CHAPTER 9

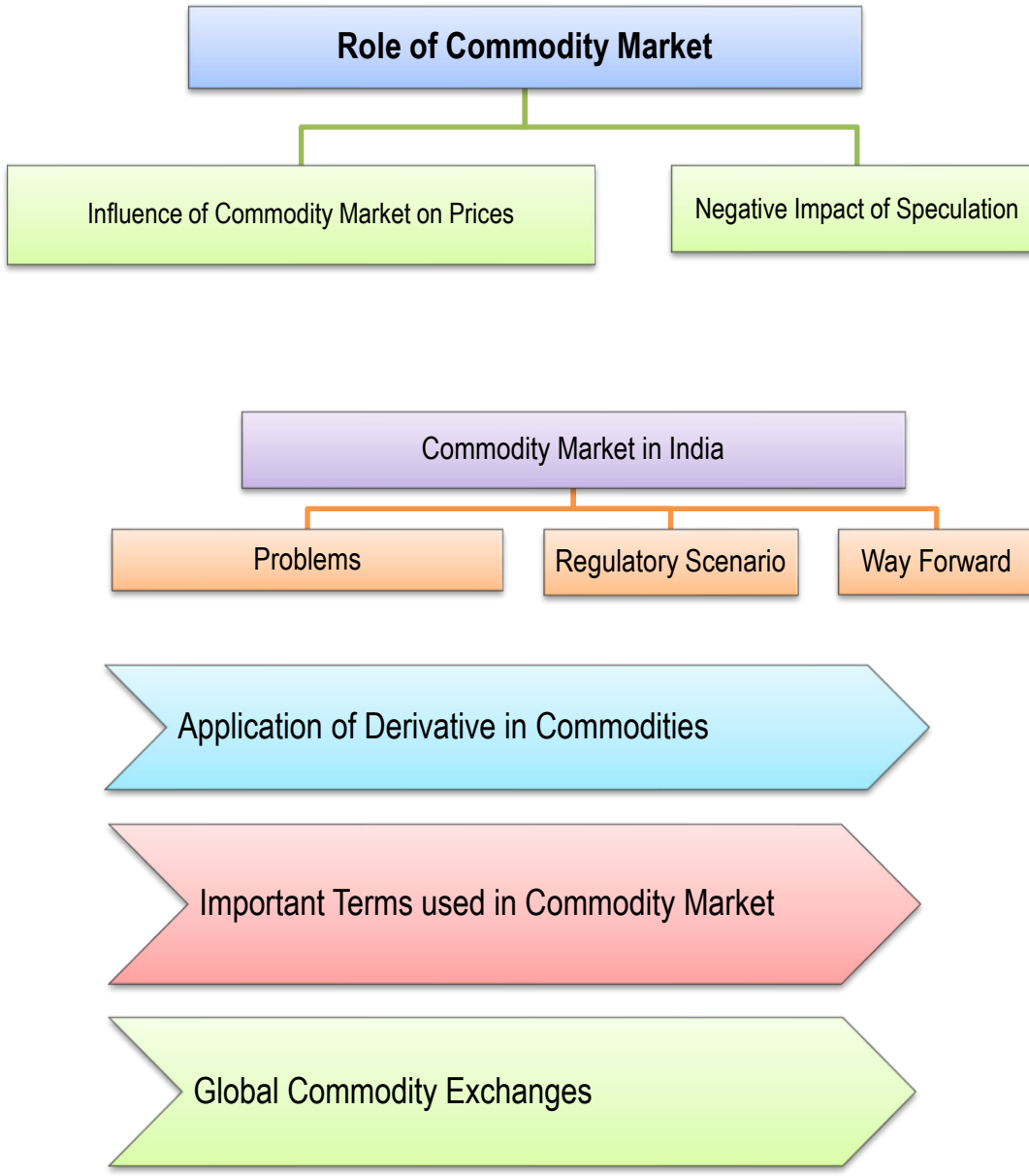
COMMODITY MARKET

LEARNING OUTCOMES

After going through the chapter student shall be able to understand:

- ❑ Introduction of Commodity Markets
- ❑ Role of Commodity Markets
- ❑ Commodity Market in India
- ❑ Application of derivative in commodities
- ❑ Global Commodities Exchanges

CHAPTER OVERVIEW



1. INTRODUCTION

Like financial markets which deal with money and shares, the commodity markets deal with trading of 'commodities' like metals, raw material commodities like cotton, pulses etc. In fact, the commodity market is the foremost form of market which was structured more of a barter of commodity exchanges – usually dissimilar products – which later got one leg as money as time progressed. The contemporary commodity market is as sophisticated as its stock market counterpart, with the only distinction being commodities, instead of stocks, traded.

The commodity market is essential to understand how the prices get influenced by many factors ranging from monsoon predictions to political decisions. The commodity market acts as the barometer of how the markets perceive these factors, which in turn will impact the demand-supply dynamics, thereby influencing the futures prices. This leads to a market driven price discovery mechanism.

For example, a farmer will be very much interested to 'lock in' prices for his harvest of pulses next crop season due in 3 months. Hence, he would 'sell' an estimated quantity, say 100 kilograms (kg.) of his future produce at the future rate of ₹ 80 per kg, thereby assuring himself of a fixed price. A wholesaler in pulses would similarly like to have a committed purchase price and would enter the 'buy' leg (futures long) at ₹ 80 per kg. Assume after 3 months, the contract closes out at 81 per kg. That means the farmer has lost ₹ 1 per kg whereas the wholesaler has gained by Re 1 per kg. in the futures contract. Of course, the contracts are settled in cash – rarely there is actual physical delivery of the commodities involved.

2. ROLE OF COMMODITY MARKETS

Since ancient times people used to trade in primary commodities like cotton, spices, and livestock. The traders used to engage in futures with the time frame normally that of the harvest duration. Later with the advent of the Industrial Revolution, people started trading in base metals. In the 2000s, the matured economies of US and UK also started to have exchange traded commodities (ETCs) and exchange traded funds (ETFs).

The major role of the early commodity markets was to:

a) Act as a platform for enabling farm produce growers and the end buyers to interact.

b) Enabling intermediaries to engage in representing both the demand and the supply side of the commodity chain.

c) Price discovery.

Even today the above characteristics hold good in commodity exchanges. The added feature is of course, a regulated market that is transparent, and real time.

2.1 Influence of commodity markets on prices

Commodity markets influence prices at two levels:

a) Enabling as a platform for both demand and supply factors to determine the prices for a particular commodity or grade of a particular commodity.

b) Acting as an indicator for produce growers to take informed decision on which product to grow to reap better prices.

Essentially both the above objectives culminate in price discovery.

However, it's very important that the information that is getting used to determine the price is real time and transmitted across markets. In structured markets, the market prices are close to the 'fair value' prices.

2.2 Negative Impact of Speculation

The bane of the commodity market is speculation driven trades and short selling done to gain short-term profits. Precious metals like gold and diamond attract speculative investors given the hedge value of these assets. In some cases, there are also instances of black money and money laundering that mires the true features of an efficient commodity market. A report released by World Bank in 2012 has laid the blame that 'food prices globally soared by 10 percent' squarely on the want on speculative trades executed in parts of the globe.

Speculation cannot be ended in any market; however, it can be regulated, and offenders treated with high penalties. The European Securities and Markets Authority (ESMA), based in Paris and formed in 2011, is an "EU-wide financial markets watchdog", which aims at orderly pricing and settlement conditions. The individual exchanges also have brought their own checking mechanisms like position limits, trade cutoffs, etc. to discourage pure arbitrage traders.

3. COMMODITY MARKET IN INDIA

3.1 Indian Commodity Markets

MCX (Multi Commodity Exchange of India Limited) and the NCDEX (National Commodity & Derivatives Exchange Limited) are the primary commodity trading platforms in India. MCX is a commodity futures exchange started in 2003 and is listed on the BSE. NCDEX is another exchange that is promoted jointly by LIC, NABARD, etc. and has a robust online trading system.

The National Multiple Commodity Exchange (NMCE) started its operations on November 26, 2002, as the country's first, online, demutualized, multi-commodity exchange with nationwide reach. It not only revived futures trade electronically in the commodities in India after a gap of 41 years, but also integrated the centuries old commodity market with the latest technology. It is backed by compulsory delivery-based settlement to ensure transparent and fair-trade practices. NMCE offers an electronic platform for future trading in plantation, spices, food grains, non-ferrous metals, oil seeds and their derivatives.

NCDEX started its first agricultural index — 'Dhanya' — in 2012, which was later named 'N-Krishi' but this index was not tradable.

The National Commodity and Derivatives Exchange (NCDEX) in May 2020 launched the country's first agricultural futures trading index — 'Agridex' — with four contracts expiring in June, July, September, and December. This agriculture index is based on the revised guidelines issued by the Securities and Exchange Board of India, which allowed futures trading in commodity indices.

Agridex, launched on 25 May 2020 comprises 10 liquid commodities traded on NCDEX. The spot and future of these 10 commodities — soybean, chana, coriander, cottonseed oilcake, guar gum, guar seed, mustard seed, refined soy oil, castor seed and jeera — will define the value of this index.

The index represents various agricultural commodities of both kharif and rabi seasons, with price references throughout the year. Agridex will also facilitate the participants in hedging their commodity risk based on price anticipation of the products.

In the present times, due to disruption in domestic business and exports, the volumes of individual commodities listed under Agridex have remained low. However, for Agridex the only factor that is important for the index is the overall market sentiment for the agricultural sector as it's not just dependent on a single agricultural commodity.

For example, if soybean mandi across the country remains closed but other commodity mandis are open, the trading activities for soybean may remain low in futures as a commodity, but trading in the Agridex, which is an overall index, will not be affected as other commodities trade will move it.

The Agridex futures exchange will also help market participants to take advantage of generating returns with less risk and excessive research because they do not have to research individual commodities. For trading on Agridex, one needs to only know specific news or reports about agricultural commodities to get a sense of the price direction.

This is like the equity market wherein participants trade at the NIFTY index as Agridex also has a base value of 1,000. Agridex also provides an opportunity for those already trading in equity markets as well as with farm produce organisations, farmers, retail traders and others. *(Source: The Print)*

The below is a screen shot of the same –

Last	Open	High	Low	Previous Close
1211.10 (-12.45 -1.03%)	1225.50	1226.50	1209.50	1223.55

Constituents	Expiry	LTP	Open	High	Low	Prev. Close	Change
Castor Seed	Dec 18, 2020	4670	4740	4746	4670	4750	-1.68
Chana	Dec 18, 2020	5213	5265	5265	5192	5282	-1.31
Coriander	Dec 18, 2020	6506	6512	6592	6432	6570	-0.97
Cotton Seed Oilcake	Dec 18, 2020	2074	2070	2114	2062	2053	1.02
Guar Gum 5 MT	Dec 18, 2020	6015	6135	6135	5970	6147	-2.15
Guar Seed 10 MT	Dec 18, 2020	3967	4069	4069	3956	4076	-2.67
Jeera	Dec 18, 2020	14125	14225	14240	14110	14210	-0.60
Mustardseed	Dec 18, 2020	6151	6180	6193	6147	6191	-0.65
Ref Soya Oil	Dec 18, 2020	1077	1073	1080.3	1063.4	1079.1	-0.19
Soy Bean	Dec 18, 2020	4458	4525	4525	4425	4487	-0.65

3.2 Problems with the Indian Commodity Markets

The Indian markets have been plagued by the 'speculator' and 'fly-by-night' operators. The Chairman of the now defunct NSEL (National Spot Exchange Limited) had to be arrested for having entered futures markets without adequate documentation – many commodities that were traded didn't have any underlying to them. SEBI has passed tough strictures on fresh forward contracts in the commodity markets in Feb 2016, and it has derecognized OTCEI (Over-the-counter exchange of India).

Another big problem is that the commodity markets have not been able to see the 'exponential' growth that is required for platforms to sustain it. The basic problem is 'inclusion' – farmers that form the backbone of agri-based commodities are not able to connect to the market, even though both MCX and NCDEX have created several awareness programs towards the same.

Political ramifications have also added to the woes – price sensitive commodities like sugar have been on and off the futures platform.

3.3 Way Forward

The commodity markets in India have a long way to go to become globally competent. There is a persisting need to close the chain between farmers to markets, which is even more challenging given that the hold of intermediaries is too strong in Indian scenario. An impetus from the government is also required to both educate and popularize the adoption of commodity markets in India.

3.4 Regulatory scenario in India

In India, the Forward Markets Commission (FMC) was the chief regulator of commodity futures markets in India before it got merged with SEBI. The government, considering it wise to bring the commodity market under a common regulator, repealed the Forward Contracts Regulation Act (FCRA) 1952 and the regulation of commodity derivatives market shifted to Securities and Exchange Board of India (SEBI) under Securities Contracts Regulation Act (SCRA) 1956 with effect from 28th September 2015.

4. APPLICATION OF DERIVATIVE IN COMMODITIES

4.1 Difference between Commodity Markets and Financial Markets

It should be noted that following are some of the differences between commodity and financial derivatives:

(i) **Storage Cost:** Commodities, especially agricultural commodities, are perishable in nature and they require storage. Due to this reason, the buyer must bear the cost of storage and transportation charges. In case if location of goods is not in the same state, then, the buyer also has to borne taxes, octroi etc. However, storage cost is not there in financial derivatives.

(ii) **Complexity:** Compared to Financial Market, there are low volumes of transactions and transparency in commodity market, and, thus, often relationship between future and spot get distorted. Further, delivery in the financial market is comparatively less cumbersome.

(iii) **Higher Cost:** While in the financial market, only costs in the form of interest cost and exchange rate loss are involved, while in the commodity market a lot of costs are involved such as transportation, delivery, storage etc.

(iv) **Physical Delivery:** Since the quality of goods commodities even in two different batches cannot be same, the delivery of commodities becomes a challenging task. Stating otherwise, this is the most distinguishing feature of commodity derivatives.

4.2 Pre-requisites for Futures trading on a Commodity Exchange

For a future to be traded on a Commodity Exchange, following are the prerequisites:

(i) **Durability** - Commodity should be storable and durable.

(ii) **Homogeneity** - The commodity should be homogeneous in nature.

(iii) **Free from Control** - The trading in commodities should be free from any type of price or regulatory control.

(iv) **Frequent Trading** - The demand and supply should be large, leading to a daily fluctuation in prices. Practically, it has been seen that even if the same commodities possess the above characteristics, they are still required to be traded successfully.

4.3 Trading and Settlement Process

Broadly, commodity trading involves following three mechanisms:

(i) **Order Matching Mechanism** - Firstly, a trader places his/her order with any registered broker who in turn enter the same into online terminal. In case order matches with opposite order (one party buys and other party sells) the trade is said to be complete.

(ii) **Trade Clearing Mechanism** - The clearing of the matched order takes place through a Registered Clearing House. The function of these clearing houses is as follows: -

(a) Follow up with parties

(b) Timely Settlement

(c) Delivery versus payment (DVP) of commodity traded.

(d) In case of non-delivery, settlement through fund transfer.

(iii) **Processing of Delivery** - The main issues to be considered in the delivery processes are as follows:

(a) Availability of warehouse

(b) Location of order

(c) Quantity of Commodity deposited and dematerialized.

Further, delivery process involves following steps:

(i) Buyer request Depository Participant (DP) to deliver the commodity.

(ii) DP forward this request to the Registrar and then to Transfer Agent.

(iii) Transfer Agent after verifying authenticity of request passes the details of delivery to the warehouse.

(iv) After thorough identification checking, a warehouse arranges the delivery of the concerned goods to the designated buyer.

4.4 SEBI's Approval for Option in Commodities

SEBI has now allowed option trading in the Commodity Future market. On expiry date, if option ends in "Out the Money" (OTM) position it will be squared off at loss (premium) and the holder of "In the

Money" (ITM) position will have a choice either to square it off at profit or get converted into a Future Contract. Once it is converted into a future contract it will be subject to margin requirement as other future contracts.

4.5 Important Terms to be understood in the context of the Commodity Market

(a) **Short position in a contract***:* The party who agrees to deliver (sell) the contracted commodity.

(b) **Long position in a contract***:* The party who agrees to receive (purchase) the contracted commodity.

(c) **Futures Contract***:* The formal agreement where one party agrees to take a short position and another party assumes the long position on contracted commodity. The contract will specify the quantity and quality of the commodity, the specific price per unit, and the date and method of delivery.

(d) **Settlement:** The close out day of the futures contract. The positions get wounded, and the resulting profit / loss of either party gets settled in cash.

(e) **Margin:** This is perhaps the most important term in commodity futures – the parties entering a contract must furnish a margin equal to a % (usually 5 to 15 percent) of the contract value. Traders are required to keep margin monies usually based on the traded volumes.

(f) **Open:** This is the opening price of the trade

(g) **High:** The highest price in the trading session / day

(h) **Low:** The lowest price in the trading session / day

(i) **Open Interest (Volume):** The number of open positions of contracts

(j) **Expiry Date:** The closure date of the contract

(k) **LTP:** Last traded price

(l) **Unit traded:** The unit of measurement (For e.g. Cotton will be measured in 'bales')

4.6 The Role of Derivatives

(i) **Forward Contract:** This is the simplest of all contracts, which states that there would be an exchange of an agreed quantity of a given commodity at a particular price (the forward price).

(ii) **Futures Contract:** These are standardized forward contracts that are done through an exchange, for a particular quantity of commodity at a particular future date and location, the price is left undetermined.

(iii) **ETCs:** Exchange traded commodities are the commodities that are traded on a stock exchange, just like a stock. They track the performance of an underlying commodity index including total return indices based on a single commodity.

4.7 How Hedging works in Commodity Markets

One type of hedger is a farmer. Farmers plant crops, like soybeans in this case, and assume the risk that by the time the crop is harvested, its price will have dropped. By selling soybean futures, which might lock in a price for their crops early in the growing season, farmers can protect themselves against that risk.

Five thousand bushels of soybeans make up a soybean futures contract on the Chicago Board of Trade exchange operated by the CME Group. Growing 500,000 bushels of soybeans annually would require a farmer to sell 100 soybean futures contracts.

Assume for the moment that a bushel of soybeans costs $13. He suspects the downfall of soybean prices in the future. It could make sense for the farmer to sell (short) the futures contracts at $13 to lock in the price if he is certain to make a profit at $10. By doing this, the farmer could save i.e. hedge himself from the loss even if the price drops below $13 at the time of expiry of the futures contract.

It is always possible that by harvest time, soybean prices will have increased significantly. If the farmer sold the $13-a-bushel futures contracts, they would lose out on the potential increase in soybean prices to $16 a bushel. Anyhow, the farmer has not incurred any losses by hedging the soybean price at $13. And this is the basic purpose of hedging i.e. to protect from losses.

5. GLOBAL COMMODITIES EXCHANGES

5.1 London Metal Exchange (LME)

The iconic London Metal Exchange, popularly referred to as 'LME,' is one of the world's largest futures exchange market established in 1877, when Great Britain was at the peak of its glory. With half the world under the British Empire, London had become the epicenter of commodity trades of all kinds. Shortly after, the industrial revolution further spurred the growth of markets for metals like copper, tin, and aluminum. The 'three-month contract' which is now considered as the standard period for a future, was borne out of the time frame that took copper to be shipped from Chile to UK.

The opening of Suez Canal in 1869 similarly reduced the time for shipment of tin to arrive from Malaya to 3 months, which gave rise to the '3-month contract' now in vogue.

LME was acquired in 2012 by Hong Kong Exchanges & Clearing Limited and a new custom clearing house was designed and introduced to bring technology into the global metal trade platform.

Today, LME sets the standards for operating in the commodity metals market within the framework of corporate governance – LME has an operational committee for each of the metal traded, like an 'aluminum' committee for aluminum, a 'molybdenum' committee for molybdenum, and so on. LME also has an elaborate 'Ring Disciplinary' committee and an appeal mechanism for both traders and members in place.

The LME price discovery mechanism works in all the three ways –

(a) **Open out-cry** – the trading floor on the LME that is also called as the 'Ring', where the prices are determined on the traditional out-cry (verbal) method,

(b) **LME Select** – the electronic trading platform, and,

(c) Inter-office telephone market system.

Thus, the LME is active for trading 24 hours a day. There is a common misconception that precious metals like gold are traded on the LME, but they aren't. The LME specializes in ferrous and nonferrous metals, whereas gold and silver are traded on the OTC managed by the London Bullion Market.

5.2 Eurex Exchange

Eurex is the largest European futures and options market, established in Germany. One of the foremost exchanges to usher in electronic trading, its trading platform T7 is the best in the world. Eurex is constantly pushing itself to explore new areas and product classes, for example, they have introduced a factor index-based futures that allow investors to trade six individual risk factors in futures format. The six factors are - size, value, carry, momentum, low risk and quality, and is a dynamic attempt to allocate to alternative sources of beta to deliver equity-like returns with low correlation.

5.3 Chicago Mercantile Exchange (CME) Group

Chicago Mercantile Exchange & Chicago Board of Trade (CME) is the US based largest futures and options platform for trading. Established in 1898, CME offers the entire bouquet of trades based on ferrous, non-ferrous metals, precious metals, and even on weather and real-estate. The acquisition of New York Mercantile Exchange (NYMEX) by the CME group in 2007 catapulted it to the number one status in US. The platform also allows for agri-based commodity contracts like Class IV milk,

Class III milk, Feeder Cattle etc. CME has developed 'SPAN' ('Standard Portfolio Analysis of Risk') which is standardized software to calculate margin requirements for futures, which has been adopted by many agencies as benchmark software across the globe.

Contract specifications on MCX

Following is the illustration of contract specifications of Crude Oil on MCX for the practical and conceptual understanding of the students.

FUTURES CONTRACT SPECIFICATIONS OF CRUDE OIL

Symbol	CRUDEOIL
Description	CRUDEOILMMMYY
Contract Listing	Contracts are available as per the Contract Launch Calendar.
Contract Start Day	As per the Contract Launch Calendar
Last Trading Day	As per the Contract Launch Calendar
Trading	
Trading Period	Mondays through Fridays
Trading Session	Monday to Friday: 9.00 a.m. to 11.30/ 11.55 p.m.* * based on US daylight saving time period.
Trading Unit	100 barrels
Quotation/Base Value	Rs. Per barrel
Maximum Order Size	10,000 barrels
Tick Size (Minimum Price Movement)	Re. 1
Daily Price Limits	The Exchange has implemented a narrower slab of 4%. Whenever the narrower slab is breached, the relaxation will be allowed up to 6% without any cooling off period in the trade. In case the daily price limit of 6% is also breached, then after a cooling off period of 15 minutes, the daily price limit will be relaxed upto 9%. In case price movement in international markets is more than the maximum daily price limit (currently 9%), the same may be further relaxed in steps of 3%.
Initial Margin	Minimum 10% or based on Standard Portfolio Analysis of Risk (SPAN) # whichever is higher.
Extreme Loss Margin	Minimum 1 %

Additional and/ or SpecialMargin	In case of additional volatility, an additional margin (on both buy & sell side) and/ or special margin (on either buy or sell side) at such percentage, as deemed fit, will be imposed in respect of all outstanding positions.
Maximum Allowable Open Position	For individual clients: 4,80,000 barrels or 5% of the market wide open position, whichever is higher for all Crude Oil contracts combined. For a member collectively for all clients: 48,00,000 barrels or 20% of the market wide open position, whichever is higher for all Crude Oil contracts combined.
Quality Specification	Light Sweet Crude Oil confirming to the following quality specification: Sulfur 0.42% by weight or less, API Gravity: Between 37 degree – 42 degrees
Due Date Rate (DDR)	Due date rate shall be the settlement price, in Indianrupees, of the New York Mercantile Exchange's (NYMEX)# Crude Oil (CL) front month contract on the lasttrading day of the MCX Crude Oil contract. The last available RBI USDINR reference rate will be used for the conversion. The price so arrived will be rounded off to the nearest tick. For example, on the day of expiry, if NYMEX Crude Oil (CL) front month contract settlement price is $40.54 and the last available RBI USDINR reference rate is 66.1105, then DDR for MCX Crude oil contract would be Rs. 2680 per barrel (i.e. $40.54 * 66.1105 and rounded off to the nearest tick). #A market division of Chicago Mercantile Exchange Inc. ("CME Group")
Settlement Mechanism	The contract would be settled in cash

Exchanges use SPAN to figure out margins and risk for F&O portfolios. In addition to several other factors, SPAN analyzes the price and volatility of the underlying investment to calculate the maximum loss that can occur for a portfolio and to provide the proper margin.

MCX Crude Oil Futures (100 Barrels)

Contract Launch Calendar for Contracts Expiring During the Calendar Year 2024

Contract Month	Contract Launch Date	Contract Expiry Date
Jan-24	20th July 2023	19th January 2024
Feb-24	22nd August 2023	16th February 2024

Mar-24	20th September 2023	19th March 2024
Apr-24	20th October 2023	19th April 2024
May-24	20th November 2023	20th May 2024
Jun-24	19th December 2023	18th June 2024
Jul-24	22nd January 2024	19th July 2024
Aug-24	19th February 2024	19th August 2024
Sep-24	20th March 2024	19th September 2024
Oct-24	22nd April 2024	21st October 2024
Nov-24	21st May 2024	19th November 2024
Dec-24	19th June 2024	18th December 2024

(Reference Circular No. MCX/TRD/425/2023 dated June 30, 2023)

TEST YOUR KNOWLEDGE

Multiple Choice Questions (MCQs)

1. ..... among the following is not a role of commodity markets.

   (a) Act as a platform for enabling farm produce growers and the end buyers to interact.

   (b) Enabling intermediaries to engage in representing both the demand and the supply side of the commodity chain.

   (c) Price discovery.

   (d) Enabling speculation driven trades and short selling done to gain short-term profits.

2. Agridex, launched on 25 May 2020 comprises 10 liquid commodities on .....

   (a) National Commodity and Derivatives Exchange

   (b) Multi Commodity Exchange of India

   (c) Indian Commodity Exchange

   (d) ACE Derivatives & Commodity Exchange Limited

3. ..... is not a problem with the Indian Commodity Markets.

(a) Commodity markets have not been able to see the 'exponential' growth that is required for platforms to sustain it.

(b) Farmers that form the backbone of agriculturally based commodities are not able to connect to the market.

(c) MCX and NCDEX have created several awareness programs.

(d) Political ramifications have also added to the woes – price sensitive commodities like sugar have been on and off the futures platform.

4. ..... is a prerequisite for futures trading on a commodity exchange.

(a) Complexity

(b) Higher Cost

(c) Homogeneity

(d) Physical Delivery

5. ..... offers the entire bouquet of trades based on ferrous, non-ferrous metals, precious metals, and even on weather and real-estate.

(a) London Metal Exchange

(b) Chicago Mercantile Exchange

(c) Eurex Exchange

(d) National Stock Exchange of India Limited

Theoretical Questions

1. Discuss the role of commodity market and influence of commodity markets on prices.
2. Explain the problems with the Indian Commodity Markets and the way forward.
3. Explain how Commodity Derivatives are different from Financial Derivatives.
4. Discuss the trading and settlement process in commodity trading.
5. What is the standardized software to calculate margin requirements for futures developed by CME and adopted by many agencies as benchmark software across the globe?

Practical Questions

1. A company is long on 10 MT of copper @ ₹ 474 per kg (spot) and intends to remain so for the ensuing quarter. The standard deviation of changes of its spot and future prices are 4% and 6% respectively, having correlation coefficient of 0.75.

What is its hedge ratio? What is the amount of the copper future it should short to achieve a perfect hedge?

ANSWERS/SOLUTIONS

Answers to Multiple choice Questions:

1.	(d)	2.	(a)	3.	(c)	4.	(c)	5.	(b)

Answers to Theoretical Questions

1. Please refer paragraph 2
2. Please refer paragraph 3.2 and 3.3
3. Please refer paragraph 4.1
4. Please refer paragraph 4.3
5. Please refer paragraph 5.3

Answers to the Practical Questions

1. The optional hedge ratio to minimize the variance of Hedger's position is given by:

$$H = \rho \frac{\sigma S}{\sigma F}$$

Where

σS = Standard deviation of ΔS

σF = Standard deviation of ΔF

ρ = coefficient of correlation between ΔS and ΔF

H = Hedge Ratio

ΔS = change in Spot price.

ΔF = change in Future price.

Accordingly

$$H = 0.75 \times \frac{0.04}{0.06} = 0.5$$

No. of contract to be short = 10 x 0.5 = 5

Amount = 5000 x ₹ 474 = ₹ 23,70,000