Module on

DERIVATIVE SEGMENT

LEARNING OBJECTIVES

- Understand the basics of financial markets and the role of derivatives as financial instruments.
- Explain the different types of derivatives, including forwards, futures, options, and swaps.
- Analyze the purpose and importance of derivatives for hedging, speculation, and arbitrage.
- Gain insights into the concept, structure, and applications of financial indices.
- Differentiate between forward and futures contracts and comprehend their pricing models and market mechanisms.
- Understand the fundamentals of options, their pricing, and key strategies like spreads, straddles, and protective puts.
- Learn the practical aspects of trading derivatives, including account setup, trading systems, and risk management.
- Familiarize themselves with the clearing and settlement process, including margining and risk management systems.
- Recognize the regulatory framework governing the derivatives market, including compliance and investor grievance mechanisms.
- Identify the dos and don’ts of trading derivatives and align trading practices with their risk profiles.

Module 01

INTRODUCTION TO DERIVATIVES

WHAT ARE FINANCIAL MARKETS?

- Platforms for buying and selling financial instruments.
- Categories :-
  - Equity: Ownership in companies.
  - Bonds: Fixed income securities.
  - Derivatives: Contracts deriving value from an underlying asset etc.
- Importance: Capital allocation, price discovery, liquidity, risk management.

TYPES OF FINANCIAL MARKETS?

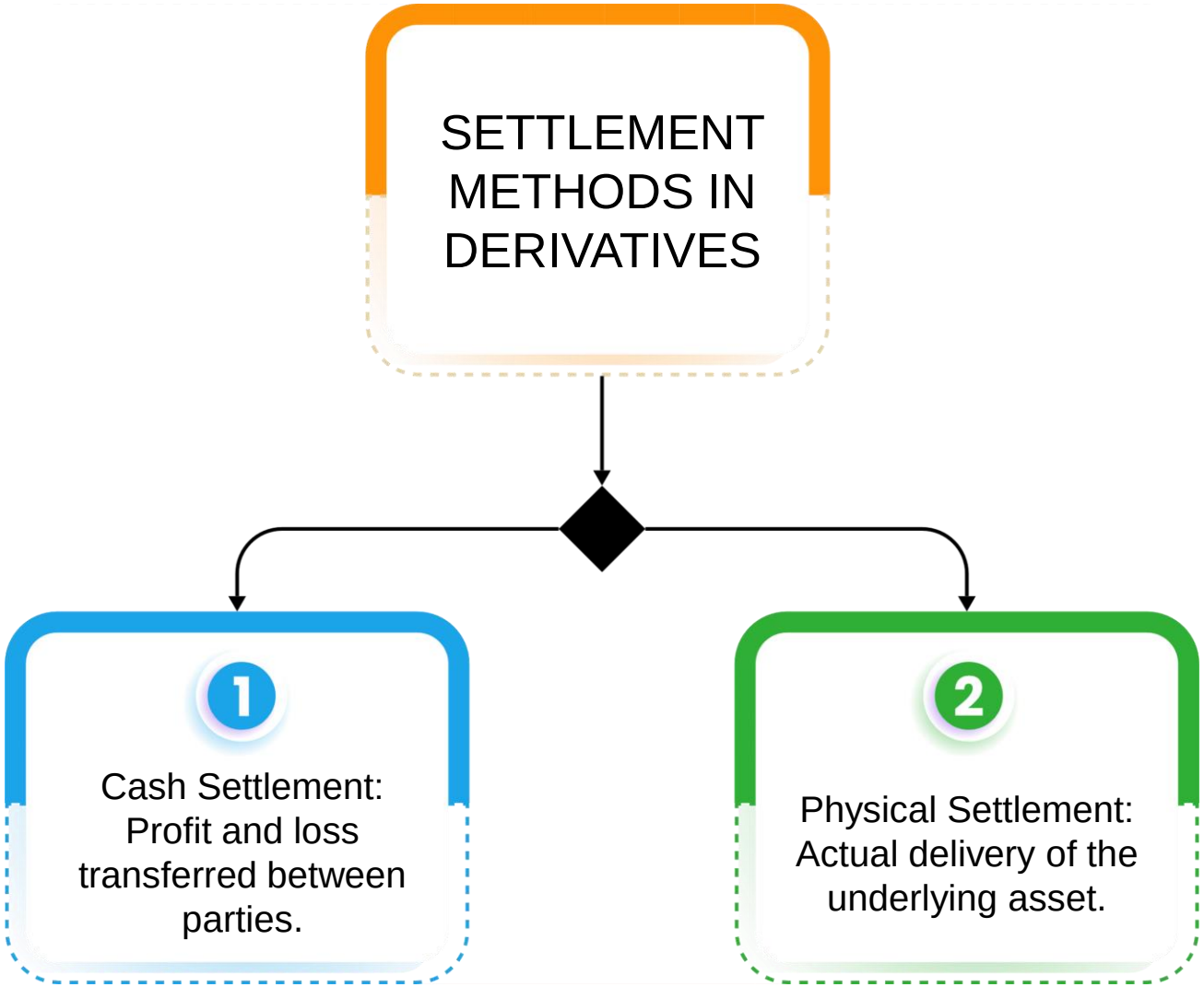
- Short-term instruments (≤ 1 year).
- Participants: Banks, RBI, LIC.
- Instruments: Treasury Bills, Certificates of Deposit.
- Regulated by RBI.

- Long-term instruments (> 1 year).
- Participants: Stockbrokers, mutual funds.
- Instruments: Stocks, government securities.
- Regulated by SEBI.

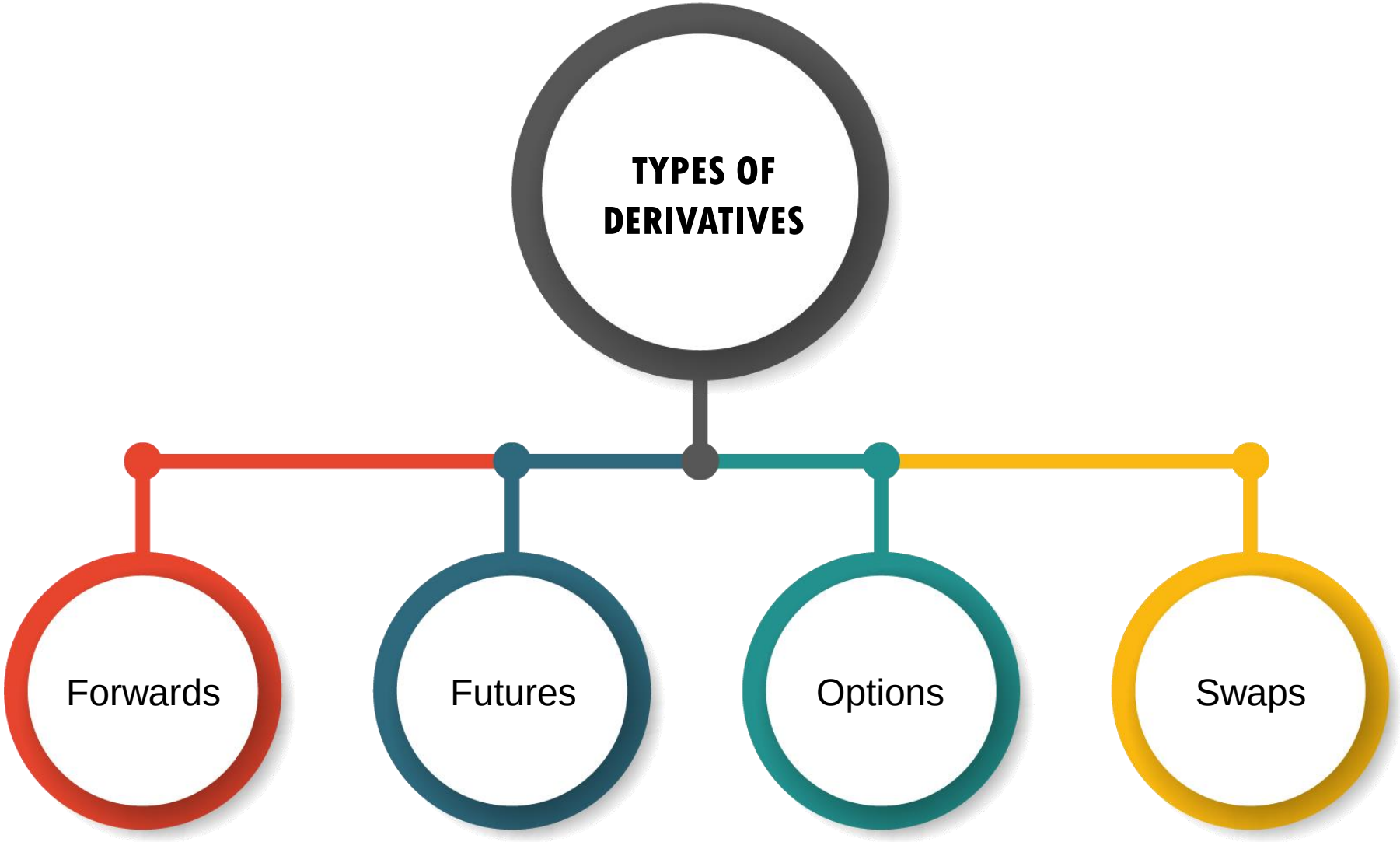
INTRODUCTION TO DERIVATIVES

- Financial contracts deriving their value from an underlying asset (equity, bonds, commodities).
- Bread as a derivative product, with the price depending on the underlying wheat.
- Types of Underlying Assets in Derivatives
    - Metals: Iron, Copper, Gold, Silver, etc.
    - Energy: Crude Oil, Natural Gas, Electricity.
    - Agri Commodities: Wheat, Sugar, Pulses, etc.
    - Financial Assets: Shares, Bonds, Currency, etc.

SETTLEMENT METHODS IN DERIVATIVES



TYPES OF DERIVATIVES



1. FORWARDS CONTRACTS

- Customized contracts between two parties to buy or sell an asset at a specified price on a future date.
- Over-the-counter (OTC) markets for customized contracts.

EXAMPLE

Bread Ltd. entering a forward contract to buy wheat from a farmer at Rs 30/kg in 3 months, protecting against price volatility.

Price Scenarios

Scenario 1 Wheat price rises to Rs 35/kg – Bread Ltd. profits.

Scenario 2 Wheat price falls to Rs 25/kg – Farmer profits.

Scenario 3 Wheat price stays the same – No profit/loss.

2. FUTURES CONTRACTS

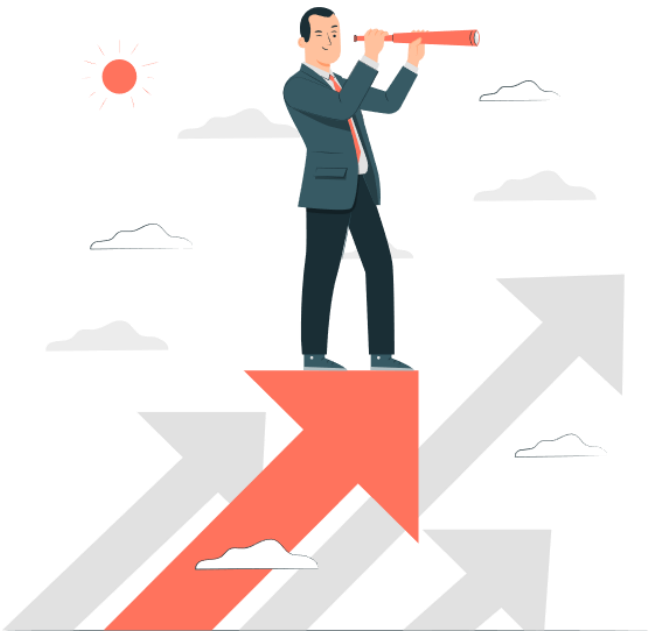
Standardized contracts traded on exchanges like NSE or BSE.

Features:

- Centralized trading on exchanges.
- Overcomes counterparty risk with margin requirements.
- Standardized quality, quantity, and settlement terms.

FUTURES TERMINOLOGY

- Contract Size: Pre-determined quantity of the underlying asset.
- Contract Cycle: Three-month contract cycles (January, February, March).
- Expiration Day: The last day of the contract.
- Tick Size: Minimum price movement.
- MTM (Mark to Market): Daily settlement of profits and losses



EXAMPLE

Imagine an investor, Ravi, expects that the stock price of Reliance Industries (currently trading at ₹1,250) will rise in the next month. Instead of buying the stock directly, he enters a futures contract to buy 500 shares (1 lot) of Reliance at ₹1,250 per share, with a contract expiry in one month.

Scenario 1: Stock Price Rises

After one month, if **Reliance's stock price increases to ₹1,500**, Ravi makes a profit:

- He still buys at **₹1,250** (as per the futures contract) but can sell at **₹1,500**.
- **Profit per share = ₹250**, so **total profit = ₹250 × 500 = ₹1,25,000**.

Scenario 2: Stock Price Falls

If **Reliance's stock price drops to ₹1,100**, Ravi incurs a loss:

- He still has to buy at **₹1,250** but can only sell at **₹1,100**.
- **Loss per share = ₹150**, so **total loss = ₹150 × 500 = ₹75,000**.

Key Takeaways

✅ If Ravi had **bought the stock directly**, he would have needed to invest the full amount of **₹6,25,000 (₹1,250 × 500 shares)**.
✅ By trading **futures**, he only had to pay the **margin requirement**, which in this case is approximately **₹1,15,000**.
✅ **Futures allow investors to take positions** on stocks without owning them outright.
✅ They can be used for **speculation** (betting on price movements) or **hedging** (protecting against price fluctuations).
✅ Unlike stocks, **futures contracts have an expiry date**, requiring traders to settle their positions before expiry.

3. OPTIONS CONTRACTS

- A contract that gives the holder the right, but not the obligation, to buy or sell an asset at a predetermined price.

- Types:
  - Call Option: Right to buy an asset.
  - Put Option: Right to sell an asset.

TYPES OF OPTIONS

TYPES OF OPTIONS

TYPE 01

American Options:

Can be exercised before the expiration date.

TYPE 02

European Options

Can only be exercised on the expiration date (Indian markets use European options).

TYPES OF OPTIONS

MONEYNESS OF OPTIONS

TYPE 01

In-the Money (ITM):

Option generates a positive cash flow if exercised immediately

TYPE 02

Out-of-the-Money (OTM):

Option generates a negative cash flow if exercised.

TYPE 03

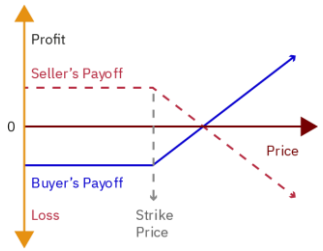
At-the-Money (ATM):

No profit or loss if exercised.

OPTIONS PAYOFF

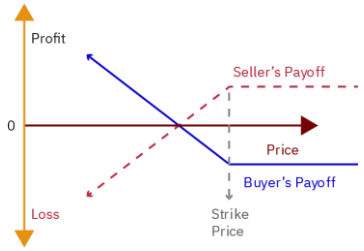
Call Option

Profit when the spot price is greater than the strike price.



Put Option

Profit when the spot price is lower than the strike price.



EXAMPLE – CALL OPTION

Market Situation:

Nifty 50 is trading at 22,600

You expect Nifty to **rise**, so you **BUY a Call Option**
A trader who expects Nifty to **stay below 22,800 SELLS (writes) a Call Option**

Call Option Details:

- **Strike Price:** 22,800
- **Premium:** ₹200 per lot
- **Lot Size:** 75
- **Expiration:** Monthly expiry

For Call Option Buyer (Bullish View)

✅ **If Nifty moves to 23,500**

•You can buy at **22,800** (strike price) and sell at **23,500**
•**Profit per lot = (23,500 - 22,800 - 200) × 75 = ₹37,500** (unlimited profit potential).

❌**If Nifty stays below 22,800**

•Option expires worthless, and your **loss is ₹200 × 75 = ₹ - 15,000** (maximum loss = premium paid)

For Call Option Seller (Bearish or Neutral View)

✅ **If Nifty stays below 22,800**

•The option **expires worthless**, and the seller **keeps ₹15,000 as profit**. (Premium received)

❌**If Nifty moves to 23,500**

•The seller must sell at **₹22,800** while the market is at **₹23,500**
•**Loss per lot = (22,800 - 23,500 + 200) × 75 = ₹ - 35,000** (unlimited loss potential).

EXAMPLE – PUT OPTION

Market Situation:

Bank Nifty is trading at 48,600

You expect Bank Nifty to **fall**, so you **BUY a Put Option**

A trader who expects Bank Nifty to **stay above 48,900 SELLS (writes) a Put Option**

Put Option Details:
- **Strike Price:** 48,900
- **Premium:** ₹730 per lot
- **Lot Size:** 30
- **Expiration:** Monthly expiry

For Put Option Buyer (Bearish View)

✅ **If Bank Nifty falls to 48,000**

- You can sell at **48,900** while the market is at **48,000**
- **Profit per lot = (48,900 - 48,000 - 730) × 30 = ₹5,100** (unlimited profit potential).

❌ **If Bank Nifty stays above 48,900**

- Option expires worthless, and your **loss is ₹730 × 30 = ₹ - 21,900** (maximum loss = premium paid).

For Put Option Seller (Bullish or Neutral View)

✅ **If Bank Nifty stays above 48,900**

- The option **expires worthless**, and the seller **keeps ₹21,900 as profit**. (Premium received)

❌ **If Bank Nifty falls to 48,000**

- The seller must **buy at ₹48,900** while the market is at **₹48,000**
- **Loss per lot = (48,000 - 48,900 + 730) × 30 = ₹ - 5,100** (unlimited loss potential).

KEY TAKEAWAY FROM EXAMPLES

Aspect	Option Buyer	Option Seller
Market View	Directional (expects big movement)	Neutral (expects little or no movement)
Risk	Limited to the premium paid	Unlimited if the market moves against them
Reward	Unlimited profit potential	Limited to the premium received
Time Factor	Suffers from **time decay**	Benefits from **time decay**
Margin Required	Low (only premium is paid)	High (due to unlimited loss potential)

- **Option buyers pay a premium but have limited risk and unlimited profit potential.**
- **Option sellers receive a premium but have unlimited loss potential.**

4. SWAPS

A derivative contract where two parties exchange a series of cash flows based on a notional principal amount.

Types:

- Interest Rate Swaps: Exchange of fixed and floating interest rate payments.
- Currency Swaps: Exchange of cash flows in different currencies.
- Debt Equity Swaps: Exchange of debt for equity during company restructuring.

EXAMPLE

Current Situation:

- **Company A** has a **floating-rate** loan of **₹10 crore** with an interest rate of **MIBOR + 2%**.
- **Company B** has a **fixed-rate** loan of **₹10 crore** at **8% interest**.
- Company A prefers fixed payments, and Company B prefers floating payments.

To benefit both parties, they enter an **interest rate swap** where:

- **Company A agrees to pay Company B a fixed 8% interest.**
- **Company B agrees to pay Company A floating interest (MIBOR + 2%).**

Every quarter, they exchange payments based on the agreed rates. The principal amount is not exchanged—only the **interest payments** are swapped.

Outcome:

- If MIBOR is **6%**, then Company B pays Company A **(6% + 2%) = 8%** interest.
- Since both are paying 8%, there is no net payment.
- If MIBOR rises to **7%**, then Company B pays Company A **(7% + 2%) = 9%**, while Company A pays 8%.
- Now, Company A benefits because it effectively pays only 8% instead of the new floating 9%.
- This way, Company A locks in a fixed interest rate, and Company B takes on floating-rate exposure.

PURPOSE AND IMPORTANCE OF DERIVATIVES

01

Hedging:
Protecting against price risk.

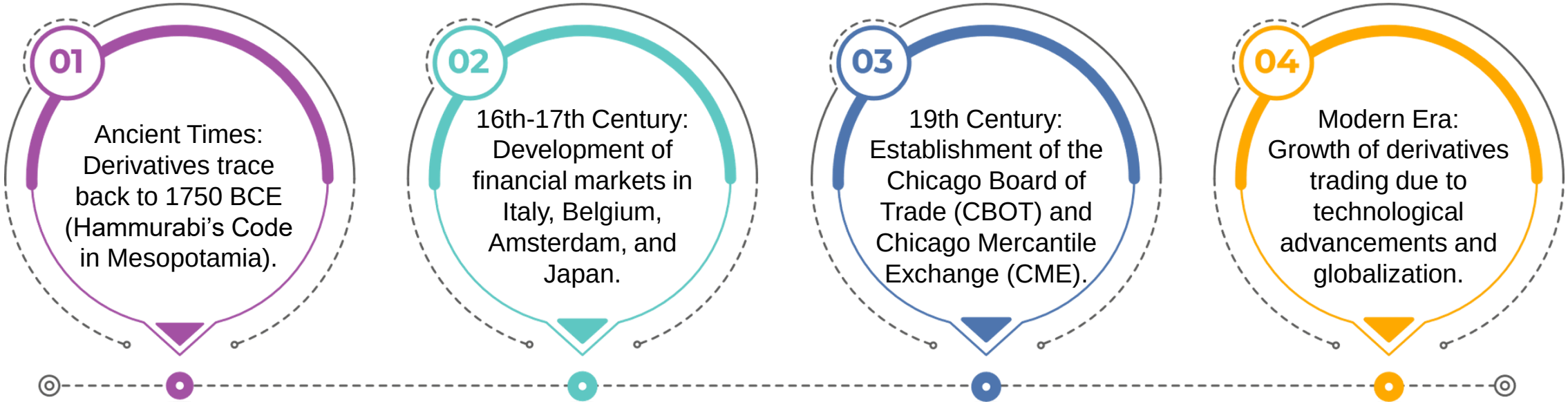
02

Speculation:
Predicting future price movements for profit.

03

Arbitrage:
Exploiting price differences across markets

HISTORICAL CONTEXT OF DERIVATIVES



The earliest form of derivatives contracts can be traced back to Mesopotamia (1750 BCE) with contracts in Hammurabi's Code for price fixing in agriculture. Alongside with ancient Greece and Rome for Managing risk

In the 16th century, Italy developed sophisticated financial markets and futures delivery of securities became common in regions like Belgium and Amsterdam, eventually spreading to England, France, and Germany by the late 17th century.

In the 18th Century, the Osaka Rice Exchange emerged in Japan where "rice bills" functioned as forward contracts for the delivery of rice at a future date.

The 19th Century marked a significant event by establishing the Chicago Board of Trade (CBOT) in 1848 by farmers to standardize commodities prices and facilitate better trades. Following the success of CBOT, the Chicago Mercantile Exchange (CME) was established which handled more trading volumes and introduced more complex financial instruments over time.

The late 20th and 21st centuries witnessed rapid growth in derivatives trading due to technological advancements and globalization. Emerging countries like India introduced derivatives exchanges followed by developments in the regulatory frameworks.

CONCLUSION

Derivatives are vital financial tools for managing risk, speculation, and arbitrage.

Understanding their types, features, and purposes is crucial for navigating financial markets.