NISM CERTIFICATION EXAMINATION WORK BOOK

XVI

Commodity Derivatives

National Institute of Securities Markets

A Capacity Building Initiative of SEBI

Workbook for

NISM-Series-XVI: Commodity Derivatives Certification Examination

National Institute of Securities Markets

www.nism.ac.in

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

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FOREWORD

NISM is a leading provider of high-end professional education, certifications, training and research in financial markets. NISM engages in capacity building among stakeholders in the securities markets, through professional education, financial literacy, enhancing governance standards and fostering policy research.

The NISM certification programs aim at enhancing the quality and standards of professionals employed in various segments of the financial sector. NISM develops and conducts certification examinations and Continuing Professional Education (CPE) programs that aim at ensuring that professionals meet the defined minimum common knowledge benchmark for various critical securities market functions.

NISM certification examinations and educational programs service different securities market 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, wishing to make a professional career in the securities markets.

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 commodity derivatives, commodity indices, commodity futures and commodity options, clearing, settlement and risk management as well as the regulatory environment in which the commodity derivatives markets operate in India. It will be immensely useful to all those who want to have a better understanding of various products available in Indian commodity derivatives markets.

Sashi Krishnan
Director

About NISM Certifications

NISM is engaged in developing and administering Certification Examinations and Continuing Professional Education (CPE) Programmes for professionals employed in various segments of the Indian securities markets. These Certifications and CPE Programmes 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. NISM seeks to ensure that market intermediaries meet defined minimum common benchmark of required functional knowledge through Certification Examinations and CPE Programmes on Mutual Funds, Equities, Derivatives, Securities Operations, Compliance, Portfolio Management etc.

These Certifications create quality market professionals and catalyzes greater investor participation in the markets. They also provide structured career paths to students and job aspirants in the securities markets.

About the NISM-Series-XVI: Commodity 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 members who are registered as such in the commodity derivatives segment of a recognized stock exchange.

Examination Objectives

The examination aims to enable a better understanding of various derivatives products available in commodity derivatives markets, regulations and risks associated with the products and the exchange mechanisms of trading, clearing and settlement. The examination also covers knowledge competencies related to the understanding of the importance of different rules and regulations governing the commodity derivatives markets in India.

On successful completion of the examination the candidate should:

- Know the basics of the Indian commodity derivatives markets.
- Understand various trading strategies that can be built using commodity derivatives.
- Understand the clearing, settlement and risk management as well as the operational mechanism related to commodity derivatives markets.
- Know the regulatory environment in which the commodity derivatives markets operate in India.

Assessment Structure

The NISM-Series-XVI: Commodity Derivatives Certification 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*

Acknowledgement

This workbook has been developed by the Certification Team of NISM in co-ordination with its subject matter experts. This workbook has been reviewed by Mr. Venkatachalam Shunmugam, former Adjunct Faculty, NISM.

NISM gratefully acknowledges the contribution of the Examination Committee of NISM-Series-XVI: Commodity Derivatives Certification Examination consisting of representatives of Stock Exchanges and Industry Experts and Commodity Participants Association of India (CPAI) for their inputs.

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Important

- Please note that the Test Centre workstations are equipped with either Microsoft Excel or OpenOffice Calc. Therefore, candidates are advised to be well versed with both of these softwares for computation of numericals.
- The sample questions and the examples discussed in the workbook are for reference purposes only. The level of difficulty may vary in the actual examination.

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Chapter 1: Introduction to Commodity Markets

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Know the history of commodities trading and the evolution of commodity exchanges
- Know the Key economic functions performed by derivatives markets and list the major commodities traded in derivatives exchanges
- Understand the broad classification of market participants and the roles performed by them in the commodity derivatives market
- Understand the peculiarities of Commodities when compared to other financial assets
- Know the Important entities in the commodity market ecosystem and their roles
- Know the crucial factors that have an impact on commodity prices

1.1 History of Commodity Trading

Commodity trading is as old as human civilization and one of the earliest economic pursuits of mankind. Over the centuries, commodity trading has evolved from the barter system to spot and derivatives markets. In a barter system, goods were exchanged between two parties with matching and opposite needs (for example, bags of wheat were exchanged for cattle). Over a period of time, commodities brought from distant places were exchanged for gold and silver. With the introduction of Money as a medium of exchange, there was a paradigm shift in commodity trading. The value of commodity being expressed in monetary terms and trading in commodities was conducted mainly through the medium of currency. Commodity spot markets evolved in many places as those with trading interests met at these common places where goods were brought for immediate sale and delivery at the market price decided by the demand and supply forces. In commodity spot markets, traders sell goods such as rice for immediate delivery against cash. At some stage, counterparties started entering into agreements to deliver commodities (eg: wheat) at a specified time in future at a price agreed today. These agreements came to be known as forward contracts. For example, on May 25, a trader agreed to sell rice for delivery on a future specified date (say one month from May 25 i.e., on June 25) irrespective of the actual price prevailing on June 25.

More often than not, these forward contracts were not honored by either of the contracting parties due to price changes and market conditions. A seller pulled out of the contract if the spot price was more profitable for him than the contracted price. A buyer also backed out from executing the contract on maturity if he was able to get the commodity at a cheaper price from the spot market. Futures emerged as an alternative financial product to address these concerns of counterparty default, as the Exchange guaranteed the performance of the contract in case of the Futures.

The contracts of commodities being traded gradually got 'standardized' in terms of quantity and quality over a period of time. The contracts also began to change hands before the delivery date. For instance, if the buyer of a wheat contract decides that he does not want the wheat, he would sell the contract to someone who needed it. Also, if the farmer didn't want to deliver his wheat, he could pass on his contractual obligation to another farmer. The price of the contract would increase or decrease depending on what was happening in the wheat market.

Gradually, even those individuals who had no intention of ever buying or selling wheat began trading in the futures contracts, expecting to make some profits by betting on their expectations. They were called speculators. They bought contracts with the expectation of selling them later at a price higher than their purchase price. Or, they sold the contracts in advance expecting to buy them later at a price lower than their sale price. This is how the futures market in commodities evolved over the years. The hedgers (in this case, the producers of the commodity or farmers) began to efficiently transfer their market risk of holding physical commodities to these speculators by trading at the futures exchanges.

1.1.1 Evolution of Commodity Exchanges

Organized commodities exchanges have a long history. Commodity futures trading first started in Japan, and the first known organized futures market was the Osaka Rice Exchange, set up in 1730. In the 17th century, Osaka emerged as the major trading center for rice in Japan. At that time, rice played an important role in the Japanese economy as it was the main agricultural commodity. Rice from all over the country was sent to Osaka and stored there. It was sold by way of auctions, and once deals were made, the sellers issued a certificate of title in exchange for money. The certificates were called rice bills. In the early stage, the rice bills were issued upon making a good-faith deposit, which was directly and fully paid after the auction and with delivery of rice within a short period. Merchants could hold the bills or could sell them expecting to make a quick profit within the defined period. However, as the market developed, the deposits shrank, and the delivery dates extended. The rice bills represented the right to take up delivery of an agreed quantity of rice at a future date but at the current price. This was the precursor to futures.

The Chicago Board of Trade (CBOT) in USA and the London Metal Exchange (LME) in UK successfully launched their operations in 1848 and 1877, respectively. Many more exchanges were set up in the next few decades, in various countries such as Argentina, China, Egypt, Russia, Hungary, Turkey and India. After the 1990s, with market liberalization and explosive growth in information technology, commodity exchanges started mushrooming around the world. Major commodity exchanges around the world are listed in Annexure 1.

1.1.2 History of Commodities Trading in India

History of commodities trading in India dates back to several centuries. Forward trading in animal, agricultural produce and metals are believed to have existed in ancient India and references to such markets appear in Kautilya's 'Arthasastra'. Terms relating to commerce such as *'Teji', 'Mandi', 'Gali'* and *'Phatak'* have been coined and freely used as early as 320 B.C. However, organized trading in commodity derivatives started in India in 1875 by the Bombay Cotton Trade Association Limited with cotton as the underlying commodity. A few years later, Guajrati Vyapari Mandali was set up, which started trading in castor seed, groundnut and cotton. In the year 1919, the Calcutta Hessian Exchange was setup which started trading in raw jute and jute goods. Subsequently, many other commodity derivatives trading centers emerged across the country in places such as Hapur, Amritsar, Bhatinda, Rajkot, Jaipur, Delhi, etc., facilitating trading in forward contracts of commodities that the farmers in the nearby regions were specializing in.

Due to reasons such as speculation, hoarding, wars and natural disasters, several controls were placed on trading of certain commodities from time to time. In 1919, the Government of Bombay passed the Bombay Contract Control (War Provision) Act and set up the Cotton Contracts Board. With an aim to restrict speculative activity in cotton market, the Government of Bombay issued an Ordinance in September 1939 prohibiting options trading in cotton which was later replaced by the Bombay Options in Cotton Prohibition Act, 1939. In 1943, the Defence of India Act was passed for the purpose of prohibiting forward trading in some commodities (spices, vegetable oils, sugar, cloth, etc.) and regulating such trading in others on all India basis. These orders were retained with necessary modifications in the Essential Supplies Temporary Powers Act 1946, after the Defence of India Act had lapsed. After Independence, the Constitution of India placed the subject of "Stock Exchanges and Futures Market" in the Union list and therefore the responsibility for regulation of forward contracts devolved on the Government of India. The Parliament passed the Forward Contracts Regulation Act in 1952 to regulate the forward contracts in commodities across the country. With the liberalization of Global trade and India becoming full-fledged member of the Wrold Trade Organization, the government had decided to liberalize trading in futures contracts as part of the policy announcements during National Agricultural Policy, 2000. Nationalized online exchanges became operational from 2003 onwards. The Forward Contracts Regulation Act (FCRA) 1952 was repealed, and regulation of the commodity derivatives market was shifted to the Securities and Exchange Board of India (SEBI) under the Securities Contracts Regulation Act (SCRA) 1956 with effect from 28th September 2015.

Commodity trading in Indian exchanges has reached a sophisticated level. The exchanges offer electronic trading platforms for buyers and sellers to manage their price risks better and to improve the marketing of their physical products. This has made the commodity sector more efficient and competitive. Globally, exchange-traded commodity derivatives have emerged as an investment product often used by institutional investors, hedge funds, sovereign wealth funds besides retail investors. There has been a growing sophistication of commodities investments with the introduction of exotic products such as weather derivatives, power derivatives and environmental emissions trading (carbon credits trading).

1.2 Spot and Derivatives Trading in Commodities

Commodities can be traded in both the spot market and the derivatives (forward and futures) market.[1] Although the two markets are different in terms of the time of delivery and other terms of trade, they are inter-related. The commodities are physically bought or sold on a

[1] Please note that the terms cash market, spot market, physical market, mandis, APMC have been used synonymously in this chapter.

negotiated basis in the spot market, where immediate delivery versus payment takes place. The physical markets for commodities deal in cash (spot) transactions for ready delivery and payment.

There are two main types of commodities that trade in the spot and derivatives markets:

- Soft commodities: These are perishable agricultural products such as corn, wheat, coffee, cocoa, sugar, soybean, etc.
- Hard commodities: These are natural resources that are mined or processed such as the crude oil, gold, silver, etc.

1.2.1 Spot Market

The spot market is a place where the commodity is traded, and the transfer of ownership takes place immediately to complete the cycle of delivery versus payment. This concept is also termed as "ready delivery contract" under which payment and delivery of good happens immediately. Spot markets operate in two modes: physical spot market and electronic spot market.

Physical Spot Market

In a physical spot market, the commodities are physically bought and sold by the buyers and sellers respectively for immediate delivery. In addition to the buyers and the sellers, the spot market has traders who are licensed by the mandi to trade in the market. These traders have to pay mandi fees. In a spot market, a physical commodity is sold or bought at a price negotiated between the buyer and the seller. The spot markets can be either a retail market i.e., which serves the actual consumers or a wholesale market i.e., a market for supply chain intermediaries.

In a Mandi, the farmers bring their produce, and the traders or middlemen known as commission agents or 'arhatiyas' inspect the quality of the produce and bid based on their assessment of quality. The buyer with the highest bid acquires the produce. Thus, the traditional 'Mandi' system leaves the farmer with no bargaining power as the price setting power completely rests in the hands of the traders and middlemen (though the recent reforms are changing this situation). As it does not truly reflect the supply and demand fundamentals in the market, this type of transaction results in a very inefficient price discovery mechanism.

Electronic Spot Exchange / Spot Commodity Exchange

A spot commodity exchange is an organized marketplace where buyers and sellers come together to trade commodity-related contracts following the rules set by the respective commodities exchange. An electronic spot commodity exchange provides a marketplace where the farmers or their Farmer Producer Organization (FPO) can sell their produce, and the processors, exporters, traders, and other users can buy such produce through an electronic trading platform. Electronic Spot Exchanges for agricultural produce were setup to bring large number of buyers and sellers on the same platform for better price realization for the farmers. Unlike in a traditional mandi market, here the farmer plays a role in the price discovery by putting his ask price and thereby not a mere witness to the sale of the agricultural commodity.

Electronic National Agriculture Market (eNAM) plays a key role in the electronic spot market of agricultural produce. eNAM is a Pan-India electronic trading portal which networks the existing APMCs (mandis) to create a unified national market platform for agricultural commodities. Small Farmers Agribusiness Consortium (SFAC) is the lead agency for implementing eNAM under the aegis of Ministry of Agriculture and Farmers' Welfare, Government of India.

eNAM is set up to promote uniformity in agriculture marketing by streamlining the procedures across various APMC markets that it virtually connects with, removing information asymmetry between buyers and sellers and promoting real time price discovery based on actual demand and supply. The idea behind eNAM is the integration of APMCs across the country through a common online market platform to facilitate Pan-India trade in agriculture commodities, providing better price discovery through transparent auction process based on quality of produce along with timely online payment.

1.2.2 Derivatives Market

"Derivatives" are financial instruments, the price of which is directly dependent on or derived from the value of one or more underlying assets such as equity indices, debt instruments, commodities, and related intangibles such as weather, etc. It is a contract between a buyer and a seller, entered into at a point in time, regarding a transaction to be settled/closed at a future point in time. Derivatives provide risk protection with minimal upfront investment. They allow investors to trade on future price expectations and have very low total transaction costs compared to investing directly in the underlying asset.

Derivatives are either traded on an exchange platform, or bilaterally between counterparties, the latter mode of transaction being known as the over the counter (OTC) market. OTC derivatives are created by an agreement between two specific counterparties. Most of the OTC contracts are held to maturity by the original counterparties. Exchange-traded derivatives, on the other hand, are fully standardized and their contract terms are specified by the derivatives exchanges. Over a period of time, based on the needs of the market participants, various derivatives products have evolved in both the OTC and exchange-traded commodity derivatives markets space such as commodity forwards, commodity futures, commodity options, commodity swaps, commodity loans & notes, etc.

Derivatives have become an integral part of today's commodity trading and are used for various types of risk protection and in innovative investment strategies. Derivatives trading has facilitated the integration of national commodity markets with international markets. Commodity derivatives markets play an increasingly important role in the commodity market value chain by performing key economic functions namely, risk management by the commodity ecosystem stakeholders through risk reduction and risk transfer, price discovery and transactional efficiency.

Risk Reduction: Commodity derivatives market allows market participants such as farmers, traders, processors, etc. to hedge their risk against commodity price volatility through commodity futures and options. Derivatives provide a mechanism for the investors, both individual and institutional (including corporations), to efficiently hedge themselves against the price risks through the mechanism of risk reduction and risk transfer. Hedging can bring greater certainty over the planning cycle of the businesses, and also provide for greater confidence to invest, helping farmers adjust cropping patterns, diversify risk profiles, and opt for crops with better expected profitability.

Risk Transfer: Derivatives help in the transfer of risks from hedgers to speculators. On the one hand, hedgers try to hedge their spot positions via derivatives; on the other hand, there are speculators who take up trading bets and try to gain on trading risks. Thus, volatility risks get transferred from hedgers to the speculators\investors in the commodity derivative markets.

Price Discovery: Price discovery in spot markets refers to the process of determining commodity price through forces of market demand and supply. Price discovery in futures markets refers to the process of determining the futures price through expected demand and supply after discounting expected news, data releases, and information on the alternative products. The ability of derivatives markets to provide information about potential future prices is an integral component of an efficient economic system. Knowledge of these prices is crucial for investors, consumers, and producers to take informed decisions in their planning process. Efficiency of price discovery depends on the continuous flow of information and transparency. Price discovery in the commodity futures market guides producers in making decisions on the timing of sales and guides farmers in making cropping decisions. Price discovery smoothens the effect of inter-seasonal price fluctuations for the stakeholders of an economy.

Transactional Efficiency: Derivatives lower the costs of transacting in commodity markets. As a result, risk management and investments in commodity derivatives become more productive and lead to a higher rate of economic growth. Therefore, derivatives bring important social and economic benefits to consumers and producers alike and contribute positively to the process of economic development.

1.2.3 Derivatives Instruments

A brief introduction to various derivative instruments such as forwards, futures, options and swaps is given below. The subsequent units of this workbook will cover these instruments in more detail.

Forwards

A forward contract is a legally enforceable agreement for delivery of goods or the underlying asset on a specific date in future at a price agreed on the date of contract. Forward contracts can be customized to accommodate any commodity, in any quantity, for delivery at any point in the future, at any place. These contracts are traded on the OTC markets. In a forward contract:

- The terms of the contract are tailored to suit the needs of the buyer and the seller.
- Generally, no money changes hands when the contract is first negotiated and it is settled at maturity.
- Both parties are obliged to fulfill their contractual terms.
- Most of the contracts are held till the expiry date, and the contracts can be cancelled only on mutual consent of both parties as it is a bi-partite agreement.

Two note-worthy features of forward contracts are: (1) Generally, no cash transfer occurs when the contract is signed. The seller of the commodity is obliged to deliver the commodity at maturity to the buyer and the buyer needs to pay money at the same time i.e., the buyer pays no money upfront (except for transaction fees). (2) There is an inherent credit or default risk since the counterparties of the forward transaction may fail either to deliver the commodity or take delivery by paying the agreed price at maturity.

Futures

A futures contract is a legally binding agreement between the buyer and the seller, entered on an exchange, to buy or sell a specified amount of an asset, at a certain time in the future, for a price that is agreed today. The buyer enters into an obligation to buy, and the seller is obliged to sell, on the specified date as mentioned in the contract. Futures are standardized in terms of size, quantity, grade, and time so that each contract traded on the exchange has the same set of specifications.

Commodity Futures contracts are highly uniform and are well-defined. These contracts explicitly state the commodities (quantity and quality of the goods) that have to be delivered at a certain time and place (acceptable delivery date) in a certain manner (method for closing the contract) subject to a set of regulatory conditions as prescribed by the market regulators.

Therefore, a commodity futures contract is a standardized contract to buy or sell commodities for a particular price and for delivery on a certain date in the future. For instance, if a hotel owner wants to buy 10 tonnes of wheat today, he can buy the wheat in the spot market for immediate use. If the hotel owner wants to buy 10 tonnes of wheat for future use, he can buy wheat futures contracts at a commodity futures exchange. The futures contracts provide for the delivery of a physical commodity at the originally contracted price at a specified future date, irrespective of the actual price prevailing on the actual date of delivery.

Options

Option is one more derivative product which provides additional flexibility in managing price risk. Options contracts can be either standardized or customized. There are two types of option contracts —call options and put options. Call option contracts give the purchaser the right to buy a specified quantity of a commodity or financial asset at a particular price (the exercise price) on or before a certain future date (the expiration date). Put option contracts give the buyer the right to sell a specified quantity of an asset at a particular price on or before a certain future date.

In an options transaction, the purchaser pays the seller (the writer of the option), an amount for the right to buy (in case of "call" options) or for the right to sell (in case of "put" options). This amount is known as the "Option Premium".

Premium is the cost of the option paid by the buyer to the seller and is non-refundable. Since the buyer is paying the premium to the seller, he has the right to exercise the option when it is favourable to him but no obligation to do so. In case of both call and put options, the buyer has the right but no obligation whereas the seller, being the receiver of the premium, has no right but an obligation to the buyer. We will discuss these in more detail in subsequent units.

Swaps

Swaps are agreements between two counterparties to exchange a series of cash payments for a stated period of time. The periodic payments can be charged on fixed or floating price, depending on the terms of the contract. One of the commonly used commodity swaps is "fixed-for-floating swaps".

In a "fixed-for-floating commodity swap", one party known as the "fixed price payer," makes periodic payments based on a fixed price for a specified commodity that is agreed upon at the execution of the swap, while the other party, known as the "floating price payer" makes payments based on a floating price for such commodity that is reset periodically. The floating price may be (a) a spot price for the specified commodity, (b) the price for a specified nearest futures contract for such commodity, or, (c) an average price of such spot prices or futures contracts prices calculated over a period.

For example, the floating price for a "fixed-for-floating swap" on oil with monthly payments may be based on the average of the settlement prices for the first nearby month CME WTI Crude Oil Futures for each day of the relevant month. From the perspective of the fixed price payer, an increase in the overall price of the relevant commodity in the market will cause the swap to increase in value, because the fixed price payer's contractually specified fixed price obligations will be lower than the then-prevailing commodity price in the market. Thus, fixed price payer indirectly has long exposure on actual commodity / underlying prices, while fixed price receiver indirectly has short exposure on actual commodity / underlying prices. Conversely, floating price payer is indirectly having short position on commodity / underlying prices while floating price receiver of the same is indirectly long. Understanding of such exposures help traders and hedgers to hedge, wherever required, considering their natural exposures arising out of their businesses or portfolios.

Swap is a pure financial transaction that is used to lock in the long-term price and there is no physical delivery of the commodity and there will be a net cash settlement on maturity. Currently, commodity swaps are not allowed in India.

1.3 Major Commodities Traded in Derivatives Exchanges in India

Commodity refers to tangible goods other than actionable claims, money, and securities. Commodities underlying the derivative contracts are things of value, of uniform quality, and produced in large quantities by many producers. Derivatives trading can be conducted in any commodity subject to the condition that the said commodity is allowed for trading by the Government of India and the futures contract on the same is approved for trading by SEBI on a specific exchange.

Futures trading in commodities can be conducted between members of an approved exchange. These exchanges organize futures trading in commodities after obtaining a certificate of registration from the SEBI. The national exchanges in which commodity derivatives are currently traded in India are: Multi Commodity Exchange of India Limited (MCX), National Commodity & Derivatives Exchange Limited (NCDEX), National Stock Exchange of India Limited (NSE) and BSE Limited (Bombay Stock Exchange).

Commodities traded on Indian exchanges can be grouped into four major categories: Bullion, Metals, Energy, and Agriculture. An indicative list of commodities traded in the Indian derivatives exchanges are:

Bullion: Gold, Silver, Diamond

Metals: Aluminum, Brass, Copper, Lead, Nickel, Steel, Zinc

Energy: Crude Oil, Natural Gas

Agriculture: Barley, Maize, Guar Seed, Guar Gum, Isabgul Seed, Pepper, Cardamom, Coriander, Jeera, Turmeric, Rubber, Cotton, Cotton Seed Oilcake, Castor Seed Oil, Mentha Oil,

Agriculture list may have either monsoon-based contracts or winter-based contracts majorly depending upon their season of production. For example, Wheat and Guar are winter crops. Maize, however, is produced throughout the year and hence, contracts for delivery of maize could be made available on exchanges during both the seasons to be delivered in the respective benchmark markets.

Please note that the above is an indicative list and it may change from time to time due to introduction of trading on additional commodities by various exchanges from time to time. Please refer to the websites of exchanges for the latest list of commodities traded on those exchanges and the contract specifications of those commodity derivatives.

1.4 Participants in Commodity Derivatives Markets

Broadly, the participants in the commodity derivatives markets can be classified as hedgers, speculators/investors and arbitrageurs, and are represented by manufacturers, traders, farmers / Farmer Producer Organizations (FPO), processors, exporters, and investors. An efficient market for commodity futures requires a large number of market participants with diverse risk profiles.

Hedgers

Hedgers are generally commercial producers, processors, exporters and importers of traded commodities who participate in the commodity derivatives markets to manage their spot market price risk. As commodity prices are volatile, participation in the futures and options markets allows hedgers to protect themselves against the risk of losses from fluctuating prices. Hedging implies taking position in Futures markets in such a way that overall net market risk is minimized or mitigated.

For any business or value chain participant, they are naturally short on raw materials and long on finished goods. It means they gain if raw material prices reduce, and they lose when raw material prices increase. Similarly, on finished goods, they gain when their prices rise, and they lose when their prices fall. Hence, hedgers generally hedge by buying raw materials in derivatives markets or selling finished goods in derivatives markets or both. Hedgers include:

• **Farmers** who need protection against the declining prices of crops or against rising prices of inputs such as fuel used for diesel engines of a tractor.

• **Merchandisers** who need protection against price changes between the time they purchase or contract to purchase the grains from the farmers and to the time they are actually able to sell the branded/packaged grains in the market.

• **Food processors** who need protection against increasing raw material costs or against decreasing prices of their processed commodities/products.

• **Exporters** who need protection against price increases for those goods on which they have export obligations with committed prices but are yet to procure from the domestic market.

• **Importers** who need protection against price drops in the domestic market for the goods on which they have import obligations (i.e., pre-agreed to import from their vendors in other markets).

In October 2018, SEBI had allowed eligible foreign entities to hedge their positions in commodity derivatives if they have open positions in commodities (i.e., in the underlying commodity) in India arising out of their business obligations. SEBI Further amended the guidelines in 2022 and allow foreign investors to participate in Indian ETCDs (Exchange traded Commodity Derivatives) through the FPI route without underlying exposure, subject to conditions prescribed by SEBI. To begin with, FPIs will be allowed to participate in cash settled non-agricultural commodity derivative contracts and indices comprising such non -agricultural commodities. FPIs desirous of participating in ETCDs shall be subject to risk management measures applicable, from time to time.

Speculators/Investors

Speculators/investors are traders or investors who speculate on the direction of future prices with the goal of making a profit. Since speculators/investors participate in the commodity derivatives markets for trading only and not as end users of the underlying commodity, they typically do not take physical delivery of commodities and instead liquidate their positions prior to or upon expiry of their futures and options contracts. Day Traders, Position Traders and Market Makers are the subset of speculators. Since the commodity derivative contracts are standardized and participation in them could be purely financial, it makes it a suitable product for investors who are looking to diversify their portfolio allocations.

Day traders take positions in derivatives contracts and liquidate them prior to the close of the same trading day. In the derivatives markets, hedgers transfer their risk to speculators. While Hedgers try to avoid risk and attempt to protect against price changes, speculators, on the other side, accept risk in an attempt to profit from price changes.

Position Traders maintain overnight positions, which may run into weeks or even months, in anticipation of favourable movement in the commodity futures prices. They may hold positions in which they run huge risks and with a possibility to earn big profits if their directional call proves to be correct. To keep the position alive over time, they may need to roll over the month's Futures position to next month's Futures position, as higher liquidity is generally found in near-month contracts only.

Market Maker - **A Market Maker is a class of members who are obligated to provide liquidity in the Exchange in the relevant commodity by giving two-way** quotes at all times on such terms and conditions as may be prescribed by the Exchange from time to time.

Arbitrageurs

Arbitrageurs simultaneously buy and sell in two markets where their selling price in one market is higher than their buying price in another market than after accounting for the cost of the transaction costs, resulting in a riskless profit to the arbitrager. Arbitragers make a riskless profit by exploiting the price differentials between the physical markets and the exchanges. In commodity derivatives, we may see arbitrage play between Futures – Spot or within Futures when we see huge backwardation. However, arbitrage opportunities arise infrequently and also vanishes within a very short span of time. Reaping arbitrage opportunities require availability of funds and commodity stocks for settlement of both the legs of the transaction.

From 2019 onwards, SEBI has allowed Mutual Funds also to hold positions in commodity derivatives, subject to specific restrictions.

1.5 Commodities Trading vis-à-vis Trading in Other Financial Assets

Commodity trading is strikingly different from trading in stocks and bonds which are mere promises on securities. The two major differences between commodities and other financial assets are:

(a) commodities are physical, and they are claims on real assets;

(b) unlike financial assets, many commodities have pronounced seasonality which needs to be factored in while trading in them.

(c) most financial product prices are derived from the worthiness or the financial position of the issuer of instruments in addition to interest and risk premiums. However, commodity prices are more of a factor of the supply and demand of commodities.

The financial and commodity markets are very different marketplaces in terms of features, processes and procedures. Following are some of the differentiating factors.

Delivery Process

In case of commodity derivatives, delivery process involves a sequence of steps that must be completed in a specific order and at pre-defined time interval. In exchange-traded financial derivatives globally, majority of the derivative contracts are cash-settled and cash settlement involves only transfer of cash between the buyer and seller. In case of commodity derivatives markets, the proportion of contracts that culminates into physical delivery can be significantly higher than that of other exchange-traded financial derivatives.

Quality of the underlying assets

In the case of commodity derivatives, grading plays a crucial role particularly in agricultural commodities. In the case of financial derivatives, the underlying is a financial asset and the question of grading does not arise. Commodity derivatives contracts specify standards and expected quality and certification procedures assuring the quality specifications.

Warehousing

In trading and settlement of commodity derivative contracts, warehouses play a central role. The physical delivery of commodities is effected through accredited warehouses on maturity in the case of commodity futures whereas in the case of exchange traded financial derivatives, exchange of securities and cash is effected through account transfers in bank accounts and demat accounts of the buyers and sellers.

Delivery notice period

Unlike financial futures, a seller of commodity futures has the option to give notice of delivery during the delivery notice period. The intention of this notice is to give adequate time to the buyer of a possible requirement to take delivery. These are required by virtue of the fact that the actual physical settlement of commodities requires preparation from both delivering and receiving members like arrangement of finances for payment against delivery, and loading, unloading and transportation arrangements in case the deliveries are mean to be taken out of the accredited warehouses for consumption or processing purposes.

1.6 Commodity Markets Ecosystem

Commodity ecosystems comprise of various entities providing services for the smooth flow of goods from the producer to the ultimate consumer. These entities provide services such as transport, insurance, grading, storage and warehousing, banking, etc. These commodity ecosystem players play a major role in ensuring smooth transfer of ownership and delivery from sellers to buyers. These intermediaries act as a link between the producer and the ultimate consumer and they play a pivotal role in the commodity supply chain from the time it is ready for sale till it reaches the ultimate consumer. The role of various entities in the commodities market ecosystem is discussed below:

Warehouse Service Provider/Commodity Repository facilitates storage and issues warehouse receipts (WR) against the stored commodity stock, which can then be traded in the commodity markets. A warehouse receipt is a receipt of goods or material kept for safekeeping in an exchange-recognized warehouse. It is a document of title to commodities issued by a warehouse to the depositor against the commodities he deposited in their exchange accredited warehouse to the repository account. This document can be transferred by endorsement or delivery against an open position committed for delivery on exchanges. The original depositor or the holder in due course can claim the commodities from the warehouse by producing the dematerialized electronic negotiable warehouse receipt and the holder's identity related credentials to the warehouse. More details of this will be discussed in the subsequent chapters.

Warehousing Development and Regulatory Authority (WDRA) is a statutory authority under Warehousing (Development and Regulation) Act, 2007 (WDRA Act). WDRA regulates the warehouses used for storing agricultural commodities. There are separate regulations under WDRA Act for registration of warehouses. SEBI in co-ordination with WDRA has issued various guidelines in relation to use of registered warehouses, fiduciary responsibilities of Warehouse Service Providers (WSPs) whose services are taken by Exchanges for storing and delivery of agricultural goods.

A **repository** means a company that has received a Certificate of Registration in compliance with the guidelines issued by Warehousing Development and Regulatory Authority (WDRA) for providing the electronic facility for holding and/ or transacting commodity assets through electronic transfer of title of assets from the seller to the buyer. To avail the services offered by a Repository, the depositor/ client must open a demat account with a Repository Participant (RP) registered/ empaneled by CCRL.

Repository Participants (RPs): RPs are intermediaries which can be a bank, a financial institution or an intermediary licensed by the regulators such as RBI, SEBI, PFRDA, IRDA and any other class of persons who are permitted to act as Repository Participants such as Corporates, LLPs or Partnerships. Repository participants are responsible to undertake KYC of the depositors and who would like to receive the title of transfer after a transaction is complete. Besides management of accounts after opening them, the RPs also facilitate the issuance, modification, transfer, pledge and e-auction of the electronic negotiable warehouse receipts (eNWRs).

Electronic Negotiable Warehouse Receipts (eNWRs). These receipts are issued by the repository system subject to guidelines prescribed by the Warehousing Development and Regulatory Authority (WDRA). National E-Repository Ltd. (NeRL, a subsidiary of NCDEX) and CDSL Commodity Repository Limited (CCRL, a subsidiary of CDSL) provide platforms for the issuance of negotiable warehouse receipts for commodities in electronic form, which facilitates easy pledge financing on stored goods. Besides, other benefits of eNWR to overall agrarian ecosystem including farmers and FPOs are better access to standardized storage facilities and market place, transparency in transactions, fair price for commodities, efficient transfer, centralized monitoring, ease in trade and enhanced trading opportunity.

Transport Company helps the movement of goods from the production center to the consumption center.

Quality Testing Companies help grading and standardization of commodities certifying the required quality for trading on commodity exchanges**.**

Broker sells the produce on behalf of one party or buys on behalf of other party on the exchange. Broker is the entity which intermediates between the buyer and the seller.

Exchange provides a platform for trading in commodities or commodity derivatives.

Clearing Corporation is a separate undertaking governed by SEBI's Stock Exchange and Clearing Corporation Regulations, 2012. Clearing Corporation's main role is to carry out clearing and settlement of the trades executed on the Exchange platform. The entity which guarantees settlement is 'Clearing Corporation'. SEBI had mandated to have settlement of Exchange trades through a clearing corporation, whether under the same sponsor or outsourced to another clearing corporation.

Bank provides loan or advance against goods.

Depository enables holding of stock in dematerialized form for easy tradability.

Custodians: A custodian in the Indian securities markets is the one who manages cash and holds the securities, for safekeeping and clearing, on behalf of its customers who are domestic institutional investors /foreign portfolio investors. The custodian, as registered by Sebi, settles a trade on behalf of its client, a trading member. They take the burden from the individual investor and help them to avoid the hassle while trading in the stock market. A custodian holds security either in its electronic form (dematerialized or demat) or in its physical form. Custodian also provides services related to tax reporting, fund accounting, tracking securities and related market compliances, collecting any type of payments receivable by their clients, performing buy and sell transactions on behalf of their clients. They also provide for reporting the status of assets and moving funds.

Mutual Fund: is a trust that collects money from a number of investors who share a common investment objective and invests the same in equities, bonds, money market instruments and/or other securities. And the income / gains generated from this collective investment is distributed proportionately amongst the investors after deducting applicable expenses and levies. Based on the same the funds calculate a scheme's "Net Asset Value" or NAV and announce the same. Hybrid Mutual Funds and Multi-Asset Class schemes have been permitted by the regulators to participate in the Commodity market

Hybrid Mutual Fund Schemes: Hybrid mutual funds are types of mutual funds that invest in more than one asset class. Most often, they are a combination of Equity and Debt assets, and sometimes they also include Gold or even Real estate. Hybrid mutual funds are also permitted to participate in Commodity Derivative Markets (CDMs) subject the SEBI regulations pertaining to the same.

Multi-Asset Mutual Fund Schemes: Multi-Asset funds are those hybrid funds that must invest a minimum of 10 percent in at least 3 asset classes. Asset classes include equity, debt, gold, real estate, etc. Recently SEBI also allowed Multi Asset Mutual Funds Schemes to invest in commodity derivative markets.

Alternative Investment Funds Category III and PMS have also been permitted to participate in the CDMs.

SEBI has also allowed participation of Foreign Portfolio investors in CDM. They are allowed to participate only in non-sensitive commodities that are cash settled including indices.

1.7 Factors Impacting the Commodity Prices

Commodity prices are susceptible to a multitude of factors and the major factors have been discussed below:

The 'demand-supply' equation: A commodity's demand for and supply are the two basic factors influencing its price. The higher the demand for a commodity, the costlier it will be and higher the supply of a commodity vis-à-vis demand, the cheaper would be its price, other factors remaining the same.

Fundamental equation of commodity demand and supply:

The equation for demand and supply is equal and any change in the base equation will impact the prices. The base equation is as follows:

Opening stock + Domestic production + imports = Domestic consumption + exports

If supply is more than demand, the balance residual left out at the end of the crop year is Closing Stocks, which is carried forward to the next year. If demand is more than supply, traders try to meet the same through imports if the trade policy permits or else, the equilibrium prices will rise due to lower supplies.

Seasonality: Most commodities follow a certain schedule of production cycle, which has an impact on how the prices move. For example, in agricultural commodities, during the harvest season, as farmers rush to the markets, it causes excessive supply often higher than the demand, and prices tend to come down; whereas during the sowing season, the overall supply (availability) remains lower, which leads to an increase in prices. In precious metals like gold and silver, during the festival season, increased demand helps prices to remain stronger. Annexure 2 lists the sowing, harvest, and arrival period of major crops traded on commodity exchanges.

For instance, consider Cotton, a kharif crop typically sown between April and August, with harvesting starting in September and extending through January. In years characterized by balanced supply and demand fundamentals, Cotton prices exhibit a distinct seasonal pattern. Prices tend to decrease from September onwards as harvesting of the new season crop begins, remain under pressure until December or January when supplies peak. However, from February onwards, as supply pressure diminishes, prices typically begin to recover.

News: Commodity prices are very sensitive to news and rumours and any important news related to a particular commodity can significantly affect its price in either direction in the short term. Such news items in the case of agricultural commodities include the monsoon forecasts and progress of the monsoon besides temperature movements. In the case of non-agricultural commodities, news about hurricanes tend to have an impact on crude oil prices as it affects the off-shore oil production and hence prices react accordingly. In the case of metals, unexpected events like flooding of mines or fire in the mines and labour strike can significantly impact its prices. Trade policy changes such as ban on import of commodities from select nations also affect the supplies and hence prices.

Geo-political developments: Commodities that have a global demand (e.g., crude oil) are prone to price fluctuations due to political tensions in some parts of the globe and these may lead to disruptions in supply. For example, tensions in the Middle East region may affect prices of crude oil due to potential disturbances to production and/or to supply chains. As we have seen recently, tensions between Russia and Ukraine also have inflated prices of natural gas and oil. Red sea turmoil of 2024 is a clear case of geopolitical tensions impacting the availability of transportation routes and the rise in cost of transportation of commodities leading to a potential price rise.

Macroeconomic conditions: The domestic and global macroeconomic conditions can have an impact on commodity prices. The GDP growth rate, consumption pattern, per capita income, industrial production, retail sales, consumer confidence, employment rate, inflation rate, etc. are very important factors in deciding the price trend of a commodity both in the short term as well as in the long term. Some commodities especially metals including precious metals have a closer relationship with economic variables such as economic growth, inflation, etc. Generally, copper is also called as Dr Copper i.e. it is said to be an effective indicator of economic growth as its demand grows due to its use in power generation, transmission, construction and electronics. Gold on the other hand is regarded as a hedge against inflation as investors tend to invest in gold when inflation rates move up.

Currency movement: Comparative movement in the value of a country's currency in relation to the major global currencies is very important for the prices of commodities in that particular country. Most of the commodities globally are denominated in the US dollar (USD). Hence, when the currency of a particular country appreciates against the USD, the price of the commodity in that particular country becomes cheaper and vice versa.

Interest rates: Interest rates also impact commodity prices and are the key determinants in commodity price movements. The effect of interest rate on commodity prices is almost instantaneous. High interest rates could reduce the market prices of commodities. High interest rates impact the price of storable commodities through four channels: (1) by increasing the incentive for extraction today rather than tomorrow as in the case of gold mining, (2) by decreasing firms' desire to carry inventories, (3) by encouraging speculators to shift their investments away from commodity contracts into treasury bills, and (4) by appreciating the domestic currency and thereby reducing the price of internationally traded commodities in domestic terms. All four mechanisms work to reduce the real market price of commodities. A decrease in real interest rates has the opposite effect, lowering the cost of carrying inventories, and raising commodity prices. Lower interest rates decrease the incentive to extract mine-based commodities, increase the incentives to maintain inventories, and stimulate the demand for commodity derivatives, all of which raise the prices of basic commodities.

Foreign Exchange rates: Increase in the value of the domestic currency makes imports cheaper as it reduces the INR prices of USD denominated internationally traded commodities. On the other hand, a depreciating domestic currency makes imports costlier as it increases the INR prices of internationally traded commodities. The same is reflected in Futures prices also. Domestic Prices of internationally traded commodities also include exchange rates.

Other factors: Weather is an important factor that impacts the production of agricultural commodities. The stock (inventory level) of certain commodities after a season is a significant factor for the price movement of that commodity. The government's intervention in different ways (through implementation of a rule, taxes, tariffs, quotas, market release programme, etc.) is another important factor that affects commodity price. Covid-19 like situations and lock-downs also change the demand - supply dynamics. For example, WTI Oil Futures on Nymex turned negative in April 2020 due to the pandemic induced lock-downs. Supply chain disruptions induced by pandemic or non-availability of shipping facilities could also impact the prices.

1.8 Commodity Options and Index Futures

Commodity Derivatives segment started in India initially with Commodity Futures. Majorly Futures are traded in Agricultural Commodities, Industrial Metals, Precious Metals and Oil. A few of these commodity Futures expires in cash settlement while most others lead to delivery-based settlement.

In late 2017, Commodity Options trading (on individual commodity futures contracts) was started in Indian exchanges, which initially was devolving into the respective underlying Commodity Futures. With the increased awareness of market participation, in 2020, Options which expires into direct delivery of physical commodities also were started. Commodity indices were also created, based on which, Index Futures trading was started in 2020. In March 2022, SEBI has permitted the exchanges to introduce options on commodity indices and has specified the product design and risk management framework for these Index options. These segments will be dealt in detail in subsequent chapters.

Sample Questions

1. In ________ system, goods were exchanged between two parties with matching and opposite needs.
   (a) Barter
   (b) Bullion
   (c) OTC
   (d) Monetary

   Ans: (a)

2. ___________ are agreements between two counterparties to exchange a series of cash payments for a stated period of time based on a certain pre-agreed arrangement.
   (a) Futures
   (b) Swaps
   (c) Forwards
   (d) Options

   Ans: (b)

3. _____________ refers to the process of determining commodity price through forces of market demand and supply.
   (a) Law of one price
   (b) Price determination
   (c) Price discovery
   (d) Arbitrary pricing

   Ans: (c)

4. Arbitrage opportunities can exist between _____________.
   (a) Spot and futures prices
   (b) Two futures prices
   (c) Futures and options prices
   (d) All of the above

   Ans: (d)

5. Which of the following macroeconomic factors have an impact on the commodity prices?
   (a) GDP growth rate
   (b) Per capita income
   (c) Growth in industrial production
   (d) All of the above

   Ans: (d)

Annexure 1: Major International Commodity Exchanges

Exchange	Location	Product traded
ABX Global	Brisbane, Australia	Precious Metals
Africa Mercantile Exchange	Nairobi, Kenya	Agricultural, Energy
Australian Securities Exchange	Sydney, Australia	Agricultural, Energy, Interest Rate Future
Bourse Africa (Previously GBOT)	Ebene City, Mauritius	Metals, Forex
Brazilian Mercantile And Futures Exchange	Sao Paulo, Brazil	Agricultural, Biofuels, Precious Metals
Bursa Malaysia	Malaysia	Biofuels
Chicago Board Of Trade (CME Group)	Chicago, United States	Grains, Ethanol, Treasuries, Equity Index, Metals
Chicago Climate Exchange	Chicago, United States	Emissions
Chicago Mercantile Exchange (CME Group)	Chicago, United States	Meats, Currencies, Eurodollars, Equity Index
Climex	Amsterdam, Netherlands	Emissions
Deutsche Börse / Eurex	Frankfurt, Deutschland	Agricultural, Metals, ETCs, Commodities Index
Dubai Gold & Commodities Exchange	Dubai	Precious Metals
Ethiopia Commodity Exchange	Addis Ababa, Ethiopia	Agricultural
European Climate Exchange	London, UK	Emissions
Indonesia Commodity And Derivatives Exchange	Indonesia, Jakarta	Agricultural Products, Base Metals, Financial Products
Intercontinental Exchange	Atlanta, United States	Energy, Emissions, Agricultural, Biofuels
Jakarta Futures Exchange	Jakarta, Indonesia	Cocoa, Arabica And Robusta Coffee, Precious Metals, Olein, CPO, Coal, Tea, And Rubber
Kansas City Board Of Trade	Kansas City, United States	Agricultural
London Metal Exchange	London, UK	Industrial Metals, Plastics
Mercantile Exchange Of Madagascar	Antananarivo, Madagascar	Agricultural, Metals, Energy
Multi Commodity Exchange	India	Precious Metals, Ferrrous/Base Metals, Energy, Agricultural
National Commodity And Derivatives Exchange	India	Precious Metals, Ferrous/Base Metals, Energy, Agricultural
Nepal Derivative Exchange Limited	Kathmandu, Nepal	Agricultural, Precious Metals, Base Metals, Energy
New York Mercantile Exchange (CME Group)	New York, United States	Energy, Precious Metals, Industrial Metals
NYSE Liffe	Europe	Agricultural Commodities
Pakistan Mercantile Exchange	Pakistan	Precious Metals, Agricultural Products, Crude Oil, Interest Rate Future
Shanghai Futures Exchange	Shanghai, China	Industrial Metals, Gold, Petrochemicals, Rubber

Singapore Mercantile Exchange	Singapore	Precious Metals, Base Metals, Agricultural, Energy Commodities
South African Futures Exchange (Part Of JSE Limited)	Sandton, South Africa	Agricultural Products
Tokyo Commodity Exchange	Tokyo, Japan	Energy, Precious Metals, Industrial Metals, Agricultural
Trieste Commodity Exchange	Trieste, Italy	Agricultural Products
U.S. Futures Exchange	Chicago, United States	Energy Commodities
Vietnam Commodity Exchange	Ho Chi Minh City, Vietnam	Coffee, Rubber, Steel

Annexure 2: Sowing, Harvesting and Arrival period for major agricultural commodities

Commodities	**Sowing Period**	**Harvesting Period**	**Arrival Months**
Kapas / Cotton	March-September	September-April	November-June
Chana	October-November	March-April	March-April
Urad	June-July (80%) and November-January (20%)	September-October (80%) and February-April (20%)	October-December (80%) and March-April (20%)
Yellow Peas	Imported		
Tur	June-July	September-October	October-December
Basmati Rice	July-August	October-November	November-February
Rice	June-Sep (80-85%), November (15%)	Sep-Dec (80-85%), February-April (10-15%)	September-April
Wheat	November-January	March-April	April-June
Maize	June-August (80%), November (20%)	September-November (80%), March-April (20%)	September (80%) April (20%)
Rubber	Perennial Crop		Whole year
Guar seed	June-July	October-November	November-December
Pepper	Flowering May-June	November-December	December-April
Red Chilli	August–October	January-February	February-April
Jeera	October-November	February-March	March-May
Turmeric	August-September	December-January	February-May, August-October
Caster Seed	June–August	October-December	October-March
Soya Seed	June–August	October-December	October-March
Mustard seed	October-December	February-April	February-June
Sesame seed	June-August (80%)	October-December (80%)	October-March (80%)

Chapter 2: Commodity Indices

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Understand the construction of commodity index, types of indices and its features
- Know the mechanism of Index Futures and its pricing
- Know the contracts and settlement procedure relating to Index Futures
- Know the differences between index futures and commodity futures

2.1 What is an Index?

An index is a barometer of how the prices or value of certain parameter or commodity is moving. For example, inflation index shows the rise or decline in the prices of a basket of goods or services that are relevant to an economy or its consumers. Similarly, other indices like Nifty, Sensex, Composite Bond Index, etc. shows the way market values of the underlying securities are moving. Thus, indices generally have an underlying basket / portfolio of securities whose price movements are tracked and scaled down to a base value of index. All the indices have a base value, generally set to 100 or 1000 as on the start date of that index.

Indices are constructed to create a proxy of market representation so that the index return could be considered as the market return. A robust commodity index represents general market levels of various commodities traded in that market and acts as an indicator of market sentiment for underlying commodities / segments listed there. For example, MCX BULLDEX represents sentiment in precious metals market. Compared with general indices such as CPI or WPI that are computed to measure inflation at the consumer level or the at the overall economy level, the indices in financial markets are constructed following a different set of rules. These involve rules for entry and exit of the asset class, rules about how to weigh the asset class, etc. These rules are normally set by market place regulations and such regulations are kept transparent to help market participants trading these indices flawlessly calculate these indices on a real-time basis to assist their trading strategies. Further, these indices follow a discipline of periodical review of the constituents and hence rebalancing of the weights.

Indices like Inflation Index (e.g.: wholesale price index, consumer price index, etc.) are used more like indicators of economic conditions i.e. rise in prices of goods and services. These indices help in gauging the inflationary conditions in the economy and in taking appropriate monetary and fiscal decisions to control the inflation, or to manage money supply for the orderly growth of the economy.

Traded indices can be grouped into two types based on the purpose of use of the index in the world of finance i.e. if it is used to assess the overall performance of an asset or to find if it has generated returns excess of a benchmark risk-free rate that an investor may consider.

Total Return Indices: Total return indices consider both the capital appreciation (or depreciation) of the underlying assets and any income generated by those assets, such as dividends, interest, or distributions. These indices provide a comprehensive measure of the overall performance of an investment, capturing both the price changes and the income received from holding the assets.

Excess Return Indices: Excess return indices, also known as excess return or total return above a benchmark, measure the performance of an investment relative to a specified benchmark or risk-free rate. These indices focus solely on the excess return generated by the investment compared to the benchmark, without considering any income generated by the assets.

2.2 Commodity Index

Commodity indices are different from equity indices as commodity indices in India are constructed from the prices of the nearby futures contracts of the commodity constituents, instead of the underlying spot prices of the commodities. Future prices are generally higher than the spot prices due to carrying cost parity Commodity futures prices-based indices are typically considered as **total return indices**. These indices track the performance of a basket of commodity futures contracts, including both the changes in the prices of those contracts and any income generated by rolling the futures contracts forward just prior to the expiry of the existing nearby futures contract. The income generated in this case comes from the difference between the prices of the expiring futures contracts and the prices of the new contracts purchased to maintain exposure to the underlying commodities.

Therefore, commodity futures prices-based indices are total return indices because they incorporate both the capital appreciation or depreciation of the underlying commodity futures contracts and any income generated by rolling those contracts forward. They provide investors with a comprehensive measure of the overall performance of investing in commodities through futures contracts.

Indices in global markets are computed and provided by a group of intermediaries namely index providers who develop methodologies for constructing indices, select the components of the indices, and calculate the values of the indices based on the performance of their underlying assets. Many financial services firms specialize in the creation and calculation of indices. Examples of prominent index providers include MSCI, S&P Dow Jones Indices, FTSE Russell, and NASDAQ. In addition, as in India, exchanges also specialize in index design, construction and calculation.

In the world of global commodity markets, there are various commodity indices. Notable among these include:

- Bloomberg Commodity Index (BCOM)
- S&P GSCI Commodity Index
- Dow Jones – UBS Commodity Index
- Rogers International Commodity Index
- MSCI Commodity Index
- Thomson Reuters/Core Commodity CRB Index
- London Metal Exchange Index

Bloomberg Commodity Index (BCOM) is formerly known as the DJ-UBS Commodity Index, the Bloomberg Commodity Index is another major benchmark for commodity investors. It covers a broad range of commodities, including energy, metals, and agricultural products.

The S&P GSCI (formerly the Goldman Sachs Commodity Index) is a tradable index to market participants of the Chicago Mercantile Exchange. The index was originally developed in 1991, by Goldman Sachs. In 2007, its ownership transferred to Standard & Poor's, who currently own and publish it.

). The LME (London Metal Exchange) Index is a benchmark index that tracks the overall performance of the primary metals traded on the London Metal Exchange. It is used as a reference for pricing and assessing the performance of the global metals market. The LME Index includes a basket of metals such as copper, aluminum, lead, zinc, nickel, and tin, among others. Weights of these metals are derived from average global production over last 5 years and average trade liquidity over last 5 years. The index calculation methodology ensures that the current month futures prices of commodities do not have bias on index price movement. It considers futures price of different expiry months. This approach ensures that the index reflects a broader range of prices across different delivery periods, providing a more comprehensive view of the metals market.

In Commodity Markets in India, there were earlier efforts by NCDEX and MCX to create indices based on prices of either Futures market or Spot market. However, SEBI circular dated 18th June 2019 provided explicit guidelines on construction methodology of robust commodity indices based on Futures Contract prices for the purpose of trading their derivatives. Based on the above-mentioned SEBI’s circular, the following indices were created:

- Composite Indices:
    - MCX created MCX iCOMDEX which is an Index of various non-agricultural commodities. This includes various energy, industrial metal and precious metals.
- Sectoral Index:
    - NCDEX created NCDEX Guarex, an index of only Guar family of agricultural produce.
    - MCX created MCX BULLDEX, an Index of only precious metal segment.
    - MCX also calculates and published MCX METALDEX

Above indices in India are based on commodity futures prices and hence, the concept of total return index applies to these also.

Market participants including individual investors, professional traders, manufacturing and trading companies, financial institutions such as hedge funds, exchange traded funds, Trading Members and mutual funds can use commodity indices either as a reference benchmark for performance of Indian commodity markets or as the basis of investment products to provide direct exposure to Indian commodities markets.

2.3 Index Construction and its Constituents

SEBI's circular dated 18th June 2019 provided detailed guidelines relating to construction of indices on Indian Exchanges. Major relevant points on Commodity Index construction and maintenance, used by the Exchanges are as follows:

1. Once Index is constructed with certain weights of each commodity futures, those weights should remain fixed for a year unless there arises the need for rebalancing due to stoppage of trading in derivatives of a commodity due to regulatory or other reasons. Index weights and constituents must be reviewed and rebalanced at least once in a year. For example, NCDEX and MCX follow the calendar year of January to December as the one-year period for the rebalancing of their indices. In case of rebalancing if done, new proposed rebalanced index should be disclosed at least 3 months before the date of publication of indices based on newly announced weights. Index should be rebalanced in extra-ordinary situations also like ban / suspension in trading in any constituent commodity's futures. While rebalancing index every year, its value need not be reset to that index's base value but is continued from its current value. Only underlying constituents and their weights in the index will change whenever the index is rebalanced.
2. Index's constituent's commodity futures should have been in existence for at least the last 12 months and must have been traded on 90% of the trading days during these 12 months.
3. In case of composite indices on which derivatives are to traded, the minimum 80% of index weight should comprise those commodity futures whose Minimum Average Daily Trading Volume (ADTV) is at least Rs 75 crores for agri commodities and Rs 500 crores in the case of non-agri commodities. . If any commodity does not fit in this criterion, then those commodities' individual weight should not exceed 15% in the index. This is to ensure that minimum 80% of index is formed by the liquid commodities.
4. Commodity indices are price-based indices and not volume-based indices. This means that once weights of commodities are determined in Index, then, index will capture only price movements. Weight of securities will remain the same unless are reviewed to be rebalanced before the end of 12 months due to the exit of any commodities from the current basket. Equity indices are volume-based indices where weights of underlying securities also keep changing daily depending upon market capitalization of the companies. For example, weight of Reliance Industries may move to 8% or 12% because of its price movement (as its market cap is increased because of this price move). However, in commodity index, Gold weight in MCX BULLDEX will continue to be around 63% daily as its weight is kept constant at 63% during 2022. Thus, to some extent, commodity-based indices may be a proxy of inflation in certain sectors. For example, if NCDEX GUAREX goes up by 10% over one year, somewhere it indicates that inflation in guar family commodities comprising this index (i.e., guar seed and guar gum) is nearly 10% (subject to adjustments of total return such as cost of carry on futures).
5. Weights of commodities in the index are decided by the Exchanges, based on their scoring on the overall physical market production value and liquidity value. These two scores should be in a ratio of 25:75 meaning either of their weightage shall not be below 25

percent (i.e., production or the liquidity should have a minimum of 25% weight and the other about 75%). For example, MCX is currently assigning 25:75 weights to production score and liquidity score. Production Value is average value of deliverable supply in the past 5 financial years. Liquidity Value is the average trading volume of its futures in the last 12 months. Deliverable supply in a year is nothing but production plus import in the same year.

In Composite Index, as per SEBI, each Index constituent will have a minimum weight of 1% and maximum weight of 30%. There is no such cap in case of Sectoral Index. However, exchanges may fix their own limits within the above band. For example, MCX iCOMDEX has weights of 2% to 30% with the sectoral level cap of 40%.

6. Index Value is disclosed based on traded price in Constituent's near month contract. In Commodity Futures trades executed on the Exchanges, a few trades / orders are executed as paired trades (for example, Calendar spread trades, Crush margin spread). These trades provide buy and sell together on different contracts. One leg of such trade depends upon second leg of these trades. These are not a normal single side bonafide trades. Hence, for fairness in index values, trades generated via such Spread Trades are ignored for index computation. This ensures the liquid contracts are used for valuation of index.
7. Before the expiry of the current nearby futures contracts, the trading liquidity shifts over to the incoming near month contract. Accordingly, roll-over of prices included in the index to next month's Future is required to be done. This is an issue in commodity indices based on Futures price. In equity indices (like SENSEX and NIFTY), continuity of underlying stock is maintained as those are based on cash markets and not on Futures markets. In Commodity indices, roll over of component to next Commodity Futures are done carefully and gradually so that sudden blips due to roll-over or expiry do not distort index value. This roll-over to next expiry contracts in the underlying Futures may be done in 2 or 3 days for smooth transition. As of now, NCDEX does roll-over gradually to next month contract over 3 days being first 3 trading days of the month. During this transition, it is assumed that the investment in expiry contracts shifted to next month contract by 3 equal tranches i.e. 1/3 on each of 3 days. Price change on 1st day of transition in index constituent is weighted average of below:
   a. Price change in existing expiring contract: 2/3 weight
   b. Price change in next maturity contract: 1/3 weight

   For 2nd and 3rd days of transition also, it follows on the same line. MCX does roll-over in 2 days, with 50% impact of rollover on each day. Normally roll-over happens prior to start of staggered delivery period in underlying futures. Roll-over on special days like Muhurat trading day is avoided.
8. Indices are calculated online on real-time basis based on traded prices of constituent futures contract.

Therefore, commodity indices have the commodity futures as its constituents. Commodity futures prices are generally based on the spot prices of their underlying, which are determined through spot polling process or price of internationally available underlying.

Disclosure of these underlying prices or spot polling prices help in commodity futures prices to remain aligned which in turn is also an input towards working of commodity index and trading of index futures.

NCDEX's AGRIDEX and MCX's iCOMDEX COMPOSITE INDEX with its constituents' futures' weights are as below:

For the year 2021, NCDEX's AGRIDEX index had 10 commodities in the index. As the weights are average weights of two factors (production volume in Rupees and liquidity), the final commodity constituents were selected from those commodities which score reasonably high on both these parameters.

NCDEX AGRIDEX index constituents and their weightages for 2021 were as follows:

Commodity	Weight (%)
SOYBEAN	15.646428
CHANA	20.000000
RMSEED	11.808260
GUARSEED	9.384226
CASTOR	4.340772
COCUD	11.215270
REFINED SOY OIL	12.545311
GUARGUM	7.361300
JEERA	4.505904
TURMERIC	3.191528
Total	**100**

Calculation and display of AGRIDEX series has been discontinued with effect from February 1, , 2022, as trading in many of constituent commodities have been discontinued due to regulatory concerns.

NCDEX also has a sectoral index called NCDEX GUAREX. For the year 2022-23, this index has 2 commodities with below weights:
Guar Seeds: 59.35%
Guar Gum: 40.65%

MCX's iCOMDEX Composite index has 11 commodities in the index for 2022. It majorly includes Crude Oil (23% v/s 30% in 2021), Natural Gas (17% v/s 9% in 2021) Gold (19% v/s 24% in 2021) and Silver (around 13% both in 2022 and in 2021). MCX's iCOMDEX Composite Index for 2024 is as follows:

Commodity	Percentage Weight
Crude Oil	23.94
Natural Gas	16.06
Aluminium	4.53
Copper	9.54
Lead	2.00
Zinc	3.93
Gold	22.03
Silve	17.97
Total	100.00

MCX's sectoral indices (index constituents and their weights for year 2024):

On MCX, futures are traded on sectoral indices such as MCX iCOMDEX BULLION INDEX, MCX iCOMDEX BASE METAL INDEX and MCX iCOMDEX ENERGY INDEX.

Weights of constituents in MCX iCOMDEX BULLION INDEX for the year 2024 are:
Gold: 59.425496% (64.471223% for the year 2023)
Silver: 40.574504 % (35.528777% for the year 2023)

Similarly, the constituents of MCX ICOMDEX BASE METAL INDEX include industrial metals like Copper, Zinc, , Aluminum and Lead. Please note that for sectoral indices, limit of 30% per commodity is not applicable. The weightages allocated for Aluminium, Copper, Lead and Zinc are as follows. 31%, 40%, 4%, and 25 % respectively for the year 2024.

In MCX iCOMDEX ENERGY INDEX, Crude Oil and Natural Gas have around 54% and 46% weights respectively for the year 2024.

2.4 Trading in Index Futures

Indices are made up of values created through a series of price change in underlying securities/commodities or contracts. Value of these indices also change due to change in prices of the component futures contract of the basket. Anything which has uncertainty with its value changing may create opportunities of trading in derivatives like in Futures and Options. Thus, a future with commodity index as the underlying can be created with appropriate trading and settlement structure. Trading and settlement structure of Index Futures are decided by the Exchanges and are in-built in the terms of contracts. Below are the additional relevant points, which may be different from Exchange to Exchange or within the same exchange, from time to time:

1. Index Value typically starts with the base of 1000. Minimum lot size is Rs 5 lakhs on the start date i.e., 500 units is the lot size. Order / Lot size is 500 units and the tick size is Rs 0.25. Tick size can vary depending on the exchange. Order / lot size has to be such that its value shall be at least Rs 5 lakhs on the Index Futures launch date and every rebalancing date thereafter. During the period of 1 year when weights of indexed commodities are constant and not rebalanced, order / lot size (in units) remain constant though, therefore total value of order / value of lot may change depending upon the underlying futures

contract value. However, on rebalancing of the index for the next year, lot size would have to be changed if the total value of the contract falls below Rs. 5 Lakhs.

2. Trading hours of the index futures contract should match trading hours of constituent futures contract so that all arbitrage opportunity that may arise shall be better taken advantage by the traders in index and the underlying component futures contracts. However, on expiry date of index futures, it will trade only up to 5:00 pm.
3. Like Single Commodity Futures, Commodity Index Futures have Circuit Breakers or Daily Price Limit (DPL). DPL level is fixed by respective Exchanges. DPL of Index Futures is generally equal to or higher than those of commodity futures' DPL. Actual index calculation on real time basis depends upon Commodity Futures prices. Therefore, the index's DPL calculation is also restricted by the commodity level future prices' DPL. However, at Index level futures, demand and supply forces may move index futures additionally and hence, Index Futures' DPL is generally kept higher than DPLs of Commodity level futures.
4. The maximum tenor of the Index Futures Contract shall not exceed 12 months. It means contracts may be started on the launch date for 1 month, 2 months, 6 months and 12 months etc.
5. Open position limits in index futures shall be as per SEBI regulations. At client level, it is 5% of open interest in the market for the respective commodity index futures or 1,000 lots (higher of either). At the member level, it is the higher of 15% of open interest in the market in the respective commodity index futures or 10,000 lots.
6. Commodity Index futures are settled based on the Final Settlement Price. On the Expiry day of Index Futures, the Final Settlement Price (FSP) of the index is determined after 5:00 pm. It is based on index calculation on weighted average traded price of constituents' future contract during 4:00 pm to 5:00 pm. In case of no trade in any constituent, an appropriate method as in the close price calculation should be used to arrive at FSP. FSP so determined for Index Future position is used to settle the open positions. The difference between previous day's DSP of Index Futures and FSP will be used to do daily cash settlement on next day morning.
7. Risk Management framework should confirm to the Principles of CPMI–IOSCO for financial market infrastructure. Margins will include Initial Margin (based on 99% confidence VaR with holding period i.e., MPOR of at least 2 days). CPMI refers to Committee on Payments and Market Infrastructures while IOSCO refers to International Organization of Securities Commissions. These are international bodies which bring regulators together, for setting various standards for healthy functioning of securities markets including risk management and control, product design, etc.

   MPOR is Margin Period of Risk. This is a period in terms of number of days, for which settlement risk is required to be covered by collecting margins. For cash markets, it is generally trade date to pay-in / pay-out period (like in equity markets it is 1 day). For futures markets also, it should be the minimum period to cover up pay-in / pay-out on daily settlement or final settlement. It can be increased during the periods of uncertainties also.

VaR is maximum level of volatility which may happen during 99% of the time for the given period of MPOR. For example, if MPOR is 2 days, then, maximum volatility at 99% confidence level over 2 days is statistically calculated to work out VaR which is also determined as initial margin. VaR refers in general to Value at Risk, a measure or market risk at 95-99.90% confidence level, used mainly by the Exchanges and treasury departments of banks having exposure to derivatives positions.

2.5 Uses of Index Futures

An index refers to the overall market level based on the price movements in the underlying component futures contracts weighted as per the calculation methodology. For example, NSE's Nifty and BSE's Sensex represents large cap segment, NSE's Pharma index indicates sentiments in healthcare, NSE's Nifty 500 index represents overall market at the composite level of component stocks weighted as per the index calculation methodology.

Similarly, a robust commodity index represents general market levels and indicates market sentiment for underlying commodities listed in the derivative markets. For example, MCX BULLDEX represents sentiment in precious metals, including Gold and Silver. The above feature of index makes it a unique proposition for various uses detailed below:

- Hedging: Index can be used for hedging based on the general sentiment levels in the overall commodity derivatives market or a segment within the market. For example, a construction company requiring different metals may hedge by buying futures of each metal in particular or by buying index futures relating to metals in general. Similarly, in the case of estimated surplus production in agricultural commodities, due to larger sowing and a strong and well-distributed monsoon, farmers may short sell an Agri commodity index futures consisting of a basket of agricultural commodities rather than picking and choosing individual futures of multiple commodities.
- "Proxy of monsoon" derivative: An agricultural commodity futures index may be considered as a proxy for the performance of monsoon to some extent, though it may not have perfect a correlation with the monsoon. For example, buying index Futures may imply a bet on a deficit monsoon, as the prices of produce may rise due to short supply. Similarly, if a trader expects a very good monsoon, he may short sell index Futures. This approach can be used by the trader to bet and gain from that and to protect himself against goods already available with him to be sold.
- Excess Return Index: A whole-seller in multiple grains or produce may buy in spot and short sell Index Futures. Index Futures is a Futures on Index where Index Constituents are also Futures. Thus, short selling of an Index Futures may give advantage of additional pricing due to double effect of Interest element as follows:
  - Index Future price > Index Value as generally, Future = Spot + Interest
  - Underlying Commodity Future Price > Spot price due to Interest factor

The above may provide a good arbitrage opportunity. Even for a wholesaler dealer in metal or bullion, they may short sell sectoral index futures relating to metal or bullion.

Excess Return from Carrying Cost Parity and Roll-Over to Costlier Futures in an Indian Commodity Index Derivatives Contract

Let's consider the **Bullion Index** Futures, an index that tracks the performance of gold and silver futures contracts on MCX. The index futures contract is rolled over from the near-month contract to the next-month contract as the expiry date approaches.

Let us assume:

- The current near-month Bullion Index Futures contract is trading at **₹16,000**.
- The next-month Bullion Index Futures contract is trading at **₹16,100** due to contango (where the futures prices are higher than the spot prices).
- The carry cost (including storage, insurance, and financing costs for the underlying commodities in the index) is **₹50** for one month.
- The index fund manager decides to roll over the position from the near-month contract to the next-month contract just before expiry.

In such a case:

1. **Carrying Cost Parity:**
    - The carry cost parity suggests that the futures price should reflect the spot price plus the cost of carrying the underlying commodities (gold and silver) until the futures contract expiry.
    - In this case, the carry cost is ₹50, and the next-month index futures contract is trading at ₹16,100.
2. **Roll-Over yield:**
    - As the near-month contract approaches expiry, the position is rolled over from the near-month contract (₹16,000) to the next-month contract (₹16,100).
3. **Excess Return Generation:**
    - The roll-over involves selling the near-month contract at ₹16,000 and buying the next-month contract at ₹16,100.
    - The difference of ₹100 per contract represents a costlier purchase of the futures contract, which is higher than the carry cost of ₹50.
    - Over time, as the next-month contract approaches its expiry, its price converges toward the spot price or the new near-month price, which could be higher if the contango persists.

Example Calculation:

- **Initial Position:** Holding **100 contracts** of Bullion Index Futures at ₹16,000 per contract.
- **Roll-Over Transaction:** Sell 100 contracts at ₹16,000 and buy 100 contracts at ₹16,100.
- **Cost Difference:** ₹100 per contract x 100 contracts = ₹10,000.

After roll-over:

- If the next-month futures contract price converges from ₹16,100 to ₹16,150 (due to continued contango and positive market conditions), the value of the position increases by ₹50 per contract x 100 contracts = **₹5,000**.
- **Excess Return:** The gain of ₹5,000 represents an excess return on the roll-over, driven by the carrying cost parity and the strategy of rolling over into costlier futures contracts in a contango market.

This example illustrates how an index derivative, such as the Bullion Index Futures, can generate excess returns through the roll-over strategy. The index benefits from rolling over into costlier futures contracts when the futures curve is in contango, and the difference between the carry cost and the roll yield (price increase) results in an excess return. This strategy is a common feature in commodity index derivatives trading on exchanges, where the focus is on capturing positive roll yields and managing the impact of carrying costs.

- Institutional Players: Institutional players like Mutual Funds, Alternative Investment Funds (Category III), PMS are allowed to come up with schemes which may take exposures in commodity segment. With the availability of Index derivatives, these players may directly take exposure to commodities through the Commodity Index Futures (without worrying about choosing best suitable commodity/commodities and their weights). As Institutional investors are prohibited from holding physical commodities and are expected to avoid physical deliveries, an Index Derivative contract shall be a better avenue to gain from a future possible commodity price movement without worrying about delivery of physical commodities.
- Exchange Traded Fund (ETF): ETF is a packaged portfolio of securities or commodities which can be listed on exchanges, where its prices are expected to move in line with the performance of the underlying assets and the broader market, with some influence from fees and liquidity. It is a type of open-ended fund means more ETF shares can be created if there is an increase in the investor demand. For example, Gold ETF of various mutual funds, Nifty Next 50 Index ETF of IDBI Mutual Fund. An ETF can be created based on a portfolio of commodity comprised in an index and such ETF can be listed on a stock exchange. Thus, commodity ETFs can be another suitable product for traders, hedgers and institutional players. While in the case of Gold ETFs the regulation had so far allowed investing in physical gold, the current regulation has allowed investing in gold futures as well. Recently Silver ETFs are also permitted to invest in Silver derivative contracts traded on the exchange.
- Diversified Portfolio: Index is an indicator of general market and is run by the price levels of the underlying commodity derivative contracts of the portfolio weighed appropriately. Hence, any price disruption in one or two commodities' futures does not impact the traders / hedgers who use Index Futures for their strategies. For example, if a commodity faces price disruption where futures may enter into abnormally high backwardation due

to too much oversupply or due to quality issues in warehouse, then Index Value and its Future prices may not be impacted significantly due to the fact that underlying commodity portfolio is diversified. This may also happen if there is a convenience yield associated with spot market (e.g. households may prefer to hold gold in physical form rather than have position through Gold Futures or Bullion Index). Though, Gold Futures may enter into backwardation in this situation, overall index future price may not, due to the diversified representation of various commodities in the given multi-segment commodity index. However, given that various commodities or commodity segments have various demand and supply factors, price movements in one segment may be cushioned by the opposite price movement in another segment. The extent of their impact would be subject to the weightages of the individual commodity or the segment.

2.6 Trading in Index Options

SEBI vide its circular dated March 24, 2022, has specified the product design and risk management framework for options on commodity Indices. It has permitted the recognized stock exchanges having a commodity derivatives segment, to introduce commodity index options of up to 12 months expiry. Underlying to these options will be the commodity indices which conform to SEBI's guidelines on commodity index construction. Some of the key regulatory guidelines regarding commodity index options contract design and trading are given below:

1. Trading hours of Commodity Index Options will be in line with the trading hours for constituent futures of underlying index. However, index options contracts will expire at 5:00 pm on the day of expiry.
2. Index Options will be cash-settled on their expiry. The final settlement price will be the underlying index price arrived at based on the Volume Weighted Average Price of the constituents of the underlying index between 4:00 pm and 5:00 pm on the expiry day.
3. These are European-style options with a minimum of three strikes available for trading.
4. On expiry date, all ITM contracts will get exercised automatically, unless buyer of option has given a 'contrary instruction'. All OTM contracts shall expire worthless.
5. Expiry date of Options shall not coincide with the roll-over of index constituents as explained in index methodology.
6. Open position limits as fixed by SEBI in index option is double that of index futures in % as well as lots. At client level, it is 10% of open interest subject to a minimum of 2,000 lots. At member level, it is 30% of open interest subject to a minimum of 20,000 lots.
7. Like in Index Futures, the Risk Management framework should confirm the CPMI–IOSCO Principles for Financial Market Infrastructures (PFMI). Initial margin shall be adequate to cover at least 99% VaR and Margin Period of Risk (MPOR) shall be at least two days.
8. Clearing Corporation should impose various margins on open positions like Short-Option Minimum Margin (SOMM), Initial margin, Concentration margin, Additional Adhoc margin, ELM, Pre-Expiry Margins, etc. Initial Margin will be applied at the level of portfolio of the individual client. As index options are cash-settled, there will not be any rolling period/delivery period margin. Buyers of index options will pay the option premiums,

which will be credited to the seller's account. All the above margins will be will be applicable to the seller of the index options.

Challenges faced in respect of Commodity index Futures and Options in India.

- **Liquidity:** one of the major drivers of any financial instrument be it equity, commodity or currency derivative is Liquidity In India, commodity indexes are not as popularly traded as individual commodities listed like Crude oil, Natural gas, Gold, Silver, Copper, Kapas, Guarseed or its counterparts like nifty, bank nifty, fin nifty, Sensex etc. One of the major reasons being limited volatility and availability of alternative trading instruments with decent liquidity and volatility.
- **Volatility:** Since Commodity indexes are built in the form of a basket of multiple commodities, most of the times, volatility gets reduced significantly due to law of averages. This makes trading /investing in individual commodities more attractive for majority of participants who look for greater gains in short span of time especially intraday. So intraday traders seldom opt for commodity index over individual commodity contracts resulting in lower liquidity. Hedgers on the other hand may not fill in the gap as they do need counter parties for executing their hedge trades. One more reason for lower liquidity in commodity index derivatives compared to equity index derivatives is that the participant needs to focus only on 8-10 individual commodity contracts compared to 100's of equity individual scrip linked derivative contracts.
- **Limited awareness:** Traders / investors prefer contracts that are easy to understand, indexes on the other hand have the complexity linked to the basket composition, weightage, correlation, rebalancing etc. Hence attracting trader community to build market depth becomes more challenging especially when individual component commodities are thriving with decent volatility and liquidity.

Sample Questions

1. Which of the following ratios are as per the regulatory requirements for production related weights and liquidity related weights while constructing index?
   (a) Equal weight i.e., 50:50
   (b) Minimum 25% each factor
   (c) Minimum 40% each factor
   (d) Maximum 60% each factor

   Ans: (b)

2. Which of the following is correct statement?
   (a) Commodity Index Futures are based on underlying which is a continuous series based on Commodity Futures
   (b) Commodity Index Futures are based on underlying which is a Futures devolving on spot commodity
   (c) Commodity Indices are based on underlying which devolves on commodity Futures
   (d) Commodity Index is a spot market product.

   Ans: (a)

3. _____________ indicates the benefit of owning a commodity rather than buying an index futures contract on that commodity.
   (a) Yield to Maturity
   (b) Current Yield
   (c) Spot Yield
   (d) Convenience Yield

   Ans: (d)

Chapter 3: Commodity Futures

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Understand the key characteristics of commodity futures
- Know the differences between futures and forwards
- Understand cost-of-carry model and how it explains the relationship between spot and futures prices
- Understand the concepts of "convergence" and "Convenience yield"
- Be able to calculate the fair value of futures with various compounding frequencies
- Understand and illustrate the pay-off profile of long and short futures
- Know the spot price polling mechanism

3.1 Introduction to Futures

As discussed earlier, a futures contract is a legally binding agreement between the buyer and the seller, entered on an exchange, to buy or sell a specified amount of an asset at a certain time in the future for a price agreed today. The buyer enters into an obligation to buy, and the seller is obliged to sell, on the specific date. Futures are standardized in terms of size, quantity, grade and time, so that each contract traded on the exchange has the same specification.

Commodity Futures contracts are highly uniform and are well-defined. These contracts explicitly state the commodities (quantity and quality of the goods) that have to be delivered at a certain time and place (acceptable delivery date) in a certain manner (method for closing the contract) and define their permissible price fluctuations (minimum and maximum daily price changes). Therefore, a commodity futures contract is a standardized contract to buy or sell commodities for a particular price and for delivery on a certain date in the future. Futures contracts provide for the delivery of a physical commodity at the originally contracted amount on a specified future date, irrespective of the actual price that may be prevailing on the actual date of delivery.

3.2 Distinction between Forwards and Futures

While the futures contracts and forward contracts share many similarities, they are also different in many respects. Futures carry many advantages in terms of broader participation and hence a robust price discovery in the markets in a transparent manner compared to the forward contacts, key differences between these two are listed below:

S.No.	Futures	Forwards
1	Futures are always traded on a recognized exchange.	Forward contracts, by nature, are over the counter (OTC) contracts transacted between a given buyer and seller.

S.No.	Futures	Forwards
2	Futures are highly standardized by the exchange in terms of quantity, quality, place of delivery and delivery dates. The specifications of the futures contracts are made available to all.	Forwards are customized contracts suited to the specific requirements of the buyer and the seller and the specifications of which will not be made available to the public.
3	The credit risk / settlement risk on futures is eliminated because the clearing corporation of the exchange becomes the central counter-party to all the buyers and sellers and thereby guarantees settlement of trade.	Credit risk is directly related to the credit worthiness of the buyer and seller and their ability and willingness to honour the contract. Hence, counter-party credit risk exists and settlement failure is always possibility in case of forwards contracts.
4	Taking a position in the futures contract requires margin money that is determined by the regulated marketplace.	Generally, there are no margins for forwards. However, if one of the parties to the transaction is not comfortable, he may require a margin from the counter party.
5	Futures are settled daily based on the closing prices in the markets and the margins paid are adjusted against daily price movements.	Forward contracts are settled only on the maturity date.
6	Only a fraction of futures contracts leads to actual physical delivery of commodities.	Forward contracts generally result in actual physical delivery unless specified otherwise.
7	Futures contracts are traded only through an Exchange. Buyers and Sellers on the exchange remain anonymous to the transaction.	A forward contract is essentially an OTC contract involving the buyer and the seller who know each other and pre-negotiate the terms of specifications of the contract.
8	Futures contracts are highly liquid and can be closed out easily.	Markets for forward contracts are not very liquid.

3.3 Cost-of-Carry

According to the cost-of-carry model, the futures price of a commodity depends on the spot price of a commodity and the cost of carrying the commodity from the spot price of the underlying commodity on the date of entering into the given futures contract to the date of expiry of the futures contract.

The cost of storage, insurance, transportation, cost of financing, and other costs associated with carrying the commodity until a future date constitutes the cost-of-carry. This concept can be understood with the help of an illustration.

Assume that the spot price for the underlying commodity in June is Rs 8,000 and the futures price of September maturity futures contract is Rs 8,340. A buyer who needs the particular commodity in September has two choices:

(a) either he can go long (buy) the September futures contract (of Rs 8,340) and lock in the buying price at Rs 8,340; or
(b) he can buy the commodity today at the prevailing spot price of Rs 8,000 and store it until the commodity is needed in September.

By buying the commodity today (i.e. in June) at Rs 8,000, the buyer is foregoing the interest which could have been earned on these funds from June to September. Moreover, there could be costs associated with storing the commodity till it is needed for consumption in September. Therefore, the person who is buying the commodity now and holding it till September is willing to pay a lower price (i.e., Rs 8,000 only) compared to the person who is buying the September futures (at Rs 8,340). This is logical as the person who is buying the September futures is earning the interest on his funds till September and also not incurring the storage cost till September.

The additional price (Rs 340) paid by the futures buyer (Rs 8,340) compared to the spot buyer (Rs 8,000) is known as "cost of carry". The main components associated with cost of carry include finance cost (interest), storage cost and insurance.

The cost-of-carry model can be expressed as:

F = S + C

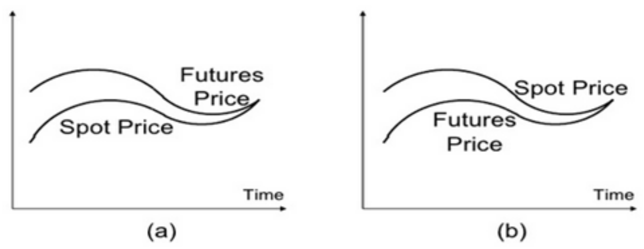
where:
F: Futures Price
S: Spot Price
C: Cost of carry

For example, if the cost of 10 grams of gold in the spot market is Rs 50,000/- and the cost-of-carry is 12% per annum, the fair value of a 4-month futures contract will be:
F = S + C
F = 50,000 + {50,000 x 12% x (4/12)}
F = 50,000 + 2,000
F = Rs 52,000

3.4 Convergence of Spot and Futures Prices

As the cost of carry determines the differential between spot and futures price (Future price less Spot price) and is associated with costs involved in holding the commodity till the date of delivery, it follows that the cost of carry diminishes with each passing day and the differential must narrow and on the date of delivery, the cost of carry reduces to zero and the spot and futures price converge. This is known as convergence.

Convergence of Futures Price and Spot Price



As we have seen in the example above, the futures are normally traded at a price higher than the spot price due to the cost-of-carry. This gap keeps reducing as time progresses, and finally, both these prices merge at the maturity of the futures contract. This is depicted in the first diagram (a) above and is called "Contango." If the futures price is higher than the spot price of an underlying asset, market participants may expect the spot price to go up in the near future. The depreciating local currency also increases the expected price of commodity that are globally traded or imported. In that case, Futures prices may increase in expectation while spot price may also increase thereafter when the domestic currency actually depreciates. This expectedly rising market is called the "Contango market". Similarly, if futures price is 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". The Second diagram (b) indicates the backwardation of Future price against the Spot price, which later on converges with the spot price on the expiry date. This backwardation, in spite of cost-of-carry, arises due to seasonality factors in commodities, especially in agricultural products. In the case of non-agricultural products, the expectations of gloomy future demand due to economic conditions and supply glut do not adjust to demand at a short period in time. For e.g. during sowing season, spot supplies remain less and it increases during the harvesting month typically after about 3-4 months from sowing. Hence, spot prices are expected to be lower during harvesting months (i.e., 3 months later) than the present spot price (i.e., while sowing). Hence, to reflect the same, 3 months' expiring Futures will be priced lower than the current spot price as the market is expected to have more supplies as the harvest starts. Further, expectation of an appreciation in the local currency also reduces the futures price of commodities which are globally traded or imported. In that case, Futures prices may decline first in such expectation and the spot price may also decline when the domestic currency actually appreciates.

3.5 Fair Value of a Futures Contract

We can calculate the theoretical futures price that will be fair to both the buyer and seller of the contract, if the spot price and the cost to carry are known.

Fair Value of the Futures Contract = Spot Price + Cost of Carry

If the difference between the spot price and futures price is less than the cost of carry, the buyer would be better off buying the commodity in the futures market rather than buying the commodity in the spot market and holding it. Conversely, if the difference is greater than the cost of carry, the buyer would be better off buying the asset in the spot market and holding it than buying the futures contract. However, when the difference between the spot and futures prices exactly matches the cost of carry then the buyer would be indifferent as to whether to buy from the spot market or from the futures market. Convenience yield will play a major role here which we will discuss in the next section.

Therefore, it may be seen that the futures price is based on the relevant spot market price that is adjusted for the 'cost of carry' associated with the specific commodity.

Illustration:

Spot price: Rs 2,500

Expected Holding Time: 90 days

Interest rate: 6% per annum

Storage cost: 1% per annum

Calculating the cost of carry:

Finance cost = 2500*0.06*(90/365) = Rs 36.98

Storage = 2500*0.01*(90/365) = Rs 6.16

Total Cost of carry = finance cost plus storage cost = 36.98 + 6.16 = Rs 43.14

Fair Value = 2500 + 43.14= Rs 2,543.14

The fair value of a futures contract is the theoretical value of a futures contract, given the current spot price, cost of financing, and the time till the expiry of the contract. Different versions of the "compounding formula" are used to calculate this theoretical futures price based on the compounding frequency applicable to a specific situation. Three such scenarios are explained below: (i) annual compounding, (ii) monthly compounding and (iii) daily compounding (continuous compounding).

(i) In case of annual compounding, fair value of a futures contract can be calculated as:

$$\boxed{F = S * (1+r)^n}$$

where:

S: Spot price

F: Futures price,

r: cost of financing in percentage (annually compounded)

n: time till the expiry of the contract (number of years)

(ii) If the value of "r" is compounded "m" times in a year, the formula to calculate the fair value will be:

$$\boxed{F = S * (1 + r / m) \wedge (m * n)}$$

where:

m: number of times compounded in a year

Example: The cost of 10 grams of gold in the spot market is Rs 50,000 and the cost of financing is 12 percent per annum, compounded monthly (i.e., m = 12). Fair value of a 4-month futures contract will be:

F = S * (1+ r / m) ^ (m*n)

F = 50,000 x (1+ 0.12 / 12) ^ (12 x 4/12)

F = 50,000 x (1.01) ^4

F = 50,000 x 1.040604

F = Rs 52,030

Similarly, for semi-annual compounding, m is taken as 2 and for quarterly compounding, m is taken as 4.

(iii) The fair value of a futures price with continuous/daily compounding can be expressed as:

$$\boxed{F = S * e \wedge (r * n)}$$

where:

F: Futures price

S: Spot price

r: Cost of financing in percentage

n: time till the expiry of the contract (number of years)

e = 2.71828 = A Constant number used in continuous compounding in mathematics.

The above formula is used to calculate the futures price of a commodity when no storage costs are involved. The futures price is equal to the sum of money, "S", invested at a rate of interest "r" for a period of "n" years.

For example, if the cost of 10 grams of gold in the spot market is Rs 50,000 and the cost of financing is 12% per annum (continuously compounded), the fair value of a 4-month futures contract will be:

$$\boxed{F = S * e \wedge (r * n)}$$

$F = 50{,}000 \times e^{(0.12 \times 4/12)}$

$F = 50{,}000 \times e^{(0.04)}$

$F = 50{,}000 \times 1.04081$

F = Rs 52,040

3.6 Convenience Yield

Convenience yield indicates the benefit of owning a commodity rather than buying a futures contract on that commodity. Convenience yield can be generated because of the benefit from ownership of a physical asset. This is one of the differentiating features between financial and commodity derivatives.

Financial derivatives on bonds and equities are used for investment and hedging purposes. Holding the underlying bond or stock does not add any additional value compared to holding a futures contract on the same bond or stock. In contrast, commodities, especially agricultural commodities, have a convenience return because they form part of a production process that require ready accessibility to commodities at all the times to continue to operate at economical costs.

Processors of agricultural commodities might face losses, if they do not have enough inventory at all times for uninterrupted production. Therefore, a commodity's convenience yield is the benefit in rupee term that a user realizes for carrying sufficient stock of physical goods over and above his immediate needs. Sometimes, due to supply bottlenecks in the market, the holding of an underlying commodity may become more profitable than owning the futures contract, due to its relative scarcity versus huge demand. This applies to agricultural produce supply during the lean season as the supplies tend to tighten vis-à-vis demand. An oil refiner may enjoy a convenience yield on crude oil inventories and without it, production will be interrupted and the refiner will not be able to continue operating the refinery. This also includes a situation where a manufacturer is more comfortable to buy in the spot, with a particular supplier only (due to other service-related reasons), which may further increase the convenience yield of the commodity (raw material) to the manufacturer. Due to convenience yield, the difference between Futures and Spot reduces, as the manufacturers are open to having a position by outright purchases (directly from spot markets) due to ease of possession, which helps in running their production cycle smoothly. Convenience yield also can be because of a lack of awareness about Futures markets, which might lead to buying in the spot market, even though the funds for the entire position quantity get blocked in the outright purchase (spot markets).

Example of convenience yield in guar seed agriculture commodities in India

Let's explore an example of convenience yield in the context of guar seed, an important agricultural commodity in India commonly used in industries such as food processing, textile manufacturing, and oil drilling.

Suppose you're a guar seed farmer in India, and you've just harvested your crop. Similar to the wheat example, you have two options: sell your guar seeds immediately in the spot market or store them for future sale. Let's assume the current spot price of guar seeds is Rs. 6000 per quintal.

Factors contributing to the convenience yield in this scenario:

Seasonal Fluctuations and Demand Dynamics: Guar seed production is seasonal, with harvests typically occurring during specific times of the year. Market demand for guar seeds can vary based on factors such as industrial demand for guar gum (a derivative of guar seeds) and oil drilling activities (guar gum is used in hydraulic fracturing). During periods of high demand or tight supply, prices may rise, providing an incentive for farmers to store their crop and sell it later at a higher price.

Storage Costs and Risks: Storing guar seeds involves costs such as warehousing fees, transportation, and the risk of spoilage or damage due to pests, humidity, or temperature fluctuations. These costs and risks must be considered when deciding whether to store guar seeds. Let's say the total storage costs and risks amount to Rs. 200 per quintal over a six-month period.

Government Policies and Export Demand: Government policies related to guar seed cultivation, export regulations, and incentives for guar gum exports can influence market dynamics and the convenience yield. Additionally, export demand for guar gum, particularly from industries like oil drilling, can impact the convenience yield by affecting overall demand and prices.

Market Speculation and Futures Trading: Speculation in the futures market and the presence of derivatives such as guar seed futures contracts can also impact the convenience yield. Farmers may anticipate future price movements based on market speculation and adjust their storage decisions accordingly to maximize profits.ex

Suppose, after considering these factors, the convenience yield for storing guar seeds over a six-month period is estimated to be Rs. 300 per quintal.

In this scenario, if the convenience yield exceeds the storage costs and risks, it would be economically beneficial for the farmer to store the guar seeds and sell them later when prices are expected to rise, thereby capitalizing on the convenience yield and maximizing returns

Factoring in the above information, the futures price equation we mentioned earlier can be updated as below:

$F = S + C - Y$

where:
F: Futures Price
S: Spot Price
C: Cost of carry

Y: Convenience Yield

3.7 Commodity Futures and Commodity Forwards

As discussed earlier, a futures contract is a standardized contract, traded on the regulated platform namely, an exchange, to buy or sell a certain underlying asset or an instrument at a certain date in the future, at a specified price. Under a commodity futures contract, the seller agrees to deliver to the buyer:

- a specified quantity of a commodity:
- of a specified quality
- on a specified date
- at a specific price
- at the specified place.

Futures contracts on currency rates (currency futures), interest rates (bond futures) and equity prices (stock or equity index futures) are known as financial futures, as distinct from commodity futures (futures on crude oil, metals, agriculture products, etc.). Futures are bought and sold only through the authorized members of the exchange. A distinct feature of futures is that the contracts are marked to market daily, and the members must pay/receive margin equivalent to that day's loss/gain, if any. This way, the possibility of default on the settlement date is significantly reduced. Also, the exchange guarantees all trades routed through its members, even in case of default, insolvency, or non-performance of any client or member.

Buying futures is often referred to as "going long" or 'long' or establishing a 'long position'. Selling futures is often called "going short, "or 'shorting' or establishing a 'short position'. The exchange-traded commodity futures offer distinct advantages.

Advantages of commodity futures over commodity forwards:

- Efficient price discovery as the market brings together buyers and sellers of divergent needs
- Elimination of counterparty credit risk as exchanges interpose as central counter-party
- Access to all types of market participants, big or small
- Standardized products: Standardization increases the clarity about all factors that decide the price of a commodity and leaves it to the forces of supply and demand and thereby easing participation resulting in increased liquidity than the forward markets
- Being scientifically margined and margins representing a fraction of the commodity's total value, it increases the participants' cost-efficiency.
- Transparent trading platform Induces confidence among participants.

3.8 Pay-off Profile for Futures Contracts

Pay-off refers to profit or loss in a trade. A pay-off is referred to as "positive" if the trade results in a profit and it is referred to as "negative" if it results in a loss. A pay-off diagram represents profit/loss in the form of a graph.

The pay-off of a futures contract on maturity depends on the spot price of the underlying goods at expiry and the price at which the contract was initially traded. The outcome for a buyer or seller of a futures contract, when it reaches the expiry date, is driven by the pricing trends of the underlying commodity in the spot markets at that time.

The commodities futures contracts have a linear payoff. The pay-off chart implies that if the price of the underlying commodity rises, the futures' buyer makes profit and if the price of the underlying commodity falls, the futures' buyer makes losses and the seller on the contrary in both the cases losing and profiting, respectively.

There are two positions that could be taken in a futures contract – either a 'long position' or a 'short position'. These are discussed below.

3.8.1 Long position

When one enters into a contract to buy the goods at the futures price (F), then it means taking a long position. Example: A person has purchased a futures contract at Rs 100. If the market price of an underlying commodity (hereinafter referred as spot price) on the maturity of the futures contract is Rs 100, there is no profit or loss. However, if the spot price on maturity of the futures contract is Rs 110, the trade results in a profit of Rs 10 because the buyer of the futures contract gets to buy at lower price (Rs 100) compared to the spot price (i.e., Rs 110). Conversely, if the spot price on maturity of the futures contract is Rs 90, the trade results in a loss of Rs 10 to the buyer. The formulae for calculating the long pay-off is as follows:

Long Pay-off = ST – F

where:

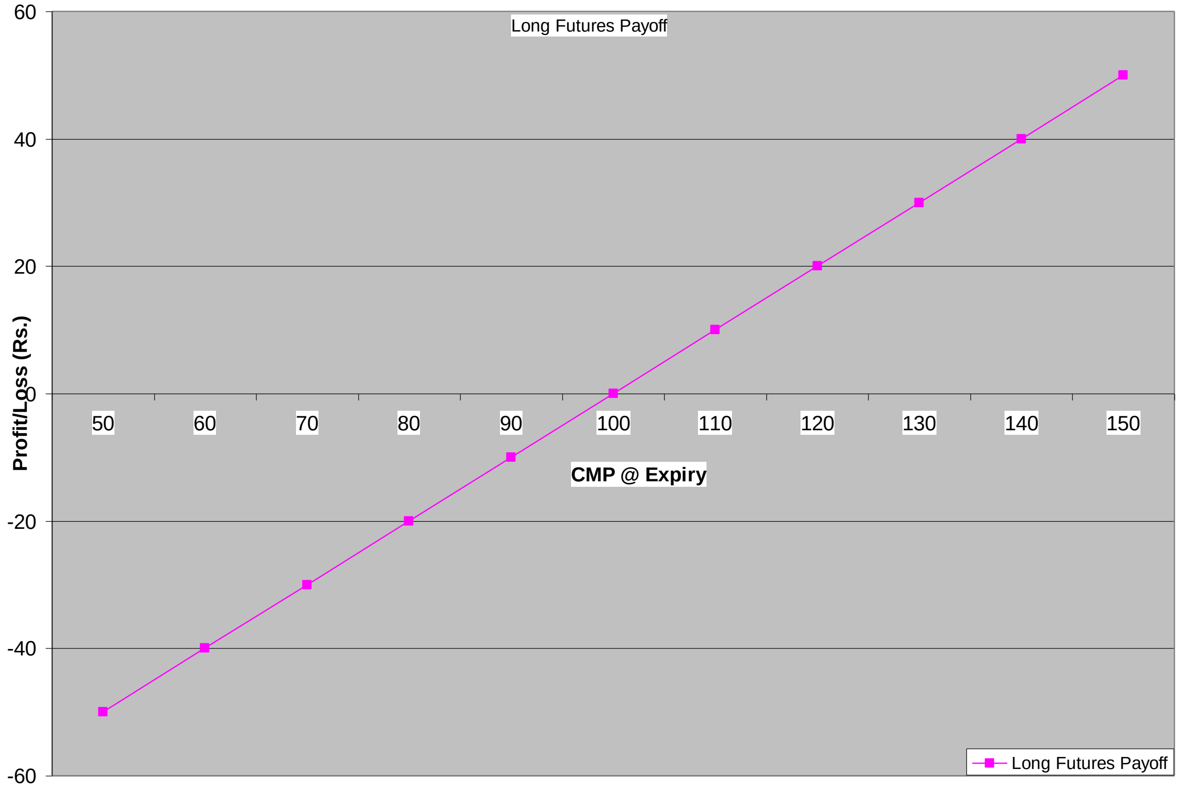
ST: spot price of the asset at the expiry of the contract (i.e. the closing price on the expiry date of the futures contract)

F: futures contracted price (i.e., Futures buy price)

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

Long Futures at 100	
Spot 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



As can be seen from above, the buyer of a futures contract commits to buy at the specified futures price and will make a profit as long as the underlying is trading above the price he had entered in to the contract on expiry of the futures contract. The higher the price of the underlying at expiry compared to the price at which he had bought, the higher the profit made by the buyer of the futures contract.

Example: A trader in the commodity futures market expects gold price to rise in the month of June. On the basis of his view about the gold price movement, he buys one gold futures contract (of 1 kg each) at the price of Rs 50,000 per 10 gm i.e. for Rs.50,00,000 per 1 kg in April. In May, gold June futures actually moves as per his expectation and increases to Rs 55,000 per 10 gm. Now he can square off the position at Rs 55,00,000 per 1 kg. This results in a profit of Rs 5,000 per 10 gm i.e., Rs 5,00,000 per 1 kg will be his total profit on this contract.

3.8.2 Short Position

One may enter into a contract to sell the goods at the futures price (F) on a future date, without any existing position in a comparable long position in Futures market. This is called taking a 'short position'. In Commodities, the open short position in Futures on expiry needs to be delivered by buying from spot market or from one's existing stock ensuring that the quantity and the quality meets the futures contract specifications. If the short seller does not deliver, it will end up being non-compliant to his contractual obligations leading to the delivery default which will result an obligation to pay up the delivery default penalty.

Example: A person sells (shorts) a futures contract at Rs 100. If the spot price is Rs 100 on maturity, there is no profit or no loss. However, if the spot price is Rs 110 on maturity of the futures contract, the trade results in a loss of Rs 10. Conversely, if the spot price is Rs 90 on maturity of the futures contract, the trade results in a profit of Rs 10 (as he can buy at Rs 90 in the spot market on the expiry day and immediately deliver it to the futures buyer and receive Rs 100 from the futures buyer thereby making a profit of Rs 10). The formula for calculating the short pay-off is as follows:

Short Pay-off = F - ST

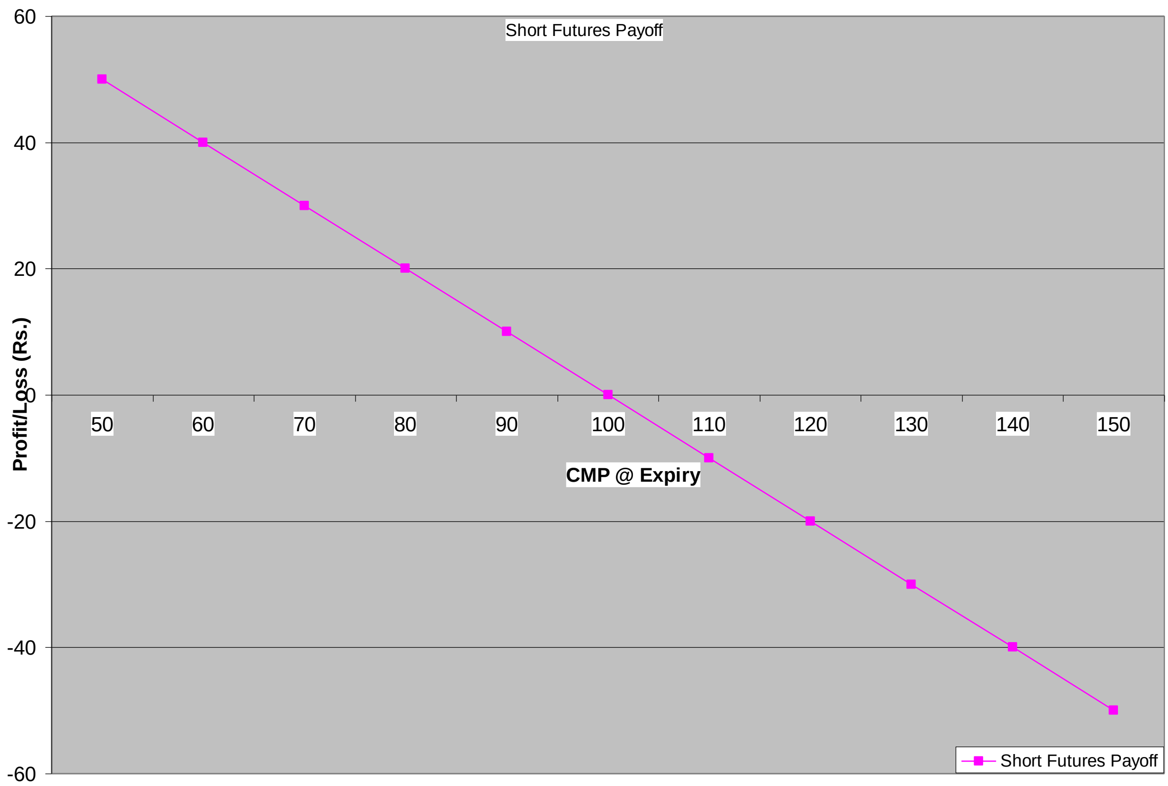
where:

ST: spot price of the asset at the expiry of the contract (i.e. the closing price on the expiry date of the futures contract)

F: futures contracted price (i.e., Futures sell price)

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	
Spot 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 the futures contract prices fall below the prices in which it was sold. If prices fall to Rs 60 at expiry, the person who has shorted at Rs 100 will buy from the market at Rs 60 on expiry and sell at 100, thereby making a profit of Rs 40. The lower the price of the underlying (i.e., the spot price) at expiry, the higher the profit made by the seller of the futures contract.

Short position in futures means selling a futures contract in anticipation of decrease in the price before the expiry of the contract. If the price of the futures contract decreases before the expiry of the contract, then the trader makes a profit by squaring off the position and if the price of the futures contract increases, then the trader incurs a loss. Speculators who short futures contracts are those who expect the prices of the underlying commodity to fall and therefore sell futures contracts.

3.9 Tick Size and its impact

Tick size is the minimum price movement in terms of change in price or change in quotation for order. It is in Rupees\Paise terms for a unit value that is commonly referred to in the physical markets. For example, Gold prices are often quoted at Rs. Per 10 grams or Rs. Per gram and Cotton in Rs per bale, and so on and so forth. If, as per the contract specification, the price of a commodity is allowed to move from Rs.100 to Rs.100.10 or to Rs.99.90 (but not to prices in between like Rs.100.05, or Rs.100.03, or Rs.99.95, or Rs.99.92, etc.), it means tick size for this commodity is fixed as Rs.0.10 (i.e., 10 Paisa). Quoted prices of the futures contracts shall be in multiples of 10 paise ie. Rs. 0.10 only.

The tick size for commodity derivatives differs from one commodity to another. The impact of change in price by one tick plays a significant role in entry and exit decisions for market participants. Hence it is important to understand the profit and loss arising out of one tick change client's portfolio which is called as "tick value".

Tick value shows the worth of one tick movement on the contract value. The calculation of tick value is dependent on three parameters: Lot size, quotation factor and tick size. The formula for calculating tick value is as follows:

Tick Value = (Lot size / Quotation factor) * Tick size

Example 1:
The quotation factor for Gold = Rupees per 10 grams
The lot size for regular gold contract = 1 KG (1000 grams)
Tick size = Rupee 1 per 10 grams
Tick value = (1000 / 10) * 1 = Rs 100

Example 2:
The quotation for Zinc = Rupees per Kilogram
Lot size = 5 MT (5000 kilograms)
Tick size = Rs 0.05
Tick value = (5000 / 1) * 0.05 = Rs 250

Tick size is significant for Algo traders who trade in tick by tick movement of the commodity prices. For the Hedgers / Speculators as well, tick size empowers them to accurately hedge or profit from their position in the futures contract. In most cases, higher tick size benefits the algo traders or the speculators while lower tick size benefits hedgers.

3.10 Spot Price Polling and Final Settlement Price of Futures

The exchanges need spot price information on a daily basis to be used as the basis for the commodity futures contracts traded on their platforms. These prices are disseminated by the exchanges to help the participants anchor their future price expectations and are also used to determine the Final Settlement Price (FSP). The FSP is very important in case of cash settlement of any commodity futures or case of delivery default by a short seller. Spot price dissemination r helps the players regularly understand the extent of contango or backwardation built in future prices and make trading decisions accordingly. The collected spot prices also help the exchange/clearing corporation of to have an effective surveillance over the activities of the participants.

Through this polling mechanism, the commodity exchanges collect spot prices on various underlying commodities traded on its platform. Polling is the process of compiling price information from a cross-section of market players from different centers across the country to arrive at the spot prices in the commodity market for dissemination.

Spot prices are collected from the empanelled polling participants comprising traders and users of the particular commodity. The commodity exchanges regularly review the panel of polling participants with a view to strengthening the polling process i.e., either by adding active participants and/or by removing inactive participants.

As per the regulatory guidelines, all the exchanges need to disclose following information regarding spot price polling of the commodities:

- Details of the contract
- Mechanism of spot prices polling
- How spot prices are arrived at
- Whether these prices include or exclude taxes and other levies
- Whether the spot price polling has been outsourced to any agency and if so, the details thereof
- Criteria for selection of these participants
- Any other information that exchange may consider useful for improving transparency in arriving at spot prices

Spot polling prices are disseminated to participants regularly so that futures and options price discoveries are better and aligned with spot price. For example, on the NCDEX platform, details of prices given by different participants for each commodity are disclosed twice daily: Once at around 1:30 pm and the second time at around 4:00-5:00 pm.

As there are various participants in spot markets across mandis for agricultural products, the polling procedure may lead to multiple price quotations for the same product by various participants. These are ex-warehouse prices inclusive of Mandi Cess but exclusive of GST. From among the various prices polled from the panel of market players, Boot-strapping methodology is used to remove extreme prices polled. Median price is arrived at and outlier prices are ignored for further bootstrapping procedure. Thereafter, an algorithm is run across balance data of polled prices which arrives at final polled price based on the below broad principles:

- The final polled price figure should have the least standard deviation with the set of polled prices. This is based on principle of least error or similar to least square method of regression.
- Standard deviation is worked of polled data vis-à-vis a random price selection. The same procedure is repeated after selection of another random price.
- The random price whose standard deviation is higher is ignored and another random price is considered to arrive at the standard deviation of the randomized prices.
- This process is repeated till a final number is arrived, from a set of polled prices which has the least standard deviation vis-à-vis the polled data. This is considered to be the spot polling price at that time on that trading day.

Spot polling price is declared on a daily basis by the Exchanges on their websites and are broadcasted on the trading screen. This price may be almost similar to the arithmetic Average, Median, or Mode if the polled data are highly polarized with a low level of deviation between highest and lowest (i.e., the polled prices being in a tight range).

Polled spot prices are also used to arrive at the Final Settlement Prices (FSP) of the derivative contracts which includes futures and option on goods. FSP is derived as simple average of polled prices of last 3 days of the expiry of contract including that of the expiry day. For example, if a futures contract or an option on goods contract is expiring on "E" day, then it will be simple average of polled prices of E, E-1 and E-2 days.

There are SEBI and Exchange circulars to deal with the situations when there is no spot trading or no spot polling on Expiry Day "E", or "E-1" or "E-2" due to non-functional markets. One methodology prescribed by SEBI is to take average of last 3 daily polled prices, or 2 daily polled prices or 1-day polled price of whichever date is available going back upto "E-3" day, provided polled price on the expiry day "E" is available.

If polled price on "E" day is not available, then Exchanges have their own circulars to deal with such situation. For example, in NCDEX polled price on "E" day for alternate basis-center will be considered. This is subject to certain conditions so as to arrive at fair FSP on main basis center on "E" day. If these conditions are not fulfilled, then, another alternate methodology will be used. This included extrapolation of Future traded prices to arrive at Spot price on "E" day on the basis of trend of Futures-Spot movement in last 30 days. If this methodology is also not workable, then, Futures prices itself can be used for last 3 days after removing outliers to arrive at a fair spot price that can be used for settlement of the derivative contract. This is again subject to certain conditions. In case none of these alternates can be used, then, last available polled spot price will be considered as FSP. For instance, if spot markets are closed for a week till 20th October (due to Diwali), while Futures expiry is of 20th October, then last available polled price may be as of 13th October, which may itself be used as FSP on 20th October, as last option.

Sample Questions

1. If the cost of 10 grams of gold in the spot market is Rs 50,000 and the cost-of-carry is 12% per annum, the theoretical fair value of a 3-month futures contract would be _____ (approximately).
   a) Rs 50,000
   b) Rs 51,500
   c) Rs 52,000
   d) Rs 56,000

Ans: (b)

2. With each passing day, the cost of carry of a futures contract __________.
   a) Decreases
   b) Increases
   c) Increases initially and then decrease
   d) Decreases initially and then increase

Ans: (a)

3. If futures price is higher than spot price of an underlying asset, it is called as ____________.
   a) Convergence
   b) Divergence
   c) Contango
   d) Backwardation

   Ans: (c)

4. Calculate the Total Cost of Carry, if the Spot price of a commodity is Rs 28000, Time period is 90 days, Interest rate is 7% and Storage cost is 2%.
   a) Rs 621.37
   b) Rs 483.29
   c) Rs 138.08
   d) Rs 1,400.00

   Ans: (a)

5. _____________ indicates the benefit of owning a commodity rather than buying a futures contract on that commodity.
   a) Yield to Maturity
   b) Current Yield
   c) Spot Yield
   d) Convenience Yield

   Ans: (d)

Chapter 4: Commodity Options

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Understand the key characteristics of commodity options and the choices it provides to the buyer of the option
- Know the key terminology of options such as strike price, spot price, option premium, lot size, intrinsic value, time value, etc.
- Understand the pay-off profiles of call and put options (for long and short positions)
- Understand the key determinants of option price and discuss the option Greeks
- Understand the concept of “moneyness” of an option (ITM, ATM, CTM and OTM options)
- Know About options on futures and Options on Goods.
- How Options on Goods differ from Options on Futures

4.1 Introduction to Options

As mentioned earlier, options contracts give the right to the buyer but not the obligation to exercise. This provides additional flexibility in managing risk. Options contracts can be either standardized (exchange-traded options) or customized (OTC options). There are two types of options contracts: Call options and Put options. Call option contracts give the buyer the right to buy a specified quantity of a commodity or the underlying financial asset at a particular price (the exercise price/strike price) on or before a certain future date (the expiration date). Put option contracts give the buyer the right to sell a specified quantity of an asset at a particular price on or before a certain future date.

In an options transaction, the purchaser pays the seller (the writer of the option), an amount for the right to buy (in case of “call” options) or for the right to sell (in case of “put” options). This amount is known as the “Option Premium”.

Premium is the cost of the option paid by the buyer to the seller and is non-refundable. Since the buyer is paying the premium to the seller, he has the right to exercise the option when it is favourable to him but with no obligation to do so. In case of both call and put options, the buyer has the right but no obligation whereas the seller, being the receiver of the premium, has no right but an obligation to the buyer.

Party	Long (Buy)	Counterparty	Short (Sell)
Call Buyer	Right to Buy	Call Seller	Obligation to Sell to call buyer
Put Buyer	Right to Sell	Put Seller	Obligation to Buy from put buyer

An option buyer has the following choices:
(1) Exercise the option on the expiration date
(2) Sell the option in the Exchange before the expiration date
(3) Let the option expire without being exercised on the expiration date

4.2 Option Terminology

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 option seller of this right called 'option premium' .

Writer of an option: The writer of an option (also referred as the seller 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 word 'American' refers to a style of settlement of the options contract in which the options buyer has the option to exercise his right to call for delivery or take the delivery on or before the expiry of the options contract. 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. As per current regulatory norms, only European style commodity options are permitted to be launched in the case of 'Options on Futures' and in the case of Options on Goods traded in the Indian derivatives exchanges. Within these commodity 'options on futures', on exercise, a few commodity options devolve into the underlying futures contracts. In the case of 'Options on Goods', they result in direct delivery of underlying commodity itself, hence those are "Options on Goods". In case of devolvement into Futures, all such devolved futures positions are considered to be devolved at the strike price of exercised options, on the expiry date of options, during the end of the day processing. In the case of Options on Goods, the options devolve into direct delivery obligations where the delivery positions are created and considered to be deliverable at the strike price of exercised options on the expiry date. These are explained in detail in later sections.

Option price/Premium: It is the price which the option buyer pays to the option seller.

Lot size: Lot size is the number of units of underlying asset in an options contract.

Expiration Day: The day on which the options contract ceases to exist. It is the last trading date/day of the contract.

Spot price: It is the price at which the underlying asset trades in the spot market.

Strike price or Exercise price: Strike price is the price for which the underlying security may be purchased (in case of call) or sold (in case of put) by the option holder, by exercising the option.

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.

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 the strike price. And a put option is said to be OTM when spot price is higher than the strike price.

Close to the money (CTM) option: CTM options are those options whose strike prices are very close to the spot price usually within 1-3 ticks from the at the money (ATM) contracts. Therefore, CTM options include the ATM option and a few ITMs and OTMs which are in close proximity to the ATM option (i.e., their strike prices are very close to that of the ATM option). In the exchange traded commodity derivatives segment in India, the concept of CTM is applicable only for "Options on Goods" contracts (it is not applicable for "Options on Futures" contracts).

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 the 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 cannot be negative.

Thus, for call option which is in-the-money, intrinsic value is the excess of spot price (S) over the strike/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: Open interest is the total number of (put/call) option contracts outstanding for an underlying asset.

4.3 Pay off Profiles of Options Contracts

Having gone through the basic terminology used in the options market, let us get to the payoff 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 (in case of call) / selling (in case of put) the underlying asset in the contract. When you are long on an 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 or the writer 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 (if the call option is exercised) / buying (if the put option is exercised) the underlying asset in the contract. When you are short (i.e., the writer of) an option contract:

- You have an obligation to the buyer as you have received the option premium.
- Your maximum profit (as the seller/writer of the option) is the premium received.
- Your potential loss can be very high.

The following example illustrates how a buyer/seller of a call and put option stands to gain or lose on the date of expiry if there is a divergence of strike price and market price on the date of expiry**.**

Example:

Style: European Option

Contract: Commodity - Gold

Strike price: Rs 48,000 per 10 grams

Premium paid: Rs 500 per 10 grams

Expiry date: 5th October

Settlement price on expiry: Rs 50,000 per 10 grams

Impact on:	**Buyer of a call option**	**Seller of a call option**	**Buyer of a put option**	**Seller of a put option**
Premium	Premium is paid by the buyer up front and is non-refundable.	Premium is received by the seller up front and is non-refundable.	Premium is paid by the buyer up front and is non-refundable.	Premium is received by the seller up front and is non-refundable

Impact on:	Buyer of a call option	Seller of a call option	Buyer of a put option	Seller of a put option
Exercising the option	In the above case, option will be exercised, as strike price is Rs 48,000 and market price on last day of option i.e., settlement price is Rs 50,000.	In the above case, option will be exercised, as strike price is Rs 48,000 and market price on the last day of option i.e., settlement price is Rs 50,000. (The buyer will exercise the option and the seller is under obligation to fulfill the contract)	In the above case, option will not be exercised, as strike price is Rs 48,000 and the settlement price is Rs 50,000. (The buyer of the option has no incentive to exercise this option as he may sell in the market at Rs 50,000 instead of selling at Rs 48,000 by exercising this option)	In the above case, option will not be exercised, as strike price is Rs 48,000 and the settlement price is Rs 50,000. (The buyer of the option has no incentive to exercise this option, so it does not create any obligation on seller of put also)
Gain / Loss under cash settlement	In the above case, option buyer's gain is Rs 2,000 per 10 gram (minus Rs 500 premium Paid) i.e., net profit of Rs 1,500 per 10 grams on this contract. Hence, on expiry buyer receives Rs 2,000, if cash settlement is applicable.	In the above case, the option seller's loss is Rs 2,000 per 10 grams (minus Rs 500 that he received as premium from the buyer) i.e., net loss of Rs 1,500 on this contract. On expiry, seller pays Rs 2,000, if cash settlement is applicable. Please note that the option buyer's gain is equal to option seller's loss and vice-versa.	Loss for the buyer is Rs 500 (i.e., the premium paid by him) In the above case, since the buyer has not exercised his option, his loss is equal to the premium that he paid to the seller upfront i.e., net loss of Rs 500 on this contract. No payment or receipt on expiry of contract.	Gain for the seller is Rs 500 (i.e., the premium received). In the above case, since the buyer has not exercised his option, the seller's profit is equal to the premium that he received from the buyer upfront i.e., net profit of Rs 500 on this contract. No payment obligation on expiry of this contract. Again, note that the option buyer's gain is equal to option seller's loss and vice-versa.

Impact on:	Buyer of a call option	Seller of a call option	Buyer of a put option	Seller of a put option
Physical delivery and gross settlement obligations	Call buyer will pay the full strike price at Rs 48,000 and receive delivery of physical 10 gms gold. Suppose he decides to sell the same gold immediately, he can do so at the rate of Rs 50,000 to earn profit of Rs 2,000 per 10 gms, assuming market price continues to be the same till he receives delivery.	Call seller has to sell and deliver his physical gold at Rs 48,000 to the call buyer, even though the ongoing market price is Rs 50,000 per 10 gms. If he does not have physical gold with him, he has to buy it from the market at Rs 50,000 and sell it to the call buyer at Rs 48,000. Thus, it results in a loss of Rs 2,000 per 10 gms.	As Put buyer does not exercise his option, there is no transaction / payment / delivery at the expiry of option.	As Put buyer does not exercise his option, there is no transaction / payment / delivery obligations at the expiry of option.

The risk and reward in option contracts is summarized through the table below:

Position	Maximum Risk	Maximum Reward
Long Call	Limited to Premium	Unlimited
Short Call	Unlimited	Limited to Premium
Long Put	Limited to Premium	Strike price less premium
Short Put	Strike price less premium	Limited to premium

Option strategies result in nonlinear pay offs (that is not a straight line, but either curve or a line with a sharp bend) because of the optionality of options, which is the right without obligation for the buyer. The buyer of option has limited downside and unlimited upside, while seller has limited upside and unlimited downside. This is unlike returns from a futures contract or returns from a position in spot market which are linear and are same for both buyer and seller.

Given below is an illustrative payoff diagram of a long futures contract (Figure 1) and a long call option (Figure 2). Please note that in future contract, change in returns is similar for the same increase and decrease in price. In other words, the return would increase by say Rs 10 for every Rs 8 increase in spot price and would also decrease by Rs 10 for every Rs 8 decrease in spot price. However, in options, say a long call option, the change in return when spot price decreases is not same as when spot price increases. As shown in Figure 2, the returns are negative and remain constant irrespective of amount of decrease in spot price while returns keep increasing with increasing spot price. Similarly, for a long-put option, the returns are negative and remain constant irrespective of amount of increase in spot price while returns keep increasing with decreasing spot price. Please refer to figure 3 above for a payoff chart of long put and refer to figure 4 for payoff chart of short futures.

Figure 1: Pay off of long futures contract

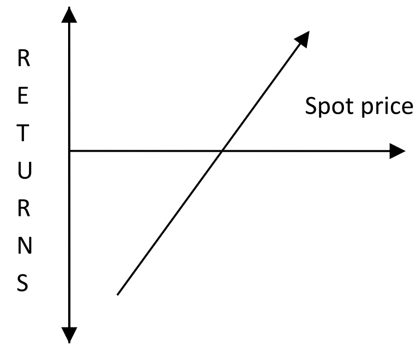


Figure 2: Payoff of long call

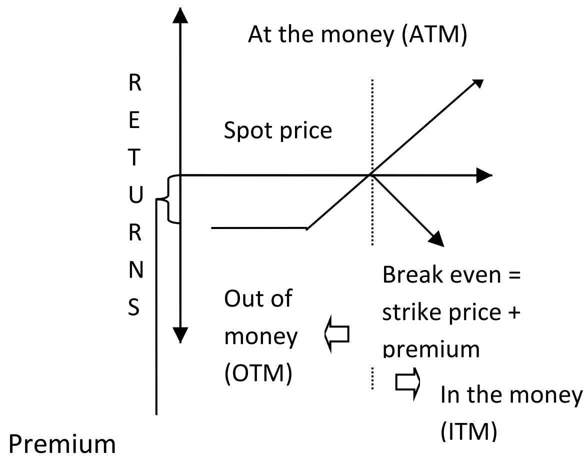


Figure 3: Payoff of long put

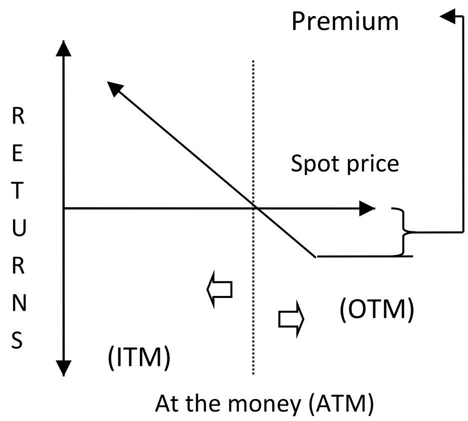
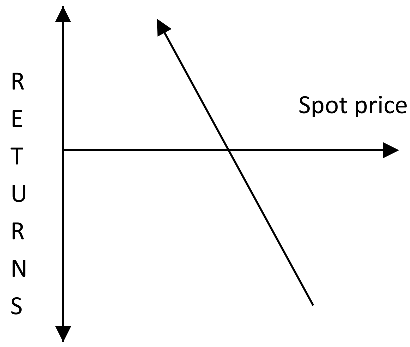


Figure 4: Pay off of short futures contract



Let us reinforce our learning of this important concept with the help of another example.
Commodity: Zinc
Strike Price: Rs 180, Call Premium: Rs 10 and Put Premium: Rs 8
Expiry: One month

Scenario Analysis:
On expiration, if the market price is higher than the strike price, the call option will be exercised

Market Price	Strike Price	Premium	Buyer of Call	Seller of Call
200	180	10	Profit of Rs 10	Loss of Rs 10
220	180	10	Profit of Rs 30	Loss of Rs 30

On expiration, if the market price is lower than the strike price, the call option will not be exercised.

Market Price	Strike Price	Premium	Buyer of Call	Seller of Call
160	180	10	Loss of Rs 10	Profit of Rs 10
140	180	10	Loss of Rs 10	Profit of Rs 10

On expiration, if the market price is higher than the strike price, the put option will not be exercised.

Market Price	Strike Price	Premium	Buyer of Put	Seller of Put
200	180	8	Loss of Rs 8	Profit of Rs 8
220	180	8	Loss of Rs 8	Profit of Rs 8

On expiration, if the market price is lower than the strike price, the put option will be exercised.

Market Price	Strike Price	Premium	Buyer of Put	Seller of Put
160	180	8	Profit of Rs 12	Loss of Rs 12
140	180	8	Profit of Rs 32	Loss of Rs 32

The above examples of Put Option in last two tables can be practically seen in agricultural products by way of Minimum Support Price (MSP) declared by the Government for its procurement. For example, Government has fixed up MSP of Maize, and Wheat as follows:

Maize: Rs 1850 per quintal (previous year it was Rs 1760 per quintal)

Wheat: Rs 1925 per quintal

These are the guaranteed procurement prices by the Government for its procurement from the farmers. Thus, for farmers, these MSP acts like strike price of a Put option. Its effect is that farmers have right to sell their produce at above price to the Government, if market price is lower than the above price (MSP). Once the Government has declared this MSP, farmers will have a position like buyers of Put Option at the strike price of the MSP. At the same time, Government will have a position like that of a seller of Put Option with its strike price being the MSP. The only difference in this case in reality is that government does not receive premium for selling/writing the option but in the market the seller/writer of the same put option will receive a premium. This works as follows:

For Maize Kharif crop, if MSP = Rs 1,850 per quintal and Market price = Rs 1,350 per quintal: Thus, farmers get price protection (put option buy position) at a price of Rs 1,850. If the market price continues to remain far below MSP, farmers will sell the farm output post harvesting to Government at Rs 1,850 instead of selling it in the market at Rs 1,350. The government like a put option seller, has to take delivery of purchased crop at Rs 1,850. By chance, actual market price goes above MSP (say, to Rs 2,000, which is greater than the MSP), then farmer may not exercise this option of selling to government but may sell in the market directly.

Similarly, for Wheat, if MSP = 1,925 per quintal and Market price = Rs 1,825 per quintal: This gives a benefit to farmers to sell to the government so long as the market price remains below MSP. Government is obliged to purchase at Rs 1,925 so long as the farmers keep selling to it.

4.4 Determinants of Option Premium

4.4.1 Option pricing fundamentals

In our above example, we have seen that the call option premium is Rs 10 and the put option premium is Rs 8. The question is where did these values come from? On what basis did market participants arrive at these values they quote to buy the options called as 'premiums'? What are the parameters that affect these values? Are these fixed by the commodity exchanges or by SEBI?

The answer lies in understanding what affects the prices of options sold by the option writers who takes the risk of selling their obligations to provide or take delivery. Prices are never fixed by exchanges, SEBI, or anybody else. In fact, price discovery is a critical and basic component of markets as in futures trading. Commodity exchanges only provide a platform where buyers and sellers meet, and SEBI's role is to ensure the smooth functioning of the derivative 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 and time values. As long as the option has 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.

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

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

1) 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 in several ways.

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 call option's value increases while the put option's value 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. For "Options on Futures", the underlying asset is the specific Commodity Futures contract whereas for the "Options on Goods", the underlying asset is the Commodity itself which leads to direct delivery and payment for the commodity upon expiry.

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 the value of the option.

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. The higher the volatility of the underlying stock, the 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).

But how to measure volatility? One way is to measure historical volatility from the actual price movements in the past. However, there can be no guarantee that the future will have the same degree of volatility. Future volatility cannot be accurately predicted, although it would be useful to know the volatility of the asset in the future. Therefore, the market forms a collective view about what is likely to happen in the future by buying and selling options where volatility is factored in as a component in option premium. Different players in market may have different views, based on which they may provide different quotes for buying or selling of options. However, the actual traded price in a liquid options contract may be considered as a representation of the collective view of the market. Mathematically, it can be derived from option pricing models such as the Black-Scholes Model. This model calculates implied volatility using strike price, underlying market price, time to expiry, and cost of carry (interest rate) as parameters. Implied Volatility is built within the option price.

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 of the price 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 by the time the contract reaches the expiry.

It can be inferred that a long-dated option will have more 'time value' than the short-dated option because the price of the underlying can move over a greater range in, say three months than in one month. In other words, the option buyer has more time (i.e., higher possibility) for the option to move in his favour. It may be noted that the rate at which the time value of the option erodes (time decay) is not linear and the rate of erosion increases as expiry date approaches.

It is also interesting to note that of the two components of option pricing (time value and intrinsic value), one component is inherently biased towards reduction in value; i.e., time value, and the other need not necessarily move so. So, if all things remain constant throughout the contract period, the option price will always fall by expiry. Thus, option sellers are at a fundamental advantage as compared to option buyers as there would be an inherent tendency in the price to go down.

Interest Rates

High-interest rates will increase the value of a call option and a decrease in the value of a put option.

The table below summarizes impact of all the above factors on the option premium:

Factor	**Call premium**	**Put premium**
Price of underlying rises	Rises	Falls
Strike price rises	Falls	Rises
Time to expiry increases (i.e., comparing premiums of 1st month and 2nd month contracts with same strike price)	Rises	Rises
Volatility rises	Rises	Rises
Interest rate rises	Rises	Falls

4.4.2 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.

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, relatively simple, and fast mode of calculation. Unlike the Binomial model, it does not rely on calculation by iteration. This model is used to calculate a theoretical price of options using the five key determinants of an option's price: underlying price, strike price, volatility, time to expiration, and short-term (risk free) interest rate. This model provides the formula to calculate price of options based on cash settlement or physical settlement of Options on goods / securities.

As per the Black-Scholes model which is used for the Option on Goods / securities,

Call Option Price on direct spot goods (C) = $S*N(d1) - e^{-rT} *K*N(d2)$
Put Option Price on direct spot goods (P) = $e^{-rT} *K*N(-d2) - S*N(-d1)]$

Where,

$d1 = [\ln(S/K) + (v^2/2)*T] / (v*\sqrt{T})$
$d2 = d1 - (v*\sqrt{T})$

A variant of the original Black-Scholes option pricing model (called "Black-76 model") is used for calculating the theoretical price of "Options on Futures" contract as the underlying is the futures contract unlike in the previous case wherein the underlying is a good or a security.

The formula for Black-76, which was derived from main Black Scholes model, is as follows:
As we have seen in the chapter of Futures, F = Spot Price (S) * e^{rT}
Which means, $e^{-rT} * F = S$

Therefore, from the main formula above, variant version under Black-76 will be:
Call Option Price (C) = $e^{-rT} * [F*N(d1) - K*N(d2)]$
Put Option Price (P) = $e^{-rT} * [K*N(-d2) - F*N(-d1)]$ { or, $P = C - [e^{-rT} * (F - K)]$ }

where,
$d1 = [\ln(F/K) + (v^2/2)*T] / (v*\sqrt{T})$
$d2 = d1 - (v*\sqrt{T})$

In both the above formulae (i.e. for Options on Goods and Options on Futures),
N is the cumulative standard normal probability distribution function
F is the underlying futures contract price in case of Options on Futures
S is the underlying spot price in case of Options on Goods
K is the strike price
T is the time remaining until expiry (expressed in years)
r is the current continuously compounded risk-free interest rate (MIBOR rate)
v is the annualized volatility of underlying (the futures contract on which the option is defined)
In is the natural logarithm
e is the exponential function

On expanding the above formula of Options on Futures i.e., Black-76 formula, we find that in Options on Futures,

Call Option Price (C) = e^{-rT} *F*N(d1) - e^{-rT} *K*N(d2)
Put Option Price (P) = e^{-rT} *K*N(-d2) - e^{-rT}*F*N(-d1)]

Please notice that main formula for Options on Goods and its variant Black-76 formula for Options on Futures follow the same principle for calculation but depicted with different symbols. This is because, e^{-rT} *F= S.

Hence, on the day of expiry of Option, if other things and terms and conditions of contracts are equal, Call Option Price of an option on Futures as well as on Goods will remain the same. However, practically things may differ. Futures are part of organized markets at Exchanges and have Daily Price Limits (DPL) i.e., circuit breaker which limits volatility. On the other hand, spot markets in commodities are not centrally managed and do not have DPL, which may lead to higher volatility. Due to higher volatility factor and partly asymmetry of data or limitations of the spot polling process, options on goods may be priced higher as protection demand may be higher. In other words, expected volatility and uncertainties lead to higher volatility input for the calculation of Option for Goods. This may lead to higher option prices than comparable "options on futures" with same terms and conditions.

4.4.3 Option Greeks

Option premiums change with changes in the factors that determine option pricing i.e. factors such as strike price, volatility, time 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 underlying asset's price. It may also be seen as the speed with which an option moves with respect to the price of the underlying asset.

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

Example: Assume that when the Silver Futures price was at Rs 60,000, the ATM 2 months Call Option of Silver was available at a premium of Rs 3,500, and when the Silver Futures price moves to Rs 63,000 (i.e., 5% up), the call option premium for the same strike of Rs 60,000 moves to Rs 6,100. And when the Silver Futures price moves to Rs 66,000 (i.e., 10% up), call option premium for the same strike of Rs 60,000 moves to Rs 8,800.

Delta of call option when Futures price moves to Rs 63,000 = 2600 / 3000 = 0.867

Delta of call option when Futures price moves to Rs 66,000 = 2700 / 3000 = 0.90

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

Under the same price movement, the Delta for the put option buyer will be negative. The value of the contract increases as the underlying price falls. This is similar to a short or 'bear' position in the underlying asset. Delta for the put option seller will be the 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 price, all else being equal.

Gamma (γ)

It measures the change in delta with respect to change in the price of the underlying asset. And hence it is called as the 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 the market price of the underlying asset.

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

As per the same example as mentioned above for Delta,

Delta of the options, when the underlying security was at Rs 60,000 = 0.867

Delta of the options, at underlying security price of Rs 63,000 = 0.900

Therefore, Gamma = (0.867-0.900) / (-3000) = 0.00001 i.e., 0.001%.

Gamma 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 affects options premiums.

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

In the above-mentioned example, the ATM option for two months expiry was at Rs 3,500. After a month, the same option will have a residual maturity of only one month. At that time, it represents the price of a 1-month Option and assumes that it is trading at Rs 3,450 (assuming all other things are the same). This reduction from Rs 3500 to Rs 3450 represents the Theta effect i.e., time decay effect.

Hence, Theta = (-50 / 3500) / 1 month = -1.43% p.m. or 17.14% p.a.

Usually theta will be negative for a long option, be it 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 with each passing day thereby reducing the possibility of that option becoming ITM by the expiry date.

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 for a percent change in the in the volatility of the underlying asset.

Vega = Change in an option premium / Change in the volatility

For example, in above mentioned Silver contract, if volatility factor of spot price or underlying price increases from 10% to 12%, option premium may go up by Rs 500 from Rs 3,500 to Rs 4,000. In that situation, Vega = Rs 500 / 2 = Rs 250 per 1% change in volatility.

Vega will be positive for both call and put option contracts. An increase in the assumed volatility of the underlying increases the expected pay-out 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 and the increase in the cost of funding the underlying. An increase in interest rate increases the call option price but reduces the put option price. Similarly, a reduction in interest rate increases the put option price but reduces the call option price.

Rho = Change in an option premium / Change in cost of funding the underlying (or in simple terms, change in the risk-free interest rate).

For example, in above mentioned Silver contract, assume that the original option premium for 1-month expiry is Rs 3,500. Further, assume that if the overall risk-free interest rate reduces from 12% p.a. (i.e., 1% p.m.) to 9% p.a. (i.e., 0.75% p.m.), the Option premium will reduce to Rs 3,200.

In such a situation, Rho = Rs (3,500-3,200) / (12-9) = Rs 100 per 1% change in interest rate.

4.4.4 Moneyness of an Option

As mentioned earlier, the premium of an options contract is made up of two components: intrinsic value and time value which can be expressed as follows:
Premium (PM) = Intrinsic value (IV) + Time Value (TV)

The intrinsic value in the option price is the difference between the strike price and the underlying commodity price. The time value reflects the possibility or potential that the price can move beyond the strike price and is the price paid for that uncertainty (or possibility).

We have also discussed the five fundamentals parameters that influence the options price: (1) Price of the underlying asset, (2) Strike price of the option, (3) Volatility of the prices of the underlying asset, (4) Time to expiration of an options contract, and (5) Risk-free Interest rates. Of these, the first two factors (i.e., underlying price and strike price) create Intrinsic Value of the option whereas the other three factors (i.e., volatility, time to expiry and interest rate) create the Time Value of the options.

Example:

If a call option has a strike price of Rs 1170 and the current market price of the underlying commodity futures is Rs 1280, and the option premium is Rs 200, the intrinsic value and the time value are calculated as follows:
Premium = Intrinsic Value + Time Value = Rs 200
Intrinsic Value = Current market price of underlying - Strike price = 1280 – 1170 = Rs 110
Time Value = Premium – Intrinsic Value = Rs 200 – Rs 110 = Rs 90

Moneyness is an indicator of whether an option (call or put) would make money if it is exercised immediately. The table below summarizes how the moneyness of an option is determined by the market price (current market price of the underlying) and strike price dynamics:

Status	Call Option	Put option
In-the-money (ITM)	Market price > Strike Price	Market Price < Strike price
At-the-money (ATM)	Market price = Strike Price	Market price = Strike Price
Out-of-the-money (OTM)	Market Price < Strike price	Market price > Strike Price

Let's say that on a particular day in mid-September, the November gold futures contract is quoted at Rs 50,000 per 10 grams whereas the call option with a strike price of Rs 50,000 on November gold futures are trading at a price of Rs 51,200 per 10 grams. The option is At the Money and therefore, has no intrinsic value (Market price = Strike price). However, the call option has a premium of Rs 1200, the option's time value. The buyer may be willing to pay Rs 1200 for this option as the option still has two months to go before it expires in November, and by that time, the underlying price may rise above the Rs 50,000 strike price. If it were to climb above Rs 51,200 (= strike price of Rs 50,000 + premium of Rs 1200), the call option holder would realize a profit. Other things remain the same: the more time an option has until expiration, the higher its premium. Thus, normally, for At-The-Money Options, the intrinsic value will be zero (or, in practice, it is a very small amount), while the option price is mainly comprised of time value.

There are three different ways of closing an option position: offset, exercise and expiration. The most common method of exit is by offset. This is accomplished by selling (purchasing) a call or put identical to the put or call originally bought (sold) by the option holder or option seller. This is normally done to make a profit on account of the change in the premiums or to unwind an existing position. The option is exercised on the expiry date only if it is in-the-money either for physical delivery or for receipt of cash differential between strike price and the settlement price, in the case of a cash settled options contract. The Options on Goods are settled by delivery versus payment, while the Option on Futures, it devolves into the equivalent futures position and such futures are either cash settled or delivered against payment depending on the respective delivery logic. The last choice for the option holder is to abandon the option if it is out-of-the-money and is not profitable for him to exercise.

As per SEBI regulations, exercise of options contracts which are in the money or at the money is done on the following basis:

(a) In the money Options (ITM): These options are automatically exercised unless the buyer of option has given 'contrary instruction' of not exercising it during the time window when such intimation can be given. These rules apply to those ITM Options that are not part of Close to the Money Options as per point (b) below.

(b) At the money Options (ATM) and Close to the Money Options (CTM): These options are not exercised unless buyer of option gives an instruction to exercise it during the time window when exercise option can be intimated. ATM options for this rule are those option contracts whose strike price is nearest to the underlying price on expiry. If the underlying price on the expiry of the option is exactly mid-way between two strike prices, then there is no ATM Option. CTM Options is a concept specific to 'Options on Goods'. It includes ATM Options plus a few additional Options with strike price slightly above and slightly below the ATM. CTM concept does not apply to 'Options on Futures'. This is explained in more detail in subsequent sections of this workbook.

(c) Out-of-the-money options (OTM): OTM Options, which do not form part of CTM (where CTM is applicable), automatically lapse.

4.4.5 The Put-Call Parity Theorem

The put-call parity theorem explains the relationship between call/put prices and the underlying price. Let us understand this with an example:

The current market price of an underlying commodity / security is Rs 300, and the put premium for the Rs 250 strike is Rs 4. The option expires in three months' time, and the risk-free interest rate is currently 6%. The premium for the 250-strike call can be derived from the following formula:

$$C - P = S - \frac{K}{(1+rt)}$$

where C is Call Premium, P is Put Premium, S is Underlying Price and K is Strike Price.

$$C - 4 = 300 - \frac{250}{1+(0.06*0.25)}$$

$$C - 4 = 300 - \frac{250}{1.015}$$

C – 4 = 300 – 246.30

C – 4 = 53.70

C = 53.70 + 4

C = 57.70

The difference between Call and Put price as per above formula (= 57.70 - 4) is difference between Spot and PV of strike. In case of ATM i.e., where strike price = Spot price, the difference in Call and Put price represents interest on the strike price. For example, in the same example as above, if spot price (S) = Rs 250 = strike price (K), then,

$$C - 4 = 250 - \frac{250}{1+(0.06*0.25)}$$

C = Rs.7.70

P = Rs.4 already given.

The difference of Call and Put = C-P = 7.70-4 = 3.70 = 250-246.30

Put-Call Parity Theorem also indicates that generally Call option prices tends to be more than the Put options prices for ITM and ATM call options where underlying is a commodity or security. For OTM call options, call option prices tends to be lower than the put option prices as put options goes ITM.

In the case of Options on Futures, Call price = Put price for ATM Options, as the formula will be as follows:

$$C - P = \frac{F}{(1+rt)} - \frac{K}{(1+rt)}$$

4.5 Options on Commodity Futures

Till 2019, the commodity option contracts trade were all in fact 'Options on Commodity Futures'. Subsequently, the products relating to Option on Goods were introduced across exchanges in 2020. In the case of Options on Futures, devolvement into Futures (i.e., expiry of Option) happens generally before the day when delivery period and staggered margin period on Futures starts. These margins in Futures generally start 5-15 calendar days before expiry of Futures. Thus, if Futures' pre-delivery margin period starts 10 days before expiry of Futures (say, E-10 day), relevant Option contract devolves on Futures around 13 days before expiry of Futures (i.e., around E-13 days).

In case of Options on Futures, as explained in earlier section, Black-76 formula is used to work out the prices of options. As per Put-Call parity, call and put price of Options on Futures will remain the same for ATM contracts. Buyers of Options on Futures would get a right to have a position in underlying commodity futures rather than getting a right to outrightly buy/sell the actual commodity on expiry.

Settlement Method:

On exercise, options positions shall devolve into underlying futures positions as follows (around 10-13 days before expiry of Futures as explained earlier):

- long call position shall devolve into long position in the underlying futures contract
- long put position shall devolve into short position in the underlying futures contract
- short call position shall devolve into short position in the underlying futures contract
- short put position shall devolve into long position in the underlying futures contract

All such devolved futures positions shall be opened at the strike price of the exercised options. It means for strike price of Rs 1700, call buyers will get a buy position in Futures, assuming it is already bought at Rs 1,700. As the Option on Futures devolves into the Futures itself, lot size of the two are kept same to avoid mismatch in quantity and trading lot at the time of devolvement.

Exercise Mechanism:

On the expiry day of 'Options on Futures', they devolve into Futures, based on above exercise options used by the players for their positions which are In the Money (ITM). That day, as Futures are already running, the Daily Settlement Price (DSP) of Futures is used to work out the Final Settlement Price (FSP) for Options and compare it with the Strike Price. The treatment of Options at various strikes differs depending on whether those are ITM or OTM options.

Assume that Gold Futures' price on the day of option expiry is Rs 49,900 per 10 grams. It is called Daily Settlement Price of Futures (DSP). Just before expiry, assume that different Gold Options were available at different strike prices such as Rs 45,000, Rs 46,000, Rs 47,000 and so on (with strike interval of Rs 1,000) upto Rs 55,000. In this situation, different Call Options will be categorized as ITM and OTM as follows:

ITM Options (i.e., Call Options with strikes of Rs 49,900 or below): These Call buyers will profit by exercising their call options. However, actual net-payoff depends upon transaction cost of exercise also, which may include additional brokerage, CTT, GST, etc. Hence, call buyers are provided a choice to not exercise an ITM option, if exercising such an option is not profitable for the option holder. Without such instruction from Call buyers, these options will by default get exercised. That means, all ITM option contracts will get automatically exercised, unless 'contrary instruction' has been given by long position holders of such options contracts for not doing so.

OTM Options (i.e., Call Options with strike price of above Rs 49,900): These options will not be exercised, as there is no benefit to the option buyers from exercising those options. By default, system will allow it to expire worthless.

In case of Put Options in the above example, strikes with OTM Calls will have ITM Puts while strikes with ITM calls will have OTM puts.

Thus, all ITM 'options on futures', shall be exercised automatically, unless 'contrary instruction' has been given by long position holders of such contracts for not doing so. All Out of the money (OTM) option contracts, shall expire worthless. All exercised contracts within an option series shall be assigned to short positions in that series in a fair and non-preferential manner.

Once DSP of Futures (i.e., FSP of Options) is determined on the option expiry day, a 15-30 minutes window is kept open by the Exchanges to provide the contrary choice for the ITM holders to not to excercise. This window will enable traders to give contrary instruction on their ITM options, which otherwise would have been exercised by default. This can be given by the traders through their brokers. For this window, Exchanges deal directly with the brokers only. The client who deals online may give their option of exercising or not exercising online, but his broker will re-upload the same instruction of the client to exchange system.

What if underlying prices turn negative due to a peculiar situation with spot or underlying futures? This situation may arise when there are desperate sellers or huge payouts happen before the expiry of a derivatives contract with a very high yield factor (for example, due to bonus shares in case of equity or high storage cost in case of a commodity). In case of a significant fall in underlying futures prices, the Call option may turn out to be deep Out of Money, while the Put Option may end up as deep In the Money. The basic fundamental of

OTM and ITM options, exercise principle, payment and obligation calculations will still remain the same. For example, if the strike price is Rs 500 but the actual price of the underlying turned negative, i.e. (-)200, then the put option will have an intrinsic value of Rs 700 while the call option will be deep OTM. Thus, if the FSP of this Options contract is declared as (-)200 in this case, put option buyers will have an MTM gain on devolvement amounting to Rs 700, and the put option seller will have an MTM loss of Rs 700. These will be settled as per the payment and settlement cycle of the clearing corporation.

With negative spot price, new options with negative strike prices may be created. However, the value of call / put options will still be positive, and rules relating to intrinsic value will remain the same.

This indicates that the Futures price may move to negative along with the Spot price. However, Option price is at least equal to its intrinsic value and cannot become negative. This is because Intrinsic Value is at least Zero, even in the case of an Out of Money Option.

4.6 Options on Goods

4.6.1 Introduction

Earlier Sections of this chapter explained the Introduction of Options in general and detailed concepts relating to the Fundamentals of Options and Options on Commodity Futures. In this section, we will look at the key aspects to "Options on Goods" and their differences compared with the Options on Futures.

Options on Goods are direct options for the actual delivery of commodities. Hence, instead of devolving on Futures like in the case of "Options on Futures," "Options on Goods" devolves into direct delivery of the commodity to the Call Option Buyers or direct delivery of commodity by the Put Option Buyers when those options are exercised at the expiry of the options contract.

In Equity markets, shares are also in Dematerialized form, and there is a regulatory framework under the Dematerialization Act as well as an operational framework of Depositories (like NSDL and CDSL) and Depository Participants. Spot equity markets are also very vibrant and centralized at stock exchanges under the regulatory supervision of SEBI. As dematerialized shares fall within the operational framework, comprising of depository participants, stock exchanges and regulated by SEBI, Options on spot equity was easier to implement as spot equity market was also available with stock exchanges. In case of physical Commodities, since spot markets are outside the stock exchanges and outside the regulatory purview of SEBI, implementing Option on Spot commodities initially was very challenging. Hence, Options on Commodity Futures were implemented in FY2017-18 as Futures markets were very much under the commodity trading platform of exchanges (i.e., traded on exchanges such as NCDEX, MCX, etc.). Commodity Futures were already on Direct Commodity, many of which had compulsory delivery rather than cash settlement. Hence, over the time, it is felt that Options can also be traded in such a way that its expiry results in delivery as is the case with the respective futures contracts of those commodities. Thus, Options on spot commodities were implemented.   These are also European style of options

In the case of options on direct spot equity, spot equity prices are already available for the market participants to get guidance from in terms of the price movements of the underlying stocks and hence its volatility. In case of Options on Goods, spot prices of commodities are polled from physical markets by the Exchanges and are disclosed to the market participants two or more times in a day.

Options on Goods have one specific advantage against Option on Futures, as futures contracts themselves being used as tools in lot of speculative trades, they may sometime lead to inconsistent price movements. This impacts the pricing on their options as well. Further, traders in Options on Futures are aware that they need not take delivery immediately on devolvement. Further, in case Futures are cash settled at the end as per contract terms, its options also may tend to be speculative. However, in case of Options on Goods, there is a direct delivery of the underlying commodity on devolvement (and not cash settlement). Hence, it leads to better convergence of spot and futures markets and hence protection of market participants. It also reduces chances of inconsistent pricing of options as any such inconsistency will be made good by the arbitragers in the markets.

It is possible to have both these products (i.e., Options on Futures and Options on Goods) working together on an exchange. However, in some cases, Options on Futures are completely dismantled as the Exchange decides to focus on Options on Goods. Wherever the futures end up in physical delivery, it is better to have Options on Goods rather than Options on Futures, as Options on Goods can expire along with Futures expiry. Currently options in goods contracts are available for trading in crops such as Guar, Coriander, Maize, etc.

Stock exchanges are permitted to introduce option contracts with underlying as goods. Only those goods are eligible as underlying for these options, on which futures contracts are already trading on the stock exchange or exchange is proposing to launch the futures contracts on or before the day of launching option in those goods. This is in addition to the options on commodity futures.

These option contracts shall have same quality specification, delivery centres, final settlement price methodology etc. as in the case of corresponding futures contract. Options in Goods provide a settlement mechanism were contracts settle on spot price and all open positions convert into physical delivery at expiry. This options contract allows FPO or farmer to sell his/her crops on a particular date in the future and at a particular price, by paying a small premium amount. If the price goes higher than the determined price in future, the farmer can still sell at market price by coming out of the option, only at the loss of a small premium. The options in goods would benefit the farmer for realizing better prices for their crops with minimal risk.

Below are some of the key fundamentals of Options that are same for both Options on Futures as well as Options on Goods:

- Call / Put Options, Option Premium, Option Buyers and their rights, Option writer (seller) and their obligations,
- European Options
- Expiry Dates: Definition, Concepts of Spot and strike, Volatility of underlying prices, and Moneyness of Options, including ITM and OTM.
- Intrinsic Value, Time Value, Open Interest, Pay-off Profile, Risk and reward in option contracts
- Option Greeks and its basic fundamentals - Delta, Gamma, Theta, Vega and Rho.
- Concept of Put-call Parity

Trading hours, Intention marking for exercise, and Lot size for Options on Goods are the same as that of the Futures contracts on that particular commodity. This is in spite of the fact that it is Options on Goods and not Options on Futures. Options on Goods though do not devolve on to the Futures, its final delivery and settlement schedules and obligations are merged with those of the respective Commodity Futures contract as their expiry date remains the same. Hence, the delivery obligations from the last day of trading of the respective options in goods and futures contracts are combined together to work out net obligations. For example, on NCDEX, this is 20th of the month in most of the cases. Hence, keeping same order size and lot size is important as this would help the clearing corporations avoid the problems of odd lot deliveries after the process of netting off. For example, a Call Option buyer buys 20 MT (lot size being 10 MT) also sells 10 MT in Futures (again same lot size). So, netting can be done by way of receiving delivery of 10 MT (i.e., one lot). Tick-size of Options may be lower than that of underlying Goods' Futures as it is on Option Premium only rather than full price unit value of the commodity.

As explained in section 4.4, the main formulae of Black-Scholes used in "Option on Goods" are:

Call Option Price on direct spot goods (C) = $S*N(d1) - e^{-rT} *K*N(d2)$
Put Option Price on direct spot goods (P) = $e^{-rT} *K*N(-d2) - S*N(-d1)]$

As explained earlier, BS-76 is a variation of the original Black-Scholes, which is used for pricing "Options on Futures." For" Options on Goods," the original version of Black-Scholes, as above, continues to be in use.

Interpreting an Options Contract by it ISIN Number

Contracts for Option on Goods can be identified by its specifically assigned symbols by the respective Exchange. For example, one symbol of Maize Option contract is: MAIZE20MAY20CE2100S. Here, the last letter 'S' indicates that it is an option on the spot i.e., "Option on Goods" (If the last letter is 'F', it is "Option on Futures"). The above is an option on Maize with expiry date of 20th May 2020 (mentioned as DDMMMYY). It is "CE" i.e., European Call Option, with strike price of Rs 2100.

Trading mechanism for Options on Goods is similar to that of trading an Options on Futures contract. Exchanges can have their own norms as part of trading and risk management, which are over and above the trading and compliance standards set by the Regulator.

As explained in section 4.4, all other things being the same, Call Option Price on Futures as well as on Goods on expiry date will remain the same, technically. However, in practice things may slightly differ. Option on goods may be costlier than Option on Futures in relatively shallow markets due to the following reasons:

- Futures are part of organized markets at Exchanges and have Daily Price Limits (DPL) i.e., circuit breakers which puts a limit on volatility. On the other hand, spot markets in commodity is not regulated and hence there are no controls on the price discovery process as it exists in the futures markets such as a Daily Price Limits (DPL) which could result in higher volatility. Due to higher volatility factor and partly asymmetry of data or limitations of the spot polling process, options on goods may be priced higher as protection demand may be higher. In other words, expected volatility and uncertainties lead to higher volatility input for calculation of Premiums quoted for the Option on Goods.
- Options on goods create obligation of delivery or payment for Option writers, if the Option Buyers exercise the option. A call writer may have risk of full delivery of goods while put writer may have risk of full payment against the goods offered in delivery. This increases the risk level of Option writers as they have to deliver goods on exercise of call option or make payment at adverse price levels on exercise of put option. Due to this increased risk, option sellers will ask higher Option Premium at the time of actual trade which leads to higher price for Options on goods compared to the Options on futures. It acts as a compensation to option writers for the increased risk of higher obligations that they would be exposed to.

If markets are not shallow, and there are enough buyers and sellers in the markets, then, Option on Goods may not have higher premium than Options on Futures. In that case, if writers of the options (short sellers) demand a high premium, buyers of options might find an advantage in trading in Futures markets or in the spot market. Hence, arbitrage forces may keep prices of Options on goods and Options on futures hypothetically the same if the Option market, Futures market as well and the Cash markets are sufficiently deep.

In normal situation, $F > S$ before expiry of future contract. Therefore,

- $(F-X) > (S-X)$ where X = Strike price of a Call option
- $(X-F) < (X-S)$ where X = Strike Price of a Put option

Hence, the Intrinsic Value of a Call Option on Futures is higher than that of a Call Option on Goods. However, the Intrinsic Value of a Put Option on Goods is higher than that of a Put Option on Futures. This difference relates to the aspect of 'Futures carry'.

Other special points relevant to Options on Goods are enumerated below:

Closing the Options on Goods:

Like in Options on Futures, there are three different ways of closing an option position: offset, exercise and expiration. The most common method of exit is by offset. This is accomplished by selling (purchasing) a call or put identical to the call or put originally bought (sold) by the option holder or option seller. This is normally done to make a profit on account of movement in the premiums or to unwind an existing position.

The option is exercised at expiry in the case of European Style for actual delivery versus payment on the expiry date, only if it turns out to be In-the-money (and may be for some CTM options). The last choice for the option holder at expiry is to abandon the option, if it is out-of-the-money (and may be for some CTM options) and is not profitable to him to exercise.

Exercise of an "option on goods" contract depends upon whether the option ends up as ITM, ATM, CTM or OTM. Rules of exercising are the same as that of Option on Futures for ITM and OTM. The difference is in relation to CTM options which is as follows:

CTM Options in case of "Options on Goods" include the ATM Option and three contracts of strike price above the ATM Option and three contracts of strike price below the ATM option. Thus, options with these 7 strike prices are considered as CTM options.

If FSP of option falls exactly mid-way between two strike prices, then there is no ATM option. In that case, three contracts of strike price above FSP and three contracts of strike price below FSP are considered as CTM options (i.e., total of 6 strike prices).

Let's take an example to understand this. Assume Gold spot price on the day of option expiry i.e., final settlement price for option (FSP) is Rs 49,900 per 10 gms. Just before expiry, assume, different Gold Options were available at different strike prices being, Rs 45,000, Rs 46,000, Rs 47,000 and so on (with strike interval of Rs 1,000) upto Rs 55,000.

In the above situation, different Call Options will be categorized as ITM, CTM, ATM and OTM as follows:

Strike Price	Category of Call Option	Reasoning
45,000	ITM	Call buyers will profit by exercising (Strike < Spot)
46,000	ITM	Call buyers will profit by exercising (Strike < Spot)
47,000	CTM / ITM	Call buyers may / may not benefit depending upon transaction cost
48,000	CTM / ITM	Call buyers may / may not benefit depending upon transaction cost
49,000	CTM / ITM	Call buyers may / may not benefit depending upon transaction cost
50,000	CTM / ATM	Call buyers may / may not benefit depending upon transaction cost
51,000	CTM / OTM	Call buyers may / may not benefit depending upon transaction cost
52,000	CTM / OTM	Call buyers may / may not benefit depending upon transaction cost
53,000	CTM / OTM	Call buyers may / may not benefit depending upon transaction cost
54,000	OTM	Call buyers will not exercise as there is no benefit (Strike > Spot)
55,000	OTM	Call buyers will not exercise as there is no benefit (Strike > Spot)

There are 7 CTM Options in above table: one of which is ATM, 3 are ITM and 3 are OTM. Rs 50,000 strike will be ATM option as that is the closest to the FSP of Rs 49,900.

If there is no ATM i.e., FSP of Option is say Rs 49,500, which is exactly between strikes of Rs 49,000 and Rs 50,000. In that case, only 6 CTM Options will be there as shown below:

Strike Price	Category of Call Option	Reasoning
45,000	ITM	Call buyers will profit by exercising (Strike < Spot)
46,000	ITM	Call buyers will profit by exercising (Strike < Spot)
47,000	CTM / ITM	Call buyers may / may not benefit depending upon transaction cost
48,000	CTM / ITM	Call buyers may / may not benefit depending upon transaction cost
49,000	CTM / ITM	Call buyers may / may not benefit depending upon transaction cost
50,000	CTM / OTM	Call buyers may / may not benefit depending upon transaction cost
51,000	CTM / OTM	Call buyers may / may not benefit depending upon transaction cost
52,000	CTM / OTM	Call buyers may / may not benefit depending upon transaction cost
53,000	OTM	Call buyers will not exercise as there is no benefit (Strike > Spot)
54,000	OTM	Call buyers will not exercise as there is no benefit (Strike > Spot)
55,000	OTM	Call buyers will not exercise as there is no benefit (Strike > Spot)

In the case of Put Options, strikes with OTM Calls (in both the above tables) will have ITM Puts, while strikes with ITM calls in the above tables will have OTM puts. Strikes with CTM or ATM calls will also have CTM or ATM Puts.

Thus, ITM options will be exercised automatically, unless 'contrary instruction' has been given by long position holders of such contracts for not doing so. All CTM and ATM options will be exercised only upon explicit instruction from option buyers to exercise them; otherwise, those will expire. All OTM options, shall expire worthless. All exercised contracts within an option series shall be assigned to short positions in that series in a fair and non-preferential manner.

Price of the commodity:

Option on Goods require regular dissemination of Spot Prices that are in the hands of the physical markets and not in the domain of the Exchanges. Therefore, exchanges would have to develop a mechanism of Spot Price Polling for regular dissemination of Spot prices so that the traders in Options on Goods can take guidance from that for their trades in Options. The price of the underlying commodity determines the intrinsic value and any rise in its current market price will push the premium upwards in the case of call option and similarly any fall in its current market price would push the call option premium downwards.

Though rare, sometimes Spot prices may fall sharply to zero and even into negative territory, especially in case of perishables and those with limited storage capacities available, whose handling and storage costs are very high due to increased demand for storage with inability of the suppliers to respond to. In that scenario also, basic fundamentals of options will remain the same. In case spot price has fallen and entered into negative territory, option prices do not go negative as options prices do not represent the underlying commodity prices but the right to buy / right to sell for the option buyer and are not obligations to these option buyers.

It is not a physical asset but an invisible asset. Secondly, concept of OTM options which lapses will neutralize the negative theoretical pricing of option. OTM options which lapses automatically can have zero price at the lowest level. In case of such a deep fall in spot price, call Options will lapse OTM while Put Options will be Deep In-the-Money. The functionality of other Greeks like Theta and Rho will continue as per their fundamentals.

4.6.2 Options on Direct Commodity – Regular settlements

Settlement Method on expiry of options:

On exercise, option positions shall devolve into payment and delivery obligations as follows:

- Long call position shall devolve into a buy position in the underlying goods requiring payment and receiving delivery
- Long put position shall devolve into a sell position in the underlying goods requiring delivery to be made and receive payment for the same
- Short call position shall devolve into a sell position in the goods requiring delivery to be made
- Short put position shall devolve into a buy position in the underlying goods requiring payment against the receipt of the delivery

Same Final Settlement Price (FSP) from Spot Polling can be used as settlement of Futures as well as such Options. Hence, arbitrage between Futures and Options are possible as both will have the same FSP. Of course, these are two different products with not a direct 1:1 beta and correlation. However, one may find possibility of buying call cheaper than buying Futures or buying Straddle (a strategy consisting of buying and selling of options) cheaper than buying and selling Futures.

Exercise Mechanism:

On expiry, option series having strike price closest to the FSP shall be termed as At the Money (ATM) option series. FSP is derived by the polling process carried out to disclose daily spot prices of commodity and the same process is specifically carried out to arrive at the closing spot price on the expiry date of Futures Contract, which is the same date when Option on Goods also expire (called E-Day). This ATM option series and three option series having strike prices immediately above this ATM strike and three option series having strike prices immediately below this ATM strike shall be referred to as 'Close to the money' (CTM) option series. In case, the FSP is exactly midway between two strike prices, then immediate three option series having strike prices just above FSP and immediate three option series having strike prices just below FSP shall be referred as 'Close to the money' (CTM) option series. All call and put option contracts belonging to 'CTM' option series shall be exercised only on 'explicit instruction' for exercise by the buyers (holders) of such option contracts.

As explained earlier in this section, CTM in case of Options on Goods have 3 strikes above and below apart from the ATM, totaling to 7 strikes (i.e., 3 ITM + 1 ATM + 3 OTM). In case of Options on Futures, concept of CTM does not exist.

These 7 strikes in case of Options on Goods for CTM is due to certain aspects relating to the polling process and polling sample used to arrive at the Spot price. As Spot markets in goods are out of the domain of exchanges and SEBI, taking spot prices through scientific polling process based on sample selection is highly manual and prone to sampling errors. To cope up with sampling error situation on daily basis, it is decided to have CTM options upto 7 strikes so that traders having position in border cases of sampling error may make their judgement more diligently considering the nature of spot markets.

Expiry day of “Options on Goods” and that of “Futures” of that underlying goods fall on the same day. Hence, positions in both the markets leads to final settlement and delivery obligations together on the same day. Options positions leads to such obligations based on exercise options used by the players for positions in ITM and CTM. On the expiry day, the Final Settlement Price (FSP) of Spot / underlying commodity is worked out after the market close, which is also the FSP of “Futures”. Then, a 15-30 minutes window is kept open by the Exchanges where exercise option can be given by the players through their brokers. If Futures markets of underlying Option goods is ending at 5 pm, FSP is derived immediately after that and above exercise window would be provided to be participants at around 5:30 pm - 6:00 pm. If Futures markets of underlying Option goods is ending at 11:30 pm - 11:55 pm, FSP is derived immediately after that and above exercise window can be given at around or after 12:00 am. For example, for Options on Gold, exercise window at MCX is available even up to 12:20 am. This exercise window, will only be available to the members of the exchange. The clients of the members may give their option of exercising or not exercising online, but, their clearing member will re-upload the same instruction of client to the exchange system.

Commodity Options vary from Equity options segment in various ways. Key differences between these two segments are given as below:

Commodity Options	***Equity Options***
Options on Futures - if exercised Settled in futures Contracts	*Options on stocks - if exercised settle in physical Delivery*
Options on Goods - if exercised Settles in physical Delivery	*Options on Index - if exercised settled in cash*
Monthly expiries	*Daily, Weekly and Monthly expiries*
Last day of expiry 3 days prior to futures tender Period	*Settlement on last day of expiry*
Popular options : Individual scrips like Crude oil, Gold, Natural Gas etc	*Popular options : Index options like Nifty, BankNifty, Sensex etc*
Market timings : 9 am to 11:30pm/11:55pm	*Market timings : 9:15 am to 3:30 pm*
Volatility : High	*Volatility : Moderate to High*

Sample Questions

1. An option contract gives its buyer ____________ to exercise that option.
   a) A right but not an obligation
   b) A right and an obligation
   c) An obligation but not a right
   d) Neither a right nor an obligation

   Ans: (a)

2. __________ 'options on goods' give the option buyer zero or close to zero cash flow (ignoring upfront premium), if it were exercised immediately.
   (a) Deep ITM & OTM options
   (b) ATM & CTM options
   (c) All Exchange Traded
   (d) All OTC

   Ans: (b)

3. The maximum potential gain for the seller of an option contract is ______________, till the expiry of the contract.
   (a) Unlimited
   (b) Limited to the spot price of the underlying
   (c) Limited to the futures price of same expiry
   (d) Limited to the premium received upfront

   Ans: (d)

4. If a commodity call option has a strike price of Rs 1000 and the current market price of the underlying commodity futures is Rs 1150 and the option premium is Rs 200, calculate its Time Value.
   (a) Rs 150
   (b) Rs 100
   (c) Rs 50
   (d) Rs 200

   Ans: (c)

5. Assuming all other factors remains constant, which of the following statement is TRUE regarding the relation between interest rates and option premium?
   (a) Higher interest rates will result in decrease in the value of both call and put options
   (b) Higher interest rates will result in increase in the value of both call and put options
   (c) Higher interest rates will result in an increase in the value of a call option and a decrease in the value of a put option
   (d) Higher interest rates will result in a decrease in the value of a call option and an increase in the value of a put option

   Ans: (c)

6. An option on goods contract has following benefit against option on futures:
   a) Option on Goods is more realistic pricing as buyers and sellers of goods may price it based on consideration of delivery and payment obligations rather than depending upon speculative demand supply
   b) Option on goods do not have devolvement margin
   c) Option on goods are free from pitfalls of goods delivery and GST related procedures as applicable in the case of Options on futures
   d) Option on goods are less volatile

   Ans: (a)

7. Buyer of an "Options on Goods" contract will end up having zero or close to zero cash flow on exercise, if those option ends up as __________
   (a) Deep ITM options
   (b) ATM or one of the 7 CTM strike options
   (c) ATM or one of the 7 OTM strike options
   (d) Deep OTM options

   Ans: (b)

8. Commodity price and its Future price may turn negative due to technical, fundamental and speculative factors. Can an Option on Goods be priced negative?
   (a) Possibilities exist depending upon difference between strike price and spot price
   (b) Possibilities exist as Gamma and Theta may act on negative side
   (c) Possibilities exist, if storage and cleaning costs of actual goods are extremely high
   (d) Not possible, as there is already concept of OTM Options which lapses

   Ans: (d)

9. Option on goods in a nutshell is: ______________.
   (a) Devolvement of Options on Futures which leads to delivery of goods
   (b) Devolvement of Futures on Options
   (c) Devolvement of Futures on Goods
   (d) Devolvement of Options on direct delivery of goods and payment thereof

   Ans: (d)

10. For Option on Futures and Option on Goods having the same terms and conditions, which statement is true?
   (a) Option on Goods may be less volatile than Options on Futures and hence, Option on goods may be costlier
   (b) Option on Goods may be less volatile than Options on Futures and hence, Option on goods may be cheaper
   (c) Option on Goods may be more volatile than Options on Futures and hence, Option on goods may be costlier
   (d) Option on Goods may be more volatile than Options on Futures and hence, Options on goods may be cheaper

   Ans: (c)

Chapter 5: Uses of Commodity Derivatives

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Know the meaning of "Hedging" and understand how to hedge using futures and options
- Understand the long hedge and short hedge strategies using commodity futures
- Be able to calculate Hedge Ratio and know the benefits and limitations of hedging
- Understand speculative positions using long and short positions in futures and options
- Understand the term "Arbitrage" and describe spot-versus-futures arbitrage, cash-and-carry arbitrage and reverse cash-and-carry arbitrage
- Understand various strategies to implement Spread Trading
- Understand the concept of "Basis", its strengthening and weakening
- Discuss option trading strategies such as covered calls, spreads, straddles and strangles
- Know the hedging strategies disclosure norms for listed companies

5.1 Hedging (Price Risk Management Strategies)

Hedging means taking a position in the derivatives market that is opposite of a position in the physical market with the objective of reducing or limiting risks associated with the price changes. Hedging is a process designed to reduce or remove the risk of a price change arising from a position in an asset in the spot market or a position in the derivative market. Hedger enters into the derivatives contract to mitigate the risk of adverse price fluctuation in respect of his existing position. Hedgers have an underlying exposure in the commodity and use derivatives market to insure themselves against adverse price fluctuations. Hedgers include importers, exporters, and producers and processors. Broadly, there are two types of hedgers: commodity users (processors/consumers) and commodity producers.

Commodity users use commodities as a raw material while for the commodity producers, it is finished goods. Any business or value chain participant are naturally short on raw materials and long on finished goods. It means, they gain if raw material prices fall and they lose when raw material prices increase. Similarly, on finished goods, they gain when their prices gain, and they lose on falling prices of finished goods. Hence, hedgers generally hedge by buying raw materials in forward / futures or selling finished goods in forwards/futures or both. Thus, hedging is a tool for 'Commodity Price Risk Management'.

Hedging is a two-step process. For instance, if the hedger has plans to buy a commodity in the spot market at a future date, he buys the futures contract now. This is the first step. Subsequently, he takes the delivery against his futures position on the Expiry date. Alternatively, if the hedger manages to buy the required commodity from the spot market in the interim, he may square off his futures contract.

Likewise, if the hedger plans to sell a commodity in the spot market in future, he will simultaneously square off the futures position. Alternatively, he may deliver the commodity against his sell position on the expiry date of the futures contract. Alternately, if the hedger manages to sell the commodity in the spot market in the interim, then he immediately exits his futures position.

Hedging is based on the principle that the spot market prices and futures market prices tends to move in tandem and the price movement is close enough even though it may not necessarily be identical. Therefore, it is possible to mitigate the risk of a loss in the spot market by taking an opposite position in the futures market. Taking opposite positions in the spot and futures market allows losses in one market to be offset by gains in the other.

Two basic hedging strategies are listed below:

- Hedges can be undertaken to offset price risk that has arisen over a physical market activity that has already been undertaken. This is known as "offsetting hedge".
- Hedges can serve to lock in an attractive price level from a transaction by fixing the sales price at a level above the known costs (in the case of a seller) or fixing a purchase price at a lower level (in the case of a buyer). E.g. processor locks the raw material purchase price for the stocks to be used in his manufacturing process for the next 3 to 6 months. Similarly, during sowing season, farmers locks in selling price of upcoming harvesting season for their produce even though the produce will be harvested and delivered a few months later.

Hedging or Price Protection through a call option:

Hedgers use options to manage price risk and protect themselves against the possibility that the market prices may go against them. We have discussed the features of a call option in the previous unit, however, here is a quick recap of the salient features of using a call option for the purpose of hedging:

Features of a call option contract:

- It is the right, but not the obligation, to buy a specific commodity at a specified price (i.e., at the strike price) at a specified time in future.
- In purchasing a call option, the buyer is effectively buying insurance against higher product prices in the spot market on the specified future date.
- The buyer pays an upfront premium for buying a call option contract.

Benefits:

- Protection from any price appreciation in the spot market above the strike price of the option contract.
- In case of a price increase in the spot market, the loss is compensated by the gains from the position taken in the option market to hedge.
- For example, if you buy a call option of strike price Rs 1000 and on expiry you find that the spot price is Rs 1700, you can exercise this contract at a profit of Rs 700. Thus, hedging comes in the form of Price Protection where the maximum loss for a buyer of an Option contract is limited to the option premium paid.

Disadvantages

- The buyer has to pay an upfront premium to buy a call option.
- Option price (Premium) movement is not linear to underlying commodity price. Hence, having a perfect hedge via Options are difficult as it requires techniques of Gamma hedging also. As the rate of change in option's price is not a straight line but in curvature (i.e., curvature of option curve), hedging also requires consideration of gamma factor apart from delta alone.

Example of hedging through call option:

The call option enables the merchant to hedge his forward commitments to sell in domestic or export market. On January 1, a merchant enters into a forward contract for sale of, say, 1000 bales of cotton lint to a mill at Rs 18,000 per bale for delivery in the first week of April. The merchant is unwilling to buy 1000 bales immediately and store it to save expenses on storage. He expects a decline in the cotton price in March and he wants to avoid the risk of unforeseen price rise as well. He, therefore, hedges his forward sale by buying a call option maturing on March 31 at a premium of Rs 500 per bale with a strike price of Rs 17,500 per bale. Assume the spot price of cotton declines to Rs 16,000 per bale on March 31 when the merchant buys physical cotton to meet his forward sale commitment. In this situation, the merchant need not exercise his call option but loses the premium and yet makes a net gain of Rs 1500 per bale (Rs 18,000 – Rs 16,000 – Rs 500 (premium)). In contrast, had the spot cotton price risen to Rs 19,000 per bale on March 31 and the settlement price on the above position was at Rs 19,500 on expiry, the merchant would have exercised the call option and take delivery of the underlying for delivery against his forward sale commitment.

Example of hedging through put option:

Minimum Support Price (MSP) declared by the Government for its procurement can be considered equivalent to that of writing a put option for the farmers. For example, the Government has fixed up MSP of Maize, Wheat, and RM Seeds as follows:

Maize: Rs 1850 per quintal (previous year, it was Rs 1760 per quintal)

Wheat: Rs 1925 per quintal

These are the guaranteed procurement prices by the Government for its procurement from the farmers. Thus, for farmers, these MSP acts like the strike price of a Put option. Its effect is that farmers have the right to sell their produce at the above price to the Government if the market price is lower than the above price (MSP). Once Government has declared this MSP, farmers will have a position like buyers of Put Option at a strike price of MSP. This works as follows:

For Maize Kharif crop, if MSP = Rs 1,850 per quintal and Market price = Rs 1,350 per quintal:

Thus, farmers get a price protection (put option buy position) at a price of Rs 1,850. If the market price continues to remain far below MSP, farmers will sell the farm output post harvesting to Government at Rs 1,850 instead of selling it in the market at Rs 1,350. The government, like a put option seller, has to take delivery of purchased crop at Rs 1,850 instead of buying from market at Rs 1,350. By chance, actual market price goes above MSP (say, to Rs 2,000, which is greater than the MSP), then farmer may not exercise this option of selling to government but may sell in the spot market.

The same right to sell can be purchased by the farmer in organized derivatives markets by paying option premium to option sellers.

5.2 Long Hedge and Short Hedge Strategies Using Futures

A hedger seeks to transfer price risk by taking a futures position opposite to an existing position in the underlying commodity. By hedging, the hedger reduces to a large extent or even eliminates the possibility of a loss from a decline in the price of the commodity. However, he would also have foregone the possibility of a gain from any price increase.

In the case of a long hedge, the hedger does not own the underlying commodity, but he needs to acquire it in the future. He can lock-in the price that he will be paying in the future by buying, or going long in futures contracts. In effect, he is already naturally short on the underlying commodity because he must buy it in future and he offsets this naturally short position by taking a long position in futures. Similarly, short hedge involves **s**ale of futures to offset potential losses from the falling prices.

Example of a Long Hedge:

Date	Spot Market	Futures Market
1st June	A jeweler needs to buy 1 kg of gold at end-July at Rs 50,000 per 10 grams to make desired profit and make a provision for INR 50.00 lakhs to buy 1 kg of Gold.	August Futures is trading at Rs 50,400 per 10 grams. He buys one August gold futures contract at the rate of Rs 50,400 per 10 grams. (1 contract = 1 kg)
30th June	At end of July, gold is trading at Rs 51,600 per 10 grams in the spot market. The jeweler pays Rs 51.60 lakhs to buy one kilo gold.	August futures is trading at Rs 52,000 per 10 grams. He sells the futures at Rs 52,000 and squares off his position in August month futures and makes a profit of Rs 1,60,000.
Result	Higher cost in the spot market Rs 1,60,000.	Profit in the futures market Rs 1,60,000.

Therefore, the loss in the spot position was offset by the profit made in the futures position.

Example of a short hedge:

Date	Spot Market	Futures Market

1st June	A producer likes to sell 1 MT (1 MT = 10 quintals) of guar seeds at Rs. 4,000 per quintal at the end of July to earn desired profit.	He goes **short** for 1 lot of August futures (1 lot = 1 MT = 10 quintal) guar seeds at Rs.4,050 per quintal.
30th July	Spot price drops to Rs.3950 end-July and the producer sells 10 quintals of guar seeds in the spot market at Rs. 39,500 (=3950 * 10).	He **buys** back the 1 MT August futures at Rs.4,000 per quintal by squaring off the contract at the end of July.
Result	Lower realized price in spot market, therefore loss of Rs 500.	Futures market profit Rs 500.

Therefore, the loss in the spot position was off-set by the profit made in the futures position.

5.2.1 Hedge Ratio

Hedge ratio indicates the number of lots/contracts that the hedger is required to buy or sell in the futures market to cover his risk exposure in the physical / spot market. It helps to neutralize the price changes between Spot and Futures. Hedge ratio is calculated as under:

Hedge Ratio = coefficient of correlation between spot and futures price * (standard deviation of change in spot price / standard deviation of change in futures price)

Example:

Mr. X has an exposure of 50 MT of a commodity and wishes to hedge his position in the futures market using a hedge ratio for appropriate hedging. The historical prices available are as follows:

Spot price of the commodity (Rs.)	Futures price of the commodity (Rs.)
100	112
101	114
104	119
108	122
109	124
109	123
106	118
107	113
99	110
96	107
93	103

Based on the above historical prices, Mr. X calculates the hedge ratio and finds the number of lots of futures to be traded for efficient hedging (contract lot size is 5 MT i.e. he holds 10 lots in 50 MT).

Spot Price of the commodity	**Change in spot price**	**Futures price of the commodity**	**Change in futures price**
100		112	
101	1	114	2
104	3	119	5
108	4	122	3
109	1	124	2
109	0	123	-1
106	-3	118	-5
107	1	113	-5
99	-8	110	-3
96	-3	107	-3
93	-3	103	-4
Standard deviation of change in spot	3.56	Standard deviation of change in futures	3.63
Correlation between spot and futures	0.93		
Hedge ratio	Correlation * (SD in change in spot / SD of change in futures) = 0.93 * (3.56 / 3.63) = 0.912		
No of contracts to be hedged	(Physical Exposure * Hedge ratio) / Lot size = 9.1		

It shows that hedge ratio suggests that instead of hedging 10 lots equivalent to 50 MT, Mr. X will hedge 9 contracts so as to neutralize the volatility of price change and to ensure that the loss arising out of one position will be efficiently offset against profit from another.

Example:

A silver trader bought 500 kilograms of silver in the spot market to make silverware for sale after a month. He fears a fall in silver prices over the next month and wants to hedge his risk in the futures market by selling one-month silver futures. His hedge ratio is calculated from the following information.

Standard deviation of the change in spot price of silver for the one-month period = 1.17
Standard deviation of change in futures price of silver for the same period = 0.62
Co-efficient of correlation between spot and futures price for the same period = 0.60

Hedge Ratio= 0.60*(1.17/0.62) =1.132258
Optimal Hedge = 1.132258 * 500 = 566.18 kilograms of futures

Assuming the lot size of silver is 30 KG, number of futures contracts required to implement this hedge is: (Spot market Exposure * Hedge ratio) / Lot size
= (500 * 1.1322) / 30
= 18.87
= 19 lots would have to be sold to hedge against his spot market exposure

Correlation co-efficient between spot and futures mentioned above is 0.60 for explanation purpose. However, in real life, correlation between spot and futures would generally be much higher in a liquid and transparent market, because of which beta and hedge ratio will also be higher.

Benefits of hedging

1) Price risk is minimized
2) Provides for advance production/business planning and cash flow management

Limitations of hedging

1) Price risk cannot be fully eliminated.
2) Basis risk continues to remain
3) Transaction cost is to be incurred
4) Margin is to be maintained leading to cash flow pressures
5) If hedging is selectively carried out on a few positions based on one's view and not on other positions, the hedging transaction leg itself may result in loss or cumulatively over a period, total gain on hedged leg may be negative. This is because selective hedging, with the choice to hedge or not to hedge, is as good as speculation or trading the commodity. Speculation / trading have payoffs on both the sides – gains as well as loss. Hence, an entrepreneur who wants to focus on his core competency in his business avoids selective hedging and implements the policy of hedging the incidental risks at all times.

5.3 Speculation

Speculation is the practice of engaging in trading to make quick profits from fluctuations in prices. It includes buying, selling (short selling) of securities, commodities or any financial asset. They never utilize the underlying asset for future physical use as their objective is to get quick profits from change in prices.

There are two types of speculators:

1) Long speculator
2) Short speculator

Long speculators are those who buy first and expect the price to increase from the current level.

Short speculators are those who sell first and expect the price to decrease from the current level.

Speculation is an action that does not undertake safety of the initial investment along with the return. Speculating is all about taking risk on capital in anticipation of gain but recognizing the possibility of loss.

Speculation: Long Position in Futures

Taking a long position (i.e. buying) in a commodity futures contract in expectation of an increase in price before the expiry of the contract without any corresponding short positions in the spot market is called a long speculative transaction. If the price of the futures contract increases before the expiry of the contract, then the trader makes a profit by squaring off the position, and if the price of the futures contract decreases then the trader incurs a loss.

Speculation: Short Position in Futures

Short speculators are those who expect the price to fall and therefore sell futures contracts. Taking a short position in futures (i.e., selling) in a commodity futures contract in anticipation of a decrease in the price before the expiry of the contract without any corresponding long positions in the spot market or without stocks in hand is called a short speculative transaction. If the price of the futures contract decreases before the expiry of the contract, then the trader makes a profit by squaring off the position and if the price of the futures contract increases then the trader incurs a loss.

Using options for speculative trades

Options are a versatile risk-management instrument and an attractive tool for smart traders. They can be used for protection under rising or declining price scenarios to achieve short-term or long-term objectives. They can be used conservatively or aggressively.

Call and put options are distinctly different contracts. Buyers of calls or puts are buying the rights contained in the specific option. Sellers of calls or put options must sell or buy the commodities contained in the specific option. Option buyers pay a price for the rights contained in the option. The option price is known as premium.

Option Buyer/Seller	**Call Option**	**Put Option**
Option Buyer	Pays premium; right to have buy / long position in the commodity or its Futures, as the case may be	Pays premium; right to have short sell position in the commodity or its Futures, as the case may be
Option Seller	Receives premium; obligation to sell the commodity or have a short sell position on the commodity futures, as the case may be	Receives premium; obligation to buy the commodity or have a long / buy position on the commodity futures, as the case may be

An option buyer has limited loss potential (only to the extent of premium paid) and unlimited gain potential, converse is true for the sellers. The premium is paid initially when the option is bought. Since the option buyer has rights, but not obligations, the option buyer does not have margin requirements. Option buyers can exercise (use) their rights at the time of option expiration, in the case of European style option and any time till the date of expiry in the case of American-style option. Option sellers collect the premium for their obligations to fulfil the rights. An option seller has limited gain potential (premium received) and unlimited loss potential, due to the obligations of the position. Since the option seller has obligations to the exchange, option sellers need to adhere to the margin requirements of the clearing corporation to ensure performance of the options contract.

The commodity producers and sellers can use the following strategies for price protection.

Option strategies for commodity buyers	**Option strategies for commodity sellers**
Buy calls for protection against rising prices	Buy puts for protection against falling prices
Sell puts to lower your purchase price in a stable market	Sell calls to increase your selling price in a stable market

5.4 Arbitrage

Arbitrage involves making purchases and sales simultaneously in two different markets to profit from the prevailing price differences. There are two broad types of arbitrage: spot versus futures arbitrage and futures versus futures arbitrage. The factors driving arbitrage are the real or perceived differences in the equilibrium price as determined by the supply and demand at different locations. Arbitrage strategy even does not take any Basis Risk. If Basis risk exists because of uncertainties of reversal or roll-over, then those are, in fact, not purely an arbitrage position but a bet on specific differences.

Spot versus Futures Arbitrage

Spot versus futures arbitrage can be undertaken when the estimated fair price of the futures contract is different from the traded price of the futures contract. Assume that the spot price of gold in June is Rs 50,000 per 10 grams and the cost of carry for one month is Rs 700 per 10 grams i.e., the fair futures price is Rs 50,700 per 10 grams. However, the July gold futures is trading at Rs 51,200 per 10 grams. In such a scenario, fair price is less than the traded price. An arbitrager can buy gold at Rs 50,000 per 10 grams in June and simultaneously sell July gold futures at Rs 51,200 per 10 grams. He can earn a riskless profit of Rs 500 per 10 grams (Rs 51,200 minus 50,700) and deliver the gold on maturity. This is also known as 'spot versus futures arbitrage'.

Cash and Carry arbitrage

Cash-and-carry arbitrage refers to buying of a physical commodity with borrowed funds and simultaneously selling the futures contract. The physical commodity is delivered upon the expiry of the contract. This opportunity arises when the futures price of the commodity is more than the sum of the spot price and the cost of carry (till expiry).

Example:

Mr. X is an arbitrager in the commodity market. In May, he resorts to cash and carry arbitrage transaction in silver in the following manner:

In May, Mr. X buys 30 kg of silver at the spot price of Rs 50,000 per kg by borrowing Rs 15,00,000 at the rate of 10 percent per annum for two months (at simple interest) and simultaneously sells silver July futures contract of 30 kg at a price of Rs 51,500 per kg. He keeps possession of silver for two months. He closes out the futures position on the contract expiry day when the spot and futures prices converged, by giving delivery of the silver purchased in May. The transaction yields a gross profit of Rs 45,000 (Rs 1,500 per kg x 30 kg). From the amount of Rs 45,000, Mr. X returns the borrowed amount of Rs 15,00,000 along with the interest charges of Rs 25,000. Mr. X earns a net arbitrage profit of Rs 20,000 (ex-interest).

Reverse Cash and Carry Arbitrage

Reverse cash and carry arbitrage opportunity is for those who have asset holdings with them. The arbitrage opportunity can be explored when futures price of the commodity is less than the spot price + cost of carry. It is initiated by lending funds released from selling the commodity in the spot market and buying futures simultaneously. At the end of the contract period the asset will be bought after funds realization happens and interest income is also part of final calculations as an income.

The same can be executed between futures contracts expiring in two different months by simultaneously selling the near month contract and buying the next month contract or vice-versa.

Example: Mr. Y an arbitrager enters into commodity futures transaction on seeing riskless profit opportunity in the market. In March, he resorts to reverse cash and carry arbitrage transaction in silver in the following manner:

He sells 30 kg of silver in the spot market at Rs 40,500 per kg and simultaneously buys silver May futures contract of 30 kg at Rs 40,600 per kg. The Mr. Y invests the sale proceeds of Rs 12,15,000 at the rate of 10 percent per annum for two months (simple interest). He closes the futures position on the contract expiry date, when the spot and futures prices converged, by taking delivery of silver. He earns an interest of Rs 20,250 on an investment of Rs 12,15,000. His arbitrage profit is Rs 17,250 after replacing 30 kg physical silver at the rate of Rs 40,600 per kg.

5.5 Spread Trading

Spread refers to the difference in prices of two futures contracts i.e. two months of the same commodity or between commodities that are economically related or have a fairly steady correlation. An understanding of spread relationship in terms of fair spread is essential to earn speculative profit. Considerable knowledge of a particular commodity in terms of its fundamentals and various data releases that moves the prices of the commodity are essential for the trader to understand the market trends and appropriately use spread trading strategy. When actual spread between two futures contracts of the same commodity widens, trader buys the near-month contract because it is underpriced and sells the far-month contract because it is overpriced. When actual spread between two futures contracts of the same commodity narrows, trader sells the near-month contract because it is overpriced and buys far-month contract because it is underpriced.

However, such a spread trade strategy would always be profitable only if the misalignment in prices is due to market forces (or market related factors) and not caused by special factors like harvesting season, sowing season, crop failure, quality issue with the crop expected to come into the warehouses, etc.

Buying a Spread

Buying a spread is an intra-commodity spread strategy. It means buying a near-month contract and simultaneously selling a far-month contract. This strategy is adopted when the near-month contract is underpriced, or the far-month contract is overpriced. A trader of the above strategy buys the near-month contract and sells the far-month contract when the spread is not fair and squares off the positions when the spread corrects and the contracts are traded at the fair spread.

Example: Mr. X is an active trader in the commodity futures market. In April, Mr. X gets an opportunity for spread trading in gold futures. He is of the view that gold June futures contract is underpriced relative to gold August futures contract and so he buys one contract (1 kg) of gold June futures at the price of Rs 50,700 per 10 gm and simultaneously sells one contract of gold August futures at the price of Rs 50,800 per 10 gm. As per his view, spread between gold June futures contract price and gold August futures contract price reduces in May. In May, he squares off gold June futures contract at Rs 50,900 per 10 gm and gold August futures contract at Rs 50,950 per 10 gm. Mr. X makes a net gain of Rs 5,000.

Selling a Spread

Selling a spread is also an intra-commodity spread strategy. It means selling a near-month contract and simultaneously buying a far-month contract. This strategy is adopted when the near-month contract is overpriced or the far-month contract is underpriced. A trader of the above strategy sells the near-month contract and buys the far-month contract when the spread is not fair and squares off the positions when the spread corrects and the contracts are traded at fair spread.

Example: Mr. Y is an active trader in the commodity futures market. In April, Mr. Y gets an opportunity for spread trading in gold futures. Mr. Y is of the view that gold June futures contract is overpriced relative to gold August futures contract and so he sells one contract (1 kg) of gold June futures at the price of Rs 50,750 per 10 gm and simultaneously buys one contract of gold August futures at the price of Rs 50,800 per 10 gm. As per his view, the spread between gold June futures contract and gold August futures contract increases in May. In May he squares off gold June futures contract at Rs 50,800 per 10 gm and gold August futures contract at Rs 50,900 per 10 gm. Mr. Y makes a net gain of Rs 5,000.

A futures spread trade involves simultaneously buying and selling futures contracts. In spread trading, there are two legs of transactions. The first leg is completed initially and the second leg a little later. Therefore, a spread is a position that includes simultaneous long and short positions in the same or related futures markets. A spread trader is interested in the expected change in the relative value of the two contracts to make a profit.

Futures spreads are broadly divided into two categories based on the economic relationships between the legs of the spread.

A) Inter-commodity spread

An inter-commodity spread is made up of a long position in one commodity and a short position in a different but economically related commodity.

Example: Spread between Guar Seed and Guar Gum; Spread between Soyabean and Soya Oil.

This strategy involves buying and selling different but economically related commodities by taking long and short positions in the commodities simultaneously for the same calendar month.

A trader expects a fall in the spread between guar seed and guar gum in the near month (as the guar seeds supplies are going to dwindle and the availability of guargum is likely to be more than what is demanded) and executes the short sell position in spread by using the following strategy.

Step 1: The trader buys June guar seed futures and sells guar gum June futures on June 1. This creates short sell position in spread as reducing spread will result in a gain to the trader.

Step 2: He holds the contract and watches the spread movements and finds the spread reduces on June 16. On June 16, he squares off his both the legs. In other words, he buys spread to square off his short-sold position in spread.

Step 3: He squares off his position and closes out both the futures contracts. Profit realized from this strategy is illustrated below:

Contract	**June Guar Seed Futures**	**June Guar Oil Futures**	**Spread**
June 1	Buy at Rs 6010	Sell at Rs 11120	Rs 5110
June 16	Sell at Rs 6075	Buy at Rs 11050	Rs 4975
Profit/loss	+65 Rs	+70 Rs	-135 Rs
Net Profit	+135 Rs		

Types of inter commodity spreads:

Crush spreads: It specifically refers to soyabean complex whereas the spread trader buys soyabean and sell soyabean meal and soyabean oil in a specific proportion to locking processing margins.

Crack spreads: This strategy specifically refers to the Energy complex, where trading happens between crude oil and petroleum products extracted from it. It helps lock refining margins.

B) Intra-commodity spread (Calendar spread)

An intra-commodity spread is made up of a long position in futures contract and a short position in another month contract of the same underlying or another contract of the same commodity with a different lot size. As the level of settlement default risk is low in such positions, the margins are also low.

Bull spread: A bull spread using futures is created when the actual spread is more than the fundamental spread (average difference) between two calendar month contracts. The expectation while creating such spread is that difference will narrow in future.

Bear spread: A bear spread using futures is created when the actual spread is less than the fundamental spread (average difference) between two calendar month contracts. The expectation while creating such spread is that the difference will widen in the future.

Bull spread – Example:

A trader believes that the spread between two gold futures contracts will narrow in the near future due to skewed buy-sell pressure in gold in the near month and a normal buy-sell pressure in the next month leading to spread squeeze and he likes to capitalize on the opportunity by executing a spread trade strategy.

Step 1: He buys the near month futures contract and sells the far month futures contract.

Step 2: He holds the contact and watches the spread movement daily and finds that the spread narrows on the 20th day sharply.

Step 3: He squares off the position by closing out the futures contracts

	April Gold Futures	June Gold Futures	Change in spread
1st April	50,100	50,200	100
20th April	50,260	50,320	60
Profit/Loss	+ 160	-120	
Net gain	+40		+40

Bear spread – Example:

A trader is of the view that the spread between two gold futures contracts will widen in the near future and he likes to capitalize on the opportunity by executing a spread trade strategy.

Step 1: He sells the near month futures contract and buys the far month futures contract.

Step 2: He holds the contact and watches the spread movement daily and finds that the spread widens on the 15th day sharply.

Step 3: He squares off the position:

	June Gold Futures	August Gold Futures	Change in spread
1st June	50,100	50,300	200
15th July	50,960	50,220	260
Profit/Loss	+ 140	-80	
Net gain	+60		+60

Lower Margin for spread trading

A spread position usually carries a lower margin than an outright position, as net amount of value to be settled tends to be less volatile than an outright price of a single position in a contract. Each exchange sets the margin requirements for its spread trading. Spread trading results in very thin profit margin in relation to outright trading. Moreover, spread trading involves simultaneous buy-sell of futures contracts of different expiry dates and hence exchanges set lower margin requirements. SEBI has come up with the circular in March 2023 on spread margin benefit, which provides for an overall low level of margin compared to the required margin if both the legs of trade are considered independent. The benefit is up to 75% of the total initial margin in case of same underlying commodity while it is up to 50% of the total initial margin in case of two different commodities such as a commodity complex. Regulations also require that such a spread margin in commodity complex shall be provided if there exists a correlation of 0.90 between any two commodities. Extreme Loss Margin is applicable individually to both the legs of the positions that are taken by the traders. As Such spread margin is permitted when each individual contract in the spread is from amongst the first six expiring contracts.

5.6 Basis

Basis is a measure of the difference between the spot and the futures prices.

Basis = Spot Price – Futures Price

Futures price broadly follow the price movement of the underlying asset in the spot markets. However, certain factors can influence the futures prices more than the spot prices such as seasonality of crops, depletion of inventory, expected increase in demand, dwindling supply of a commodity due to weather or other factors etc. The futures price of a commodity is the spot price adjusted for variables such as freight, handling, storage and insurance, as well as the local supply and demand factors.   In addition to above factors, basis may change due to changes in demand and supply of a particular commodity, changes in cost of carry especially in interest rates, insurance and storage costs, availability of logistics, and changes in time remaining to expiry.

The price difference between the spot and futures prices may be small or sometimes substantial, and the two prices may not always vary by the same degree as they refer to delivery of the commodity now versus a future delivery date.

Basis Risk

Basis risk is defined as the risk that a futures price will move differently from that of its underlying asset. There is a relationship between the futures price and its underlying commodity spot price and the futures price broadly follow the spot price and the difference between the two tends to become less as the futures approaches its expiry date. However, other factors can occasionally influence the futures price. The best method of eliminating the basis risk is to hold the futures contract till expiry, since the futures and spot prices converge at the time of expiry.

Negative Basis / Contango Market

When the futures price is greater than the spot price, the basis is a negative number. This is also known as the 'Contango' market. For example, a change of basis from Rs. -50 (i.e., spot price is Rs. 50 less than the futures price) to Rs. -40 (i.e., spot price is Rs. 40 less than the futures price) indicates a strengthening basis, even though the basis is still negative. Strengthening of basis is associated with increase in spot prices and/or reduction in Futures. In such a case the market is said to be moving in a direction from 'contango' to 'backwardation'. With the expiry of futures and convergence of the futures prices with that of the spot prices, Contango disappears, and Basis strengthens from negative number (like -40) to zero.

In other words, 'contango' refers to a market condition when the price of the commodity for future delivery is higher than the spot price of the commodity and reflects the normal market conditions where the future price is a reflection of cost of the commodity today and cost of carrying it for future delivery. The size of the contango is a function of the cost of storing, financing and insuring the commodity to deliver it on a future delivery date.

In Agricultural commodity derivatives, a contango-like situation may also arise due to expected quality-related issues in goods lying in warehouses or are expected to come into warehouses, which the traders expect that may not be able to meet the delivery specifications as per the derivative contract and may be rejected. This may create a run on the short sellers or genuine sellers who want to deliver and scarcity is created for supply of goods meeting the delivery norms of the derivative contracts traded on the exchange platforms'. Similarly, weak monsoon forecasts may also create expected demand-supply gap in commodity and inflate the contango effect.

Positive Basis / Backwardation Market

When the futures price is less than the spot price, the basis will be a positive number. This is also known as the 'backwardation' market. A change of basis from Rs. +20 (spot price is Rs. 20 more than the futures price) to Rs. +15 (spot price is Rs. 15 more than the futures price) indicates a weakening basis, despite the fact that the basis is still positive. Positive basis is

associated with higher spot, lower Future price and 'backwardation' like situation in the market. Weakening of basis is associated with reduction in spot or rise in Futures or movement in the direction towards 'contango'.
In Agri markets, the 'backwardation' is a common phenomenon due to various reasons. The reasons may be related to:

a. Longer staggered delivery periods
b. Seasonal arrivals of crops. For examples, arrival months futures in rabi and kharif crops generally see significant backwardation which may keep changing depending upon crop forecast and monsoon forecasts.

With the expiry of Futures and convergence of it with spot, 'backwardation' disappears, and Basis reduces from positive to zero.

In both the types of markets (i.e., both in contango and backwardation), the basis must narrow to zero as the contract moves towards expiry date because of convergence. Thus, strengthening of basis happens when basis becomes more positive or less negative and weakening of basis happens when basis becomes less positive or more negative.

Example of Strengthening of basis:

Day	Spot	Futures	Basis
1st Jan	1100	1300	-200
15th Jan	1200	1350	-150

Example of weakening of basis:

Day	Spot	Futures	Basis
1st March	1100	1300	-200
15th March	1200	1450	-250

Long hedge and Short hedge

As discussed earlier, hedging means taking a position in the future market that is opposite to position in the physical market with a view to reduce risk associated with unpredictable price changes. The resultant profit (loss) in the cash position is offset by equivalent loss (profit) in the futures position.

Long hedge is associated with Long in Futures and selling in spot. Thus, Long hedgers benefit if the basis weakens, i.e., Future price going up and Spot price coming down. Generally, Long hedge happens for raw materials by processors wherein the processors expect their raw material prices may increase impacting the competitiveness of his business.

Short hedge is associated with Short in Futures against spot buying position or against yet to be manufactured stocks. Thus, short hedge happens with finished goods by processors / manufacturers. Short hedgers benefit with strengthening of basis i.e. spot price going up and Futures price falling.

Market types based on change in basis:

Market Type	Basis	Preferred position
Contango market	Strengthening of basis	Benefits short hedger
Contango market	Weakening of basis	Benefits long hedger
Backwardation market	Strengthening of basis	Benefits short hedger
Backwardation market	Weakening of basis	Benefits long hedger

For example

Mr. X is keeping a track of the basis for Commodity A in the month of June which was continuously getting strengthened as illustrated in the table below:

Contango Market - Strengthening of Basis - Benefits Short Hedger					
Date	Spot Market (Buy/Sell)	Spot Price (Rs.)	Futures Price (Rs.)	Futures Market (Buy/Sell)	Basis
1st July	Buy	1100	1800	Sell	-700
15th July	Sell	850	1200	Buy	-350
	Gross Total	-250	600		
		Net Total	350		

Mr. Y is keeping a track of basis for commodity B in the month of May which was continuously getting weakened as illustrated in the table below:

Backwardation Market - Weakening of Basis - Benefits Long Hedger					
Day	Spot Market (Buy/Sell)	Spot	Futures	Futures Market (Buy/Sell)	Basis
1st June	Sell	1800	1500	Buy	300
15th June	Buy	1400	1300	Sell	100
	Gross Total	400	-200		
		Net Total	200		

5.7 Option Trading Strategies

In the previous unit, we learnt about options contracts and the payoffs of basic options contracts (Calls and Puts) to the buyers and sellers of these options and when they can be used. In the section below, we will learn a few strategies using these options: some plain-vanilla options and some combination strategies. A trading strategy is a set of option positions to achieve a desired risk-return profile. Option strategies are used to minimize or offset the price risk by Investors and Hedgers. The strategy could vary depending on the market outlook in the views of the trading participants.

Combination strategies mean use of multiple options with same or different strikes and maturities to implement a view. Combination strategies are more suitable when the market view is moderately bullish / bearish, range bound or uncertain and the transaction objective is to also reduce the overall payout of options premium. Numerous strategies can be worked out depending on the view on the market, risk appetite and objective. In this section, we will briefly discuss some of the strategies that can be formed using options.

5.7.1 Covered Option Position

A) Covered Short call

A covered short call position is created by combining a long underlying position with a short call option. A covered call option attempts to enhance the return in a stagnant market and at the same time partially hedge a long underlying position. Covered short call is different from a naked short call. A naked short call is a speculative position where the investor does not own the commodity.

Assume a trader holds 500 kgs of nickel of with the spot price of Rs.1000 per kilo. He writes a single call option with a strike price of Rs 1025 for a premium of Rs 12. On expiry, the outcome will be as follows:

- If the price remains at Rs.1,000, the option does not get exercised and he gets to keep the premium of Rs.12.
- If the nickel price rises to Rs.1025, the investor keeps the premium of Rs12 (on options) plus a gain of Rs.25 per kilo (on the spot position)
- If the nickel price falls to Rs.990, the option is not exercised by the buyer and the seller keeps the premium of Rs 12 which partly compensates the fall in the value of the spot position.

Thus, in covered call strategy the idea is to reduce the purchase price in the spot markets partly offset by the earnings from the option premium. While earning through option premium, care is taken to go for little out of money strike (OTM strike) so that the chances of it being exercised are low. The more out of money strikes are used, the chances of exercise are further reduced but option premium income will also reduce.

B) Covered Short Put

A covered short put position is a hedging strategy and is created when the investor is selling a put option and at the same time holding sufficient funds to buy the commodity, if necessary. A covered short put position attempts to enhance the return on funds while at the same time partially hedge a short underlying position. A covered short put position is different from naked short put position. Selling a put option without funds is called 'naked short put position' which is a speculative position.

Assume an investor enters into a covered short put position on gold and sells a Rs 50,500 put for a premium of Rs 600 when the current price is Rs 50,000. On expiry, the outcome will be as follows:

- If the price remains stagnant, the option will not be exercised by the buyer and the premium received is the profit to the investor having written the put option.
- If the price falls to Rs 49,900, the option is exercised but the loss to the investor is partially offset by the premium received by him. In this case, his loss on option position

from the price drop is 50500-49900=600 which gets offset by the premium received Rs 600 making the net loss zero.
- If the price rises to Rs 50,600 or above, the buyer would not exercise the option and hence the Rs 600 premium received by the investor is his profit.

Thus, in this strategy, intention is to earn option premium but by reducing risk of exercise. For this, out of money strike is chosen so that the chances of it being exercised remains low. The more out of money strikes are used, the chances of exercise reduce further, but option premium income will also reduce.

5.7.2 Spread trading

Spread trading involves simultaneous purchase of call option or put option of same/different strike prices and expiration dates to profit from direction of price movement and the volatility in commodity prices.

Vertical Spreads

Vertical Spreads attempts to profit from the directional movement in the underlying commodity. Unlike an outright purchase of call/put option, the vertical spreads are used when the market view of the investor is moderately bearish/bullish. Vertical spreads are implemented by buying or selling calls or puts with different strike prices but of the same expiry months. Vertical Spreads are classified into bull spreads and bear spreads. In a bull spread, the investor buys a lower strike and sells the higher strike. Conversely, the investor sells the lower strike and buys a higher strike in a bear spread.

Summary of Vertical Spread Strategy:

A strategy is a set of options positions that an investor or trader takes to achieve a particular risk/return profile based on his market view.

	Bull Call	**Bear Call**	**Bull Put**	**Bear Put**
Market view	Moderately Bullish	Moderately Bearish	Moderately Bullish	Moderately Bearish
Strategy	Buy lower strike and sell higher strike	Sell Lower strike and buy Higher strike	Buy lower strike and sell higher strike	Sell Lower strike and buy Higher strike
Net Premium	Paid out	Received	Received	Paid Out
Maximum Risk	Net Premium paid	Difference in strike prices less net premium received	Difference in strike prices less net premium received	Net Premium paid
Maximum Reward	Difference in strike less net premium paid	Net premium received	Net premium received	Difference in strike less net premium paid

Example: Bull Call Spread in Gold

The options chain is given below:

Strike Price	Call Premium	Put Premium
50500	700	180
50525	490	230
50550	370	350
50575	250	470
50600	190	670

An investor is moderately bullish on gold and buys the 50550 calls and pay a premium of Rs.370 but believes that the price will not rise beyond 50590. So he sells the 50600 call at the same time and receives a premium of Rs.190. which brings down the cost of premium to Rs.180 this strategy is known as “Bull Call spread”.

- If price remain below Rs 50500 on the date of expiry, both options would expire out of the money and will not be exercised. Loss is limited to Rs 180.
- If the price rises between Rs 50550 and Rs 50600, The investor would exercise his option at Rs 50550 if the market price touches Rs 50590 and reduce his loss marginally from Rs 180 to Rs 140 (= 50590 – 50550 – 180).
- If the price rises beyond Rs.50600, If the price market price touches Rs.50630, both the calls will be exercised. The loss would be capped at Rs.130 (= 50,600-50,550 – 180).

Thus, a bull spread is a trading bet in a range with a slight bullish view. Being slight bullish view, call of lower strike price is purchased while option premium cost is reduced by selling call of higher strike price. The more higher the strike price trader goes for writing, the more out-of-money call writing will happen with lower chances of exercise but would also result in lower premium receipt from that OTM option.

A bear spread is essentially the other side of a bull spread and used by the investor if his market view is bearish.

Horizontal Spreads:

Horizontal spreads, also known as calendar spreads, attempt to profit from expected moves in volatility. Horizontal spreads are implemented by buying and selling options with the same strike price but different expiry months. There are two basic types of horizontal spreads. The first type is based on the view that volatility will fall in a short time horizon and the investor would sell a shorter maturity option and buy a longer maturity option on the same asset with the same strike price. This creates short positions in Vega and Theta and hence, investor gains with reducing Vega and Theta going further negative. This type of option spread will generate profit from the phenomenon that short term option will lose their time value much faster than long term option.

The second type of option spread takes the view that volatility will rise in short time horizon and the investor would buy a short maturity option and sell a long maturity option on the same underlying commodity and on the same strike price. This creates long positions in Vega and hence, investor gains with increasing volatility i.e., Vega in short run. This strategy is used to take advantage of key announcements such as RBI meetings and other key economic data releases/company earnings reports etc.

Diagonal Spreads:

Diagonal spreads attempt to profit from market view and changes in volatility. Diagonal spreads are implemented by buying and selling options with different strike prices and different expiry months. The investor would buy a call option if his view about the market is bullish and put options if his market view is bearish by selling short term options and buying long term options.

5.7.3 Straddle and Strangle

One of the common strategies in option trading involves simultaneous purchase of calls/puts with a view to profit from a change in the volatility of the underlying commodity. Investors with Long options anticipate an increase in volatility and they are long on vega i.e., volatilities. Similarly, one who is with short positions anticipates a decrease in volatility and are having short positions in volatility / vega. Volatility refers to the range to which the price of a commodity may increase or decrease. Straddles and Strangles are the two major strategies under this category.

Long Straddle: A long straddle is an option strategy where the trader buys a call and a put with the same strike price and same expiry date by paying premium.

Long Strangle: A long strangle involves the purchase of a call and a put with the same expiry date but with different strike prices.

	Long Straddle	**Short Straddle**	**Long Strangle**	**Short Strangle**
Market View	An increase in volatility	A decrease in volatility	A large increase in volatility	Large decrease in volatility
Methodology	Buy a call and put with the same strike price and expiry date	Sell a call and put with the same strike price and expiry date	Buy a call and a put with the same expiry dates but with different strike prices	Sell a call and a put with the same expiry dates but with different strike prices. To be safer, the trader may sell out of money call and put to reduce chances of being exercised

Maximum Risk	Total Premiums paid	Unlimited	Total Premium paid	Unlimited
Maximum Returns	Unlimited	Limited to the sum of the premiums received	Unlimited	Total Premiums received

Example: Straddle and Strangle

Option Chain for Aluminum

Strike Price	**Call Premium**	**Put Premium**
170	20	7
180	16	9
190	12	13
200	8	17
210	6	21

	LONG Straddle	**SHORT Straddle**	**LONG Strangle**	**SHORT Strangle**
Rationale: A major market announcement is due	Investor is unsure about direction of movement of price. Good news will push the price higher and bad news will bring down the price.	The investor is taking an opposite view and believes that the price will not move too far away from the current market price.	Investor expects more volatility in the prices to come.	Investor takes opposite view. He thinks volatility will not be more and will not increase beyond current level.
Construction	Investor buys a call at 190 for 12 and buys put at 190 for 13.	Investor sells a call at 190 for 12 and sells a put at 190 for 13.	Buying a put at 170 for 20 and buying a call at 210 for 21	Selling a put at 170 for 20 and selling a call at 210 for 21

Long Straddle: If the price rises to Rs 230, the investor exercises the call and abandon the put. He makes a gain of Rs.40 (= 230 - 190) minus premium of Rs 25. His net profit is Rs 15. If the price falls to Rs 150, the investor abandons the call and exercises the put. He makes a gain of Rs 40 (= 190 - 150) minus premium of 25. His net profit is Rs 15.

Short Straddle: The investor received a premium of Rs 25 initially. If the price rises to Rs 230, the call would have been exercised and his net loss is Rs 40 - 25 = Rs 15. If the price falls to Rs 150, the put would have been exercised and his net loss would be 40 - 25 = Rs 15.

Differences between Long Straddle and Strangle and Short Straddle and Strangle

	Long Straddle	**Long Strangle**
Construction	Purchase of a call and put with the same expiry dates and same strike prices	Purchase of a call and put with same expiry date but with different strike prices
Premium cost	Higher	Lower, as it is expected that buyer is ready to bear part of volatility within the range of two strikes
Potential for profit	Prices to move far beyond premium paid	More volatility needed for buyer of strangle to succeed and prices to move beyond premium paid

	Short Straddle	**Short Strangle**
Construction	Sale of a call and put with the same expiry dates and same strike prices	Sale of a call and put with same expiry date but with different strike prices
Premium receipt	Higher	Lower, as higher chances of writer to succeed as he is not writing volatility within the range of strike prices
Potential for profit	Price rise/fall to move within premium received.	Volatility to move within amount of premium received and range of strike prices.

5.8 Uses of Index Futures

- **For Hedging:** Index can be used for hedging based on the general sentiment levels in a market or its segment. For example, a construction company requiring different metals may hedge its exposure (i.e., its natural short position) by buying metal index futures (i.e., by taking a long position in index futures). Similarly, in case of expected surplus production of agricultural commodities, due to larger sowing and good rainfall, farmers may short sell an agricultural commodity futures index rather than picking and choosing individual futures of multiple commodities.
- **As "Proxy of monsoon" derivatives:** An agricultural commodity futures index may be considered as a proxy of monsoon derivatives to some extent, though it may not have perfect correlation with the performance of the monsoon. A food production company or an FMCG company may require several agricultural commodities in its production process. For example, production on milk biscuits require raw materials such as wheat, sugar, milk, etc. as key ingredients. If there are worries of deficit monsoon, there may be a shortage of agricultural raw materials and hence a risk of prices of agri commodities

going up, then such FMCG companies may buy the agricultural commodity index futures in advance to meet such an eventuality.

- **For Speculation:** If a trader expects a very good monsoon and thereby surplus supply of agricultural produce in the market which may lead to a broader decline in the prices of agri commodities, then the trader can initiate a speculative position by taking a short position in the agricultural commodity index futures. Similarly, if the view is of a bad monsoon leading to crop failures and hence a broader increase in agri commodity prices, then the trader can take a long position in the agricultural commodity index futures.

- **For Arbitrage:** Index Futures can provide opportunities for arbitragers. For example, when a 2-month Futures contract is in backwardation to a 1-month futures contract, this throws arbitrage opportunity as shown in the example below:

  If a 1-month MCX iCOMDEX Futures is at Rs 14,175 and the 2-month Futures is at Rs 14,150 (interest rate is 1% per month), this gives an arbitrage opportunity. An arbitrageur may purchase 2-months Futures and short sell 1-month Futures in the expectation that the prices will re-align subsequently, as 2-months Futures price should be equal to 1-month Futures price + 1% interest rate. In this example, the 2-months Futures is priced cheaply vis-à-vis the 1-month Futures. Hence, an arbitrage position can be taken by selling 2-months Futures and buying 1-month Futures.

5.9 Hedging Strategies Disclosure Norms

SEBI's circular dated 15th November 2018 issued to listed companies refers to recommendations of Uday Kotak's Governance Committee and lays down norms of disclosure about commodity exposures and extent of physical market exposures hedged by the listed corporates. The annexure to the circular provides details of disclosure requirements, part of which is descriptive and the other part quantitative (in a tabular format). It provides for disclosure of the following:

- Risk Management Policies in relation to Commodities including Hedging
- For each physical commodity, exposure in Rupees, in quantities, extent of it that is hedged in domestic markets (on OTC markets and Exchanges to be disclosed separately) and international markets (OTC and Exchanges to be separately disclosed)

The annual reports of various listed companies provide disclosures about their commodity price risk management. For example, according to Annual Report of Hindustan Unilever Limited (FY2019-20), the company hedged 72% of Brent price exposure, 15% of Benzene and 11% of Fuel Oil exposures in international OTC markets. As per the FY2020-21 annual report, HUL has hedged 49% of its Brent price exposure through international OTC markets. It also provided description about its commodity price risk management mechanism and also provided details of gains / losses in cash flow hedges due to the derivatives transactions.

According to annual report of Reliance Industries Limited (FY2019-20), the company is exposed to commodity price risk in crude oil, gas, downstream petrochemicals and petroleum products. It described the hedge policy and risk management structure including the governance framework. The data provided in these reports disclosed that about 41% of crude exposure, 45% of middle distillates exposure and 52% of light distillates exposure were hedged in international markets with separate disclosure of hedges in OTC and in Exchanges. In FY 2020-21 annual report, these were 65%, 68%, 43% respectively which indicates that the extent of hedging was higher in FY2020-21 compared to the year before that.

Annual report of Hindustan Zinc Limited (FY2019-20) provided that monthly average hedging was done to hedge commodity price risk. The report mentioned that 48% of Zinc exposure, 37% of Silver exposure and 75% of Lead exposure were hedged in international markets. These were further divided into separate figures for OTC and Exchanges. In the annual report of FY2020-21, these ratios were 72%, 48%, 67% respectively which again shows that the extent of commodity price hedging has increased in FY2020-21 against FY2019-20.

Sample Questions

1. ________ enters into the derivatives contract to mitigate the risk of adverse price fluctuation in her existing position.
   (a) Speculator
   (b) Trader
   (c) Hedger
   (d) Arbitrageur

   Ans: (c)

2. Selling a commodity futures contract, without any corresponding long positions in the spot market or without stocks in hand, in expectation of a decrease in price before the expiry of the contract is a ___________.
   (a) Long speculative transaction
   (b) Short speculative transaction
   (c) Long hedge transaction
   (d) Short hedge transaction

   Ans: (b)

3. In India, deep in the money commodity "call options on futures" on exercise gives the option buyer _________.
   (a) Long position in the underlying commodity futures
   (b) Long position in the underlying physical commodity
   (c) Short position in the underlying commodity futures
   (d) Short position in the underlying physical commodity

   Ans: (a)

4. ________ is the risk that a commodity's futures price will move differently from that of its underlying physical commodity.
   (a) Premium risk
   (b) Spread risk
   (c) Margin risk
   (d) Basis risk

   Ans: (d)

5. A _________ is an option strategy where the trader buys a call and a put with the same strike price and same expiry date.
   (a) Short straddle
   (b) Long straddle
   (c) Short strangle
   (d) Long strangle

   Ans: (b)

Chapter 6: Trading Mechanism

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Know the classification of exchange members based on their trading and clearing functions
- Know the trading system in the exchanges dealing in commodity derivatives
- Know the regulatory guidelines for selecting a commodity for derivatives trading on the exchanges
- List various elements of a contract specification and understand these terms
- Be able to compute the impact of one tick change on the value of a derivative contract
- Understand various types of orders (orders with price conditions and time conditions)
- Know various sources to track the prices of commodity derivatives
- Know the type of participants permitted to trade in commodity markets.
- Know about disclosures by exchanges

6.1 Membership on Exchanges Having Commodity Derivatives Segment

Membership of Exchange is governed by the SEBI Stock Brokers Regulation. The Regulation prescribes the procedures for the grant of recognition of a member, different types of members, net worth criteria, deposits, members' fees and charges for different categories of members.

Clearing Corporation is an entity that is different from an Exchange. Exchanges are governed by SEBI's Stock Exchange and Clearing Corporation Regulations, 2012. The same regulations provide governance norms for Clearing Corporations also. Clearing Corporation's main role is to carry out settlement of the trades executed on the Exchange platform. The entity which guarantees settlement is Clearing Corporation. For trading purpose, Exchange membership is required while for clearing purposes, membership of a clearing corporation is required.

Commodity Exchanges prescribe different eligibility criterion for different classes of membership. While admitting members, the commodity exchanges generally take into account specific factors such as corporate structure, capital adequacy, track record, educational levels and the experience of the promoters, infrastructure set-up, manpower, etc. to ensure that the members are equipped to offer quality broking services so as to build and sustain confidence among investors in the Exchange's operations. An applicant for commodity exchange membership must possess the minimum stipulated networth which varies across commodity exchanges as per their rules, regulations and bye-laws. The membership categories are more or less similar across the exchanges but vary considerably when we consider the membership criteria in terms of deposit/networth requirements, admission fees, and other membership requirements.

The members of the commodity exchanges are classified as below:

a) Trading Member (TM): A Trading Member can trade either on their own account or on behalf of the clients. This category of membership entitles a member to execute trades on his own account as well as for clients registered with him. The clearing and settlement of the trades done through a trading member is accomplished through a clearing member who is a member of clearing corporation where the security/commodity is being traded.

b) Self Clearing Members (SCM) / Trading cum Clearing Member (TCM): This category of membership entitles a member to execute trades on his own account as well as for his clients and also to clear and settle trades executed by himself as well as of his clients. Clearing members are members of the clearing corporation. They help the clearing corporations carry out risk management activities effectively and provide for confirmation/inquiry of trades through the trading system.

c) Professional Clearing Member (PCM): A professional clearing member is entitled to clear and settle trades executed by other members of the commodity exchanges (TMs/ TCMs) but does not have the right to execute trades. A professional clearing member is a clearing member and is not a trading member. Typically, banks and custodians become professional clearing members and clear and settle trades done by their trading members or the clients of the trading members. They are not entitled to execute any trades on the exchanges unless it is for the purpose of risk management.

Most of the members of the exchanges operate as Trading cum Clearing Members (TCMs) of more than one exchange. Most of the trades of Institutional participants are done through the trading members and are cleared by the professional clearing member (PCM).

Authorized Persons (APs):

SEBI had earlier allowed spread of sub-brokership as well as Authorized Person's network to expand the brokers' network. However, SEBI Board in its meeting held on June 21, 2018 decided that sub-brokers as an intermediary shall cease to exist with effect from April 01, 2019. All existing sub-brokers would migrate to become Authorized Persons (APs) or Trading Members if the sub-brokers meet the eligibility criteria prescribed under Stock Exchange bye-laws and SEBI Regulations.

An Associated Person is an individual employed by a SEBI-registered intermediary (stockbroker, investment advisor etc.) who interacts with the clients or has access to client information. They are crucial in facilitating securities transactions but **cannot** act independently. Their responsibilities include, soliciting clients for securities transactions and handling their client accounts and transactions. They are expected to route all monetary transactions of their clients directly through the brokers and not to be handled by themselves. They must be qualified and certified by SEBI to ensure competent and ethical conduct within the securities market.

6.2 Trading System in the Exchanges

6.2.1 Screen Based Trading System

Derivative Exchanges offer a nation-wide online fully automated screen-based trading system (SBTS). In this system, the trading member of the exchange can put in the orders and the prices at which they would like to transact. The transaction gets executed as soon as a buy order matches with a sell order in terms of price.

The order matching is done on a price-time priority basis. This means that all the orders received are first sorted on 'best-price' basis i.e., orders are first ranked according to their prices and similar priced orders are then sorted on a time-priority basis (i.e., the order that comes in early gets priority over the order that came in later). Highest priced buy orders and lowest priced sell orders are matched first for trade, after which next highest buy order or next lowest sell order comes up for trade match. It indirectly means that reducing buy order limit will delay execution while increasing buy order price will increase the probability of the order getting matched and converted into trade. Also, reduction in quantity of the order from the original quantity will not change its price-time priority. SBTS enables market participants to see the prices on a real-time basis and trade with one another simultaneously, irrespective of their geographical location.

In this trading system, an order number or trade number is generated for the orders (that are entered into the system after being accepted) and for the executed trades (as the order gets matched for the price and quantity and becomes trade). A trading system also provides other live market information such as the last traded price, traded quantity, open, high, low, close price, total traded value, total traded quantity, etc. Connectivity to SBTS can be accomplished through laptops, tablet PCs, desktop computers, and mobile phones.

A commodity exchange provides a trading platform or an electronic trading system and lays down well defined trading rules such as:

Rules for Buy and Sell Side of Futures contractsSell Side	Buy Side
• The seller needs to pay an upfront initial margin as prescribed by the exchanges to take a short position in the commodity futures market. • The open short position is exposed to mark to market . • Open short position may result in giving physical delivery or cash settlements on expiry date. Quality certification is a mandatory requirement. • The sell position can be squared off during the same day or any time during the life time of the contract. • The margins are released if the short position is squared off.	• The buyer needs to pay an upfront initial margin as prescribed by the exchanges to take a long position in commodity futures market. • The long position is exposed to mark to market if kept open. • Open long position may result in an obligation to receive physical delivery or cash settlements on expiry date depending on the settlement mode of the derivative contract. • The buyer if desires can square off his position during the same day or any time during the period of contract. • The margins are released if the long position is squared off.

Other than the SBTS, trading in commodity derivatives can be done using algorithms which measures market movements and pushes orders for the best buy/sell executions given the market conditions.

6.2.2 Algorithmic Trading

Algorithmic trading is introduced and defined as trading in financial instruments where a computer algorithm automatically determines individual parameters of orders such as initiation of order, timing, price or quantity, managing the order post submission without / with limited human intervention.

Any order generated using automated execution logic is known as algorithmic trading. Algorithmic trading permits the use of programs and computers to generate and execute orders in markets with electronic access and does not require human intervention. It employs a defined set of instructions on timing, price, quantity, or any mathematical model for placing orders at a faster pace and with higher frequency.

Algo trading is tailored to perform according to the account type an investor chooses. For example, an investor who prefers a conservative investment profile will have an automatic trading protocol that is programmed to perform in a conservative manner, meaning if a commodity’s price movement is too volatile, it may sell that commodity automatically to prevent a potential loss. Another example would be the opposite scenario, where an investor may prefer an aggressive investment strategy. The algorithm on that particular account would be programmed to ride the wave of volatility, allowing for large market fluctuations without squaring off a trade or cancelling a standing order. Algo trading is permitted in commodity exchanges subject to the broad SEBI guidelines dated 27th September 2016.

High Frequency Trading (HFT) is part of algorithmic trading that comprises latency-sensitive trading strategies and deploys high speed networks to connect and trade on the trading platform. As per the regulatory norms, Immediate or Cancel and Market orders are not allowed for the algorithmic traders. Members are expected to prevent any unauthorized access to the software and should allow it to be handled by the authorized dealers only. There are provisions of audit. The regulations provide for dis-incentivizing higher number of orders which are not executed. The exchanges provide penalty provisions at different slabs of Order-to-trade ratio.

The algorithms need to be reviewed by the Exchanges before it is used by brokers. The algorithm which leads to the orders resulting in taking away liquidity from the market, or abnormal or manipulative prices are not approved for use.

If Algo trading is used without due care and diligence, it may throw huge risk to market integrity even with small error. The member should have adequate risk management system and control for the same. They should have separate dealer-wise limit, internal price bands so that ordered price doesn’t cross a level and order size limit.

6.2.3 Trading Hours

Trading in the commodity exchanges take place on all days except Saturdays and Sundays and the exchange-notified holidays. The holidays are notified in advance.

Types of commodities	Trading Days and Time (IST)
Domestic Agricultural Commodities	Monday to Friday (9:00 AM – 5:00 PM)
Agricultural Commodities including agri processed commodities	Monday to Friday (9:00 AM -9:00 PM)
Non-agricultural Commodities	Monday to Friday (9:00 AM – 11:30 PM / 11.55 PM*) ** After the end of US day light savings (fall season)*

Exchanges have flexibility to fix their own market timings within the above timing provided by SEBI. For non-agricultural commodities, trade timings are allowed up to 11:30 / 11:55 PM due to specific reasons. In case of market outages that leads to a delay in the relaunch of the markets within 30 minutes before scheduled closure of the respective market segment, the timing for the same can be extended by another 30 minutes. The intimation regarding the extension of trading hours would have to be sent at least 15 minutes before the scheduled closure of market timings (i.e. before 4:45 PM, 8:45 PM and 11:10 PM (only if the scheduled market closure is 11:25 PM). Most of the non-agricultural commodities’ futures markets follow international benchmark prices. For example, prices of Oil, Gold, Silver, Metals are based on internationally decided benchmark prices. Hence, to arrive at fair value of DSP or

FSP in Futures trading in India, trading (timings) of these commodities in Indian exchanges would have to be in alignment with the international markets to provide for real time hedging opportunities when the benchmark markets are operational.

6.2.4 Trading parameters across contracts

Base Price

When a new future contract is made available for trading, the exchange decides its base price, which is used to decide Daily Price Limit on first day. This price is determined on the basis of a few minimum number of trades happening during first half an hour of trading or up to an extended period of total one hour. Once the contract is listed on the exchange, the base price keeps changing from the second day of its launch as per the official closing price of that contract on the exchange on the preceding day.

Open, High, Low and Last Traded Prices

All commodity exchanges continuously disseminate open, low, high and last traded prices on a real time basis on their screen during the trading session.

Circuit Filters

Circuit filters, also known as the Daily Price Range (DPR) or Daily Price Limit (DPL), is the maximum price range within which contracts would be permitted to trade during a day. This is used as a risk management tool in highly volatile markets. DPL regulations provides a price limit and a cooling off time and a permanent closure of the market beyond a limit for domestic commodities. Details of separate pre-defined DPR for various agricultural and non-agricultural commodities are discussed in section 7.10 of this workbook.

Settlement Price

In commodities futures, there are two types of settlement price: one is the daily settlement price (DSP), known as closing price, and the other is the final settlement price (FSP), also known as Due Date Rate (DDR). Daily settlement price is used to calculate the daily mark-to-market profit or loss. It helps the clearing corporations to avoid accumulation of losses on the part of participants. Final settlement price (FSP) is the price at which the delivery or final cash settlement is done at the expiry of the contract. FSP or DDR is also used for determination of "delivery default penalty" in case of non-delivery of short sell quantity. It is also used to determine delivery and payment obligations arising out of the expiry of Options on Goods or the devolved open positions from an expired Options on Futures contracts. FSP in case of Options on Futures is DSP of the underlying Futures itself while in the case of Options on Goods, it is the same as FSP of Futures expiring on the same day. There are regulatory guidelines to arrive at the Daily Settlement Price (DSP), Final Settlement Price or Due Date Rate and the delivery default penalty and working out compensation to the buyer in such case, using the FSP/DDR.

The procedure for arriving at FSP is generally defined in Contract Specifications which is very much standardized as per the SEBI prescribed guidelines based on the polled spot market prices from a portfolio of spot market ecosystem participants. Exchanges have their internal policies in addition to the regulatory guidance to arrive at FSP in case of non-availability of Spot Markets on the contract expiry day. Last Traded Price at the end of the day or on expiry of contract (LTP) may be different from the DSP/FSP/DDR. This is because DSP or FSP is arrived at by using documented methodology while LTP is actually the price at which the last contract of the day was traded.

Delivery Process

Each futures contract for the specified delivery month is deemed to have entered into the delivery period from such date of its expiry month, as specified by the Exchange in the relevant contract specification. Each commodity has its own pre-specified delivery logic as provided in the respective contract specification. Delivery logic means buyers and sellers' choice on open positions during the tender/delivery period. Basically, two delivery options are available in the commodity derivative markets:

- Compulsory delivery
- Cash Settlement

In the compulsory delivery option, both buyer and seller having an open position during the tender/delivery period of the contract are obligated to take/give delivery of the commodity.

Other trading parameters that are mostly common across major commodities are as follows:

- Start date of trading and Last date of trading: These are generally common across a few commodities in an Exchange. These dates coincide with the trading cycle adopted by that Exchange. For example, many contracts on MCX ends on 5th of the month while on NCDEX, many contracts start on 1st of the start month and ends on 20th of the expiry month.
- Funds Pay-in Pay-out: All the obligations arising out of Initial Margin, MTM loss, Option purchase price needs to be paid before the next day morning.
- Initial Margin & ELM: These are normally based on Value at Risk (VaR) calculated based on price volatility considering a holding period of 2 days. In normal situation for many contracts, we see Initial Margin to be around 4% while ELM of 1%. However, these are also flexible and vary depending upon volatility of prices, Margin Period of Risk (MPOR), etc. If the holding period or settlement period i.e., MPOR is considered more, then initial margin will also increase as the volatility risk is higher on longer settlement periods.
- Additional / Adhoc or Special and Concentration Margins: Enabling provisions exist in contracts for Exchanges to levy these margins in case their imposition is warranted to maintain market integrity.
- Open Position Limit at the Broker level and Client level: Specified in the contract generally in line with SEBI norms. Member level limits are normally 10 times that of client level limit in numeric terms.
- Instrument Type : A specific code that clearly distinguishes derivative instruments such as Commodity Futures, Options on Futures, Options on Goods, Index Options and Index Futures from each other.

- Trading days and trading time: These are provided in advance and specified for most agricultural commodities and non-agricultural commodities based on SEBI norms.
- Basis Centre and Additional delivery center: Provided as part of the contract specifications to enable a robust process for the discovery of commodity prices.
- Staggered Delivery Period and Delivery Period Margin: These are specified for the commodities that are settled through the physical delivery-based final settlement. In a recent change in the regulatory policy the mandatory minimum of 3 days has been prescribed as the minimum number of days for staggered delivery of any given commodity.
- Devolvement Margins for Options on Futures and Delivery margins for Options on Goods: These enabling clauses exists so that the exchange can charge margins to cover up the gaps in margin if the opted and eligible Options on Futures devolve on to the underlying Futures Position or to cover up the gaps in payment, if instrument such as Options on Goods ends up in delivery-based settlement of goods upon expiry.

List of a few more typical contract specifications are specified in section 6.4, which are common components of all the contracts.

6.2.5 Introduction of Investor Risk Reduction Access (IRRA) platform in case of disruption of trading services provided by the Trading Member[2]:

Salient features of the SEBI circular are given below. For additional information participant may refer to the SEBI circular.

- A joint platform to provide Investor Risk Reduction Access (IRRA) service has been developed by the exchanges to provide the investors an opportunity to square off/close the open positions and /or cancel pending orders in case of disruption of trading services provided by the Trading Member.
- The IRRA service shall support multiple segments across multiple exchanges.
- TMs, upon facing technical glitches which lead to disruption of trading services, can request for enablement of the IRRA service as per the procedures specified by the stock exchanges from time to time and IRRA shall be enabled on receipt of such requests.
- Once the service is enabled, all the investors of the TM shall be informed by the exchange of the availability of the service through email/SMS and a public notice on exchanges' website. TMs shall also communicate the same by displaying on their website.
- Investor can us IRRA service to square off/close the open position and/or cancel the pending order. The IRRA service shall not permit any action that increases the risk of the investor.
- Further, IRRA service shall also provide the TM with access to an Admin Terminal, through which the TM can monitor the actions of investors and also carry out the actions as mentioned above, on instructions of investors.
- It's important to clarify that the IRRA system is exclusively for individual investors and does not cater to algorithmic trading or institutional clients. Furthermore, its primary

[2] https://www.sebi.gov.in/legal/circulars/dec-2022/introduction-of-investor-risk-reduction-access-irra-platform-in-case-of-disruption-of-trading-services-provided-by-the-trading-member-tm-_66785.html

function is to facilitate the closure of positions and the cancellation of pending orders & not the initiation of new positions.

6.2.6 Framework to address the 'technical glitches' in Stock Brokers' Electronic Trading Systems[3].

Salient features of the SEBI circular are given below. For additional information participant may refer to the SEBI circular.

- Stock brokers shall inform about the technical glitch to the stock exchanges immediately but not later than 1 hour from the time of occurrence of the glitch.
- Stock brokers shall submit a Preliminary Incident Report to the Exchange within T+1 day of the incident (T being the date of the incident). The report shall include the date and time of the incident, the details of the incident, effect of the incident and the immediate action taken to rectify the problem.
- Stock brokers shall submit a Root Cause Analysis (RCA) Report (as per format specified by SEBI)of the technical glitch to stock exchange, within 14 days from the date of the incident.
- RCA report submitted by the stock brokers shall, inter-alia, include time of incident, cause of the technical glitch (including root cause from vendor(s), if applicable), duration, chronology of events, impact analysis and details of corrective/ preventive measures taken (or to be taken), restoration of operations etc.
- Increasing number of investors may create additional burden on the trading system of the stock broker and hence, adequate capacity planning is prerequisite for stock brokers to provide continuity of services to their clients.

Proactively and independently monitoring technical glitches shall be one of the approaches in mitigating the impact of such glitches. In this context, the stock exchange has advised to build API based Logging and Monitoring Mechanism (LAMA) to be operated between stock exchanges and specified stock brokers' trading systems. Under this mechanism, specified stock brokers shall monitor key systems & functional parameters to ensure that their trading systems function in a smooth manner.

6.3 Selection Criteria of Commodities for Trading on Derivatives Exchanges

Whenever a new contract on commodity futures is to be introduced by commodity exchanges, an approval from SEBI should be obtained by the concerned exchange and similarly, whenever trading in a 'specific commodity futures' is withdrawn from the market, prior permission of SEBI has to be obtained. Any modification (of certain specifications)/ cancellation in the schedule of SEBI approved contracts, for those contracts which are yet to be traded, would also require SEBI approval.

A commodity exchange will introduce trading in commodity derivative contracts having due regard to key factors such as demand for introduction of a particular commodity from the market players (such as producers, processors, consumers, traders), demand and supply dynamics, price volatility, inventory level, stock utilization, price elasticity, liquidity level of

[3] https://www.sebi.gov.in/legal/circulars/nov-2022/framework-to-address-the-technical-glitches-in-stock-brokers-electronic-trading-systems_65466.html

commodity markets, production of commodity, political sensitivity of commodity, homogenous nature, durability / expiry period of commodity, storability, government regulation and control, etc.

For a commodity to be suitable for futures trading, it must possess the following characteristics:
(i) The marketable surplus of the commodity should be large enough
(ii) Prices of the commodity should be volatile that necessitates hedging through derivatives – Key objective behind the existence of the derivative market.
(iii) The commodity should be free from substantial control from Government regulations (or other state or central government bodies
(iv) The commodity should be homogenous or, alternately it must be possible to specify a standard, as it is necessary for the futures exchange to deal in standardized contracts.
(v) The commodity should be storable. In the absence of this condition, arbitrage would not be possible and there would not be any relationship between spot and futures markets that may exist. In the absence of such a relationship, there is no utility of the futures market to a stakeholder.

Eligibility criteria for launching Options with Commodity Futures as underlying: Options would be permitted for trading on a stock exchange only on those commodity futures as underlying, which are traded on its platform and satisfy the criteria specified below on the respective exchange:

i. The average daily turnover of underlying futures contracts of the corresponding commodity during the previous twelve months, shall be at least:

a) INR 100 crore for agricultural and agri-processed commodities

b) INR 1000 crore for other commodities

6.4 Contract Specifications for Commodity Derivatives Contracts

The product details are very clearly spelt out in a contract and a typical contract specification would contain the following details:

- Contract Start date
- Contract Expiry Date: This is the date on which contract expires and FSP would have to be arrived at for the final settlement of the contract.
- Trading Unit: It is the quantity for which price is quoted for trading. For example, price for 10 grams of Gold.
- Lot size: It is the minimum quantity that will have to be traded and delivered upon expiry of the derivative contract. (eg: Silver 30 Kilos lot, Wheat 10 MT lot, etc.). In the case of cash-settled commodities, it is the quantity on which the open position upon expiry of the contract would be settled. Lot size shall be equal to or higher than minimum trading unit. It shall also be equal to or higher than minimum order quantity.
- Price Quote (whether inclusive of taxes or exclusive of taxes)

Example: Ex-Mumbai (basis centre): This price is applicable for delivery from Mumbai delivery center where as Ex-Delhi price is applicable for delivery receivable from the Delhi delivery center. All expenses such as transport, loading and unloading etc. are to be borne by the seller/buyer at the time of providing physical delivery or at the time of lifting of the goods from the designated warehouse.

- Maximum Order Size (in quantity)
- Tick size: It is the minimum price movement in terms of change in price or change in quotation for order. It will always be in INR terms.
- Daily price limit
- Initial Margin
- Additional or Special Margin, if any – These are leviable in addition to the initial margins applicable to all open positions in the markets. Additional or special margins will increase the margins applicable and thereby reducing the leverage for the participants.
- Maximum permissible open positions (Client-wise and member-wise will be given) – Also known as (open) Position Limits.
- Delivery Centers
- Delivery Logic
- Due Date Rate: It is in terms of price per trading unit as specified in the contract. SEBI master circular on Commodity Derivatives Segment provides guidance on the Methodology for the calculation of FSP in detail. FSP calculation relies on the spot price available on the expiry day of contract and at least two additional days which are prior to expiry day. Spot prices are polled and calculated following the SEBI and exchange prescribed norms in a transparent manner on a daily basis.
- Quality Specifications
- Last day of trading
- Tender period
- Tender period margin
- Delivery period
- Delivery Margin
- Funds pay-in
- Funds pay-out
- Delivery pay-in
- Delivery pay-out
- Delivery default Penalty Provisions

Any modification in the existing contract terms can be done with at least 10 days of prior intimation to the market participants. All such modifications that are permitted can be segregated into three categories, as follows:

Category A: Non-material modifications like symbol, order size, tick size, strike levels, number of strikes, etc. These modifications can be done by the exchanges subject to an advance notification to the market before 10 days.

Category B: Expiry date, trading unit, delivery centre including additional delivery centre, delivery unit, quality specifications, premium / discount, allowable open position limit. These also can be done by the exchanges with the approval of the internal committees such as Product Advisory Committee and the Regulatory Oversight Committee (post facto).

Category C: These are material modifications requiring regulatory approvals. Prior to that any modification in this category would have to be deliberated within the Product Advisory Committee and Regulatory Oversight Committee before seeking permission from SEBI. These include Contract launch calendar, DPL, Due date rate / settlement rate, tender period, staggered delivery period start date for near month. All changes relevant to Category B and C would have to be announced to the market 10 days prior to such change coming into effect.

6.5 Order Types and Conditions

One must place an order to buy or sell commodity futures contract on a commodity exchange. The order should specify:

a) whether it is a buy order or sell order

b) the number of lots

c) expiry month and

d) price conditions.

The computer screen of the Trader Work Station (TWS) software shows the best buy order (order placed in the system with the highest bid price) and best sell order (order placed in the system with the lowest offer price) on price-time priority basis along with the quantities to be bought or sold at each of those price levels (ticks). The trading members can submit the following type of orders based on: 'Price related' and 'Time related' conditions.

6.5.1 Orders with Price-Related Conditions

Limit order: In a limit order, the buyer or seller specifies the price at which the trade should be executed. For a buyer, the limit order generally remains below the on-going asking price and for a seller the limit order remains above the then bid price. For example, if the ongoing asking price is Rs 1000, the limit order will be placed below Rs 1000 say at Rs 990 by a buyer and above Rs 1000 say at Rs 1010 by a seller.

Market order: In a market order, the trade is executed at the immediately available current market price, prevailing at the time of placing the order. For the buyer, the market order takes the prevailing best ask price and for the seller the market order takes the prevailing best bid price to execute the trade.

Stop loss order: A stop loss order is generally placed after entering into a trade. This is used to limit a probable loss if the price moves in the opposite direction. For example, a trader bought one lot of Gold June futures contract at Rs 45,900 per 10 gm, expecting that the price would rise. However, he incurs a huge loss if the price falls drastically. In this situation, a stop loss order at, say, Rs 45,850 could limit the loss. This means, if the price falls to Rs 45,850 per 10 gm his existing long (buy) position would be automatically squared off and there would be a loss of only Rs 50 per 10 gm. Stop loss orders are passive until the trigger price is breached. Stop Loss levels are in fact triggers for sending orders to the online order matching system. Once this trigger price is reached, the stop loss feature gets activated. Stop loss orders are extremely helpful to mitigate the risk of unlimited losses at times of high volatility. However frequent trigger of stop loss without much of directional movement or volatility may result in higher cumulative losses across the trades.

The above orders are within the architecture of Exchange systems and are executed accordingly. Stop loss leg of the order follows price-time priority in a different perspective. For example, main buy order may have stop loss to sell. This selling order is executed when prices are falling and next the buy quotation is at below stop loss trigger rather than being above stop loss trigger. For example, if stop loss sell order is at Rs.250, the trade may get executed when the best buyer is at Rs.250 or below that rather than when the best buyer available is at Rs.251.

In addition, Trailing Stop Loss Order may be provided at the broker level which is as follows:

Trailing stop loss order: A trailing stop loss order is a stop loss order placed by a trader to minimize losses and protect potential profits. Once placed, the price in the trailing stop loss order will adjust based on the settings provided by the trader at the time of initiation of the trade. The types of orders include:
(a) Trailing Stop Loss in rupees
(b) Trailing Stop Loss as a percentage

Example: A trader just bought June gold futures at a price of Rs. 50,000 per 10 grams. He then places a 'Trailing Stop Loss' order in rupees, at Rs. 49,000. Possible scenarios: If the price of the futures goes to Rs. 49,000 or below, the Trailing Stop Loss order will get triggered and turn into a market sell order and be sold at the best available price in the market. The Trailing Stop Loss order will move up and adjust, as the price of the futures rises above Rs 50,000. If the price of the futures goes up to Rs. 50,500, the Trailing Stop Loss order will be at Rs 49,500 because it will trail (follow) the futures price as it moves up by the amount customer set in rupees when he placed the initial trade at Rs. 50,000. If the price of the futures goes up to Rs 53,000, the trailing stop loss order would move to Rs 52,000. If the price of the futures drops to Rs 49,000, the Trailing Stop Loss order would stay at Rs 49,000 and would trigger and become a market sell order at Rs 49,000. The Stop Loss order does not adjust downwards in this case.

6.5.2 Time-Related Orders

Day order

Also termed as 'end of session order', these orders have to be executed on the same trading day that they are entered. If these orders do not get executed that day, they expire or are automatically cancelled by the exchange at the end of the day.

Good-Till-Date (GTD) order

GTD orders specify a particular date up to which the orders can remain alive for execution. If the order does not get executed by that specified date, it gets cancelled or expired automatically. Such GTD orders would also enter into the matching process of the exchange once the prices meet the DPL conditions of the contract i.e. until the prices are within the DPL for the day, the GTD order will remain in a passive mode.

Good-Till-Cancelled (GTC) order

GTC orders are orders that remain in the system till their execution or their cancellation by the trader. A GTC order remains active until the expiry of the contract if it is not executed or until it is cancelled, whichever is earlier.

Immediate or Cancel (IOC) order

Immediate or Cancel (IOC) is an order requiring all or part of the order to be executed immediately after it has been placed. Any portion not executed immediately is automatically cancelled. This is used by the traders with large orders where filling the entire order quickly can be difficult. Such orders will not remain in the order book.

6.5.3 Modification and Cancellation of Orders

A Member is permitted to modify or cancel his orders. The order can be modified by effecting changes in the order input parameters. Time priority for an order modification will not change due to a change in in quantity or disclosed quantity. In case of all other changes to the order parameter, the time priority of the order will change. All unexecuted pending orders can be cancelled.

6.6 Tracking Commodity Futures and Options prices

The market watch window of the commodity exchanges provides real-time market information of the commodity derivatives contracts such as best buy/best sell price and quantity, last traded price, percentage change and total number of buyers and sellers. The information is updated online on a real time basis.

The market watch window enables the investor to view the market details of the contract with a provision for sorting in ascending/descending order and can create/modify a portfolio. The dialogue box displays the following:

- Instrument type
- Symbol
- Commodity
- Last update time
- Price Quotation Unit

- Buy Price
- Sell Price
- Last Traded Price–the price at which the last trade happened
- Average Traded Price–weighted average price of all trades executed during the day
- Buy Quantity – Total number of unmatched buy quantity waiting for the matching buy prices or quantity
- Sell Quantity - Total number of unmatched sell quantity waiting for the matching buy prices or quantity
- Value –the total value of the contracts traded during the day
- Low – lowest price at which the instrument was traded for the day
- High- Highest price at which the instrument was traded for the day
- Close – indicates the previous closing price of the instrument.
- Expiry Date – The date on which all the open positions are mandated to be delivered or cash settled.
- Tender Period – When one can start tendering for delivery against the open positions held by them.
- Option Type – Whether the option instrument is 'Option on Futures' or 'Option on Goods'.
- Open Interest- total number of long or short positions
- Volume – refers to the total volume traded during the entire session of the day
- Percent Change from previous close
- Net Change (in Rs.) (It displays absolute change in Last Traded Price (LTP) compared with previous day closing price in Rs.)
- LTP indicator (It displays a blue or red arrow - indicative of a rise or fall in LTP)
- Net Change Indicator (It displays a blue or red arrow tip for a rise or fall in net change)

6.7 Trading Costs to Participants in Commodity Derivatives

A participant in the derivatives market incurs different trading costs which can be broadly classified into user charges, statutory charges and impact cost:

User charges: Brokerage is the commission charged by brokers who place the orders for their clients and/or route the client orders onto the exchanges. Rates of brokerage may differ based on the additional services offered by the broker. Just as brokers charge brokerage from their clients, the exchanges also collect transaction charges from brokers who are the members of the exchange.

Statutory charges: These include Commodity Transaction Tax (CTT), Goods and Services tax (GST), Stamp Duty under Indian Stamps Act and SEBI's Turnover fees. These are discussed in detail in section 9.4 of this workbook.

Indirect Cost of Participation: Bid-ask spread and Impact cost

The market participants do not explicitly pay these costs but they may arise due to market imperfections or lack of liquidity in certain contracts. This particularly impact those who place market orders. The result is that buyers who place orders to buy at the market price instead of placing limit orders may end up paying higher prices than they would have expected. Similarly, sellers who place orders to sell at the market price instead of limit orders, may receive lower prices than they would have anticipated. Consider an order book with the following buy and sell orders for a commodity derivative contract:

Example: Gold Call Option for 2-months expiry for a given strike price is quoting at Rs.2014 – Rs.2187. It means a market participant "A" can buy it at the market price of Rs.2187. However, if he places a limit of Rs.2014, probably some other player may sell at Rs.2014 to "A". Thus, limit order transfers the impact cost risk to the seller in this case if he places a market order. The impact cost or difference between bid and ask is significantly high at 8.70% because some of the Gold options contracts may be highly illiquid. This is particularly true in the case of strike prices that are deep out of money. However, underlying Gold Futures may be trading at Rs. 51,560 – 51,570. The difference between the bid and the ask is only Rs.10 i.e., 0.02%, as Gold Futures in this case is liquid. Bid-ask spread may not only arise from the difference between the best buy and sell orders but from the number of orders at each of the prices that are available to match a given contract. Hence, impact cost for a market order is always measured in terms of Rs. Per Rs. Crore worth of an order. Impact cost arises due to the difference between best buy and best sell orders standing in the market and the number of buyers and sellers standing at the best buy and sell orders in the market.

This gap between the bid and ask prices is known as the bid-ask spread. The bid-ask spread tends to be larger for illiquid derivative contracts which typically have a lower participation by the traders such as a very far month futures or options contract. In the case of options, deep out of the money options adds the second dimension to the problem of illiquidity and hence the greater would be the cost of execution of a given order. Thus, impact cost is a measure and indicator of relative liquidity among the instruments. Again, the larger the bid-ask spread, larger would be the impact cost.

Example: Cost of trading

Suppose a trader takes a position of MCX BULLDEX index futures at the futures price of Rs 15,000. The lot size is 50. Hence the contract value is =1*50*15000, i.e., Rs 7,50,000. The various costs associated with this trade are shown in the table below:

Sr No	**Index Futures traded Value (with lot size of 50) (INR)**	**7,50,000**
1	Brokerage assumed @ 0.10%	750.00
2	CTT @ 0.01% (payable by the sellers only)	75.00
3	Exchange fees @ 0.002%	15.00
4	Stamp Duty @ 0.002%	15.00

5	GST @ 18% on (1+3)	137.70
6	SEBI charges @ 0.00015%	1.13
	Total trading cost	**993.83**

Note that the brokerage charges in the above example are only illustrative and may differ from broker to broker depending on the connectivity provided and other services being offered by them. Brokerage charges may also vary depending on different plans of the same broker also. Also, financial closure of a position done by an opposite position in the same contract would involve same costs, separately apart from the clearing charges. You may see that, apart from the brokerage charges, other major contributor to transaction costs are GST and CTT. The CTT (Commodity Transaction Tax) is levied as per following table:

Sr. No.	Taxable commodities	Payable on	Rate	Payable by
1	Sale of a commodity derivative	price at which the commodity derivative is traded	0.01 per cent	Seller
2	Sale of commodity derivatives based on prices or indices of prices of commodity derivatives	Price at which the commodity derivative is traded	0.01 per cent	Seller
3	Sale of an option on commodity derivative	Option premium	0.05 per cent	Seller
4	Sale of option in goods	Option premium	0.05 per cent	Seller
5	Sale of an option on commodity derivative, where option is exercised.	Settlement Price	0.0001 per cent	Purchaser
6	Sale of option in goods, where option is exercised resulting in actual delivery of goods	Settlement Price	0.0001 per cent	Purchaser
7	Sale of option in goods, where option is exercised resulting in a settlement otherwise than by the actual delivery of goods	Difference between settlement price and strike price	0.125 per cent	Purchaser

6.8 Participants in Commodity Derivatives

Commodity Derivatives markets can be used as a tool for hedging, portfolio diversification, arbitraging, and for taking speculative and trading bets. SEBI wide its circular in July 2019, has provided for Liquidity Enhancement Scheme i.e., for market making to make the newly available commodity derivative contracts on the exchange platform more liquid. Liquidity Enhancement Scheme (LES) has been introduced to increase liquidity in the markets and better participation. The types of existing and potential participants in the commodity derivatives includes:

- Farmers' Producing Organizations (FPOs): These are the companies or co-operatives, where farmers are the shareholders. These organizations may participate in the commodity derivative markets mainly for the purpose of selling their harvest and where possible deliver the underlying too. They may sell Futures for the relevant harvesting month at the time of sowing to book their selling price. They may buy Put Options also.

- Processors: Companies which process raw agricultural / processed agricultural products or use crude oil, metals in their production processes may also participate in the market for hedging purposes.
- Foreign Portfolio Investors (FPI): Foreign Investors are allowed to participate in the Indian Exchange Traded Commodity Derivatives (ETCDs) segment through the FPI route. FPIs have been permitted to participate in cash settled non-agricultural commodity derivative contracts and indices comprising such non-agricultural commodities.
- Margin traders (Crush Margin, Crack Margin, etc.): A few traders or businesses like to book their margin through two-way trades, one on buy side in raw materials and the other on sell side in finished goods. It is possible only if derivative contract on both the raw materials and the finished goods are traded on the exchange platforms.
- Arbitrageurs and Traders: Arbitrageurs enter the market to take advantage of various arbitrage opportunities. Traders may also trade based on speculative bets on direct commodity prices or judgmental bets on volatility and other factors through various option strategies like strangles, bull/bear spreads, etc. These traders may be individuals, HUFs, Companies, etc.
- Institutional Players:
    - Category III Alternate Investment Funds (AIF): SEBI allowed Category III AIFs to participate in commodity derivatives which will widen the investment options for Category III investments and products besides the opportunity for portfolio diversification subject to the regulations regarding their participation. Their participation is subject to the approval by the existing investors and provision of exit opportunity for the dissenting investors. They shall be treated as clients in ETCDs segment and are subject to reporting requirements as specified by SEBI.
    - Portfolio Managers (PMS): SEBI allowed PMS to take exposure in the commodity derivatives. This is subject to condition of agreement with the client and adequate risk disclosures. It also provides that in case the trade leads to physical possession of goods which is meant for clients, it should be disposed-off at the earliest, on best effort basis within the timelines as agreed upon between the client and the portfolio manager.
    - Mutual Funds: SEBI allowed Mutual Funds to take exposure in commodity derivatives vide their schemes in hybrid funds, multi asset funds and Gold ETFs. However, they cannot take exposure in sensitive commodities as defined by the regulatory guidelines. Further mutual funds can take exposure to Commodities by way of commodity index futures also. They have been prohibited from taking

positions in the options segment in the commodities markets. Mutual Funds which already have Gold ETFs, can also invest in Gold derivatives, if the offer document of Gold ETFs mentions the flexibility of investments in "Gold Related Instruments". While taking exposure through commodity derivatives, mutual funds are not allowed to go on net short positions.

Before investing in commodity derivatives markets, a few additional documentation and other framework-related procedures are also prescribed for the mutual funds. In addition, if offer documents of the existing schemes do not allow these investments, offer documents need to be amended to provide these permissions and such amendments would be considered as a change in the fundamental attribute of the schemes. Hence, such schemes amended for participation in commodity markets should provide the existing investors to exit the funds within a time period of 30 days at the existing NAV without charging the exit load. Further various investment limits are also prescribed at each commodity level, commodity segment level etc.

Mutual funds are currently not allowed to deal in physical commodities (except Gold) as this requires custodians to be geared up to take care of commodity level activities. As of now, custodians have taken permissions to provide physical commodity level services only for Gold and Silver for the purpose of commodity ETFs.

6.9 Disclosures by Exchanges

Exchanges disclose various information and update it regularly. These are disclosed for information of clients, traders as well as for providing them further insight into positions and pricing. Information disclosed through their websites and terminals by the Exchanges includes:

- Index Constituents and Index Values: Helps in benchmarking indices and trading of index futures
- Polled Spot Prices: Helps in tracking and trading of Commodity Futures
- Final Settlement Price (FSP): FSP for expiry of various contracts in commodity futures, index futures, commodity options. It is also known as Due Date Rates.
- Contract Specifications: This provides basic details of Futures contract like expiry period, lot size, tick size, order quantity, specification of underlying commodity, margin requirements etc.
- Bhav Copy: Daily listed closing price of the commodity futures
- Information on Participation by Retail / Proprietary/ Algo/ Institutional Participants
- Participation by hedgers / traders: This gives an indication of the extent to which trades are done by hedgers and by traders / speculators. This also provides an indication of trading liquidity in the markets and the factors that are leading up to building up of the volumes in the market.

- Top 10 Participants in terms of their Open Interest: This shows the concentration in trading positions.
- Details of deliveries in each commodity: This gives an idea about the extent of delivery that is likely to happen. This helps in technical analysis too.
- Physical stocks: Stocks in warehouses gives an indication of extent to which open interest is supported by the physical stocks. If stock in warehouses are less, it may indicate that open interest have the higher possibility of getting squared off soon before the contract expiry nears.
- Summary of delivery intentions: It gives an indication of the extent to which open interest is converting into deliveries.
- Premium / Discount of different locations and quality: This gives an indication of the additional price/discount for deliveries at locations other than the basis centre.
- Most active contracts, put, call, put–call ratio: This gives an idea about the activities going on, the liquidity of contracts, and the extent to which puts or calls are being written in the markets. It also helps in technical analysis.
- Sanctioned Hedge limits details: This data gives details on hedging activity in an anonymous manner and indicates upto which hedge activity has been permitted to take place.
- Historical contract-wise prices, traded volumes and open interests to check their return, volatility and liquidity performance: It gives an indication of how contract prices and trading activities are moving.
- Percentage of proprietary trades/client trades: It gives an indication of wider participation (by all of those other than members) vs. member participation in the market.
- Percentage of ALGO or HFT trades: It gives a rough idea of what is moving the market and from where the majority of the traded volume is coming indicating the persistence of liquidity and potential volatility.
- Details of investor grievances

Sample Questions

1. A ___________ can trade either on its own account or on behalf of its clients.
   (a) Market maker
   (b) Clearing member
   (c) Professional clearing member
   (d) Trading member

   Ans: (d)

2. The margin money is released, _____________.
   (a) Only on the expiry of the contract
   (b) Only when the open position is squared off
   (c) Either on the expiry of the contract or when the open position is squared off, whichever is earlier
   (d) Either on the expiry of the contract or when the open position is squared off, whichever is later

   Ans: (c)

3. Introduction of futures trading on new commodities, or withdrawal of futures trading on a specific commodity require the prior approval of ______________.
   (a) FMC
   (b) SEBI
   (c) The exchange
   (d) The clearing corporation of that exchange

   Ans: (b)

4. A "limit order" is an order ___________.
   (a) To execute at or better than a given price or not at all
   (b) To execute at the best available price
   (c) To execute only when the price touches the exact specified price
   (d) To both buy and sell simultaneously

   Ans: (a)

5. Time priority of an order WILL NOT change in which of the following order modification instances?
   (a) When the order quantity is decreased
   (b) When the order price is increased
   (c) When the order price is decreased
   (d) Time priority of an order will remain the same irrespective of any modifications done to that order

   Ans: (a)

Chapter 7: Clearing, Settlement and Risk Management

LEARNING OBJECTIVES:

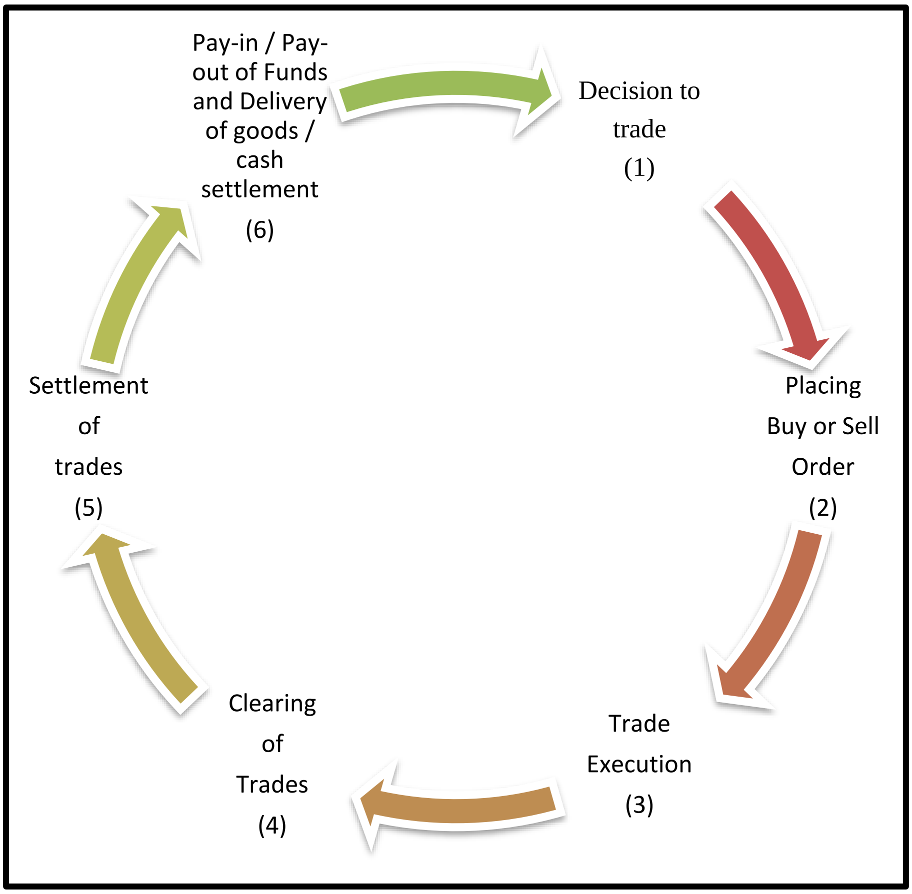
After studying this chapter, you should:

- Known the Role of clearing corporation in ensuring good delivery
- Know the clearing and settlement process of commodity derivatives contracts (including Futures on commodities, Index Futures, Options on Futures and Options on Goods)
- Understand the delivery process and the available delivery options
- Know the entities involved in the clearing and settlement process and their roles
- Understand the calculation of Premium / Discount for quality variations
- Know the penalties for delivery default by the seller
- Understand the staggered delivery mechanism
- Understand various risks that exist in commodity derivatives markets
- Understand the position limits and its computation at the client and member level
- Know the importance of capital adequacy, online monitoring, offline surveillance, margin requirements, position limits, settlement guarantee fund, etc. as risk containment measures
- Know different margins such as SPAN margin, initial margin, MTM margin, special margin and delivery period margin

7.1 Clearing Corporation

Clearing Corporation is an entity that is different from an Exchange. Exchanges are governed by SEBI's Stock Exchange and Clearing Corporation Regulations, 2012. The same regulations provide governance norms for Clearing Corporations also. Clearing Corporation's main role is to carry out clearing and settlement of the trades executed on the Exchange platform through the process of 'novation'. The entity which guarantees settlement of all the trades done on an exchange is Clearing Corporation. To do this, Clearing Corporation collects margins, deals with the payment and delivery mechanism. Various Governance aspects like Regulatory, Member Compliance, etc. are separate for the Exchange and Clearing Corporation. SEBI had mandated to have settlement of Exchange trades through a clearing corporation, which may be under the same sponsor or outsourced to another clearing corporation.

After a trade has been executed by the trading system, it needs to be cleared and settled. This is illustrated below:



7.2 Clearing and Settlement

Clearing and Settlement Process

Clearing refers to the process of accounting to update and reconcile obligations/payments of the parties involved in the trade. This refers to clearing of carried over open positions on a daily basis after the settlement of profits and losses incurred by the respective holders.

Settlement process involves matching the outstanding buy and sell instructions, by transferring the commodities ownership against funds between buyer and seller at the expiry of the contract. Transactions involving transfer of ownership of commodities are settled on delivery-versus-payment (DVP) basis by netting at a client level and grossing up at the member level, whereas fund obligations are netted at the member level to reduce the number of settlement transactions as part of the clearing process.

In other words, clearing refers to the process of adjusting financial positions of the parties to the trade transactions to reflect the net amounts due to them or due from them. The process flow in settlement of pay-in/pay-out arising out of its clearing function is as follows:

After the end of the trading session every day, files/reports are downloaded by the trading members through FTP (File Transfer Protocol), which contains: a) details of transactions executed by the member on that day, b) positions carried forward from the previous day, c) closing position of the day, including net obligation of the member. The net obligation report further provides the a) amount of margin deposit b) margin utilized c) available deposit d) required pay-in/pay-out amount e) transaction fee payable/receivable, etc.

Clearing and settlement process has been automated at all the exchanges and broadly involves the following steps:

- Trade details are transmitted from commodity exchange to clearing corporation on a real-time basis.
- The trade details are notified by the clearing corporation/clearing house to compute obligations of trading members.
- Obligation and pay-in advice of funds are communicated to clearing members.
- Instructions are issued to clearing banks to make funds available by the pay-in time.
- Funds are paid in for the executed trades by clearing banks, which debit the accounts of the clearing members and credit the clearing corporation accounts for the amount due to them.
- Pay-out of funds is done based on the instruction of the clearing corporation to clearing banks to credit account of clearing members by debiting its account, wherever funds pay out obligations are applicable.

Clearing and Settlement functions at the pre-trading, intra-trading and post trading session are as follows:

Pre-Trading Session

- Uploading of member margin limits to the trading system
- Uploading of obligation and margin file to the bank
- Verifying margins, etc.

  The above uploaded files on margins and obligations include effects of all the transactions in Commodity Futures, Commodity Options on Futures, Commodity Options on Goods, and Futures on Commodity Indices. The obligations of margin, delivery and settlement arise as per the regulations framed in the contracts of trading in these segments.

Intra-Trading Session

- Tracking funds collection against margins/obligations
- Tracking utilization of open position limits by the members
- Processing of the members' increase/release margin requests, etc.

Post-Trading Session

- Calculation of Clearing members’ positions based on Open interest (outstanding positions) at the client level
- Trade processing
- Report generation
- Updating margins and MIS.

- Exchange will issue pay-in and pay-out instructions. (Each member has to open two accounts with the clearing banks—A Settlement account and A Client account. All debit and credit instructions are effected in the settlement account.)

The above is worked on consolidated positions arising out of obligations of delivery, payment and margins as per trading and settlement rules in each of the instruments viz. commodity futures, commodity index futures, commodity index options, commodity options on futures and commodity options on goods.

Index Futures are similar to “Futures Contracts with Cash settlement”. Options on Futures devolve on Futures. Options on Goods that have delivery obligations upon expiry is subsumed with delivery obligations of commodity futures. Hence, we will first look at clearing and settlement mechanism relating to commodity futures. After that, special points relating to other traded instruments will be explained.

Let’s take an Example for understanding above process of pre-trade, intra-trade and post-trade settlement:

Members A& B are two clearing members of the exchange.

X is a client of member A and Y is a client of member B

X buys a futures contract of Gold with a lot size of 1 kg at Rs 50,000 per 10 grams from Client Y as their orders got matched on the exchange platform. At the time of trade execution, the amount of margin is blocked by the exchange on real-time basis from the respective clearing member account, in turn the members block the margin from the client account. Assuming that the total margin is 5% on futures contract, an amount of Rs 2,50,000/- is blocked from both that of X & Y’s accounts (Rs 50000 per 10 grams X 100 as the lot size is of 1 kg makes the contract value Rs 50,00,000 and 5% of contract value is the amount of margin i.e., Rs 2,50,000).

Let us assume that at the end of the day (EOD), the closing price of the day was Rs 50,100 per 10 grams.

Exchange after EOD calculates the Mark to market pay-in and pay-out based on the difference of traded price and Exchange’s closing price i.e., Rs 100 per 10 grams and initiate the daily settlement/clearing of the positions of ’X’ and ‘Y’ as mentioned below:

1) Y hold a short position in one gold futures contract (entered at Rs 50,000 per 10 grams) and the closing price is Rs 50,100 per 10 grams gives him a notional loss of Rs 100 per 10 grams. Based on the contract lot size of 1 kg, the notional loss is Rs 10,000 on the position held by him. The amount of notional loss will have to be paid in by Y on T+1 basis.
2) X hold a long position in one gold futures contract (entered at Rs 50,000 per 10 grams) and the closing price is Rs 50,100 per 10 grams makes a notional profit of Rs 100 per 10 grams. Based on the contract lot size of 1 kg, the notional profit is Rs 10,000 on the position held by him. The amount of notional profit will be pay-out to him on T+1 basis.

This is the same amount which got collected by the exchange from client Y as his notional loss (i.e., the pay-in from Y is the pay-out to X).

Thus, on every trading day till the expiry of the futures contract, there is some amount of MTM gain equal to MTM loss depending on the movement of closing prices, across members, which needs to be settled by their clearing members namely B and A, respectively.

7.3 Delivery Process

Each commodity futures contract traded in the exchange traded commodity derivative markets refers to a specific delivery month and is deemed to have entered the delivery period from such date of its expiry month. The date of expiry is specified by the Exchange in the relevant contract specification.

Each commodity has its own delivery logic that is clearly specified in the contract specification.[4] The tendering of deliveries is permitted by the exchange on specific tender days before the expiry as indicated in the contract. The buyer will be obliged to take delivery if he has not squared of his position, within such period (i.e. before the expiry date) as may be specified by the Exchange. Once a contract enters into tender/delivery period, any new buying position carries the risk arising out of the payment obligation if the seller's position that is matched against the buyer, tags his intention to provide delivery of the underlying commodity which then gets assigned to that buyer through the processes of the clearing corporation. Therefore, the market for a futures contract post the start of the tender/delivery period typically behaves like that of the cash market rather than a futures market from the trading perspective.

In the commodity futures market, at present three settlement options are available to the buyer/seller: compulsory delivery, both options and cash settlement.

The process of physical delivery of compulsorily delivered contract is as described below:

Assumption No. (1): Seller has deposited the quality certified goods in the warehouse and received the warehouse receipt before the initiation of step 1.

Assumption No. (2): Buyer has transferred the money to the clearing member equivalent to that of the value of goods to be taken delivery by him calculated using the Final Settlement Rate/Due Date Rate. This is also taken care by stepping up delivery margin on buyers once the tender/delivery period starts in order to avoid sudden shock on exchange and on buyer.

Step 1: Trading Member Q will transfer the quality certificate and warehouse receipt for client Y's goods to clearing member B.

Step 2: Clearing member B will initiate the commodity pay-in process through the clearing corporation. In the commodity Pay in process the clearing member will transfer the warehouse receipt to the clearing corporation.

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[4]Delivery logic means the choice that buyers and sellers get on open positions during the tender/delivery period.

Step 3: Trading member P will transfer funds received from client X to the clearing member A.

Step 4: clearing member A will transfer funds to the clearing corporation completing the Funds pay in process.

Step 5: Clearing Corporation makes a commodity pay out to the clearing member A by transferring the ownership of warehouse receipt to the ultimate beneficiary that is the final buyer's (X's) name.

Step 6: Clearing member A transfers the warehouse receipt received from the clearing corporation to the Client X which completes the pay-out of commodities process

Step 7: Clearing Corporation with the help of clearing banks transfer the funds equivalent to the contract value (calculated at the Final Settlement Price) to the clearing member B.

Step 8: Clearing member B gives a credit in the trading/ledger account of funds to the client Y which completes the process of funds pay-out by the exchange.

Lastly, the exchange will notify the name of the buyer to the seller and a tax-paid invoice will be generated by the seller to the buyer based on the Due Date Rate. Most of the contracts are traded at net of GST price and hence, GST is added in tax paid invoice by the seller. The settlement of delivery versus payment (DVP) is made for the full tax paid invoice value. Exchanges and brokers are supposed to settle the trade at gross of GST taxed invoice. Exchanges accept the GST rates as provided by the sellers and guarantees settlement of GST at that rate. Exchanges do not go into the correctness of the GST rates.

7.3.1 Compulsory delivery

In the compulsory delivery option, both the buyer and seller with an open position during the tender/delivery of the contract are obligated to take/give delivery of the commodity. In some of the compulsory delivery contracts, the tender marking period starts much ahead of the maturity date of the contract, and delivery and settlement take place as per the terms of contract specifications. For example, Gold is a compulsory delivery contract. All the open interests remaining after the expiry date is compulsorily settled through physical deliveries. So, if the short position is not squared off by the client then he has to give physical delivery of quality certified commodity of the given quantity to the buyer and buyer needs to pay the total amount equivalent to the contract value's settlement price to the seller.

The total open interest remaining on the settlement date will indicate the number of contracts outstanding as the number of open contracts that will potentially end up in physical delivery compulsorily after the expiry date. During the tender marking period, if the seller intends to give delivery, then it will result in delivery, and accordingly, the buyer will be matched as per the process set in place by the Exchange. Pay-in and pay-out of funds and commodity will take place as per the timeline and date given in the settlement calendar.

However, on the maturity of compulsory delivery contracts all outstanding positions will result in physical delivery of the underlying commodities.

7.3.2 Both option to deliver

In the case of a both options, the delivery will be executed only when both buyers and sellers agree to take/give delivery. Even if one of them in a trade do not opt for delivery, such open positions are cash settled at the Due Date Rate (DDR). Due date rate/ Final Settlement Price (FSP) is the rate at which contract is settled by the exchange. Usually it is the average of spot prices (polled) in last few days of Futures contract as defined per the contract specification of the exchange platform.

7.4 Entities Involved in the Clearing and Settlement Process

7.4.1 Clearing Corporation

The clearing corporation undertakes post-trade activities such as clearing and settlement of trades (including risk management) executed on a commodity exchange. The clearing corporation, inter alia:

- Collects different types of margins prescribed by the commodity exchanges.
- Computes obligations of clearing members.
- Arranges for pay-in and pay-out of funds.
- Assumes the counter-party risk of each member and guarantees financial settlement.
- Arranges for physical delivery of goods, wherever applicable.

7.4.2 Clearing Members

Clearing members play a vital role in the post-trade processes of the commodity trade value chain. A clearing member is a member of the clearing corporation who is permitted to clear trades directly with the clearing corporation and is allowed to accept trades for other clearing members and non-clearing members to settle on their behalf. The different kinds of clearing members are: Trading cum Clearing Members (TCM) and Professional Clearing Members (PCM).

Clearing members are required to maintain and operate a settlement account with any one of the empanelled clearing banks of the clearing corporation at the designated branch. Clearing members are responsible for settling their obligations as determined by the clearing corporation. All the fund movements to and from the clearing corporation are made through the designated settlement account, which is used exclusively for the purpose of clearing and settlement operations. The primary responsibilities of the clearing corporation are:

- Collection of margins on a timely basis
- Daily clearing and settlement
- To act as a legal counterparty for every contract
- To monitor positions
- Maintain and manage Settlement Guarantee Funds
- Manage financial and delivery defaults

7.4.3 Clearing Banks

Clearing banks play an important role in the smooth transfer of funds between the clearing members and clearing corporation to effect settlement of funds. The commodity exchange requires every clearing member to open a dedicated and exclusive clearing account with one of the empanelled clearing banks. The clearing corporation computes and advises the clearing member's obligation and the clearing member makes funds available in the clearing account against the pay-in obligations of a clearing member and receives funds in case of a pay-out. The clearing banks communicate the status of fund flow in respect of each trading and clearing member to the clearing house to facilitate monitoring.

7.4.4 Custodial Services/Repositories

Warehousing Development and Regulatory Authority (WDRA) has recognized NERL and CDSL as approved Repositories for electronically maintaining records of warehoused agricultural goods which can also be used for clearing and settlement of trades on exchanges. Exchanges have accredited warehouses for metals and vaults for precious metals to enable delivery of all traded Precious/Metals derivative contracts. Clearing corporations provide for an electronic repository mechanism of their own connected to their respective warehouses/vaults for enabling delivery of physical goods and their safeguard until withdrawal. All WDRA accredited warehouses are connected to either of the above-mentioned commodity repositories issuing e-NWRs on their behalf.

7.4.5 Warehouses

Warehouses play a critical role in the final settlement of trades upon expiry in the commodities futures market in the form of physical delivery of commodities certified for quality matching as per the specifications of the contract. In order to facilitate the physical delivery of commodities, it is imperative to have a wide and reliable network of warehouses at the delivery centers as proposed in the contract specifications. This is especially important in case of agricultural commodities given that they are comparatively highly perishable in nature and hence would need proper handling to ensure preservation of value of the commodity.

The National commodity exchanges do not own or hire any warehouse for the purpose of settlement of the contracts that are required to be settled by the physical delivery of commodities. Exchanges set the criteria for the warehouses and empanel warehouse service providers (WSPs) who arrange storage facilities on the basis of the criteria laid down by the exchanges. Storage facilities may be by way of warehousing, silos, marine vessels, cold storage, sheds, tanks, or pipelines, depending upon the nature of the commodity to be stored. As per SEBI Regulations, only WDRA accredited warehouses can be empanelled as WSPs by the clearing corporations for storage of agricultural commodities which are meant for settlement of trades on exchanges. Please note that the WDRA registers warehouses and recognizes each warehouse separately rather than WSP. SEBI norms prescribes that there should be at least one warehouse in each delivery centre within 100 kms radius.

With a view to ensuring good delivery of commodities on expiry of the futures contract, SEBI has amended the Securities Contracts (Regulation) (Stock Exchanges and Clearing Corporations) Regulations, 2012 ("SECC Regulations"), by providing that every exchange shall ensure guarantee for settlement of trades including good delivery. SEBI prescribed warehousing norms for agricultural and Agri-processed commodities traded on the derivatives exchanges in September 2016 which was subsequently revised in its circular dated April 16, 2021. These norms were prescribed as the minimum requirements/standards and exchanges can prescribe additional norms/guidelines for compliance by their accredited WSPs, warehouses and assayers. The following are some of the key requirements prescribed by SEBI:

- Clearing Corporation shall follow a transparent process for accreditation of WSP by issuing open advertisements in leading newspapers and/or putting the same on its website and through a transparent selection process thereafter.
- A WSP can be accredited with more than one clearing corporation. In such case, the clearing corporation shall not mandate that its WSP cannot provide services to other clearing corporations. A storage facility of a WSP may be utilized by more than one Clearing Corporation with proper segregation, demarcation and putting in place appropriate storage related risk management procedures. However, the same storage facility shall not be utilized by more than one Clearing Corporation for the same commodity
- The Clearing Corporation shall ensure that the storage facilities provided by the WSP are under absolute control of the WSP. In case a storage facility is a leased property it should be ensured by Clearing Corporation that no third party including the owner / lessor of the storage facility, has any role to play in the operations and management of the concerned storage facilities operated by the WSP.
- The exchanges and the clearing corporations shall ensure that the WSP/Management of WSP (defined as 'key managerial personnel' including whole time directors of WSP and their 'relatives' as per Companies Act, 2013) or entities owned or controlled by promoters/management of WSP/Group concerns/associates directly or indirectly or persons 'acting in concert' are not allowed, either directly or indirectly, to trade on the exchange in the commodity for which it is accredited by the clearing corporation. The clearing corporation shall not provide for any exemption in this regard. WSP shall be a company under the Companies Act.
- Clearing Corporation shall ensure that the staff/employees of the WSP who are managing the day-today affairs of the warehouses, deployed both in the office of the WSP and in its warehouses, are duly trained on their expected tasks through the relevant training programmes or are deputed to attend the certification programme conducted by National Institute of Securities market (NISM).
- SEBI has prescribed minimum net worth criteria of Rs 10 crores to Rs 50 crores for different categories of WSP based on the goods (commodities) they store. The value of

the goods stored in the accredited storage facilities of WSP shall not, at any point of time, exceed 33 times the net worth of the WSP, irrespective of the number of Clearing Corporations being served by the given WSP. The Clearing Corporations shall obtain suitable information from time to time from the WSPs in this regard.

- The WSP shall appoint a compliance officer who shall be responsible for monitoring the compliance with relevant Act, rules and regulations, notifications, guidelines and instructions issued by relevant authorities from time to time. The Compliance officer of the WSP shall ensure that all norms mentioned are followed by the WSP and should issue a declaration to that effect to the clearing corporation, at regular intervals as directed by the clearing corporation.
- Know Your Depositor: The WSP shall comply with Know Your Depositor (KYD) Policy as prescribed by the clearing corporation from time to time. The clearing corporation shall ensure that they and the WSP shall, at any point of time be able to identify the depositor of the goods deposited in the registered warehouses, and also the actual beneficiary (in case the depositor and the beneficiary are different) of the deposited/stored commodities.
- The clearing corporation shall ensure that the WSPs to be eligible for accreditation have reasonable facility and infrastructure for proper handling and scientific storage of commodity. This also includes adequate infrastructure for storing the deliverable commodities of commodity derivative contracts which needs to be stacked properly in a separate storage area as specified by the Clearing Corporation thereby providing clear-cut demarcation between exchange-delivered and non-exchange commodities.
- WSPs should take care of infrastructures such as rail/road connectivity, adequate lighting, security, firefighting equipment, including marking fire hydrants or fire escapes, and ventilation while managing the handling or storage of commodities. In addition to these norms, SEBI has also prescribed additional separate norms for agricultural and non-agri commodities for the physical safety and scientific preservation of these commodities.
- The Clearing Corporation shall ensure that the WSP had obtained the required registrations of the proposed storage facility from WDRA for commodities notified under the WDRA Act and for other commodities under applicable law/s and the same shall be intimated by it to the Clearing Corporation prior to extending storage services to the Clearing Corporation.
- The Clearing Corporation shall ensure that WSP should have necessary internal process that enables it to physically verify - by deputing its officials or through any agencies / experts engaged by it - the goods deposited, the facilities available in such warehouse, or to inspect the level of compliance of the warehousing norms stipulated by the Clearing Corporation/regulator from time to time.
- The clearing corporation shall be responsible for the monitoring the warehouses of their accredited WSPs. Clearing corporation and WSPs shall ensure that the goods whose final expiry date is over, are removed from the concerned warehouse within the prescribed

timelines. Clearing corporation shall review and appraise operational performance of each WSP every year.

- The participants/clients willing to deposit goods in the clearing corporation accredited Warehouses would submit a request to the clearing corporation. The clearing corporation shall use a transparent and time-bound process for the participants to identify the warehouse where the participants can deposit the goods. After such identification, the clearing corporation shall intimate the participants about the time, place and the warehouse where they can deposit the goods. The clearing corporation shall then issue directions to the concerned warehouse for accepting deposits from the concerned participants/clients after assaying/ quality testing as per the laid down procedure in a transparent manner. The WSP shall accept the goods for deposits only at the instruction of concerned clearing corporation.

SEBI norms place special emphasis on the assaying and quality testing of commodities being stored in the warehouses for trading on derivatives exchanges. Some of the key points are:

- Each warehouse of an accredited WSP shall assign a special place to store the samples used for inspection and testing for the purpose of further examination and testing.
- The WSP shall undertake to have assaying/testing facilities for the commodities it intends to render warehousing facility, or shall undertake to be associated with an assaying/testing agency which may preferably be certified by one or more national/international agencies like NABL (National Accreditation Board for calibration and testing Laboratories), BIS etc., as specified by the exchange.
- Clearing Corporations shall ensure that the WSP has put in place necessary infrastructure for accurate and efficient weighing, sampling, inspection and grading of the commodities deposited in its storage facility and the WSP has deployed personnel who have knowledge and experience in sampling, weighing, inspecting and/or grading of commodities.
- The Clearing Corporation to ensure that WSP shall be responsible to accept the goods/commodities in warehouses which meets the quantity and quality parameters as per the exchange contract specifications. The WSP shall take necessary steps to maintain the quality and quantity of goods stored in the warehouse, in accordance with the conditions/parameters (for maintaining the quality) as laid down by the clearing corporations for each of such commodity that they have been accredited for.
- The clearing corporation shall follow a transparent process for accreditation of assayers and the accreditation shall be done with the approval of the Risk Management Committee of the Board of Directors of the clearing corporation. The clearing corporation shall ensure that the empanelled assayers work independently and their operations are governed by Standard Operating Procedures (SOPs) prescribed by the clearing corporation. The assayers shall be preferably certified by one or more national/international agencies like NABL (National Accreditation Board for calibration and testing Laboratories), BIS etc. They shall have the facilities as may be prescribed by the clearing corporation from time to time.

7.4.6 Electronic -Registry for Warehouse Receipts

A Warehouse Receipt is a document of title to goods issued by a warehouse service provider to a person depositing commodities in the warehouse, evidencing storage of goods.

A warehouse receipt is capable of endorsement and delivery. A person to whom warehouse receipt is transferred by endorsement acquires a title to the goods in respect of which such warehouse receipt has been issued. The endorsee gets a right to have the possession of goods covered by such warehouse receipt as per the terms and conditions contained in such receipt. The endorsee also gets a right to have such goods to be provided or delivered to him or his authorized agent by the warehouseman/service provider.

Warehouse receipts which are not negotiable, need to be electronically registered, to facilitate settlement through the Clearing Corporation. As per the Warehousing (Development and Regulation) Act, 2007 (WDRA), negotiable warehouse receipts (NWRs) can be in both paper and electronic form. The electronic warehouse registry system of the WDRA will enable multiple transfers without the physical movement of goods. SEBI has stipulated that all exchange-accredited warehouses must be registered with WDRA and all warehouses registered with WDRA are connected to one of the commodity repositories.

Functions of the Commodity Repositories

The functions of the E- Registry are as follows:

- Maintenance of the identity of the original depositor of the commodity.
- Flexibility for acceptance of non-standard (small lots) quantities.
- Provide for online verification of warehouse charges/ stocks.
- Consolidation and splitting of the goods in deliverable lots as per the contract specification of an exchange.
- Facilitation of pledging of the commodities through pledge marking and removal of lien.
- Stacking and weight tracking information.
- Ability to capture quality-related information and receipt expiry date.
- Electronic Transfer of title of the commodity in the case of sale of the commodity

7.5 Premium/Discount

Quality specification of a commodity is an indication of the minimum acceptable criteria which the exchange deliverable commodity must possess to provide for valid delivery confirming to quality specifications as per the specifications of the commodity derivative contract. However, quality variations in the goods delivered are generally accepted by the buyer subject to adjustment in the originally contracted prices either in the form of premium or discount as mentioned in the contract specifications.

Discount

In the contract specification for Castor seed futures contract, the quality specification for oil is mentioned as follows:

- From 45 percent to 47 percent accepted at a discount of 1:2 or part thereof,

• Below 45 percent rejected

The above implies that if the oil content in castor seed is below 47 percent but within 45 percent, the contracted price will attract discount. For every 1 percent decrease in oil content or part thereof, there will be a discount of 2 percent or part thereof in price.

The following example in respect of castor seed contracts illustrates how discount is calculated:

If the contracted price of castor seeds is Rs 6000 per ton with a quality specification of 47 percent, and on actual delivery, the quality content is found to be 46 percent, then the price payable is recalculated as follows:

Contracted price of castor seeds i.e., Rs 6000 will be discounted by 2 percent because the quality content has decreased by 1 percent (from 47 percent to 46 percent).

Contracted price of castor seeds (at discount) =6000*98/100= 5880

Premium

The following example, regarding gold futures, illustrates how the premium is calculated. The price of gold is calculated based on .995 purity. If a seller delivers .999 purity, he would get a premium. In such cases, the price will be calculated by way of "contract rate * 999/995."

If a gold futures contract is bought for Rs 25,000 per 10 grams of gold with a quality specification of .995 fineness and on the delivery date, if .999 fineness gold is delivered, the price is recalculated as follows:

Gold price=25000*999/995= Rs 25,100.50. The buyer will pay Rs 25100.50 against the original contract price of Rs 25000 per 10 grams.

7.6 Penalty for Seller's Delivery Default and Buyer's Default

SEBI has laid down the guidelines and procedures for levy of penalty in the event of delivery default. These delivery default norms are prescribed by the regulator in order to strengthen the deterrent mechanism and to ensure adequate compensation to the non-defaulting counterparty. SEBI has prescribed the following delivery default norms:

- Penalty on seller in case of delivery default is as follows:
  - Futures contracts on agri-commodities: 4% of Settlement Price + replacement cost (Replacement cost is the difference between settlement price and average of three highest of the last spot prices of 5 succeeding days after the commodity pay-out date, if the average price so determined is higher than Settlement Price, else this component will be zero.)
  - Futures contracts on non-agri commodities: 3% of Settlement Price + replacement cost (Replacement cost is the difference between settlement price and higher of the last spot prices on the commodity pay-out date and the following day, if the spot price so arrived is higher than Settlement Price, else this component will be zero.)
  - Clearing Corporations / Exchanges have flexibility to increase / decrease penalty for specific commodities depending on situation, in consultation with SEBI.
  - How the collected penalty would be apportioned between SGF, Clearing Corporation and the Impacted Buyer:

        - At least 1.75% of Settlement Price shall be deposited in the Settlement Guarantee Fund (SGF) of the Clearing Corporation
        - Up to 0.25% of Settlement Price may be retained by the Clearing Corporation towards administration expenses
        - Balance amount (i.e., 1% of Settlement Price in case of non-agri goods or 2% of settlement price in case of agri goods) plus replacement cost shall go to the buyer who was entitled to receive delivery.
    - In addition, Clearing Corporation may have appropriate deterrent mechanisms (including penal/disciplinary action) in place against intentional/wilful delivery default.

- A default penalty for defaulting buyers is introduced w.e.f. May 2021, as per the circular dated 23rd March 2021. Earlier, only the default delivery by sellers was considered for penalty purposes. However, now, in the case of a default by a buyer, the Clearing Corporation shall review the loss incurred by the non-defaulting party, i.e., Seller, at its sole discretion, and accordingly, levy a penalty on the defaulting buyer. However, such penalty shall be within the overall cap of delivery margins collected by the clearing corporations from such defaulting buyer.

7.7 Deliveries in the Case of Physical Delivery

Where deliveries are to take place are very clearly indicated in the contract specifications and generally physical delivers are made in approved warehouses at the Exchange designated delivery centres only i.e., as specified by the Exchange in the contract specifications of a commodity.

Staggered Delivery

Staggered delivery is the period before the expiry of a contract when the buyer and seller with an open position can submit their intention to give or take delivery. All compulsory delivery commodity future contracts are required to have a staggered delivery period. SEBI via circular dt. May 24, 2024 has reduced the staggered delivery period for the commodity derivatives segment to three days from the earlier five days. The corresponding buyer will be randomly allocated by the trading system of the exchange and they will have to take the delivery on the T+2 day at the designated delivery centre where the seller has delivered the commodity through title transfer of ownership of physical goods. This is to ensure confirmation of delivery in the near month contract and to keep the price volatility under check. Wherever staggered delivery is permitted by the exchange in any contract specifications, the settlement price for any delivery allocation during staggered delivery period (i.e., up to one day prior to expiry) would be the last available spot price displayed by the Exchange for the respective contract.

7.8 Risk Management for Exchange Traded Commodity Derivatives

A robust risk management system is central to an efficient clearing, settlement and delivery system of commodity exchanges. Commodity contracts are subject to an array of risks which are summarized below:

7.8.1 Counterparty Risk

Counterparty Risk arises, if one of the parties to the commodity derivatives contract does not honour the contact and fails to discharge their obligation fully and on time. This broadly has two components, namely replacement cost risk (pre-settlement risk) and principal risk, which arises during settlement. Replacement-cost risk refers to the cost associated with replacing the original trade, as the new trade may generally be done at a price different from the original prices and probably at an adverse price to the aggrieved party.

7.8.2 Principal Risk

Principal risk arises when the buyer/seller has not received the goods/funds but has fulfilled his obligation of making payment/delivery of goods. This is eliminated by having a central counterparty such as clearing corporation and through the principle of 'Novation'. SEBI has recognized the fact that the commodity exchanges need not be the other counterparty for gross settlement of full amount in case of default by other counterparty. Exchanges guarantees financial settlement and not gross delivery settlement i.e., exchanges can guarantee the financial compensation to the aggrieved party in case of default by other counterparty.

7.8.3 Market Integrity and Surveillance related risks

Markets always carry the risks of price rigging, cartelling, and cornering the stocks in derivatives markets and/or in spot markets to create artificial scarcity and inflated prices. All these distort the market integrity and basic purpose of organized markets which is fair price discovery.

The exchanges and regulators have strong surveillance function which keeps high vigil on the price and participant behaviour in the markets. Members are also required to ensure the adequacy of risk management and basic due diligence so as to avoid any practice leading to market failures or that impacts the market integrity. SEBI and Exchanges are authorized by rules, bye laws and regulations to raise any question to any member in respect of any client trade wherever they have suspicion of potential surveillance issues. Inputs from surveillance are also used in regulatory decision making for the maintenance of market integrity.

7.8.4 Operational Risk

Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events such as, error, fraud, outages, etc. in commodity exchanges. The issues might arise due to connectivity issues or hang-up of the trading engine due to information technology related issues. It may also relate to sun outage when trading terminal would be shut for some time given the market connectivity issues that participants may face under such a situation, as in the past. However, this risk is identified in advance and the MII issue circulars beforehand warning the participants of potential issues. A disaster situation at the members' end or with the Exchange would also impact regular activities such as saving the executed trades, recovery of trade files, pending order files, open position / margin related files, etc.

7.8.5 Legal Risk

Exchanges face legal risk on account of uncertainty due to legal actions or uncertainty in the applicability or interpretation of contracts, laws or regulations or due to uncertainty and complexities relating to successful delivery of stocks of specified quality. The legal risk is also high in commodities trading which are subject matter of various local/regional/national regulations such as Essential Commodities Act, FSSAI standards in addition to various taxes like GST, CTT, etc.

7.8.6 Systemic Risk

Systemic risk might arise when the default by one of the parties leads to the default of other parties too. The multiplier effect of one significant risk that can cause a failure in the system. To avoid such problems, the commodity exchanges have put in place stricter rules and regulations on margining, capital adequacy standards, settlement guarantee funds and legal backing for settlement activity. Some of the exchanges also have limits to exposure to Bank Guarantees of a single bank which is an example of exchanges proactive attempts to preempt systemic risks that may arise due to the bank's financial woes.

7.9 Position Limits and Computation of Open Position

Position Limits are set at the client level and member level to prevent any members and clients from building up large open positions on the buy side or sell side that would help them manipulate short-term price movements to their advantage. Numerical position limits are set both for agricultural and non-agricultural commodities as per the guidelines of the regulator. Open position limits are set on an annual basis by the regulators in consultation with the exchanges operating relevant commodity derivative contracts taking into consideration the total available deliverable supplies.

Computation of Open Position

Open position is that quantity of commodity which needs to be squared off before the expiry of the respective derivative contract, otherwise it will go for final settlement either by way of delivery or as cash settlement in terms of difference between FSP and traded price. Open Position limit is on Open exposure which is higher of Buy or Sell. If buy position is 1500 and sell position is 2000, then, the open position is 2000. At client level, open position is calculated at net level per commodity. If one contract is long 3000 and other contract of same commodity is short 3500, then, the open position for the purpose of compliance with respect the open position limit to be considered is 3500. For Member level open position, higher of buy and sell at each client level is worked out first and those figures are grossed up to arrive at open position at member level.

7.10 Salient Features of Risk Containment Measures

Commodity Exchanges have put in place a mechanism to minimize the risks emanating from multiple sources.

7.10.1 Capital Adequacy requirements

The commodity exchanges and SEBI stipulate the capital adequacy requirements and the net worth requirements for every category of clearing members to act as a cushion in the event of any loss sustained by the members. The computation procedure of networth specified by the regulator ensures that the networth free to be used for the broking business only to be considered and other fixed assets, advances given and due for more than 3 months, investments in other subsidiaries, pledged securities, intangible assets, prepaid expenses, etc. to be ignored while calculating networth. The deposits collected from members and kept with the exchange as part of the membership requirement is the next line of defense which may be used towards the member's margin requirement. Additional capital/deposit will be collected from the member for taking up any additional exposure.

7.10.2 On-Line Monitoring

The commodity exchanges have put in place an on-line monitoring and surveillance system, whereby the exposure of the members versus margins held and the open positions held by them is monitored on a real time basis. A system of alerts has been in-built so that the members are alerted as per the pre-set levels (e.g., on reaching 70 percent, 85 percent, 90 percent, 95 percent). As and when the members approach these limits, alerts are sent out to the members and the trading rights are denied if the prescribed limits are breached. The system enables the exchange to further check the micro-details of members' positions if required and take pro-active action. The on-line surveillance mechanism also generates alerts/reports on any price/volume movement not in line with past trends/patterns. Typically, the margins available versus the crystallized losses, futures market price movement versus the spot price movement, any large movement in prices or buildup of open positions are the major surveillance check points. For this purpose, the exchange's surveillance system not only maintains various databases but also link them to generate alerts enabling proactive risk management by the exchanges. These alerts are scrutinized and, if necessary, taken up for follow-up action. Besides this, market rumours appearing in the media are tracked and where they are found to be price sensitive, companies are approached to verify the same This is then informed to the members and the public.

7.10.3 Off-line Surveillance Activity

Off-line surveillance activity consists of inspections and investigations. As per the regulatory requirements, trading members are to be inspected in order to verify the level of compliance with various rules, byelaws and regulations of the Exchange. The officials of the regulatory inspection team verify and check if investors' interests are being compromised in the conduct of business by the trading members. Observations emanating from the inspection of the members also serve as surveillance inputs for the exchange officials.

Offline surveillance comprises reviews, inspections, and examinations. According to the administrative prerequisites, trading members and clearing members are to be reviewed, keeping in mind the end goal of investor protection to check the level of consistency and compliance of the members in terms of various regulatory guidelines, byelaws, and controls of the Exchange. The inspection team of the Exchange needs to do an audit of members so that practices and procedures followed by the members represent the policies and regulatory requirements of the exchange, in principle. Exchanges are authorized to levy penalties in case of any observed violation of the regulatory requirements such as frequent dealing error, wrong reporting of margins collected from clients, not collecting exact margins due from clients, using clients' account for self-trades, improper maintenance of basic layouts, lack of proper accounting and non-maintenance of other records, unsigned client agreements, improper records of authorized participants, etc.

7.10.4 Margin Requirements

The commodity exchanges impose need-based margin requirements as a part of its risk containment measure. The margin amount will be increased suitably to deter trading members from undesirable and speculative trades.

7.10.5 Circuit Filters (DPR / DPL)

Circuit filters, also known as the Daily Price Range (DPR) or Daily Price Limit (DPL), is the price range indicating the maximum and the minimum price within which contracts are mandated to be traded during a day. This is used as a risk management tool in highly volatile markets. It provides a limit and a cooling off time, by which volatility is restricted.

For agricultural products, SEBI vide its master circular dated 4th August, 2023, has defined DPR separately for broad, narrow and sensitive products. The initial circuit breaker for broad and narrow agricultural commodities is fixed at 4% and after the cooling off period of 15 minutes, it can increase to 6% for the rest of the day. If the prices increase more than 6 percent of the day i.e. no buy or sell orders standing in the markets to match at prices 6 percent higher compared with yesterday's closing prices. Similarly, for sensitive commodities, initially it is kept at 3% which after 15 minutes of cooling off period, will be increased to 4% for rest of the day. If the prices move beyond 4%, trading would be stopped for the day. Contracts where prices for the commodities are discovered locally have lower price limits and commodities whose prices are followed from the global markets have higher position limits i.e. 9 percent for the day. Contracts on international commodities are allowed to exceed the prescribed price limits with appropriate regulatory approval if the prices in the global markets are in sync.

Circuit filter / DPR / DPL is clearly mentioned in the contract specifications. As mentioned above, in most of the agricultural products' futures, NCDEX has fixed a DPR of 4% to 6%. In Gold contracts of different denominations, NSE has defined the DPR as 3% to 6% while for Silver contracts, it is 6% to 9%. DPR is computed on the previous day's close price.

Example: Suppose the closing price for a particular commodity contract was Rs 1,000 yesterday and DPR for this particular contract is 5 percent. So, this contract will be traded within the price range of Rs 950 and Rs 1,050 today. For Options contracts, DPL is based on volatility scan range.

7.10.6 Position Limits

Client level limits and member level limits are set by the exchange to avoid concentration risk and prevent market manipulation by a trading member or a group of participants acting in concert.

7.10.7 Settlement Guarantee Fund (SGF)

The Settlement Guarantee Fund held with clearing corporation acts as a buffer for any residual risk and operates like an insurance mechanism. In the event of a trading member failing to meet his settlement obligation, the fund is utilized to the extent required and accessible as per default waterfall arrangement, for successful completion of the settlement. This instills confidence in the market players that settlement will be mandatorily completed irrespective of a default by the counterparties to a trade. SGF is a corpus made up of contributions by the exchange, clearing corporation, and the clearing members. Besides, a portion of all the penalties related to settlements collected from participants will also be credited to the Settlement Guarantee Fund.

7.10.8 Investor Protection Fund (IPF)

Investor Protection Fund is a separate fund to be used for initiatives of investor education and awareness. The fund shall be administered by a trust created for this purpose meeting SEBI norms. The source funds include, all penalties collected from the violating participants (other than settlement violations) and 1% of the turnover fee that is collected by the exchange from its members or a minimum of Rs. 10 Lakhs (whichever is higher) in a financial year. The same can be used to pay the claim of clients or investors in the case of default by a member where dues from member is in excess of margins deposited by him. There are separate SEBI's rules and regulations for governing IPF.

7.10.9 Settlement of running account of Client's funds lying with the TM:

With a view to prevent any misuse of a client's funds by the broker, SEBI has made it mandatory for brokers to settle the running account of client funds on a monthly or quarterly basis as per the mandate of the client.

The TM (Trading Member), after considering the End of the Day (EOD) obligation of funds across all the Exchanges, shall settle the running accounts at the choice of the clients on quarterly and monthly basis, on the dates stipulated by the Stock Exchanges. To ensure uniformity and clarity on dates of such monthly and quarterly settlement of client accounts; Stock exchanges shall, jointly, issue the annual calendar for the settlement of running account (quarterly and monthly) at the beginning of the financial year.

7.11 Margining Mechanism

7.11.1 Margining using SPAN

SPAN (Standard Portfolio Analysis of Risk) is a scenario-based risk calculation methodology used for calculation of margin. It was originally developed by the Chicago Mercantile Exchange Group and is now widely used by most of the exchanges across the world for the purpose of margining the futures contracts irrespective of the underlying. It looks at the impact on a portfolio of futures and options contracts, if the price and the volatility of the underlying asset changes by set amounts. Its parameters include the initial margin rate (known as "scanning range") and the percentage volatility movement.

These scenario-based risk calculations are also used to monitor the short option minimum margin (SOMM) requirements. For calculation purpose, SEBI has prescribed minimum level volatility scan range. Thus, SEBI's minimum level of volatility scan range are used for SOMM (Short Option Minimum Margin) in options. The minimum Volatility Scan Range (VSR) prescribed by SEBI for agricultural commodity derivatives is 5%, 6%, 7% and for non-agri commodity derivatives it is 4%,5%,6% respectively for commodities showing low, medium and high annualized realized volatility, respectively. Commodities with annualized volatility of 0-15% are considered low volatility commodities, those with annualized volatility between 15% - 20% are considered as medium volatility commodities. Commodities witnessing 20 percent annualized volatility are considered as high volatility commodities.

SPAN is based on the estimation of the liquidation value of a position using several scenarios representing changes in market conditions. There is a set of scenarios for each contract which is updated on a daily basis to reflect current market conditions. SPAN scenarios take into account possible changes in the underlying asset's price and changes in the underlying asset's price volatility and considers a total of 16 risk scenarios when estimating the maximum loss that a position might incur from one trading day to next trading day. This forms the basis for initial margin requirements.

There are broadly seven types of margins relating to Futures segment: initial margin, extreme loss margin, mark-to-market margin, special/additional margin, concentration margin, lean period margin, and tender period/delivery period margin. In addition to that, Option on Futures Instrument will attract Devolvement Margin (but does not have tender period / delivery period margin) applicable at the time of devolvement of options positions into the respective underlying futures position. Option on Goods will have all the above margins of Futures applicable at all the time on option sellers including tender period / delivery period margin.

7.11.2 Initial Margin and Extreme Loss Margin (ELM)

Initial margin is the amount a customer needs to deposit with the clearing house before entering a trade. Initial margin is a certain percentage of the value of the contract. The initial margin is determined by the exchange based on the Value at Risk (VaR) methodology. VaR is a statistical measure of loss based on volatility that is expected for the commodity futures contract given a specific confidence level (probability). This margin is collected (or blocked from the existing deposits) upfront from the clients by the members and from the members by the exchange as part of the first level of risk management at the respective levels. The initial margin must be maintained throughout the time the position is open and is refundable at the time of delivery or cash settlement on the date of expiry or if the open position is squared off before the maturity of contract. Extreme Loss Margin (ELM) is the margin to cover the loss in situations that lie outside the coverage of the VaR based initial margins. ELM of

1% on gross open positions shall be levied and shall be deducted from the liquid assets of the clearing member on an online, real time basis and the same is also applicable for the client positions.

In respect of Option positions, initial margin is worked out based on SPAN. As mentioned earlier, it calculates 16 scenarios in which Option prices can move and based on that, initial margin is worked out.

In 2020-21, SEBI issued norms for collecting Initial Margin based on Peak Exposure during the day. Prior to these new rules, margins were collected in advance and calculated using end-of-day positions. That enabled brokers to provide a higher exposure to investors on an intra-day basis. This often ended up in brokers collecting margins that were way lesser than the minimum margins that need to collected. Hence, SEBI in 2020 came out with peak margin rules with an aim to restrict brokers from giving exposures not in line with margins given to them.

As per the peak exposure margin reporting mechanism introduced by the regulator, brokers must collect full margins in advance from their clients, a move aimed at curbing risky intra-day trades. Under this system, exchanges calculate peak margins by taking four trade snapshots at different time points of a trading session. Thus, the new rules required brokers to shift the basis of exposure for margin multiplication from the end-of-day position to using the intra-day peak position.

7.11.3 Mark-to-Market Margin

Mark-to-market (MTM) margin is calculated on each trading day by taking the difference between the closing price of a contract on that particular day and the price at which the trade was initiated (for new positions taken during the day) or is based on the previous day's closing price (for all the carry forward open positions from the previous day).

Mark-to-market loss\profit calculated at the end of each trading day based on the day's closing price and the same is termed as mark-to-market margin. MTM gain/loss is calculated by marking all the positions in the futures contracts to their respective daily settlement prices (DSP) at the end of each trading day. DSP is the volume weighted average of prices of all the trades that were done in the last half an hour of the day (or) in case of less than 10 trades (or) an appropriate methodology to be used by the stock exchange / clearing corporation in case there is no trade. Due to illiquidity in the contract, sometimes, DSP is arrived at by using other methodologies which depend upon price of other contracts of the same commodity, spot price of commodity, etc. The profits/losses are computed as the difference between the traded price or the previous day's DSP, as the case may be, and the current day's DSP. In case, the net outstanding position in any futures contract is nil, the difference between the buy and sell values is considered as notional loss for the purpose of calculating the mark to market margin payable.

In case of the position that was squared off on the day, the realized loss on the day of square off vis-à-vis previous day's DSP is first adjusted against margins kept by the participant, and thereafter, available margin is considered to recalculate the allowable exposure.

If the closing price is lower than the entry price, the buyer has to pay the MTM margin (loss) and if the closing price is higher than the entry price, the seller has to pay the MTM margin (loss). In this manner, the daily profit/loss is calculated on the open futures position. If there is a loss, the amount is transferred by the broker from customer's trading account to the clearing house and in case of profit the amount is transferred from the clearing house to customer's trading account via the broker. MTM pay-in and pay-out are mandated to be settled in cash before the start of trading on T+1 day. If mark to market obligations are not collected before start of the next day's trading, the stock exchange shall collect correspondingly higher initial margin (scaling up by a factor of square root of two) to cover the potential losses over the time elapsed in the collection of margins.

On a daily basis, at the Exchange level, the total amount of MTM losses to be collected equals the MTM gains that are payable against the open futures contracts. Hence, the clearing corporation receives the amounts from those brokers who have MTM losses and credit the same to the other brokers who have MTM gains. Hence, the level of daily clearing activity as indicated by the changes in MTM represents the volatility in daily closing prices.

In case of Options sellers (also known as writers), the margin obligations also include SOMM (Short Option Minimum Margin). For Option buyers, premium payment obligations are done along with other obligations, or netted off MTM loss / MTM gain receipt. Buyers of Options are not charged with any other margin.

7.11.4 Additional / Special Margin and Concentration margin

Increase in volatility increases margins on futures contract as margins are used as a tool for curbing excessive speculation from the markets. The additional / special margins are imposed to prevent overheating in the market and to ensure market integrity. The major indicators for deciding these margins are:

- one sided run in the future prices (upward/downward),
- growing divergence of futures and spot prices,
- significant increase in open interest not backed by stocks in warehouse particularly in the near month contract, and
- Client-level concentration of open interest on the buy side or sell side.

Additional margin is levied on both sides i.e. buy and sell. A special margin is levied only on one side of the open interest standing in the market – either buy or sell. Thus, the purpose of additional margin is mainly to reduce the market's overheating in terms of higher open interests, while the purpose of a special margin is to correct the market's open interest and price momentum on one side which seems to be affecting market integrity.

Existing guidelines mandate that the regulator’s view should be taken by the exchanges before levying or revising any kind of additional or special margin. This is because of the prudency that the exchanges to take regulators into confidence in determining the extent of margin and the direction of the market.

Concentration margin is an excellent tool to levy margin only on those clients with concentrated contracted open interest on buy or sell side vis-à-vis total open interest in that commodity / contract. Thus, it helps to pick and choose the concentrated positions of the clients to levy the margin. While there is no rule to determine if the position of a client falls into the ambit of ‘Concentration Margins’ or not, exchanges are expected to keep in mind factors such as time to maturity of the contract, liquidity in the contract, and the width and depth of the market. Additional and Special margins are levied on all the clients within a commodity but concentration margins are levied only on select clients.

7.11.5 Tender Period Margin / Delivery Period Margin

The extra margins during the tender and delivery period are collected from those who have an open position in the market as the exchange faces the risk of financial and delivery defaults. Thus, Tender Period Margin is levied at the Client level and not at the Member level.

Extra margins are applied to all open positions once they enter the tender period or delivery period (usually the last 5-10 days before the expiry date of the contract) and is known as tender period/delivery period margin. The applicable tender/delivery period margin is calculated as 3% + 5 day 99% VaR of Spot Prices or 20% (whichever is higher). All open positions during the tender period or delivery period are subject to this margin.

This margin figure can be changed / revised, and its start date can also be changed depending upon the situation of stocks in the warehouse, amount of open interest standing in the market during the tender/delivery period, chances of major rejection of stocks while entering warehouse (due to an overall bad crop quality), highly speculative participation in terms of level of open interests standing without tendering for delivery, etc.

In case there is a delivery intention and the proof of holding the commodity is provided by the seller in the form of a warehouse receipt, then the seller of the commodity will be exempted from this margin. In case of non-delivery, this margin is released only after the final cash settlement is done. In such a case, delivery default penalty provisions would be applicable to the defaulting buyer/seller.

An example to understand margins is given below:

A trader wishes to buy Gold June futures contract at the prevailing price of, say, Rs. 45,000 per 10 grams. Therefore, the value of a single contract of gold (1 kilogram) would be Rs 45,00,000. In this case, the trader initially has to deposit only, say, five percent of the contract value; i.e., Rs 2,25,000. This amount is called initial margin plus minimum level of extreme loss margin.

At the end of that trading day, if the gold June contract fell to Rs 44,900 per 10 grams, then the trader has to pay the difference (i.e., Rs 45,000 – Rs 44,900 = Rs 100 for 10 grams) which is Rs 10,000 per kg as mark-to-market margin.

In case gold prices start showing very high volatility and/or there was a significant increase in open interests, the exchange may impose a special margin of extra one percent (Rs 45,000 in this case). This can be an additional margin (i.e., margin collected from both sides of contract) or a special margin (i.e., margin collected only on either buy or sell side of contract). Orderbook of the exchange is a clear indicator of the source of price momentum if it is coming in general due to volatility in the prices of the underlying or from excessive buying or selling that is happening in a particular contract.

During the tender period, the trader has to pay an extra 20 percent of the total contract value, i.e., Rs 9,00,000 in this case. This is called tender period margin or delivery period margin. Tender period margins are levied once the futures contract enters the first day of the announced tender period (as per the contract specifications) on all the open positions for which a delivery matching is yet to happen. The tender period margins are payable by buyer and seller and it will be in addition to the initial / daily margin, special and / or such other margins, if any already applied.

Index Futures and Index Options are cash settled and hence, delivery period margins do not apply on these instruments. Option on Commodity Futures devolve into the underlying Commodity Futures before those futures go into staggered delivery period. Thus, delivery period margin does not apply to Options on Futures. However, exchanges shall start collecting margins on an incremental basis for all the options positions that could be potentially exercised.

However, Options on Goods expire with the expiry of related commodity Futures. In-the-money (ITM) Options and a few Close-to-the-money (CTM) Options are expected to be exercised into delivery vs payment. Thus, delivery-related risks exist in the last 5-10 days before expiry, similar to those of Futures. Hence, for Options on Goods, both the players i.e. buyers as well as sellers are charged with delivery period margin in each of the last 3-5 days before expiry. This margin is levied following the below mechanism given the scenarios provided:

- It is levied on buyers and sellers of only those strike price options, which are in ITM or CTM or expected to go into ITM or CTM based on volatility and expected price movement till the expiry date. For example, on 5 days before expiry (i.e., E-5 day), next 4 days' volatility and price movement are estimated, compared with polled spot price on daily basis, expected movement in spot price and based on those, strikes which are in ITM / CTM or expected to be in ITM / CTM by the "E" day are charged delivery period margin. This is complex as final settlement price (FSP) for Option on Goods are in fact based on polled spot price and not based on Futures price.

- It may happen that initially, at the start of delivery period, delivery period margin is charged on 1 ITM option. But, in next 2 days, spot price movement converted that ITM option into Out-of-the-money (OTM) option. In this scenario, already charged delivery period margin may be released, after estimating FSP and volatility.
- In case any OTM contract turns into ITM on E-2 day only, then on that day, tender period margin relating to E-4 and E-3 (i.e., backlog margin of previous days) are also collected on E-2.
- If any of the trader in the segment squares-off his position during this period, his margins will be released. It is similar to that in Futures also.
- If a new position is created by a trader during the staggered delivery period, let's say, on "E-2" day, then, the trader is obliged to pay delivery period margins of the days of E-2, E-3, E-4, …. before the next morning of "E-1" day. Thus, all the earlier backlog of delivery period margins is collected from new trader and the same is released for the other trader who now squared off his position (by passing on his open position to this new trader).

7.11.6 Devolvement Margin for Option on Futures

Normally, buyers in Options on Futures are not charged any margin while option sellers are charged SOMM. On the other hand, in Futures, both the buyers and sellers are charged various margins like initial margin, ELM, additional / ad-hoc/concentration margins, etc. Thus, ITM options that are about to devolve on Futures carry the risk of margin shortfall as these players need to comply with the margin requirements of Futures on devolvement. Therefore, in the last 3 days before the expiry of Options on Futures, a separate devolvement margin is charged equally to players on both sides (i.e., on buyers as well as on sellers). It is similar to the logic of the delivery period margin explained above for Option on Goods. It is normally charged on E-2, E-1 and E ("Expiry day") of Options on Futures. It is charged equally i.e. 1/3rd on each day + backlog in 1/3rd charged earlier due to price movement. For example, assume that on E-2 day, it was decided to charge Rs 25,000 margin on each of the 3 days. However, on E-1 day, due to change in volatility or price fluctuation, it is recalculated to arrive at amount of Rs 26,000 per day. Then, on E-1 day, Rs 27,000 will be collected (i.e., Rs 26,000 + Rs 1,000 shortfall of E-2 day). Devolvement margin ultimately ensures that post-devolvement of Options into Futures, the margin obligations on Futures are also realized and there will be no shortfall.

7.11.7 Alternate Risk Management Framework in case of possibility of negative pricing

SEBI, vide its circular dated 23rd February 2021, has decided to impose pre-expiry margins on cash-settled contracts wherein the underlying commodity is deemed susceptible to the possibility of near zero and/or negative prices as identified by the Exchange or Clearing Corporation. In case of these contracts, pre-expiry margins during the last five trading days prior to expiry date shall increase by 5% every day. Such an increase in pre-expiry margin for the commodities futures whose prices are susceptible to fall to near zero or negative, will help in inducing closure of open positions at an early stage and reduce risks related to delivery or payment default on expiry. As per the regulatory guidelines the Alternative Risk Management Framework would be activated:

1) There is a fall in the commodity prices by more than 50% within 20 trading days, while comparing the intra-day highest and lowest prices.
2) In case of internationally referenced contracts, if the exchange of reference decides to introduce measures for negative prices.
3) If the price of the underlying commodity/futures contract comes down to the level equal to or lower than the maximum price movement observed over the Margin Period of Risk ("MPOR") in past 12 months.

Once ARMF is activated, the margin benefit on spread positions shall be completely withdrawn. In the case of options contracts, Bachelier model would be applicable for the purpose of theoretical price determination. Clearing corporations shall levy other margins such as additional margins, special margins, concentration margins, etc, at their own discretion. The de-activation of the Alternative Framework and re-activation of regular framework will be done when the margin requirement under the two frameworks sufficiently converges.

7.11.8 Lean period Margin for agricultural commodities

Lean period is generally a period before the harvest of the agricultural commodities during which there are uncertainties about the volume of harvesting and volume of production and hence the spot prices remain volatile. These uncertainties may result in additional volatilities which may come up due to other expectations about monsoon surplus / deficit, labour supply for harvesting, transportation issues and various other geo political situations. For e.g. Lean period is prescribed by NCDEX through their various circulars from time to time and it may keep changing depending upon the start of harvesting season etc. For e.g. for turmeric, NCDEX revised lean period in Sept 2021 from December 21 – February 22 to January – March 2022. As per that circular it is November to January for castor and it was January to March for Dhaniya. For Guar, it is July to September. Participants would have to look out for exchange circulars of the relevant years for the time period of applicability of the Lean Period Margins for the respective agricultural commodity derivative contracts of their interests.

Contracts of lean period are charged additional lean period margin to manage these additional volatilities arising out of uncertainty of information about the fundamentals that prevails during lean periods.

7.12 Additional Procedures for Other Commodity Products

7.12.1 Index Futures

Index Futures are like any other normal Futures with the only settlement option of cash settlement. Hence, its settlement procedures are similar to that of those commodity futures which are cash settled (such as crude oil). On a daily basis before expiry of index futures, following margins / payments are collected or credited:

- Initial Margin while taking positions by both buyers and sellers
- MTM margin on daily basis

On Expiry day of Index Futures, Final Settlement Price (FSP) of index is determined after 5:00 pm. It is based on index calculation on volume weighted average traded price of constituents' future contracts during 4:00 pm to 5:00 pm on the expiry date. FSP so determined for Index Futures position is used to settle all the open positions at the time of expiry. The difference between previous day's DSP of Index Futures and FSP is used to do cash settlement on the next day morning, i.e. upon expiry of the contract. This payment obligation is also subsumed along with other payment obligations / receivables under commodity futures and options on every day morning.

As per SEBI Circular dated 29th June 2021, cross-margin benefit has been allowed on index futures position, similar to crush margin benefit in two commodities such as oilseeds and their respective vegetable oils. If there are opposite positions in index futures and futures of constituents of the same index, then cross margin benefit is available up to 75% subject to the below condition:

- MTM Loss and ELM will continue to be levied and collected.
- The cross-margin benefit will only be available at the client level for those cross positions taken up by the client and hence it is neither applicable nor calculated at the broker level.
- To be eligible for the cross-margin benefit, contracts belonging to Index futures and underlying constituents or their variants shall belong to the same expiry month or to the nearest expiry month and should be from amongst the first three expiring contracts only.
- Clearing Corporations/Exchanges may introduce cross margin benefits after back testing for adequacy of cross margin to cover Mark to Market losses (MTM) for a minimum period of six months.

7.12.2 Options on Futures

On a daily basis before expiry of options, following margins / payments are collected or credited:

- Buyers of options pay Option price / premium on T+1 basis before the start of the market hours.
- Sellers of options are credited with the Option price / premium on T+1 basis. At the same time, Sellers of options are charged with margin for short position in options referred to as Short Option Minimum Margin (SOMM). The SOMM is collected which is based on SPAN based calculations developed and licensed by the Chicago Mercantile Exchange. This calculation requires various scenario analysis over the option's remaining period and works out risks to the seller of options for which the margin (SOMM) is collected.

- During devolvement period i.e., 3 days prior to devolvement, devolvement margins are collected over those three days as mentioned above in section 7.10.

SEBI has prescribed minimum level of volatility scan range to be used for SOMM in options which is effective from April 1, 2021. The matrix of minimum level of volatility scan range is based on categorization of low, medium and highly volatile contracts. The same for agricultural commodity derivatives is 5%, 6%, 7% while for non-agri is 4%,5%,6% respectively.

On expiry of Options, FSP is determined which is same as Daily Settlement Price (DSP) of respective Futures. The difference between FSP and Strike price is considered MTM gain / loss of the players which is received / credited on T+1 basis i.e., on the next morning. The exercise window is opened to determine which options will be exercised and devolved onto the respective underlying future. Post devolvement and post-assignment of the devolvement obligation, the options contract would cease to exist, and the parties of that option get their equivalent positions in the future.

7.12.3 Options on Goods

On a daily basis before expiry of options, following margins / payments are collected or credited which is similar to that of Options on Futures:

- Buyers of options pay Option price / premium on T+1 basis before start of market hours.
- Sellers of options are credited with the Option price / premium on T+1 basis. At the same time, Sellers of options are charged with margin for short position in options. SOMM (Short Option Minimum Margin) is collected which is based on SPAN based calculations.

As mentioned above, minimum Volatility Scan Range is applicable for SOMM in options w.e.f. 1st April 2021.

On exercise, option position shall devolve into payment and delivery obligations as follows:

- Long call positions and short put positions in exercised options shall devolve into buy position in the underlying goods requiring payment to be made against delivery received.
- Long put position and short call positions in exercised options shall devolve into sell position in the underlying goods requiring delivery to be made.

All such devolved delivery and payment obligations are merged with the delivery and payment obligations of normal Commodity Futures trading segment within the same Exchange. Post the devolution, the net position of delivery and payment is derived. As the options position-based delivery obligations merges with that of delivery obligations from Future positions, additional procedures for final settlement start as explained below:

In a commodity trading segment of the exchange, Futures and Options on Goods for the same commodity, both expire on the same date. For example, for RM Seed and Wheat contracts in NCDEX, Futures and Options on goods both expire on the 20th of the expiry month. In case

Futures is not available for a month's expiry, Option on goods will not also be available for that month's expiry. This co-existing and co-expiring schedule of options on goods and the related futures contracts facilitates the following:

- Same Final Settlement Price (FSP) from Spot Polling can be used as settlement of Futures and the Options on the same Goods.
- Delivery and Payment obligations of Futures and such Options can be considered together and subsumed together to arrive at net obligation for the final settlement procedure to kick in during the next day.

The above FSP is derived by a polling process carried out by the spot polling team of the respective clearing corporation to disclose daily spot prices of commodity and the output of the same process is specifically carried out to work out closing spot price on the expiry date of Futures Contract, which is the same date when Option on Goods also expire (called 'E' day). The Final Settlement Price is the spot prices announced during the last three days of the contract including E, E-1, and E-2. In case underlying price is some other price disseminated by other international exchange, the same is derived as per the contract terms to work out FSP.

In Options on Futures, normally devolvement period starts early. Still, in Options on goods, delivery period starts after expiry of Options on Futures, in line with the expiry of the referenced futures contract. Collection of delivery period margin starts before that. For example, in MCX, w.e.f. E-4 days (i.e., in last 5 days just before delivery), tender period margin is collected from the parties having In-The-Money (ITM) Option positions (E-4 to E-0). In NCDEX, the same delivery margin, i.e., tender period margin, is levied in the last 3 days i.e., E-2, E-1, E days.

In Futures contract, there are: delivery period, staggered delivery period and pre-expiry margins. Collection of these margins may start in Futures 1-2 weeks or even 20 days before expiry depending upon market fluctuations and price volatility.

However, in Options on Goods, there is nothing as pre-expiry period or pre-expiry margin, but only tender period margin or delivery margin as above is applied. As European Options on Goods expire along with the expiry of respective commodity futures, the tenure of such Option on Goods would normally be longer than Options on Futures.

Tender period margin i.e., Delivery Margin shall be levied at the client level and collected from the clearing member. The above mechanism applies only to the positions in Options on Goods and it will not be adjusted / netted with the margin obligations of the related futures positions.

On expiry of Options (on Goods), FSP is determined as mentioned above and Option exercise window is opened so that buyers (especially those with At-The-Money position) can decide whether to exercise or not. The difference between FSP and Strike price is considered as MTM gain / loss of the players which is received / credited on T+1 basis i.e., on the next morning. All exercised contracts within an option on futures series shall be assigned to respective long/short positions in that series in a fair and non-preferential manner. This will create ultimate delivery and payment obligations.

These obligations are merged with obligations of payment and delivery on Futures which expire on the same day (‘E’ day). This leads to start of the payment and delivery part or actual settlement of obligations by Clearing Corporation. The framework of Clearing Corporations of exchanges, Warehouses, WSP, Repository (NERL and CDSL), Clearing Bank, assaying and testing, E-Registry and Warehouse Receipts works together in the settlement procedure which has elaborately been discussed in the earlier chapter. This also include aspects like delivery center, premium or discount applicable on additional delivery center, delivery default penalty which are important for smooth settlement of obligations by parties. For example, currently, Gold is deliverable at seven additional delivery centers at MCX while Base metals have 2 delivery centers. Premium / discount may differ for each delivery center. The delivery is also possible electronically by way of debit and credit of the quantities in their repository system depending on if they are a seller/buyer, respectively.

7.13 Raising of Bill for Delivery

Once obligations for delivery are assigned, seller will raise the bill on buyer at the Final Settlement Price. The bill will be inclusive of appropriate GST levied on Final Settlement Price. Even though the trades might have happened at some other traded rates on trade date, the bills will always be raised at the Final Settlement Price. The difference between these two rates was already adjusted earlier during daily MTM obligations.

7.14 Cyber Security & Cyber Resilience framework (CSCRF) for Stock Brokers / Depository Participants

Rapid technological developments in securities market highlighted the need for maintaining a robust cyber security and cyber resilience framework to protect the integrity of data and guard against breaches of privacy. Since stock brokers and depository participants perform significant functions in providing services to holders of securities, these entities should have robust cyber security and cyber resilience framework. This shall provide for essential facilities and perform systemically critical functions relating to securities market. Cyber security framework includes measures, tools and processes that are intended to prevent cyber-attacks and improve cyber resilience.

SEBI has recently notified a detailed CSCRF for the SEBI Regulated Entities (REs) that shall come into effect, in phased manner, starting from January 1, 2025 onwards (superseding the existing circulars). The key objective of CSCRF is to address evolving cyber threats, to align with the industry standards, to encourage efficient audits, and to ensure compliance by SEBI Regulated entities. As per the CSCRF, the following REs are constituted as the Market Infrastructure Institutions (MIIs):

a. Stock Exchanges
b. Depositories
c. Clearing Corporations
d. KYC Registration Agencies (KRAs)
e. Qualified Registrars and Transfer Agents (QRTAs)

Cyber Resilience is an organization's ability to prepare and respond to a cyber-attack and to continue operation during, and recover from, a cyber-attack. The Cyber Security and Cyber Resilience Framework is based on 5 cyber resiliency goals:

1. **Anticipate**: Maintain a state of informed preparedness from adversary attacks.
2. **Withstand**: Continue essential business functions at times of adversary attacks.
3. **Contain**: In the event of cyber-attacks, localise containment of crisis and isolate trusted functions from untrusted ones to continue business operations.
4. **Recover**: Restore business functions to the maximum extent, subsequent to adversary attacks.
5. **Evolve**: To change business functions and its supporting cyber capabilities to minimize adverse impacts of adversary attacks (actual or predicted).

Sample Questions

1. Transactions involving transfer of ownership of commodities are settled on _____ basis.
   (a) Cash settlement
   (b) Auction settlement
   (c) Margin settlement
   (d) Delivery-versus-payment
   Ans: (d)

2. Option on Goods does not have _________ margin.
   (a) Initial Margin
   (b) Devolvement Margin
   (c) Delivery Margin
   (d) SOMM
   Ans: (b)

3. Under the staggered delivery mechanism, the buyer who is randomly assigned a delivery obligation by the trading system of the exchange has to take the delivery from the delivery centre _______.
   (a) On the same day
   (b) On the next day
   (c) On the expiry date
   (d) On T+2 day
   Ans: (d)

4. ________ refers to the cost associated with substituting the original trade with a new trade, as the new trade may generally be done at a different price and probably at an adverse price to the aggrieved party.
   (a) Rollover risk
   (b) Principal risk
   (c) Replacement-cost risk
   (d) Systemic risk
   Ans: (c)

5. For a new long futures position taken during the day, if the closing price at the end of the day is lower than his transaction price, ____________.
   (a) The buyer has incurred an MTM loss
   (b) The buyer has made an MTM gain
   (c) The seller has incurred an MTM loss
   (d) The seller can ask for more premium from the buyer
   Ans: (a)

Chapter 8: Legal and Regulatory Environment

LEARNING OBJECTIVES:

After studying this chapter, you should:

- Know the regulatory framework governing the commodity markets in India
- Understand the key aspects of Securities Contracts (Regulation) Act, 1956
- Know the powers of SEBI under the Securities and Exchange Board of India Act, 1992
- Know the Other regulatory norms to encourage commodity derivatives

8.1 Regulatory Structure of Commodities Market

The main objective of commodity market regulation is to maintain and promote the fairness, efficiency, transparency and growth of commodity markets, protect the interests of the various stakeholders of the commodity market including the investors, reduce systemic risks and ensure financial stability.

The three-tiered regulatory framework for commodity markets comprises Government of India, Securities and Exchange Board of India (SEBI) and Exchanges.

8.1.1 Central Government

The Central Government formulates the broad policy with regard to the recognition of commodity exchanges and the list of commodities that are permitted for trading in their derivative contracts (defined as securities).

The subject of securities is under the Union List in Schedule VII of the Constitution of India, whereas the spot market trade in commodities particularly agriculture commodities is in the state list.

8.1.2 Securities and Exchange Board of India (SEBI)

Securities and Exchange Board of India (SEBI) is the regulator for commodity derivatives markets. SEBI has the twin objectives of protecting the interests of the investors and to promote the development of the markets.

After the Forward Contracts (Regulation) Act, 1952 (FCRA) was repealed by the Government with effect from September 28, 2015, Securities Contracts (Regulation) (Stock Exchanges and Clearing Corporations) Regulations, 2012 (SECC Regulations) and SEBI (Stock Brokers) Regulations, 1992 are made applicable to the commodities derivative's exchanges and their trading members.

SEBI has also created a separate Commodity Derivatives Market Regulation Department (CDMRD) for the regulation of commodity derivatives segment. CDMRD was responsible for supervising the functioning and operations of commodity derivatives segment of the exchanges. Currently, the same has been merged into the Market Regulation Department of SEBI. All recognized associations/commodity derivatives exchanges under the Forward Contracts (Regulation) Act, 1952 were continued to be recognized as stock exchanges under the Securities Contracts (Regulation) Act, 1956 with effect from September 2015.

For the proper conduct of exchanges and commodity derivatives markets, SEBI keeps issuing guidance by way of notifications, circulars including master circulars applicable for the respective class of securities traded in the Indian securities markets. For example, SEBI's

Master Circular dated 4th August 2023 is a compilation of various circulars issued by SEBI for commodity derivatives markets.

8.1.3 Exchanges

After the repealing of Forward Contracts (Regulation) Act, 1952 (FCRA) on September 28, 2015, all recognized associations (i.e., hitherto commodity derivatives exchanges) under FCRA have been deemed to be recognized stock exchanges under the Securities Contracts (Regulation) Act, 1956. Subsequently, the commodities derivatives markets and the securities derivative markets were further integrated by integrating the participants, brokers, and operational frameworks.

In order to integrate the two markets at the intermediary's level, SEBI has issued a circular on 'Integration of broking activities in Equity Markets and Commodity Derivatives Markets under single entity' in September 2017. The next step was integration of trading across the existing stock exchanges. For this SEBI has amended the Securities Contracts (Regulation) (Stock Exchanges and Clearing Corporation) Regulations, 2012 (SECC Regulations) and permitted trading of commodity derivatives and other segments of securities markets on a single exchange with effect from October 1, 2018.

8.2 Securities Contracts (Regulation) Act, 1956

The Securities Contracts (Regulation) Act, 1956 (SCRA), provides for direct and indirect control of virtually all aspects of securities trading and the operations of the stock exchanges. It prevents undesirable transactions in securities by regulating the business of securities dealing and trading. In pursuance of its objects, the act covers a variety of issues, of which some are listed below:

1. Granting recognition to stock exchanges
2. Corporatization and demutualization of stock exchanges[5]
3. The power of the Central Government to call for periodical returns from stock exchanges
4. The power of SEBI to make or amend bye-laws of recognized stock exchanges
5. The power of the Central Government (exercisable by SEBI also) to supersede the governing body of a recognized stock exchange
6. The power to suspend business of recognized stock exchanges
7. The power to prohibit undesirable speculation

SCRA gives SEBI the jurisdiction over stock exchanges through recognition and supervision. It also gives SEBI the jurisdiction over contracts in securities and listing of securities on stock exchanges.

SCRA states that in order to be recognized, a stock exchange has to comply with conditions prescribed by SEBI. It specifies that organized trading of securities can take place only on recognized stock exchanges. The stock exchanges can lay out their own listing requirements, which have to conform to the listing criteria set out in the rules.

[5]This now comes under the purview of the Securities Contracts (Regulation) (Stock Exchanges and Clearing Corporations) Regulations, 2012

This Act gives the powers to stock exchanges to make their own bye-laws, subject to prior approval by SEBI. These bye-laws can cover the day-to-day working of the stock exchanges and the operations thereon.

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 (SARFAESI Act)
- 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 referred 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
- Options in Goods (has been introduced recently)

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.

In December 2021, Electronic Gold Receipts (EGR) was also included in the definition of "Securities" under SCRA and SEBI (Vault Managers) Regulations, 2021 was notified. Further, in February 2022, SEBI developed the framework for trading in EGR on exchange platforms. This framework provides details of various aspects relating to trading in EGR. This regulatory framework has been crafted by SEBI to encourage trading in EGRs. NSDL and CDSL will act as depositories for managing vaults and EGR of various denominations will be issued to the depositors of gold.

8.3 Securities and Exchange Board of India Act, 1992

SEBI Act, 1992 provides for the establishment of the 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 corporates in the issuance of capital and transfer of securities, in addition to all intermediaries and persons associated with the securities market. SEBI has been obligated to perform the aforesaid functions with the help of such measures that 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
- 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.

SEBI Act empowers SEBI to impose penalties and initiate adjudication proceedings against intermediaries who default on the following grounds such as failure to furnish information, return, etc. or failure by any person to enter into agreement with clients, etc. under the various sub sections of Section 15 of the SEBI Act.

8.4 Other Regulatory Norms to Encourage Commodity Derivatives

SEBI wide powers conferred to it under above regulations also came up with other rules and regulations relating to other intermediaries in relation to their participation in commodity markets. For example, SEBI, wide its circulars dated 21st and 22nd May 2019 has allowed Mutual Funds and PMS respectively, to participate in commodity markets subject to certain restrictions and procedures. It allowed eligible foreign entities also to hedge their Indian commodities exposures in commodity derivatives markets. Under SEBI's Listing Obligations and Disclosure Regulations, SEBI mandated listed companies to provide details about commodity risk management/policies, commodity risk exposures and the extent to which these are hedged in domestic and international markets. RBI also issued directives to banks to advise their borrower clients to hedge their commodity exposures, if the lending is being done against commodities as collaterals.

Sample Questions

1. Spot market trade in commodities particularly agriculture commodities fall under the jurisdiction of _______.
   (a) Individual state governments
   (b) Central government
   (c) Supreme court
   (d) Local bodies such as municipalities and gram panchayats

   Ans: (a)

2. The regulatory framework for commodity markets in India consists of three tiers. Which of the following is NOT one of them?
   (a) Government of India
   (b) Securities and Exchange Board of India (SEBI)
   (c) Exchanges
   (d) Forward Markets Commission (FMC)

   Ans: (d)

3. ________ gives SEBI the power to grant recognition to stock exchanges in India.
   (a) Forward Contracts (Regulation) Act, 1952
   (b) Securities Contract (Regulation) Act, 1956
   (c) Stock Exchange Regulation Act, 1992
   (d) Commodity Exchange Regulation Act, 1986

   Ans: (b)

4. As per the definition of securities under Securities Contract Regulation Act 1956, which of the following does not fall under the definition of "Securities"?
   (a) Electronic Gold Receipt
   (b) Deposit Receipt under SARFAESI Act
   (c) Commodity Derivatives
   (d) Monsoon Derivatives

   Ans: (d)

5. Which of the following Acts are repealed?
   (a) SEBI's (Vault Mangers) Regulation, 2021
   (b) SARFESI Act, 2002
   (c) Forward Contract Regulation Act, 1952
   (d) SEBI's Stock Exchange and Clearing Corporation Regulation, 2012

   Ans: (c)

Chapter 9: Accounting and Taxation

LEARNING OBJECTIVES:
After studying this chapter, you should: • Understand the important Accounting aspects related to trading in commodity derivatives • Know the key elements of the guidance note issued by ICAI on accounting treatment of derivatives transactions • Know the Accounting of Options Contracts • Know the important aspects of taxation pertaining to commodity derivatives trading in India

9.1 Important Accounting Aspects Related to Trading in Commodity Derivatives

The accounting treatment for commodity futures/options transactions are largely governed by the revised guidance note issued in 2021, by the Institute of Chartered Accountants of India (ICAI) from the view point of the parties who enter into such futures contracts as buyers or sellers.

Hedge Accounting

Hedging refers to an action initiated to minimize/eliminate uncertainty of value of assets, value of liabilities, cash flows, firm commitments. Hedging involves two components: the hedged item (which is carrying the risk) and the hedging instrument (which helps reduce the risk of the hedged item). Hedging can be used effectively by commodity producers to protect themselves from changes in prices of their inputs (raw materials) or the output (final manufactured products). Forward Contracts, Commodity Futures and Commodity Options are examples of hedging instruments in general available to a commodity market stakeholder. Hedge presupposes the existence of an underlying exposure in the commodity. From the accounting point of view there are three types of hedges viz., Fair Value Hedge, Cash Flow Hedge and Net Investment Hedge.

The above-mentioned Guidance Note specifies that for Futures and Options contracts traded in stock exchanges, first of all, it should be demonstrated that these exposures are taken for hedging/risk management purposes. If it can be established that these exposures in the derivative instruments are for risk management purposes to manage volatility of underlying exposure, then, the principles for hedge accounting can be used.

Fair value

Fair value is the price received for selling an asset or the price paid for transferring a liability in an arms-length transaction between knowledgeable and willing counterparties. There could be an accounting mismatch between the derivative instrument, which is measured at a fair price, and the underlying exposure, which is measured at the actual cost. This mismatch can be offset by using principles of hedge accounting. The objective of hedge accounting is to ensure that the gain or loss on account emerging out the exposure to a hedging instrument is recognized in the same year, just like the hedged item affecting the overall profit or loss in the balance sheet of a business. The following conditions need to be fulfilled:

1) There should be formal documentation for hedge including a board approved risk management policy (that also includes risk management strategy).
2) The hedge effectiveness of the hedge instrument should be assessed and recorded on an ongoing basis throughout the reporting period.

Fair value hedge

A fair value hedge is a hedge of the exposure to changes in the fair value of an asset or liability or a previously-unrecognised firm commitment to buy or to sell an asset at a fixed price, or an identified portion of such an asset, liability or firm commitment, that is attributable to a particular risk and could affect reported net profit. In a fair value hedge, the gain or loss from revaluing the hedging instrument at fair value (derivative) is recognized immediately in the income statement of the business. At the same time, the carrying amount of the hedged item is adjusted for the gain or loss of the hedged risk and the change is also recognized immediately in the income statement to offset the change in the value of the derivative. For example, inventory of commodities has to be valued on fair value, along with valuation of hedging instrument like short sale of futures. If hedging is not 100% effective, there will be some impact in profit and loss account due to mismatch of gain and loss on underlying and hedge instrument versus the value of the asset or the liability that is hedged.

Cash flow hedge

The risk being hedged in a cash flow hedge is the exposure to variability in cash flows that is attributable to a particular risk associated with a recognised asset or liability, an unrecognised firm commitment (currency risk only), or a highly probable forecast transaction that could affect the income statement. Volatility in future cash flows will result from changes in interest rates, exchange rates, equity prices or commodity prices. For example, it may be related to foreign currency hedging in import or export, or interest rate swaps in floating rate of borrowing or lending. In cash flow hedge, the hedged item's differential in cash flow due to volatility is recognised in equity instead of profit and loss account. Hedging instruments' cash flow impact is also recognised in equity and thereafter, both are moved to profit and loss accounts together on a net basis.

The hedge of a firm commitment is accounted for as a fair value hedge, provided that all the criteria for hedge accounting are met. A hedge of the foreign currency risk associated with firm commitments may be designated as a cash flow hedge or a fair value hedge, as such a foreign currency risk affects both the cash flows and the hedged item's fair value.

Hedge effectiveness / ineffectiveness

To qualify for hedge accounting, the accounting standards require the hedge to be highly effective. The ICAI Guidance note does not prescribe any specific testing methodology but it provides a few examples of methodology like regression analysis, Dollar offset test, critical item matching, economic relationship between underlying and hedging instruments, negligible impact of credit risk, review of sources which may result in ineffectiveness of hedging, etc. There are separate tests to be applied prospectively and retrospectively and these tests are mandatory:

- Prospective effectiveness testing has to be performed at inception of the hedge and at each subsequent reporting date during the life of the hedge. This testing consists of demonstrating that the undertaking expects changes in the fair value or cash flows of the hedged item to be almost fully offset (i.e., nearly 100%) by the changes in the fair value or cash flows of the hedging instrument.
- Retrospective effectiveness testing is performed at each reporting date throughout the life of the hedge following a methodology set out in the hedge documentation. The objective is to demonstrate that the hedging relationship has been highly effective by showing that actual results of the hedge are to be within the value range of 80-125%.

9.2 Guidance Note Issued by ICAI on Accounting Treatment of Derivative Transactions

The revised guidance note issued by the Institute of Chartered Accountants of India (ICAI) in 2021 comes into effect in respect of accounting periods beginning on or after April 1, 2021. This guidance note requires that all derivative positions should be recognized on the balance sheet and measured at fair value since a derivative contract represents a contractual right or an obligation. Fair value in the context of derivative contracts represents the 'exit price' i.e., the price that would be paid to transfer a liability or the price that would be received when transferring an asset to a knowledgeable, willing counterparty. The extent and availability of collateral should be factored in while arriving at the fair value of a derivative contract.

This Guidance Note applies to following derivative contracts whether or not used as hedging instruments:

(i) Foreign exchange forward contracts that are hedges of highly probable forecast transactions and firm commitments;

(ii) Other foreign currency derivative contracts such as cross currency interest rate swaps, foreign currency futures, options and swaps;

(iii) Other derivative contracts such as traded equity index futures, traded equity index options, traded stock futures and option contracts; and

(iv) Commodity derivative contracts.

9.2.1 Presentation in the financial statements

Derivative assets and liabilities recognized on the balance sheet at fair value should be presented as current and non-current based on the following considerations:

- Derivatives that are intended for trading or speculative purposes should be reflected as current assets and liabilities.
- Derivatives that are hedges of recognized assets or liabilities should be classified as current or non-current based on the duration of the hedge exposure.
- Derivatives that are hedges of forecasted transactions and firm commitments should be classified as current or non-current based on the settlement date / maturity dates of the derivative contracts.
- Derivatives that have periodic or multiple settlements such as interest rate swaps should not be bifurcated into current and non-current elements. Their classification

should be based on the predominant portion of their cash flows i.e. due for settlement as per their contractual terms.

9.2.2 Types of hedge accounting

The Guidance Note of ICAI recognizes the following types of hedging:

- The *fair value hedge* accounting model is applied when hedging the risk of a fair value change of assets and liabilities already recognized in the balance sheet, or a firm commitment that is not yet recognized.
- The *cash flow hedge* accounting model is applied when hedging the risk of changes in highly probable future cash flows or a firm commitment in a foreign currency.

Hedge Accounting – An example of a cash flow hedge of a forecasted sale with an exchange-traded future

Company Z is a producer and wholesaler of copper with annual reporting period ending on March 31 each year. On January 1, 2024, Company Z forecasts sales of 100 tons of copper expected to occur in September 2024. The sales will probably occur with high probability based on the historical experience and expected sales. In order to hedge its exposure on the variability of copper prices, Company Z enters into a derivative exposure selling a futures contract on the Commodity Exchange to sell 100 tons of copper (same grade) with maturity of September 30, 2024. As per its risk management policies, Company Z designates this futures contract as a cash flow hedge of highly probable forecasted sales of 100 tons of copper inventory that is likely to occur during September 2024.

Since the commodity future does not fall within the scope of AS 11 and has been entered into to hedge the exposure of variability in cash flows arising from price risk, this would fall within the scope of this Guidance Note. According to this Guidance Note, Company Z will record the following on March 31, 2024:

Record a derivative asset/ liability based on the fair value (MTM) of the commodity futures contract with a corresponding credit/ debit to the Cash Flow Hedging Reserve.

As at March 31, 2024, the Balance Sheet of Company Z will carry the following items:

- Derivative asset/liability – MTM of the commodity futures contract. It will be reflected as increase in cash/bank balances in case of MTM gain and reduction in cash/bank balance in case of MTM loss.
- Cash Flow Hedging Reserve - MTM of the commodity futures contract (It is like a Profit and loss account. It's credited on gain and debited on loss but it remains in the balance sheet till the actual sales date of the underlying physical commodities).

Assuming that the sales in the future occur as expected, the MTM carried in the Cash Flow Hedging Reserve will be reclassified to the statement of profit and loss when the sales are booked in the financial statement. In this case, this will happen in September 2024, along with the maturity of the commodity futures contract. Such reclassification can be made in the sales line item in the statement of profit and loss, which potentially records the sales at the hedged price.

Hedge Accounting : An example of a fair value hedge of forecasted sales with an exchange-traded futures instrument

Continuing the above example, consider that Company Z designates the commodity futures contract as a fair value hedge of a portion of its inventory, i.e., 100 tons of copper. The Company documents it as a hedge of the exposure to changes in fair value of the inventory due to commodity price risk. As of March 31, 2024, the price of copper increased, thereby resulting in an increase in the fair value of inventory and MTM loss on the derivative.

Since the commodity future does not fall within the scope of AS 11 and has been entered into to hedge the exposure of variability in fair values due to price risk, it would fall within the scope of this Guidance Note. According to this Guidance Note, Company Z will record the following on March 31, 2024:

(i) Record a derivative liability based on the fair value (MTM) of the commodity future contract with a corresponding debit to the statement of profit and loss.

(ii) Record an increase in inventories for the change in fair value as a hedge accounting adjustment through statement of profit and loss. Accounting Standard (AS) 2, Valuation of Inventories, requires inventories to be carried at the lower of cost and net realizable value. Hence, this will be recorded as a separate hedge accounting adjustment distinguished from the valuation of inventories under AS 2.

As at March 31, 2024, the Balance Sheet of Company Z will carry the following items:

- Derivative asset/liability – MTM of the commodity futures contract.
- Inventory – valued as per AS 2 at cost.
- Inventory hedge accounting adjustment – basis adjustment to record change in fair value.

When sales of the hedged inventory occur in the future, the hedging related fair value adjustment to inventory will be released to the statement of profit and loss and can be classified as part of the ‘cost of goods sold’.

9.2.3 Disclosures in financial statements

Disclosures in financial statements should explain what the financial risks are, how the entity manages the risk and why the entity enters into various derivative contracts to hedge the risks. The listed entity should disclose its commodity risk management policies, total commodity price risk exposure, extent to which it is hedged in the domestic markets versus the international markets, and further break-down into OTC markets and exchanges. It should also mention the hedging strategies used to mitigate financial risks. An entity is also required to make specific disclosures about its outstanding hedge accounting relationships. The following disclosures are to be made separately for fair value hedges, cash flow hedges and hedges of net investments in foreign operations:

- a description of the hedge;
- a description of the financial instruments designated as hedging instruments for the hedge and their fair values at the balance sheet date;
- the nature of the risks being hedged;

- for hedges of forecast transactions, the periods in which the transactions are expected to occur when they are expected to affect the statement of profit and loss and a description of any forecast transactions that were originally hedged but now are no longer expected to occur. Guidance Note does not specify the future time bands for which the disclosures should be made. Entities should decide on appropriate groupings based on the characteristics of the forecast transactions;
- if a gain or loss on derivative or non-derivative financial assets and liabilities designated as hedging instruments in cash flow hedges has been directly recognized in the hedging reserve:
  - the amount recognized in the hedge reserve during the period.
  - the amount recycled from the hedge reserve and reported in profit and loss statement.
  - the amount recycled from hedge reserve and added to the initial measurement of the acquisition cost or other carrying amount of a non-financial asset or nonfinancial liability in a hedged forecast transaction.
- a breakup of the balance in the hedge reserve between realized and unrealized components and a reconciliation of the opening balance to the closing balance for each reporting period.

9.3 Accounting of Options Contracts

Buying Calls and Puts:

It is buying a right (i.e., paying a premium to buy an asset). Purchased Options are recognized as financial assets on the date of purchasing. Options generally do not create a perfect hedge to an underlying. This is because it is a protection product and not just hedging product. Hence, its MTM gains / losses cannot be matched with underlying assets and hence exposures to options and resultant funds flow would have to be treated separately. In equity markets, it is similar to buying a rights entitlement or a warrant that has the right to subscribe to equities. Upon exercise of a call option, the option premium is added to the cost of underlying assets purchased to arrive at a combined cost. Upon exercise of a put option, the option premium is reduced from the sales proceeds of assets. Upon lapsing without exercise or devolvement into Futures, option premium is debited to the profit and loss account.

Selling Calls and Puts:

Here, Premium income is received with certainty. Hence, Premium income is immediately recognized in profit and loss account. A contingent liability is shown for the probable liability/ commitment to either pay for purchasing goods (in case of Put option writing) or deliver goods (in case of Call option writing). Its MTM gains / losses cannot be matched with any underlying assets but has to be treated separately.

Upon exercise of call option, seller will raise bill on buyer for selling commodity to him, for which normal sale accounting is done. Upon exercise of put option, option seller will have to purchase commodity and hence, will make normal accounting entry for purchase of commodity. Upon lapsing without exercise or devolvement into futures, no further accounting treatment is required. But accounting treatment in relation to futures buy / sell positions will be required in case of devolvement in futures.

9.4 Important Tax Aspects Related to Trading in Commodity Derivatives

Commodity Derivatives transactions are subject to an array of taxes such as GST, Commodity Transaction Tax (CTT), etc.

9.4.1 Commodities Transaction Tax (CTT)

Commodities Transaction Tax (CTT) is applicable on transactions of commodity futures and on transactions of options on underlying commodities which are not exempted agricultural commodities. Finance Act, 2013 had introduced CTT on commodity derivatives on all non-agricultural commodity derivatives traded in recognized exchanges. The intention was to bring parity between the derivative trading in the securities market and the commodity market. The CTT was levied at the rate of 0.01 per cent that time, same as Securities Transaction Tax (STT) levied on sale of 'futures' in securities. When Options on commodity futures were introduced, initially they were levied in line with STT on equity options due to lack of clarification of CTT regime on that. Subsequently, Finance Act 2018 clarified the same and expanded scope of CTT by including options on Futures also.

CTT is determined at the end of each trading day. For each client code, all the sell transactions for a trading day shall be aggregated at contract level. The contract note issued to the client by the trading member on a daily basis specifies the total commodities transaction tax applicable for the transactions mentioned therein. CTT is levied on sellers of Futures and Options. However, on exercise of Options, it is levied on Purchaser of Options as the buyer chooses to enter into exercise deal. The agricultural unprocessed commodities' derivatives are exempted from CTT though processed commodities are not. Therefore, CTT is levied on derivatives of Sugar, Guar gum, Soya Oil and all the metal and energy commodity derivatives.

The current CTT rates applicable to taxable commodities transactions are as follows:

No.	Taxable Commodities Transaction	Chargeable on	CTT Rate	Payable by
1	Sale of a commodity Futures or Commodity Index Futures	Purchase value of the contract	0.01 %	Seller
2	Sale of an any option	Option Premium	0.05 %	Seller
3	Exercise of Options leading to delivery of goods	Settlement Value	0.0001 %	Purchaser
4	Exercise of Options on Futures or on commodity derivative	Settlement value	0.0001 %	Purchaser
5	Exercise of Options where settlement is is done by other than physical delivery	Settlement Value	0.125%	Purchaser

The value of taxable commodities transaction for the above-mentioned transactions is:

a) in the case of a taxable commodities transaction relating to a commodity derivative, shall be the total value of the contract at the sale price at which the commodity derivatives contract is traded;

b) in the case of a taxable commodities transaction relating to an option on commodity derivative, shall be:
   i. the option premium, in respect of transaction at serial number 2 of the Table above,
   ii. the settlement value, in respect of transaction at serial number 3 to 5 of the Table

As an example, to show consistency with rates mentioned above, as per MCX circular dated 17th August 2020, CTT on index futures will be at 0.01% as per serial number 1 of above table. MCX circular dated 7th July 2020 provides details of CTT on Gold Mini in 3 situations as follows:

- While selling options on goods: 0.05% on seller (as per item 2 above)
- On exercise of options leading to delivery: 0.0001% on purchaser (as per item 3 above)
- On exercise of option leading to non-delivery-based settlement: 0.125% on purchaser (as per item 5 above)

Example:
Futures price of gold in April was Rs 50,00,000 per kilogram. A trader expects gold prices to rise in the near future and bought one lot of Gold futures (lot size is one kilogram) expiring in September. Gold prices dipped to Rs 49,80,000 per kilogram in July and the trader decided to close his position by selling the futures contracts at the current rate. The loss on account of closing out the contract is Rs 20,000 (i.e., Rs 50,00,000 – Rs 49,80,000 = Rs 20,000). Over and above this loss, the trader (being seller) will also have to pay the CTT at 0.01% as per the rates given in the table above i.e., Rs 49,80,000 * 0.01% = Rs 498.

9.4.2 Stamp Duty

Earlier, brokers used to collect stamp duty from their clients at the rates applicable in the states where brokers' offices were located. However, starting from 1st July 2020, this responsibility has been shifted to the exchanges as the central government introduced uniform stamp duty regime as follows:

- Exchanges will levy stamp duty on brokers based on clients' trades, collect from them and deposit with respective states in which the respective buyers are registered. Exchanges track this data from the Uniform Client Code details available with them.
- Uniform rate of stamp duty will be Rs 2 per Rs 1 lakh of transaction i.e., approximately 0.002%.
- Brokers should in turn levy and collect the same from their clients.

9.4.3 SEBI Turnover Fees

SEBI Turnover Fees is applicable on the total turnover value clocked by the broker. The same is collected by the Exchanges from the brokers. The rate of SEBI Turnover Fees is Rs 15 per Rs 1 crore of turnover (i.e., 0.00015%). It has been reduced to Rs. 1 Per crore in the case of agricultural commodities. In order to pass on the desired benefits from reduction of regulatory fees on agricultural commodity derivatives the SEBI has mandated that the stock exchanges dealing with agricultural commodity derivatives shall create a separate fund earmarked for the benefit of farmers/FPOs in which the regulatory fee forgone by SEBI shall be deposited and utilized exclusively for the benefit of and easy participation by Farmers and FPOs in the agri-commodity derivatives market. Any income on investments from the fund shall also be ploughed back into the same fund. The fund shall be used exclusively for the benefit of and for easy participation by the Farmers and FPOs in the agri-commodity derivatives market. In case of exchange participation by the farmers/FPOs SEBI had mandated that the funds shall be utilized for various purposes ranging from broker fees to paying up of warehousing of charges as per the SEBI framework for utilisation of Regulatory Fee foregone by SEBI issued on March 20, 2019.

9.4.4 Goods and Services Tax (GST)

Goods and Services Tax (GST) is a destination-based tax on consumption of goods and services which is levied at all stages right from manufacture up to final consumption with the provision to get back the credit of taxes paid at previous stages available as setoff. In other words, only value addition will be taxed.

The GST levied by the Centre on intra-State supply of goods and/or services is called the Central GST (CGST) and that levied by the States is called the State GST (SGST). Similarly, Integrated GST (IGST) is levied and administered by the Centre on every inter-state supply of goods and services.

In Commodity Derivatives, GST is levied by seller of goods on buyer of goods at the time of billing for delivery. It is levied at the point of delivery of goods after assignment of delivery obligations. GST is levied on billed amount which is Final Settlement Price of the goods to be delivered. GST subsumed a large number of central taxes and state taxes. It subsumes Excise, Sales Tax, Octroi and Mandi Tax. But it does not subsume Mandi Cess and Custom Duty. As the exchange does not deal with IGST but ensures collection of only CGST and SGST that too at the time of final settlement of the delivery, buyers may face issues, if the sellers and buyers tagged for delivery are from different states, and buyers do not have GSTN for the delivery state.

In addition to the deliveries made through the clearing corporations, provision of brokerage services by the brokerages and trading services by the exchanges would also attract GST. In such a case, GST is applicable on brokerage fee and the trading/clearing fee levied.

Sample Questions

1. Which of the following can be used as a Hedging Instrument?
   (a) Commodity Forwards
   (b) Commodity Futures
   (c) Commodity Options
   (d) All of the above

   Ans: (d)

2. Which of the following is a type of hedge from "accounting" point of view?
   (a) Fair value hedge
   (b) Cashflow hedge
   (c) Net investment hedge
   (d) All of the above

   Ans: (d)

3. ICAI's guidance note requires that all derivatives are recognized on the _______ and measured at fair value.
   (a) Balance sheet
   (b) Income statement
   (c) Cashflow statement
   (d) Speculative statement

   Ans: (a)

4. ____________ is a destination-based tax on consumption of goods and services which is levied at all stages right from manufacture up to final consumption with credit of taxes paid at previous stages available as setoff.
   (a) Income Tax
   (b) Goods and Services Tax
   (c) Commodities Transaction Tax
   (d) Securities Transaction Tax

   Ans: (b)

5. _________ is levied and administered by the Centre on every inter-state supply of goods and services.
   (a) CGST
   (b) SGST
   (c) IGST
   (d) XGST

   Ans: (c)

Chapter 10: Code of Conduct and Investor Protection Measures

LEARNING OBJECTIVES:

After studying this chapter, you should:

- SEBI's Code of Conduct for Brokers
- Understand the importance of risk disclosure at the time of client onboarding and KYC
- Know the investor grievance redressal mechanism
- Understand the Rights and Obligations of Members and Clients
- Additional Dos and Don'ts for clients / investors in commodity derivatives

10.1 SEBI's Code of Conduct for Brokers

Schedule II of the SEBI (Stock Brokers) Regulations, 1992 prescribes a code of conduct for securities brokers, which is discussed below:

A. General

1. Integrity: Shall maintain high standards of integrity, promptitude and fairness in the conduct of all its business.
2. Exercise of Due Skill and Care: Shall act with due skill, care and diligence in the conduct of all its business.
3. Manipulation: Shall not indulge in manipulative, fraudulent or deceptive transactions or schemes or spread rumours with a view to distorting market equilibrium or making personal gains.
4. Malpractices: Shall not create false market either singly or in concert with others or indulge in any act detrimental to the investors' interest or which leads to interference with the fair and smooth functioning of the market.
5. Compliance with Statutory Requirements: Shall abide by all the provisions of the Act and the rules, regulations issued by the Government, the Board and the stock exchange from time to time as applicable.

B. Duty to the Investor

1. Execution of Orders: Shall faithfully execute the orders for buying and selling of securities at the best available market price and not refuse to deal with a small investor merely on the ground of the volume of business involved. A stock-broker also shall promptly inform its client about the execution or non-execution of an order, and make prompt payment in respect of securities sold and arrange for prompt delivery of securities purchased by clients.
2. SEBI came up with norms on segregation and monitoring of collaterals at client level, in July 2021. This norm was to further strengthen measures to mitigate risk of mis-appropriation or mis-use of client's securities including use of one client's securities for the purpose of providing for exposure, or margin, or settlement of another client.

The member is expected to implement a framework for reporting of client-wise collaterals, and its bifurcation into categories like cash and other collaterals. It can be further segregated into different types of collaterals. This is to be done by way of uploading these details on the relevant web portal for which enabling functionality will be provided by clearing corporations and exchanges.

3. Issue of Contract Note: The trading member shall issue without delay to its client a Contract Note for all transactions in the form specified by the stock exchange. Contract note can be issued electronically by way of Electronic Contract Note (ECN) to the client only upon consent of the client either through client agreement or by way of separate consent.
4. Breach of Trust: Shall not disclose or discuss with any other person or make improper use of the details of personal investments of their clients and any other information of a confidential nature of the client which it comes to know in its business relationship.
5. Business and Commission:
    - A stock-broker shall not encourage sales or purchases of securities with the sole objective of generating brokerage or commission.
    - A stock-broker shall not furnish false or misleading quotations or give any other false or misleading advice or information to the clients with a view of inducing him to do business in particular securities and enabling itself to earn brokerage or commission thereby.
6. Business of Defaulting Clients: Shall not deal or transact business knowingly, directly or indirectly or execute an order for a client who has failed to carry out his commitments in relation to securities with another stock-broker.
7. Fairness to Clients: A stock-broker, when dealing with a client, shall disclose whether it is acting as a principal or as an agent and shall ensure at the same time that no conflict of interest arises between it and the client. In the event of a conflict of interest, it shall inform the client accordingly and shall not seek to gain a direct or indirect personal advantage from the situation and also not consider clients' interest inferior to his own.
8. Investment Advice: Shall not make a recommendation to any client who might be expected to rely thereon to acquire, dispose of, retain any securities unless it has reasonable grounds for believing that the recommendation is suitable for such a client upon the basis of the facts, if disclosed by such a client as to his own security holdings, financial situation and objectives of such investment. The stock-broker shall seek such information from clients, wherever it feels it is appropriate to do so.

7(A) Investment Advice in publicly accessible media –

- A stock broker or any of its employees shall not render, directly or indirectly, any investment advice about any security in the publicly accessible media, whether real time or non-real-time, unless a disclosure of his interest including the interest of his dependent family members and the employer including their long or short position in the said security has been made, while rendering such advice.

- In case, an employee of the stock broker is rendering such advice, he shall also disclose the interest of his dependent family members and the employer including their long or short position in the said security, while rendering such advice.

9. Competence of Stock Broker: Shall have adequately trained staff and arrangements to render fair, prompt and competent services to its clients.

C. Dealing with other Brokers

1. Conduct of Dealings: A stock-broker shall co-operate with the other contracting party in comparing unmatched transactions. A stock-broker shall not, knowingly and wilfully deliver documents which constitute bad delivery and shall cooperate with other contracting party for prompt replacement of documents which are declared as bad delivery.
2. Protection of Clients Interests: Shall extend fullest cooperation to other stock-brokers in protecting the interests of its clients regarding their rights to dividends, bonus shares, right shares and any other right related to such securities.
3. Transactions with Stock-Brokers: Shall carry out its transactions with other stock-brokers and shall comply with its obligations in completing the settlement of transactions with them.
4. Advertisement and Publicity: Shall not advertise its business publicly unless permitted by the stock exchange.
5. Inducement of Clients: Shall not resort to unfair means of inducing clients from other stock- brokers.
6. False or Misleading Returns: Shall not neglect or fail or refuse to submit the required returns and not make any false or misleading statement on any returns required to be submitted to SEBI and the stock exchange.

10.2 Risk Disclosure to Client and KYC

The Broker while onboarding a client should satisfy himself about Know your Customer (KYC) norms and KYC documents of the client. In addition, before onboarding, he should ensure that the client signs a Risk Disclosure Document. By signing, client agrees that he is aware of all the risks involved in derivatives trading.

SEBI's master circular dated 15th October 2019 specified the detailed policy and procedures to be adopted for KYC and AML risk management framework. Members are expected to take care of their responsibilities under guidelines specified in the above circular and set up framework of policies and procedures as mentioned in the above circular. In addition to the above, section 11A to Prevention of Money Laundering Act (PMLA) was inserted w.e.f. 2019.

This section specifies that the Aadhaar Card is not a mandatory requirement but is a voluntary evidence to be provided depending upon the desire of the client. In addition, it specifies other Officially Valid Documents (OVD) which can be used as different alternatives and are voluntary on the desire of the client. Those OVDs are driving license, passport copy, voters' id and the job card issued by NREGA. These provisions are related to alternative evidences (other than Aadhaar Card) and procedures to get recognized for e-authentication for KYC procedures. In November 2019, SEBI came up with the procedure for appointing a few entities as KYC Registration Agencies (KRAs) to facilitate e-authentication. In furtherance to that, few entities are recognized as KRA on 22nd April 2020. These include companies that are registered as KRAs with SEBI such as CDSL Ventures Limited, NSDL Data Management Limited (NDML), DotEx International Limited, and CAMs Investor Services Private Limited.

SEBI vide its circular dated February 8, 2023, had allowed Members who would like to use facilities from KUA in relation to e-authentication of their clients for the purposes of e-KYC authentication with UID Authority of India (UIDAI), have to register themselves with any of them as Sub-KUA of KYC User Agencies (KUAs) permitted by SEBI. KUAs are entities that will allow SEBI registered intermediaries to undertake Aadhaar Authentication of their clients as sub-KUA for the purpose of KYC.

In addition to the above, in April 2020, SEBI came up with the guidelines to encourage use of technology in KYC procedures which include Video based Client Identification Procedure, use of online app, digital locker for KYC procedures, use of digital signature, e-signature (cropped signature). These guidelines of SEBI are in line with guidelines issued by the RBI for its regulated entities including banks, NBFCs.

10.2.1 Risk Disclosure

The Risk Disclosure Document should specify broadly all the key risks while dealing / trading in derivatives markets, specifically mentioning about the following:

a. Price Fluctuation / Market Risk in Spot, Futures, Options or any other derivatives markets
b. Macroeconomic scenarios leading to unexpected price movement arising out of foreign exchange movement, global demand supply, local demand supply, weather forecast, government policies related to commodities, tax related policies etc.
c. Sudden liquidity dries down on any contract leading to adverse movement in prices or higher transaction costs or inability to unwind the position
d. Basis risk vis-à-vis spot prices
e. Risks of position remaining unhedged
f. Risks in Short positions in options
g. Broker's credit risk i.e., Counterparty risk
h. Risks arising out of technical snags, operational issues or technology related issues at the brokers' end, Exchange's servers or connectivity-related issues in web trade
i. Other penalties that may arise due to open position limit breaches or margin shortfalls arising out of sharp fluctuations in market prices

j. .
k. Risks relating to quality of commodities or rejection of commodities at the warehouse after short selling the commodity on stock exchanges that could lead to a delivery failure

As mentioned in the guidelines of the above detailed circular, the clients may be categorized as Low Risk, Medium Risk, and High Risk based on the due diligence or KYC documents. By classifying the clients under various risk categories, effective monitoring and due diligence can be applied to thwart any illegal/unlawful transactions. The risk category of the client is based on several parameters such as the location of the client, nature of the business activity, volume and value of turnover, nature of the transaction, manner of payments, etc. Low-risk clients have a respectable social and financial standing and transactions and dealings are satisfactory with timely payment and delivery. Medium risk clients are generally those who indulge in speculative transactions in excess of their known sources of income. High risk clients are those with a history of default and their financial status is suspectable.

The following clients' onboarding need enhanced due diligence and close monitoring after having onboarded.

(1) Non-face to face client

(2) Clients with multiple accounts in similar names and large number of accounts having common parameters such as common partners/directors/ promoters/address/email address/telephone numbers or authorized signatory

(3) Unexplained transfers between such multiple accounts

(4) Unusual activity compared to past transactions and use of different accounts by the same client alternatively

(5) Clients who show sudden activity in dormant accounts.

The above list is just indicative and the exchanges and brokerages would apply several scenarios while deciding on their surveillance process. It is upon the member to have a robust framework to identify clients with high risk which may have to go through enhanced due diligence.

10.2.2 Risks faced by investors trading in commodities markets

Commodity price risk arises on account of adverse fluctuations in the prices of commodities. Producers of commodities are primarily exposed to falling prices of their produce, leading to less revenue generation. They are also exposed to rising prices of their raw materials. The important factor determining the impact of these movement is elasticity of demand and elasticity of supply on both – raw materials and finished goods.

Generally, there are three groups that will be exposed to commodity risk viz., producers, consumers and exporters. Producers include farmers, processors, manufacturers and miners. Consumers comprise individuals, corporates, commercial traders, and manufacturers who consume commodities in their production processes and ultimate consumption. Exporters generally face risk from the time lag between the time point on which an export order is received and the time of final receipt of export proceeds from the export sales, as well as political risk where compliance, regulation or availability can adversely impact sales price.

Further, exporters face foreign exchange risk as most commodities are priced and traded in US dollars (USD) and any adverse movement in the foreign currency carry foreign exchange rate risk that impacts revenue and profits. Managing commodity risk in isolation of any exchange rate risk will leave the exporter exposed to adverse movements in the currency in which the commodity is priced and traded. Therefore, when undertaking any strategy to manage commodity risk, due consideration should also be given to managing foreign exchange rate risk also.

In the commodity derivatives markets, the market for some individual commodities is not very liquid and it is very difficult to unwind from existing position in times of need. Investing in individual commodities through sophisticated instruments like derivatives requires specific knowledge and expertise which a lay investor may not possess. SEBI has already come up with guidelines under Liquidity Enhancement Scheme on 9th October 2018, which may help in improving liquidity through market making procedures.

10.2.3 Importance of KYC process and KYC documents

Know Your Customer (KYC) has the following basic attributes:

a. Having the client’s identity proof (to know the customer)
b. Having the client’s address proof
c. Independent personal verification (IPV). Personal verification of the client is stronger proof of the existence of a client and also substantiates the fact that the entity knows the customer. The broker should have a client visit report to document the KYC process of the client.

It has been made mandatory that trading members ensure compliance by clients with the KYC norms, whenever a new client is allowed to open a trading account with them and trading members are required to exercise care and prudence in accepting the client.

Client registration documents are to be executed with any new client before allowing the client to start trading in commodity exchanges. Documents obtained from the clients would include: “Know your client (KYC) form”, execution of Client-Member constituent agreement (MCA) and Risk Disclosure document (RDD).

The Exchanges also have basic information of clients like Unique Client Code (UCC) apart from the broker details through whom each client is trading. Exchanges’ surveillance function also looks into those trades which constitute profit transfers, reversals or any other suspicious activities harmful to market integrity. However, main responsibility of carrying out KYC of new clients and regular screening of their trades for anti-money laundering and suspicious transaction reporting lies with the members.

SEBI's circular dated March 8, 2021, has prescribed the following to the members and to the exchanges having commodity derivatives segment regarding the UCC and mandatory requirement of Permanent Account Number (PAN or e-PAN):

- It shall be mandatory for the exchange's members with commodity derivatives segment to use Unique Client Code (UCC) for all clients transacting on the commodity derivative segment. The exchanges with the commodity derivatives segment shall not allow the execution of trades without uploading the UCC details by the members of the exchange. For this purpose, members shall collect after verifying the authenticity and maintain in their back-office copies of the Permanent Account Number (PAN) issued by the Income Tax (IT) Department for all their clients. However, in the case of e-PAN, members shall verify the authenticity of the e-PAN with the details on the website of the IT Department and maintain the soft copy of the PAN in their records.
- The exchanges having commodity derivatives segment shall ensure that the members of their exchanges shall:
    - i. Collect copies of PAN cards issued to their existing as well as new clients after verifying with the original.
    - ii. Cross-check the aforesaid details collected from their clients with the details on the website of the Income Tax (IT) Department. However, in case of e-PAN, verify the authenticity of e-PAN with the details on the website of IT Department and maintain the soft copy of PAN on the records.
    - iii. Upload details of PAN or e-PAN so collected to the Exchanges as part of Unique Client code.
    - iv. Verify the documents with respect to the unique code and retain a copy of the document.

Following are the additional requirements as per current regulatory framework of SEBI (KYC Registration Agency (KRA)) Regulations, 2011:

- All members of commodity derivatives markets are to be registered with any one or more KRAs registered by SEBI as per the SEBI KRA Regulations 2011.
- KYC for New Clients: a) The Member is to perform the initial due diligence of the new client whose KYC data are not available with the KRAs, upload the KYC information for both individuals and non-individuals with proper authentication on the system of the KRA, furnish the scanned images of the KYC documents to the KRA, and retain the physical KYC documents.
- The Member is to furnish the physical KYC documents or authenticated copies thereof to the KRA, whenever so desired by the KRA.
- A new client can be allowed to start trading/dealing on the exchange platforms through the member as soon as the client is registered by completing the necessary KYC documentation process. However, the Member shall be under obligation to upload KYC details with proper authentication on the system of the KRA, within 10 days of receipt of the KYC documents from the client.

- KYC for existing Clients: (a) With respect to the existing clients, who are presently registered with the members but whose KYC data are not available with any of the KRAs, the member shall upload the KYC information with proper authentication on the system of the KRA, furnish the scanned images of the KYC documents to the KRA and retain the physical KYC documents.
- The members shall also upload the KYC details about their existing clients which are missing/not available with them by calling for the same from their clients.
- The member shall not use the KYC data of a client obtained from the KRA for purposes other than it is meant for; nor shall it make any commercial gain by sharing the same with any third party including its affiliates or associates.
- The Member shall have the ultimate responsibility for the KYC of its clients, by undertaking enhanced KYC measures commensurate with the risk profile of its clients.
- The member shall, at all times, have adequate internal controls to ensure the security and authenticity of data uploaded.

10.2.4 Suspicious Transaction Reporting (STR) to Financial Intelligence Unit (FIU)

SEBI Intermediaries including brokers shall monitor transactions of the client to ensure that those are not suspicious from money laundering or tax evasion point of view. The trades like reversal trade, profit transfer trades or trades associated with dabba trades are some of the examples of suspicious trades.

FIU is a separate intelligence arm under finance ministry. The brokers are expected to report such transactions to FIU through online mechanism provided by FIU. Though, the Exchange through its surveillance mechanism raise a suspicion about a client's transactions, it is the duty of concerned broker to identify those suspicious transactions through its regular monitoring and report them to FIU. The brokers are not supposed to inform the client about this reporting as it will lead to tipping-off information to client which is illegal and not allowed. At the same time, members should not depend solely upon directions from the Exchanges' Surveillance Team or the mechanism in operation and the alerts generated of the system but are required to have their own robust controls and procedures.

10.3 Investors Grievance Redressal Mechanism

Investor Grievance Redressal Mechanism / Investor Service Department is a very important department and is considered as a key regulatory function of SEBI in terms of monitoring exchanges under SECC Regulation 2012. Further, having a proper mechanism of investor grievance redressal is a must and is an ongoing condition for eligibility of membership of the Exchange under Brokers Regulation 1992.

Investors can approach the Investors Grievance Division (IGD) of the exchange for redressal of their grievances. The Exchange has a mechanism of resolving disputes by coordinating with the member and the complainant. Exchanges generally entertain complaints against trading members in respect of the following:

1. Non-receipt of documents such as member-client agreement, contract notes, settlement of accounts, order trade log, etc.
2. Non-refund of margin money
3. Trades executed without adequate margins
4. Delay or non-receipt of funds
5. Squaring up of positions without consent or not squaring up of position led to settlement at unfavourable FSP
6. Unauthorized transaction in the account
7. Trades done not as per price limit directed over phone
8. Trading error in relation to timing of order entry, missing favourable prices, error in trades, etc.
9. Servicing issues which may relate to online transaction, offline transaction, confirmation of trades, accounts, calculation of realized / unrealized gain in summary statement, etc.

Guidelines for filing complaints:

1) Clients should first send the complaint against concerned Member to the Exchange with whom the respective member is registered and then to SEBI.
2) Complaint can be in writing in English or Hindi or in any regional language and shall be duly signed by the client.
3) No fee is chargeable on such complaints.
4) Frivolous or vexatious complaints which are vague, anonymous or pseudonymous or trivial in nature are not entertained.

The investor should first approach the concerned exchange/intermediary against whom there is a complaint. If the response received is not satisfactory, then investors can approach SEBI through SCORES. SEBI Complaints Redress System (SCORES) is a web based centralized grievance redress system of SEBI. Complaints can be made online and acknowledgement is generated instantaneously acknowledging the receipt of complaint and allotting a unique complaint registration number to the complainant for future reference and tracking. The complaint is forwarded online to the entity concerned for its redressal and the entity concerned should upload an Action Taken Report (ATR) on the complaint. The entity must resolve the complaint within 21 days after receiving intimation from SEBI under SCORE.

Online Dispute Resolution in the Indian Securities Market: Leveraging the Digital Transformation

The Online Dispute Resolution (ODR) Portal represents a transformative step in resolving disputes within the Indian Securities Market. Initiated by the Securities and Exchange Board of India (SEBI), this innovative platform is designed to efficiently address and resolve conflicts between investors and market participants using modern digital solutions. This guide provides an in-depth exploration of how the ODR platform operates and guides clients through lodging and resolving grievances.

The Purpose and the Overview of the ODR Portal

The SMARTODR Portal has been established by the Market Infrastructure Institutions (MIIs) to provide a centralized, accessible, and efficient means of resolving disputes related to the activities of listed companies, stock brokers, depository participants, and other entities regulated by SEBI. By leveraging online conciliation and arbitration methods, this portal aims to enhance the transparency and speed of dispute resolution processes, which were previously more fragmented and slower due to physical and procedural constraints.

The ODR Platform is the go-to solution for various grievances investors might encounter. Whether it's a service-related complaint, a trade discrepancy, or an issue related to non-compliance with the regulatory frameworks by market participants, this platform has got all such grievances of the investors covered, to be resolved. The resolution process is comprehensive, starting from the initial grievance filing and potentially leading to arbitration if initial conciliation efforts fail.

Here's a detailed look at the types of grievances that the ODR platform addresses:

1. Service-Related Complaints

These complaints encompass a variety of issues that clients might encounter with the services provided by market participants. Examples include:

- **Non-receipt or delay of account statements** - Where clients do not receive their account statements or receive them later than expected.
- **Problems with the execution of transactions** - Issues such as delays in the execution of transactions or transactions not being executed as per the client's instructions.
- **Issues with account management** - Such as unauthorized account closures, problems with account updates, and incorrect account maintenance.
- **Technological issues** – Client grievances arising from problems associated with trading platform use, including software glitches, system downtimes, and connectivity issues.
- **Poor customer service** - Inadequate service from the brokerage staff, including not responding to queries promptly or satisfactorily.

2. Trade Disputes

Disputes related to the actual trading activities, including:

- **Discrepancies in order execution** - Trades are not executed according to the client's instructions or at incorrect prices.
- **Alleged wrongful trades** - Unauthorized trades made on behalf of the client without their consent or incorrect recording of trade details.
- **Settlement issues** - Delays or errors in the settlement of completed trades.

3. Disputes Related to fees

- **Incorrect charging of fees** - This includes overcharging, incorrect calculation of fees, or charging fees that were not agreed upon.

- **Disputes over penalties** - Penalties misapplied or disagreed with the terms of service.

4. Product Misrepresentation

- **Misleading information about investment products** - Includes providing incorrect or misleading information regarding investment products' risks, benefits, or features.
- **Failure to adhere to agreed terms** - Not providing the services or returns promised at the time of investment.

5. Issues with Depository Participants and Registrars

- **Transfer errors** - Errors made during the transfer of securities between accounts.
- **Registration issues** - Problems related to securities registration in the holder's name.

6. Compliance Violations

- **Non-compliance with regulatory standards** includes failure to adhere to SEBI's regulations or other legal requirements.
- **Breach of contract** - Violations of the contractual agreements between the investors and the market participants.

7. Ethical Violations

- **Insider trading allegations** - Complaints regarding the misuse of undisclosed, material information for trading.
- **Market manipulation** - Actions a market participant takes to deceive or mislead other investors by manipulating the price or availability of securities.

Process for Addressing Grievances

1. **Filing the Complaint:** Investors initiate the process by filing a complaint through the ODR portal, detailing the nature of their grievance against a market participant.
2. **Conciliation:** An attempt is made to resolve the dispute through conciliation, a less formal method where a conciliator helps the parties reach a mutual agreement.
3. **Arbitration:** If conciliation fails or is deemed inappropriate, the matter may be escalated to arbitration, where an arbitrator (or panel of arbitrators) reviews the evidence and issues a binding decision.

This structured approach ensures that all parties clearly understand the process and can prepare adequately for each phase, ultimately leading to the effective resolution of disputes.

Key Features and Improvements Over Previous Systems

- **Centralized Dispute Handling:** Unlike disparate systems previously in place, the ODR Portal provides a unified approach to handle all securities market disputes.
- **Digital First Approach:** Utilizing online tools and technologies facilitates quicker resolutions, reduces the need for physical documentation, and allows participants to engage from remote locations.

- **Structured Resolution Phases:** Clearly defined stages of dispute resolution ensure that both parties know the process and can prepare accordingly.
- **Enhanced Accessibility and User-Friendliness:** The portal is designed to be accessible for all users, irrespective of their tech-savviness.

How the ODR Portal Works: A Step-by-Step Guide

An investor/client shall first take up the grievance with the Market Participant by lodging a complaint directly with the concerned Market Participant.

1. If the grievance is not redressed satisfactorily, the investor/client may, escalate the grievance through the SCORES Portal in accordance with the process laid out therein. The Online Dispute Resolution (ODR) Portal has connectivity with the SEBI SCORES portal / SEBI Intermediary portal.

2. if the investor/client is still not satisfied with the outcome, the grievance can be taken up through the ODR Portal by initiating dispute resolution.

3. A complaint/dispute initiated through the ODR Portal will be referred to an ODR Institution empaneled by a MII. References to ODR Institutions shall be made after a review of such complaint/dispute by the relevant MII with the aim of amicable resolution and which review shall be concluded within 21 calendar days.

4. The ODR Institution that receives the reference of the complaint/dispute shall appoint a sole independent and neutral conciliator from its panel of conciliators, to reach an amicable and consensual resolution within 21 calendar days.

5. If the process of conciliation is successful, the same shall be concluded by a duly executed settlement agreement between the disputing parties. In case the matter is not resolved through the conciliation process within the 21 calendar days an investor/client may pursue online arbitration.

6. Upon the conclusion of the arbitration proceedings and issuance of the arbitral award, payment shall be made by the Market Participant within a period of 15 calendar days from the date of the arbitral award (unless such award requires payment sooner), and/or performance within such period as specified by the arbitral award.

Upon the issuance/pronouncement of the arbitral award, the party against whom order has been passed, will be required to submit its intention to challenge the award under Section 34 of the Arbitration Act within 7 calendar days. Further, in the course of such a challenge, if a stay is not granted within 3 months from the date of the receipt of award, complete adherence to the terms of the arbitral award must be done. The MII shall also monitor the due compliance by the Market Participant with the terms of the arbitral award/judgement of the appellate forum.

10.4 Rights and Obligations of Members and Clients

Code of Conduct for Stock Brokers is laid down in Schedule II of SEBI's Stock Brokers and Sub-Brokers Regulation, 1992. Brokers are required to abide by these codes as per conditions of registration under the regulation. Client agreement also covers most of the points relating to rights and obligations of members and clients.

Major duties, obligations, and codes for Members specified in the above schedule are on the following points:

- Maintain integrity, promptness, and fairness in the conduct of business by members
- Exercise due skill and care
- Compliance with statutory requirements, including requirements in relation to KYC, AML, and Surveillance obligations
- No manipulative trades or malpractices, including fraudulent or deceptive transactions
- Brokers to have a voice recording mechanism in their dealing room and execute all the deals only through recorded lines. These recordings should be maintained for a minimum period for which the arbitration accepts investors' complaints as may be notified from time to time. However, in cases where dispute has been raised, such records shall be kept till final resolution of the dispute.
- Duties towards investors include:
    - Executing transactions as per the order of the client and issuing contract notes
    - No breach of trust or communication of client's details to other clients
    - Avoid providing wrong advice or purposely influencing a client to transact to earn brokerage income
    - While advising a client or doing research, members should adhere to the other regulations of SEBI relating to registered investment advisors and research analysts.
    - Protecting clients' interest to the full extent in relation to rights and entitlements of clients on trades or investments.

Other duties and obligations of members towards clients include:

- Explaining the risks in relation to the transactions or services client would like to have. Special emphasis on risks in case of internet trading (in case client opts for internet trading).
- Abide by the directions of Conciliation and Arbitration Award in case of redressal procedures of a member-client dispute.
- Maintain adequate procedures of voice recording of dealing room so as to facilitate resolution of client disputes relating to dealing error.
- Funds in clients' account not to be used for proprietary trades or meeting any other obligations.
- Provide details of client relationship manager and investor grievance redressal officer so that the client can get his grievances addressed.

- Sending to client account statement for a period, daily margin statement and such other reports so that the client is able to understand his position and remains updated of his payment status.
- Member should explain the risks and technical issues to the clients in the case of deliveries. For example, the risk may relate to the fact that the buyer may not be registered in the state under GST where delivery is happening, which may lead to the burden of GST on the buyer. Such GST related technical issues may emerge in the cases where the sellers and the buyers are from different states.
- Broker will be responsible for losses to the client due to unauthorized PMS services that he may extend to the client either directly or indirectly. Example of indirectly carrying out unauthorized PMS is through another entity of relatives where the broker has an influence and can carry out unauthorized PMS activity.

Rights of members while dealing with the client include:

- To ask various information and documents of the client or its beneficial owner for KYC AML compliance purposes.
- Not to deal in a transaction of client, if member is aware about failure in commitment by the client in other deals, or there is shortfall in margin. This also include not to take fresh positions for the client in above situation, or depending upon the risk profile of the client, or upon client's history of payment defaults / delays.
- To levy additional margins from certain clients or certain trades depending upon risk profile of those clients or risk associated with those trades.
- Not to onboard a client if the client is not signing a Risk Disclosure document.
- To hold the commodities purchased for the client, which are supposed to be delivered to him, for adjusting against receivables from the client in case of dispute or payment defaults by the client.
- In case of delivery failure by the client, a member can purchase a commodity from the client's account and debit the client's account for the same. Alternately members can square off the client's position provided the client is already intimated about it separately or through client agreement.
- Not to square off of an existing position on the last day of the contract unless the client expressly intimates to square off the same. Of course, members should co-operate with the client and explain to him the implications of not squaring off the position. This is a right of the members and not an obligation. Hence, the client cannot presume that the members are supposed to square off the position if no instruction is given. This clarity is very important when the declared FSP is at unexpected levels against traded prices in the last few hours due to huge volatility in the spot market and hence the underlying prices. This is also important in cases of derivatives contracts, which are settled by physical delivery and involve significant storage and other costs associated with such physical delivery (as in the case with certain commodity derivatives contracts).

- To execute a trade on behalf of the client only after complying with the norms relating to keeping records of the client's order like telephonic record, client's emails from registered email ID, relevant log of internet trades, physical hand-written copy of client order, mobile SMS records, etc.

Obligations of client/investor:

- Pay Margins and Brokerage as agreed upon.
- Fulfil obligation of delivery of sold positions or payment of purchased positions.
- Seller should raise bill on buyer on delivery obligations along with applicable GST.
- Understand all the risks involved in the member services or trades while signing a risk disclosure document or client agreement.
- Provide accurate details in the Account Opening Form about the client himself and its beneficial owners for KYC purposes. Also provide updates of these details in case of any update.

Rights of client/investor:

- Access to Investor Grievance Redressal Mechanism of member, stock exchange and through SCORES /SMART ODR window of SEBI to get the resolution for his/her complaints.
- The client has a right to make a complaint even if there is no monetary compensation he is seeking. He can make complaints about servicing\operational issues as well.
- To receive contract notes, account ledger/statement and other margin and position related reports.

10.5 Additional Do's and Don'ts for Clients / Investors in Commodity Derivatives

In the above section, we have seen various rights and obligations of members and clients. To some extent, these also imply DOs and DONTs for the clients. In addition to these, specific to the commodity derivatives segment, the following are additional points that investors should follow at all times:

DOs:

Apart from the obligations mentioned above,

- Investors should enter into commodity derivatives transaction only through registered members. He may ask additional credentials from the members for the same.
- Should get familiarized with the contract details, rules, regulations and bye-laws of the exchanges and SEBI.
- Should understand mechanism of derivatives trading, understand mechanism of devolvement, spot prices, delivery and settlement obligations, margin rules, etc.
- Should take trading decision only after a thorough anlaysis of the information available and after understanding the obligations. He should take a well-informed decision.
- Investor should read and understand client agreement and risk disclosure document.
- Take acknowledgment of collaterals deposited with the broker.

- Fulfill obligations of payment of margins, brokerage, or purchase amount and fulfill the delivery obligations.
- Investors should keep reviewing emails, SMS, and other correspondences received from brokers and respond promptly if he has any objections to the contents of any trade details, trade confirmation, contract notes, balances, etc.

DONTs:

Apart from the points in the "rights and obligations of the client" mentioned above, investors should also note the following:

- Not to disclose login credentials of internet trading account to anybody.
- Do not get carried away by rumors, luring advertisements, promises, etc.
- Don't be involved in Dabba Trading or illegal trading in unorganized markets.
- Don't accept / pay cash for the transactions.
- Don't enter into malpractices like reversal transactions, transactions to transfer profit or loss or tainted money etc.
- Do not default on delivery.

Sample Questions

1. Which of the following are the risks generally faced by the Commodity exporters?
   a) Commodity price risk
   b) Foreign exchange rate risk
   c) Geopolitical risk
   d) All of the above

   Ans: (d)

2. Investors can lodge complaints with SEBI and track the status of redressal of such complaints from anywhere using the online system of _______________.
   a) Complaints-Anonymous
   b) Proxy-Complaints
   c) SCORES
   e) SCRA

   Ans: (c)

3. Which of the following is correct about Electronic Contract Note (ECN)?
   a) With increased digitization, it is compulsory for brokers to issue ECN to clients
   b) Brokers should avoid issuing ECN in view of fishing and cyber security risks
   c) Brokers can issue ECN to FPIs but not to the retail clients who are residents of India
   d) Brokers can issue ECN to clients only after getting client's consent either on client agreement or separately

   Ans: (d)

4. Which of these does not directly relate to KYC and anti-money laundering control procedures?
   a) Suspicious Transaction Reporting
   b) In-person verification
   c) Financial Intelligence Unit
   d) Position limits violation

   Ans: (d)

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