

NISM-Series-VIII — Equity Derivatives

Complete Book | Table of Contents | 18 chapters + 9 sections

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CH-1 Basics of Derivatives

Topic 1 — Meaning of Derivatives and the Underlying

- **Derivative** — A contract whose value comes from (is derived from) the value of something else. That something else is called the **underlying**.
- **No value of its own** — A derivative has no independent worth. When the price of the underlying moves, the value of the derivative moves with it.
- **Underlying** — It can be an asset (a share, gold, wheat), a rate (an exchange rate, an interest rate), an index (Nifty 50, Sensex) or even a measurable event such as rainfall or temperature.
- **Contract between two parties** — Every derivative has a buyer and a seller who agree today on terms that will be settled on a future date.
- **Zero-sum game** — Leaving out costs and taxes, the gain of one party equals the loss of the other. Derivatives move risk from one person to another; they do not create wealth by themselves.

Legal meaning in India

- **SCRA section 2(ac)** — The Securities Contracts (Regulation) Act, 1956 says a derivative includes (i) a security derived from a debt instrument, share, loan (secured or unsecured), risk instrument or contract for differences or any other form of security, and (ii) a contract which derives its value from the prices, or index of prices, of underlying securities.
- **Derivatives are securities** — Because SCRA treats derivatives as securities, equity derivatives can trade only on recognised stock exchanges and are regulated by SEBI.

Common underlyings and their derivatives

Underlying class	Example of derivative	Where traded in India
Equity share	Stock futures, stock options	Equity derivatives segment of NSE, BSE
Stock index	Nifty 50 futures, Sensex options	Equity derivatives segment of NSE, BSE
Currency	USD-INR futures and options	Currency derivatives segment
Interest rate	Interest rate futures on Government securities	Interest rate derivatives segment
Commodity	Gold, crude oil, cotton futures	Commodity derivatives segment / commodity exchanges

Example: Arjun of Indore buys one Nifty 50 futures contract. He owns none of the 50 shares in the index, yet his profit or loss depends entirely on how the Nifty 50 moves. The Nifty 50 is the underlying; the futures contract is the derivative.

Remember this

- Derivative = contract + underlying. No underlying, no derivative.
- Legal definition: SCRA section 2(ac); derivatives are 'securities' and trade only on recognised exchanges.

Topic 2 — Evolution of Derivatives Markets

Global journey

- **Agricultural roots** — Farmers and merchants have long fixed prices before harvest to escape price swings. These were early forward contracts.
- **Rice trading in Japan** — In the 18th century the Dojima rice market in Osaka traded rice for future delivery, one of the earliest organised futures-type markets.

- **Chicago Board of Trade (1848)** — Brought standardised grain contracts and a central place to trade them; standardisation is the base of modern futures.
- **Financial derivatives (1970s onwards)** — Currency futures came in 1972, exchange-traded stock options on the Chicago Board Options Exchange in 1973, stock index futures in 1982, and swaps spread in the 1980s.
- **Today** — Financial derivatives (on indices, interest rates and currencies) are far larger than commodity derivatives worldwide.

Indian journey in equity derivatives

Year	Milestone
1875	Bombay Cotton Trade Association starts organised futures trading in cotton
1995	Securities Laws (Amendment) Ordinance withdraws the prohibition on options in securities
1996	SEBI sets up the L.C. Gupta Committee to draft a regulatory framework for derivatives (report submitted 1998)
1998	J.R. Varma Committee recommends risk-containment measures — margins, position limits, mark-to-market
1999	SCRA amended to include derivatives within the definition of 'securities'
June 2000	Index futures begin on BSE and NSE
June 2001	Index options begin
July 2001	Stock options begin
November 2001	Stock futures begin
2018–2019	Stock derivatives move in phases from cash settlement to physical settlement
Nov 2024	From 20 Nov 2024: weekly index options limited to one benchmark index per exchange; minimum contract value of index derivatives raised to ₹15 lakh
From 1 Sep 2025	NSE contracts expire on Tuesday, BSE contracts on Thursday

Order to remember: Index futures → index options → stock options → stock futures. Index products came first because they are harder to manipulate and easier to settle in cash.

Remember this

- L.C. Gupta Committee = regulatory framework; J.R. Varma Committee = risk containment.
- India's first exchange-traded equity derivative: index futures, June 2000.

Topic 3 — Types of Derivative Contracts

- **Forward** — A private agreement to buy or sell an asset on a future date at a price fixed today. Terms are customised; both parties are bound; no money changes hands at the start (see CH-3).
- **Futures** — A forward contract that is standardised (lot size, expiry, quality) and traded on an exchange. The clearing corporation guarantees settlement and positions are marked to market every day (see CH-3).
- **Option** — Gives the buyer a right, but not an obligation, to buy (**call**) or sell (**put**) the underlying at a fixed price (**strike price**) on or before a fixed date. The buyer pays a **premium**; the seller (writer) has the obligation (see CH-5).
- **Swap** — An agreement to exchange streams of cash flows in future, e.g. fixed interest for floating interest (interest rate swap), or payments in one currency for another (currency swap). A swap is like a series of forwards.
- **Other variants** — Warrants (long-dated options issued by companies), LEAPS (long-term options), basket options (on a group of assets) and swaptions (options to enter a swap).

Feature	Forward	Futures	Option
Nature	Obligation on both	Obligation on both	Right for buyer, obligation for seller
Traded	OTC, bilateral	Exchange	Exchange or OTC
Terms	Customised	Standardised	Standardised on exchange
Upfront payment	Nil	Margin by both	Premium by buyer; margin by seller
Counterparty risk	High	Clearing corporation bears it	Clearing corporation bears it (exchange-traded)

Example: Sunita pays a premium of ₹6,000 for a call option on Narmada Cables Ltd. If the share price rises above the strike price she exercises and gains; if it falls she simply lets the option lapse. Her maximum loss is the ₹6,000 premium.

Example: Malwa Finance pays a fixed 7.4% on a notional ₹100 crore and receives a floating rate from a bank for five years. Only the interest difference is exchanged — the ₹100 crore principal never moves. This is an interest rate swap.

Remember this

- Forward and futures = obligation for both sides; option = right for the buyer only.
- Option buyer pays premium; option seller receives premium and takes the obligation.

Topic 4 — Exchange-Traded and OTC Derivatives

- Over-the-counter (OTC) derivative** — Negotiated directly between two parties (often a bank and a client). Terms are tailor-made, but each party depends on the other to honour the deal.
- Exchange-traded derivative (ETD)** — Bought and sold on a stock exchange in standard lots and expiries. Prices are visible to all and trades are cleared through a clearing corporation.
- Novation** — After a trade on the exchange, the clearing corporation becomes the buyer to every seller and the seller to every buyer. This removes counterparty risk for participants (see CH-12).
- Margins and mark-to-market** — ETDs need initial margin and daily settlement of gains and losses, so losses cannot pile up unnoticed.
- Lessons of 2008** — The global financial crisis showed the danger of large, opaque OTC positions. Regulators worldwide then pushed OTC derivatives towards central clearing and trade reporting.

Basis	OTC derivatives	Exchange-traded derivatives
Contract terms	Customised to need	Standardised lot, expiry, strike
Counterparty risk	Borne by each party	Taken over by clearing corporation
Transparency	Low — private deal	High — prices shown on screen
Liquidity	Limited; hard to exit early	Usually high in active contracts
Margins	As agreed, may be nil	Compulsory, set by clearing corporation
Regulation	Lighter, contract-based	Exchange rules + SEBI regulation

Example: Mahanadi Exports books a customised forward with its bank to sell USD 3,45,000 on 17 March. The amount and date suit its export bill exactly, but if the bank fails, the contract may not be honoured. Had it used exchange-traded currency futures, the clearing corporation would guarantee settlement,

though the lot sizes and dates would not match the bill exactly.

Remember this

- OTC = flexibility with counterparty risk; ETD = standardisation with a clearing guarantee.
- Novation makes the clearing corporation the counterparty to every trade.

Topic 5 — Participants in the Derivatives Market

- Hedgers** — They already face a price risk in the cash market and use derivatives to reduce it. A hedger gives up some upside in exchange for protection.
- Speculators** — They have no underlying exposure to protect. They take positions to profit from an expected price movement and accept the risk that hedgers pass on.
- Arbitrageurs** — They look for price differences between two markets (cash and futures, two exchanges, two expiries) and lock in a nearly riskless gain by buying cheap and selling dear at the same time.

Participant	Objective	Typical action
Hedger	Reduce existing risk	Holds shares, sells index or stock futures / buys puts
Speculator	Earn from a price view	Buys futures or calls if bullish; sells futures or buys puts if bearish
Arbitrageur	Earn from mispricing	Buys in cash, sells futures (or the reverse) when the gap exceeds fair value

Hedger example: Farhan in Lucknow holds a ₹40 lakh portfolio of large-cap shares. Before a budget announcement he sells Nifty 50 futures. If the market falls, the gain on futures offsets much of the portfolio loss (strategies in CH-7).

Speculator example: Neha expects quarterly results of Sahyadri Motors to be strong. Without owning the shares, she buys one lot of its stock futures, hoping to sell at a higher price.

Arbitrage example: Shares of Kaveri Power trade at ₹1,500 in the cash market while the near-month futures trade at ₹1,530. Raghav buys 600 shares in cash and sells futures for the same quantity. At expiry the two prices converge, so he locks in a gross gain of $₹30 \times 600 = ₹18,000$, before funding cost and charges, whatever the final price.

- Why all three matter** — Hedgers need someone to take the other side; speculators provide that liquidity; arbitrageurs keep futures and cash prices in line, which makes the market efficient.

Remember this

- Hedger reduces risk, speculator takes risk, arbitrageur exploits price gaps.
- Arbitrage = simultaneous buy and sell in two markets; gain is locked in at the start.

Topic 6 — Economic Functions of Derivatives

- Price discovery** — Futures and option prices show what the market expects the underlying to be worth in future. This information helps producers, investors and policy-makers.
- Risk transfer** — Risk moves from those who do not want it (hedgers) to those willing to bear it for a reward (speculators). The total risk in the system does not disappear; it is reallocated.
- Higher activity in the cash market** — Hedging and arbitrage need trades in the underlying, so derivatives raise cash-market volumes and liquidity.
- Lower transaction cost** — Taking a market-wide view through one index futures contract is cheaper than buying or selling 50 separate shares.



- **Market efficiency** — Arbitrage removes mispricing quickly, keeping prices in different markets consistent.
- **Completing the market** — Derivatives let investors take positions that are hard to take otherwise, such as a view that the market will fall or will stay range-bound.
- **Encouraging enterprise** — When businesses can hedge price risk, they plan production and investment with more confidence.

Function	Who gains most
Price discovery	Investors, producers, policy-makers
Risk transfer	Hedgers — exporters, fund managers, portfolio holders
Liquidity and lower cost	All traders and investors
Market efficiency	Entire market through arbitrage

Example: The three-month futures price of Ganga Sugar Mills is quoted at a premium to its share price. A long-term investor reads this as the market's view of fair future value after carry cost, and uses it in planning purchases.

Remember this

- Two core functions: price discovery and risk transfer.
- Derivatives shift risk; they do not destroy it.

Topic 7 — Leverage and Risks in Derivatives

- **Leverage** — A derivative position needs only a margin, a small part of the contract value. So a small move in the underlying gives a large percentage gain or loss on the money put up.
- **Double-edged** — Leverage multiplies losses exactly as it multiplies gains. A loss can exceed the margin paid, and the trader must then bring in more money.
- **Option buyer vs seller** — An option buyer's loss is limited to the premium. An option seller's loss can be very large, which is why sellers pay margins.

N1. [Numerical] Ravi buys one lot (750 shares) of Sahyadri Motors futures at ₹2,400. Assume the margin is 20% of contract value (illustrative). Find the profit or loss as a % of margin if the price moves 5% up or down.

Item	Value
Lot size	750 shares
Futures price	₹2,400
Margin (assumed)	20%
Price move	±5% (₹120)

Solution:

Formula:

$$\text{Return on margin} = \frac{\text{Lot} \times \text{Price change}}{\text{Margin}} \times 100$$

Contract value = $750 \times 2,400 = ₹18,00,000$; margin = 20% = ₹3,60,000.

$$\frac{750 \times 120}{3,60,000} \times 100 = 25\%$$

A 5% rise gives +₹90,000 (+25% on margin); a 5% fall gives -₹90,000 (-25% on margin).

Answer: ±₹90,000, i.e. ±25% of margin — five times the 5% move in price



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Key risks

Risk	Meaning	How it is controlled
Market risk	Loss from adverse price movement	Stop-loss, position sizing, hedging
Leverage risk	Small move causes big loss on margin	Adequate margin; trade within means
Counterparty risk	Other side fails to pay	Novation and guarantee by clearing corporation
Liquidity risk	Cannot exit at a fair price	Trade active near-month contracts
Operational risk	Errors, system or process failure	Controls, checks, audit
Legal / regulatory risk	Rule change or unenforceable contract	Follow exchange and SEBI rules

- **Retail caution** — SEBI has tightened safeguards for individual traders: a minimum contract value of ₹15 lakh for index derivatives and weekly expiry on only one benchmark index per exchange (from 20 Nov 2024), and upfront collection of option premium from buyers (from 1 Feb 2025). Details in (see CH-10, Topic 1, p. 38), (see CH-13, Topic 5, p. 52) and (see CH-14, Topic 4, p. 55).
- **Suitability** — Brokers must ensure that derivatives are offered only to clients who understand the risk (see CH-18).

Remember this

- Leverage magnifies both profit and loss; losses can exceed the margin.
- Exchange trading removes counterparty risk, not market risk.

Topic 8 — Equity Derivatives Market in India Today

- **Regulator** — SEBI regulates equity derivatives under the SEBI Act, 1992 and SCRA, 1956 (see CH-15).
- **Exchanges** — Equity derivatives trade on the equity derivatives segments of NSE and BSE. Clearing and settlement are handled by their clearing corporations — NSE Clearing Ltd and Indian Clearing Corporation Ltd.
- **Four products** — Index futures, index options, stock futures and stock options.
- **Settlement** — Index derivatives are cash-settled. Stock futures and stock options are physically settled: open positions at expiry end in delivery of shares (see CH-14).
- **Option style** — All equity options traded in India are European style; they can be exercised only on the expiry day.
- **Expiry** — Weekly options are allowed on only one benchmark index per exchange (Nifty 50 on NSE, Sensex on BSE). From 1 Sep 2025, NSE contracts expire on Tuesday and BSE contracts on Thursday; monthly contracts expire on the last such day of the month (more in (see CH-2, Topic 8, p. 8)).
- **Eligibility** — Only stocks and indices meeting SEBI's eligibility criteria can have derivatives (see CH-10).
- **Tax treatment** — Income from F&O trading is non-speculative business income (see CH-17).

Product	Underlying	Settlement	Style
Index futures	Nifty 50, Nifty Bank, Sensex and other eligible indices	Cash	—
Index options	Eligible indices	Cash	European
Stock futures	Eligible individual stocks	Physical delivery	—
Stock options	Eligible individual stocks	Physical delivery	European

Example: Vivek holds a long position in Tapi Cement futures and does not square it off before expiry. He must pay the full value and will receive the shares in his demat account. Holding a Nifty 50 futures position to expiry instead would be settled only by paying or receiving the cash difference.

Remember this

- Index derivatives: cash-settled. Stock derivatives: physically settled.
- All equity options in India are European style.

NISM-Series-VIII | Module A | CH-1 | MCQs

Q1. Kiran holds a contract whose value rises and falls only with the price of 500 shares of Godavari Steel Ltd, which she does not own. How is this contract best described? [Ref: Topic 1, p. 2]

- (a) A derivative on Godavari Steel shares
(b) A bond issued by Godavari Steel Ltd
(c) Equity shares of Godavari Steel in demat form
(d) A sector mutual fund unit on steel companies

Q2. Consider: I. Under SCRA, a contract that derives its value from an index of prices of underlying securities is a derivative. II. Derivatives fall outside the definition of 'securities' under SCRA. Which is/are correct? [Ref: Topic 1, p. 2]

- (a) Both I and II (b) Only II (c) Only I (d) Neither I nor II

Q3. In which order were the following introduced on Indian stock exchanges? [Ref: Topic 2, p. 2]

- (a) Stock futures, stock options, index futures, index options
(b) Index options, index futures, stock futures, stock options
(c) Index futures, stock futures, index options, stock options
(d) Index futures, index options, stock options, stock futures

Q4. SEBI set up a committee in 1996 specifically to draft the regulatory framework for derivatives trading in India. Which committee was it? [Ref: Topic 2, p. 2]

- (a) L.C. Gupta Committee (b) J.R. Varma Committee
(c) Narasimham Committee (d) Kelkar Committee

Q5. Sunita pays ₹6,000 to get the right, but not the obligation, to buy 1,000 shares of Narmada Cables at ₹410 on the expiry date. What has she bought? [Ref: Topic 3, p. 2]

- (a) A stock futures contract (b) A put option
(c) A call option (d) An interest rate swap

Q6. Malwa Finance agrees to pay a bank a fixed 7.4% and receive a floating rate on a notional ₹100 crore for five years; only the interest difference is settled. This contract is a: [Ref: Topic 3, p. 2]

- (a) Currency swap (b) Interest rate swap
(c) Forward rate on shares (d) Index futures contract

Q7. Mahanadi Exports books a tailor-made contract with its bank to sell USD 3,45,000 on 17 March. Compared with exchange-traded futures, which risk is mainly higher here? [Ref: Topic 4, p. 3]

- (a) Counterparty default risk (b) Price discovery risk
(c) Daily mark-to-market risk (d) Standardisation risk of lots

Q8. Consider: I. In exchange-traded derivatives the clearing corporation becomes the counterparty to both buyer and seller. II. OTC derivatives come in standard lot sizes and fixed expiry dates. Which is/are correct? [Ref: Topic 4, p. 3]

- (a) Only II (b) Only I (c) Both I and II (d) Neither I nor II

Q9. Farhan holds a ₹40 lakh large-cap portfolio and sells Nifty 50 futures before the Union Budget to guard against a fall. In this trade Farhan acts as a: [Ref: Topic 5, p. 3]

- (a) Speculator (b) Arbitrageur (c) Market maker (d) Hedger

Q10. Shares of Kosi Chemicals trade at ₹820 in the cash market and its near-month futures at ₹836. Raghav buys 1,000 shares and sells an equal quantity of futures. If both prices converge at expiry, his gross gain before costs is: [Ref: Topic 5, p. 3]

- (a) ₹8,360 (b) ₹16,000
(c) ₹32,000 (d) Dependent on the expiry price

Q11. Neha owns no shares of Sahyadri Motors but buys its stock futures expecting good results. Her role and the benefit she gives the market are: [Ref: Topic 5, p. 3]

- (a) Hedger; reduces systemic risk (b) Arbitrageur; aligns cash and futures
(c) Speculator; adds liquidity (d) Hedger; transfers her own risk

Q12. Futures prices of Ganga Sugar Mills give investors an idea of the market's expected future value of the share. Which economic function of derivatives does this show? [Ref: Topic 6, p. 3]

- (a) Risk transfer (b) Novation
(c) Price discovery (d) Physical settlement

Q13. Asha buys stock futures with a contract value of ₹20 lakh, paying an assumed margin of 20%. The price falls by 3%. Her loss as a percentage of the margin paid is: [Ref: Topic 7, p. 4]

- (a) 3% (b) 20% (c) 60% (d) 15%

Q14. Vivek does not square off his long position in Tapi Cement stock futures before expiry. How will the position be settled? [Ref: Topic 8, p. 4]

- (a) By delivery of Tapi Cement shares against full payment
(b) By paying only the cash difference
(c) By automatic roll-over to the next month
(d) By conversion into a call option

Q15. Consider: I. Equity options traded on NSE and BSE are European style. II. Index derivatives are settled in cash. Which is/are correct? [Ref: Topic 8, p. 4]

- (a) Only I (b) Only II (c) Neither I nor II (d) Both I and II

Answer key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	a	4	a	7	a	10	b	13	d
2	c	5	c	8	b	11	c	14	a
3	d	6	b	9	d	12	c	15	d

CH-2 Understanding Index

Topic 1 — Meaning and Purpose of an Index

- **Index** — A single number that tracks the change in the combined value of a selected basket of securities, compared with a starting point called the base period.
- **Base period and base value** — On the base date the index is given a round value such as 100 or 1,000. Every later value is read against it.
- **Relative measure** — The index level is not a price in rupees. An index at 2,000 against a base of 1,000 means the basket is worth twice its base value.
- **Barometer of the market** — A broad index such as the Nifty 50 or Sensex shows the mood and direction of the whole market in one figure.
- **Points and per cent** — Moves are quoted in index points and in per cent. A 250-point rise from 25,000 is a 1% rise.