Commodity Options Strategies

for

Easing Participation of Hedgers and Small Stakeholders

Dr. Meena Bhatia[1], Dr. Ruchi Arora[2]

[1] Professor (Finance), BIMTECH meena.bhatia@bimtech.ac.in

[2] Associate Professor(Finance), BIMTECH ruchi.arora@bimtech.ac.in

Executive Summary

This project, "**Commodity Options Strategies for Easing Participation of Hedgers and Small Stakeholders**," aims to develop practical strategies for traders, hedgers, and arbitrageurs in the Indian commodity derivatives market. The study focuses on commodity options as effective financial instruments for managing risk and maximizing returns in volatile markets.

The commodity exchanges has played a pivotal role in offering structured derivative contracts across various segments, including bullion, industrial metals, energy, and agricultural commodities. Given the increasing complexities in commodity price movements, this research provides structured option strategies for different market conditions and risk appetites.

Key Objectives:

- Enhance Understanding of Commodity Options – Introduce market participants to the fundamental concepts and applications of options in hedging and trading.
- Develop Practical Strategy Models – Formulate working models in MS Excel to illustrate various option-based trading and hedging strategies
- Optimize Hedging Strategies – Provide structured approaches for producers, exporters, importers, and commodity processors to mitigate market risks.
- Enable Trading & Arbitrage Opportunities – Design models for high/low volatility, directional movements, and arbitrage between options and futures.
- Provide Cost & Margin Analysis – Assess implementation costs and potential margin benefits of combining options with futures or spot trading.
- Develop Interactive Financial Models – Create an Excel-based decision-making tool for stakeholders to simulate and analyze expected payoffs.

Methodology: The study integrates financial modeling, option pricing (Black-76 Model), and scenario analysis to develop robust strategies. Data from major commodity contracts such as Gold, Crude Oil, Cotton, and Copper are used to refine models and enhance accuracy. ***Expected Impact:*** By providing structured option trading strategies, this research empowers commodity value chain participants (traders, hedgers and arbitrageurs) with effective risk management tools, fostering market liquidity, transparency, and efficient price discovery.

This project serves as a comprehensive guide for market participants, offering actionable insights, working models, and a structured approach to risk management in commodity markets

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Commodity Options Strategies for Easing Participation of Hedgers and Small Stakeholders

I. INTRODUCTION

The Indian Commodity derivatives market has a historical background from 1875, with the Bombay Cotton Trading Association starting the futures trading business *(Lethesh & Reddy, 2023).* Even if the market was a world leader in futures trading in 1900, the market had to ban the use of cash and options trading in 1952. The Forward Markets Commission (FMC), established in 1953 under the Forward Contracts Regulation Act (FCRA), became the dedicated regulator, overseeing commodity exchanges, setting risk management frameworks, and ensuring market integrity while maintaining restrictions on options trading. The market regained momentum in the early 2000s with electronic trading platforms and stronger regulation, culminating in the FMC's merger with SEBI in 2015 to create a unified financial market regulator. Both agricultural and non-agricultural products are actively traded in the spot and futures markets, with metals emerging as the dominant category on the Multi Commodity Exchange (MCX) *(Arcot & Naidu, 2024)*

Derivatives are financial instruments that are derived from underlying assets such as commodities, indexes, and currencies, thus, they are the backbone of market speculators, hedging instruments, and arbitrage. At present, derivative agents are serving as the key financial instrument for hedging i.e. price risk management *(Arcot & Naidu, 2024),* besides enabling risk takers to cover the negative effects of inflation and, at the same time, get exposure to original assets such as agricultural yield, metals, and energy.

Commodities represent the only markets for real-time exchanges that have existed predominantly across human history. Over time, the scope of commodity markets has expanded beyond fundamental agricultural products to encompass metals and energy resources. The evolution of trading has progressed from *barter* conducted in town marketplaces without monetary instruments to sophisticated forward contracting between producers and merchants, and subsequently to structured Futures markets with clearing houses that ensure the creditworthiness of transactions. The definition of contracts has progressed from basic forwards to complex options and structured products, enabling originators and intermediaries to mitigate risks beyond their primary expertise.

The derivatives market is significantly larger than the stock market when measured in terms of underlying assets. The value of the assets associated with outstanding derivatives transactions far exceeds the global gross domestic product (*Cirappa,2021).* Derivatives serve multiple economic functions, and are complex and at times controversial in nature; however, they are an integral part of the financial system *(Palraj et al,2021).* Frequently, the variables driving derivatives are the prices of market-traded assets. For instance, a bond option is a derivative whose value hinges on the price of a bond. However, derivatives are not limited to financial assets; they can derive their value from virtually any variable, such as the price of crude oil or

the wind speed at a particular location. The underlying assets for derivatives can include foreign exchange, interest rates, equities, commodities, and credit.

A well-functioning commodities market facilitates the efficient exchange of information between spot and futures markets. Interdependency between commodity markets allows for the transmission of crucial information through price discovery.

MCX offers trading in commodity derivative contracts across varied segments including bullion, industrial metals, energy, and agricultural commodities, as also on indices constituted from these contracts. It is India's first Exchange to introduce commodity options and futures contracts on bullion, base metals, and energy indices. The Exchange focuses on providing commodity value chain participants with neutral, secure, and transparent trade mechanisms and formulates quality parameters and trade regulations, in conformity with the regulatory framework. Hedgers, traders, and arbitrageurs are three key participants in financial markets *(Tropeano, 2016;Popli & Singh, 2016),* each with distinct roles and objectives. Commodity options are useful risk management tools, particularly for small stakeholders, as the option buyer does not generally have to maintain margins. They are akin to price insurance for the hedgers, which can be bought by paying only a one-time option premium. Traders aim to profit from short-term price movements in financial assets, and arbitrageurs exploit price discrepancies between related assets or markets to earn risk-free profits.

While these roles are distinct, market participants often engage in multiple activities simultaneously. For example, a trader may hedge their positions to manage risk, while also engaging in arbitrage opportunities when they arise. Additionally, the presence of hedgers, traders, and arbitrageurs contributes to market liquidity and efficiency by providing counterparties for trades and helping to align prices across different markets. The purpose of this study is to provide various strategies to the market participants to ease their financial decision-making. The report shall be compiling the option strategies, which will act as a guide to the trader, hedgers, and arbitrageurs. They can use working models in MS Excel spreadsheets to create their trade and make decisions according to the expected payoffs. Figure- 1 shows the distinct objectives of each market participant

Figure 1: Objective of each market participant

1. Project Objectives

The research proposal titled "Commodity Options Strategies for Easing Participation of Hedgers and Small Stakeholders" aims to:

1. Enhance Understanding of Commodity Options – Provide a structured introduction to commodity options, outlining how they can be used based on market conditions, hedger objectives, and trading outlooks.

2. Develop Practical Strategy Models – Formulate multiple working models in MS Excel to illustrate commodity options strategies, making them accessible for hedgers, retail investors, and value-chain participants.

3. Optimize Hedging Strategies – Develop option-based strategies to help hedgers manage physical market exposure and futures market positions, catering to different market participants like buyers, sellers, and trade.

4. Enable Trading & Arbitrage Opportunities – Design trading strategies for various market scenarios (high volatility, low volatility, directional movements, etc.), along with arbitrage strategies across different strikes, expiries, and asset classes.

5. Provide Cost & Margin Analysis – Assess the cost of implementing different option strategies and highlight potential margin benefits when combining options with futures or other asset classes.

6. Develop an Interactive Model for Stakeholders – Create an interactive Excel-based tool where users can input their values and obtain expected payoffs, helping them understand and simulate different trading strategies.

Let us understand what are commodity futures and options before we proceed for different strategies

2. Commodity Options

Commodity options with futures as the underlying asset are derivative contracts that give the buyer the right (but not the obligation) to buy or sell a commodity futures contract at a predetermined price on or before a specific expiration date. MCX offers options on commodity futures contracts traded on the exchange. These commodity options, on exercise, devolve into the underlying futures contracts. All such devolved futures positions open at the strike price of exercised options.

Unlike traditional equity options, where the underlying asset is a stock, commodity options are structured on commodity futures contracts rather than the physical commodity itself.

Key Features of Commodity Options on Futures

✓ Underlying Asset

The option is linked to a commodity futures contract (e.g., Crude Oil Futures, Gold Futures) instead of the physical commodity.

✓ Call Option (Right to Buy Futures)

The holder has the right to buy the futures contract at the strike price. If exercised, the trader takes a long position in futures at the agreed strike price.

✓ Put Option (Right to Sell Futures)

The holder has the right to sell the futures contract at the strike price.

If exercised, the trader takes a short position in futures at the agreed strike price.

✓ Exercise & Settlement

At expiration, the option does not result in physical delivery of the commodity. Instead, it results in the settlement of a long or short futures contract. The futures contract then follows its regular settlement mechanism.

✓ Strike Price & Premium

The option strike price is defined based on futures price levels. The buyer pays a premium to the seller for acquiring the option right.

✓ Expiry Alignment

The expiration of the option contract is typically before or aligned with the expiry of the underlying futures contract.

3. Commodity Futures

Commodity futures are standardized contracts traded on exchanges where two parties agree to buy or sell a specific quantity of a commodity (e.g., Crude oil, gold, copper etc.) at a predetermined price on a future delivery date. These contracts are used for hedging (managing price risk) for various value chain participants or speculation (profiting from price movements).

Key Features of Commodity Futures:

1. Standardized Contracts

Commodity futures are traded on regulated exchanges with strictly standardized terms, including the quantity, quality, and expiration date of the underlying commodity. This uniformity ensures transparency, liquidity, and ease of trading, as all market participants adhere to the same contract specifications. Example: 1 crude oil futures contract = 1,000 barrels.

2. Leverage (Margin Trading)

Futures trading operates on a margin system, meaning traders only need to deposit a small percentage (margin) of the contract's total value to control a much larger position. While this leverage amplifies potential profits, it also increases the risk of significant losses if the market moves against the trader.

3. Settlement Methods

Commodity futures can be settled in two ways: physical delivery, where the buyer receives the actual commodity (common for hedgers like food producers), or cash settlement, where the difference between the contract price and market price is paid in cash (preferred by traders to avoid handling physical goods).

4. Price Discovery & Hedging

Futures markets play a crucial role in price discovery, reflecting supply and demand expectations. Producers (like farmers) and consumers (like manufacturers) use futures to hedge against price swings, locking in rates to protect against volatility. Meanwhile, speculators trade futures to profit from price movements, adding liquidity to the market

5. High Liquidity (for Major Commodities)

Major commodities like crude oil, gold, and wheat have highly liquid futures markets, meaning contracts can be bought or sold quickly without major price changes. However, there are some commodities that suffer from low liquidity, leading to wider bid-ask spreads and higher trading costs.

6. Expiration Dates

Every futures contract has a fixed expiration date, after which it must be settled (either by delivery or cash payment)

II. HEDGING

Hedgers in the commodity market are participants who use various financial instruments to mitigate or offset the risks associated with price fluctuations in the underlying commodities they produce, consume, or trade. These risks can arise due to factors such as supply and demand imbalances, geopolitical events, weather conditions, or changes in market sentiment. Hedging allows commodity market participants to protect their profits, stabilize cash flows, and manage their exposure to price volatility. The objective of hedgers is to protect their capital in any situation.

Following objectives are covered under this section:

1. Understanding of various approaches to manage commodity risk
2. Understanding various hedging techniques using futures and working model for hedging
3. Understanding various hedging techniques using Options

Hedging with Futures

- Long Futures and Short Futures

Hedging with Options

- Long Call and Long Put

2.1 Hedging with Futures

Use case -1 Background

A jeweler, Raj Gold & Sons, regularly purchases gold for manufacturing jewelry. Given the volatility in gold prices, they are concerned about potential price increases in the coming months.

Hedging Objective

Raj Gold & Sons wants to hedge against the risk of rising gold prices by using Gold Futures

 **Gold**	
Description	GOLDMMMYY
Tick Size (Minimum Price Movement)	Re. 1 per 10 grams

Quotation / Base Value	10 grams
Lot Size	1000 grams (1 Kg)
Initial Margin Extreme Loss Margin Minimum 1%	Minimum 6% or based on SPAN whichever is higher
Extreme Loss Margin	Minimum 1%
Hedging Strategy Since Raj Gold & Sons will need 1 kg (1000 grams) of gold in April, they decided to go long (buy) one MCX Gold Futures contract (each contract represents 1 kg).	

- Current Spot Price: ₹81,808 per 10g
- Futures Price (April 4, 2025 expiry): ₹82,350 per 10g
- Contract Size: 1 kg (1000g)
- Total Margin required: 82,350*6%*100=4,94,100

Outcome Scenarios at Expiry (April 4, 2025)

Scenario 1: Price Increases (Hedging Works Well)

- Suppose on April 4, 2025, the spot price of gold rises to ₹85,000 per 10g.
- Raj Gold & Sons will buy physical gold at the higher spot price (₹85,00,000 per kg) but make a gain on their long futures position:
  - Futures contract value at expiry: ₹85,000
  - Initial contract price: ₹82,350
  - Profit on Futures: ₹(85,000-82,350) =2,650 per 10 gm.
- Effective purchase price for Gold Jeweler ₹85,000 (spot) - ₹2,650 (futures profit) = ₹82,350
- The hedge protected against price increases and allowed Raj Gold & Sons to lock in their gold price at ₹82,350 per price

Pls note trading cost is not considered in the example

Scenario 2: Price Decreases (Hedging Leads to Loss on Futures, but Benefits from Lower Spot Prices)

- Suppose the spot price falls to ₹80,500 per 10g in April.
- The company buys gold at ₹80,500 per 10g, but incurs a loss on futures:
  - Futures contract value at expiry: ₹80,500
  - Initial contract price: ₹82,350
  - Loss on Futures: ₹1,850 per 10 gm
- Effective purchase price: ₹80,500 (spot) + ₹1,850 (futures loss) = ₹82,350 per kg

Pls note trading cost is not considered in the example

Use Case-2

Scenario: Hedger Using Copper Futures

Background

A manufacturing company, **ABC Electricals Ltd.**, specializes in producing electrical wires and transformers Since copper is a primary raw material, the company is exposed to price fluctuations in the copper market, which can impact its production costs and profit margins.

Problem Statement

Copper prices are highly volatile due to global supply-demand dynamics, geopolitical events, and macroeconomic factors ABC Electricals Ltd. needs to **hedge against rising copper prices** to stabilize production costs and maintain profitability.

 **Copper**	
Description	COPPERMMMYY
Tick Size (Minimum Price Movement)	5 Paisa per kg
Quotation / Base Value	1 kg
Lot Size	2.5 metric tons (MT) or 2500 kilograms
Initial Margin	Minimum 8% or based on SPAN whichever is higher
Extreme Loss Margin	Minimum 1%

Hedging Strategy Using MCX Copper Futures

1. **Current Situation**:
    - ABC Electricals Ltd. plans to purchase **50 metric tons of copper** in 2 months.
    - The current spot price of copper is **₹832.05 per kg**.
    - The company anticipates a **price increase** due to global supply chain disruptions.
2. **Hedging Execution (Taking a Long Position in MCX Copper Futures)**:
    - The company buys **MCX Copper Futures contracts** equivalent to **50 metric tons** at **₹832.05 per kg** (current futures price).
    - Each MCX Copper futures contract represents **2.5 metric tons** of copper, so they purchase **20 contracts (50 MT / 2.5 MT per contract)**.

Outcome Scenarios at Expiry (2 Months Later):	
Scenario 1: Copper Price Increases (₹850/kg) → Profitable Hedge ○ The spot price rises to **₹850/kg**, leading to increased procurement costs. ○ However, the **futures contract gains ₹17.95/kg** (₹850 - ₹832.05), offsetting the higher cost in the spot market. ○ The net effect is that ABC Electricals Ltd. **buys copper at an effective price of ₹820/kg**, protecting against the price surge.	**Scenario 2: Copper Price Drops (₹780/kg) → Opportunity Loss** ○ The spot price drops to **₹780/kg**, making physical copper cheaper. ○ The futures contract incurs a loss of ₹52.05/kg (₹780 - ₹832.05). ○ However, ABC Electricals Ltd. **absorbs this loss in the futures market while benefiting from lower procurement costs** in the spot market.

Use Case -3

Background

Bharat Petro Resources Ltd. (Based in Mumbai, India) produces crude oil domestically (e.g., from Rajasthan oil fields) and sells it to Indian refiners like IOCL or Reliance. Bharat Petro wants to hedge the falling crude oil prices between production (today) and delivery (3 months later).

Hedging Objective

Produce and sell 100,000 barrels of crude oil in 3 months. Bharat Petro Resources Ltd will short crude oil futures on MCX (Multi Commodity Exchange of India) to lock in a selling price

 CRUDEOIL	
Symbol	CRUDEOIL
Description	CRUDEOILMMMYY
Tick Size (Minimum Price Movement)	Re. 1
Quotation / **Base Value**	₹ Per barrel
Lot Size	100 barrels
Initial Margin Extreme Loss Margin Minimum 1%	Minimum 10% or based on SPAN whichever is higher.
Extreme Loss Margin	Minimum 1 %

- Current Spot Price: ₹5800 per barrel

- Futures Price (April 21, 2025 expiry): 5850 per barrel.
- Contract Size: 100 barrel

Scenario 1: Price Decreases (Hedging Works Well)	**Scenario 2: Price Increases (Hedging Leads to Loss on Futures, but Benefits from Lower Spot Prices)**

• Suppose on April 21, 2025, the spot price of Crude oil falls to ₹5250 per barrel.
• Gain from Futures Contract (5850-5250)=600 per bbl.
• Effective selling price for Bharat Petro 5250 (spot) + 600 (futures profit) = ₹5850
• The hedge protected against price falls and allowed Bharat Petro to lock in their Crude oil price at ₹5,850 per bbl.
Please note trading cost is not considered in the example
	• Suppose the spot price rises to ₹6000 per bbl in April.
	• The company sells crude oil at ₹6000 per bbl, but incurs a loss on futures:
	  ○ Futures contract value at expiry: ₹6000
	  ○ Initial contract price: ₹5,850
	  ○ Loss on Futures: ₹150 per bbl.
	• Effective price: ₹6000 (spot) - ₹150 (futures loss) = ₹5850 per bbl.
	The effective price locked in was the one where he locked it earlier.
	Please note trading cost is not considered in the example

2.2 Hedging with Options

2.2.1 Hedging with Long Call

Use case-1

PetroIndia Ltd. is an oil refining company that imports crude oil to produce petroleum products. The company is concerned about the rising crude oil prices due to geopolitical tensions and supply chain disruptions. Since crude oil prices are highly volatile, an unexpected price increase can significantly impact the company's profit margins. To mitigate this price risk, PetroIndia Ltd. hedges using commodity options.

The company needs to buy crude oil in 3 months but fears a price increase. If crude oil prices rise, the import cost will increase, reducing profit margins. To hedge this risk, they decide to buy Call Options

Thumb rule

"Whatever you going on to do with the asset tomorrow, do with its cover today". PetroIndia is going to import crude oil in 3 months so they can hedge using options by buying a call option or "Long Call".

Strategy:

Current Crude Oil Price: $80 per barrel

Crude Oil Call Option Strike Price: $85 per barrel

Option Premium Paid: $3 per barrel

Lot Size: 100 barrels per contract

Number of Contracts Required: 10 contracts (to hedge 10,000 barrels)

Scenario Analysis

S.No	Scenario	Spot Price at Expiry ($/barrel)	Action Taken	Net Cost per Barrel ($)	Total Savings/Loss ($/barrel)
1	Crude Oil Prices Rise	95	Exercise Call Option, Buy at $85	88	7
2	Crude Oil Prices Stay the Same	80	Option Expires, Buy in Spot Market	83	-3
3	Crude Oil Prices Fall	75	Option Expires, Buy in Spot Market	78	-3

The objective of hedging is to lock the price margins and reduce the risk exposure. The objective is not to make profits from hedging.

2.2.2 Hedging with Long Put

A long put acts as an insurance policy for commodity holders, balancing risk management with profit potential. It is ideal for producers seeking stability without sacrificing upside in uncertain markets.

Use case-2

An oil producer expects to extract 10,000 barrels of crude oil in 6 months. The current market price is $80/barrel, but they fear a potential drop due to geopolitical instability or increased supply. To hedge against downside risk while retaining upside potential, they use a long put strategy. If the price will drop, then Long Put will give benefit. Let us see the different scenarios of price fall. The price is locked at $72 per barrel

Oil Price at Expiration ($/barrel)	Spot Market Revenue	Put Option Payoff	Premium Paid	Net Revenue	Effective Price per Barrel
60	$600,000	$150,000	-$30,000	$720,000	$72.00
65	$650,000	$100,000	-$30,000	$720,000	$72.00
70	$700,000	$50,000	-$30,000	$720,000	$72.00
75	$750,000	$0	-$30,000	$720,000	$72.00
80	$800,000	$0	-$30,000	$770,000	$77.00

The effective price after hedging is $72 per barrel.

Points to note:

- Commodity options provide effective risk management for businesses exposed to price volatility.
- Call options protect buyers (importers, refiners, manufacturers).
- Put options to protect sellers (producers, farmers, exporters).

III. TRADERS

A trader is someone who engages in the buying and selling of financial instruments, such as stocks, bonds, commodities, or currencies, to make a profit from short-term fluctuations in prices. They can be retail investors, institutions, or any other small stakeholder. Traders often analyze market trends, economic indicators, and other relevant factors to make informed decisions about when to buy or sell assets.

This section applies to all types of value chain participants and is limited to only traders

The following section covers the following objectives:

1. Working models on commodity option strategies for various market conditions with expected payoffs
   a. Option strategy for high volatility and directional expectations (rise/fall)
   b. Option strategy for low volatility and directional expectations (rise/fall)
   c. Option strategy for Direction Neutral and Low Volatility
   d. Option strategy for volatility-neutral and direction-neutral expectations

2. Working models on commodity option strategies for risk-bearing capacity (low/moderate & high risk) of a trader with a combination of various market conditions

3. Using the Black-76 model to determine the fair value of an option incorporated in the model.

3.1 Strategies for High-Risk Trader

Table: 3.1 Strategies for High-Risk Trader

Case	Expected Direction	Expected Volatility	Risk	Strategies-1	Strategies-2
A	Rise	Neutral	High		Short Put
B	Fall	Neutral	High		Short Call
C	Neutral	Low	High	Short Straddle	Short Strangle
D	Rise	Low	High	Short Strip	
E	Fall	Low	High	Short Strap	

A. Short Put

Short Put: - A bullish options strategy that involves selling a put option, giving the buyer the right (but not the obligation) to sell the underlying asset at a specified strike price before or at expiration. The seller profits if the asset price stays above the strike price, allowing the option to expire worthless.	
Objective	To generate income from the premium received, expect the underlying asset's price to stay above the strike price.
Expected Direction	Bullish
Expected Volatility	Low to Moderate
Risk	Significant (if the asset price drops sharply) but limited to the strike price minus the premium received (in assumption that price won't get into negative territory).
Components	Sell 1 Put Option (out-of-the-money or at-the-money strike price)
Maximum Profit	Limited to the premium received from selling the put option
Maximum Loss	Significant if the underlying asset's price drops to zero, equal to the strike price minus the premium received (in the assumption that price won't get into negative territory).
Market Conditions	Ideal in stable or moderately bullish markets where the trader expects the underlying asset to remain above the strike price.
Advantages	• Consistent income through premium collection. • Lower break-even point compared to buying the underlying asset. • Potential to acquire the asset at a discount (due to premium received) if assigned
Disadvantages	• Significant downside risk if the asset price falls sharply. • Requires margin and can have high capital requirements. • Limited profit potential compared to the risk.

Strike Price (Short Put)	75,000
Underlying Price (Spot)	78000
Premium	430

Table: 3.2 ***Pay-off Table- Short Put***

Expected Prices	Gain/loss (Put)	Total Premium	Net Gain / Loss
72,000	-3000	430.00	**-2,570.00**
73,000	-2000	430.00	**-1,570.00**
74,000	-1000	430.00	**-570.00**
75,000	0	430.00	**430.00**
76,000	0	430.00	**430.00**
77,000	0	430.00	**430.00**
78,000	0	430.00	**430.00**
79,000	0	430.00	**430.00**
80,000	0	430.00	**430.00**
81,000	0	430.00	**430.00**
82,000	0	430.00	**430.00**

Fig-3.1 Pay-off Diagram- Short Put

B. Short Call

Short Call: - A bearish or neutral options strategy that involves selling a call option, giving the buyer the right (but not the obligation) to buy the underlying asset at a specified strike price before or at expiration. The seller profits if the asset price stays below the strike price, allowing the option to expire worthless.	
Objective	To generate income from the premium received, expect the underlying asset's price to remain below the strike price.
Direction	Bearish to Neutral
Volatility	Low
Risk	Unlimited (if the asset price rises significantly above the strike price)
Components	Sell 1 Call Option (out-of-the-money or at-the-money strike price)
Maximum Profit	Limited to the premium received from selling the call option
Maximum Loss	Unlimited, as the underlying asset's price can rise indefinitely

Market Conditions	Ideal in low-volatility, bearish, or neutral markets where the trader expects the asset's price to stay below the strike price.
Advantages	• Consistent income through premium collection. • High probability of small gains if the price remains stable or declines. • Simple to implement.
Disadvantages	• Unlimited risk if the asset price rises sharply. • Requires strict risk management and potentially large margin requirements. • Limited profit potential compared to the risk.

Strike Price (Short Call)	75,000
Underlying Price (Spot)	78000
Premium	1815

Table: 3.3 *Pay-off Table- Short Call*

Expected Prices	Gain / loss (Call)	Total Premium	Net Gain / Loss
72,000	0	1,815.00	**1,815.00**
73,000	0	1,815.00	**1,815.00**
74,000	0	1,815.00	**1,815.00**
75,000	0	1,815.00	**1,815.00**
76,000	-1000	1,815.00	**815.00**
77,000	-2000	1,815.00	**-185.00**
78,000	-3000	1,815.00	**-1,185.00**
79,000	-4000	1,815.00	**-2,185.00**
80,000	-5000	1,815.00	**-3,185.00**
81,000	-6000	1,815.00	**-4,185.00**
82,000	-7000	1,815.00	**-5,185.00**

Fig-3.2 Pay-off Diagram- Short Call

C. Short Straddle

Short Straddle: - A neutral options strategy that involves selling both a call option and a put option with the same strike price and expiration date. This strategy profits when the underlying asset remains close to the strike price, leading to the options expiring worthless and allowing the trader to keep the premium received.	
Objective	To profit from minimal movement in the underlying asset, expecting it to stay near the strike price at expiration.
Direction	Neutral (expects low volatility).
Volatility	Low
Risk	Unlimited (if the price moves significantly in either direction).
Components	1. Sell 1 ATM Call Option (Strike Price = Current Market Price/Spot Price) 2. Sell 1 ATM Put Option (Same Strike Price)
Maximum Profit	Limited to the total premium received from selling both options.

Maximum Loss	Unlimited if the price moves significantly upward; substantial if the price drops sharply.
Market Conditions	Ideal in low-volatility environments where the trader expects minimal price movement.
Advantages	• Profits from time decay (theta). • Can generate steady income in stable markets. • High probability of success if the asset remains near the strike price.
Disadvantages	• Unlimited risk if the price moves significantly. • Requires precise market movement predictions. • Margin requirements can be high due to the risk exposure.

EXAMPLE

Strike Price (Short Call)	83,000
Underlying Price (Spot)	80,000
Call Premium	1815
Strike Price (Short Put)	83,000
Put Premium	925

Table: 3.4 ***Pay-off Table- Short Straddle***

Expected Prices	Gain/loss (Call)	Gain / Loss (Put)	Total Premium	Gain / Loss
78,000	0	-5000	1,945.00	**-3,055.00**
79,000	0	-4000	1,945.00	**-2,055.00**
80,000	0	-3000	1,945.00	**-1,055.00**
81,000	0	-2000	1,945.00	**-55.00**
82,000	0	-1000	1,945.00	**945.00**
83,000	0	0	1,945.00	**1,945.00**
84,000	-1000	0	1,945.00	**945.00**
85,000	-2000	0	1,945.00	**-55.00**
86,000	-3000	0	1,945.00	**-1,055.00**
87,000	-4000	0	1,945.00	**-2,055.00**
88,000	-5000	0	1,945.00	**-3,055.00**

Fig-3.3 Pay-off Diagram- Short Straddle

D. Short Strip

Short Strip: - A options strategy that involves selling one at-the-money (ATM) call option and two at-the-money (ATM) put options with the same strike price and expiration date. This strategy profits when the underlying asset remains near the strike price but carries a higher risk if the price declines significantly.	
Objective	To profit from minimal movement in the underlying asset, with a higher risk exposure to downward price movements.
Direction	Rise
Volatility	Low
Risk	Unlimited (if the price moves significantly in either direction, especially downward).
Components	1. Sell 1 ATM Call Option (Strike Price = Current Market Price) 2. Sell 2 ATM Put Options (Same Strike Price)
Maximum Profit	Limited to the total premium received from selling all options.
Maximum Loss	Unlimited if the price moves significantly upward; substantial if the price drops sharply (higher downside risk due to two short puts).
Market Conditions	Ideal in low-volatility environments where the trader expects minimal price movement but with a slight bearish bias.
Advantages	• Profits from time decay (theta). • Higher premium received compared to a short straddle. • Can generate steady income in stable markets.
Dis-advantages	• Higher downside risk due to two short puts. • Unlimited risk if the price moves significantly. • Requires precise market movement predictions. • High margin requirements due to increased risk exposure.

Underlying Price (Spot)	78000
Strike Price (Short Call)	1
Call Premium	845
Number of lots (Put)	1
Strike Price (Short Put)	78000
Put Premium	1210
Number of lots (Put)	2

Table: 3.5 ***Pay-off Table- Short Strip***

Expected Prices	Gain / loss (Put)	Gain / Loss (Call)	Total Premium	Net Gain / Loss
72,000	-12000	0	3,265.00	**-8,735.00**
73,000	-10000	0	3,265.00	**-6,735.00**
74,000	-8000	0	3,265.00	**-4,735.00**
75,000	-6000	0	3,265.00	**-2,735.00**
76,000	-4000	0	3,265.00	**-735.00**
77,000	-2000	0	3,265.00	**1,265.00**
78,000	0	0	3,265.00	**3,265.00**
79,000	0	-1000	3,265.00	**2,265.00**
80,000	0	-2000	3,265.00	**1,265.00**
81,000	0	-3000	3,265.00	**265.00**
82,000	0	-4000	3,265.00	**-735.00**

Fig-3.4 Pay-off Diagram- Short Strip

E. Short Strap

Short Strap: - A options strategy that involves selling two at-the-money (ATM) call options and one at-the-money (ATM) put option with the same strike price and expiration date. This strategy profits when the underlying asset remains near the strike price but carries a higher risk if the price rises significantly.	
Objective	To profit from minimal movement in the underlying asset, with higher risk exposure to upward price movements.
Direction	Fall
Volatility	Low
Risk	Unlimited (if the price moves significantly in either direction, especially upward).
Components	1. Sell 2 Call Options (Strike Price = Current Market Price) 2. Sell 1 Put Option (Same Strike Price)
Maximum Profit	Limited to the total premium received from selling all options.
Maximum Loss	Unlimited if the price moves significantly upward; substantial if the price drops sharply (lower downside risk due to only one short put).

Market Conditions	Ideal in low-volatility environments where the trader expects minimal price movement but with a slight bullish bias.
Advantages	• Profits from time decay (theta). • Higher premium received compared to a short straddle. • Can generate steady income in stable markets.
Disadvantages	• Higher upside risk due to two short calls. • Requires precise market movement predictions. • High margin requirements due to increased risk exposure.

EXAMPLE

Underlying Price (Spot)	78000
Strike Price (Short Call)	2
Call Premium	845
Number of lots (Put)	1
Strike Price (Short Put)	78000
Put Premium	1210
Number of lots (Put)	1

Table: 3.6 ***Pay-off Table- Short Strap***

Expected Prices	Gain / loss (Put)	Gain / Loss (Call)	Total Premium	Net Gain / Loss
72,000	-6000	0	2,900.00	**-3,100.00**
73,000	-5000	0	2,900.00	**-2,100.00**
74,000	-4000	0	2,900.00	**-1,100.00**
75,000	-3000	0	2,900.00	**-100.00**
76,000	-2000	0	2,900.00	**900.00**
77,000	-1000	0	2,900.00	**1,900.00**
78,000	0	0	2,900.00	**2,900.00**
79,000	0	-2000	2,900.00	**900.00**
80,000	0	-4000	2,900.00	**-1,100.00**
81,000	0	-6000	2,900.00	**-3,100.00**

Fig-3.5 Pay-off Diagram- Short Strap

82,000	0	-8000	2,900.00	**-5,100.00**

Short Strangle: - A neutral options strategy that involves selling an out-of-the-money (OTM) call and an out-of-the-money (OTM) put with the same expiration date but different strike prices. This strategy profits from minimal price movement and stable market conditions.	
Objective	To profit from minimal movement in the underlying asset, expecting the price to stay between the two strike prices until expiration.
Direction	Neutral
Volatility	Low
Risk	Unlimited (on the upside for the call) and significant (on the downside for the put)
Components	1. Sell 1 OTM Call Option (Higher Strike Price) 2. Sell 1 OTM Put Option (Lower Strike Price)
	Limited to the net premium received from selling both options.
Maximum Loss	Unlimited on the upside (if the asset price rises sharply) and significant on the downside (if the price falls sharply).
Market Conditions	Ideal in low-volatility environments where the trader expects the underlying asset to remain within a specific price range.
Advantages	• Consistent income through premium collection. • High probability of small gains if the price remains stable. • Profitable in low-volatility markets.
Disadvantages	• Unlimited risk if the asset makes significant moves in either direction. • Requires strict risk management. • Margin requirements can be high.

F. Short Strangle

Underlying Price (Spot)	78000
Strike Price (Short Call)	79000
Call Premium	430
Number of lots (Put)	1
Strike Price (Short Put)	77000
Put Premium	1020
Number of lots (Put)	1

Table: 3.7 ***Pay-off Table- Short Strangle***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Total Premium	Net Gain / Loss
74,000	0	-3000	1,450.00	**-1,550.00**
75,000	0	-2000	1,450.00	**-550.00**
76,000	0	-1000	1,450.00	**450.00**
77,000	0	0	1,450.00	**1,450.00**
78,000	0	0	1,450.00	**1,450.00**
79,000	0	0	1,450.00	**1,450.00**
80,000	-1000	0	1,450.00	**450.00**
81,000	-2000	0	1,450.00	**-550.00**
82,000	-3000	0	1,450.00	**-1,550.00**

Fig-3.6 Pay-off Diagram- Short Strangle

3.2 Strategies for Low-Risk Trader

Table: 3.8

Case	Direction	Volatility	Risk	Strategies-1	Strategies-2	Strategies-3	Strategies-4
F	Rise	Neutral	Low	Bull Call Spread	Bull Put Spread	Long Call	
G	Fall	Neutral	Low	Bear Call Spread	Bear Put Spread	Long Put	
H	Neutral	High	Low	Short Butterfly Spread	Short Condor Spread	Long Straddle	Long Strangle
I	Neutral	Low	Low	Long Butterfly Spread	Long Condor Spread		
J	Neutral	Low	Low	Iron Condor			
K	Rise	High	Low	Long Strap			
L	Fall	High	low	Long Strip			

A. Long Call

Long Call - A bullish options strategy that involves buying a call option, giving the trader the right (but not the obligation) to purchase the underlying asset at a specified strike price before or at the expiration date. This strategy profits from an increase in the underlying asset's price.	
Objective	To profit from a significant upward movement in the underlying asset's price.
Direction	Bullish
Volatility	High
Risk	Limited to the premium paid for the call option
Components	Buy 1 Call Option (at-the-money or out-of-the-money strike price)
Maximum Profit	Unlimited potential profit as the asset price can rise indefinitely, minus the premium paid.
Maximum Loss	Limited to the premium paid for the call option
Market Conditions	Ideal in bullish market conditions where the trader expects the underlying asset's price to rise significantly.
Advantages	• Unlimited profit potential if the price rises sharply. • Limited and predefined risk. • Lower capital requirement compared to buying the underlying asset directly.
Disadvantages	• Time decay can erode the option's value if the price doesn't move as expected. • Requires a significant price move to cover the premium cost. • Loss of entire premium if the option expires out-of-the-money.

Underlying Price (Spot)	78000
Strike Price (Long Call)	79000
Call Premium	-1590

Table: 3.9 *Pay-off Table- Long Call*

Expected Prices	Gain / Loss (Call)	Total Premium	Net Gain / Loss
74,000	0	-1,590.00	**-1,590.00**
75,000	0	-1,590.00	**-1,590.00**
76,000	0	-1,590.00	**-1,590.00**
77,000	0	-1,590.00	**-1,590.00**
78,000	0	-1,590.00	**-1,590.00**
79,000	1000	-1,590.00	**-590.00**
80,000	2000	-1,590.00	**410.00**
81,000	3000	-1,590.00	**1,410.00**
82,000	4000	-1,590.00	**2,410.00**

Fig-3.7 Pay-off Diagram- Long Call

B. Bull Call Spread

Bull Call Spread - A bullish options strategy that involves buying an in-the-money (ITM) call and simultaneously selling an out-of-the-money (OTM) call at a higher strike price to reduce costs.	
Objective	To profit from a moderate increase in the underlying asset's price.
Direction	Rise
Volatility	Neutral
Risk	Low
Components	1. Buy 1 ITM Call Option (Lower Strike Price) 2. Sell 1 OTM Call Option (Higher Strike Price)
Maximum Profit	The difference between the strike prices minus the net premium paid.
Maximum Loss	Limited to the net premium paid.
Market Conditions	Ideal when expecting a moderate rise in the asset price.
Advantages	• Limited risk with a defined maximum loss. • Low-cost strategy compared to other spread strategies.

	• Higher potential return when correctly executed in low-volatility conditions.
Disadvantages	• Limited risk with a defined maximum loss. • Low-cost strategy compared to other spread strategies.

Underlying Price (Futures)	78000
Strike Price (Long Call)	77000
Call Premium	-1815
Strike (Short Call)	79000
Call Premium	1020

Table: 3.10 ***Pay-off Table- Bull Call Spread***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Total Premium	Net Gain / Loss
74,000	0	0	-795.00	**-795.00**
75,000	0	0	-795.00	**-795.00**
76,000	0	0	-795.00	**-795.00**
77,000	0	0	-795.00	**-795.00**
78,000	1000	0	-795.00	**205.00**
79,000	2000	0	-795.00	**1,205.00**
80,000	3000	-1000	-795.00	**1,205.00**
81,000	4000	-2000	-795.00	**1,205.00**
82,000	5000	-3000	-795.00	**1,205.00**

Fig-3.8 Pay-off Diagram- Bull Call Spread

C. Bull Put Spread

Bull Put Spread - A bullish options strategy that involves selling an in-the-money (ITM) put and simultaneously buying an out-of-the-money (OTM) put at a lower strike price to limit risk.	
Objective	To profit from a moderate increase or stability in the underlying asset's price.
Direction	Rise
Volatility	Neutral
Risk	Low
Components	1. Sell 1 ITM Put Option (Higher Strike Price) 2. Buy 1 OTM Put Option (Lower Strike Price)
Maximum Profit	The net premium received when initiating the spread.
Maximum Loss	The difference between the strike prices minus the net premium received.
Market Conditions	Ideal in low-volatility environments when the trader expects the underlying asset price to rise.

Advantages	• Limited risk with a defined maximum loss. • Low-cost strategy compared to other spread strategies. • Higher potential return when correctly executed in low-volatility conditions.
Disadvantages	• Limited profit potential. • Requires precise market movement predictions. • Higher transaction costs due to two options contracts.

EXAMPLE

Underlying Price (Futures)	78000
Strike Price (Long Put)	77000
Call Premium	-925
Strike (Short Put)	79000
Call Premium	430

Table: 3.11 ***Pay-off Table- Bull Put Spread***

Expected Prices	Gain / Loss (Long Put)	Gain / Loss (Short Put)	Total Premium	Net Gain / Loss
74,000	-5000	3000	495.00	**-1,505.00**
75,000	-4000	2000	495.00	**-1,505.00**
76,000	-3000	1000	495.00	**-1,505.00**
77,000	-2000	0	495.00	**-1,505.00**
78,000	-1000	0	495.00	**-505.00**
79,000	0	0	495.00	**495.00**
80,000	0	0	495.00	**495.00**
81,000	0	0	495.00	**495.00**
82,000	0	0	495.00	**495.00**

Fig-3.9 Pay-off Diagram- Bull Put Spread

D. Long Put

Long Put: - A bearish options strategy that involves buying a put option, giving the trader the right (but not the obligation) to sell the underlying asset at a specified strike price before or at expiration. This strategy profits from a significant decline in the underlying asset's price.	
Objective	To profit from a significant downward movement in the underlying asset's price.
Direction	Bearish
Volatility	High
Risk	Limited to the premium paid for the put option
Components	Buy 1 Put Option (at-the-money or out-of-the-money strike price)
Maximum Profit	Significant profit potential if the asset price drops to zero, minus the premium paid.
Maximum Loss	Limited to the premium paid for the put option
Market Conditions	Ideal in bearish market conditions where the trader expects the underlying asset's price to decline significantly.
Advantages	• High profit potential in a declining market. • Limited and predefined risk. • Cost-effective compared to short selling the underlying asset.
Disadvantages	• Time decay can erode the option's value if the price doesn't move as expected. • Requires a significant price drop to cover the premium cost. • Loss of entire premium if the option expires out-of-the-money.

Underlying Price (Futures)	78000
Strike Price (Long Put)	78000
Put Premium	-655

Table: 3.12 ***Pay-off Table- Long Put***

Expected Prices	Gain / Loss (Put)	Total Premium	Net Gain / Loss
74,000	4000	-655.00	**3,345.00**
75,000	3000	-655.00	**2,345.00**
76,000	2000	-655.00	**1,345.00**
77,000	1000	-655.00	**345.00**
78,000	0	-655.00	**-655.00**
79,000	0	-655.00	**-655.00**
80,000	0	-655.00	**-655.00**
81,000	0	-655.00	**-655.00**
82,000	0	-655.00	**-655.00**

Fig-3.10 Pay-off Diagram Long Put

Bear Call Spread

Bear Call Spread - A bearish options strategy that involves selling an in-the-money (ITM) call and buying an out-of-the-money (OTM) call at a higher strike price to hedge risk.	
Objective	To profit from a moderate decrease or stagnation in the underlying asset's price.
Direction	Fall
Volatility	Neutral
Risk	Low
Components	1. Sell 1 ITM Call Option (Lower Strike Price) 2. Buy 1 OTM Call Option (Higher Strike Price)
Maximum Profit	Limited to the net premium received.
Maximum Loss	The difference between the strike prices minus the net premium received.
Market Conditions	Ideal when expecting a slight decline or sideways movement in the asset price.
Advantages	• Generates income from the premium received • Limited risk due to the hedge with a higher strike call
Disadvantages	• Limited profit potential • Requires the underlying price to stay below the short call strike price for profitability

EXAMPLE

Underlying Price (Futures)Spot)	78000
Strike Price (Long Call)	79000
Call Premium	-1020
Strike Price (Short Call)	77000
Call Premium	1815

Table: 3.13 ***Pay-off Table- Bear Call Spread***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Total Premium	Net Gain / Loss
74,000	0	0	795.00	**795.00**
75,000	0	0	795.00	**795.00**
76,000	0	0	795.00	**795.00**
77,000	0	0	795.00	**795.00**
78,000	-1000	0	795.00	**-205.00**
79,000	-2000	0	795.00	**-1,205.00**
80,000	-3000	1000	795.00	**-1,205.00**
81,000	-4000	2000	795.00	**-1,205.00**
82,000	-5000	3000	795.00	**-1,205.00**

Fig-3.11 Pay-off Diagram Bear Call Spread

E. Bear Put Spread

Bear Put Spread - A bearish options strategy that involves buying an in-the-money (ITM) put and selling an out-of-the-money (OTM) put at a lower strike price to reduce costs.	
Objective	To profit from a moderate decline in the underlying asset's price.

Direction	Fall
Volatility	Neutral
Risk	Low
Components	1. Buy 1 ITM Put Option (Higher Strike Price) 2. Sell 1 OTM Put Option (Lower Strike Price)
Maximum Profit	The difference between the strike prices minus the net premium paid.
Maximum Loss	Limited to the net premium paid.
Market Conditions	Ideal when expecting a slight decline in the asset price
Advantages	• Lower cost than buying a put outright • Limited risk with defined profit potential
Disadvantages	• Limited profit potential • Requires the underlying price to fall for profitability

Underlying Price (Futures)Spot)	78000
Strike Price (Long Put)	79000
Put Premium	-925
Strike Price (Short Put)	77000
Put Premium	430

Table: 3.14 ***Pay-off Table- Bear Put Spread***

Expected Prices	Gain / Loss (Long Put)	Gain / Loss (Short Put)	Total Premium	Net Gain / Loss
74,000	5000	-3000	-495.00	**1,505.00**
75,000	4000	-2000	-495.00	**1,505.00**
76,000	3000	-1000	-495.00	**1,505.00**
77,000	2000	0	-495.00	**1,505.00**
78,000	1000	0	-495.00	**505.00**
79,000	0	0	-495.00	**-495.00**
80,000	0	0	-495.00	**-495.00**
81,000	0	0	-495.00	**-495.00**
82,000	0	0	-495.00	**-495.00**

Fig-3.12 Pay-off Diagram Bear Put Spread

F. Long Straddle

Long Straddle: - A neutral options strategy that involves buying both a call option and a put option with the same strike price and expiration date. This strategy profits from significant movement in the underlying asset, regardless of direction.	
Objective	To profit from significant movement in the underlying asset, either upward or downward.
Direction	Neutral (expects high volatility).
Volatility	High
Risk	Limited to the total premium paid.
Components	1. Buy a Call Option 2. Buy a Put Option (Same Strike Price)
Maximum Profit	Unlimited in case of a strong upward move; substantial in case of a strong downward move.
Maximum Loss	Limited to the total premium paid for both options.

Market Conditions	Ideal in high-volatility environments where the trader expects a significant price movement in either direction.
Advantages	• Unlimited profit potential if the price moves significantly. • Simple to execute, requiring only two option contracts. • No need to predict the direction of the movement, just the magnitude.
Disadvantages	• High cost due to purchasing two ATM options. • Loss occurs if the price remains stagnant near the strike price. • Requires significant movement to offset the premium paid.

Underlying Price (Futures)Spot)	78000
Strike Price (Long Call)	78000
Put Premium	-1590
Strike Price (Long Put)	78000
Put Premium	-655

Table: 3.15 ***Pay-off Table- Long Straddle***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Net Gain / Loss
74,000	0	4000	**1,755.00**
75,000	0	3000	**755.00**
76,000	0	2000	**-245.00**
77,000	0	1000	**-1,245.00**
78,000	0	0	**-2,245.00**
79,000	1000	0	**-1,245.00**
80,000	2000	0	**-245.00**
81,000	3000	0	**755.00**
82,000	4000	0	**1,755.00**

Fig-3.12 Pay-off Diagram Long Straddle

G. Long Strangle

Long Strangle: - A neutral options strategy that involves buying an out-of-the-money (OTM) call and an out-of-the-money (OTM) put with the same expiration date but different strike prices. This strategy profits from significant price movements in either direction.	
Objective	To profit from significant movement in the underlying asset's price, either upward or downward.
Direction	Neutral (expects high volatility)
Volatility	High
Risk	Limited to the net premium paid
Components	1. Buy 1 OTM Call Option (Higher Strike Price) 2. Buy 1 OTM Put Option (Lower Strike Price)
Maximum Profit	Unlimited on the upside (for the call) and significant on the downside (for the put), minus the net premium paid.
Maximum Loss	Limited to the net premium paid
Market Conditions	Ideal in high-volatility environments where the trader expects a large price movement in either direction.

Advantages	• Potential for unlimited profit if the asset moves significantly in either direction. • Simple to construct and manage. • Lower cost compared to long straddles.
Disadvantages	• Requires substantial price movement to be profitable. • Limited loss potential, but both options can expire worthless. • Higher break-even points compared to some other strategies.

EXAMPLE

Underlying Price (Futures)Spot)	78000
Strike Price (Long Call)	78000
Put Premium	-1590
Strike Price (Long Put)	78000
Put Premium	-655

Table: 3.16 ***Pay-off Table- Long Strangle***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Total Premium	Net Gain / Loss
74,000	0	3000	-1,450.00	**1,550.00**
75,000	0	2000	-1,450.00	**550.00**
76,000	0	1000	-1,450.00	**-450.00**
77,000	0	0	-1,450.00	**-1,450.00**
78,000	0	0	-1,450.00	**-1,450.00**
79,000	0	0	-1,450.00	**-1,450.00**
80,000	1000	0	-1,450.00	**-450.00**
81,000	2000	0	-1,450.00	**550.00**
82,000	3000	0	-1,450.00	**1,550.00**

Fig-3.14 Pay-off Diagram Long Strangle

H. Long Strip

Long Strip: - A options strategy that involves buying one at-the-money (ATM) call option and two at-the-money (ATM) put options with the same strike price and expiration date. This strategy profits when the underlying asset experiences significant movement, with a higher potential profit if the price declines.	
Objective	To profit from a significant movement in the underlying asset, with a stronger bias toward a downward move.
Direction	Fall
Volatility	High
Risk	Limited (only the net premium paid).
Components	1. Buy 1 Call Option 2. Buy 2 Put Options (Same Strike Price)
Maximum Profit	Unlimited if the price moves significantly (larger profit on the downside due to extra put option).
Maximum Loss	Limited to the net premium paid.
Market Conditions	Ideal in high-volatility environments where the trader expects a strong move, preferably downward.
Advantages	• Limited risk with a defined maximum loss. • Profits from significant price movements in either direction. • Greater profit potential if the price drops (due to two long puts).
Disadvantages	• Requires strong market movement predictions. • Higher upfront cost due to buying multiple options. • If the price remains stable, the entire premium may be lost.

Underlying Price (Futures)Spot)	78000
Strike Price (Long Put)	1
Put Premium	-655
Number of Lots (Put)	2
Strike Price (Long Call)	78000
Call Premium	-1590

Number of Lots	1

EXAMPLE

Table: 3.15 ***Pay-off Table- Long Strip***

Expected Prices	Gain / Loss (Put)	Gain / Loss (Call)	Total Premium	Net Gain / Loss
74,000	8000	0	-2,900.00	**5,100.00**
75,000	6000	0	-2,900.00	**3,100.00**
76,000	4000	0	-2,900.00	**1,100.00**
77,000	2000	0	-2,900.00	**-900.00**
78,000	0	0	-2,900.00	**-2,900.00**
79,000	0	1000	-2,900.00	**-1,900.00**
80,000	0	2000	-2,900.00	**-900.00**
81,000	0	3000	-2,900.00	**100.00**
82,000	0	4000	-2,900.00	**1,100.00**

Fig-3.15 Pay-off Diagram Long Strip

I. Long Strap

Long Strap: - A bullish-biased neutral options strategy that involves buying two at-the-money (ATM) call options and one at-the-money (ATM) put option with the same strike price and expiration date. This strategy profits from significant movement in the underlying asset, with a higher potential profit if the price rises.	
Objective	To profit from significant movement in the underlying asset, with a stronger bias toward an upward move.
Direction	Rise
Volatility	High
Risk	Limited (only the net premium paid).
Components	1. Buy 2 Call Options (Strike Price = Current Market Price) 2. Buy 1 Put Option (Same Strike Price)
Maximum Profit	Unlimited if the price moves significantly upward (larger profit on the upside due to extra call option).
Maximum Loss	Limited to the net premium paid.
Market Conditions	Ideal in high-volatility environments where the trader expects a strong move, preferably upward.
Advantages	• Limited risk with a defined maximum loss. • Profits from significant price movements in either direction. • Greater profit potential if the price rises (due to two long calls).
Disadvantages	• Requires strong market movement predictions. • Higher upfront cost due to buying multiple options. • If the price remains stable, the entire premium may be lost.

Underlying Price (Futures)Spot)	78000
Strike Price (Long Call)	78000
Call Premium	-1590
Number of Lots (Call)	2
Strike Price (Long Put)	78000
Put Premium	-655
Number of Lots (Put)	1

Table: 3.18 ***Pay-off Table- Long Strap***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Total Premium	Net Gain / Loss
74,000	0	4000	-3,835.00	**165.00**
75,000	0	3000	-3,835.00	**-835.00**
76,000	0	2000	-3,835.00	**-1,835.00**
77,000	0	1000	-3,835.00	**-2,835.00**
78,000	0	0	-3,835.00	**-3,835.00**
79,000	2000	0	-3,835.00	**-1,835.00**
80,000	4000	0	-3,835.00	**165.00**
81,000	6000	0	-3,835.00	**2,165.00**
82,000	8000	0	-3,835.00	**4,165.00**

Fig-3.16 Pay-off Diagram Long Strap

J. Long Butterfly Spread

Long Butterfly Spread - A neutral options strategy that involves using three strike prices by buying one call, selling two calls, and buying (for a call butterfly). Please note that all strikes should be equidistant. It can also be constructed with puts.	
Objective	To profit from minimal movement in the underlying asset, expecting it to close at the middle strike price at expiration.
Direction	Neutral
Volatility	Low
Risk	Low
Components	1. Buy 1 Call Option (Lower Strike Price) 2. Sell 2 Call Options (Middle Strike Price) 3. Buy 1 Call Option (Higher Strike Price), **All Strikes should be equidistant**

EXAMPLE

Maximum Profit	Limited to the difference between the lower and middle strike prices minus the net premium paid.
Maximum Loss	Limited to the net premium paid.
Market Conditions	Ideal in low-volatility environments when the trader expects the underlying asset to stay near the middle strike price.
Advantages	• Limited risk with a defined maximum loss. • Low-cost strategy compared to other spread strategies. • Higher potential return when correctly executed in low-volatility conditions.
Disadvantages	• Limited profit potential. • Requires precise market movement predictions. • Higher transaction costs due to four options contracts.

Underlying Price (Futures)Spot)	78000
Strike Price (Long Call-1)	77000
Call Premium	-2010
Number of Lots (Call)	1
Strike Price (Short Call)	78000
Call Premium	1590
Number of Lots (Call)	2
Strike Price (Long Call-2)	79000
Call Premium	-1200

Table: 3.19 ***Pay-off Table- Long Butterfly***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Gain / Loss (Call)	Total Premium	Net Gain / Loss
74,000	0	0	0	-30.00	**-30.00**
75,000	0	0	0	-30.00	**-30.00**
76,000	0	0	0	-30.00	**-30.00**
77,000	0	0	0	-30.00	**-30.00**
78,000	1000	0	0	-30.00	**970.00**
79,000	2000	-2000	0	-30.00	**-30.00**
80,000	3000	-4000	1000	-30.00	**-30.00**
81,000	4000	-6000	2000	-30.00	**-30.00**
82,000	5000	-8000	3000	-30.00	**-30.00**

Fig-3.17 Pay-off Diagram Long Butterfly

K. Long Condor Spread

Long Condor Spread - A four-leg options strategy where an investor buys an ITM option, sells one at a lower middle strike, sells another at a higher middle strike, and buys another option. It profits when the underlying asset remains within a specific range but allows for some movement.	
Objective	To profit from low volatility, expecting the asset to stay within a certain range.
Direction	Neutral
Volatility	Low
Risk	Low
Components	1. Buy 1 Option (Lowest Strike) 2. Sell 1 Lower Middle Option 3. Sell 1 Upper Middle Option 4. Buy 1 Option (Highest Strike), **All Strikes should be equidistant**
Maximum Profit	The difference between the middle strike prices minus the net premium paid.
Maximum Loss	Limited to the net premium paid for the condor setup.
Market Conditions	Ideal for markets with low volatility, where price is expected to remain within a range but with some flexibility.
Advantages	• Wider profit range than a Butterfly Spread • Lower risk compared to other strategies
Disadvantages	• Lower profit potential than a Butterfly Spread • Requires proper selection of strike prices

EXAMPLE

Underlying Price (Futures))	78000
Strike Price (Long Call-1)	77000
Call Premium	-2010
Number of Lots (Call)	1
Strike Price (Short Call)	78000
Call Premium	1590
Number of Lots (Call)	1
Strike Price (Short Call-2)	79000
Call Premium	1200
Strike Price (Long Call-2)	80000
Call Premium	-845

Table: 3.20 ***Pay-off Table- Long Condor***

Expected Prices	Gain / Loss (Call)	Gain / Loss (Put)	Gain / Loss (Call)		Total Premium	Net Gain / Loss
74,000	0	0	0	0	-65.00	**-65.00**
75,000	0	0	0	0	-65.00	**-65.00**
76,000	0	0	0	0	-65.00	**-65.00**
77,000	0	0	0	0	-65.00	**-65.00**
78,000	1000	0	0	0	-65.00	**935.00**
79,000	2000	-1000	0	0	-65.00	**935.00**
80,000	3000	-2000	-1000	0	-65.00	**-65.00**
81,000	4000	-3000	-2000	1000	-65.00	**-65.00**
82,000	5000	-4000	-3000	2000	-65.00	**-65.00**

Fig-3.18 Pay-off Diagram Long Condor

IV. ARBITRAGE

Arbitrage is a trading strategy in which an investor longs and shorts a security or asset in different markets at the same time to make a profit from price gaps. It means exploiting pricing inconsistencies, thereby making sure that markets remain fairly valued. The arbitrage is risk-free in its purest form, since the immediate transactions fix profits regardless of the market's movement. In the commodity derivatives market, arbitrage typically involves profiting from the gap between the spot market (where products are traded instantly) and the derivatives market (where contracts for future delivery are traded).

To trade in commodity markets through derivatives is to seek the arbitrage form of this situation, which is accomplished by the fact that the current prices are different from the prices that the futures markets or options markets had set. The methods used to realize the approaches include: the cash-and-carry arbitrage, by which the investor(s) will buy the spot asset and sell the future(s); the exact opposite is the reverse cash-and-carry, where they sell spot and buy futures; conversion and reversal in terms of exploiting price mismatches; box spread, a risk-neutral strategy, uses the difference between option prices and receives an arbitrage. Through application of these approaches, the dealers will increase their returns at the time of least risk exposure.

Cash and Carry Arbitrage	• Profit from futures prices exceeding the spot price + carrying costs. • Long - Commodity in spot market (hold it) and simultaneously Short futures contract
Reverse Cash and Carry Arbitrage	• Exploit futures prices lower than the spot price - carrying costs. • Short- Commodity in spot market (invest the proceeds) and simultaneously Long futures contract
Coversion Arbitrage	• Exploit pricing inefficiencies between options and their underlying futures price • Combine long positions in the futures and put options with a short call option
Reversal Arbitrage	• Exploit pricing inefficiencies between options and their underlying future price • Combine short positions in the futures and Long call options with a short put option
Box Spread Arbitrage	• Lock in a risk-free profit by exploiting pricing mismatches in options with different strike prices. • Combine a bull spread (buy low-strike call, sell high-strike call) with a bear spread (sell low-strike put, buy high-strike put) to create a fixed payout.

3.1 Cash and Carry Arbitrage

Cash and carry arbitrage involves buying a physical commodity and simultaneously selling a futures contract for that commodity. Here's how it can work for gold, copper, and crude oil on the MCX (Multi Commodity Exchange):

Futures Contract

A **futures contract** is a standardized legal agreement to buy or sell a specific asset (such as commodities, currencies, or financial instruments) at a predetermined price at a specified time in the future. These contracts are traded on exchanges and are binding agreements that obligate the buyer to purchase, and the seller to sell, the underlying asset at the agreed-upon price on the contract's expiration date. Futures contracts are a fundamental component of commodity derivatives, providing a mechanism for price discovery, risk management, and speculation. They enable participants in the commodities market to hedge against price fluctuations and manage their exposure to various risks associated with commodity trading.

 **Gold**	
Description	GOLDMMMYY
Tick Size (Minimum Price Movement)	Re. 1 per 10 grams
Quotation / Base Value	10 grams
Lot Size	1 Kg
Initial Margin	Minimum 6% or based on SPAN whichever is higher
Extreme Loss Margin	Minimum 1%
Example	
Spot Price	₹ 76,044.00 per 10 grams as on December 9, 2024
Futures Price	₹ 77,159.00 per 10 grams
Expiration date and Trade Date	February 5, 2025 and 20 March 2025
Risk free rate	7% assumed
Fair Price	= Se^rt = ₹ 76044*2.714^ (7%*2/12) = ₹ 76934.96
Since the futures contract is overvalued. Therefore, Arbitrage Strategy ias follows: • **Long position/Buy**: Gold at the spot price of ₹76,044.00 per 10 grams. • **Short position/Sell**: Futures contract at ₹77,159.00 per 10 grams.	

Long - Gold @ ₹76,044.00/10 grams **Short -** Futures contract @ ₹77,159.00/10 grams **Scenario** Expected Prices = ₹ 77500 (We are assuming that the price of Gold on expiry has moved from 76,044 to 77,500)	
Short Position Gold @ ₹ 77,500 Profit = ₹ 77,500-76,044 = ₹1456	**Long Position** Futures Contract @ ₹ 77,500 Loss = ₹ 77,159 - ₹ 77,500 = ₹ 341
Net Gain = ₹ 1456 – ₹ 341 = ₹ 1115 per 10 Grams **Total Net Gain = ₹ 1115 * 100 = ₹ 1,11,500 (Not considered trading cost)**	
Initial Investment	= ₹ 76044 * 100 = ₹ 76,04,400
Initial Margin	= 6% of Contract Value = 0.06 * 77,159 * 100 = ₹ 4,62,954
ELM	= 1% of Contract Value = 0.01 * 77,15,900 = ₹ 77,159
Total Investment	= ₹76,04,400 + ₹ 4,62,954 + ₹ 77,159 = ₹ 81,44,513
Annualized Return(%)	= ₹ 1,11,500 / ₹ 81,44,513*365/(15) = 33.33% p.a

Recommendations: As the annualised return is more than the opportunity cost (7%), the arbitrage is fruitful.

Use Case

 **Copper**	
Description	COPPERMMMYY
Tick Size (Minimum Price Movement)	5 Paisa per kg
Quotation / Base Value	1 kg
Lot Size	2.5 metric tons (MT) or 2500 kilograms
Initial Margin	Minimum 8% or based on SPAN whichever is higher
Extreme Loss Margin	Minimum 1%

<table>
<tr><th colspan="2">Example</th></tr>
<tr><td>Spot Price</td><td>₹ 817 as on December 9, 2024</td></tr>
<tr><td>Futures Price</td><td>₹ 830.75</td></tr>
<tr><td>Expiration date and trade date</td><td>December 31, 2024 and 15 Nov, 2024</td></tr>
<tr><td>Risk free rate</td><td>7% assumed</td></tr>
<tr><td>Fair Price</td><td>= Se^rt
= ₹817 * 2.714 ^ (7%*22/365)
= ₹ 820.449</td></tr>
<tr><td colspan="2">Since futures contract is overvalued. Therefore, Arbitrage Strategy:
• Long Position/Buy in Spot Market: Buy copper at the spot price of ₹ 817.
• Short Position/Sell in Futures Market: Sell a futures contract at ₹ 830.75</td></tr>
<tr><td colspan="2">Long - Copper @ ₹ 817
Short - Futures contract @ ₹ 830.75
<u>Scenario</u>
Expected Spot Price = ₹835.50 (We are assuming that the price of copper has moved from 817 to 835.50 on expiry</td></tr>
<tr><td>Short Position
Copper @ ₹ 835.5
Profit = ₹ 835.5 - 817 = ₹18.5</td><td>Long Position
Futures Contract @ ₹ 835.5
Loss = ₹ 830.75 – 835.5 = ₹ 4.75</td></tr>
<tr><td colspan="2">Net Gain = ₹ 18.5 – ₹ 4.75
= ₹ 13.75
Total Net Gain = ₹ 13.75 * 2500 = ₹ 34,375 (without considering cost)</td></tr>
<tr><td>Initial Investment</td><td>= ₹ 817 * 2500
= ₹ 20,42,500</td></tr>
<tr><td>Initial Margin</td><td>= 8% of Contract Value
= 0.08 * 830.75 * 2500
= ₹ 1,66,150</td></tr>
<tr><td>ELM</td><td>= 1% of Contract Value
= 0.01 * 830.75 * 2500
= ₹ 20,768.75</td></tr>
<tr><td>Total Investment</td><td>= ₹ 20,42,500 + ₹ 1,66,150 + ₹ 20,768.75
= ₹ 22,29,418.8</td></tr>
<tr><td>Annualized Return</td><td>= ₹ 34,375 / ₹ 22,29,418*365/15
= 37.522% p.a</td></tr>
</table>

Recommendations: As the annualised return is more than the opportunity cost (7%), the arbitrage is fruitful. The return is without considering the trading and other brokerage cost.

 **Crude Oil**	
Symbol	CRUDEOIL
Description	CRUDEOILMMMYY
Tick Size (Minimum Price Movement)	Re. 1
Quotation / Base Value	₹ Per barrel
Lot Size	100 barrels
Initial Margin Extreme Loss Margin Minimum 1%	Minimum 10% or based on SPAN whichever is higher.
Extreme Loss Margin	Minimum 1 %
Example	
Spot Price	₹ 5689.00 as on December 9, 2024
Futures Price	₹ 5826.00
Expiration date and trade date	December 18, 2024 and 25 Nov,2025 (trade date)
Risk free rate	7% assumed
Fair price	=Se^rt = ₹ 5689 * 2.714 ^ (7%* 9/365) =₹ 5698.8123
Since futures contract is overvalued. Therefore, Arbitrage Strategy: • **Long Position/Buy in Spot Market**: Crude oil at the spot price of ₹5689.00. • **Short Position/Sell in Futures Market**: Futures contract at ₹5826.00	
Long – Crude Oil @ ₹ 5,689 **Short -** Futures contract @ ₹ 5,826 **Scenario** Expected Spot Price = ₹ 5,830	
Short Position Crude Oil @ ₹ 5,830 Profit = ₹ 5,830 – 5,689 = ₹141	**Long Position** Futures Contract @ ₹ 5,830 Loss = ₹ 5826 – 5,830 = ₹ 4
Net Gain = ₹ 141 – ₹ 4 = ₹ 137 **Total Net Gain = ₹ 137 * 100 = ₹ 13,700**	
Initial Investment	= ₹ 5689 * 100 = ₹ 5,68,900

Initial Margin	= 10% of Contract Value = 0.1 * 5826 * 100 = ₹ 58,260
ELM	= 1% of Contract Value = 0.01 * 582600 = ₹ 5826
Total Investment	= ₹ 5,68,900 + ₹ 58,260 + ₹ 5,826 = ₹ 6,32,986
Annualized Return (%)	= ₹ 13700 / ₹ 6,32,986*365/23 = 34.34% p.a

Recommendations: As the return is less than the opportunity cost (7%), the arbitrage is fruitful. The return is without considering the trading and other brokerage cost.

3.2 Reverse Cash and Carry Arbitrage

Reverse cash-and-carry arbitrage involves taking a short position in the commodity while simultaneously going long in the futures market. This strategy is employed when the futures price is lower than the expected future spot price, allowing traders to exploit the price discrepancy for profit.

Futures contracts are essential in reverse cash-and-carry arbitrage as they provide a mechanism for traders to hedge their positions and exploit pricing inefficiencies between the spot and futures markets.

- *The goal is to riskless profit from the difference between the spot price and the futures price. If the futures price is lower than the spot price, the trader can cover the short position with the commodity received from the futures contract at expiration.*
- *The profit is realized when the proceeds from the short sale exceed the total costs incurred, including the futures price and any carrying costs.*
- *The strategy is only effective when the futures price is lower than the spot price, indicating a market condition known as* ***backwardation.***
- *In this strategy, the trader must hold the commodity.*

 **Gold**	
Description	GOLDMMMYY
Tick Size (Minimum Price Movement)	Re. 1 per 10 grams
Quotation / Base Value	10 grams

Lot Size	1000 grams (1 Kg)
Initial Margin Extreme Loss Margin Minimum 1%	Minimum 6% or based on SPAN whichever is higher
Extreme Loss Margin	Minimum 1%
Example	
Spot Price	₹ 76,044.00 per 10 grams as on December 9, 2024
Futures Price	₹ 77,159.00 per 10 grams
Expiration date	February 5, 2025
Risk free rate	7% assumed
Fair Price	= Se^rt = ₹ 76044*2.714^ (7%*2/12) = ₹ 76934.96
Since futures contract is overvalued. Therefore, in this scenario, the reverse cash-and-carry arbitrage would not be profitable as the total costs exceed the proceeds from the short sale.	

 **Copper**	
Description	COPPERMMMYY
Tick Size (Minimum Price Movement)	5 Paisa per kg
Quotation / Base Value	1 kg
Lot Size	2.5 metric tons (MT) or 2500 kilograms
Initial Margin	Minimum 8% or based on SPAN whichever is higher
Extreme Loss Margin	Minimum 1%
Example	
Spot Price	₹ 817 as on December 9, 2024
Futures Price	₹ 830.75
Expiration date	December 31, 2024
Risk free rate	7% assumed
Fair Price	= Se^rt = ₹ 817 * 2.714 ^ (7%*22/365) = ₹ 820.449
Since futures contract is overvalued. Therefore, in this scenario, the reverse cash-and-carry arbitrage would not be profitable as the total costs exceed the proceeds from the short sale.	

 **Crude Oil**	
Symbol	CRUDEOIL
Description	CRUDEOILMMMYY
Tick Size (Minimum Price Movement)	Re. 1
Quotation / Base Value	₹ Per barrel
Lot Size	100 barrels
Initial Margin Extreme Loss Margin Minimum 1%	Minimum 10% or based on SPAN whichever is higher.
Extreme Loss Margin	Minimum 1 %
Example	
Spot Price	₹ 5689.00 as on December 9, 2024
Futures Price	₹ 5826.00
Expiration date	December 18, 2024
Risk free rate	7% assumed
Fair price	= Se^rt = ₹ 5689 * 2.714 ^ (7%* 9/365) =₹ 5698.81
Since futures contract is overvalued. Therefore, in this scenario, the reverse cash-and-carry arbitrage would not be profitable as the total costs exceed the proceeds from the short sale.	

3.3 Conversion Arbitrage

Conversion arbitrage is a trading strategy that exploits price discrepancies between different forms of a commodity or between a commodity and its derivatives.

 **Gold**	
Description	Option on Gold Futures
Underlying	Underlying shall be Gold Futures contract traded on MCX
Option type	European Call & Put Options
Tick Size (Minimum Price Movement)	Re. 0.5 per 10 grams
Quotation / Base Value	10 grams

Maximum order size	100 kg
Trading Unit	One MCX Gold futures contract
Strikes	50 In-the-money, 50 Out-of-the-money and 1 Near-the-money. (101 CE and 101 PE). The Exchange, at its discretion, may introduce additional strikes, if required
Strike Price Intervals	₹ 100
Example	
Future Price, Expiry 4 April,25	₹85000 per 10 grams as on 26 March 25
Instrument: OPTFUT	
CE X = ₹ 85000 Lots = 1 Premium = ₹ 500	PE X = ₹ 85000 Lots = 1 Premium = ₹ 1100
Expiration date -4th April, 25	

Steps for Conversion Arbitrage:

1. **Long Position in Futures**
   - Long Futures
2. **Long Position in Put Options (PE)**:
   - Buy put options to hedge against a drop in the underlying asset's price.
3. **Short Position in Call Options (CE)**:
   - Sell call options to generate premium income.

Gain /Loss per 10 gm	(85000-84000)-(-500+1100)=400
Cost per 10 gm	255
Net Gain / Loss =14,496	
Investment: 22,83,000	
Annualised Return: 25.75%	
If the Annualised return (%) is higher than opportunity cost (7% p.a), then strike the deal and carry up to expiration otherwise check in Reversal	

3.4 Reversal Strategy

Reversal arbitrage (also called reverse conversion) is a risk-neutral strategy that exploits pricing inefficiencies between futures, calls, and puts. It is the mirror opposite of conversion arbitrage and involves:

- ✓ Short futures,
- ✓ Buying call options (CE), and
- ✓ Selling put options (PE) of same strike

This strategy locks in a risk-free profit when the synthetic futures position (created using options) is mispriced relative to the actual futures contract

4.5 Box Spread Arbitrage

A box spread is an options trading strategy that involves creating a synthetic long and synthetic short position using options with the same expiration date but different strike prices. This strategy is primarily used to exploit pricing inefficiencies in the options market, and it can also be applied in the context of commodity derivatives.

A box spread typically consists of four options:

1. **Buy a Call Option** at a lower strike price (K1). (Long Strike Price is 81,000)
2. **Sell a Call Option** at a higher strike price (K2).(Short Call Strike Price is 83,000)
3. **Buy a Put Option** at the higher strike price (K2).(Long Put Strike Price is 81,000)
4. **Sell a Put Option** at the lower strike price (K1). Short Put Strike Price is 83,000)

Contract 1	
Long Call Strike 1*	81,000
Long Call Premium*	1,500
Moneyness	In the Money
Number of Lot(s)	1
Margin (Long Call)	Actual Premium

Contract 2	
Short Call Strike 2*	83,000
Short Call Premium*	760
Moneyness	Out of the Money
Number of Lot(s)*	1
Margin (Short Call)	6.00%

Contract 3	
Long Put Strike-3*	83,000
Long Put Premium*	1,500
Moneyness	In the Money
Number of Lot(s)*	1
Margin (Long Put)	Actual Premium

Contract 4	
Short Put Strike-4	81,000
Short Put Premium	760
Moneyness	Out of the Money
Number of Lot(s)	1
Margin (Short Put)	6.00%

The box spread is a market-neutral strategy, meaning it is not dependent on the direction of the underlying commodity's price movement.

Pay-off Table and Diagram

Fig:3.18

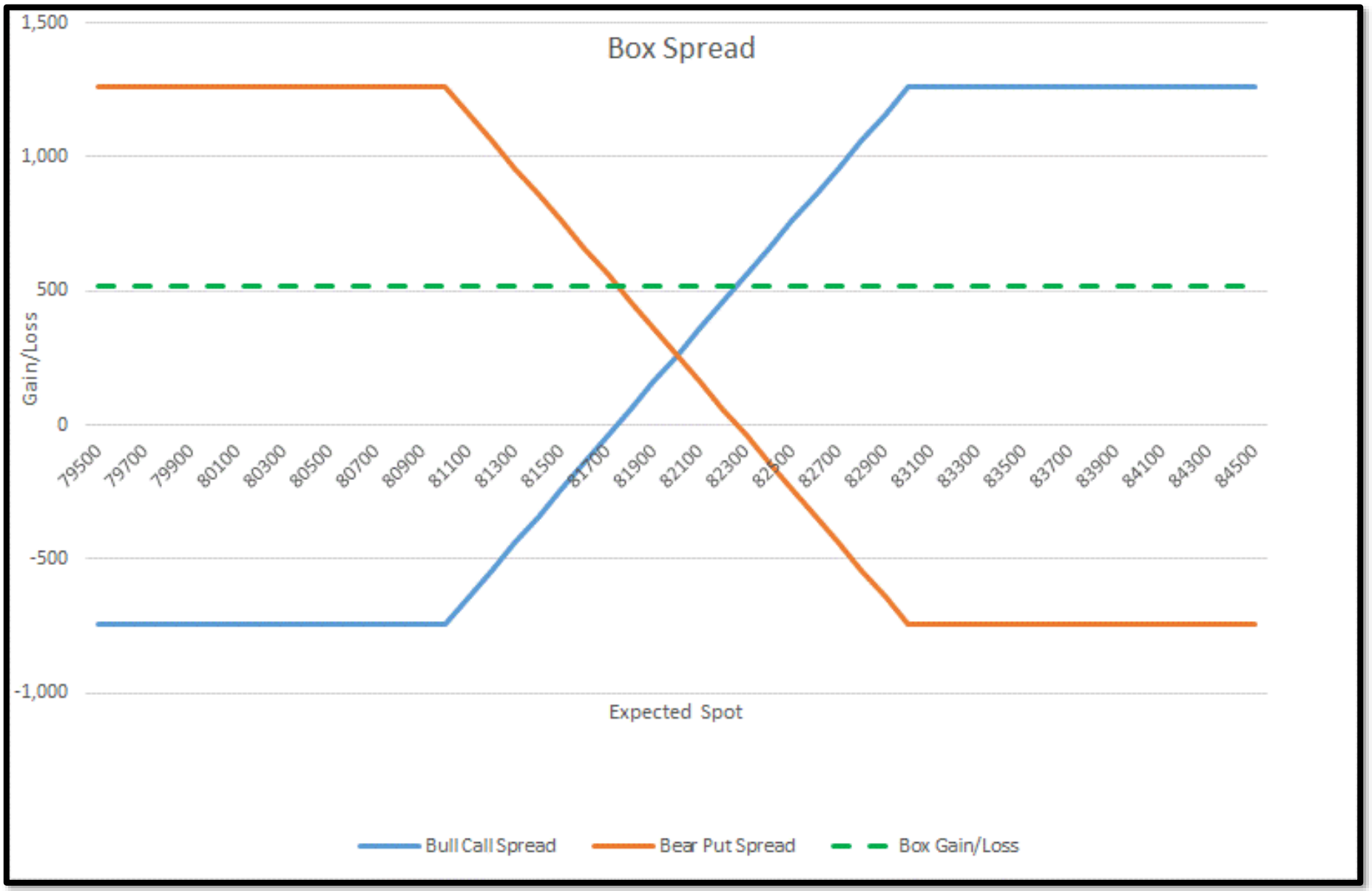

Table: 3.21

Pay-off Table														
Expected Prices	Long Call X - 81000	Short Call X - 83000	Bull Call Spread (Long Call + Short Call) excluding premium	Bull Call Spread	Long Put X - 83000	Short Put X - 81000	Bear Put Spread (Long Put + Short Put) excluding premium	Bear Put Spread	Total Premium Cost	Box Gain/Loss	Total Gain / Loss	Trading Cost	Net Gain / Loss (After trading	Annualised Return
79500	0	0	0	-740	3500	-1500	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
79600	0	0	0	-740	3400	-1400	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
79700	0	0	0	-740	3300	-1300	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
79800	0	0	0	-740	3200	-1200	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
79900	0	0	0	-740	3100	-1100	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80000	0	0	0	-740	3000	-1000	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80100	0	0	0	-740	2900	-900	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80200	0	0	0	-740	2800	-800	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80300	0	0	0	-740	2700	-700	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80400	0	0	0	-740	2600	-600	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80500	0	0	0	-740	2500	-500	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80600	0	0	0	-740	2400	-400	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80700	0	0	0	-740	2300	-300	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80800	0	0	0	-740	2200	-200	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
80900	0	0	0	-740	2100	-100	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%
81000	0	0	0	-740	2000	0	2000	1,260	-1480	520	5200	-163.15	5036.847	130.16%

Output			
Margin (Long Call)	15,000.00	Cost	163.15
Margin (Short Call)	49,800.00	Gain	5,036.85
Margin (Long Put)	15,000.00	Loss	
Margin (Short Put)	48,600.00	Gain (%)	130.16%
Total Margin / Investment	1,28,400.00	Loss (%)	
Opportunity Cost	6.00%		
Recommendation	Compare the Gains with Opportunity Cost		
Final Recommendation	PROCEED		

V. SUMMARY

This study, "Commodity Options Strategies for Easing Participation of Hedgers and Small Stakeholders," provides a comprehensive guide to navigating India's commodity derivatives market, focusing on risk management and profit optimization. It traces the market's evolution from its 1875 origins to its modern structure under SEBI, highlighting the role of futures and options in price discovery and hedging. The research develops practical Excel-based models for strategies like the Black-76 pricing model, catering to traders (high-risk: short straddles, strips; low-risk: bull spreads, condors, and butterflies), arbitrageurs (cash-and-carry, box spreads), and hedgers (long calls for buyers, long puts for sellers). Case studies on gold, copper, and crude oil demonstrate real-world applications, emphasizing margin analysis and scenario analysis. By integrating theory with actionable tools, the study empowers market participants to mitigate volatility risks and exploit inefficiencies. The annexures include interactive Excel models, enhancing usability for stakeholders. Ultimately, the research underscores the importance of structured derivatives strategies in fostering market stability and profitability, recommending their adoption by both small and institutional players to navigate commodity price fluctuations effectively

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