash inflow after transaction costs, brokerage, margin deposits etc.

Illustrations:

Cash and carry arbitrage

The following data is available on stock A as on March 1, 2018.

Cash market price	Rs. 1500
June Futures	Rs. 1520
Contract multiplier for stock	100 shares

Assume an implied cost of carry of 9% per annum i.e. 0.75% per month.

Theoretically/ fair price of June futures is 1504.69 (= $1500 * e^{0.0075*5/12}$). Going by the theoretical price, we may say that June futures on stock A are overvalued. To take advantage of the mispricing, an arbitrageur may buy 100 shares of stock A and sell 1 futures contract on that at given prices. This would result in the arbitrage profit of Rs. 1531 (= 100 X 15.31), which is the difference between actual and fair prices for 100 shares. Position of the arbitrager in various scenarios of stock price would be as follows:

Case I: Stock rises to Rs. 1550 on expiry day

Profit on underlying = (1550 – 1500) x 100 = Rs. 5000
Loss on futures = (1550 - 1520) x 100 = Rs. 3000
Gain on Arbitrage = Rs. 2,000
Cost of Arbitrage in terms of financing (Rs. 4.69 for 100 shares) = Rs. 469
Net gain out of arbitrage = (2000 – 469)= Rs 1531

Case II: Stock falls to Rs.1480 on expiry day

Loss on underlying = (1500- 1480) x 100 = Rs. 2000
Profit on futures = (1520-1480) x 100 = Rs. 4000
Gain on Arbitrage = Rs. 2000
Cost of Arbitrage in terms of financing (Rs. 4.69 for 100 shares) = Rs. 469
Net gain out of arbitrage = (2000 – 469) = Rs. 1531

Reverse cash and carry arbitrage

The reverse cash and carry arbitrage is done when the futures are trading at a discount to the cash market price. Let us look at the following data on stock A as on March 1, 2018.

Cash market price	Rs. 100
March futures price	Rs. 90

The prices trading in the market reflect a negative cost of carry, which offers an opportunity to the traders to execute reverse cash and carry arbitrage as cost of carry is expected to reverse to positive at some point in time during contract's life. Otherwise, also, if the trader carries his position till the expiry, it will yield him an arbitrage profit. The assumption in implementing this arbitrage opportunity is that the arbitrager has got the stock to sell in the cash market, which will be bought back at the time of reversing the position. If stock is not available, arbitrager needs to borrow the stock to implement the arbitrage. In that case, while analyzing the profitability from the transaction, cost of borrowing of stock would also be taken into account.

Assuming the contract multiplier for futures contract on stock A is 200 shares. To execute the reverse cost and carry, arbitrager would buy one March futures at Rs 90 and sell 200 shares of stock A at Rs 100 in cash market. This would result in the arbitrage profit of Rs 2000 (200 X Rs 10). Position of the arbitrager in various scenarios of stock price would be as follows:

Case I: Stock rises to Rs. 110 on expiry day

Loss on underlying = (110 - 100) x 200 = Rs. 2000
Profit on futures = (110 - 90) x 200 = Rs. 4000
Net gain out of arbitrage = Rs. 2000

Case II: Stock falls to Rs. 85 on expiry day

Profit on underlying = (100 - 85) x 200 = Rs. 3000
Loss on futures = (90 - 85) x 200 = Rs. 1000
Net gain out of arbitrage = Rs. 2000

On maturity, when the futures price converges with the spot price of underlying, the arbitrageur is in a position to buy the stock back at the closing price/ settlement price of the day.

Our assumption in the above example is that both the positions (i.e. in cash and futures) were held until maturity. However, one can always square off one's position before the expiry of the contract, whenever one feels that the market prices are favourable. Let us understand this point with the help of an example. If in the above example of reverse cost and carry, on any day in March before the maturity date, spot price of stock A is Rs. 130 and March futures are at Rs. 135, arbitrager could reverse both his positions i.e. buying the stock at Rs. 130 and selling futures at Rs. 135. This would result in the following position:

Loss on underlying = (130 - 100) x 200 = Rs. 6000
Profit on futures = (135 - 90) x 200 = Rs. 9000

Net gain out of arbitrage = Rs. 3000

The above example on reverse cash and carry arbitrage can also be expanded to include the interest income generated out of investing the sale proceeds of the stock.

Inter-market arbitrage

This arbitrage opportunity arises because of some price differences existing in same underlying at two different exchanges. If August futures on stock Z are trading at Rs. 101 at NSE and Rs. 100 at BSE, the trader can buy a contract at BSE and sell at NSE. The positions could be reversed over a period of time when difference between futures prices squeeze. This would be profitable to an arbitrageur.

It is important to note that the cost of transaction and other incidental costs involved in the deal must be analyzed properly by the arbitragers before entering into the transaction.

In the light of above, we may conclude that futures provide market participants with a quick and less expensive mode to alter their portfolio composition to arrive at the desired level of risk. As they could be used to either add risk to the existing portfolios or reduce risk of the existing portfolios, they are essentially risk management and portfolio restructuring tool.

Chapter 4: Introduction to Options

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Concept of Options
- Payoffs in case of option contracts
- Fundamentals relating to option pricing
- Option Greeks
- Uses of Options

4.1 Basics of options

As seen in earlier section, forward/futures contract is a commitment to buy/sell the underlying and has a linear pay off, which indicates unlimited losses and profits. Some market participants desired to ride upside and restrict the losses. Accordingly, options emerged as a financial instrument, which restricted the losses with a provision of unlimited profits on buy or sell of underlying asset.

An Option is a contract that gives the right, but not an obligation, to buy or sell the underlying asset on or before a stated date/day, at a stated price, for a price. The party taking a long position i.e. buying the option is called buyer/ holder of the option and the party taking a short position i.e. selling the option is called the seller/ writer of the option.

The option buyer has the right but no obligation with regards to buying or selling the underlying asset, while the option writer has the obligation in the contract. Therefore, option buyer/ holder will exercise his option only when the situation is favourable to him, but, when he decides to exercise, option writer would be legally bound to honour the contract.

Options may be categorized into two main types:-

- Call Options
- Put Options

Option, which gives buyer a right to buy the underlying asset, is called Call option and the option which gives buyer a right to sell the underlying asset, is called Put option.

Option terminology

There are several terms used in the options market. Let us comprehend on each of them with the help of the following price:

Quote for Nifty Call option as on March 7, 2018

1. Instrument type	:	Option Index
2. Underlying asset	:	Nifty 50
3. Expiry date	:	March 28, 2018
4. Option type	:	Call European
5. Strike Price	:	10000

6. Open price	:	271.95
7. High price	:	310.00
8. Low price	:	233.25
9. Close price	:	245.05
10. Traded Volume	:	14,941 contracts
11. Open Interest	:	9,83,775
12. Underlying value	:	10154.20

Quote for Nifty Put option as on March 7, 2018

1. Instrument type	:	Option Index
2. Underlying asset	:	Nifty 50
3. Expiry date	:	March 28, 2018
4. Option type	:	Put European
5. Strike Price	:	10000
6. Open price	:	74.50
7. High price	:	86.70
8. Low price	:	66.55
9. Close price	:	80.40
10. Traded Volume	:	2,00,111 contracts
11. Open Interest	:	40,83,000
12. Underlying value	:	10154.20

Index option: These options have index as the underlying asset. For example options on Nifty, Sensex, etc.

Stock option: These options have individual stocks as the underlying asset. For example, option on ONGC, NTPC etc.

Buyer of an option: The buyer of an option is one who has a right but not the obligation in the contract. For owning this right, he pays a price to the seller of this right called 'option premium' to the option seller.

Writer of an option: The writer of an option is one who receives the option premium and is thereby obliged to sell/buy the asset if the buyer of option exercises his right.

American option: The owner of such option can exercise his right at any time on or before the expiry date/day of the contract.

European option: The owner of such option can exercise his right only on the expiry date/day of the contract. In India, Index options are European.

Option price/Premium: It is the price which the option buyer pays to the option seller. In our examples, option price for call option is Rs. 245.05 and for put option is Rs. 80.40. Premium traded is for single unit of nifty and to arrive at the total premium in a contract, we need to multiply this premium with the lot size.

Lot size: Lot size is the number of units of underlying asset in a contract. Lot size of Nifty option contracts is 75. Accordingly, in our examples, total premium for call option

contract would be Rs 245.05 x 75= Rs 18378.75 and total premium for put option contract would be Rs 80.40 x 75 = Rs 6030.

Expiration Day: The day on which a derivative contract ceases to exist. It is the last trading date/day of the contract. Like in case of futures, option contracts also expire on the last Thursday of the expiry month (or, on the previous trading day, if the last Thursday is a trading holiday). In our example, since the last Thursday (i.e., March 29, 2018) is a trading holiday, both the call and put options expire one day before that i.e. on 28 March, 2018. (Please note that Weekly Options expire on Thursday of each week. Weekly Options are the Exchange Traded Options based on a Stock or an Index with shorter maturity of one or more weeks. If the expiry day of the Weekly Options falls on a trading Holiday, then the expiry will be on the previous trading day.)

Spot price (S): It is the price at which the underlying asset trades in the spot market. In our examples, it is the value of underlying viz. 10154.20.

Strike price or Exercise price (X): Strike price is the price per share for which the underlying security may be purchased or sold by the option holder. In our examples, strike price for both call and put options is 10000.

In the money (ITM) option: This option would give holder a positive cash flow, if it were exercised immediately. A call option is said to be ITM, when spot price is higher than strike price. And, a put option is said to be ITM when spot price is lower than strike price. In our examples, call option is in the money.

At the money (ATM) option: At the money option would lead to zero cash flow if it were exercised immediately. Therefore, for both call and put ATM options, strike price is equal to spot price.

Out of the money (OTM) option: Out of the money option is one with strike price worse than the spot price for the holder of option. In other words, this option would give the holder a negative cash flow if it were exercised immediately. A call option is said to be OTM, when spot price is lower than strike price. And a put option is said to be OTM when spot price is higher than strike price. In our examples, put option is out of the money.

Intrinsic value: Option premium, defined above, consists of two components - intrinsic value and time value.

For an option, intrinsic value refers to the amount by which option is in the money i.e. the amount an option buyer will realize, before adjusting for premium paid, if he exercises the option instantly. Therefore, only in-the-money options have intrinsic value whereas at-the-money and out-of-the-money options have zero intrinsic value. The intrinsic value of an option can never be negative.

Thus, for call option which is in-the-money, intrinsic value is the excess of spot price (S) over the exercise price (X). Thus, intrinsic value of call option can be calculated as S-X, with minimum value possible as zero because no one would like to exercise his right under no advantage condition.

Similarly, for put option which is in-the-money, intrinsic value is the excess of exercise price (X) over the spot price (S). Thus, intrinsic value of put option can be calculated as X-S, with minimum value possible as zero.

Time value: It is the difference between premium and intrinsic value, if any, of an option. ATM and OTM options will have only time value because the intrinsic value of such options is zero.

Open Interest: As discussed in futures section, open interest is the total number of option contracts outstanding for an underlying asset.

Exercise of Options

In case of American option, buyers can exercise their option any time before the maturity of contract. All these options are exercised with respect to the settlement value/ closing price of the stock on the day of exercise of option.

Assignment of Options

Assignment of options means the allocation of exercised options to one or more option sellers. The issue of assignment of options arises only in case of American options because a buyer can exercise his options at any point of time.

4.2 Pay off Charts for Options

Having gone through the basic terminology used in the options market, let us get to the pay off profile of various option positions.

Long on option

Buyer of an option is said to be "long on option". As described above, he/she would have a right and no obligation with regard to buying/ selling the underlying asset in the contract. When you are long on equity option contract:

- You have the right to exercise that option.
- Your potential loss is limited to the premium amount you paid for buying the option.
- Profit would depend on the level of underlying asset price at the time of exercise/expiry of the contract.

Short on option

Seller of an option is said to be "short on option". As described above, he/she would have obligation but no right with regard to selling/buying the underlying asset in the contract. When you are short (i.e., the writer of) an equity option contract:

- Your maximum profit is the premium received.
- You can be assigned an exercised option any time during the life of option contract (for American Options only). All option writers should be aware that assignment is a distinct possibility.
- Your potential loss is theoretically unlimited as defined below.

Now, let us understand each of these positions in detail:

Long Call

On March 1, 2018, Nifty is at 10460. You buy a call option with strike price of 10500 at a premium of Rs. 115 with expiry date March 28, 2018. A Call option gives the buyer the right, but not the obligation to buy the underlying at the strike price. So in this example, you have the right to buy Nifty at 10500. You may buy or you may not buy, there is no compulsion. If Nifty closes above 10500 at expiry, you will exercise the option, else you will let it expire. What will be your maximum profits/ losses under different conditions at expiry, we will try to find out using pay off charts.

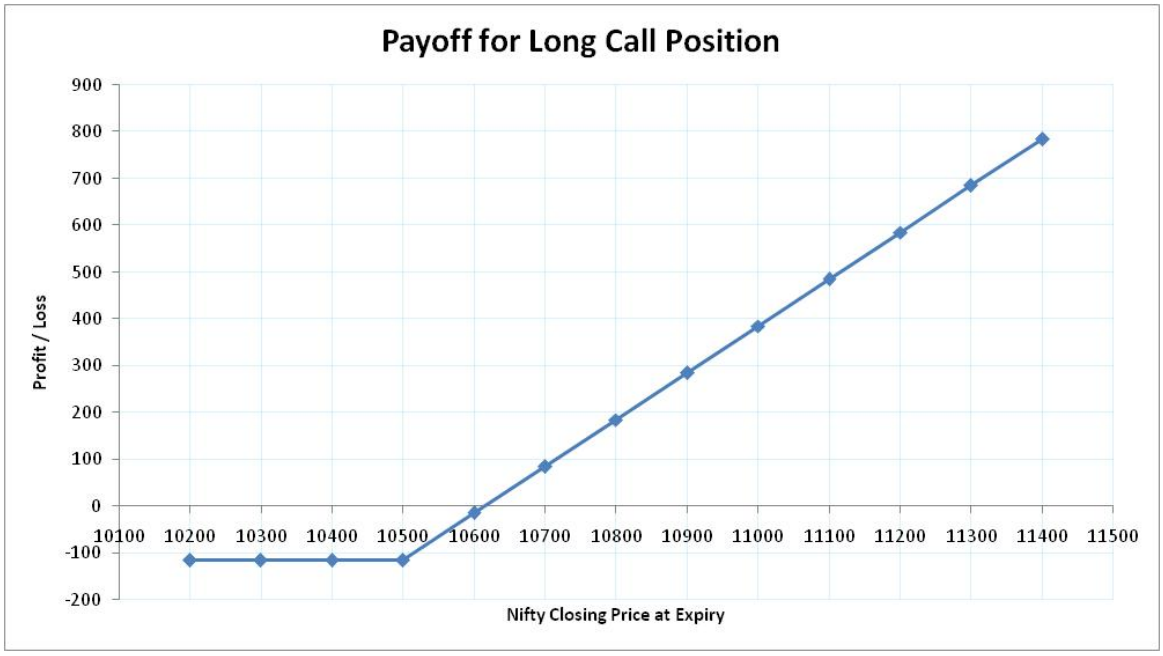
If Nifty closes at 10400, you will NOT exercise the right to buy the underlying (which you have got by buying the call option) as Nifty is available in the market at a price lower than your strike price. Why will you buy something at 10500 when you can have the same thing at 10400? So you will forego the right. In such a situation, your loss will be equal to the premium paid, which in this case is Rs. 115.

If Nifty were to close at 10615, you will exercise the option and buy Nifty at 10500 and make profit by selling it at 10615. In this transaction you will make a profit of Rs. 115, but you have already paid this much money to the option seller right at the beginning, when you bought the option. So 10615 is the Break Even Point (BEP) for this option contract. A general formula for calculating BEP for call options is strike price plus premium (X + P).

If Nifty were to close at 11000, you will exercise the option and buy Nifty at 10500 and sell it in the market at 11000, thereby making a profit of Rs. 500. But since you have already paid Rs. 115 as option premium, your actual profit would be 500 – 115 = 385.

For profits/losses for other values, a table is given below. This table is used to draw the pay off chart given in the next page.

Strike Price (X)	10500			
Premium	115			
Nifty at Expiry	Premium Paid	Buy Nifty at	Sell Nifty at	Pay off for Long Call Position
	A	B	C	D = A + B + C
10200	-115	-10200	10200	-115
10300	-115	-10300	10300	-115
10400	-115	-10400	10400	-115
10500	-115	-10500	10500	-115
10600	-115	-10500	10600	-15
10700	-115	-10500	10700	85
10800	-115	-10500	10800	185
10900	-115	-10500	10900	285
11000	-115	-10500	11000	385
11100	-115	-10500	11100	485
11200	-115	-10500	11200	585
11300	-115	-10500	11300	685
11400	-115	-10500	11400	785



The contract value for a Nifty option with lot size of 75 and strike price of 10500 is 75 * 10500 = 787500.

The maximum loss for such an option buyer would be equal to 115 * 75 = 8625

As Nifty goes above 10615, you start making profit on exercising the option and if it stays below 10615, you as a buyer always have the freedom not to exercise the option. But as seen from table and chart you can reduce your losses as soon as nifty goes above 10500. Long call position helps you to protect your loss to a maximum of Rs. 8625 with unlimited profit.

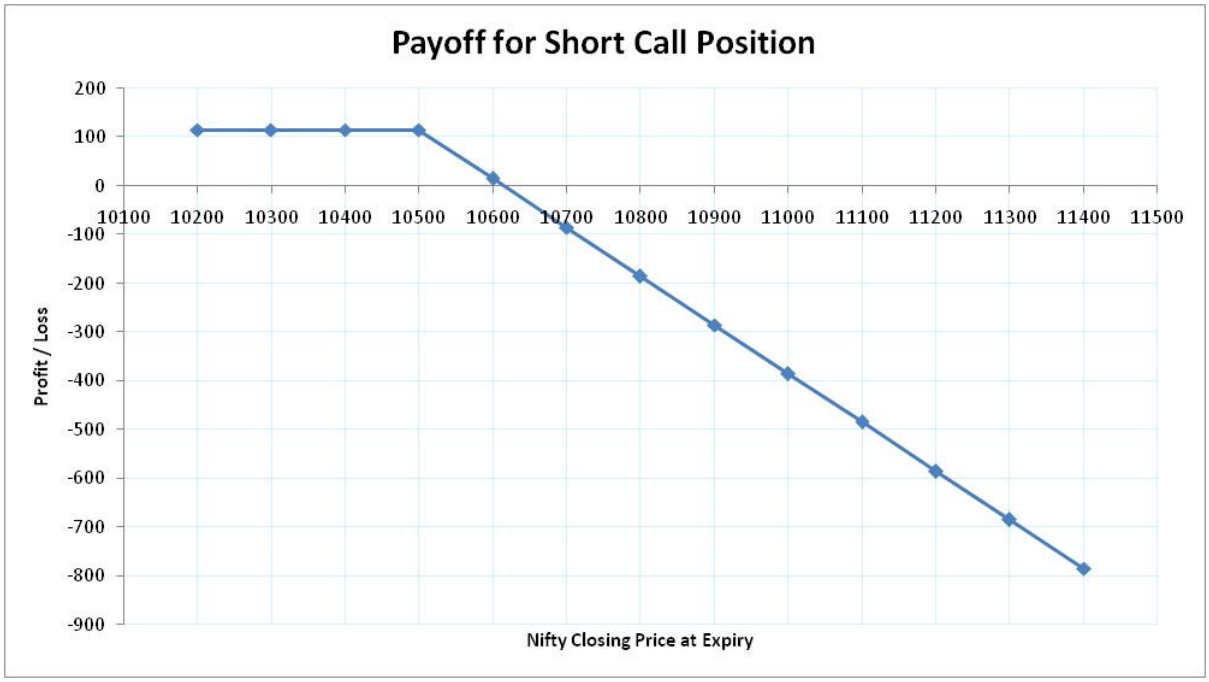
Short Call

Whenever someone buys a call option, there has to be a counterparty, who has sold that call option. If the maximum loss for a long call position is equal to the premium paid, it automatically means that the maximum gain for the short call position will be equal to the premium received. Similarly, if maximum gain for long call position is unlimited, then even maximum loss for the short call position has to be unlimited. Lastly, whenever, the long call position is making losses, the short call position will make profits and vice versa. Hence, if we have understood long call pay off, short call pay off chart will be just the water image of the long call pay off. Thus at 10200 Nifty, When long call position makes a loss of Rs. 115, short call position will make a profit of Rs. 115. Similarly for 11000, when long call makes a profit of 385, short call position will lose 385.As Nifty starts rising, short call position will go deeper into losses.

Strike Price (X)	10500				
Premium	115				

Nifty at Expiry	Premium Paid	Buy Nifty at	Sell Nifty at	Pay off for Long Call Position	Pay off for Short Call Position
	A	B	C	D = A+B+C	- D
10200	-115	-10200	10200	-115	115
10300	-115	-10300	10300	-115	115
10400	-115	-10400	10400	-115	115
10500	-115	-10500	10500	-115	115
10600	-115	-10500	10600	-15	15
10700	-115	-10500	10700	85	-85
10800	-115	-10500	10800	185	-185
10900	-115	-10500	10900	285	-285
11000	-115	-10500	11000	385	-385
11100	-115	-10500	11100	485	-485
11200	-115	-10500	11200	585	-585
11300	-115	-10500	11300	685	-685
11400	-115	-10500	11400	785	-785

The pay off chart for a short call position is shown below. Maximum gain for an option seller, as explained earlier, will be equal to the premium received (as long as Nifty stays below strike price) whereas maximum loss can be unlimited (when Nifty starts moving above BEP). BEP for a short call position will also be equal to X + P. BEP is independent of position (long or short), it is instrument specific (call option).



For a lot size of 75, the contract value is 75 * 10500 = 787500.

Premium is received by the seller of the option. However he has to pay the margin. This is because the option seller has an obligation and since his losses can be unlimited, he can be a potential risk for the stability of the system.

Long Put

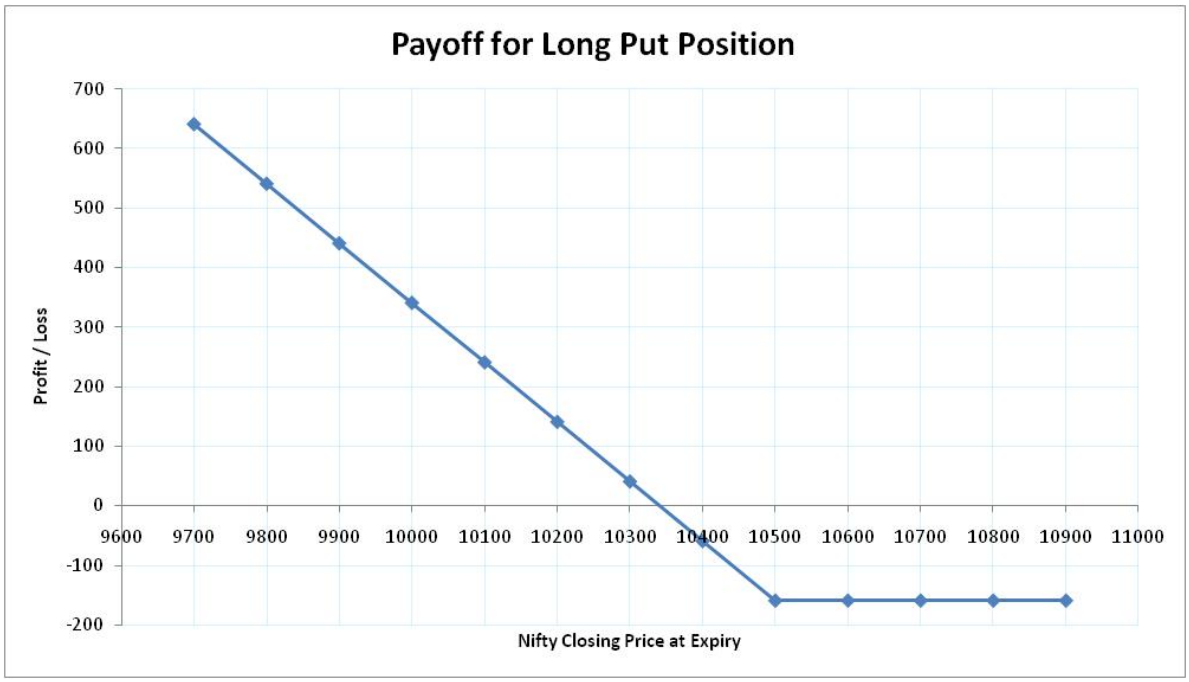
On March 1, 2018, Nifty is at 10460. You buy a put option with strike price of 10500 at a premium of Rs 160 with expiry date March 28, 2018. A put option gives the buyer of the option the right, but not the obligation, to sell the underlying at the strike price. In this example, you can sell Nifty at 10500. When will you do so? You will do so only when Nifty is at a level lower than the strike price. So if Nifty goes below 10500 at expiry, you will buy Nifty from market at lower price and sell at strike price. If Nifty stays above 10500, you will let the option expire. The maximum loss in this case as well (like in long call position) will be equal to the premium paid; i.e. Rs. 160.

What can be the maximum profit? Theoretically, Nifty can fall only till zero. So maximum profit will be when you buy Nifty at zero and sell it at strike price of 10500. The profit in this case will be Rs. 10500, but since you have already paid Rs. 160 as premium, your profit will reduce by that much to 10500 – 160 = 10340.

Breakeven point in this case will be equal to strike price – premium (X – P). In our example breakeven point will be equal to 10500 – 160 = 10340. Thus when Nifty starts moving below 10340, will you start making profits.

The pay off chart for long put position is drawn using the below table.

Strike Price (X)	10500			
Premium	160			
Nifty at Expiry	Premium Paid	Buy Nifty at	Sell Nifty at	Pay off for Long Put Position
	A	B	C	D = A + B + C
9700	-160	-9700	10500	640
9800	-160	-9800	10500	540
9900	-160	-9900	10500	440
10000	-160	-10000	10500	340
10100	-160	-10100	10500	240
10200	-160	-10200	10500	140
10300	-160	-10300	10500	40
10400	-160	-10400	10500	-60
10500	-160	-10500	10500	-160
10600	-160	-10600	10600	-160
10700	-160	-10700	10700	-160
10800	-160	-10800	10800	-160
10900	-160	-10900	10900	-160



The maximum loss for the option buyer is the premium paid, which is equal to 160 * 75 = 12000, where 75 is the lot size. Contract value for this put option is 10500 * 75 = 787500.

A put option buyer need not pay any margin. This is because he has already paid the premium and there is no more risk that he can cause to the system. A margin is paid only if there is any obligation. An option buyer (either buyer of a call option or a put option) has no obligation.

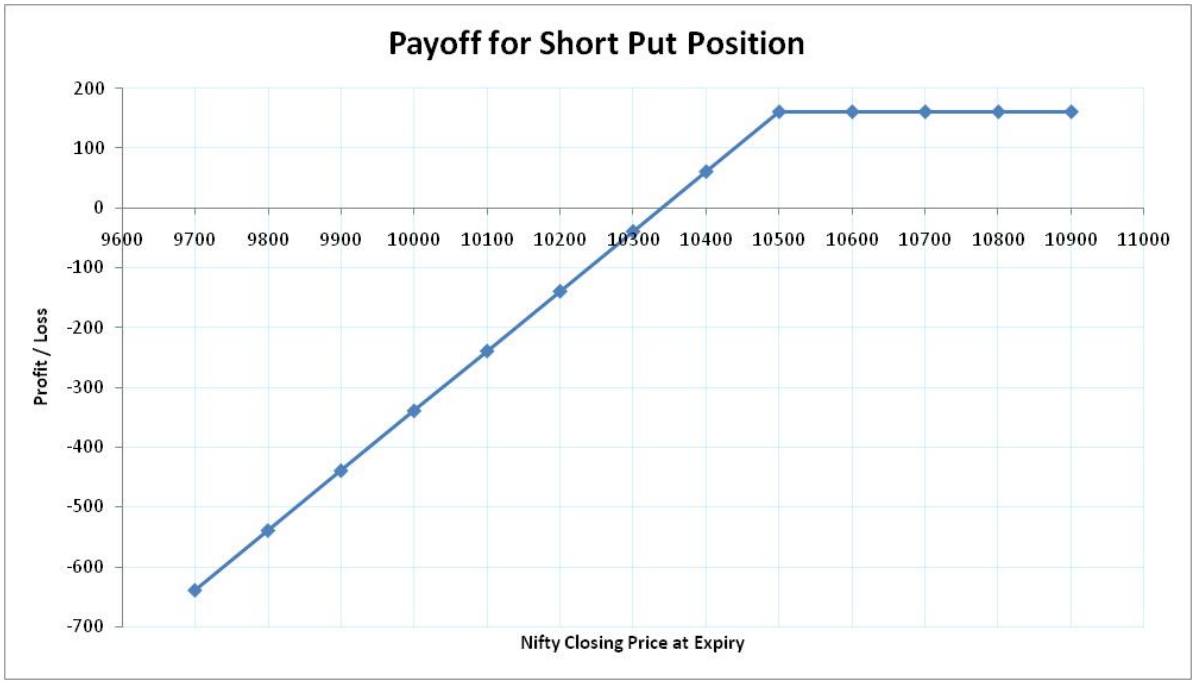
Short Put

What will be the position of a put option seller/writer? Just the opposite of that of the put option buyer. When long put makes profit, short put will make loss. If maximum loss for long put is the premium paid, then maximum profit for the short put has to be equal to the premium received. If maximum profit for long put is when price of underlying falls to zero at expiry, then that also will be the time when short put position makes maximum loss.

The table below shows the profit/ loss for short put position. An extra column is added to the above table to show positions for short put. The pay off chart is drawn using this table.

Strike Price (X)	10500				
Premium	160				
Nifty at Expiry	Premium Paid	Buy Nifty at	Sell Nifty at	Pay off for Long Put Position	Pay off for Short Put Position
	A	B	C	D = A+B+C	- D

9700	-160	-9700	10500	640	-640
9800	-160	-9800	10500	540	-540
9900	-160	-9900	10500	440	-440
10000	-160	-10000	10500	340	-340
10100	-160	-10100	10500	240	-240
10200	-160	-10200	10500	140	-140
10300	-160	-10300	10500	40	-40
10400	-160	-10400	10500	-60	60
10500	-160	-10500	10500	-160	160
10600	-160	-10600	10600	-160	160
10700	-160	-10700	10700	-160	160
10800	-160	-10800	10800	-160	160
10900	-160	-10900	10900	-160	160



Contract value in this case will be equal to 10500 * 75 = 787500 and premium received will be equal to 160 * 75 = 12000.

Seller of the put option receives the premium but he has to pay the margin on his position as he has an obligation and his losses can be huge.

As can be seen above, options are products with asymmetric risk exposure i.e., the gains when the underlying asset moves in one direction is significantly different from the losses when the underlying asset moves in the opposite direction. For example, under a call option, when a stock price goes down, the loss incurred by the buyer of this option is limited to the purchase price of the option. But if the stock price goes up, the buyer of the call gains in proportion to the rise in the stock's value, thereby giving asymmetric pay off. In contrast to this, futures have symmetric risk exposures (symmetric pay off).

Opening a Position

An opening transaction is one that adds to, or creates a new trading position. It can be either a purchase or a sale. With respect to an option transaction, we will consider both:

- Opening purchase (Long on option) – A transaction in which the purchaser's intention is to create or increase a long position in a given series of options.
- Opening sale (Short on option) – A transaction in which the seller's intention is to create or increase a short position in a given series of options.

Closing a position

A closing transaction is one that reduces or eliminates an existing position by an appropriate offsetting purchase or sale. This is also known as "squaring off" your position. With respect to an option transaction:

- Closing purchase – A transaction in which the purchaser's intention is to reduce or eliminate a short position in a given series of options. This transaction is frequently referred to as "covering" a short position.
- Closing sale – A transaction in which the seller's intention is to reduce or eliminate a long position in a given series of options.

Note: A trader does not close out a long call position by purchasing a put (or any other similar transaction). A closing transaction for an option involves the purchase or sale of an option contract with the same terms.

Leverage

An option buyer pays a relatively small premium for market exposure in relation to the contract value. This is known as leverage. In our examples above (long call and long put), we have seen that the premium paid (Rs 8,625 for long call and Rs 12000 for long put) was only a small percentage of the contract value (Rs 7,87,500 in both cases). A trader can see large percentage gains from comparatively small, favourable percentage moves in the underlying equity.

Leverage also has downside implications. If the underlying price does not rise/fall as anticipated during the lifetime of the option, leverage can magnify the trader's percentage loss. Options offer their owners a predetermined, set risk. However, if the owner's options expire with no value, this loss can be the entire amount of the premium paid for the option.

Risk and return profile of option contracts

	Risk	Return
Long	Premium paid	Unlimited
Short	Unlimited	Premium received

A long option position has limited risk (premium paid) and unlimited profit potential. A short option position has unlimited downside risk, but limited upside potential (to the extent of premium received)

4.3 Basics of Option Pricing and Option Greeks

Option pricing fundamentals

In our above examples, we have seen that call option premium is Rs. 115 and put option premium is Rs. 160. The question is from where did we get these values? On what basis did market participants come to these values of the premiums? What are the parameters that affect these values? Are these fixed by the stock exchanges or by SEBI?

The answer lies in understanding what affects options? Prices are never fixed by stock exchanges or SEBI or anybody for that matter. In fact price discovery is a very critical and basic component of markets. Stock exchanges only provide a platform where buyers and sellers meet, and SEBI's role is to ensure smooth functioning of our markets.

Any option's value increases or decreases depending upon different variables. Each variable has its impact on an option. The impact can be same or different for a call and put option.

As explained in the earlier section, option premium is the sum of intrinsic value and time value. As long as the option is not expired, there will always be some time value. Intrinsic value may or may not be there, depending upon whether the option is ITM, ATM or OTM.

Time value of the option in turn depends upon how much time is remaining for the option to expire and how volatile is the underlying.

Thus there are five fundamental parameters on which the option price depends:

1) Spot price of the underlying asset
2) Strike price of the option
3) Volatility of the underlying asset's price
4) Time to expiration
5) Interest rates

These factors affect the premium/ price of options (both American & European) in several ways.

Spot price of the underlying asset

The option premium is affected by the price movements in the underlying instrument. If price of the underlying asset goes up the value of the call option increases while the value of the put option decreases. Similarly if the price of the underlying asset falls, the value of the call option decreases while the value of the put option increases.

Strike Price

If all the other factors remain constant but the strike price of option increases, intrinsic value of the call option will decrease and hence its value will also decrease. On the other hand, with all the other factors remaining constant, increase in strike price of option increases the intrinsic value of the put option which in turn increases its option value.

Volatility

It is the magnitude of movement in the underlying asset's price, either up or down. It affects both call and put options in the same way. Higher the volatility of the underlying

stock, higher the premium because there is a greater possibility that the option will move in-the-money during the life of the contract.

Higher volatility = Higher premium, Lower volatility = Lower premium (for both call and put options).

Time to expiration

The effect of time to expiration on both call and put options is similar to that of volatility on option premiums. Generally, longer the maturity of the option greater is the uncertainty and hence the higher premiums. If all other factors affecting an option's price remain same, the time value portion of an option's premium will decrease with the passage of time. This is also known as time decay. Options are known as 'wasting assets', due to this property where the time value gradually falls to zero.

It is also interesting to note that of the two component of option pricing (time value and intrinsic value), one component is inherently biased towards reducing in value; i.e. time value. So if all things remain constant throughout the contract period, the option price will always fall in price by expiry. Thus option sellers are at a fundamental advantage as compared to option buyers as there is an inherent tendency in the price to go down.

Interest Rates

Interest rates are slightly complicated because they affect different options, differently. For example, interest rates have a greater impact on options with individual stocks and indices compared to options on futures. To put it in simpler way high interest rates will result in an increase in the value of a call option and a decrease in the value of a put option.

Options Pricing Models

There are various option pricing models which traders use to arrive at the right value of the option. Some of the most popular models are briefly discussed below:

The Binomial Pricing Model

The binomial option pricing model was developed by William Sharpe in 1978. It has proved over time to be the most flexible, intuitive and popular approach to option pricing.

The binomial model represents the price evolution of the option's underlying asset as the binomial tree of all possible prices at equally-spaced time steps from today under the assumption that at each step, the price can only move up and down at fixed rates and with respective simulated probabilities.

This is a very accurate model as it is iterative, but also very lengthy and time consuming.

The Black & Scholes Model

The Black & Scholes model was published in 1973 by Fisher Black and Myron Scholes. It is one of the most popular, relative simple and fast modes of calculation. Unlike the binomial model, it does not rely on calculation by iteration.

This model is used to calculate a theoretical call price (ignoring the dividends paid during the life of the option) using the five key determinants of an option's price: stock price, strike price, volatility, time to expiration, and short-term (risk free) interest rate.

The original formula for calculating the theoretical Option Price (OP) is:

$OP = SN(d_1)-Xe^{rt}N(d_2)$

Where,

$D_1=[In(s/n)+(r+(v^2/2)t]/ v\sqrt{t}$

$D_2 = d1-v\sqrt{t}$

And the variables are

- S = stock price
- X = strike price
- t = time remaining until expiration, expressed in years
- r = current continuously compounded risk-free interest rate
- v = annual volatility of stock price (the standard deviation of the short-term returns over one year)
- In = natural logarithm
- N(x) = standard normal cumulative distribution function
- e = the exponential function

Option Greeks

Option premiums change with changes in the factors that determine option pricing i.e. factors such as strike price, volatility, term to maturity etc. The sensitivities most commonly tracked in the market are known collectively as "Greeks" represented by Delta, Gamma, Theta, Vega and Rho.

Delta (δ or Δ)

The most important of the 'Greeks' is the option's "Delta". This measures the sensitivity of the option value to a given small change in the price of the underlying asset. It may also be seen as the speed with which an option moves with respect to price of the underlying asset.

Delta = Change in option premium/ Unit change in price of the underlying asset.

Delta for call option buyer is positive. This means that the value of the contract increases as the share price rises. To that extent it is rather like a long or 'bull' position in the underlying asset. Delta for call option seller will be same in magnitude but with the opposite sign (negative).

Delta for put option buyer is negative. The value of the contract increases as the share price falls. This is similar to a short or 'bear' position in the underlying asset. Delta for put option seller will be same in magnitude but with the opposite sign (positive).

Therefore, delta is the degree to which an option price will move given a change in the underlying stock or index price, all else being equal.

The knowledge of delta is of vital importance for option traders because this parameter is heavily used in margining and risk management strategies. The delta is often called the hedge ratio, e.g. if you have a portfolio of 'n' shares of a stock then 'n' divided by the delta gives you the number of calls you would need to be short (i.e. need to write) to create a hedge. In such a "delta neutral" portfolio, any gain in the value of the shares

held due to a rise in the share price would be exactly offset by a loss on the value of the calls written, and vice versa.

Gamma (γ)

It measures change in delta with respect to change in price of the underlying asset. This is called a second derivative option with regard to price of the underlying asset. It is calculated as the ratio of change in delta for a unit change in market price of the underlying asset.

Gamma = Change in an option delta / Unit change in price of underlying asset

Gamma works as an acceleration of the delta, i.e. it signifies the speed with which an option will go either in-the-money or out-of-the-money due to a change in price of the underlying asset.

Theta (θ)

It is a measure of an option's sensitivity to time decay. Theta is the change in option price given a one-day decrease in time to expiration. It is a measure of time decay. Theta is generally used to gain an idea of how time decay is affecting your option positions.

Theta = Change in an option premium / Change in time to expiry

Usually theta is negative for a long option, whether it is a call or a put. Other things being equal, options tend to lose time value each day throughout their life. This is due to the fact that the uncertainty element in the price decreases.

Vega (ν)

This is a measure of the sensitivity of an option price to changes in market volatility. It is the change of an option premium for a given change (typically 1%) in the underlying volatility.

Vega = Change in an option premium / Change in volatility

Vega is positive for a long call and a long put. An increase in the assumed volatility of the underlying increases the expected payout from a buy option, whether it is a call or a put.

Rho (ρ)

Rho is the change in option price given a one percentage point change in the risk-free interest rate. Rho measures the change in an option's price per unit increase in the cost of funding the underlying.

Rho = Change in an option premium / Change in cost of funding the underlying

4.4 Uses of Options

Perspectives of Option Traders

An important decision that a trader needs to make is which option he should trade: in-the-money, at-the-money or out-of-the-money. Among other things, a trader must also consider the premium of these three options in order to make an educated decision. As discussed earlier there are two components in the option premium – intrinsic value and time value. If the option is deeply in-the-money, the intrinsic value will be higher and so

is the option value/premium. In case of at-the-money or out-of-the-money options there is no intrinsic value but only time value. Hence, these options remain cheaper compared to in-the-money options. Therefore, option buyer pays higher premium for in-the-money option compared to at-the-money or out-of-the-money options and thus, the cost factor largely influences the decision of an option buyer.

For ATM options, the uncertainty is highest as compared to ITM or OTM options. This is because we know that when an option is ITM or OTM, even if the price moves somewhat, in any direction, still the option will largely remain ITM or OTM as the case may be.

But in case of ATM options, even a small price movement in either direction can tip the option from ATM to ITM or OTM. There is a huge uncertainty here and this uncertainty is a function of time to expiry and volatility of the underlying, both of which are captured in the time value

Analysis of Call Option Trading from Buyer's Perspective

The spot price of Nifty on March 1, 2018, was 10460. Let us consider call options with strike prices of 10300, 10400, 10500 and 10600. A call option buyer will buy the option and pay the premium upfront. The premiums for various strike prices are as follows:

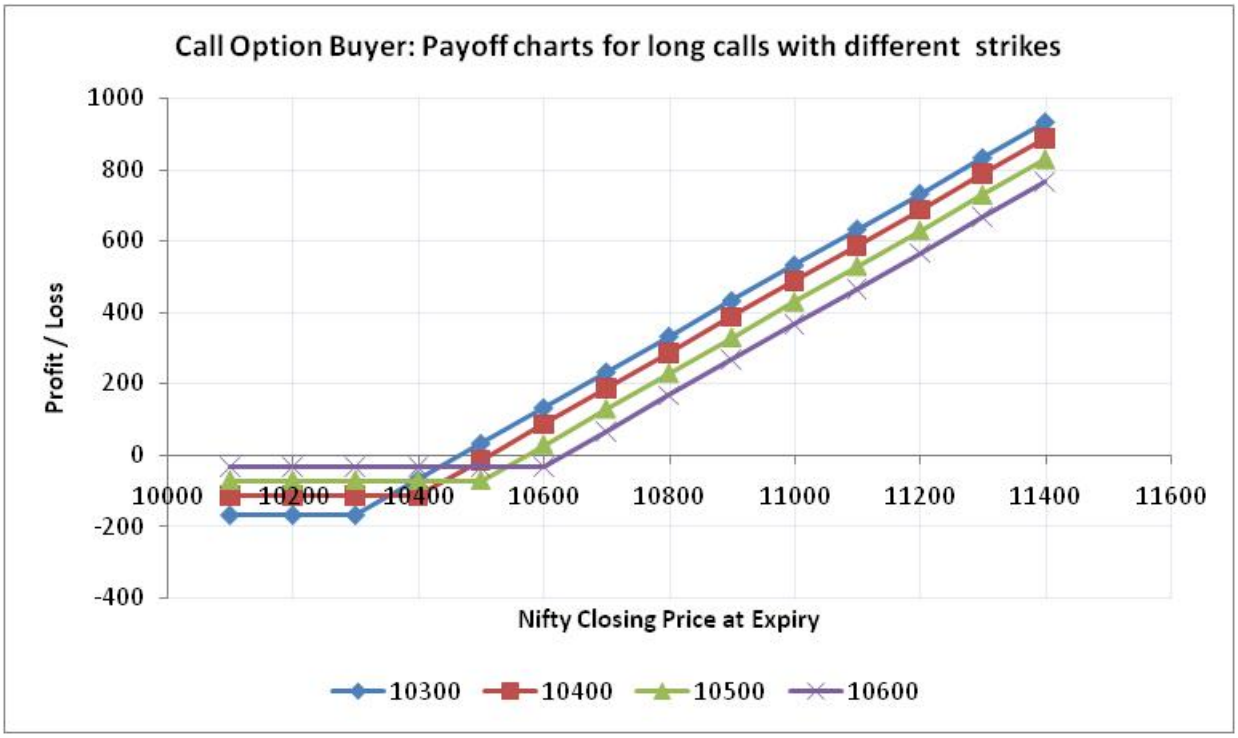
Strike Price	Premium
10300	170
10400	115
10500	72
10600	34

The 10300 strike call option is deep in the money and has an intrinsic value of 10460 – 10300 = 160. Hence the option premium will be at least equal to this value. The remaining portion of the premium is the time value (170 – 160 = 10)

The 10600 strike call option is out of the money option. There is no intrinsic value here. The entire option premium is attributed to risk associated with time, i.e. time value.

Pay offs for call options with different strikes and premiums					
Nifty Closing on Expiry	X	10300	10400	10500	10600
	P	170	115	72	34
	BEP	10470	10515	10572	10634
10100		-170	-115	-72	-34
10200		-170	-115	-72	-34
10300		-170	-115	-72	-34
10400		-70	-115	-72	-34
10500		30	-15	-72	-34
10600		130	85	28	-34
10700		230	185	128	66
10800		330	285	228	166
10900		430	385	328	266

11000	530	485	428	366
11100	630	585	528	466
11200	730	685	628	566
11300	830	785	728	666
11400	930	885	828	766



If Nifty closes below 10300 at expiry i.e. on March 28, 2018, all options will expire out of the money i.e. they are worthless. The greatest loss will be for option with strike price 10300 (Rs 170) and least loss will be incurred on strike 10600 option (Rs 34).

Profitability for call options

As seen earlier when a buyer is bullish on nifty, he can buy call option with any strike price. The choice of option would be better understood with return on investment (ROI). In each case, ROI is defined as net profit as a percentage of premium paid by the option buyer.

To illustrate, if Nifty goes up to 10700 at maturity, then ROI for all the four options will be as below:

Profit on strike price 10300 option = 10700 – 10300 – 170 = 230
Return on investment = 230 / 170 = 135%

Profit on strike price 10400 option = 10700 – 10400 – 115 = 185
Return on investment = 185 / 115 = 161%

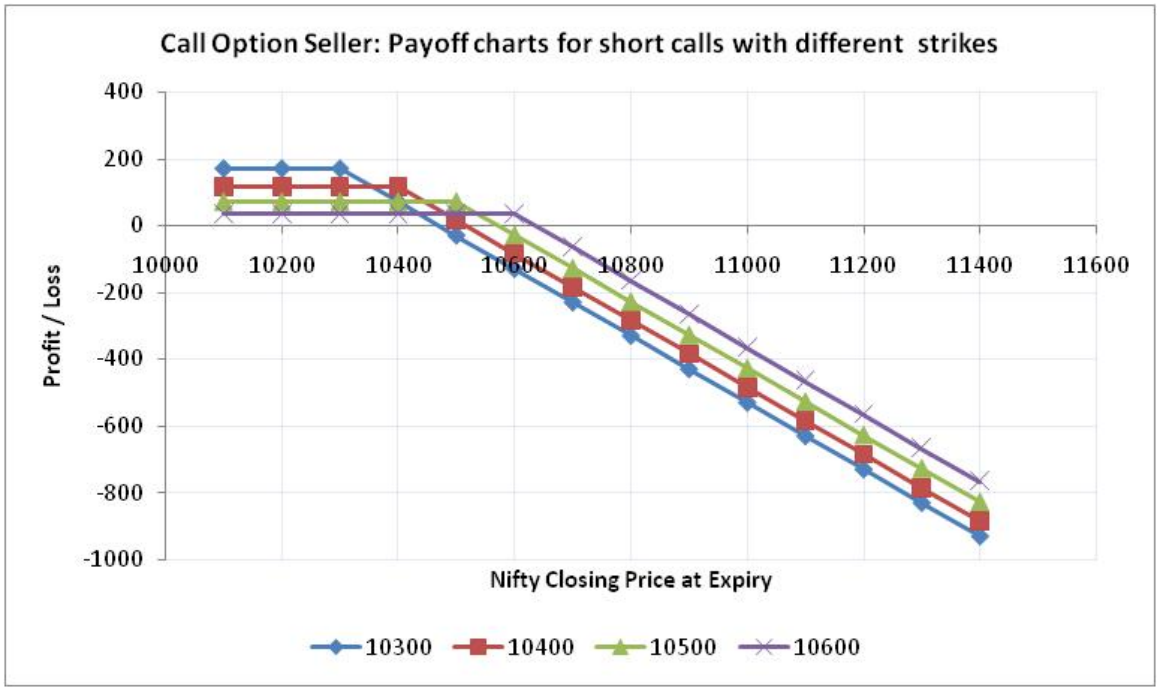
Profit on strike price 10500 option = 10700 – 10500 – 72 = 128
Return on investment = 128 / 72 = 178%

Profit on strike price 10600 option = 10700 – 10600 – 34 = 66
Return on investment = 66 / 34 = 194%

Seller of call option

A call option seller has a neutral to bearish perspective regarding the underlying price.

Pay offs for call options with different strikes and premiums					
Nifty Closing on Expiry	X	10300	10400	10500	10600
	P	170	115	72	34
	BEP	10470	10515	10572	10634
10100		170	115	72	34
10200		170	115	72	34
10300		170	115	72	34
10400		70	115	72	34
10500		-30	15	72	34
10600		-130	-85	-28	34
10700		-230	-185	-128	-66
10800		-330	-285	-228	-166
10900		-430	-385	-328	-266
11000		-530	-485	-428	-366
11100		-630	-585	-528	-466
11200		-730	-685	-628	-566
11300		-830	-785	-728	-666
11400		-930	-885	-828	-766



Analysis of Put Option Trading from a Buyers' Perspective

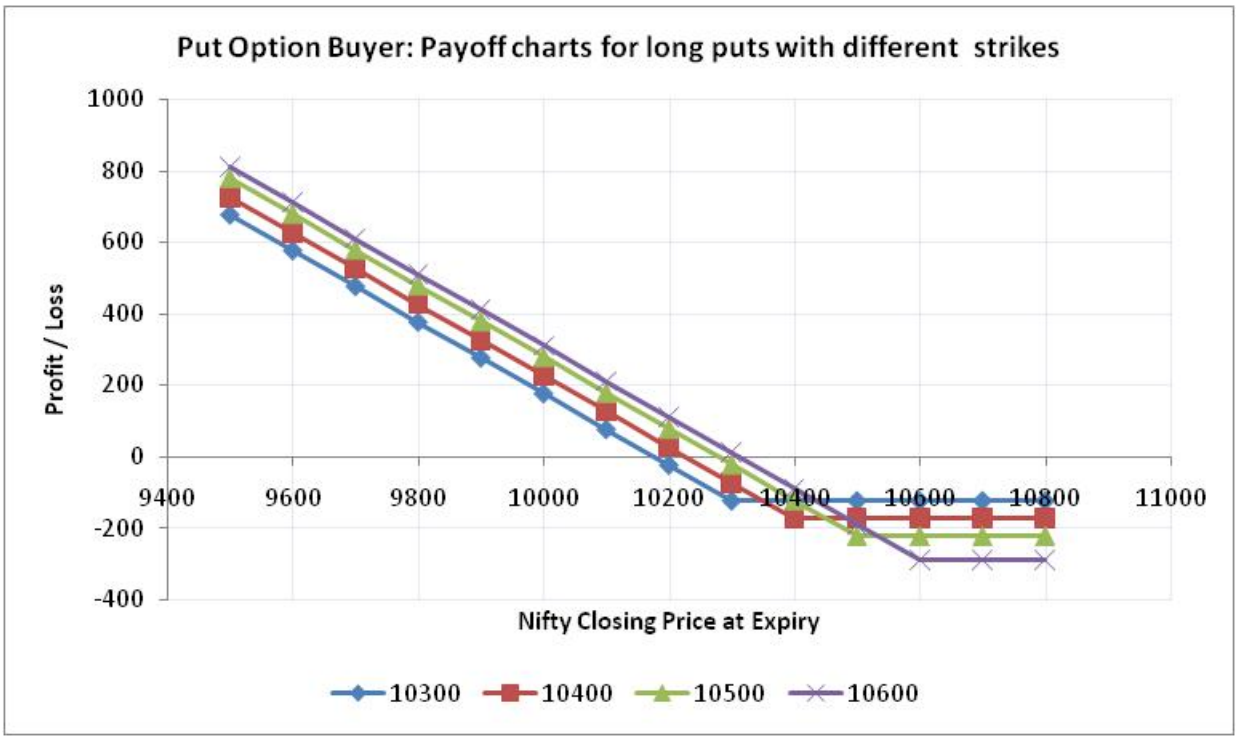
Spot Nifty on March 1, 2018 was 10460. A person bearish on the Nifty can buy a put option of any strike available. Let us consider put options of strike prices 10300, 10400, 10500 and 10600. The premiums for each of these are given below:

Strike Price	Premium
10300	125
10400	173
10500	221
10600	290

The 10600 strike put option is ITM whereas the 10300 strike put option if OTM. In case of the 10600 strike option, the intrinsic value is 10600 – 10460 = 140 and 270 – 140 = 130 is the time value.

For the other two options, the entire premium is the time value

Pay offs for put options with different strikes and premiums					
Nifty Closing on Expiry	X	10300	10400	10500	10600
	P	125	173	221	290
	BEP	10175	10227	10279	10310
9500		675	727	779	810
9600		575	627	679	710
9700		475	527	579	610
9800		375	427	479	510
9900		275	327	379	410
10000		175	227	279	310
10100		75	127	179	210
10200		-25	27	79	110
10300		-125	-73	-21	10
10400		-125	-173	-121	-90
10500		-125	-173	-221	-190
10600		-125	-173	-221	-290
10700		-125	-173	-221	-290
10800		-125	-173	-221	-290



The strike price of 10600 is in the money and hence the sellers are expecting a higher premium of Rs. 290 for it. Similarly strike price 10300 is out of the money and so the contract is selling at low premium of Rs. 125.

In terms of return on investment criterion, buyer of deep out of the money option will gain the maximum return, if price of the Nifty falls drastically.

To illustrate if Nifty falls to 10000 at maturity then ROI for all the three options will be as below:
Profit on strike price 10300 option = 10300 – 10000 – 125 = 175
Return on investment = 175 / 125 = 140%

Profit on strike price 10400 option = 10400 – 10000 – 173 = 227
Return on investment = 227 / 173 = 131%

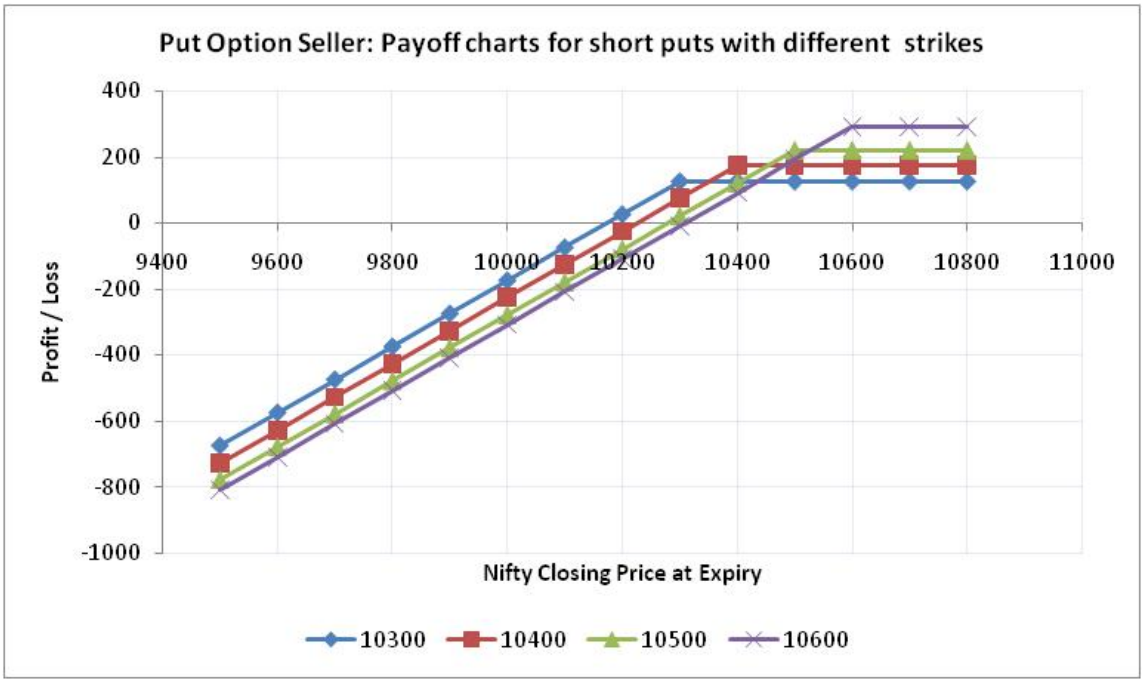
Profit on strike price 10500 option = 10500 – 10000 – 221 = 279
Return on investment = 279 / 221 = 126%

Profit on strike price 10600 option = 10600 – 10000 – 290 = 310
Return on investment = 310 / 141.5 = 107%

Seller of put option

Pay offs for put options with different strikes and premiums					
Nifty Closing on Expiry	X	10300	10400	10500	10600
	P	125	173	221	290
	BEP	10175	10227	10279	10310

9500	-675	-727	-779	-810
9600	-575	-627	-679	-710
9700	-475	-527	-579	-610
9800	-375	-427	-479	-510
9900	-275	-327	-379	-410
10000	-175	-227	-279	-310
10100	-75	-127	-179	-210
10200	25	-27	-79	-110
10300	125	73	21	-10
10400	125	173	121	90
10500	125	173	221	190
10600	125	173	221	290
10700	125	173	221	290
10800	125	173	221	290



As per the table and charts, the seller of put option has more risk to sell deep in the money put options even though they fetch higher returns in terms of option premiums. On the other hand, selling deep out of the money put options is less risky but they come with low premium.

Summary

From a trader's perspective, we may say that he has the choice of futures of various expiries and also options of various expiries and various strikes. Depending upon his analysis of the then existing market conditions and his risk appetite, he can devise various strategies, which we will see in the next chapter.

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Chapter 5: Option Trading Strategies

LEARNING OBJECTIVES:

After studying this chapter, you should know about the following option trading strategies:

- Option spreads
- Straddle
- Strangle
- Covered call
- Protective Put
- Collar
- Butterfly Spread

Having understood the risk/ return profiles for vanilla call/ put options, now we turn to using these products to our advantage – called option strategies. The only limiting factor for strategies is the thought of the trader/ strategy designer. As long as the trader can think of innovative combinations of various options, newer strategies will keep coming to the market. Exotic products (or 'exotics') are nothing but a combination of different derivative products. In this section, we will see some of the most commonly used strategies.

5.1 Option Spreads

Spreads involve combining options on the same underlying and of same type (call/ put) but with different strikes and maturities. These are limited profit and limited loss positions. They are primarily categorized into three sections as:

- Vertical Spreads
- Horizontal Spreads
- Diagonal Spreads

Vertical Spreads

Vertical spreads are created by using options having same expiry but different strike prices. Further, these can be created either using calls as combination or puts as combination. These can be further classified as:

- Bullish Vertical Spread
  - Using Calls
  - Using Puts
- Bearish Vertical Spread
  - Using Calls
  - Using Puts

Bullish Vertical Spread using Calls

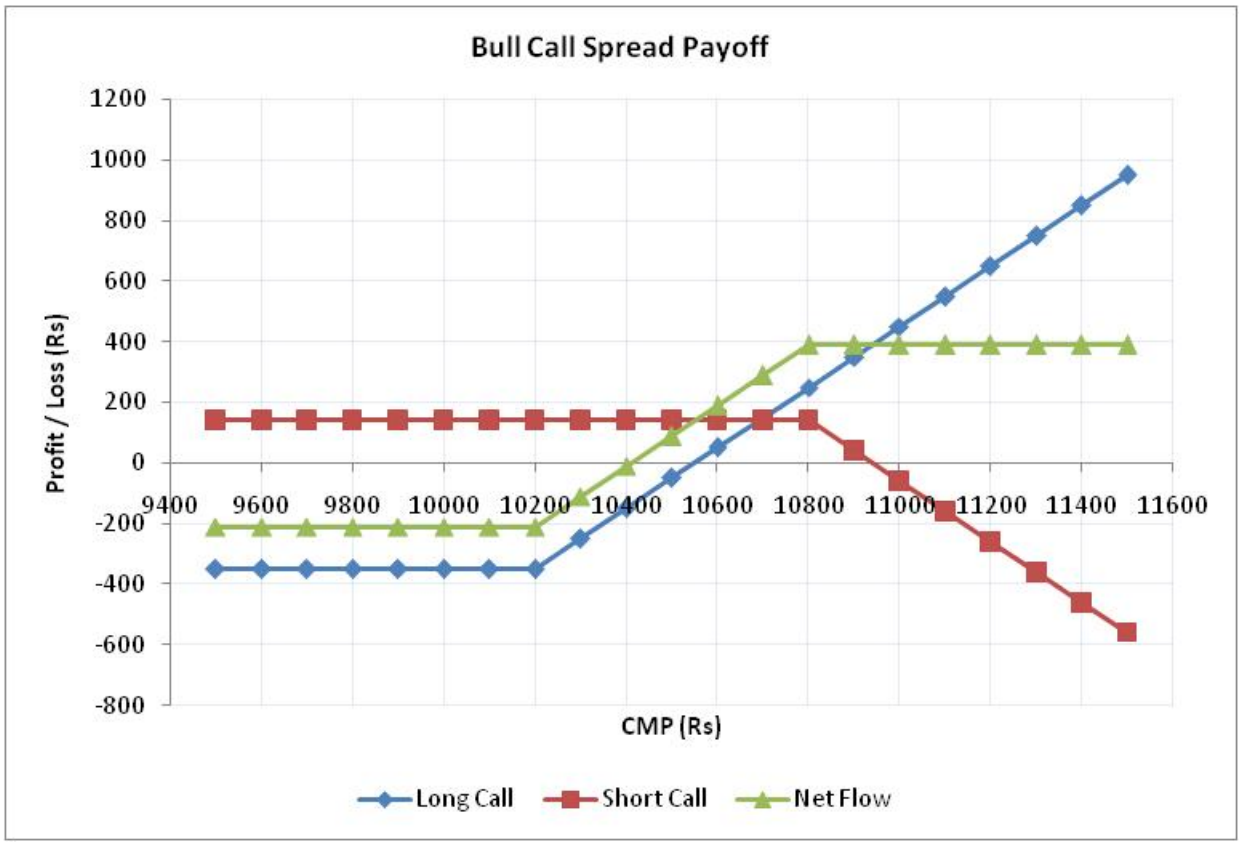
A bull spread is created when the underlying view on the market is positive but the trader would also like to reduce his cost on position. So he takes one long call position with lower strike and sells a call option with higher strike. As lower strike call will cost

more than the premium earned by selling a higher strike call, although the cost of position reduces, the position is still a net cash outflow position to begin with. Secondly, as higher strike call is shorted, all gains on long call beyond the strike price of short call would get negated by losses of the short call. To take more profits from his long call, trader can short as high strike call as possible, but this will result in his cost coming down only marginally, as higher strike call will fetch lesser and lesser premium.

Say, for example, a trader is bullish on market, so he decides to go long on 10200 strike call option by paying a premium of 350 and he expects market to not go above 10800, so he shorts a 10800 call option and receives a premium of 140. His pay off for various price moves will be as follows:

Option	Call	Call
Long/Short	Long	Short
Strike	10200	10800
Premium	350	140
Spot	10500	

CMP	Long Call	Short Call	Net Flow
9500	-350	140	-210
9600	-350	140	-210
9700	-350	140	-210
9800	-350	140	-210
9900	-350	140	-210
10000	-350	140	-210
10100	-350	140	-210
10200	-350	140	-210
10300	-250	140	-110
10400	-150	140	-10
10500	-50	140	90
10600	50	140	190
10700	150	140	290
10800	250	140	390
10900	350	40	390
11000	450	-60	390
11100	550	-160	390
11200	650	-260	390
11300	750	-360	390
11400	850	-460	390
11500	950	-560	390



As can be seen from the above pay off chart, it is a limited profit and limited loss position. Maximum profit in this position is 390 and maximum loss is 210. BEP for this spread is 10410.

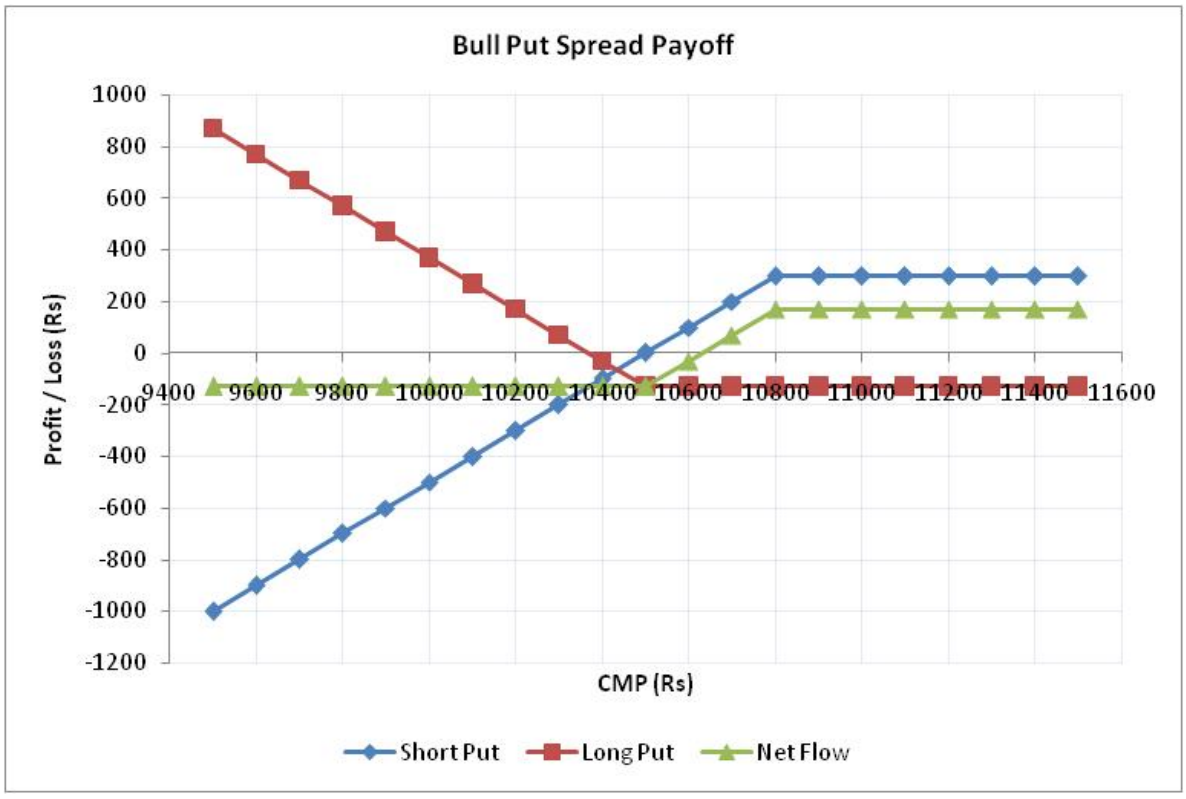
Bullish Vertical Spread using Puts

Here again, the call on the market is bullish, hence, the trader would like to short a put option. If prices go up, trader would end up with the premium on sold puts. However, in case prices go down, the trader would be facing risk of unlimited losses. In order to put a floor to his downside, he may buy a put option with a lower strike. While this would reduce his overall upfront premium, benefit would be the embedded insurance against unlimited potential loss on short put. This is a net premium receipt strategy.

Let us see this with the help of an example, where the trader goes short in a put option of strike 10800 and receives a premium of 300 and goes long in a put option of strike 10500 and pays a premium of 130:

Option	Put	Put
Long/Short	Short	Long
Strike	10800	10500
Premium	300	130
Spot	10500	

CMP	Short Put	Long Put	Net Flow
9500	-1000	870	-130
9600	-900	770	-130
9700	-800	670	-130
9800	-700	570	-130
9900	-600	470	-130
10000	-500	370	-130
10100	-400	270	-130
10200	-300	170	-130
10300	-200	70	-130
10400	-100	-30	-130
10500	0	-130	-130
10600	100	-130	-30
10700	200	-130	70
10800	300	-130	170
10900	300	-130	170
11000	300	-130	170
11100	300	-130	170
11200	300	-130	170
11300	300	-130	170
11400	300	-130	170
11500	300	-130	170



As can be seen from the picture above, it is a limited profit and limited loss position. Maximum profit in this position is 170 and maximum loss is 130. BEP for this position is 10630.

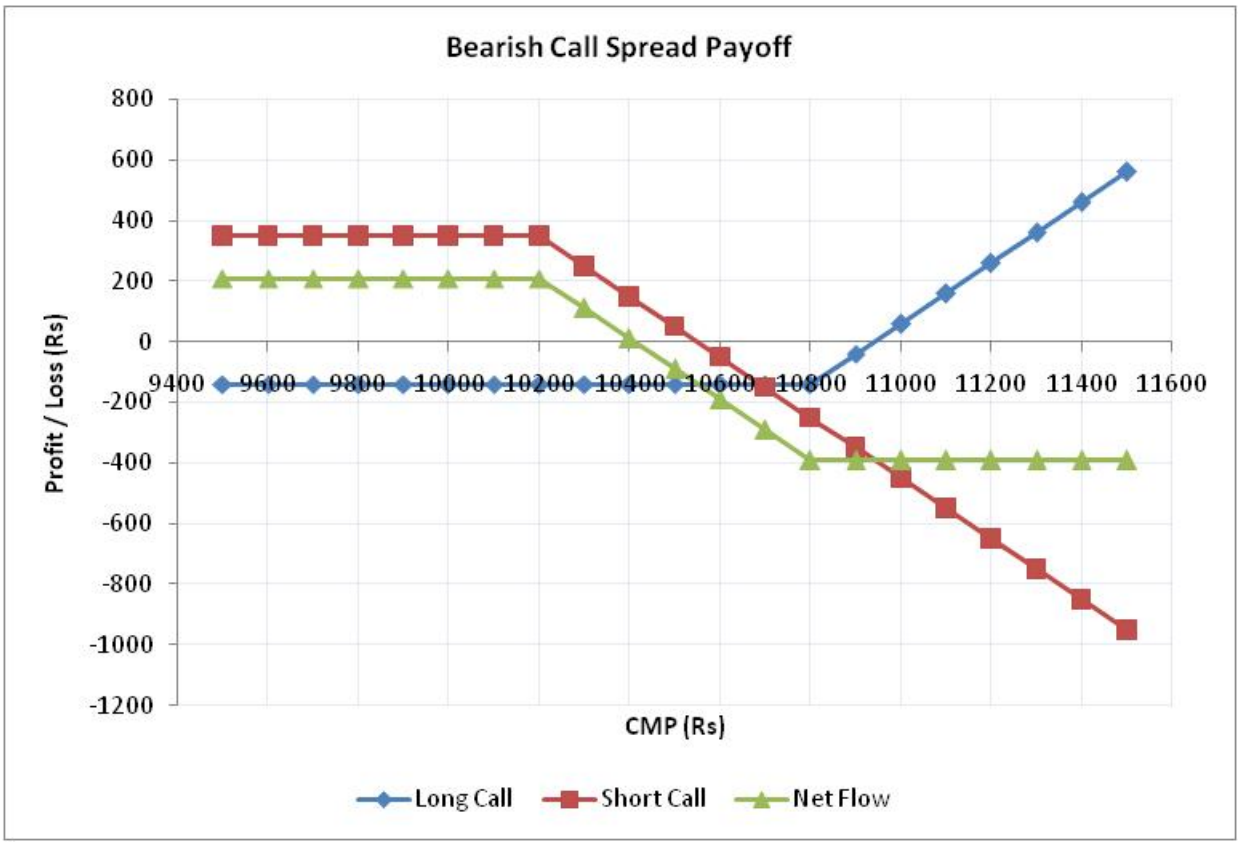
Bearish Vertical Spread using calls

Here, the trader is bearish on the market and so he shorts a low strike high premium call option. The risk in a naked short call is that if prices rise, losses could be unlimited. So, to prevent his unlimited losses, he longs a high strike call and pays a lesser premium. Thus in this strategy, he starts with a net inflow.

Let us see this with the help of the following table:

Option	Call	Call
Long/Short	Long	Short
Strike	10800	10200
Premium	140	350
Spot	10500	

CMP	Long Call	Short Call	Net Flow
9500	-140	350	210
9600	-140	350	210
9700	-140	350	210
9800	-140	350	210
9900	-140	350	210
10000	-140	350	210
10100	-140	350	210
10200	-140	350	210
10300	-140	250	110
10400	-140	150	10
10500	-140	50	-90
10600	-140	-50	-190
10700	-140	-150	-290
10800	-140	-250	-390
10900	-40	-350	-390
11000	60	-450	-390
11100	160	-550	-390
11200	260	-650	-390
11300	360	-750	-390
11400	460	-850	-390
11500	560	-950	-390



As can be seen from the picture above, it is a limited profit and limited loss position. Maximum profit in this position is 210 and maximum loss is 390. BEP for this position is 10410.

Bearish Vertical Spread using puts

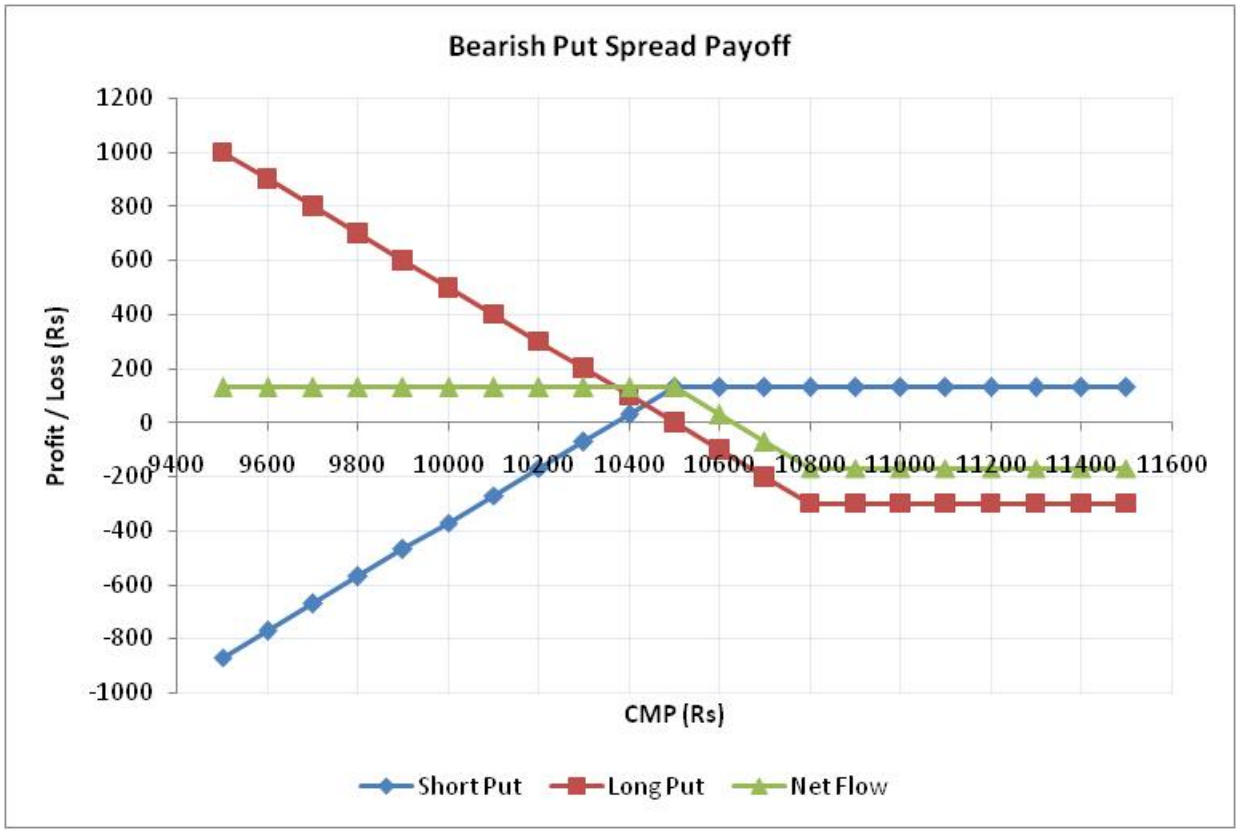
Here, again the trader is bearish on the market and so goes long in one put option by paying a premium. Further, to reduce his cost, he shorts another low strike put and receives a premium.

For example, if a trader goes long in a put option of strike 10800 and pays a premium of 300 and at the same time to reduce his cost, shorts a 10500 strike put option and earns a premium of 130, his profits/ losses and pay off would be as under:

Option	Put	Put
Long/Short	Short	Long
Strike	10500	10800
Premium	130	300
Spot	10500	

CMP	Short Put	Long Put	Net Flow
9500	-870	1000	130
9600	-770	900	130
9700	-670	800	130

9800	-570	700	130
9900	-470	600	130
10000	-370	500	130
10100	-270	400	130
10200	-170	300	130
10300	-70	200	130
10400	30	100	130
10500	130	0	130
10600	130	-100	30
10700	130	-200	-70
10800	130	-300	-170
10900	130	-300	-170
11000	130	-300	-170
11100	130	-300	-170
11200	130	-300	-170
11300	130	-300	-170
11400	130	-300	-170
11500	130	-300	-170



As can be seen from the picture above, it is a limited profit and limited loss position. Maximum profit in this position is 130 and maximum loss is 170. BEP for this position is 10630.

Horizontal Spread

Horizontal spread involves same strike, same type but different expiry options. This is also known as time spread or calendar spread. Here, it is not possible to draw the pay off chart as the expiries underlying the spread are different. Underlying reasoning behind horizontal spreads is that these two options would have different time values and the trader believes that difference between the time values of these two options would shrink or widen. This is essentially a play on premium difference between two options prices squeezing or widening.

Diagonal spread

Diagonal spread involves combination of options having same underlying but different expiries as well as different strikes. Again, as the two legs in a spread are in different maturities, it is not possible to draw pay offs here as well. These are much more complicated in nature and in execution. These strategies are more suitable for the OTC market than for the exchange traded markets.

5.2 Straddle

This strategy involves two options of same strike prices and same maturity. A long straddle position is created by buying a call and a put option of same strike and same expiry whereas a short straddle is created by shorting a call and a put option of same strike and same expiry.

Let us say a stock is trading at Rs 6,000 and premiums for ATM call and put options are 257 and 136 respectively.

Long Straddle

If a person buys both a call and a put at these prices, then his maximum loss will be equal to the sum of these two premiums paid, which is equal to 393. And, price movement from here in either direction would first result in that person recovering his premium and then making profit. This position is undertaken when trader's view on price of the underlying is uncertain but he thinks that in whatever direction the market moves, it would move significantly in that direction.

Now, let us analyze his position on various market moves. Let us say the stock price falls to 5300 at expiry. Then, his pay offs from position would be:

Long Call: - 257 (market price is below strike price, so option expires worthless)
Long Put: - 136 - 5300 + 6000 = 564
Net Flow: 564 – 257 = 307

As the stock price keeps moving down, loss on long call position is limited to premium paid, whereas profit on long put position keeps increasing.

Now, consider that the stock price shoots up to 6700.

Long Call: -257 – 6000 + 6700 = 443
Long Put: -136

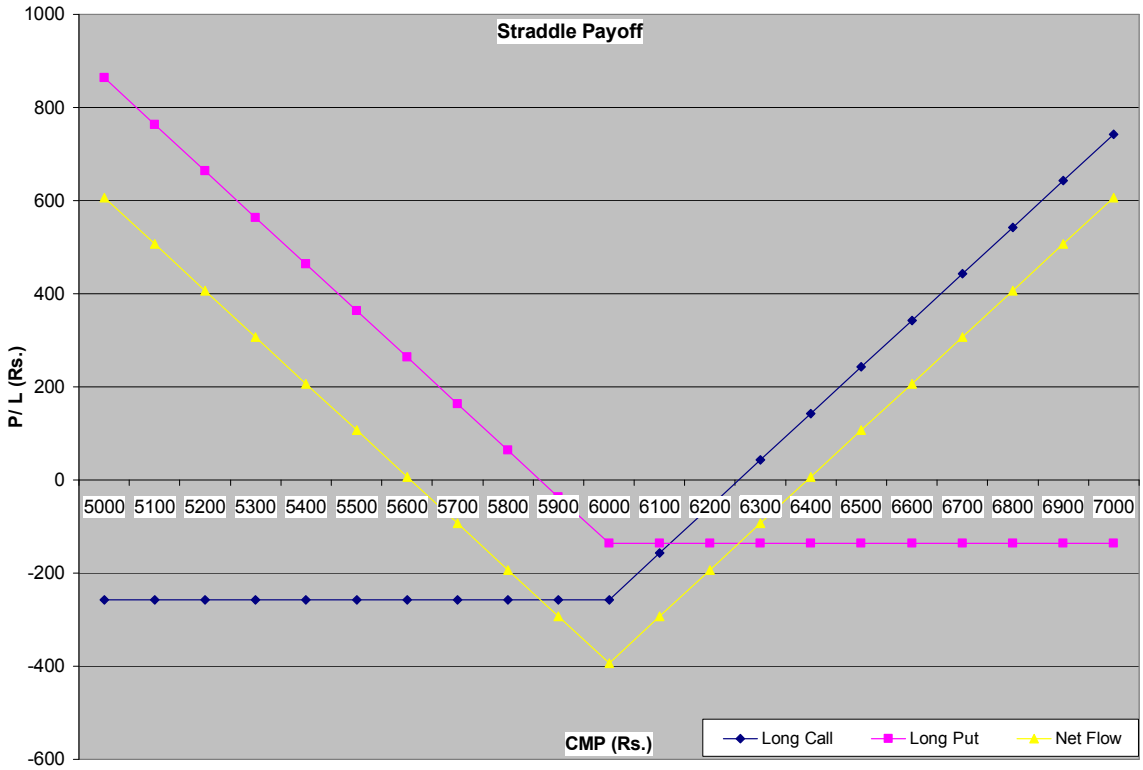
Net Flow: 443 – 136 = 307

As the stock price keeps moving up, loss on long put position is limited to premium paid, whereas profit on long call position keeps increasing.

Thus, it can be seen that for huge swings in either direction the strategy yields profits. However, there would be a band within which the position would result into losses. This position would have two Break even points (BEPs) and they would lie at "Strike – Total Premium" and "Strike + Total Premium". Combined pay-off may be shown as follows:

Option	Call	Put
Long/Short	Long	Long
Strike	6000	6000
Premium	257	136
Spot	6000	

CMP	Long Call	Long Put	Net Flow
5000	-257	864	607
5100	-257	764	507
5200	-257	664	407
5300	-257	564	307
5400	-257	464	207
5500	-257	364	107
5600	-257	264	7
5700	-257	164	-93
5800	-257	64	-193
5900	-257	-36	-293
6000	-257	-136	-393
6100	-157	-136	-293
6200	-57	-136	-193
6300	43	-136	-93
6400	143	-136	7
6500	243	-136	107
6600	343	-136	207
6700	443	-136	307
6800	543	-136	407
6900	643	-136	507
7000	743	-136	607



It may be noted from the table and picture, that maximum loss of Rs. 393 would occur to the trader if underlying expires at strike of option viz. 6000. Further, as long as underlying expires between 6393 and 5607, he would always incur the loss and that would depend on the level of underlying. His profit would start only after recovery of his total premium of Rs. 393 in either direction and that is the reason there are two breakeven points in this strategy.

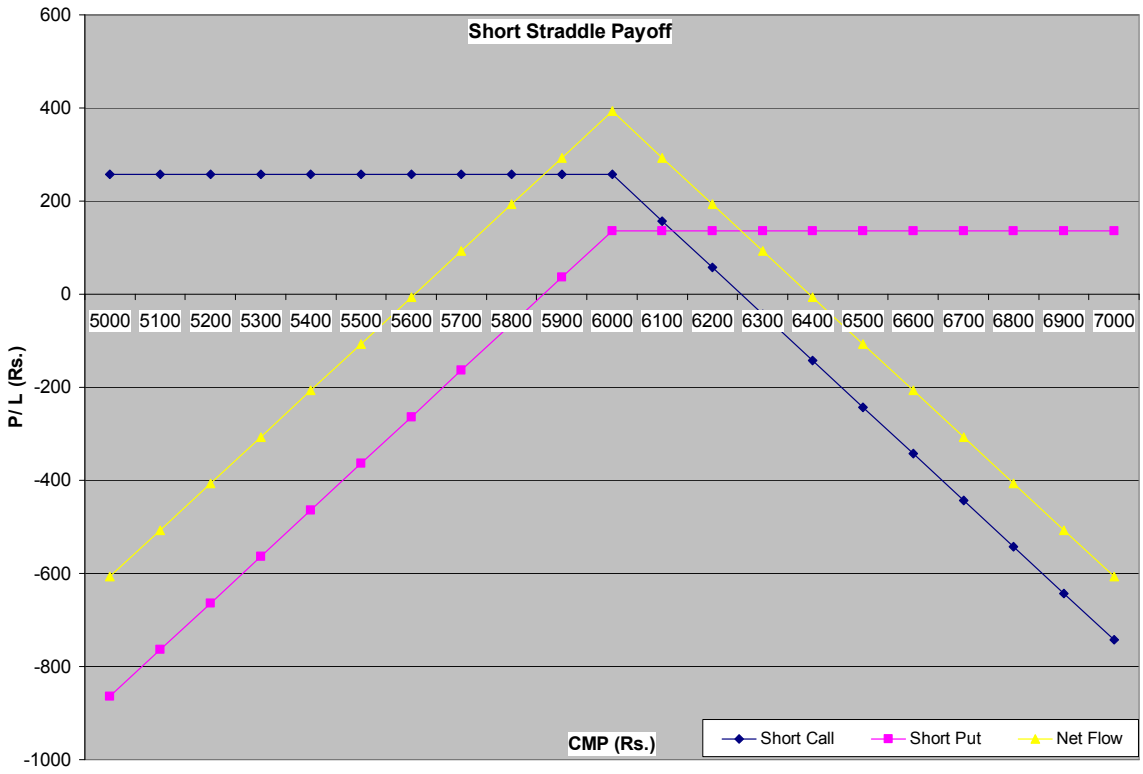
Short Straddle

This would be the exact opposite of long straddle. Here, trader's view is that the price of underlying would not move much or remain stable. So, he sells a call and a put so that he can profit from the premiums. As position of short straddle is just opposite of long straddle, the pay off chart would be just inverted, so what was loss for long straddle would become profit for short straddle. Position may be shown as follows:

Option	Call	Put
Long/Short	Short	Short
Strike	6000	6000
Premium	257	136
Spot	6000	

CMP	Short Call	Short Put	Net Flow
5000	257	-864	-607
5100	257	-764	-507
5200	257	-664	-407

5300	257	-564	-307
5400	257	-464	-207
5500	257	-364	-107
5600	257	-264	-7
5700	257	-164	93
5800	257	-64	193
5900	257	36	293
6000	257	136	393
6100	157	136	293
6200	57	136	193
6300	-43	136	93
6400	-143	136	-7
6500	-243	136	-107
6600	-343	136	-207
6700	-443	136	-307
6800	-543	136	-407
6900	-643	136	-507
7000	-743	136	-607



It should be clear that this strategy is limited profit and unlimited loss strategy and should be undertaken with significant care. Further, it would incur the loss for trader if market moves significantly in either direction – up or down.

5.3 Strangle

This strategy is similar to straddle in outlook but different in implementation, aggression and cost.

Long Strangle

As in case of straddle, the outlook here (for the long strangle position) is that the market will move substantially in either direction, but while in straddle, both options have same strike price, in case of a strangle, the strikes are different. Also, both the options (call and put) in this case are out-of-the-money and hence the premium paid is low.

Let us say the cash market price of a stock is 6100. 6200 strike call is available at 145 and 6000 put is trading at a premium of 140. Both these options are out-of-the-money.

If a trader goes long on both these options, then his maximum cost would be equal to the sum of the premiums of both these options. This would also be his maximum loss in worst case situation. However, if market starts moving in either direction, his loss would remain same for some time and then reduce. And, beyond a point (BEP) in either direction, he would make money. Let us see this with various price points.

If spot price falls to 5700 on maturity, his long put would make profits while his long call option would expire worthless.

Long Call: - 145
Long Put: -140 – 5700 + 6000 = 160
Net Position: 160 – 145 = 15

As price continues to go south, long put position will become more and more profitable and long call's loss would be maximum limited to the premium paid.

In case stock price goes to 6800 at expiry, long call would become profitable and long put would expire worthless.

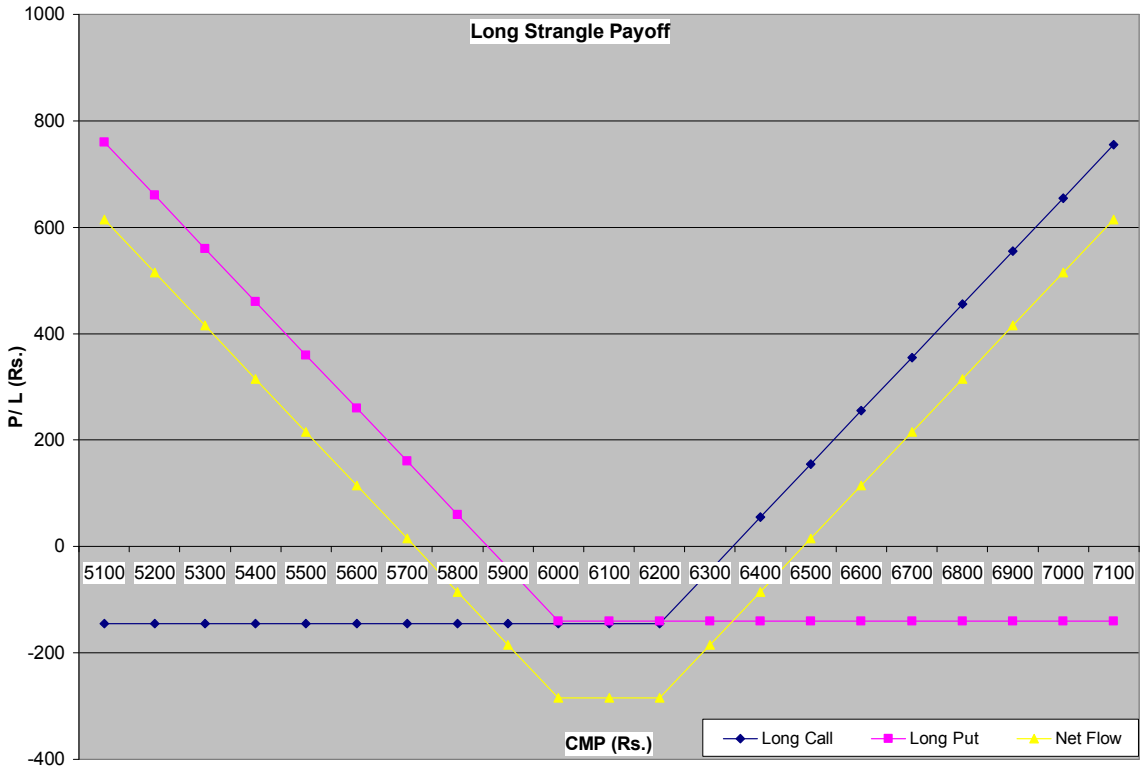
Long Call: -145 – 6200 + 6800 = 455
Long Put: -140
Net Position: 455 – 140 = 315

The pay off chart for long strangle is shown below:

Option	Call	Put
Long/Short	Long	Long
Strike	6200	6000
Premium	145	140
Spot	6100	

CMP	Long Call	Long Put	Net Flow
5100	-145	760	615
5200	-145	660	515
5300	-145	560	415
5400	-145	460	315

5500	-145	360	215
5600	-145	260	115
5700	-145	160	15
5800	-145	60	-85
5900	-145	-40	-185
6000	-145	-140	-285
6100	-145	-140	-285
6200	-145	-140	-285
6300	-45	-140	-185
6400	55	-140	-85
6500	155	-140	15
6600	255	-140	115
6700	355	-140	215
6800	455	-140	315
6900	555	-140	415
7000	655	-140	515
7100	755	-140	615



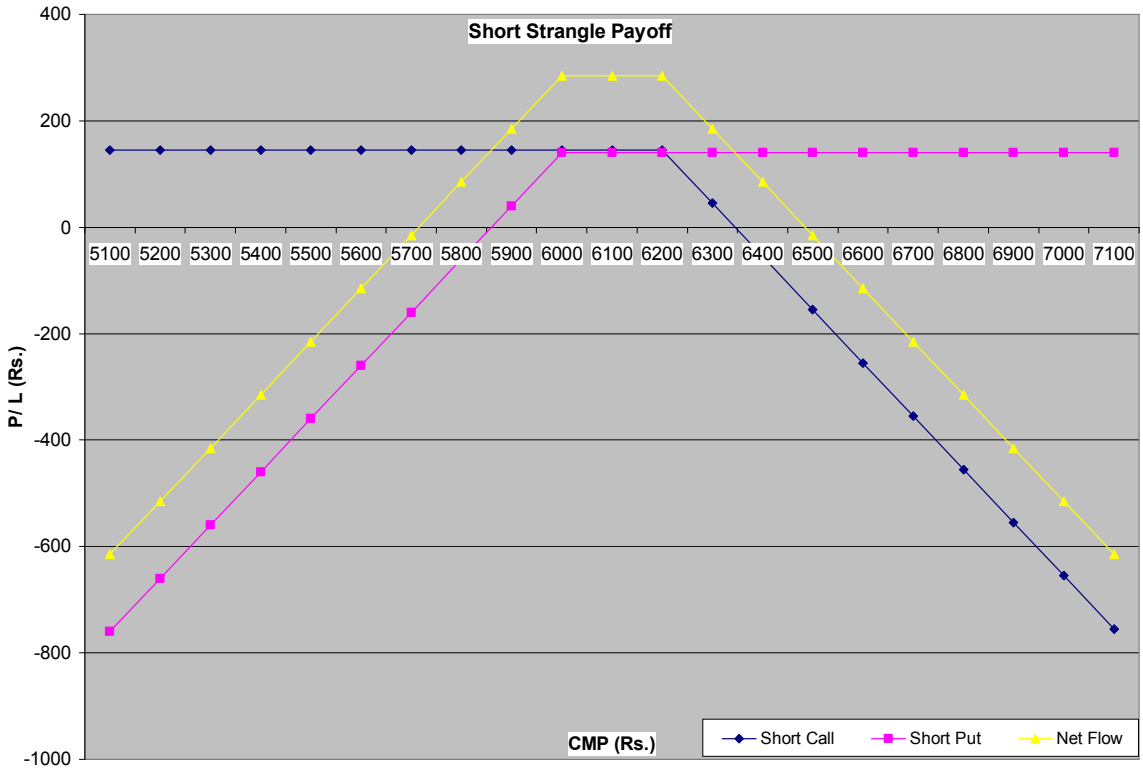
In this position, maximum profit for the trader would be unlimited in both the directions – up or down and maximum loss would be limited to Rs. 285, which would occur if underlying expires at any price between 6000 and 6200. Position would have two BEPs at 5715 and 6485. Until underlying crosses either of these prices, trader would always incur loss.

Short Strangle

This is exactly opposite to the long strangle with two out-of-the-money options (call and put) shorted. Outlook, like short straddle, is that market will remain stable over the life of options. Pay offs for this position will be exactly opposite to that of a long strangle position. As always, the short position will make money, when the long position is in loss and vice versa.

Option	Call	Put
Long/Short	Short	Short
Strike	6200	6000
Premium	145	140
Spot	6100	

CMP	Short Call	Short Put	Net Flow
5100	145	-760	-615
5200	145	-660	-515
5300	145	-560	-415
5400	145	-460	-315
5500	145	-360	-215
5600	145	-260	-115
5700	145	-160	-15
5800	145	-60	85
5900	145	40	185
6000	145	140	285
6100	145	140	285
6200	145	140	285
6300	45	140	185
6400	-55	140	85
6500	-155	140	-15
6600	-255	140	-115
6700	-355	140	-215
6800	-455	140	-315
6900	-555	140	-415
7000	-655	140	-515
7100	-755	140	-615



In this position, maximum loss for the trader would be unlimited in both the directions – up or down and maximum profit would be limited to Rs. 285, which would occur if underlying expires at any price between 6000 and 6200. Position would have two BEPs at 5715 and 6485. Until underlying crosses either of these prices, trader would always make profit.

5.4 Covered Call

This strategy is used to generate extra income from existing holdings in the cash market. If an investor has bought shares and intends to hold them for some time, then he would like to earn some income on that asset, without selling it, thereby reducing his cost of acquisition. So how does an investor continue to hold on to the stock, earn income and reduce acquisition cost? Lets us see:

Suppose an investor buys a stock in the cash market at Rs. 1590 and also sells a call option with a strike price of 1600, thereby earning Rs. 10 as premium. If the stock price moves up from 1590 level, he makes profit in the cash market but starts losing in the option trade. For example, if Stock goes to 1640,

Long Cash: Profit of 1640 – 1590 = 50
Short Call: – 1640 + 1600 + 10 = -30
Net Position: 50 – 30 = 20

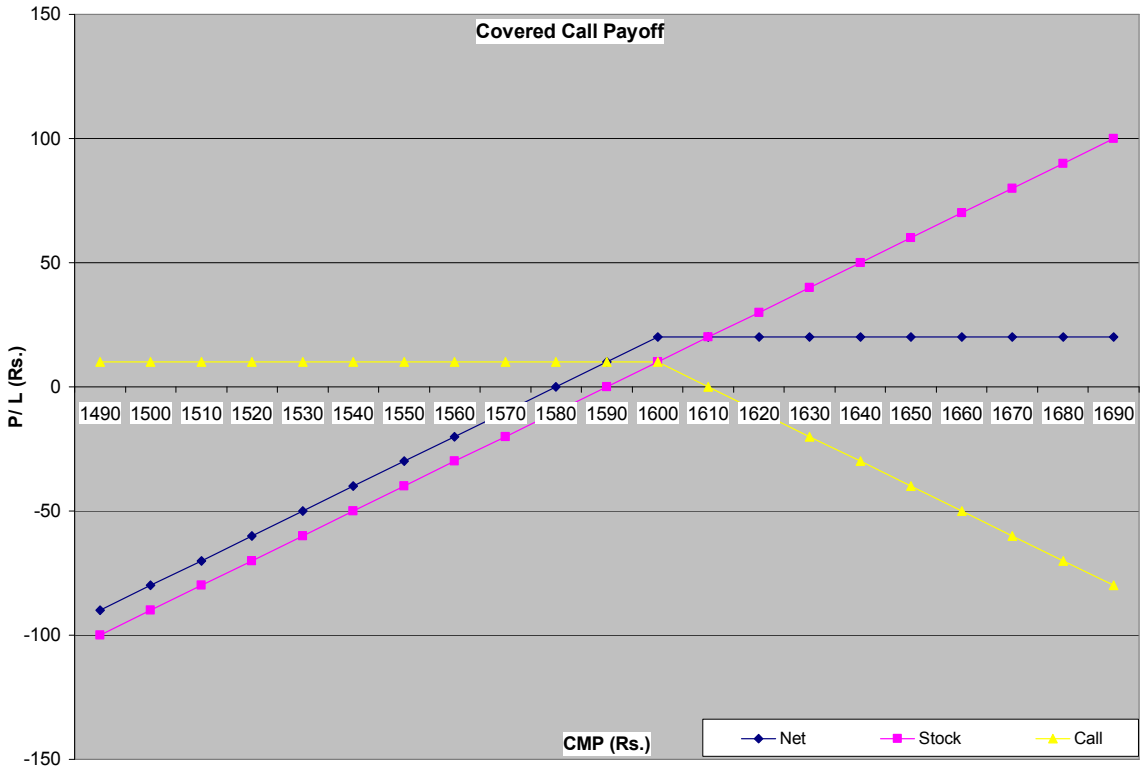
If the stock moves below 1590 level, he loses in the cash market, but gets to keep the premium as income. For example, if Stock goes to 1520,

Long Cash: 1520 – 1590 = -70
Short Call: + 10 (Long call holder will not exercise his right as he can buy the stock from the market at a price lower than strike, so he will let the option expire and the seller gets to keep the premium)
Net Position: -70 + 10 = -60

Therefore, combined position of long stock and short call would generate the pay-off as defined in the table and picture below:

Long Stock	1590
Strike Price	1600
Premium	10

CMP	Stock	Call	Net
1490	-100	10	-90
1500	-90	10	-80
1510	-80	10	-70
1520	-70	10	-60
1530	-60	10	-50
1540	-50	10	-40
1550	-40	10	-30
1560	-30	10	-20
1570	-20	10	-10
1580	-10	10	0
1590	0	10	10
1600	10	10	20
1610	20	0	20
1620	30	-10	20
1630	40	-20	20
1640	50	-30	20
1650	60	-40	20
1660	70	-50	20
1670	80	-60	20
1680	90	-70	20
1690	100	-80	20



From the table and the pay off chart we can see that the net position of a covered call strategy looks like 'short put' with a strike of 1600. This is called synthetic short put position.

If at that point of time, a 1600 strike put is available at any price other than Rs.20 (let us say Rs.17), an arbitrage opportunity exists, where the trader can create a synthetic short put position (covered call), earn a Rs. 20 premium and use the proceeds to buy a 1600 put for Rs.17, thereby making a risk free profit of Rs.3. Indeed, one needs to also provide for frictions in the market like brokerage, taxes, administrative costs, funding costs etc.

The most important factor in this strategy is the strike of the sold call option. If strike is close to the prevailing price of underlying stock, it would fetch higher premium upfront but would lock the potential gain from the stock early. And, if strike is too far from the current price of underlying, while it would fetch low upfront premium, would provide for longer ride of money on underlying stock. One has to decide on this subject based on one's view on the stock and choice between upfront premium from the option and potential gain from underlying.

A simple perspective on strike choice for covered call is that, till the time the cash market price does not reach the pre determined exit price, the long cash position can be used to sell calls of that target strike price. As long as price stays below that target price (let's say 1600 in our case), we can write call option of 1600 strike and keep earning the premium. The moment 1600 is reached in the spot market, we can sell in the cash market and also cover the short call position.

5.5 Protective Put

Any investor, long in the cash market, always runs the risk of a fall in prices and thereby reduction of portfolio value and MTM losses. A mutual fund manager, who is anticipating a fall, can either sell his entire portfolio or short futures to hedge his portfolio. In both cases, he is out of the market, as far as profits from upside are concerned. What can be done to remain in the market, reduce losses but gain from the upside? Buy insurance!

By buying put options, the fund manager is effectively taking a bearish view on the market and if his view turns right, he will make profits on long put, which will be useful to negate the MTM losses in the cash market portfolio.

Let us say an investor buys a stock in the cash market at 1600 and at the same time buys a put option with strike of 1600 by paying a premium of Rs 20.

Now, if prices fall to 1530 from here:
Long Cash: Loss of 1600 – 1530 = - 70
Long Put: Profit of – 20 – 1530 + 1600 = 50
Net Position: -20

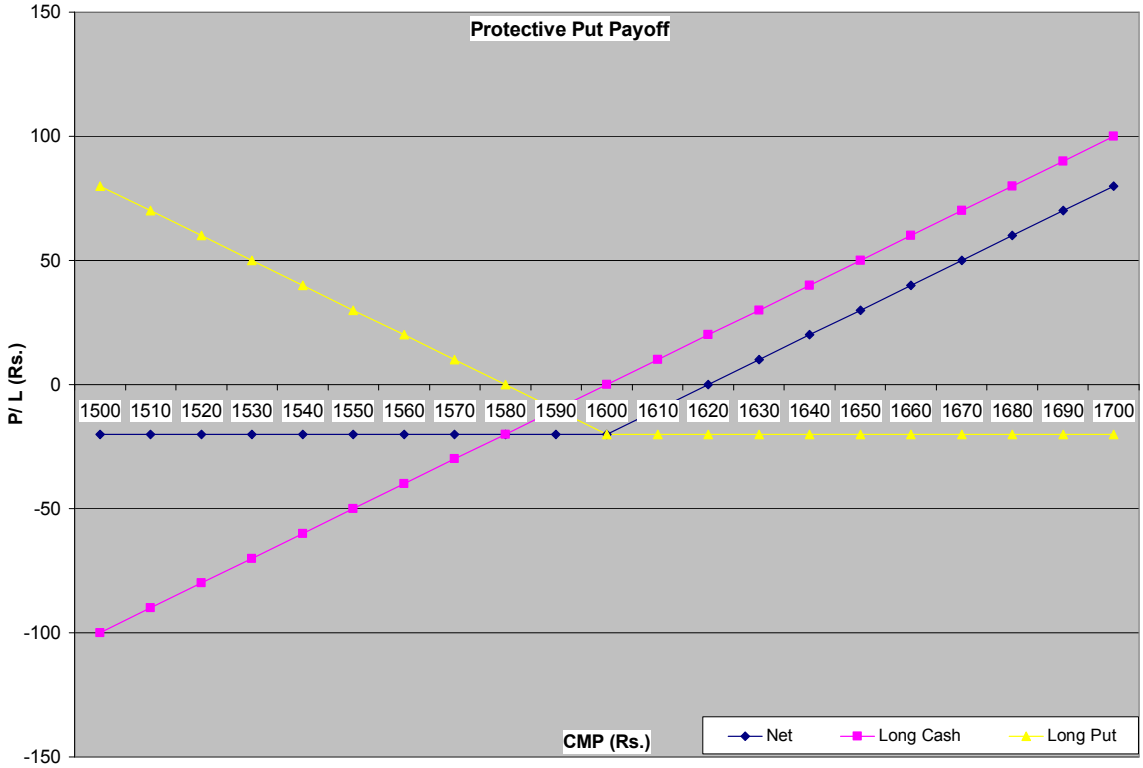
For all falls in the market, the long put will turn profitable and the long cash will turn loss making, thereby reducing the overall losses only to the extent of premium paid (if strikes are different, losses will be different from premium paid)
In case prices rise to 1660
Long Cash: Profit of 1660 – 1600 = 60
Long Put: Loss of 20
Net Position: 60 – 20 = 40

As price keeps rising, the profits will keep rising as losses in long put will be maximum to the extent of premium paid, but profits in long cash will keep increasing. Combined position would look like as follows:

Long Cash	1600
Strike Price	1600
Premium	20

CMP	Long Cash	Long Put	Net
1500	-100	80	-20
1510	-90	70	-20
1520	-80	60	-20
1530	-70	50	-20
1540	-60	40	-20
1550	-50	30	-20
1560	-40	20	-20
1570	-30	10	-20
1580	-20	0	-20
1590	-10	-10	-20

1600	0	-20	-20
1610	10	-20	-10
1620	20	-20	0
1630	30	-20	10
1640	40	-20	20
1650	50	-20	30
1660	60	-20	40
1670	70	-20	50
1680	80	-20	60
1690	90	-20	70
1700	100	-20	80



A protective put pay off is similar to that of long call. This is called synthetic long call position.

5.6 Collar

A collar strategy is an extension of covered call strategy. Readers may recall that in case of covered call, the downside risk remains for falling prices; i.e. if the stock price moves down, losses keep increasing (covered call is similar to short put).To put a floor to this downside, we long a put option, which essentially negates the downside of the short underlying/futures (or the synthetic short put).

In our example, we had assumed that a trader longs a stock @ 1590 and shorts a call option with a strike price of 1600 and receives Rs. 10 as premium. In this case, the BEP

was 1580. If price fell below 1580, loss could be unlimited whereas if price rose above 1600, the profit was capped at Rs. 20.

To prevent the downside, let us say, we now buy an out-of-the-money put option of strike 1580 by paying a small premium of Rs. 7.

Now, if price of underlying falls to 1490 on maturity:
Long Stock: -1590 + 1490 = -100
Short Call: 10
Long Put: -7 – 1490 + 1580 = 83
Net Position: -100 + 10 + 83 = - 7 (in case of covered call this would have been -90)

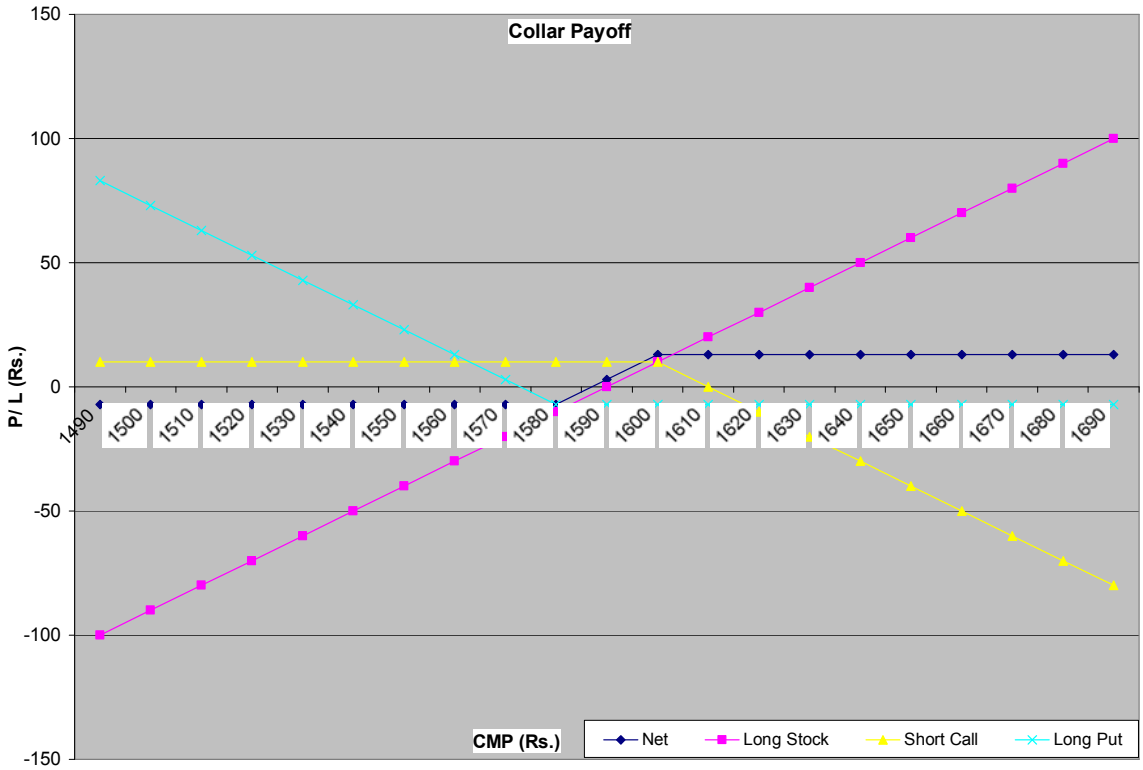
If price rises to 1690 on maturity:
Long Stock: -1590 + 1690 = 100
Short Call: 10 – 1690 +1600 = - 80
Long Put: - 7
Net Position: 100 – 80 – 7 = 13 (in case of covered call this would have been + 20)

Combined position (i.e. long underlying, short call and long put) is as follows:

Long Stock	1590
Short Call	1600
Call Premium	10

Long Put	1580
Premium	7

CMP	Long Stock	Short Call	Long Put	Net
1490	-100	10	83	-7
1500	-90	10	73	-7
1510	-80	10	63	-7
1520	-70	10	53	-7
1530	-60	10	43	-7
1540	-50	10	33	-7
1550	-40	10	23	-7
1560	-30	10	13	-7
1570	-20	10	3	-7
1580	-10	10	-7	-7
1590	0	10	-7	3
1600	10	10	-7	13
1610	20	0	-7	13
1620	30	-10	-7	13
1630	40	-20	-7	13
1640	50	-30	-7	13
1650	60	-40	-7	13
1660	70	-50	-7	13
1670	80	-60	-7	13
1680	90	-70	-7	13
1690	100	-80	-7	13



It is important to note here is that while the long put helps in reducing the downside risk, it also reduces the maximum profit, which a covered call would have generated. Also, the BEP has moved higher by the amount of premium paid for buying the out-of-the-money put option.

5.7 Butterfly Spread

As collar is an extension of covered call, butterfly spread is an extension of short straddle. We may recollect that downside in short straddle is unlimited if market moves significantly in either direction. To put a limit to this downside, along with short straddle, trader buys one out of the money call and one out of the money put. Resultantly, a position is created with pictorial pay-off, which looks like a butterfly and so this strategy is called “Butterfly Spread”.

Butterfly spread can be created with only calls, only puts or combinations of both calls and puts. Here, we are creating this position with help of only calls. To do so, trader has to take following positions in three different strikes and same maturity options:
Long Call 1 with strike of 6000 and premium paid Rs. 230
Short Call 2 with strike of 6100 and premium received Rs. 150
Long Call 3 with strike of 6200 and premium paid of Rs. 100
Short Call 2 with strike of 6100 and premium received Rs. 150

Let us see what happens if on expiry price is:

- Less than or equal to 6000
- Equal to 6100
- More than or equal to 6200

Case I: Price at 6000
Long Call 1: -230
Short Call 2: 150
Long Call 3: - 100
Short Call 2: 150
Net Position: -230 + 150 – 100 + 150 = -30

For any price lower than 6000, all calls will be out-of-the-money so nobody will exercise. Hence buyers will lose premium and sellers/ writers will get to keep the premium. In all these situations, trader's loss would be flat Rs. 30.

Case II: Price at 6100
Long Call 1: - 230 – 6000 + 6100 = - 130
Short Call 2: 150
Long Call 3: - 100
Short Call 2: 150
Net Position: - 130 + 150 – 100 + 150 = 70

This is the maximum profit point for this position. Both the shorted calls earn the premium for the trader. This entire premium is kept by the trader for all prices less than or equal to 6100.

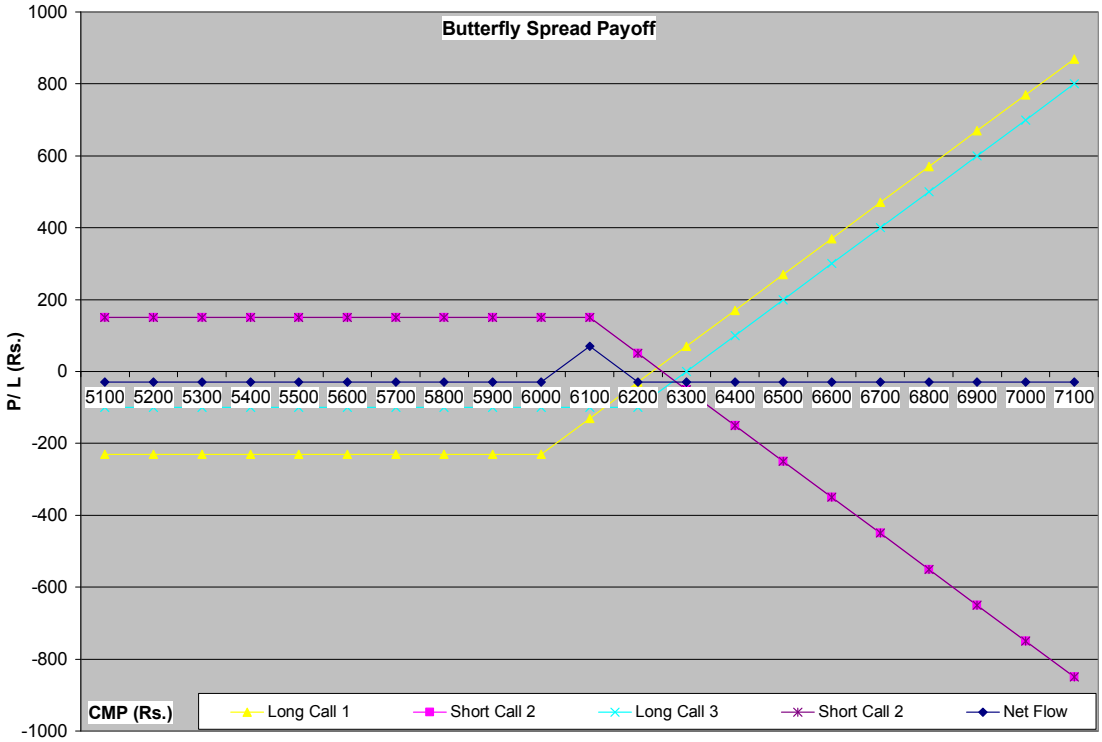
Case III: Price at 6200 or higher
Long Call 1: - 230 – 6000 + 6200 = - 30 (This will keep increasing as price rises)
Short Call 2: 150 – 6200 + 6100 = 50 (This will start getting losses as price increases)
Long Call 3: - 100
Short Call 2: 150 – 6200 + 6100 = 50 (This will start getting losses as price increases)
Net Position: - 30 + 50 – 100 + 50 = - 30

From 6200 or higher, the long calls will start making money for the trader whereas the short calls will be in losses. And, total of all 4 would always be equal to –30. Following table and picture explain this position:

Option	Call	Call	Call	Call
Long/Short	Long	Short	Long	Short
Strike	6000	6100	6200	6100
Premium	230	150	100	150
Spot	6100			

CMP	Long Call 1	Short Call 2	Long Call 3	Short Call 2	Net Flow
5100	-230	150	-100	150	-30
5200	-230	150	-100	150	-30
5300	-230	150	-100	150	-30
5400	-230	150	-100	150	-30
5500	-230	150	-100	150	-30
5600	-230	150	-100	150	-30
5700	-230	150	-100	150	-30
5800	-230	150	-100	150	-30

5900	-230	150	-100	150	-30
6000	-230	150	-100	150	-30
6100	-130	150	-100	150	70
6200	-30	50	-100	50	-30
6300	70	-50	0	-50	-30
6400	170	-150	100	-150	-30
6500	270	-250	200	-250	-30
6600	370	-350	300	-350	-30
6700	470	-450	400	-450	-30
6800	570	-550	500	-550	-30
6900	670	-650	600	-650	-30
7000	770	-750	700	-750	-30
7100	870	-850	800	-850	-30



Cost of creating butterfly spread: -230 + 150 – 100 + 150 = - 30

Lower BEP = 6000 + 30 = 6030

Higher BEP = 6200 – 30 = 6170

This position can also be created with the help of only puts or combination of calls and puts. To create this position from puts, one needs to buy one highest strike option, sell two middle strike options and then again buy one lowest strike option. And, to create this position from combination of calls and puts, one need to buy one call at lowest strike, sell one call at middle strike, buy one put at highest strike and sell one put at middle strike. This is limited profit and limited loss strategy.

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Chapter 6: Introduction to Trading Systems

LEARNING OBJECTIVES:

After studying this chapter, you should know about the:

- Trading System for futures and options
- Different entities in the trading system
- Different types of orders in the trading system and order matching rule
- Selection criteria of stocks and index for futures and option trading
- Position Limits for equity derivatives

6.1 Trading System

In this chapter we shall take a brief look at the trading system of futures and options on exchanges, including various types of orders. However, the best way to develop an understanding of the trading system is to actually watch the screen and observe trading.

As stated earlier, futures and options are standardized contracts and like shares, they are traded on exchanges. Markets around the world can be classified into two main types based on the methods of booking a trade namely an "open outcry" market and the "electronic" market. Open outcry is the way of communication between professionals on an exchange, which involves shouting, or using hand signals to transfer information about buy and sell orders. In an open outcry markets, usually the trading takes place in a large hall known as "pit" where members are present and contracts are traded through continuous bids and offers. Thus, such a market brings together the buyers and sellers (through their brokers) on a platform for trading. In case of electronic trading, there are screen based broker dealing terminals, instead of the trading pit. Futures and options trading in India is electronic in nature, with the bids and offers, and the acceptance being displayed on the terminal continuously.

All the exchanges in India (BSE, NSE and MSEI) provide a fully automated screen-based trading platform for index futures, index options, stock futures and stock options. These trading systems support an order driven market and simultaneously provide complete transparency of trading operations. Derivative trading is similar to that of trading of equities in the cash market segment.

All these exchanges have developed software for the F&O market to facilitate efficient and transparent trading in futures and options instruments.

Entities in the trading system

Broadly there are four entities in the trading system

- Trading Member
- Trading cum Clearing Member (TM-CM or TCM)
- Professional Clearing Member (PCM)
- Self Clearing Member (SCM)
- Participants

Trading Member:
They are members of Stock Exchanges. They can trade either on behalf of their clients or on their own account. The exchange assigns a trading member ID to each of its trading member. A trading member can have more than one user.

The number of users allowed for each trading member is decided by the exchange from time to time. A user must be registered with the exchange where he is assigned a unique user ID.

The unique trading member ID is common for all the users of a particular trading member. Therefore, it functions as a reference for all users of a particular trading member. Trading member is responsible to maintain adequate control over persons having access to the firm's User IDs.

Trading cum Clearing Member:
A Clearing Member (CM) who is also a Trading Member (TM) of the exchange. Such CMs may clear and settle their own proprietary trades, their clients' trades as well as trades of other TM's & Custodial Participants

Professional Clearing Member:
Professional clearing member clears the trades of his associate Trading Member and institutional clients. PCM is not a Trading Member of the exchange. Typically banks or custodians become a PCM and clear and settle for TM's as well as for Custodial Participants

Self Clearing Member (SCM)
A Self Clearing Member is also a Trading Member on the exchange. Such CMs may clear and settle only their own proprietary trades and their clients' trades but cannot clear and settle trades of other TM's.

Participants:
Participant is a client of a trading member. Clients may trade through various trading members but settle through a single clearing member.

Market Timing of Derivative segment
Trading on the derivatives segment takes place on all working days of the week between 9:15 am and 3:30 pm.

Corporate Hierarchy
In the Futures and options trading software, trading member will have a provision of defining the hierarchy amongst users of the system. This hierarchy comprises:

- Corporate Manager
- Branch Manager and
- Dealer

Corporate Manager:
As a user, it is the highest level in a trading firm. Corporate Manager can perform all the functions such as order and trade related activities, receiving reports for all branches of the trading member firm and also all dealers of the firm. Along with this he can also

define exposure limits for the branches of the firm. This facility is available only to the corporate manager.

Branch Manager:
As a user, it is placed under the corporate manager. Branch Manager can perform and view order and trade related activities for all dealers under that branch.

Dealer:
Dealer is at the lowest level of the user hierarchy. He can only view his own orders and trades and does not have access to information on other dealers under either the same branch or in other branches.

Client Broker Relationship
A trading member would be responsible for various compliance related activities including Know Your Client (KYC) form, execution of Client Broker agreement, timely execution of orders given by clients, collection of adequate margins, maintain separate client bank account for segregation of client money, ensure timely pay-in and pay-out of funds, timely issue of contract notes, resolve clients' complaints, sending periodical statement of accounts, maintain unique client code, etc.

Order types and conditions
In the trading system, trading members are allowed to enter orders with various conditions attached to them as per their requirements. These conditions are broadly divided into the following categories:

- Time conditions
- Price conditions
- Various combinations of the above are allowed providing flexibility to the users.

Time conditions
Day order: A Day order is an order which is valid for a single day on which it is entered. If the order is not executed during the day, the trading system cancels the order automatically at the end of the day.

Immediate or cancel (IOC): User is allowed to buy/sell a contract as soon as the order is released into the trading system. An unmatched order will be immediately cancelled. Partial order match is possible in this order, and the unmatched portion of the order is cancelled immediately.

Price condition
Limit order: It is an order to buy or sell a contract at a specified price. The user has to specify this limit price while placing the order and the order gets executed only at this specified limit price or at a better price than that (lower in case of buy order and higher in case of a sell order).

Market order: A market order is an order to buy or sell a contract at the best bid/offer price currently available in the market. Price is not specified at the time of placing this order. The price will be the currently available price in the market i.e., a buy market

order will get executed at the best price at which the seller is ready to sell and a sell market order will get executed at the best price at which the buyer is ready to buy.

Stop-loss order: A stop loss is an order to buy (or sell) a security once the price of the security climbed above (or dropped below) a trigger price. The stop-loss order gets activated when the trigger price is reached/crossed and enters the market as a market order or as a limit order, as defined at the time of placing this stop-loss order. To illustrate, suppose a trader buys ABC Ltd. shares at Rs 100 in expectation that the price will rise. However, prices starts declining below his buy price, trader would like to limit his losses. Trader may place a limit sell order specifying a trigger price of Rs 95 and a limit price of Rs 92. The trigger price has to be between last traded price and limit price while placing the sell limit order. Once the market price of ABC breaches the trigger price i.e. Rs 95, the order gets converted to a limit sell order at Rs 92. (Trigger Price is the price at which the order gets triggered from the stop loss book.)

Order Matching Rules

In India, F&O platforms offer an order driven market, wherein orders match automatically on price time priority basis.

Orders, as and when they are received, are first time stamped and then immediately processed for potential match. If a match is not found, then the orders are stored in different 'books'. Orders are stored in price-time priority in various books in the following sequence:

- Best Price
- Within Price, by time priority.

The best buy order will match with the best sell order. An order may match partially with another order resulting in multiple trades. For order matching, the best buy order is the one with highest price and the best sell order is the one with lowest price. This is because the computer views all buy orders available from the point of view of a seller and all sell orders from the point of view of the buyers in the market.

Price Band

There are no price bands applicable in the derivatives segment. However, in order to prevent erroneous order entry, operating ranges and day minimum/maximum ranges are kept as below:

- For Index Futures: at 10% of the base price
- For Futures on Individual Securities: at 10% of the base price
- For Index and Stock Options: A contract specific price range based on its delta value is computed and updated on a daily basis.

In view of this, orders placed at prices which are beyond the operating ranges would reach the Exchange as a price freeze.

The Trader Workstation

The market watch window

The following windows are displayed on the trader workstation screen:

- Title bar

- Ticker window of futures and options market
- Ticker window of underlying (capital) market
- Toolbar
- Market watch window
- Inquiry window
- Snap quote
- Order/trade window
- System message window

The best way to familiarize oneself with the screen is to spend some time studying a live screen.

Placing orders on the trading system

While entering orders on the trading system for both the futures and the options market, trading member are required to identify orders as being proprietary or clients. 'Pro' identifies proprietary orders while 'Cli' identifies client orders. Client account number should be provided for client orders.

Futures and Options Market Instruments

The F&O segment of the derivatives exchanges provides trading facilities for the following derivative instruments:

- Index based futures (including futures on foreign stock indices)
- Index based options (including options on foreign stock indices)
- Individual stock options
- Individual stock futures

6.2 Selection criteria of Stocks for trading

Contract specifications for single stock futures contracts

Underlying	Individual Securities
Security Descriptor	FUTSTK
Contract Size (Lot Size)	As specified by the exchange (minimum value of Rs 5,00,000)
Price Steps (Tick Size)	Rs 0.05
Trading Cycle	3 month trading cycle - the near month (one), the next month (two) and the far month (three). New contract is introduced on the next trading day following the expiry of near month contract.
Last Trading / Expiration Date	Last Thursday of the expiry month. If the last Thursday is a trading holiday, then the expiry day is the previous trading day.
Settlement Basis	Mark-to-Market and final settlement are cash settled on T+1 basis

Settlement Price	Daily Settlement price is the closing price of the futures contract for the trading day (calculated on the basis of the last half an hour weighted average price of such contract) and the final settlement price is the closing price of the relevant underlying security in the Capital Market segment of the exchange, on the last trading day of the futures contracts.

Contract specifications for single stock options contracts

Underlying	Individual Security
Security Descriptor	OPTSTK
Option Type	European (CE/PE)
Strike Price Interval	As specified by the exchange
Contract Size (Lot Size)	As specified by the exchange (minimum value of Rs 5,00,000)
Price Steps (Tick Size)	Rs 0.05
Trading Cycle *	3 month trading cycle - the near month (one), the next month (two) and the far month (three). New contract is introduced on the next trading day following the expiry of near month contract.
Last Trading / Expiration Date *	Last Thursday of the expiry month. If the last Thursday is a trading holiday, then the expiry day is the previous trading day.
Settlement Basis	Mark-to-Market and final settlement are cash settled on T+1 basis.
Daily settlement	Premium settlement is cash settled with the pay-in and pay-out of the premium settlement is on T+1 day.
Final Settlement Price	Closing price of such underlying security on the last trading day of the options contract.

* Please note that Weekly Options expire on Thursday of each week. Weekly Options are the Exchange Traded Options based on a Stock or an Index with shorter maturity of one or more weeks. If the expiry day of the Weekly Options falls on a trading Holiday, then the expiry will be on the previous trading day.

For further details on product specifications, please refer to the websites of exchanges:
www.nseindia.com
www.bseindia.com
www.msei.in

Eligibility Criteria for stock selection

The stock selection criteria for derivatives trading in India ensure that stock is large in terms of market capitalization, turnover and has sufficient liquidity in the underlying market and there are no adverse issues related to market manipulation.

Eligibility criteria of stocks

A stock on which stock option and single stock futures contracts are proposed to be introduced shall conform to the following broad eligibility criteria:

a) The stock shall be chosen from amongst the top 500 stocks in terms of average daily market capitalization and average daily traded value in the previous six months on a rolling basis.
b) The stock's median quarter-sigma order size (MQSOS) over the last six months shall be not less than Rs.10 Lakhs (Rupees Ten Lakhs). For this purpose, a stocks quarter-sigma order size shall mean the order size (in value terms) required to cause a change in the stock price equal to one-quarter of a standard deviation.
c) The market wide position limit (MWPL) in the stock shall not be less than Rs.300 crores (Rupees Three Hundred crores). The market wide position limit (number of shares) shall be valued taking the closing prices of stocks in the underlying cash market on the date of expiry of contract in the month. The market wide position limit of open position (in terms of the number of underlying stock) on futures and option contracts on a particular underlying stock shall be 20% of the number of shares held by non-promoters in the relevant underlying security i.e. free-float holding.

Continued eligibility criteria for stocks in equity derivatives

The criteria for retention of stock in equity derivatives segment are as under:

a) The stock's median quarter-sigma order size over last six months shall not be less than Rs. 5 lakhs (Rupees Five Lakhs).
b) The market wide position limit (MWPL) of the stock shall not be less than Rs. 200 crores (Rupees Two Hundred crores).
c) The stock's average monthly turnover in derivatives segment over last three months shall not be less than Rs. 100 crores (Rupees Hundred crores).

If a stock fails to meet these retention criteria for three months consecutively, then no fresh month contract shall be issued on that stock. However, the existing unexpired contracts may be permitted to trade till expiry and new strikes may also be introduced in the existing contract months.

Further, once the stock is excluded from the F&O list, it shall not be considered for re-inclusion for a period of one year.

Re-introduction of excluded stocks

A stock which is excluded from derivatives trading may become eligible once again. In such instances, the stock is required to fulfil the eligibility criteria for three consecutive months to be re-introduced for derivatives trading. Derivative contracts on such stocks may be re-introduced by the exchange subject to SEBI approval.

Recently approved changes - Inclusion and Exclusion of stocks for derivatives trading

SEBI in its Board Meeting on March 28, 2018 took the following decisions in order to rationalize and strengthen the framework of the equity derivatives market in India:

(i) To facilitate greater alignment of the cash and derivative market, physical settlement for all stock derivatives shall be carried out in a phased and calibrated manner.

(ii) To update and strengthen the existing entry criteria for introduction of stocks into the derivative segment in line with the increase in market capitalization since the last revision of the criteria in 2012. Accordingly, existing criteria like market wide position limit and median quarter-sigma order size shall be revised upward from current level of INR 300 crore and INR 10 lakh respectively to INR 500 crore and INR 25 lakh respectively. An additional criterion, of average daily 'deliverable' value in the cash market of INR 10 Crore, has also been prescribed. The enhanced criteria are to be met for a continuous period of six months.

(iii) To begin with, stocks which are currently in derivatives but fail to meet any of the enhanced criteria, would be physically settled. Such stocks would exit the derivative segment if they fail to meet any of the enhanced criteria within a period of one year from the specified date or fail to meet any of the current existing criteria for a continuous period of three months.

(iv) Stocks which are currently in derivatives and meet the enhanced criteria shall be cash settled. Such stocks if they fail to meet any one of the enhanced criteria for a continuous period of three months shall move from cash settlement to physical settlement. After moving to physical settlement if such stock does not meet any of the current existing criteria for a continuous period of three months, then it would exit out of derivatives. After a period of one year from the specified date, only those stocks which meet the enhanced criteria would remain in derivatives.

(v) To reflect global initiatives on product suitability, a framework has been approved. Individual investors may freely take exposure in the market (cash and derivatives) upto a computed exposure based on their disclosed income as per their Income Tax Return (ITR) over a period of time. For exposure beyond the computed exposure, the intermediary would be required to undertake rigorous due diligence and take appropriate documentation from the investor.

6.3 Selection criteria of Index for trading

Eligibility criteria of Indices

The Exchange may consider introducing derivative contracts on an index, if weightage of constituent stocks of the index, which are individually eligible for derivatives trading, is at least 80%. However, no single ineligible stock in the index shall have a weightage of more than 5% in the index. The index on which futures and options contracts are permitted shall be required to comply with the eligibility criteria on a continuous basis. The Exchange shall check whether the index continues to meet the aforesaid eligibility criteria on a monthly basis. If the index fails to meet the eligibility criteria for three consecutive months, then no fresh contract shall be issued on that index. However, the

existing unexpired contracts shall be permitted to trade till expiry and new strikes may also be introduced in the existing contracts.

6.4 Adjustments for Corporate Actions

Adjustments for Corporate Actions for Stock Options would be as follows:

1. The basis for any adjustment for corporate action shall be such that the value of the position of the market participants on cum and ex-date for corporate action shall continue to remain the same as far as possible. This will facilitate in retaining the relative status of positions viz. in-the-money, at-the-money and out-of-money. This will also address issues related to exercise and assignments.
2. Any adjustment for corporate actions shall be carried out on the last day on which a security is traded on a 'cum' basis in the underlying cash market, after the close of trading hours.
3. Adjustments shall mean modifications to positions and/or contract specifications as listed below such that the basic premise of adjustment laid down in the above paragraph is satisfied:
    (a) Strike Price
    (b) Position
    (c) Market Lot/Multiplier

The adjustments shall be carried out on any or all of the above based on the nature of the corporate action. The adjustments for corporate actions shall be carried out on all open positions. The corporate actions may be broadly classified under stock benefits and cash benefits as follows:

- Bonus
- Rights
- Merger/De-merger
- Amalgamation
- Splits
- Consolidations
- Hive-off
- Warrants
- Secured Premium Notes (SPNs)
- Extraordinary dividends

Following elaborates the adjustment for Bonus, Stock splits, consolidation and extraordinary dividends

Bonus, Stock Splits and Consolidations

Strike Price: The new strike price shall be arrived at by dividing the old strike price by the adjustment factor as under.

Market Lot / Multiplier: The new market lot/multiplier shall be arrived at by multiplying the old market lot by the adjustment factor as under.

Position: The new position shall be arrived at by multiplying the old position by the adjustment factor as under.

The adjustment factor for Bonus, Stock Splits and Consolidations is arrived at as follows:

Bonus
Ratio – A: B Adjustment factor: (A+B)/B

Stock Splits and Consolidations
Ratio – A: B Adjustment factor: A/B

The above methodology may result in fractions due to the corporate action e.g. a bonus ratio of 3:7. With a view to minimizing fraction settlements, the following methodology is proposed to be adopted:

(a) Compute value of the position before adjustment
(b) Compute value of the position taking into account the exact adjustment factor
(c) Carry out rounding off for the Strike Price and Market Lot
(d) Compute value of the position based on the revised strike price and market lot

The difference between (a) and (d) above, if any, shall be decided in the manner laid down by the group by adjusting Strike Price or Market Lot, so that no forced closure of open position is mandated.

Dividends
Dividends which are below 10% of the market value of the underlying stock would be deemed to be ordinary dividends and no adjustment in the Strike Price would be made for ordinary dividends. For extra-ordinary dividends, above 10% of the market value of the underlying stock, the Strike Price would be adjusted.

- To decide whether the dividend is "extra-ordinary" (i.e. over 10% of the market price of the underlying stock.), the market price would mean the closing price of the stock on the day previous to the date on which the announcement of the dividend is made by the Company after the meeting of the Board of Directors. However, in cases where the announcement of dividend is made after the close of market hours, the same day's closing price would be taken as the market price. Further, if the shareholders of the company in the AGM change the rate of dividend declared by the Board of Directors, then to decide whether the dividend is extra-ordinary or not would be based on the rate of dividend communicated to the exchange after AGM and the closing price of the stock on the day previous to the date of the AGM.
- In case of declaration of "extra-ordinary" dividend by any company, the total dividend amount (special and / or ordinary) would be reduced from all the strike prices of the option contracts on that stock.
- The revised strike prices would be applicable from the ex-dividend date specified by the exchange.

The basis for any adjustment for corporate actions shall be such that the value of the position of the market participants, on the cum- and ex-dates for the corporate action,

shall continue to remain the same as far as possible. This will facilitate in retaining the relative status of positions viz. in-the-money, at-the-money and out-of-money. This will also address issues related to exercise and assignments.

6.5 Position Limit

	Index Options	Index Futures	Stock Options	Stock Futures
Client / FPI (Category III) / Scheme of MF	The gross open position across all derivative contracts on a particular underlying stock, of each specific client, FPI (Category III) or scheme of MF, should not exceed the higher of: 1% of the free float market capitalization (in terms of number of shares). or 5% of the open interest in the derivative contracts in the same underlying stock (in terms of number of shares).			
Trading Members / FPIs (Category I & II) * / Mutual Funds *	The position limits of Trading members / FPIs (Category I & II) / Mutual Funds in equity index option contracts is higher of Rs.500 crores or 15% of the total open interest in the market in equity index option contracts. This limit would be applicable on open positions in all option contracts on a particular underlying index.	The position limits of Trading members / FPIs (Category I & II) / Mutual Funds in equity index futures contracts is higher of Rs.500 crores or 15% of the total open interest in the market in equity index futures contracts. This limit is applicable on open positions in all futures contracts on a particular underlying index.	The position limits of Trading members / FPIs (Category I & II) / Mutual Funds in individual stocks is related to the market-wide position limit for the individual stocks. The combined futures and options position limit shall be 20% of the applicable Market Wide Position Limit (MWPL).	

Market wide	There is no market wide position limits specified for index options contracts.	There is no market wide position limits specified for index futures contracts.	At the end of each day the Exchange disseminates the aggregate open interest across all Exchanges in the futures and options on individual scrips along with the market wide position limit for that scrip and tests whether the aggregate open interest for any scrip exceeds 95% of the market wide position limit for that scrip. If yes, the Exchange takes note of open positions of all client/ TMs as at the end of that day in that scrip, and from next day onwards the client/ TMs should trade only to decrease their positions through offsetting positions till the normal trading in the scrip is resumed. The normal trading in the scrip is resumed only after the aggregate open interest across Exchanges comes down to 80% or below of the market wide position limit.

* In addition to the above limits, in index futures and options, FPI Category (I &II)/MFs shall take exposure in equity index derivatives subject to the following limits:

- Short positions in index derivatives (short futures, short calls and long puts) not exceeding (in notional value) the FPI Category (I &II)/ MFs holding of stocks.
- Long positions in index derivatives (long futures, long calls and short puts) not exceeding (in notional value) the FPI Category (I &II)/MFs holding of cash, government securities, T-Bills, money market mutual funds and gilt funds and similar instruments.

In this regard, if the open position of an FPI Category (I &II)/ MF exceeds the limits as stated for Index Futures or Index Options, such surplus would be deemed to comprise of short and long positions in the same proportion of the total open positions individually. Such short and long positions in excess of the said limits shall be compared with the FPI Category (I &II) /MFs holding in stocks, cash etc. as stated above.

6.6 Using Daily Newspapers to Track Futures and Options

The prices of both spot and F&O markets are published by many major business dailies such as Economic Times, Mint, Business Standard, Financial Express, etc. They publish all or some of the following details for the derivatives contracts being traded on the exchanges.

Date: This gives the Trade date.

Symbol: This gives the underlying index or stock e.g. NIFTY, ACC, etc.

Instrument: This gives the contract descriptor for the various instruments available in the derivatives segment e.g. FUTSTK, OPTIDX, etc.

Expiry date: The date on which the contract expires

Option Type: This gives the type of option for the contract. (CE- Call European, PE- Put European, CA- Call American, PA- Put American)

Corporate Action level: This is the Corporate Action Flag. This flag changes when there is a corporate action on a contract, which could either be a symbol change or a dividend announced by the company.

Strike Price: This gives the Strike Price of the contract.

Opening price: This gives the price at which the contract opened for the day.

High price: This gives the highest price at which the contract was traded during the day.

Low price: This gives the lowest price at which the contract was traded during the day.

Closing price: This gives the price of the contract at the end of the day.

Last traded price: This gives the price at which the last contract of the day was traded.

Open Interest: For futures contracts open interest is equivalent to the open positions in that futures contract multiplied by its last available closing price. For option contracts, open interest is equivalent to the open positions multiplied by the notional value. Notional value with respect to an option contract is computed as the product of the open position in that option contract multiplied by the last available closing price of the underlying.

Total Traded Quantity: This is the total no. of contracts on which business took place during the day.

Total Traded Value: The total money value of the business which took place on the contract during the day.

Number of Trades: The total no. of trades which took place on the instrument during the day.

Information on trends in F&O markets:

- Positive trend: It gives information about the top gainers in the futures market.
- Negative trend: It gives information about the top losers in the futures market.
- Futures OI gainers: It lists those futures whose % increase in Open Interest is among the highest on that day.
- Futures OI losers: It lists those futures whose % decrease in Open Interest is among the highest on that day.
- Active Calls: Calls with high trading volumes on that particular day.
- Active Puts: Puts with high trading volumes on that particular day.
- Put/ Call ratio (PCR): It gives the information about the ratio of trading volume of put options to call options. The ratio is calculated either on the basis of options trading volumes or on the basis of their open interest.

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Chapter 7: Introduction to Clearing and Settlement System

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Different types of clearing members
- Clearing and settlement mechanism for equity derivatives
- Risk management in equity derivatives segment
- Margining system in equity derivatives segment

Clearing Corporation/ Clearing House is responsible for clearing and settlement of all trades executed on the F&O Segment of the Exchange. Clearing Corporation acts as a legal counterparty to all trades on this segment and also guarantees their financial settlement. The Clearing and Settlement process comprises of three main activities, viz., Clearing, Settlement and Risk Management.

Clearing and settlement activities in the F&O segment are undertaken by Clearing Corporation with the help of the following entities: Clearing Members and Clearing Banks.

7.1 Clearing Members

As you may recollect from our discussion in section 6.1, there are broadly three types of clearing members:

1. Self clearing member: They clear and settle trades executed by them only, either on their own account or on account of their clients.
2. Trading member–cum–clearing member: They clear and settle their own trades as well as trades of other trading members and custodial participants.
3. Professional clearing member: They clear and settle trades executed by trading members.

Both trading-cum-clearing member and professional clearing member are required to bring in additional security deposits in respect of every trading member whose trades they undertake to clear and settle.

Clearing Banks

Funds settlement takes place through clearing banks. For the purpose of settlement all clearing members are required to open a separate bank account with Clearing Corporation designated clearing bank for F&O segment.

Clearing Member Eligibility Norms

- Net-worth of at least Rs.300 lakhs. The Net-worth requirement for a Clearing Member who clears and settles only deals executed by him is Rs. 100 lakhs.
- Deposit of Rs. 50 lakhs to clearing corporation which forms part of the security deposit of the Clearing Member.
- Additional incremental deposits of Rs.10 lakhs to clearing corporation for each additional TM, in case the Clearing Member undertakes to clear and settle deals for other TMs.

7.2 Clearing Mechanism

The first step in clearing process is calculating open positions and obligations of clearing members. The open positions of a CM is arrived at by aggregating the open positions of all the trading members (TMs) and all custodial participants (CPs) clearing though him, in the contracts which they have traded. The open position of a TM is arrived at by adding up his proprietary open position and clients' open positions, in the contracts which they have traded. While entering orders on the trading system, TMs identify orders as either proprietary (Pro) or client (Cli). Proprietary positions are calculated on net basis (buy-sell) for each contract and that of clients are arrived at by summing together net positions of each individual client. A TM's open position is the sum of proprietary open position, client open long position and client open short position.

To illustrate, consider a clearing member 'A' with trading members clearing through him 'PQR' and 'XYZ'.

		Proprietary Position			Client 1			Client 2			Net Member
TM	Security	Buy Qty	Sell Qty	Net Qty	Buy Qty	Sell Qty	Net Qty	Buy Qty	Sell Qty	Net Qty	
PQR	NIFTY October contract	5000	3000	2000	3000	2000	1000	3000	1000	2000	Long 5000
XYZ	NIFTY October contract	1000	2000	(1000)	2000	1000	1000	3000	4000	(1000)	Long 1000 Short 2000

Clearing member A's open position for Nifty October contract is:

Member	Long Position	Short Position
PQR	5000	0
XYZ	1000	2000
Total for A	6000	2000

Here in the above example PQR's Long Position is arrived by summing up net position of his proprietary position i.e. 2000 and net positions of both his clients 1 & 2 i.e. 1000 and 2000 respectively. Similarly, we have calculated the long and short positions of XYZ. Clearing member's open position is arrived by adding long positions and short positions of both the clients i.e. 6000 long open positions and 2000 short open positions.

7.3 Settlement Mechanism

In India, SEBI has given the stock exchanges the flexibility to offer:

a) Cash settlement (settlement by payment of differences) for both stock options and stock futures; or

b) Physical settlement (settlement by delivery of underlying stock) for both stock options and stock futures; or
c) Cash settlement for stock options and physical settlement for stock futures; or
d) Physical settlement for stock options and cash settlement for stock futures.

A Stock Exchange may introduce physical settlement in a phased manner. On introduction, however, physical settlement for all stock options and/or all stock futures, as the case may be, must be completed within six months. The settlement mechanism shall be decided by the Stock Exchanges in consultation with the Depositories.

On expiry / exercise of physically settled stock derivatives, the risk management framework (i.e., margins and default) of the cash segment shall be applicable. Settlements of cash and equity derivative segments shall continue to remain separate.

The Stock Exchanges interested to introduce physical settlement should:

a. Put in place proper systems and procedures for smooth implementation of physical settlement.
b. Make necessary amendments to the relevant bye-laws, rules and regulations for implementation of physical settlement.
c. Bring the provisions of this circular to the notice of all categories of market participants, including the general public, and also to disseminate the same on their websites.

The Stock Exchanges interested to offer physical settlement should submit to SEBI for approval, a detailed framework for implementation of physical settlement of stock derivatives. After opting for a particular mode of settlement for stock derivatives, a Stock Exchange may change to another mode of settlement after seeking prior approval of SEBI.

Settlement Schedule

The settlement of trades is on T+1 working day basis. Members with a funds pay-in obligation are required to have clear funds in their primary clearing account on or before 10.30 a.m. on the settlement day. The payout of funds is credited to the primary clearing account of the members thereafter.

Settlement of Futures Contracts on Index or Individual Securities

In Futures contracts, both the parties to the contract have to deposit margin money which is called as initial margin. Futures contract have two types of settlements, the MTM settlement which happens on a continuous basis at the end of each day, and the final settlement which happens on the last trading day of the futures contract.

Mark to Market (MTM) Settlement

Mark to Market is a process by which margins are adjusted on the basis of daily price changes in the markets for underlying assets. The profits/ losses are computed as the difference between:

1. The trade price and the day's settlement price for contracts executed during the day but not squared up.
2. The previous day's settlement price and the current day's settlement price for brought forward contracts.

3. The buy price and the sell price for contracts executed during the day and squared up.

The clearing member who suffers a loss is required to pay the MTM loss amount in cash which is in turn passed on to the clearing member who has made a MTM profit. The pay-in and pay-out of the mark-to-market settlement are affected on the day following the trade day (T+1) where trading member is responsible to collect/ pay funds from/ to clients by the next day. Clearing Members are responsible to collect and settle the daily MTM profits/losses incurred by the TMs and their clients clearing and settling through them. After completing day's settlement process, all the open positions are reset to the daily settlement price. These positions become the open positions for the next day.

Final Settlement

On expiration day of the futures contracts, after the close of trading hours, clearing corporation marks all positions of a clearing member to the final settlement price and the resulting profit/ loss is settled in cash. Final settlement loss/profit amount is debited/ credited to the relevant clearing member's clearing bank account on the day following expiry day of the contract. All long positions are automatically assigned to short positions in option contracts with the same series, on a random basis.

Settlement of Options Contracts on Index or Individual Securities

Options contracts have two types of settlements. These are as follows

1) Daily premium settlement,
2) Final settlement

Daily Premium Settlement

In options contract, buyer of an option pays premium while seller receives premium. The amount payable and receivable as premium are netted to compute the net premium payable or receivable amount for each client for each option contract.

The clearing members who have a premium payable position are required to pay the premium amount to clearing corporation which in turn passed on to the members who have a premium receivable position. This is known as daily premium settlement. The pay-in and pay-out of the premium settlement is on T+1 day (T=Trade day). The premium payable amount and premium receivable amount are directly credited/ debited to the clearing member's clearing bank account.

Final Exercise Settlement

All the in the money stock options contracts shall get automatically exercised on the expiry day. All the unclosed long/ short positions are automatically assigned to short/ long positions in option contracts with the same series, on the random basis.

Profit/ loss amount for options contract on index and individual securities on final settlement is credited/debited to the relevant clearing members clearing bank account on T+1 day i.e. a day after expiry day. Open positions, in option contracts, cease to exist after their expiration day.

The pay-in/ pay-out of funds for a clearing member on a day is the net amount across settlements and all trading members/ clients, in Future & Option Segment.

Settlement of Custodial Participant (CP) Deals

Clearing corporation provides a facility to entities like institutions to execute trades through any trading member, which may be cleared and settled by their own CM. Such entities are called Custodial Participants (CP). A CP is required to register with clearing corporation through this clearing member, which allots them a unique CP code. The CP and the CM are required to enter into an agreement. All trades executed by such CP through any TM are required to have the CP code in the relevant field on the F&O trading system at the time of order entry. Without confirmation from CM, the responsibility of settlement of such trade vests with the CM of the TM while such trades form part of the obligations of the CM of the CP when they are confirmed from CM. They shall be responsible for all obligations arising out of such trades including the payment of margins and settlement of obligations.

Settlement Price

Settlement price for various contracts is determined as follows:

Product	Settlement	Schedule
Futures Contracts on Index or Global Index Individual Security	Daily Settlement	Closing price of the futures contracts on the trading day. (closing price for a futures contract shall be calculated on the basis of the last half an hour weighted average price of such contract)
Un-expired illiquid futures contracts (including Global Indices)	Daily Settlement	Theoretical Price computed as per formula $F=S * e^{rt}$
Futures Contracts on Index or Individual Securities	Final Settlement	Closing price of the relevant underlying index / security in the Capital Market segment of the exchange, on the last trading day of the futures contracts.
Futures Contracts on Global Indices	Final Settlement	The Special Opening Quotation (SOQ) of the Global Indices on the last trading day of the futures contracts
Options Contracts on Index and Individual Securities	Final Exercise Settlement	Closing price of such underlying security (or index) on the last trading day of the options contract.
Options Contracts on Global Indices	Final Exercise Settlement	The Special Opening Quotation (SOQ) of the Global Indices on the last trading day of the options contracts

7.4 Risk Management

For the F&O segment, a comprehensive risk containment mechanism has been developed by clearing corporation. The salient features of risk containment measures on the F&O segment are:

- Stringent requirements of capital adequacy for membership (Financial strength of a member) helps in risk management.

- Clearing corporation charges an upfront initial margin for all the open positions of a Clearing Member (CM). It specifies the initial margin requirements for each futures/ options contract on a daily basis and also follows Value-At-Risk (VAR) based margining. Clearing member collects initial margin from the trading members (TMs) and their respective clients.
- The open positions of the members are settled on an MTM basis for each contract at the end of the day. The difference is settled in cash on a T+1 basis.
- Clearing corporation's on-line position monitoring system monitors a CM's open position on a real-time basis. It sets limit for each CM based on his effective deposits and simultaneously generates alert messages whenever a CM reaches certain pre-determined benchmarks of the limit. Clearing corporation monitors the CMs for Initial Margin violation, Exposure margin violation, while TMs are monitored for Initial Margin violation and position limit violation.
- A trading terminal helps the CMs to monitor the open positions of all the TMs clearing and settling through him. A CM may set limits for a TM clearing and settling through him. Clearing corporation assists the CM to monitor the intra-day limits set up by a CM and whenever a TM exceed the limits, it stops that particular TM from further trading.

The most critical component of risk containment mechanism for F&O segment is the margining system and on-line position monitoring. The actual position monitoring and margining is carried out on-line through Parallel Risk Management System (PRISM) using SPAN® (Standard Portfolio Analysis of Risk) system for the purpose of computation of on-line margins, based on the parameters defined by SEBI.

7.5 Margining and mark to market under SPAN

In order to manage risk efficiently in the Indian securities market, exchanges have adopted SPAN (Standard Portfolio Analysis of Risk), a risk management and margining product designed by Chicago Mercantile Exchange (CME), Chicago, USA. This software was developed for calculating initial margins on the various positions of market participants.

The objective of SPAN is to identify overall potential risk in a portfolio. The program treats futures and options uniformly, while recognizing the unique exposures associated with options portfolios.

Since SPAN is used to determine initial margins/ performance bond requirements on various positions, its basic objective is to determine the largest possible loss that a portfolio might reasonably be expected to suffer from one day to the next. It then sets the initial margins/ performance bond requirement at a level, which is sufficient to cover this one-day potential loss.

The concept of risk array represents the extent to which a specific derivative instrument will gain or lose value from the present time to a specific point in time in the near future, over a specific set of market conditions. The time is set to one trading day i.e. through the use of SPAN the maximum likely loss, which may reasonably occur over one trading day is being evaluated.

Margins

The margining system for F&O segment is as below:

Initial margin

Margins are computed by clearing corporation upto client level with the help of SPAN. Clearing corporation collects initial margin for all the open positions of a Clearing Member based on the margins computed. Margins are required to be paid up-front on gross basis at individual client level for client positions and on net basis for proprietary positions. A Clearing Member collects initial margin from TM whereas TM collects from his clients.

Initial margin requirements are based on 99% value at risk over a one day time horizon. However, in the case of futures contracts (on index or individual securities), where it may not be possible to collect mark to market settlement value, before the commencement of trading on the next day, the initial margin is computed over a two-day time horizon, applying the appropriate statistical formula. The methodology for computation of Value at Risk percentage is as per the recommendations of SEBI from time to time.

Premium Margin

Along with Initial Margin, Premium Margin is also charged at client level. This margin is required to be paid by a buyer of an option till the premium settlement is complete.

Assignment Margin for Options on Securities

Along with Initial Margin and Premium Margin, assignment margin is required to be paid on assigned positions of Clearing Members towards final exercise settlement obligations for option contracts on individual securities, till such obligations are fulfilled. The margin is charged on the net exercise settlement value payable by a Clearing Member towards final exercise settlement.

Exposure Margins

Clearing members are subject to exposure margins in addition to initial margins.

The exposure margins for options and futures contracts are as follows:

- For Index options and Index futures contracts: 3% of the notional value of a futures contract. In case of options it is charged only on short positions and is 3% of the notional value of open positions.
- For option contracts and Futures Contract on individual Securities: The higher of 5% or 1.5 standard deviation of the notional value of gross open position in futures on individual securities and gross short open positions in options on individual securities in a particular underlying. The standard deviation of daily logarithmic returns of prices in the underlying stock in the cash market in the last six months is computed on a rolling and monthly basis at the end of each month.

  For this purpose notional value means:

  - For a futures contract - the contract value at last traded price/ closing price.
  - For an options contract - the value of an equivalent number of shares as conveyed by the options contract, in the underlying market, based on the last available closing price.

  In case of calendar spread positions in futures contract, exposure margins are levied on one third of the value of open position of the far month futures contract. The calendar

spread position is granted calendar spread treatment till the expiry of the near month contract.

Client Margins

Clearing corporation intimates all members of the margin liability of each of their client. Additionally members are also required to report details of margins collected from clients to clearing corporation, which holds in trust client margin monies to the extent reported by the member as having been collected from their respective clients.

Cross Margin

Salient features of the cross margining available on exchanges are as follows:

1. Cross margining is available across Cash and Derivatives segment.
2. Cross margining is available to all categories of market participants.
3. When a Clearing Member clears for client/ entities in Cash and Derivatives segments, he is then required to intimate client details through a Collateral Interface for Members (CIM) to benefit from Cross margining.
4. When different Clearing Members clear for client/entities in Cash and Derivatives segments they are required to enter into necessary agreements for availing cross margining benefit.
5. Clients who wish to avail cross margining benefit in respect of positions in Index Futures and Constituent Stock Futures only, their clearing member in the Derivatives segment needs to provide the details of the clients.

Penalties

A penal charge will be levied on the amount in default as per the byelaws relating to failure to meet funds / settlement obligations by any Clearing Member. The following penal charges are levied for failure to pay funds/ settlement obligations:

Type of Default	Penalty Charge per day	Chargeable to
Overnight settlement shortage of value more than Rs.5 lakhs	0.07%	Clearing Member
Security Deposit Shortage	0.07%	Clearing Member
Shortage of Capital Cushion	0.07%	Clearing Member

Any violations by the custodial participants shall be treated in line with those by the trading member and as a result action shall be initiated against the concerned clearing member.

Short Reporting of Margins in Client Margin Reporting Files

The following penalty shall be levied in case of short reporting by trading/clearing member per instance.

Short collection for each client	Penalty percentage
(< Rs 1 lakh) And (< 10% of applicable margin)	0.5%
(= Rs 1 lakh) Or (= 10% of applicable margin)	1.0%

If short/non-collection of margins for a client continues for more than 3 consecutive days, then penalty of 5% of the shortfall amount shall be levied for each day of continued shortfall beyond the 3rd day of shortfall.

If short/non-collection of margins for a client takes place for more than 5 days in a month, then penalty of 5% of the shortfall amount shall be levied for each day, during the month, beyond the 5th day of shortfall.

Notwithstanding the above, if short collection of margin from clients is caused due to movement of 3% or more in the Nifty 50 (close to close) on a given day, (day T), then, the penalty for short collection shall be imposed only if the shortfall continues to T+2 day.

All instances of non-reporting are treated as 100% short reporting for the purpose of levy of penalty.

Penalty and penal charges for margin/limit violation

Penalty for margin / limit violation is levied on a monthly basis based on slabs as mentioned below or such other amount as specified by the Clearing Corporation from time to time.

Instances of Disablement	**Penalty to be levied**
1st instance	0.07% per day
2nd to 5th instance of disablement	0.07% per day + Rs.5,000/- per instance from 2nd to 5th instance
6th to 10th instance of disablement	0.07% per day + Rs.20,000/- (for 2nd to 5th instance) + Rs.10000/- per instance from 6th to 10th instance
11th instance onwards	0.07% per day + Rs.70,000/- (for 2nd to 10th instance) + Rs.10,000/- per instance from 11th instance onwards. Additionally, the member will be referred to the Disciplinary Action Committee for suitable action

Instances as mentioned above refer to all disablements during market hours in a calendar month. The penal charge of 0.07% per day is applicable on all disablements due to margin violation anytime during the day.

FII/Mutual Fund position limit violation

In case of violation of FII/ Mutual Fund limits a penalty of Rs. 5,000/- would be levied for each instance of violation.

Client wise/NRI/sub account of FII/scheme of MF position limit violation

In case of open position of any Client / NRI / sub-account of FII / scheme of MF exceeding, the specified limit following penalty would be charged on the clearing member for each day of violation:

1% of the value of the quantity in violation (i.e., excess quantity over the allowed quantity, valued at the closing price of the security in the normal market of the Capital

Market segment of the Exchange) per client or Rs.1,00,000 per client, whichever is lower, subject to a minimum penalty of Rs.5,000/- per violation / per client.

When the client level/NRI/sub-account of FII/scheme of mutual fund violation is on account of open position exceeding 5% of the open interest, a penalty of Rs.5,000 per instance would be levied to the clearing member.

Market wide Position Limit violation

At the end of each day during which the ban on fresh positions is in force for any security, when any member or client has increased his existing positions or has created a new position in that security the client/trading members will be subject to a penalty 1% of the value of increased position subject to a minimum of Rs.5000 and maximum of Rs.100000. The positions, for this purpose, will be valued at the underlying close price.

Chapter 8: Legal and Regulatory Environment

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Definition of securities and derivatives as per the Securities Contract (Regulation) Act, 1956
- Functions of SEBI
- Regulatory framework for derivatives market trading, clearing, settlement and risk management
- Major recommendation of Dr. L.C Gupta Committee Report and Dr. J.R. Verma Committee Report

The trading of derivatives is governed by the provisions contained in the Securities Contracts (Regulation) Act-1956, the Securities Exchange Board of India Act-1992, the rules and regulations framed there under and other rules and bye–laws of stock exchanges.

8.1 Securities Contracts (Regulation) Act, 1956

The Act aims to prevent undesirable transactions in securities. It governs the trading of securities in India. The term "securities" has been defined in the Section 2(h) of SCRA. The term 'Securities' include:

- Shares, scrips, stocks, bonds, debentures, debenture stock or other marketable securities of a like nature in or of any incorporated company or other body corporate
- Derivative
- Units or any other instrument issued by any collective investment scheme to the investors in such schemes
- Security receipt as defined in clause (zg) of section 2 of the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002
- Units or any other such instrument issued to the investors under any mutual fund scheme (securities do not include any unit linked insurance policy or scrips or any such instrument or unit, by whatever name called which provides a combined benefit risk on the life of the persons and investment by such persons and issued by an insurer refer to in clause (9) of section 2 of the Insurance Act, 1938 (4 of 1938))
- Any certificate or instrument (by whatever name called), issued to an investor by any issuer being a special purpose distinct entity which possesses any debt or receivable, including mortgage debt, assigned to such entity, and acknowledging

beneficial interest of such investor in such debt or receivable, including mortgage debt, as the case may be

- Government securities
- Such other instruments as may be declared by the Central Government to be securities (including onshore rupee bonds issued by multilateral institutions like the Asian Development Bank and the International Finance Corporation)
- Rights or interests in securities

According to the act "Derivatives" is defined as:-

- A security derived from a debt instrument, share, loan whether secured or unsecured, risk instrument or contract for differences or any other form of security.
- A contract which derives its value from the prices, or index of prices, of underlying securities.
- Commodity derivatives, and
- Such other instruments as may be declared by the Central Government to be derivatives.
- Section 18A provides that notwithstanding anything contained in any other law for the time being in force, contracts in derivative shall be legal and valid if such contracts are:
    - Traded on a recognized stock exchange
    - Settled on the clearing house of the recognized stock exchange, in accordance with the rules and bye–laws of such stock exchanges.

8.2 Securities and Exchange Board of India Act, 1992

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. Its regulatory jurisdiction extends over corporate in the issuance of capital and transfer of securities, in addition to all intermediaries and persons associated with securities market. SEBI has been obligated to perform the aforesaid functions by such measures as it thinks fit. In particular, it has powers for:

- Regulating the business in stock exchanges and any other securities markets.
- Registering and regulating the working of stock brokers, sub–brokers etc.
- Promoting and regulating self-regulatory organizations.
- Prohibiting fraudulent and unfair trade practices.
- Calling for information from, undertaking inspection, conducting inquiries and audits of the stock exchanges, mutual funds and other persons associated with the securities market and intermediaries and self–regulatory organizations in the securities market.
- Performing such functions and exercising according to Securities Contracts (Regulation) Act, 1956, as may be delegated to it by the Central Government.

8.3 Regulation in Trading

A 24 member committee under the chairmanship of Dr. L.C.Gupta was set by SEBI to develop the appropriate regulatory framework for derivatives trading in India. On May 11, 1998, SEBI accepted the recommendations of the committee and approved the phased introduction of derivatives trading in India beginning with stock index futures.

The provisions in the SCRA and the regulatory framework developed there under govern trading in securities. The amendment of the SCRA to include derivatives within the ambit of 'securities' made trading in derivatives possible within the framework of that Act.

- Any Exchange fulfilling the eligibility criteria as prescribed in the L.C. Gupta committee report can apply to SEBI for grant of recognition under Section 4 of the SCRA, 1956 to start trading derivatives. The derivatives exchange/segment should have a separate governing council and representation of trading/clearing members shall be limited to maximum of 40% of the total members of the governing council. The exchange would have to regulate the sales practices of its members and would have to obtain prior approval of SEBI before start of trading in any derivative contract.
- The Exchange should have a minimum of 50 members.
- The members of an existing segment of the exchange would not automatically become the members of derivative segment. The members of the derivative segment would need to fulfil the eligibility conditions as laid down by the L.C. Gupta committee.
- The clearing and settlement of derivatives trades would be through a SEBI approved clearing corporation/house. Clearing corporations/houses complying with the eligibility conditions as laid down by the committee have to apply to SEBI for grant of approval.
- Derivative brokers/dealers and clearing members are required to seek registration from SEBI. This is in addition to their registration as brokers of existing stock exchanges. The minimum Net-worth for clearing members of the derivatives clearing corporation/house shall be Rs.300 Lakhs. The Net-worth of the member shall be computed as follows:
    - Capital + Free reserves
    - Less non-allowable assets viz.,
        - Fixed assets
        - Pledged securities
        - Member's card
        - Non-allowable securities (unlisted securities)
        - Bad deliveries
        - Doubtful debts and advances
        - Prepaid expenses
        - Intangible assets
        - 30% marketable securities

- The minimum contract value shall not be less than Rs 5,00,000. Exchanges have to submit details of the futures contract they propose to introduce.
- The initial margin requirement, exposure limits linked to capital adequacy and margin demands related to the risk of loss on the position will be prescribed by SEBI/ Exchange from time to time.
- The L.C. Gupta committee report requires strict enforcement of "Know your customer" rule and requires that every client shall be registered with the derivatives broker. The members of the derivatives segment are also required to make their clients aware of the risks involved in derivatives trading by issuing to the client the Risk Disclosure Document and obtain a copy of the same duly signed by the client.
- The trading members are required to have qualified approved user and sales person who have passed a certification programme approved by SEBI.

Members and authorized dealer have to fulfil certain requirements and provide collateral deposits to become members of the F&O segment. All collateral deposits are segregated into cash component and non-cash component. Cash component means cash, bank guarantee, fixed deposit receipts, T-bills and dated government securities. Non-cash component mean all other forms of collateral deposits like deposit of approved demat securities.

Net-worth criteria for Clearing Members has been provided by SEBI, while Net-worth criteria for Trading Members and Limited Trading Members have been decided by stock exchanges. Few exchanges have a special category of members called Limited Trading Members, who are not cash market members of exchange.

The broker is required to get a Risk Disclosure Document signed by the client, at the time of client registration. This document informs clients about the kind of risks that derivatives can involve for the client. It makes the client aware and well informed.

Apart from other records, Trading Members are required to maintain trade confirmation slips and exercise notices from the trading system for a period of 5 years.

All member brokers in the derivative segment should be inspected by the exchange at least once a year.

A default by a member in the derivatives segment will be treated as default in all segments of that exchange and as default on all exchanges where he is a member.

The purpose of inspection of stock brokers' records under the SEBI (Stock Broker & Sub-Brokers) Regulations, 1992 is to ensure that the books of accounts and other books are being maintained in the manner required.

The recognition to a stock exchange under the Securities Contract (Regulation) Act 1956 can be granted by the Central Government.

A penalty or suspension of registration of a stock - broker under the SEBI (Stock Broker & Sub - Broker) Regulations, 1992 can be ordered if:

- The stock broker violates the provisions of the Act
- The stock broker does not follow the code of conduct

- The stock broker fails to resolve the complaints of the investors
- The stock broker indulges in manipulating, or price rigging or cornering of the market
- The stock broker's financial position deteriorates substantially
- The stock broker fails to pay fees
- The stock broker violates the conditions of registration
- The stock broker is suspended by the stock exchange

Position limits are the maximum exposure levels which the entire market can go up to and each Clearing Member or investor can go up to. Position limits for the entire market and Clearing Members and investors are defined by SEBI.

Each Clearing Member may have several Trading Members with him. The trading limits for each such Trading Member are decided by Clearing Members on the computerized trading system.

If the Trading Member reaches his position limit, he will not be able to enter any fresh transactions which have the impact of increase his exposure. He will enter only those transactions which have the impact of reducing his exposure. Thus, new positions will not be permitted, but squaring up will be permitted.

8.4 Regulations in Clearing & Settlement and Risk Management

Anybody interested in taking membership of F&O segment is required to take membership of "Capital Market and F&O segment" or "Capital Market, Wholesale Debt Market and F&O segment". A membership for Capital Markets and F&O segment acquires a right to execute trades and to clear and settle the trades executed by the members in these segments. Similarly a membership for Capital Market, Wholesale Debt Market and F&O segment acquires a right to execute trades and to clear and settle the trades executed by the members in these segments. An existing member of CM segment can also take membership of F&O segment. A trading member can also be a clearing member by meeting additional requirements. There can also be only clearing members.

The initial and exposure margin is payable upfront by Clearing Members. Initial margins can be paid by members in the form of Cash, Bank Guarantee, Fixed Deposit Receipts and approved securities.

Clearing members who are clearing and settling for other trading members can specify the maximum collateral limit towards initial margins, for each trading member and custodial participant clearing and settling through them.

Such limits can be set up by the clearing member, through the facility provided on the trading system up to the time specified in this regard. Such collateral limits once set are applicable to the trading members/custodial participants for that day, unless otherwise modified by clearing member.

Non-fulfilment of either whole or part of the margin obligations will be treated as a violation of the Rules, Bye-Laws and Regulations of clearing corporation and will attract penalty.

In addition clearing corporation may at its discretion and without any further notice to the clearing member, initiate other disciplinary action, inter-alia including, withdrawal of trading facilities and/ or clearing facility, close out of outstanding positions, imposing penalties, collecting appropriate deposits, invoking bank guarantees/ fixed deposit receipts, etc.

Clearing member is required to provide liquid assets which adequately cover various margins and liquid Net-worth requirements. He may deposit liquid assets in the form of cash, bank guarantees, fixed deposit receipts, approved securities and any other form of collateral as may be prescribed from time to time. The total liquid assets comprise of at least 50% of the cash component and the rest is non cash component.

Responsibilities of the Clearing Corporation include:

- Collection of Margins on timely basis
- Smooth operation of the Market
- Daily Clearing and Settlement
- To act as a legal counterparty for every contract
- To monitor positions in derivatives and cash segments
- Deciding Daily Settlement Prices
- Keep consistent record of margins at client level
- Take care not to appropriate client margins against brokers dues

The Clearing Corporation can transfer client positions from one broker member to another broker member in the event of a default by the first broker member.

Some of the reports which a derivatives segment of a Stock Exchange has to provide to SEBI are:

- Occasions when the 99% Value at Risk limit has been violated
- Defaults by broker-members
- Daily market activity report
- Daily market report

Main objectives of Trade Guarantee Fund (TGF):

- To guarantee settlement of bonafide transactions of the members of the exchange.
- To inculcate confidence in the minds of market participants.
- To protect the interest of the investors in securities.

All active members of the Exchange are required to make initial contribution towards Trade Guarantee Fund of the Exchange.

8.5 Major recommendations of Dr. L.C.Gupta Committee

- Margins should be based on Value at Risk Methodology at 99% confidence.

- Volatility should be monitored online.
- Exposure should be monitored online.
- Daily collection of Mark to Market Margins (on the next trading day).
- Market participants should know volatility and margin methodology.
- Stringent entry norms for derivative broker-members.
- Each dealer should pass SEBI approved certification exams (certificate will have a validity of 3 years).
- Derivatives segment must be separate from cash segment.
- Grossing up of margins at client level.
- Separate Investor Protection Fund must be created for derivatives segment.
- Off line order entry is permitted.
- The derivatives segment should attract at least 50 members.
- Clearing Members should have a Minimum Net-worth of Rs 3 Crores.
- Clearing Members should maintain a Minimum Deposit in Liquid Assets of Rs 50 lakhs with the exchange or it's Clearing Corporation.
- Mark to Margins should be settled only in Cash.
- Both speculators/traders and hedgers are required for a healthy derivatives market.
- Both Exchanges and SEBI should work together in regulating the derivatives market.
- Exchanges should regulate at operational day to day level, while SEBI will oversee the process and formulate policy.
- Mutual Funds should be allowed to hedge in derivatives segment.
- Derivatives should begin with Index Futures and other products should be introduced in a phased manner.
- Members' exposure should be linked to the amount of liquid assets maintained by them with the clearing corporation.
- Cross margining (linking overall cash and derivative positions for margining) is not permitted.
- All clients should pay margins. Brokers should not fund margins of clients.
- In the long run, India should have a national level clearing corporation.
- Clients should be provided with a Risk Disclosure Document by brokers.
- Brokers should keep margins collected from clients in a separate bank account.
- Brokers cannot use margins for any purpose except for payment of such margins to the clearing corporation.
- Transactions should be entered in the trading system exclusive of brokerage.
- Brokerage should be charged separately in the Contract Note.
- In case of Clearing Member default, margins paid by the Clearing Member on his own account alone would be used to settle his dues.

- All brokers in the derivatives segment should obtain SEBI Registration.
- The clearing function should be organized as a separate entity, preferably in the form of a Clearing Corporation.
- The Clearing Corporation has powers to levy additional margins, special margins, define maximum exposure limits and disable brokers from trading.
- At the time of entering into a transaction, the broker must indicate the client on whose behalf the transaction is being entered into. Proprietary trading must also be clearly identified.
- SEBI should create a Special Derivatives Cell within itself to understand and supervise the market better.
- SEBI should constitute an Advisory Council for derivatives.
- Derivatives segment should have a separate Governing Council.
- No common members should be allowed between the Cash segment Governing Board and the Derivatives segment Governing Council of the exchanges.
- The exchange should set up Arbitration and Investor Grievance Cells in at least 4 regions across the country.
- Derivatives trading must be through on-line systems.
- Disaster recovery site (in case of computer failure) is a must.
- Information about derivatives segment must be disseminated over at least two information vending networks (e.g. Reuters, Bloomberg).
- All brokers of the Cash segment will not automatically become members of the Derivative segment.
- An efficient cash market is a must for a healthy derivatives market.
- Delivery levels in the cash market should improve and increase.
- Uniform settlement cycle across all exchanges is recommended.
- A separate Governing Board should be constituted for the Clearing Corporation of the Derivatives segment.
- No broker members should be allowed to sit on the Governing Board of the Clearing Corporation.
- If your client is a Trust or a Company, you (as a broker) must obtain authorization from the Board of Trustees or Board of Directors for trading in derivatives on their behalf
- Providing Client ID for every transaction is mandatory

8.6 Major recommendations of Prof. J.R.Verma Committee

- Calendar spreads on futures will attract lower margins (minimum 1% and maximum 3% - the margin itself being 0.5% per month of spread on the far month value).
- Detailed methodology on Value at Risk provided.

- Volatility should be calculated based on standard deviation of logarithmic daily returns.
- Exponential weighted average method should be used for calculation of Volatility.
- Initial Margin levels should be dynamic and recalculated continuously based on volatility levels.
- Exchange should obtain SEBI approval if it wants to change the Initial Margin calculation methodology.
- Initial Margin, if changed, will apply to all outstanding contracts and not only to fresh contracts.
- Calendar spreads carry only basis risk and no market risk - hence lower margins are adequate.
- Calendar spreads should be treated as open positions as the near month expires.
- Differential margins on conversion of Calendar spread positions to open positions should be collected three days before expiry of the near month (technically, Prof. J.R.Verma Committee recommendation was different, however currently as per SEBI guidelines, this is the regulation).
- Liquid Assets mean Deposits maintained by Clearing Members with the Clearing Corporation.
- Liquid Assets can be in the form of Cash, Cash Equivalents (Government Securities, Fixed Deposits, Treasury Bills, Bank Guarantees, and Investment Grade Debt Securities) and Equity Securities.
- Equity Securities can form maximum 50% of Liquid Assets.
- Cash and Cash Equivalents must form minimum 50% of Liquid Assets.
- Liquid Net-worth is defined as Liquid Assets minus Initial Margin.
- Liquid Net-worth of all Clearing Members at all points of time (including intraday) should be maintained at Rs 50 lakhs minimum level.
- Securities placed with the Clearing Corporation shall be marked to market on weekly basis.
- Hair cut on equity securities is 15%.
- Hair cut on debt securities is 10%.

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Chapter 9: Accounting and Taxation

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Accounting treatment for forward and futures contracts
- Taxation of derivatives transaction in securities

9.1 Accounting

Accounting for Forward Contract as per Accounting Standard - 11

When forward contract is for hedging

- The premium or discount (difference between the value at spot rate and forward rate) should be amortized over the life of contract.
- Exchange difference (difference between the value of settlement date/ reporting date and value at previous reporting date/ inception of the contract) is recognized in Profit & Loss statement of the year.
- Profit/ loss on cancellation/ renewal of forward contract are recognized in P&L of the year.

When forward contract is for trading/ speculation

- No premium or discount is recognized.
- A gain or loss i.e. the difference between the forward rate as per contract/ previous year end valuation rate and the forward rate available at the yearend (reporting date) for remaining maturity period should be recognized in the P&L of the period.
- Profit/ loss on cancellation / renewal of forward contract are recognized in P&L of the year.

Accounting of Equity index and Equity stock futures in the books of the client

The Institute of Chartered Accountants of India (ICAI) has issued guidance notes on accounting of index futures contracts from the view point of parties who enter into such futures contracts as buyers or sellers. For other parties involved in the trading process, like brokers, trading members, clearing members and clearing corporations, a trade in equity index futures is similar to a trade in, say shares, and does not pose any peculiar accounting problems. Hence in this section we shall largely focus on the accounting treatment of equity index futures in the books of the client.

Accounting at the inception of the contract (Accounting for Initial Margin)

- Every client is required to pay to the Trading Member/ Clearing Member, initial margin determined by the Clearing Corporation as per the bye-laws/ regulations of the Exchange for entering into equity index/stock futures contracts.
- Such initial margin paid/ payable should be debited to "Initial Margin - Equity Index/Equity stock Futures Account". Additional margins, if any, should also be accounted for in the same manner.

- It may be mentioned that at the time when the contract is entered into for purchase/ sale of equity index futures, no entry is passed for recording the contract because no payment is made at that time except for the initial margin.
- At the balance sheet date, the balance in the "Initial Margin - Equity Index/ Equity Stock Futures Account' should be shown separately under the head 'Currency Assets'.
- Where any amount has been paid in excess of the initial/ additional margin, the excess should be disclosed separately as a deposit under the head 'Current Assets'.
- Where instead of paying initial margin in cash, the Client provides bank guarantees or lodges securities with the member, a disclosure should be made in the notes to the financial statements of the Client. This will not require any accounting entry.

Deposit for Initial Margin Kept
Deposit for Initial Margin a/c Dr.
To Bank a/c

Initial Margin paid / adjusted from deposit
Initial Margin a/c Dr.
To Bank a/c/ Deposit for initial Margin a/c

Initial margin returned /released
Bank a/c /Deposit for initial margin a/c Dr.
To Initial Margin a/c

Suppose Mr. X purchases a Futures Contract on March 5, 2018. The initial margin calculated as per SPAN, is 50000. The margin for the subsequent days, calculated as per the SPAN, is as follows:

On March 6, 2018	Rs. 55,000
On March 7, 2018	Rs. 45,000
On March 8, 2018	Rs. 47,000

1. On March 5, 2018

Initial Margin – Equity Futures a/c. Dr	Rs 50,000	
To Bank a/c		Rs 50,000

(Being initial margin paid on Equity Futures Contracts)

2. On March 6, 2018

Initial Margin – Equity Futures a/c. Dr	Rs 5,000	
To Bank a/c		Rs 5,000

(Being additional margin paid to the Exchange)

3. On March 7, 2018

Bank a/c. Dr	Rs 10,000	
To Initial Margin – Equity Futures a/c.		Rs 10,000

(Being margin refunded by the Exchange)

4. On March 8, 2018

Initial Margin – Equity Futures a/c. Dr	Rs 2,000
To Bank a/c	Rs 2,000

(Being further margin paid to the Exchange)

Accounting at the time of daily settlement - payment/receipt of mark-to-market margin

- Payments made or received on account of Daily Settlement by the Client would be debited or credited to an account titled as "Mark-to-Market Margin - Equity Index/ Equity Stock Futures Account".
- Mark-to-Market Margin a/c can be maintained Index/ stock-wise so as to facilitate calculation of provision for loss.
- Such payment/receipt can be through a bank account or through a deposit kept with clearing member (and debited to an appropriate account say, "Deposit for Mark-to-Market Margin Account").
- At the year-end, any balance in the "Deposit for Mark-to-Market Margin Account" should be shown as a deposit under the head "Current Assets".

Deposit for Mark to Market Margin Kept
Deposit for M to M Margin a/c Dr.
To Bank a/c

M to M Margin paid /adjusted from deposit
M to M Margin a/c Dr
To Bank/Deposit for M to M Margin a/c

M to M Margin received
Bank /Deposit for M to M Margin a/c Dr.
To M to M Margin a/c

Accounting for open interests as on the balance sheet date

- Debit/ credit balance in the "Mark-to-Market Margin - Equity Index/Equity Stock Future Account" the net amount paid/ received on the basis of movement in the prices of index futures till the balance sheet date.
- Keeping in view "prudence" principle, provisions should be created by a debit to the profit and loss account for anticipated loss equivalent to the debit balance in the "Mark-to-Market Margin Account".
- Net amount received (represented by credit balance in the "Mark-to-Market Margin Account") being anticipated profit should be ignored and no credit for the same should be taken in the profit and loss account.
- The debit balance in the said "Mark-to-Market Margin Account", i.e., net payment made to the broker, should be shown under the head "Current Assets, Loans and

Advances" in the balance sheet and the provision created there-against should be shown as a deduction there from.

- On the other hand, the credit balance in the said account, i.e., the net amount received from the broker, should be shown as a current liability under the head "Current Liabilities and Provisions" in the balance sheet.
- Such provision shall be calculated Index wise/Stock wise that means all series of stock shall be combined.

Provision for loss on Equity Stock/ Equity Index futures outstanding at Balance sheet

Opening provision was less hence increased
Profit & Loss a/c Dr
To Provision for loss on Equity Stock/Equity Index future a/c

Opening provision was more hence decreased
Provision for loss on Equity Stock/Equity Index future a/c Dr
To Profit & Loss a/c

To illustrate
Suppose Mr. A pays an amount of Rs 5000, as Mark-to-Market Margin on Equity Futures Contract. The following accounting entry would be made in the books of accounts:

Profit & Loss a/c Dr.	Rs 5000
To Provision for loss on Equity Futures a/c	Rs 5000

(Being provision made for the amount paid to Clearing Member/Trading Member because of movement in the prices of the futures contract)

Accounting at the time of final settlement or squaring-up of the contract

- At the expiry of a series of equity index futures, the profit/ loss, on final settlement of the contracts in the series, should be calculated as the difference between final settlement price and contract prices of all the contracts in the series.
- The profit/ loss, so computed, should be recognised in the profit and loss account by corresponding debit/ credit to "Mark-to-Market Margin Account".
- Same accounting treatment should be made when a contract is squared-up by entering into a reverse contract.
- If more than one contract in respect of the relevant series of Equity Index/ Equity Stock futures contract to which the squared-up contract pertains is outstanding at the time of the squaring up of the contract, the contract price of the contract so squared-up should be determined using weighted average method for calculating profit/ loss on squaring-up.
- On the settlement of an Equity Index/ Equity Stock futures contract, the initial margin paid in respect of the contract is released which should be credited to Initial Margin Account", and a corresponding debit should be given to the bank account or the deposit account.

If profit on Settlement /Squaring off
M to M Margin a/c Dr

To P & L a/c

If Loss on Settlement/Squaring off
P & L a/c Dr -
To M to M Margin a/c

Entry for release of Initial Margin will be:
Bank a/c /Deposit for initial margin a/c Dr
To Initial Margin a/c

Accounting in case of a default

- When a Client default in making payment in respect of Daily Settlement, the contract is closed out
- The amount not paid by the Client is adjusted against the initial margin. Excess margin if any is released and shortfall if any will be payable by the client.
- The accounting treatment in this regard will be the same as explained earlier
- The amount of profit or loss on the contract so closed out should be calculated and recognised in the profit and loss account in the manner described earlier.

Disclosure

- The amount of bank guarantee, and book value as also the market value of securities lodged should be disclosed in respect of outstanding contracts at the year end, where initial margin money has been paid by way of bank guarantee and/or lodging of securities, separately for each type of instruments.
- The number of futures contract not settled (open interests), number of contracts, number of units pertaining to those contracts as of the balance sheet date should be disclosed separately for Long and Short Positions, in respect of each of equity index/ futures i.e. index/ stock wise

Accounting for Equity Index Options in case of cash settled options

Accounting at the inception of the contract

- The seller/ writer of the option is required to pay initial margin for entering into the option contract. It should be debited to an appropriate account, say, "Equity Index/ Stock Option Margin Account". In the balance sheet, such account should be shown separately under the head "Current Assets".
- The buyer/ holder of the option is required to pay the premium. In the books of the buyer/ holder, such premium should be debited to an appropriate account, say, "Equity Index/ Stock Option Premium Account". In the books of the seller/ writer such premium received should be credited to an appropriate account, say, "Equity Index/ Stock Option Premium Account".

Accounting at the time of payment/ receipt of margin

- Payment made or received by the seller/ writer for the margin would be credited/ debited to the bank account and the corresponding debit or credit for the same should be made to "Equity Index/ Stock Option Margin Account".

- Sometimes, the client may deposit a lump sum amount with the Trading/ Clearing Member in respect of the margin instead of paying/ receiving margin on daily basis. In such a case, the amount of margin paid/ received from/ into such account should be debited/ credited to the "Deposit for margin account". At the year-end, any balance in the "Deposit for margin account" should be shown as a deposit under the head "Current Assets".
- Entries will be similar to initial margin on futures explained earlier.

Accounting for open options as on the balance sheet date

- The "Equity Index/Stock Option Premium Account" should be shown under the "head 'Current Asset' or 'Current Liabilities', as the case may be.
- In case of multiple options, entries recommended above may be made in one “Equity Index/ Stock Option Premium Account”, in respect of options of all stocks. The balance of this composite account should be shown under the head "Current Assets' or "Current Liabilities", as the case may be.
- But for calculating provision for loss, Stock wise / index wise a/c is advisable.
- In the books of the buyer/ holder, a provision should be made for the amount by which the premium paid for the option exceeds the premium prevailing on the balance sheet date since the buyer/ holder can reduce his loss to the extent of the premium prevailing in the market, by squaring off the transaction.
- The excess of premium prevailing in the market on the balance sheet date over the premium paid is not recognised on the consideration of prudence,
- The provision so created should be credited to "Provision for Loss on Equity Index/ stock Option Account". The provision made as above should be shown as deduction from "Equity Index/ stock Option Premium" which is shown under 'Current Assets'.
- In the books of the seller/ writer, the provision should be made for the amount by which premium prevailing on the balance sheet date exceeds the premium received for that option.
- The excess of premium received over the premium prevailing on the balance sheet date is not recognised on the consideration of prudence.
- This provision should be credited to "Provision for Loss on Equity Index/ Stock Option Account", with a corresponding debit to profit and loss account. "Equity index/stock Options Premium Account" and "Provision for Loss on Equity Index/ Stock Options Account" should be shown under 'Current Liabilities and Provisions'.
- In case of multiple open options at the year-end, a Stockwise / Indexwise provision should be made considering all the open options of any strike price and any expiry date under that stock/ Index taken together.
- Profit/Loss on bought and sold position of each stock be adjusted and if net result is loss make provision and if net result is gain ignore it.
- The amount of provision required in respect of each stock or index should be aggregated and a composite" Provision for Loss on Equity Stock/ Index Options Account" should be credited by debiting P&L a/c.
- In case any opening balance in such provision account is there the same should be adjusted against the provision required in the current year and the profit and loss

account be debited/ credited with the balance provision required to be made/excess provision written back.

Accounting at the time of final settlement

In the books of the buyer/ holder:

- The buyer/ holder will recognise premium as an expense in the profit and loss account
- On exercise of the option, the buyer/ holder will receive favourable difference, between the final settlement price as on the exercise/expiry date and the strike price, which will be recognised as income.

In the books of the seller/writer:

- The seller/ writer will recognise premium as an income in the profit and loss account
- On exercise of the option, the seller/writer will pay the adverse difference, between the final settlement price as on the exercise/ expiry date and the strike price. Such payment will be recognised as a loss.
- As soon as an option gets exercised, margin paid towards such an option will be released by the exchange, which should be credited to "Equity Index/ stock Option Margin Account" and the bank account will be debited.

Accounting at the time of squaring off of an option contract

- The difference between the premium paid and received on the squared off transactions should be transferred to the profit and loss account.
- Accounting treatment is the same as above in the books of the seller/ writer for margin money released on the squaring off of an option contract. Method for determination of profit/loss in multiple options situation:
- For working out profit or loss in case of outstanding multiple options of the same stock / index with the same strike price and the same expiry date, weighted average method should be followed on squaring off of transactions or is/ are exercised before the expiry date.

Accounting treatment in respect of equity stock options in case of delivery settled options

- The accounting entries at the time of inception, payment/receipt of margin and open options at the balance sheet date will be the same as those in case of cash settled options.
- At the time of final settlement, if an option expires unexercised then the accounting entries will be the same as those in case of cash settled options.
- If the option is exercised then shares will be transferred in consideration for cash at the strike price. In such a case, the accounting treatment will be as recommended in the following paragraphs.

In case of buyer/holder:

- For a call option the buyer/ holder will receive equity shares for which the call option was entered into. The buyer/ holder should debit the relevant equity shares account and credit cash/ bank.

- For a put option buyer/ holder will deliver equity shares for which the put option was entered into. The buyer/ holder should credit the relevant equity shares account and debit cash/ bank.

In case of seller/writer:

- For a call option the seller/ writer will deliver equity shares for which the call option was entered into. The seller/ writer should credit the relevant equity shares account and debit cash/ bank.
- For a put option the seller/ writer will receive equity shares for which the put option was entered into. The seller/ writer should debit the relevant equity shares account and credit cash/ bank.
- In addition to this entry, the premium paid/received will be transferred to the profit and loss account, the accounting entries for which should be the same as those in case of cash settled options.

Disclosure

- The enterprise should disclose the accounting policies and the methods adopted, including criteria for recognition and the basis of measurement applied for equity index options and equity stock options.
- Where initial margin is paid by way of bank guarantee and/or lodging of securities, the amount of such bank guarantee/ book value and market value of securities in respect of outstanding options at the year end.
- The buyer/holder and the seller/ writer of the option should give the following details in respect of the option contracts outstanding as at the year-end for each Equity Index/ Stock Option.

Accounting for Equity Stock Options

Accounting for Equity Stock Options which are settled in Cash

- Accounting entries for Equity Stock Options settled in cash will be the same as that in the case of Equity Index Options.
- This is because in both the cases the settlement is done otherwise than by delivery of the underlying assets.

Accounting for Equity Stock Options which are settled by delivery

Accounting entries at the time of inception, daily receipt/ payment of margin and open options at the balance sheet date will be the same as that in the case of cash settled options.

9.2 Taxation of derivative transaction in securities

Taxation of Profit/Loss on derivative transaction in securities

Prior to Financial Year 2005–06, transaction in derivatives were considered as speculative transactions for the purpose of determination of tax liability under the Income -tax Act. This is in view of section 43(5) of the Income-tax Act which defined speculative transaction as a transaction in which a contract for purchase or sale of any commodity, including stocks and shares, is periodically or ultimately settled otherwise

than by the actual delivery or transfer of the commodity or stocks. However, such transactions entered into by hedgers and stock exchange members in course of jobbing or arbitrage activity were specifically excluded from the purview of definition of speculative transaction.

In view of the above provisions, most of the transactions entered into in derivatives by investors and traders were considered as speculative transactions. The tax provisions provided for differential treatment with respect to set off and carry forward of loss on such transactions. Loss on derivative transactions could be set off only against other speculative income and the same could not be set off against any other income. This resulted in payment of higher taxes by an assessee.

Finance Act, 2005 has amended section 43(5) so as to exclude transactions in derivatives carried out in a "recognized stock exchange" for this purpose. This implies that income or loss on derivative transactions which are carried out in a "recognized stock exchange" is not taxed as speculative income or loss. Thus, loss on derivative transactions can be set off against any other income during the year (except salary income). In case the same cannot be set off, it can be carried forward to subsequent assessment year and set off against any other non-speculative business income of the subsequent year. Such losses can be carried forward for a period of 8 assessment years. It may also be noted that securities transaction tax paid on such transactions is eligible as deduction under Income-tax Act, 1961.

Securities Transaction Tax (STT)

Trading member has to pay securities transaction tax on the transaction executed on the exchange shall be as under:

Sr. No.	Taxable securities transaction	STT rate	Payable by
1.	Sale of an option in securities	0.05 per cent	Seller
2.	Sale of an option in securities, where option is exercised	0.125 per cent	Purchaser
3.	Sale of a futures in securities	0.01 per cent	Seller

Value of taxable securities transaction relating to an "option in securities" shall be the option premium, in case of sale of an option in securities. Value of taxable securities transaction relating to an "option in securities" shall be the settlement price, in case of sale of an option in securities, where option is exercised.

Exchanges adopt the following procedure in respect of the calculation and collection of Securities Transaction Tax:

- STT is applicable on all sell transactions for both futures and option contracts.
- For the purpose of STT, each futures trade is valued at the actual traded price and option trade is valued at premium. On this value, the STT rate as prescribed is applied to determine the STT liability. In case of voluntary or final exercise of

an option contract STT is levied on settlement price on the day of exercise if the option contract is in the money.

- STT payable by the clearing member is the sum total of STT payable by all trading members clearing under him. The trading member's liability is the aggregate STT liability of clients trading through him.

Chapter 10: Sales Practices and Investors Protection Services

LEARNING OBJECTIVES:

After studying this chapter, you should know about:

- Client Identification procedure
- Due Diligence process for customers
- Investor Grievance Mechanism against trading members
- SEBI Complaints Redress System

The finance sector has an important role to play in an economy. It has responsibility to ensure stable markets and support the real economy. The primary function of a financial institution is to be responsible and provide sustainable financial services. Giving good advice and having excellent customer service is a precondition for long-term success of any financial institution.

Financial Institutions should have customer-oriented approach, where sales of products are customer lead and always accompanied by correspondingly efficient and appropriate advice. It can be summarily stated that: “Customers have the right to get good advice; finance employees have the duty to give good advice.”

A favourable model should be developed in cooperation between company, its employees and intermediaries in the finance sector to ensure the best possible framework for increasing customer satisfaction.

In the recent past, naïve investors have increasingly become targets of financial abuse and fraud. Investors should be cautious while investing in any of the financial products in the market. Some of the areas where investor needs to be careful about his investments are discussed below:

“High Return” or "Risk-Free" Investments

Investors should be careful of opportunities that promise spectacular profits or "guaranteed" returns. The deal sounds too good to resist. An individual may claim that unrealistic returns can be realized from "Low-Risk Investment Opportunities", but one has to keep in mind no investment is risk-free. Returns are related to the risk taken and hence there cannot be a product in the market that gives high return in risk free manner.

Investment Advisor Services

Investment advisor is an individual or firm responsible for making investments on behalf of, and/ or providing advice to, investors. He has a duty to act in the best interest of their clients. Sometimes, however, investment advisors take advantage of their positions of trust and use unauthorized and deceptive methods to misappropriate money directly from their clients. Investors should be careful to review their monthly account statements and to conduct annual reviews of their investment plans with their investment adviser. Investors should be watchful for abnormal changes in their monthly account statements.

Unsuitable Investment Recommendations

Some unscrupulous investment advisers convince clients to purchase investment products that don't meet the objectives of an investor. Unsuitable recommendations can occur when a broker sells speculative transactions such as options, futures, or penny stocks to say a senior citizen with low risk tolerance. Investors should be careful to review the risk profile of each investment recommendation.

Churning

"Churning" refers to when securities professionals making unnecessary and excessive trades in customer accounts for the sole purpose of generating commissions. Investors should be careful to review their monthly account statements and investigate any abnormally high trading activity.

Investor Seminars

Investment advisers commonly invite investors to attend seminars. At these seminars, advisers often use sales tactics to pitch unsuitable products. Investors should avoid making rushed decisions at sales seminars and should seek objective third party advice before committing their funds.

As sales become an integral part in financial services and proper advice to the customers is important.

Contact with consumers

- Sales Agents must only make sales calls on consumers at reasonable times recognizing that what is regarded as reasonable can vary in different locations and in different types of households. Sales Agents will in any event only call between 9 am and 8 pm, unless it is at the consumer's request.
- Sales Agents will, as soon as possible on making contact, identify themselves, the company they represent and their purpose.
- Sales Agents will take account of the consumer's personal circumstances and, as a minimum, comply with diversity obligations.
- Sales Agents will end the discussion and leave the premises immediately at the consumer's request.
- Sales Agents will voluntarily cease contact with a consumer who clearly indicates that contact is inconvenient, unwelcome or inappropriate.
- A contact number must be left with any consumer, on request.
- Sales Agents must not exploit a person's inexperience, vulnerability, credulity or loyalties.
- Members shall maintain records, including the date of contact with the consumer to allow the subsequent identification of the Sales Agent involved. This will assist in dealing with any complaint or query.
- Sales Agents must at all times:
  - Be courteous and professional.
  - Seek to avoid the consumer misunderstanding any information given or making false assumptions, in particular over potential returns on their savings.
  - Avoid the use of high pressure/ luring tactics.

10.1 Understanding risk profile of the client

In the context of investments, "risk" refers not only to the chance that a person may lose his capital but more importantly to the chance that the investor may not get the desired return on an investment vehicle. People invest in various investment products that generally comprise:

- Fixed Income Instruments, and
- Market oriented investments.

In the case of former, with a definite interest rate, there is little "risk" of not being able to get the desired returns (credit or default risk exists though) but in the case of latter, an investor goes with an expectation of a certain amount of return and the term "risk" in this context refers to the probability of the investor not getting the desired /expected returns.

Financial advisor should have thorough understanding of risk. There is a risk/ return trade-off. That is, the greater risk accepted, the greater must be the potential return as reward for committing one's funds to an uncertain outcome. Generally, as the level of risk rises, the expected rate of return should also rise, and vice versa.

A risk-averse investor would prefer investments that are more secure and thus would have higher portfolio allocations to debt and fixed income instruments. On the other hand an investor who is less risk averse would like to have greater exposure to equity and other risky investments.

There is need to understand risk tolerance for a variety of reasons some of which are specified below:

- To achieve level of financial independence that allows them to meet not only their basic human needs, but also higher level needs for self development and self improvement in their life.
- Willingness to accept a certain smaller return rather than a large but uncertain profit from their financial decisions.
- Individual's evaluations of their self-worth and their levels of self-esteem are related to their levels of satisfaction with their financial situation.
- Individuals need to appreciate their personal comfort zone when they trade-off what they are willing to accept in terms of possible losses versus possible gains.
- Investor's objectives are often poorly developed and unrealistic in terms of investments.
- It is often difficult for people to describe in their own words their attitudes about risk.
- There is a good chance that new investors in particular will not understand many of the financial and risk concepts presented by advisors.
- Communication is focused around an explicit and understandable score or profile.
- Very difficult for the financial advisor to arrive at an accurate risk profile.
- Single Investment model will fit all- lifecycle approach does not work.

Some of the key parameters on which one's risk tolerance can depend is age, personal income, combined family income, sex, number of dependents, occupation, marital status, education, access to other inherited sources of wealth.

Financial advisors need to know about the time period for which investors plan to invest. The objectives of the investors should be made clear to give a proper advice and meet his short term as well as long term needs. Generally speaking, the longer the time horizon, the more risk can be integrated into his financial expectations about the investments.

Globally, as well as in India, it is well established, on the basis of track record of performance that equities as a class of asset has outperformed other asset classes and delivered superior returns over longer periods of time. With these statistics available, why wouldn't everyone at all times invest 100 percent in stocks? The answer is, of course, that while over the long term stocks have outperformed, there have been many short term periods in which they have underperformed, and in fact, have had negative returns. Exactly when short term periods of underperformance occurs is unknown and thus, there is more risk in owning stocks if one has a short term horizon than if there exists a long term horizon.

The risk and complexity vary among derivative products. While some derivatives are relatively simple, many others, especially options, could be highly complex and would require additional safeguards from investors' viewpoint. Options are a more complex derivative product than index futures because evaluating the fairness of option premium is a complex matter.

It is essential that broker-client relationship and sales practices for derivatives need regulatory focus. The potential risk involved in trading (as opposed to hedging) with derivatives is not understood widely. In the case of pricing of complex derivatives contracts, there is a real danger of unethical sales practices. Clients may be fleeced or induced to buy unsuitable derivative contracts at unfair prices and without properly understanding the risks involved. That is why it has become a standard practice to require a "risk disclosure document" to be provided by broker/ dealer to every client in respect of the particular type of derivatives contracts being sold.

Also, derivatives brokers/ dealers are expected to know their clients and to exercise care to ensure that the derivative product being sold by them to a particular client is suitable to his understanding and financial capabilities. Derivatives may tempt many people because of high leverage. The concept of "know-your-client" needs to be implemented and every broker/ trader should obtain a client identity form.

Derivatives brokers/ dealers should avoid recommending opening futures/ options transaction unless they have a reasonable basis for believing that the customer has such knowledge and financial experience that he or she is capable of evaluating, and financially able to bear, the risks of the transaction.

The broker-dealer must seek to obtain and verify specific categories of information about its customers including, but not limited to, their Net-worth, annual income and

investment experience and knowledge. Brokers must ensure that investors are given a detailed explanation of the special characteristics and risks applicable to the trading of derivative products.

The disclosure document about derivative products contains information describing the mechanics and risks of derivatives trading, transaction costs, margin requirements and tax consequences of margin trading.

Written Anti Money Laundering Procedures

Each registered intermediary should adopt written procedures to implement the anti money laundering provisions as envisaged under the Anti Money Laundering Act, 2002. Such procedures should include inter alia, the following three specific parameters which are related to the overall 'Client Due Diligence Process':

- Policy for acceptance of clients
- Procedure for identifying the clients
- Transaction monitoring and reporting especially Suspicious Transactions Reporting (STR)

Customer Due Diligence

The customer due diligence ("CDD") measures comprises the following:

- Obtaining sufficient information in order to identify persons who beneficially own or control securities account. Whenever it is apparent that the securities acquired or maintained through an account are beneficially owned by a party other than the client, that party should be identified using client identification and verification procedures. The beneficial owner is the natural person or persons who ultimately own, control or influence a client and/or persons on whose behalf a transaction is being conducted. It also incorporates those persons who exercise ultimate effective control over a legal person or arrangement.
- Verify the customer's identity using reliable, independent source documents, data or information;
- Identify beneficial ownership and control, i.e. determine which individual(s) ultimately own(s) or control(s) the customer and/ or the person on whose behalf a transaction is being conducted;
- Verify the identity of the beneficial owner of the customer and/or the person on whose behalf a transaction is being conducted, corroborating the information provided in relation to person; and
- Conduct ongoing due diligence and scrutiny, i.e. perform ongoing scrutiny of the transactions and account throughout the course of the business relationship to ensure that the transactions being conducted are consistent with the registered intermediary's knowledge of the customer, its business and risk profile, taking into account, where necessary, the customer's source of funds.

Policy for acceptance of clients

All registered intermediaries should develop customer acceptance policies and procedures that aim to identify the types of customers that are likely to pose a higher

than the average risk of money laundering or terrorist financing. By establishing such policies and procedures, they will be in a better position to apply customer due diligence on a risk sensitive basis depending on the type of customer business relationship or transaction. In a nutshell, the following safeguards are to be followed while accepting the clients:

- No account is opened in a fictitious/benami name or on an anonymous basis.
- Factors of risk perception (in terms of monitoring suspicious transactions) of the client are clearly defined having regard to client's location (registered office address, correspondence addresses and other addresses if applicable), nature of business activity, trading turnover etc. and manner of making payment for transactions undertaken. The parameters should enable classification of clients into low, medium and high risk. Clients of special category may, if necessary, be classified even higher. Such clients require higher degree of due diligence and regular update of KYC profile.
- Documentation requirement and other information to be collected in respect of different classes of clients depending on perceived risk and having regard to the requirement to the Prevention of Money Laundering Act 2002, guidelines issued by RBI and SEBI from time to time.
- Ensure that an account is not opened where the intermediary is unable to apply appropriate clients due diligence measures/KYC policies. This may be applicable in cases where it is not possible to ascertain the identity of the client, information provided to the intermediary is suspected to be non genuine, perceived non cooperation of the client in providing full and complete information. The market intermediary should not continue to do business with such a person and file a suspicious activity report. It should also evaluate whether there is suspicious trading in determining in whether to freeze or close the account. The market intermediary should be cautious to ensure that it does not return securities of money that may be from suspicious trades. However, the market intermediary should consult the relevant authorities in determining what action it should take when it suspects suspicious trading.
- The circumstances under which the client is permitted to act on behalf of another person/entity should be clearly laid down. It should be specified in what manner the account should be operated, transaction limits for the operation, additional authority required for transactions exceeding a specified quantity/value and other appropriate details. Further the rights and responsibilities of both the persons (i.e. the agent- client registered with the intermediary, as well as the person on whose behalf the agent is acting should be clearly laid down). Adequate verification of a person's authority to act on behalf the customer should also be carried out.
- Necessary checks and balance to be put into place before opening an account so as to ensure that the identity of the client does not match with any person having known criminal background or is not banned in any other manner, whether in terms of criminal or civil proceedings by any enforcement agency worldwide.

Risk based approach

It is generally recognized that customers can be classified into a higher or lower risk category depending on circumstances such as the customer's background, type of business relationship or transaction etc. As such, the registered intermediaries should apply each of the customers due diligence measures on a risk sensitive basis. The basic principle enshrined in this approach is that the registered intermediaries should adopt an enhanced customer due diligence process for higher risk categories of customers. Conversely, a simplified customer due diligence process may be adopted for lower risk categories of customers. In line with the risk-based approach, the type and amount of identification information and documents that registered intermediaries should obtain necessarily depend on the risk category of a particular customer.

Clients of special categories (CSC)

Such clients include the following:

- Non resident clients.
- High Net-worth clients.
- Trust, Charities, NGOs and organizations receiving donations.
- Companies having close family shareholdings or beneficial ownership.
- Politically exposed persons (PEP) of foreign origin.
- Current / Former Head of State, Current or Former Senior High profile politicians and connected persons (immediate family, Close advisors and companies in which such individuals have interest or significant influence).
- Companies offering foreign exchange offerings.
- Clients in high risk countries (where existence / effectiveness of money laundering controls is suspect, where there is unusual banking secrecy, Countries active in narcotics production, Countries where corruption (as per Transparency International Corruption Perception Index) is highly prevalent, Countries against which government sanctions are applied, Countries reputed to be any of the following – Havens / sponsors of international terrorism, offshore financial centres, tax havens, countries where fraud is highly prevalent.
- Non face to face clients.
- Clients with dubious reputation as per public information available.etc.

The above mentioned list is only illustrative and the intermediary should exercise independent judgment to ascertain whether new clients should be classified as CSC or not.

Client Identification Procedure

- The 'Know your Client' (KYC) policy should clearly spell out the client identification procedure to be carried out at different stages i.e. while establishing the intermediary – client relationship, while carrying out transactions for the client or when the intermediary has doubts regarding the veracity or the adequacy of previously obtained client identification data.
- The client should be identified by the intermediary by using reliable sources including documents/information. The intermediary should obtain adequate

information to satisfactorily establish the identity of each new client and the purpose of the intended nature of the relationship.

- The information should be adequate to satisfy competent authorities (regulatory / enforcement authorities) in future that due diligence was observed by the intermediary in compliance with the Guidelines. Each original document should be seen prior to acceptance of a copy.
- Failure by prospective client to provide satisfactory evidence of identity should be noted and reported to the higher authority within the intermediary.
- SEBI has prescribed the minimum requirements relating to KYC for certain class of the registered intermediaries from time to time. Taking into account the basic principles enshrined in the KYC norms which have already been prescribed or which are prescribed by SEBI from time to time, all registered intermediaries should frame their own internal guidelines based on their experience in dealing with their clients and legal requirements as per the established practices. Further, the intermediary should also maintain continuous familiarity and follow-up where it notices inconsistencies in the information provided. The underlying principle should be to follow the principles enshrined in the PML Act, 2002 as well as the SEBI Act, 1992 so that the intermediary is aware of the clients on whose behalf it is dealing.

Documents to be obtained from customers for Customer Identification Procedure under KYC

1. Accounts of Individuals

Legal name and any other names used supported by documents given below:
(i) Passport (ii) PAN card (iii) Voter's Identity Card (iv) Driving License (v) Job Card issued by NREGA duly signed by an officer of the State Govt (vi) The letter issued by the Unique

Identification Authority of India (UIDAI) containing details of name, address and Aadhaar number (vii) Identity card (subject to the bank's satisfaction) (viii) Letter from a recognized public authority or public servant verifying the identity and residence of the customer to the satisfaction of bank

Correct Permanent Address supported by any of the following documents:
(i) Telephone bill (ii) Bank account statement (iii) Letter from any recognized public authority (iv) Electricity bill (v) Ration card (vi) Letter from employer (subject to satisfaction of the bank)

2. Accounts of Company

- Name of the company
- Principal place of business
- Mailing address of the company
- Telephone/Fax number

Documents Required:
(i) Certificate of incorporation and Memorandum & Articles of Association (ii) Resolution of the Board of Directors to open an account and identification of those who have

authority to operate the account (iii) Power of Attorney granted to its managers, officers or employees to transact business on its behalf (iv) Copy of PAN allotment letter (v) Copy of the telephone bill

3. Accounts of Partnership Firms

- Legal name
- Address
- Names of all partners and their addresses
- Telephone numbers of the firm and partners

Documents required:
(i) Registration certificate, if registered (ii) Partnership deed (iii) Power of Attorney granted to a partner or an employee of the firm to transact business on its behalf (iv) Any officially valid document identifying the partners and the persons holding the Power of Attorney and their addresses (v) Telephone bill in the name of firm/partners

10.2 Investors Grievance Mechanism

Each Exchange has a process for grievance redressal. The general features of these processes are mentioned below.

Investor grievance resolution mechanism (against trading members)

All exchanges have a dedicated department to handle grievances of investors against the Trading Members and Issuers. Generally these departments operate from all offices of the exchange so as to provide easy access to investors. All exchanges also have supervision mechanisms for the functioning of this department/ cell. These include the Investor Service Committees (ISC) consisting of Exchange officials and independent experts whose nomination is approved by Securities and Exchange Board of India. SEBI also monitors exchange performance related to investor grievance redressal.

Process

Receipt of Complaints

The investor is required to submit his complaint in the prescribed complaint form against the trading member providing the details as specified in the instructions annexed to the complaint registration form along with supporting documents substantiating his claim.

On receipt of the complaint, exchanges scrutinize the nature of complaint and adequacy of documents submitted along with the complaint. If all the relevant documents are submitted, the complaint is recorded, a complaint number is assigned and an acknowledgement towards receipt of complaint is sent to the investor. If the documents are inadequate, the investor is advised to set right the deficiencies in the documents.

Redressal of Complaints

Generally, exchanges initially try to resolve the complaint by following up with the member and the complainant. The issues raised by the complainant are analyzed and the complaint is taken up the concerned trading member for resolution / response

within the set timeframe. Subsequently, the response received from the trading member is reviewed.

- If the Trading Member has agreed with the contents of the complaint, he is advised to settle the matter immediately and confirm
- If the Trading Member states that he has already settled the complaint, proof of settlement is solicited and cross confirmation is obtained from the investor
- If the Trading Member raises issues from his side, the comments are analyzed and forwarded to the investor for his views and comments. If differences persist the Exchange holds meeting with the parties at the Exchange premises for expeditious resolution of the complaints. In case differences still persist the investor is informed that he may opt for Arbitration proceedings.
- If the Trading Member has justifiable reasons for his actions which are within the regulatory framework, the investor is enlightened on the correct position on the matter.

Nature of complaints

Exchanges provide assistance if the complaints fall within the purview of the Exchange and are related to trades that are executed on the Exchange Platform. These may be of the following types:

- Non-Receipt of Corporate Benefit (Dividend/Interest/Bonus etc.)
- Complaints against trading members on account of the following :
    - Non-receipt of funds / securities
    - Non- receipt of documents such as member client agreement, contract notes, settlement of accounts, order trade log etc.
    - Non-Receipt of Funds / Securities kept as margin
    - Trades executed without adequate margins
    - Delay /non – receipt of funds
    - Squaring up of positions without consent
    - Unauthorized transaction in the account
    - Excess Brokerage charged by Trading Member / Sub-broker
    - Unauthorized transfer of funds from commodities account to other accounts etc.
- Complaints in cases where the member has surrendered his membership and the complainant has approached the Exchange before expiry of the time mentioned in the public notice

Exchanges may not take up the following types of complaints

a. Complaints in respect of transactions which are already subject matter of Arbitration proceedings,
b. Complaints involving payment of funds and transfer of securities to entities other than Trading Member,
c. Claims for mental agony/harassment and expenses incurred for pursuing the matter with the ISC,
d. Claims for notional loss, opportunity loss for the disputed period or trade**,**
e. Complaints pertaining to trades not executed on the Exchange by the complainant,

f. Claims of sub-broker/authorized persons for private commercial dealings with the trading member,
g. Claims relating to transactions which are in the nature of loan or financing which are not within the framework defined by the Exchange.

Arbitration

SEBI has instructed the exchange to have arbitration committees so that differences, disputes and claims between trading members and investors can be settled effectively and in a short time. Arbitration is also governed by Exchange Bye-laws.

Arbitration is a quasi judicial process of settlement of disputes between Trading Members, Investors, Sub-brokers & Clearing Members and between Investors and Issuers (Listed Companies). Generally the application for arbitration has to be filed at the Arbitration Centres established by the exchanges.

The parties to arbitration are required to select the arbitrator from the panel of arbitrators provided by the Exchange. The arbitrator conducts the arbitration proceeding and passes the award normally within a period of four months from the date of initial hearing.

The arbitration award is binding on both the parties. However, the aggrieved party, within fifteen days of the receipt of the award from the arbitrator, can file an appeal to the arbitration tribunal for re-hearing the whole case. On receipt of the appeal, the Exchange appoints an Appellate Bench consisting of five arbitrators who re-hear the case and then give the decision. The judgment of the Bench is by a 'majority' and is binding on both the parties. The final award of the Bench is enforceable as if it were the decree of the Court.

Any party who is dissatisfied with the Appellate Bench Award may challenge the same in a Court of Law.

SEBI Complaints Redress System (SCORES) [http://scores.gov.in]

SEBI launched a centralized web based complaints redress system (SCORES). This would enable investors to lodge and follow up their complaints and track the status of redressal of such complaints from anywhere. This would also enable the market intermediaries and listed companies to receive the complaints from investors against them, redress such complaints and report redressal. All the activities starting from lodging of a complaint till its disposal by SEBI would be carried online in an automated environment and the status of every complaint can be viewed online at any time. An investor, who is not familiar with SCORES or does not have access to SCORES, can lodge complaints in physical form. However, such complaints would be scanned and uploaded in SCORES for processing. SCORES would expedite disposal of investors' complaints as this would obviate the need for physical movement of complaints and the possibility of loss, damage or misdirection of the complaints would be avoided. It would facilitate easy retrieval and tracking of complaints at any time.

SCORES is web enabled and provides online access 24 x 7. This has the following salient features:

- Complaints and reminders thereon are lodged online at anytime from anywhere;
- An email is generated instantaneously acknowledging the receipt of the complaint and allotting a unique complaint registration number for future reference and tracking;
- The complaint moves online to the entity (intermediary or listed company) concerned for its redressal;
- The entity concerned uploads an Action Taken Report (ATR) on the complaint;
- SEBI peruses the ATR and disposes of the complaint if it is satisfied that the complaint has been redressed adequately;
- The concerned investor can view the status of the complaint online;
- The entity concerned and the concerned investor can seek and provide clarification(s) online to each other;
- The life cycle of a complaint has an audit trail; and
- All the complaints are saved in a central database which would generate relevant MIS reports to enable SEBI to take appropriate policy decisions and or remedial actions.

SEBI mandates that all listed companies are required to view the complaints pending against them and submit ATRs along with supporting documents electronically in SCORES. Failure on the part of the company to update the ATR in SCORES will be treated as non-redressal of investor complaints by the company. SEBI also mandates that companies desirous of getting their equity shares listed on the stock exchanges should also obtain authentication on SCORES, before Listing Approval is granted by stock exchanges.

Effective from August 01, 2018, following procedure shall be followed for filing and redressal of investor grievances using SCORES:

Investors who wish to lodge a complaint on SCORES have to register themselves on www.scores.gov.in. While filing the registration form, details like Name of the investor, PAN, Contact details, Email id, Aadhaar card number (optional), CKYC ID(optional) etc. may be provided for effective communication and speedy redressal of the grievances. Upon successful registration, a unique user id and a password will be communicated to the investor through an acknowledgement email / SMS. Using the login credentials, the investor can lodge his/her complaint on SCORES. The complainant may use SCORES to submit the grievance directly to companies / intermediaries and the complaint shall be forwarded to the entity for resolution. The entity is required to redress the grievance within 30 days, failing which the complaint shall be registered in SCORES.

General Do's and Don’ts for Investors

Investors must follow some Do’s and Don’ts while transacting in the securities market. Given below are some general Do’s and Don’ts for investors:

Do’s

Investors must:

- Always deal with the market intermediaries registered with SEBI / stock exchanges.
- Carry out due diligence before registering as client with any intermediary. Carefully read and understand the contents stated in the Risk Disclosure Document, which forms part of the investor registration requirement for dealing through brokers.
- Collect photocopies of all documents executed for registration as a client, immediately on its execution.
- Ensure that the documents or forms for registration as Client are fully filled in.
- Give clear and unambiguous instructions to their broker / agent / depository participant.
- Always insist on contract notes from their brokers/sub-brokers. In case of doubt in respect of the transactions, verify the genuineness of the same from the exchange.
- Always settle the dues through the normal banking channels with the market intermediaries.
- Adopt trading / investment strategies commensurate with their risk-bearing capacity as all investments carry some risk, the degree of which varies according to the investment strategy adopted.
- Be cautious about securities which show a sudden spurt in price or trading activity, especially low price stocks.
- Remember that there are no guaranteed returns on investment in the stock market.
- Read the terms and conditions and understand the risk factors associated with the commodity market investment
- Always keep copies of all investment documentation (e.g. application forms, acknowledgements slips, contract notes).
- Send important documents by a reliable mode (preferably through registered post) to ensure delivery.
- Ensure that they have money and will be able to pay, before you buy.
- Ensure that they hold securities and will be able to deliver, before they sell.
- Follow up diligently and promptly e.g. If the required documentation is not received within a reasonable time, investors must contact the concerned person at the Trading Member immediately.

Don’ts

Investors must not:

- Deal with unregistered brokers / sub - brokers, or other unregistered intermediaries.
- Execute any documents with any intermediary without fully understanding its terms and conditions.
- Leave the custody of their Demat Transaction slip book in the hands of any intermediary.
- Make any payments in cash
- Accept unsigned/ duplicate or incomplete contract notes
- Deal based on rumours or 'tips'.
- Get swayed by promises of high returns.
- Fall prey to promises of guaranteed returns.

- Get misled by guarantees of repayment of their investments through post-dated cheques.
- Get carried away by luring advertisements of any nature in print and electronic media.
- Blindly follow media reports on corporate developments, as some of these could be misleading.
- Blindly imitate investment decisions of others who may have profited from their investment decisions.
- Forgo obtaining all documents of transactions, in good faith even from people whom they 'know'.
- Delay approaching concerned authorities in case of a dispute. Written complaints must be filed with the Exchange as soon as possible.


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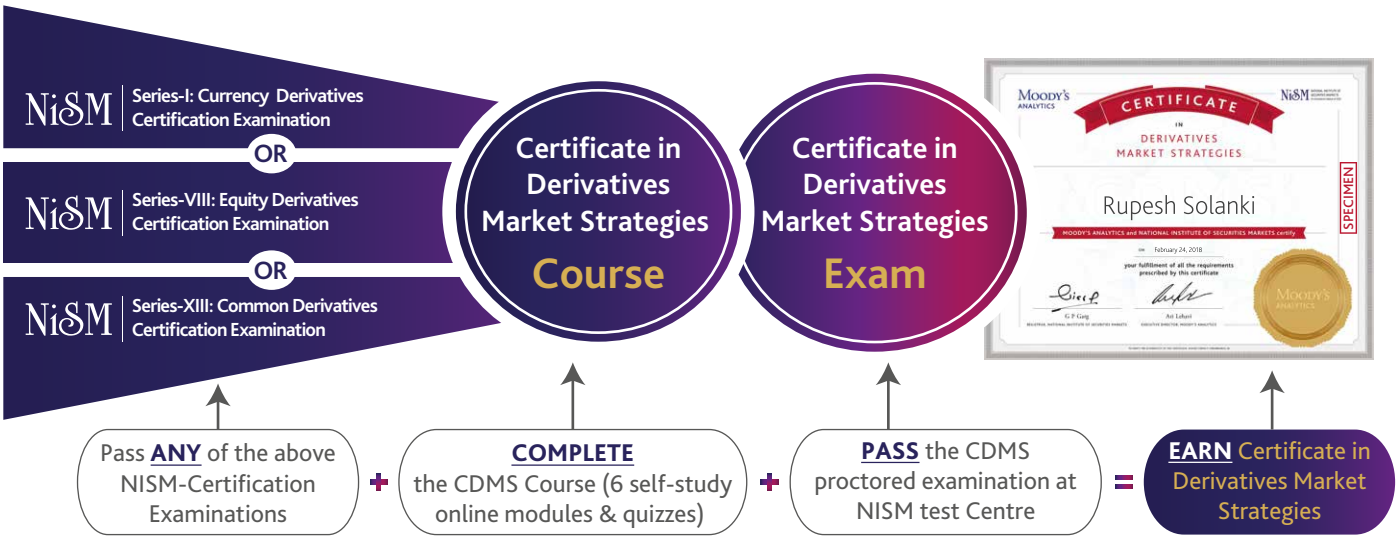
About CDMS

The **Certificate in Derivatives Market Strategies (CDMS)**, jointly offered by NISM and Moody's Analytics, is an internationally recognised certification that provides the knowledge and skills required to enter into and progress in a variety of roles that employ derivatives. With the CDMS in hand, individuals will be recognized for their specialized knowledge and qualifications in the advanced concepts of both exchange-traded and over-the-counter (OTC) derivative instruments and their applications.

Learning Pathway



Course Details

CDMS course comprises 6 modules*:

Mod-I	Introduction to Derivatives	**Mod-IV**	OTC Derivatives
Mod-II	Underlying Markets	**Mod-V**	Advanced Trading Techniques Using Derivatives
Mod-III	Pricing of Derivatives	**Mod-VI**	Advanced Hedging & Product Construction Techniques

* These modules are made available through the Learning Management System (LMS). The online course can be completed in approximately 60-80 hours and can be accessed 24/7.

Exam Details

Exam Format	Proctored Computer-Based Examination
Question Format	60 Application-Based Multiple-Choice Questions
Exam Length	3 Hours
Passing Grade	60%

Contact Us

Telephone No.: +91-22-62581919 (Call Timings: 9 AM – 9 PM (Mon – Fri).
Email: cdms@nism.ac.in | www.nism.ac.in/cdms

Appendix A: Sample Questions

1. An index option is a _____.
(a) Debt instrument
(b) Derivative product
(c) Cash market product
(d) Money market instrument

2. The purchase of a share in one market and the simultaneous sale in a different market to benefit from price differentials is known as _____.
(a) Mortgage
(b) Arbitrage
(c) Hedging
(d) Speculation

3. Financial derivatives provide the facility for _____.
(a) Trading
(b) Hedging
(c) Arbitraging
(d) All of the above

4. Operational risks include losses due to _____.
(a) Inadequate disaster planning
(b) Too much of management control
(c) Income tax regulations
(d) Government policies

5. Impact cost is low when the liquidity in the system is poor.
(a) True
(b) False

6. You sold one XYZ Stock Futures contract at Rs. 278 and the lot size is 1,200. What is your profit (+) or loss (-), if you purchase the contract back at Rs. 265?
(a) 16,600
(b) 15,600
(c) -15,600
(d) -16,600

7. You have taken a short position of one contract in June XYZ futures (contract multiplier 50) at a price of Rs. 3,400. When you closed this position after a few days, you realized that you made a profit of Rs. 10,000. Which of the following closing actions would have enabled you to generate this profit? (You may ignore brokerage costs.)
(a) Selling 1 June XYZ futures contract at 3600
(b) Buying 1 June XYZ futures contract at 3600

(c) Buying 1 June XYZ futures contract at 3200
(d) Selling 1 June XYZ futures contract at 3200

8. Which of the following is closest to the forward price of a share, if Cash Price = Rs.750, Forward Contract Maturity = 6 months from date, Market Interest rate = 12%?
(a) 772.5
(b) 795
(c) 840
(d) 940.8

9. If you have sold a XYZ futures contract (contract multiplier 50) at 3100 and bought it back at 3300, what is your gain/loss?
(a) A loss of Rs. 10,000
(b) A gain of Rs. 10,000
(c) A loss of Rs. 5,000
(d) A gain of Rs. 5,000

10. A calendar spread contract in index futures attracts _____.
(a) Same margin as sum of two independent legs of futures contract
(b) Lower margin than sum of two independent legs of futures contract
(c) Higher margin than sum of two independent legs of futures contract
(d) No margin need to be paid for calendar spread positions

11. Client A has purchased 10 contracts of December series and sold 7 contracts of January series of the NSE Nifty futures. How many lots will get categorized as regular (non-spread) open positions?
(a) 10
(b) 7
(c) 3
(d) 17

12. In an equity scheme, fund can hedge its equity exposure by selling stock index futures.
(a) True
(b) False

13. Margins in 'Futures' trading are to be paid by _____.
(a) Only the buyer
(b) Only the seller
(c) Both the buyer and the seller
(d) The clearing corporation

14. When the near leg of the calendar spread transaction on index futures expires, the farther leg becomes a regular open position.

(a) True
(b) False

15. Selling short a stock means _____.
(a) Seller does not own the stock he is supposed to deliver
(b) Seller has to deliver the stock within a short time
(c) Seller owns the stock he is supposed to deliver
(d) Seller has more than a year's time to deliver the stock which he sold

16. The buyer of an option cannot lose more than the option premium paid.
(a) True only for European options
(b) True only for American options
(c) True for all options
(d) False for all options

17. Cost of carry model states that _____.
(a) Price of Futures = Spot + Cost of Carry
(b) Price of Futures = Spot - Cost of Carry
(c) Price of Futures = Spot Price
(d) Price of Futures = Cost of Carry

18. What role do speculators play in the futures market?
(a) They take delivery of the commodities at expiration
(b) They produce the commodities traded at futures exchanges
(c) They add to the liquidity in the futures markets
(d) They transfer their risk to the hedgers

19. You sold a Put option on a share. The strike price of the put was Rs245 and you received a premium of Rs 49 from the option buyer. Theoretically, what can be the maximum loss on this position?
(a) 196
(b) 206
(c) 0
(d) 49

20. Current Price of XYZ Stock is Rs 286. Rs. 260 strike call is quoted at Rs 45. What is the Intrinsic Value?
(a) 19
(b) 26
(c) 45
(d) 0

21. A European call option gives the buyer the right but not the obligation to buy from the seller an underlying at the prevailing market price "on or before" the expiry date.

(a) True
(b) False

22. A put option gives the buyer a right to sell how much of the underlying to the writer of the option?
(a) Any quantity
(b) Only the specified quantity (lot size of the option contract)
(c) The specified quantity or less than the specified quantity
(d) The specified quantity or more than the specified quantity

23. An in-the-money option is _____.
(a) An option with a negative intrinsic value
(b) An option which cannot be profitably exercised by the holder immediately
(c) An option with a positive intrinsic value
(d) An option with zero time value

24. An option with a delta of 0.5 will increase in value approximately by how much, if the underlying share price increases by Rs 2?
(a) Rs 1
(b) Rs 2
(c) Rs 4
(d) There would be no change

25. Exchange traded options are _____.
(a) Standardised options
(b) Always in-the-money options
(c) Customised options
(d) Always out-of-the money options

26. Higher the price volatility of the underlying stock of the put option, _____.
(a) Higher would be the premium
(b) Lower would be the premium
(c) Nil (zero) would be the premium
(d) Volatility does not effect put value

27. In which option is the strike price better than the market price (i.e., price difference is advantageous to the option holder) and therefore it is profitable to exercise the option?
(a) Out-of the money option
(b) In-the -money option
(c) At-the-money option
(d) Higher-the-money option

28. Mr. X purchases 100 put option on stock S at Rs 30 per call with strike price of Rs 280. If on exercise date, stock price is Rs 350, ignoring transaction cost, Mr. X will choose _____.
(a) To exercise the option
(b) Not to exercise the option
(c) May or may not exercise the option depending on whether he is in his hometown or not at that time
(d) May or may not exercise the option depending on whether he like the company S or not

29. Three Call series of XYZ stock - January, February and March are quoted. Which will have the lowest Option Premium (same strikes)?
(a) January
(b) February
(c) March
(d) All will be equal

30. Which is the ratio of change in option premium for the unit change in interest rates?
(a) Vega
(b) Rho
(c) Theta
(d) Gamma

31. If you sell a put option with strike of Rs 245 at a premium of Rs.40, how much is the maximum gain that you may have on expiry of this position?
(a) 285
(b) 40
(c) 0
(d) 205

32. If an investor buys a call option with lower strike price and sells another call option with higher strike price, both on the same underlying share and same expiration date, the strategy is called _____.
(a) Bullish spread
(b) Bearish spread
(c) Butterfly spread
(d) Calendar spread

33. On the derivative exchanges, all the orders entered on the Trading System are at prices exclusive of brokerage.
(a) True
(b) False

34. A trader has bought 100 shares of XYZ at Rs 780 per share. He expects the price to go up but wants to protect himself if the price falls. He does not want to lose more than Rs1000 on this long position in XYZ. What should the trader do?
(a) Place a limit sell order for 100 shares of XYZ at Rs 770 per share
(b) Place a stop loss sell order for 100 shares of XYZ at Rs770 per share
(c) Place a limit buy order for 100 shares of XYZ at Rs 790 per share
(d) Place a limit buy order for 100 shares of XYZ at Rs770 per share

35. Trader A wants to sell 20 contracts of August series at Rs 4500 and Trader B wants to sell 17 contracts of September series at Rs 4550. Lot size is 50 for both these contracts. The Initial Margin is fixed at 6%. How much Initial Margin is required to be collected from both these investors (sum of initial margins of A and B) by the broker?
(a) 2,70,000
(b) 5,02,050
(c) 2,32,050
(d) 4,10,000

36. A member has two clients C1 and C2. C1 has purchased 800 contracts and C2 has sold 900 contracts in August XYZ futures series. What is the outstanding liability (open position) of the member towards Clearing Corporation in number of contracts?
(a) 800
(b) 1700
(c) 900
(d) 100

37. A defaulting member's clients' positions could be transferred to _____ by the Clearing Corporation.
(a) Another solvent member
(b) The Exchange
(c) A suspense account
(d) Error account

38. Clients' positions cannot be netted off against each other while calculating initial margin on the derivatives segment.
(a) True
(b) False

39. Mark-to-market margins are collected _____.
(a) On a weekly basis
(b) Every 2 days
(c) Every 3 days
(d) On a daily basis

40. Value-at-risk measures _____.
(a) Value of proprietary portfolio
(b) Risk level of a financial portfolio
(c) Net-worth of an investor
(d) Credit rating of an investor

41. A penalty or suspension of registration of a stock broker from derivatives exchange/segment under the SEBI (Stock Broker and Sub-broker) Regulations, 1992 can take place if _____.
(a) The stock broker fails to pay fees
(b) The stock broker violates the conditions of registration
(c) The stock broker is suspended by the stock exchange
(d) In any of the above situations

42. Clearing corporation on a derivatives exchange becomes a legal counterparty to all trades and be responsible for guaranteeing settlement for all open positions.
(a) True
(b) False

43. Initial margin collection is monitored by the _____.
(a) RBI
(b) Clearing Corporation
(c) SEBI
(d) Margin Office

44. Liquid Assets maintained by Mr A (Clearing Member) are higher than that maintained by Mr B (Clearing Member). Which of the following statements is true?
(a) Mr A can enjoy higher exposure levels in futures than Mr B
(b) Mr B can enjoy higher exposure levels in futures than Mr A
(c) Both Mr A and Mr B enjoy the same exposure levels
(d) No need to maintain liquid assets for exposure in derivatives markets

45. On the Clearing Council of the Clearing Corporation of the derivatives segment, broker-members are allowed.
(a) True
(b) False

46. The main objective of Trade Guarantee Fund (TGF) at the exchanges is _____.
(a) To guarantee settlement of bonafide transactions of the members of the exchange
(b) To inculcate confidence in the minds of market participants
(c) To protect the interest of the investors in securities
(d) All of the above

47. Value-at-risk provides the _____.
(a) Expected maximum loss, which may be incurred by a portfolio over a given period of time and specified confidence level
(b) Value of securities which are very risky
(c) Value of speculative stocks
(d) Theoretical value of illiquid stocks in a portfolio

48. Who is eligible for clearing trades in index options?
(a) All Indian citizens
(b) All members of the stock exchange
(c) All national level distributors
(d) Only members, who are registered with the Derivatives Segment as Clearing Members

49. If price of a futures contract decreases, the margin account of the buyer of this futures contract is debited for the loss.
(a) True
(b) False

50. When establishing a relationship with a new client, the trading member takes reasonable steps to assess the background, genuineness, beneficial identify, financial soundness of such person and his investment/trading objectives.
(a) True
(b) False

ANSWERS

1.	(b)	26.	(a)
2.	(b)	27.	(b)
3.	(d)	28.	(b)
4.	(a)	29.	(a)
5.	(b)	30.	(b)
6.	(b)	31.	(b)
7.	(c)	32.	(a)
8.	(b)	33.	(a)
9.	(a)	34.	(b)
10.	(b)	35.	(b)
11.	(c)	36.	(b)
12.	(a)	37.	(a)
13.	(c)	38.	(a)
14.	(a)	39.	(d)
15.	(a)	40.	(b)
16.	(c)	41.	(d)
17.	(a)	42.	(a)
18.	(c)	43.	(b)
19.	(a)	44.	(a)
20.	(b)	45.	(b)
21.	(b)	46.	(d)
22.	(b)	47.	(a)
23.	(c)	48.	(d)
24.	(a)	49.	(a)
25.	(a)	50.	(a)

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