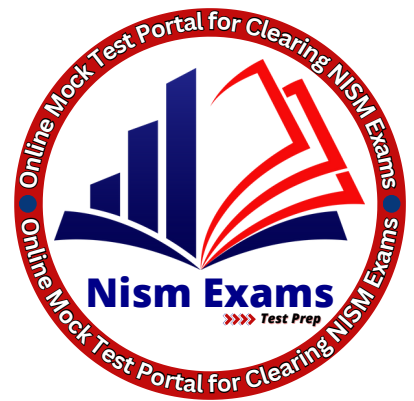


WITH THE UPDATED SYLLABUS OF

2025

Supplementary book for
NISM Series XVI

COMMODITY DERIVATIVES

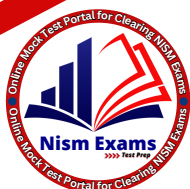


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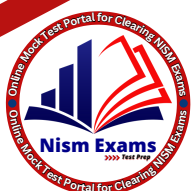


NISM SERIES XVI: COMMODITY DERIVATIVES

FOREWORD

This guide is designed to help candidates prepare for the NISM Series XVI: Commodity Derivative Certification Examination. The rapidly growing Indian financial industry, set to expand at 15% annually for the next five years, presents lucrative opportunities. Educational qualifications, especially NISM certifications, are crucial for securing roles in financial services. These certifications serve as prerequisites for various positions, assuring companies of a candidate's knowledge of the stock market. NISM certifications set a common knowledge benchmark, fostering quality market professionals and enhancing investor participation. They also offer structured career paths, allowing individuals to become traders, investors, analysts, advisors, or mutual fund distributors by clearing accredited NISM exams.

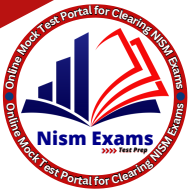
DISCLAIMER: The notes presented in this book are supplementary to the NISM workbook. The topics covered here have been curated after taking cognizance of the NISM workbook by professionals having extensive knowledge and experience with the objective of providing students with the synopsis of all the chapters from the exam point of view while ensuring thorough understanding for them



NISM SERIES XVI: COMMODITY DERIVATIVES

Syllabus Overview

Chapter No.	Chapter Name
Chapter 1	Introduction to Commodity Derivatives
Chapter 2	Commodity Indices
Chapter 3	Commodity Futures
Chapter 4	Commodity Options
Chapter 5	Uses of Commodity Derivatives
Chapter 6	Trading Mechanism
Chapter 7	Clearing, Settlement and Risk Management
Chapter 8	Legal and Regulatory Environment
Chapter 9	Accounting and Taxation
Chapter 10	Code of Conduct and Investor Protection Measures



NISM SERIES XVI: COMMODITY DERIVATIVES

CHAPTER 1

INTRODUCTION TO COMMODITY DERIVATIVES

► Trading in Commodities

Commodities can be traded in both the spot market, where the commodities are physically bought or sold on a negotiated basis in the spot market, where immediate delivery takes place, as well as the derivatives (forward and futures) market. There are 2 Types of commodities:

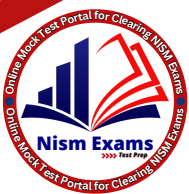
Soft commodities: These are the perishable agricultural products such as corn, wheat, coffee, cocoa, sugar, soybean, etc.

Hard commodities: These are natural resources that are mined or processed such as the crude oil, gold, silver, etc.

► Spot Market

The Spot market is a place where the commodity is traded and the **transfer of ownership takes place immediately**. This concept is also termed a “ready delivery contract” under which payment and delivery of goods happens immediately.

- **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.
- **Electronic Spot 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.



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An electronic spot commodity exchange provides a marketplace where the farmers or their Farmer Producer Organisation (FPO) can sell their produce and the processors, exporters, traders, and other users can buy such produce through an electronic trading system.

The National Agriculture Market (eNAM) plays a key role in the electronic spot market of agricultural produce. eNAM is a pan-India electronic trading portal that networks the existing APMCs (Mandis) to create a unified national market for agricultural commodities.

► Derivatives Market

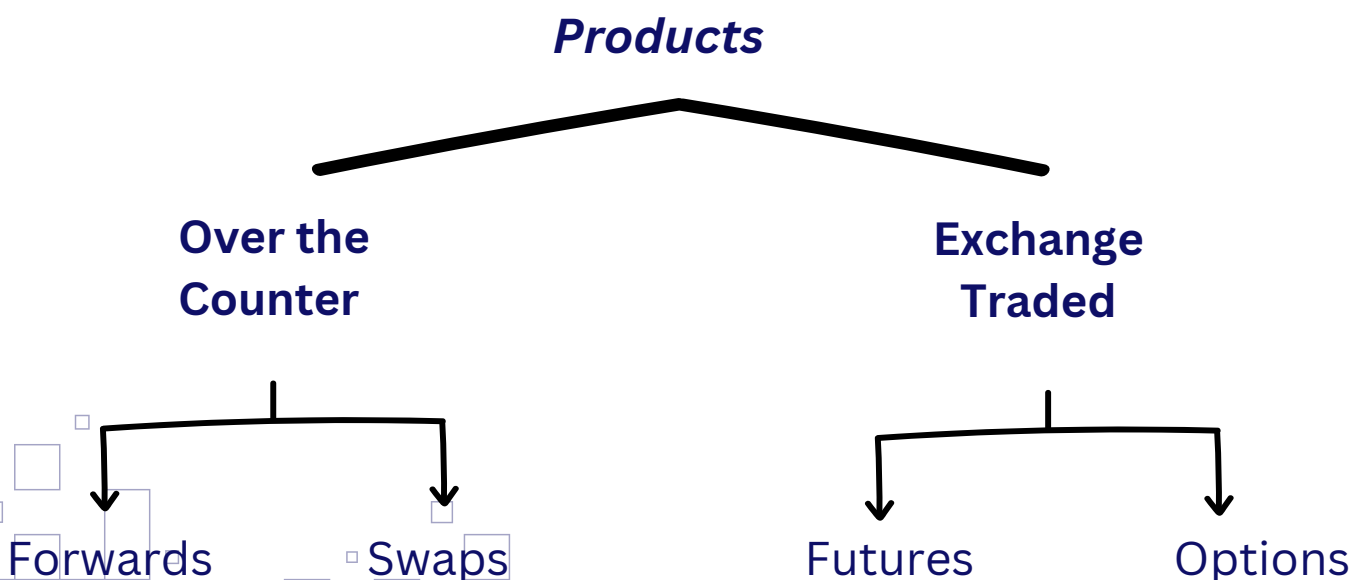
A Derivative is a contract or a product whose value is derived from the value of some other asset known as underlying. Derivatives are based on a wide range of underlying assets. It is a contract between a buyer and a seller, entered into at a point in time, regarding a transaction to be settled/closed at a future point in time. Over some time, based on the needs of the market participants, various derivatives products have evolved in OTC and exchanged-traded commodity derivatives markets such as commodity forwards, commodity futures, commodity options, and commodity swaps. Some of the key economic functions are:

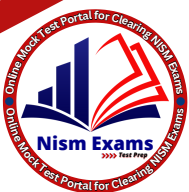
- **Risk Reduction:** Commodity derivatives market allows market participants such as farmers, traders, processors, etc. to hedge their risk against price volatility through commodity futures and options.

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- **Risk Transfer:** Derivatives help in transfer of risks from hedgers to speculators. On one side, hedgers try to hedge their spot positions via derivatives, on the other side, there are speculators who take up trading bets and try to gain on trading risks.
- **Price Discovery:** Price discovery in spot markets refers to the process of determining commodity price through forces of market demand and supply. The ability of derivatives markets to provide information about potential future prices due to expected demand and supply after discounting expected news, data releases and information on the product is an integral component of an efficient economic system.
- **Transactional Efficiency:** Derivatives lower the costs of transacting in commodity markets. As a result, investments become more productive.

► Derivatives Instruments



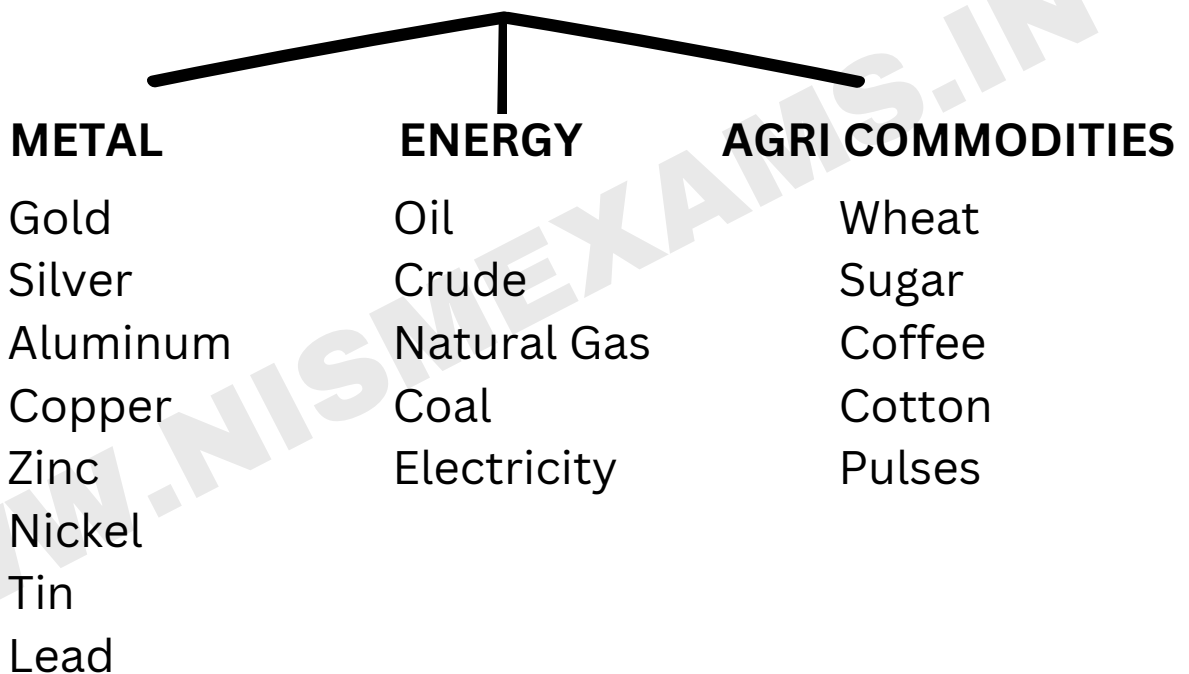


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- **Forwards:** It is a contract between two parties to buy/sell an underlying asset at a certain future date for a price that is pre-decided on the date of contract. Both the parties are obliged to honor the transaction irrespective of price of the underlying asset at the time of delivery.
- **Futures:** A futures contract is similar to a forward, except that the deal is made through an organized and regulated exchange rather than being negotiated directly between two parties. Indeed, we may say futures are exchange traded forward contracts.
- **Options:** It is a contract that gives the right, but not obligation, to buy or sell the underlying at a stated date and price. The buyer of option pays the premium for the right, seller of option receives premium with obligation to sell/ buy the underlying, if the buyer exercises his right.
- **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” where 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.

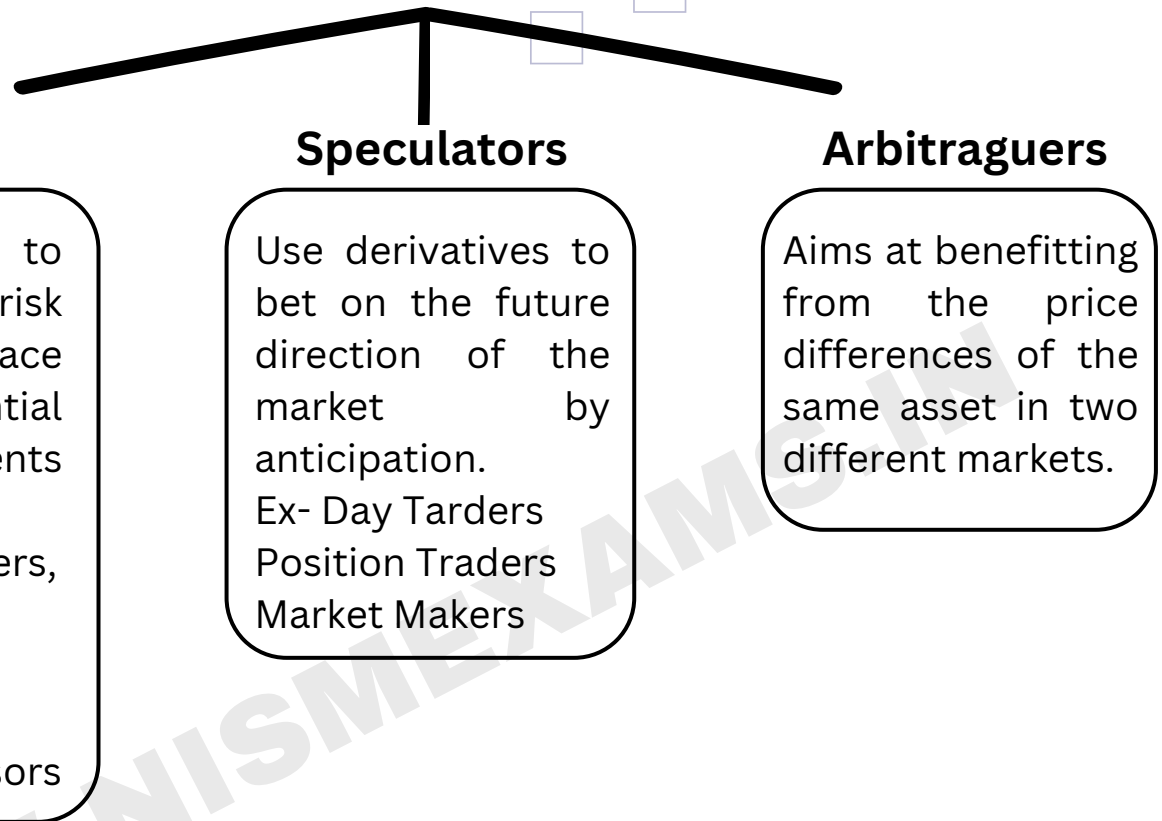
► Major Commodities Traded in Derivatives Exchanges in India

Commodity means every kind of movable property other than actionable claims, money and securities. Commodities are things of value, of uniform quality and produced in large quantities by many producers.



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), Indian Commodity Exchange Limited (ICEX), National Stock Exchange of India Limited (NSE) and BSE Limited (Bombay Stock Exchange).

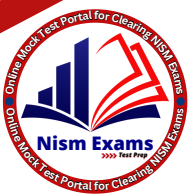
► Participants in Commodity Derivatives Markets



► 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.

- Commodities are physical and they are claims on real assets.
- Unlike financial assets, many commodities have pronounced seasonality which needs to be factored in while trading in them.
- Most financial products prices are derived from credit worthiness or financial position of the issuer of instruments in



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addition to interest and risk premium. However, Commodity prices are more of a factor of demand and supply of commodities.

► Commodity Markets Ecosystem

Commodity ecosystems comprise of various entities providing services for the smooth flow of goods from the producer to the ultimate consumer

Warehouse Service Provider facilitates storage and issues warehouse receipts (WR) against the stored commodity stock which can then be traded in the commodity markets.

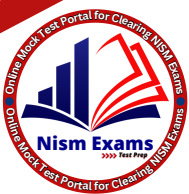
Transport Company helps movement of goods from the production centre to the consumption centre.

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

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 playing the role of carrying out clearing and settlement of the trades executed on the Exchange platform. The entity which guarantees settlement is 'Clearing Corporation'.



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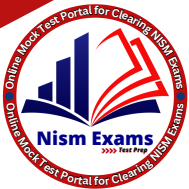
Electronic -Registry for Warehouse Receipts: A Warehouse Receipt is a document of title to goods issued by a warehouse service provider to a person depositing commodities in the warehouse, evidencing storage of goods. Warehouse receipts which are not negotiable, need to be electronically registered, to facilitate settlement through the Clearing Corporation.

E-registry: An E-registry maintains electronic records of ownership of goods against negotiable warehouse receipts (NWRs) and warehouse receipts (WRs) and effects transfer of ownership of such goods by electronic process.

- Maintaining the identity of the original depositor.
- On-line viewing of warehouse charges/ stocks.
- Consolidation and splitting of the goods in deliverable lots as per contract specification
- Maintaining stacking and weight tracking information
- Ability to capture quality related information and receipt expiry dates
- Facilitate consolidation of data relating to availability of commodity in the market at any point of time.

► Factors Impacting the Commodity Prices

The '**demand-supply**' equation: The demand for and supply of a commodity are the two basic factors that influence its price. The higher the demand for a commodity, the dearer is its price and higher the supply of a commodity vis-à-vis demand, the cheaper would be its price, other factors remaining the same.



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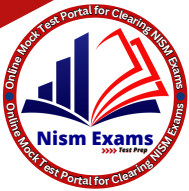
Seasonality: Most commodities follow a certain schedule of production cycle, which impacts the price trend. For example, in agricultural commodities, during the harvesting season, due to an increased supply, prices tend to come down; whereas during the sowing season, the overall supply (availability) 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.

News: Commodity prices are very sensitive to news and rumors and any important news related to a particular commodity can significantly affect its price in either direction in the short term.

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.

Macroeconomic conditions: Domestic and global macroeconomic conditions can have an impact on commodity prices. The GDP growth rate, consumption pattern, per capita income, industrial production, 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.

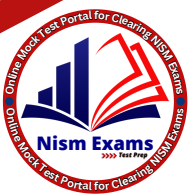
Currency movement: Comparative movement in the value of a currency of a country in relation to the major global currencies is very important for the prices of commodities in that particular country. Most of the commodities globally are



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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 rates on commodity prices is almost instantaneous. High-interest rates could reduce the market prices of commodities.



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CHAPTER 2 COMMODITY INDICES

► What is an Index?

An Index is a basket of securities of different backgrounds that indicates the price trends of the underlying securities collectively to indicate overall market trends. It serves as a benchmark for portfolio performance. It is used as an underlying for the financial application of derivatives. An index is a barometer of how the prices or value of certain parameters or commodities are moving. Ex- MCX BULLDEX represents sentiment in the precious metals market.

Composite Indices:

- MCX created MCX iCOMDEX which is an Index of various non-agricultural commodities, whose Futures are listed on MCX. This includes various energy, industrial metal and precious metals.

Sectoral Index:

- NCDEX created NCDEX Guarex, an index of only Guar family agricultural produce.
- MCX created MCX BULLDEX, an Index of only precious metal segment.

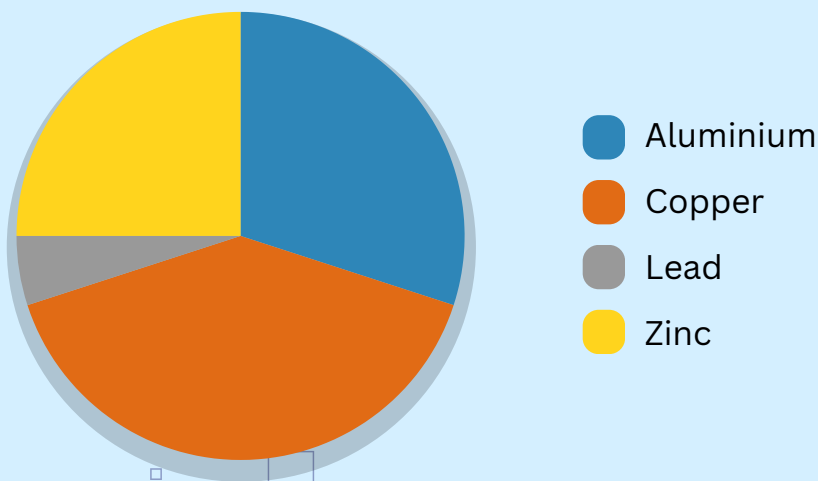
► Index Construction and its Constituents

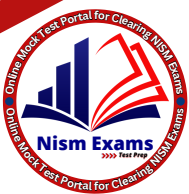
Major relevant points on Commodity Index construction and maintenance, used by the Exchanges are as follows:

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- Once the Index is constructed with certain weights of each commodity future, those weights can remain fixed for one year. Index weights and constituents must be rebalanced at least once a year.
- The Index's constituent's commodity futures should be in existence for at least 12 months and must have traded on 90% of the trading days.
- Commodity indices are price-based indices and not volume-based indices.
- In the case of the Composite Index, a Minimum of 80% of index weight should comprise those commodity futures whose Minimum Average Daily Trading Volume (ADTV) is at least Rs 75 crores for agri-based commodities and Rs 500 crores for other constituents.
- Weights of commodities in the index are decided by the Exchanges, based on their scoring on production value and liquidity value.
- Index Value is disclosed based on the traded price in the Constituent's immediate expiry contract.

MCX iCOMDEX BASE METAL INDEX:Component Weights



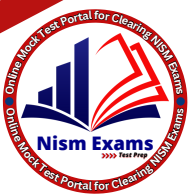


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► Trading in Index Futures

Futures of commodity index are created with appropriate trading and settlement structure which are decided by the Exchanges and are in-built in the terms of contracts.

- 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 tick size is Rs 0.25.
- Trading hours are as per regular trading hours of Futures of the Constituents so that unnecessary arbitrage opportunity or road block does not arise.
- Like Single Commodity Futures, Commodity Index Futures also have Circuit Breakers or Daily Price Limit which is fixed by respective Exchanges.
- Index Futures Contract term should be a maximum to 12 months.
- Open position limits in index futures are fixed by SEBI. At client level, it is 5% of open interest subject to a minimum of 1,000 lots. At member level, it is 15% of open interest subject to a minimum of 10,000 lots.
- 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 weighted average traded price of constituents' future contract during 4:00 pm to 5:00 pm.



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- Open position limits in index futures are fixed by SEBI. At the client level, it is 5% of open interest subject to a minimum of 1,000 lots. At the member level, it is 15% of open interest subject to a minimum of 10,000 lots.
- 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 the weighted average traded price of constituents' future contracts from 4:00 pm to 5:00 pm.
- Margins will include the Initial Margin (based on 99% confidence VaR with a holding period i.e., MPOR of 2 days) MPOR is the Margin Period of Risk.

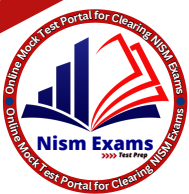
► Uses of Index Futures

An index is a reflection of the general market level on an overall basis or a particular theme or index basis. For example, MCX BULLDEX represents sentiment in precious metals. The above feature of an index makes it a unique proposition for various uses detailed below:

- Hedging
- “Proxy of monsoon” derivative
- Excess Return Index
- Institutional Players
- Exchange Traded Fund (ETF)
- Diversified Portfolio

► Trading in Index Options

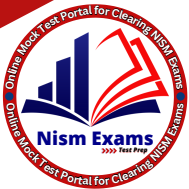
SEBI has permitted the recognized stock exchanges having a commodity derivatives segment, to introduce commodity



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index options of up to 12 months expiry. Some of the key points are given below:

- Trading hours of Commodity Index Options will be in line with the trading hours for constituent futures of the underlying index. However, on the day of expiry, index options contracts will expire at 5:00 pm.
- Index Options will be cash-settled on their expiry. The final settlement price will be the underlying index price arrived at based on Volume.
- Weighted Average Price of the constituents of the underlying index between 4:00 pm and 5:00 pm on the expiry day.
- These are European-style options with a minimum of three strikes available for trading.
- On the expiry date, all ITM contracts will get exercised automatically, unless the buyer of an option has given a 'contrary instruction'. All OTM contracts shall expire worthless.
- Open position limits in index options are double that of index futures in % as well as lots. At the client level, it is 10% of open interest subject to a minimum of 2,000 lots. At the member level, it is 30% of open interest subject to a minimum of 20,000 lots.



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CHAPTER 3 COMMODITY FUTURES

► Introduction to Commodity Futures

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). The futures contracts provide for the delivery of a physical commodity at the originally contracted amount at a specified future date, irrespective of the actual price prevailing on the actual date of delivery.

► Distinction between Forwards and Futures

BASIS FOR COMPARISON	OTC (OVER THE COUNTER)	EXCHANGE
Meaning	Over the Counter or OTC is a decentralized dealer market wherein brokers and dealers transact directly via computer networks and phone.	Exchange is an organized and regulated market, wherein trading of derivative takes place between buyers and sellers in a safe, transparent and systematic manner
Market maker	Dealer	Exchange itself
Physical Location	No	Yes

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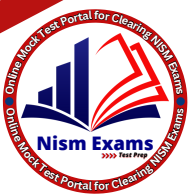
BASIS FOR COMPARISON	OTC (OVER THE COUNTER)	EXCHANGE
Trading hours	24×7	Exchange hours
Transparency	Low	Comparatively high
Contracts	Customized	Standardized
Riskiness	High	Less Risky

► Cost-of-Carry

According to the cost-of-carry model, futures price of a commodity depends on the spot price of a commodity and the cost of carrying the commodity from the date of spot price to the date of delivery of the futures contract.

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.

- **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.



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► Fair Value of a Futures Contract

$$\text{Fair Value of the Futures Contract} = \text{Spot Price} + \text{Cost of Carry}$$

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 futures market.

► 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.

Agricultural commodities have a convenience return because they form part of production processes. Therefore, a commodity's convenience yield is the benefit in rupee terms 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.

$$\text{Future Price} = \text{Spot Price} + \text{Cost of carry} - \text{Convenience Yield}$$

► 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.

- Long position: When one enters into a contract to buy the goods at the futures price, then it means taking a long position.

$$\text{Long Pay-off} = \text{Spot Price} - \text{Futures Price}$$

The higher the price of the underlying at expiry, the higher the profit made by the buyer of the futures contract.

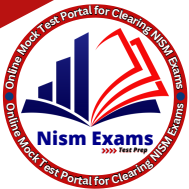
- Short Position: One may enter into a contract to sell the goods at the futures price on a future date, without any existing position in a comparable long position in Futures market. This is called taking a short position.

$$\text{Short Pay-off} = \text{Futures Price} - \text{Spot Price}$$

The Short position in futures means selling a futures contract in anticipation of a 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.

► Tick Size and its impact

Tick size is the minimum price movement in terms of change in price or change in quotation for an order.



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The impact of a 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 on a client's portfolio which is called "tick value". Tick value shows the worth of one tick movement on the contract value.

$$\text{Tick Value} = (\text{Lot size} / \text{Quotation factor}) * \text{Tick size}$$

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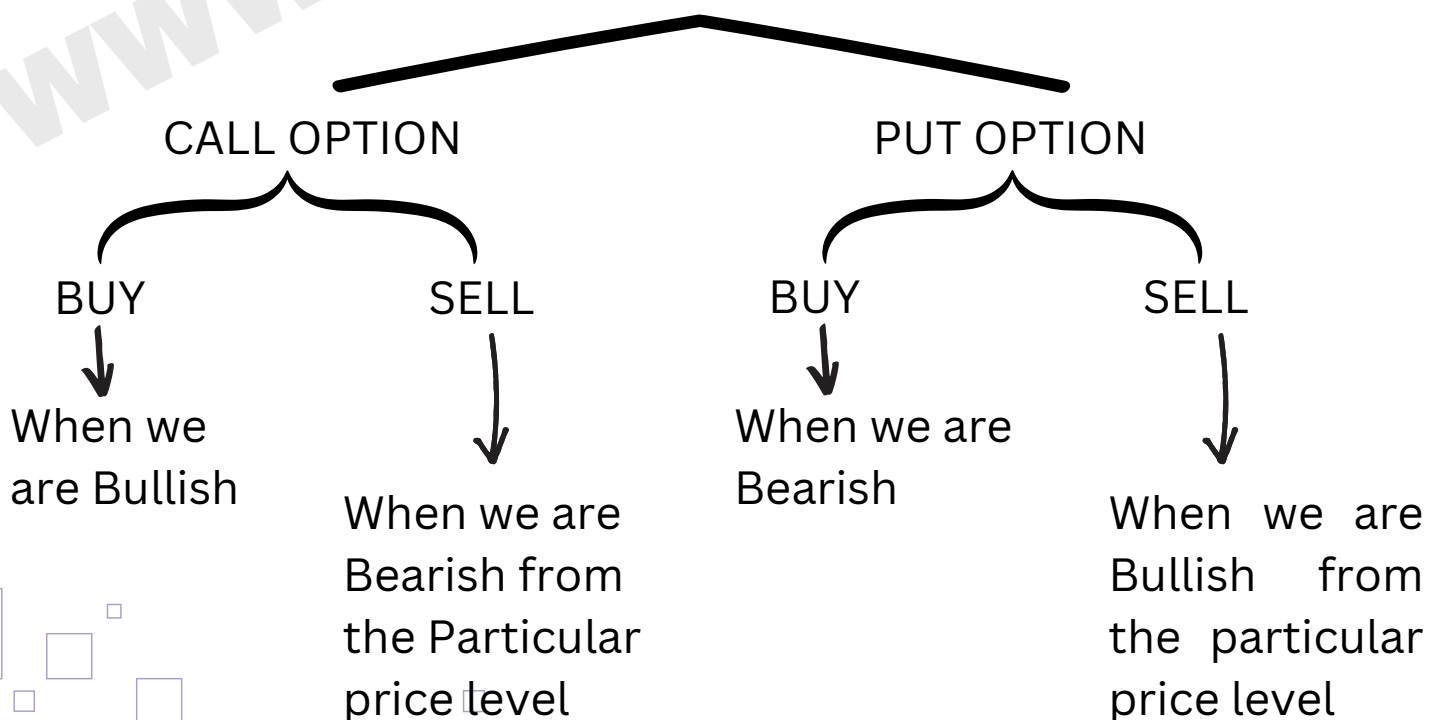
CHAPTER 4

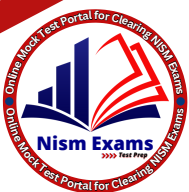
COMMODITY OPTIONS

► Tick Size and its impact

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

- **Call Option:** A Call option is a contract that gives the holder a right but not an obligation to buy an underlying asset on a specified date at a pre-determined price.
- **Put Option:** A Put option is a contract that gives the holder a right but not an obligation to sell an underlying asset on a specified date at a pre-determined price





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➤ Option Terminology

- **Strike Price:** Strike price is the price per share of underlying security which may be purchased or sold by the option holder. The different strike prices quoted above are all price levels of underlying on which options contract can be undertaken.
- **In the money (ITM) Option:** This option would give the holder a positive cash flow if it were exercised immediately. These are the price levels that the market has already breached. A call option is said to be ITM when the spot price is higher than the strike price. And, a put option is said to be ITM when the spot price is lower than the strike price. In our chart, the shaded strikes are ITM option strikes.
- **At the money (ATM) option:** The money option would lead to zero cash flow if it were exercised immediately. Therefore, for both call and put ATM options, the strike price is equal to the spot price.
- **Out of the money (OTM) option:** Out of the money option is one which is yet to be breached by the underlying asset. 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 the spot price is lower than the strike price. A put option is said to be OTM when the spot price is higher than the strike price. In our chart, the non-shaded strikes are OTM option strikes.
- **Spot Price:** It is the price at which the underlying asset trades in the spot or cash market.

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- **Lot size:** Lot size is the number of units of underlying assets in a contract. It is the minimum quantity of underlying assets that need to be traded in an option contract.
- **Premium or Option Price:** Premium is the option contract value that the option buyer pays to the option seller. The premium value quoted above is for a single unit of Nifty and to arrive at the total premium in a contract, we need to multiply this premium with the lot size.

Intrinsic Value

Intrinsic value refers to the amount by which an option is in the money i.e. the amount an option buyer will realize, if he exercises the option instantly. Only ITM strikes have the intrinsic value.

Extrinsic Value

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

Intrinsic Value of ITM Call: Strike Price – Spot Price

Intrinsic Value of ITM Put: Spot Price – Strike Price

- **Exercise of an Option Contract:** An option contract gives the buyer the privilege to exercise his right to buy (in case of a call option) or sell (in case of a put option) the underlying asset on or before expiry. Here, the buyer will ask the seller to transact in underlying assets as defined by the option contract.

American Option

The buyer of such an option can exercise his right at any time on or before the expiry day of the contract.

European Option

The buyer of such an option can exercise his right only on the expiry day of the Contract. India follows the European style of option contract.

- **Open Interest:** Open interest is the total number of option contracts outstanding against each strike price for an underlying asset.
- **Expiration Day:** The day on which a derivative contract ceases to exist. It is the last trading date/day of the contract.

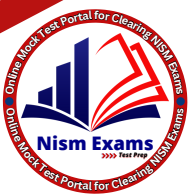
OPTION BUYER	OPTION SELLER
He is also called as option holder	He is also called as option writer

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OPTION BUYER	OPTION SELLER
He always has a right to exercise	He is always under obligation to fulfil.
Option buying has potential to generate unlimited profits	Option selling comes with limited profit potential
Option buying is exposed to limited losses	Option selling is exposed to unlimited losses
He has to pay the premium amount	He receives the premium amount.
For option buyer premium is an expense	For option seller premium is the only income.
An option buyer pays a relatively small premium for market exposure	Whereas option writer has to pay huge amount for market exposure.

➤ Fundamental parameters on which the option price depends

- Spot price of the underlying asset
- Strike price of the option
- Volatility of the underlying asset's price
- Time to expiration
- Interest rate



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► Option Greeks

- **Delta:** It measures the sensitivity of the option value to a given small change in the price of the underlying asset. It may also be seen as the speed with which an option moves with respect to the price of the underlying asset.

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

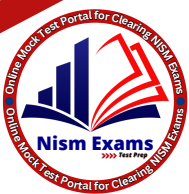
- **Gamma:** It measures the change in delta with respect to the change in the price of the underlying asset. This is called a second derivative option with regard to the price of the underlying asset. It is calculated as the ratio of change in delta for a unit change in the market price of the underlying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

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

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

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

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



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in the underlying volatility. Vega is positive for a long call and a long put.

Vega = Change in an option premium / Change in volatility

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

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

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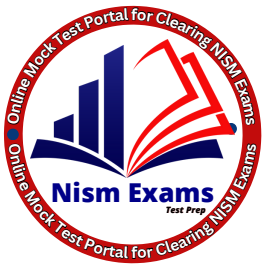
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