Skillshort

Self-Study Preparation Pack

CA FOUNDATION

Paper 4: Business Economics

Chapter-wise Detailed Notes

For January 2027 attempt (useful for May 2027 too) · ICAI BoS Study Material (new scheme) · 10 chapters

100 MCQs · 2 hours | Negative marking 0.25 VERIFY | Pass: 40% paper, 50% aggregate | Theory + numericals (elasticity, NI, multiplier)

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This subject pack has 6 parts

1 Chapter-wise notes

2 Important topics & weightage

3 Past papers: trends & links

4 Mock tests + solutions

5 Chapter practice questions

6 Last-week plan & strategy

Prepared by Skillshort for self-study. Original explanations and questions; not an official ICAI/ICMAI/ICSI publication. Items marked VERIFY should be checked against the latest official material.

How to use these notes

Business Economics is a **concept-recall** paper: about 80% of the MCQs test definitions, features, curve shapes and "which of the following" statements, and about 20% are short numericals (elasticity, costs, national income, multiplier, money multiplier). Each chapter gives the theory in tables, the numerical formulas with solved examples, and the one-liners ICAI likes.

File	Use it for
01 Chapter Notes (this file)	Concepts, curves, formulas, examples
02 Important Topics & Weightage	Official weightage and MCQs per chapter
03 Past Papers – Trend Analysis & Links	ICAI paper analysis and official links
04 Mock Tests 1–2 with Solutions	Two full 100-MCQ, 2-hour tests with explanations
05 Chapter-wise Practice Questions	MCQs chapter by chapter with explanations
06 Last-Week Plan & Exam Strategy	Revision plan, one-liners, formula sheet

Paper at a glance

Item	Detail
Marks / time	100 MCQs × 1 mark, **2 hours**, no reading time; negative marking 0.25 VERIFY
ICAI weightage (new scheme)	I Introduction 5% · II Demand & supply 10% · III Production & cost 10% · IV Price determination 15% · V National income 15% · VI Business cycles 5% · VII Public finance 10% · VIII Money market 10% · IX International trade 10% · X Indian economy 10% (±5% deviation)
Pass rule	40% in each paper and 50% aggregate of all four papers

Chapter 1: Introduction to Business Economics

Economics studies how people, firms and governments **choose** to use **scarce resources** that have **alternative uses** to satisfy **unlimited wants**.

Definition	Economist	Key idea
Wealth definition (1776)	**Adam Smith** – *Wealth of Nations*	Economics is the science of wealth
Welfare definition (1890)	**Alfred Marshall** – *Principles of Economics*	Study of mankind in the ordinary business of life; material welfare
Scarcity definition (1932)	**Lionel Robbins**	"Economics is the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses"
Growth definition	**Paul Samuelson**	How society chooses to use scarce resources to produce goods over time and distribute them

Microeconomics vs macroeconomics

Basis	Microeconomics	Macroeconomics
Meaning	Study of individual units – consumer, firm, industry	Study of the economy as a whole
Main concern	Price determination and resource allocation	National income, employment, inflation, growth
Also called	Price theory	Income and employment theory
Tools	Demand and supply of a commodity	Aggregate demand and aggregate supply
Examples	Price of rice, wage of a worker, output of a firm	GDP, general price level, unemployment rate
Term introduced by	Ragnar Frisch (1933)	Ragnar Frisch

- **Scarcity** – resources (land, labour, capital, entrepreneurship) are limited relative to wants.
- **Choice** – because of scarcity, we must choose what to produce and consume.
- **Opportunity cost** – the value of the **next best alternative** given up. If a farmer grows wheat instead of rice on a plot, the rice he could have grown is the opportunity cost of wheat.

Central problems of an economy

1. **What to produce** (and how much).
2. **How to produce** (labour-intensive or capital-intensive technique).
3. **For whom to produce** (distribution of income).
4. Problems of **full employment** and **growth** of resources.

Production possibility curve (PPC)

A **PPC** shows the various combinations of two goods that an economy can produce with given resources and technology, using them fully and efficiently.

Combination	Wheat (lakh tonnes)	Cloth (lakh metres)	MRT (wheat given up per extra unit of cloth)
A	15	0	–
B	14	1	1
C	12	2	2
D	9	3	3
E	5	4	4
F	0	5	5

- PPC is **concave to the origin** because of **increasing opportunity cost** (rising marginal rate of transformation) – resources are not equally efficient in all uses.
- A point **inside** the PPC shows unemployment/inefficiency; a point **outside** is unattainable.
- **Shift outward** – growth of resources or better technology.

1.3 Business economics – nature and scope

- **Business economics** (managerial economics) applies economic theory and methods to business decision-making. It is **pragmatic**, **micro in nature** but uses macro concepts, is **normative** (prescribes what should be done), interdisciplinary and **art as well as science**.
- **Scope – microeconomic:** demand analysis and forecasting, production and cost analysis, pricing and market structure, profit analysis, capital management (investment decisions). **Macroeconomic:** economic system, business cycles, national income, inflation, monetary and fiscal policy, foreign trade, government policies.

1.4 Basic problems of an economy and the price mechanism

Problem	Question
What to produce?	Which goods and in what quantities
How to produce?	Choice of technique – labour- or capital-intensive
For whom to produce?	Distribution of output among people
Provision for growth	How much to save and invest for the future

Economic system	How problems are solved	Merits / demerits
Capitalist (market)	Price mechanism ("invisible hand" – Adam Smith); private property, profit motive, consumer sovereignty, competition	Efficiency, innovation, choice / inequality, instability, neglect of public goods
Socialist (command)	Central planning authority; collective ownership	Equality, planned growth / bureaucracy, low incentives, no consumer sovereignty
Mixed	Market + government (India)	Combines both; public sector in key areas

REMEMBER **Price mechanism allocates resources through the interaction of demand and supply – prices signal scarcity, ration goods, and provide incentives to producers.**

Chapter 2: Theory of Demand and Supply

2.1 Demand

Demand is the quantity of a commodity that a consumer is **willing and able** to buy at a given price during a given period. Desire + ability to pay + willingness to pay = demand.

Determinants of demand

Price of the good, income of the consumer, prices of related goods (substitutes and complements), tastes and preferences, expectations of future prices, population, distribution of income, government policy, climate and season.

√× FORMULA Demand function

Dx = f(Px, Y, Pr, T, E, N) – demand for X depends on its price, income, related prices, tastes, expectations and number of buyers

Law of demand

Other things remaining the same (ceteris paribus), the quantity demanded of a commodity rises when its price falls and falls when its price rises. There is an **inverse relationship** between price and quantity demanded; the demand curve **slopes downward** from left to right.

Price (₹ per kg)	Quantity demanded (kg)
50	1
40	2
30	3
20	4
10	5

Why does the demand curve slope downward?

- **Law of diminishing marginal utility** – consumer buys more only at a lower price.
- **Income effect** – a fall in price increases real income.
- **Substitution effect** – the good becomes cheaper relative to substitutes.
- **New buyers** enter the market at lower prices.
- **Multiple uses** – at lower prices the good is used for less important purposes too.

Exceptions to the law of demand

- **Giffen goods** – inferior staple goods where the negative income effect outweighs the substitution effect (*Sir Robert Giffen* – bread in 19th-century Britain).
- **Veblen / status goods** – articles of conspicuous consumption (diamonds) bought more at higher prices (*Thorstein Veblen*).
- **Expectation of future price rise** – people buy more even when price rises (e.g. shares, gold).
- **Ignorance** – quality judged by price.
- **Necessities** – essential goods like salt, life-saving drugs (demand almost unchanged).

Change in quantity demanded vs change in demand

Basis	Change in quantity demanded (movement)	Change in demand (shift)
Cause	Change in the **price** of the good only	Change in **other factors** (income, tastes, related prices)
Graph	Movement **along** the same demand curve	**Shift** of the whole demand curve
Terms	Extension (price falls) / contraction (price rises)	Increase (shift right) / decrease (shift left)

Types of goods by income response

Good	Income rises → demand	Example
Normal good	Rises	Fruits, clothes
Inferior good	Falls	Coarse grains
Luxury	Rises more than proportionately	Cars, foreign travel
Necessity	Rises less than proportionately	Salt, rice

Related goods

- **Substitutes** (tea and coffee): price of tea ↑ → demand for coffee ↑ (positive cross relationship).
- **Complements** (car and petrol): price of petrol ↑ → demand for cars ↓ (negative cross relationship).

2.2 Elasticity of demand

Elasticity of demand measures the **degree of responsiveness** of quantity demanded to a change in one of its determinants.

Price elasticity of demand (Ep)

√x FORMULA Price elasticity of demand

Ep = Percentage change in quantity demanded ÷ Percentage change in price

Ep = (ΔQ / Q) ÷ (ΔP / P) = (ΔQ / ΔP) × (P / Q)

Arc (mid-point) elasticity = [(Q2 − Q1) / (Q2 + Q1)] ÷ [(P2 − P1) / (P2 + P1)]

Price elasticity is negative (inverse relationship), but we usually ignore the minus sign and use the absolute value.

Degree	Value	Meaning	Example
Perfectly elastic	Ep = ∞	Slight change in price → infinite change in demand; horizontal demand curve	Firm in perfect competition
Relatively elastic	Ep > 1	% change in Q > % change in P	Luxuries
Unitary elastic	Ep = 1	% change in Q = % change in P; rectangular hyperbola	–
Relatively inelastic	Ep < 1	% change in Q < % change in P	Necessities (rice, salt)
Perfectly inelastic	Ep = 0	No change in Q; vertical demand curve	Life-saving drugs (approximately)

Methods of measuring price elasticity

1. **Percentage (proportionate) method** – formula above.
2. **Total expenditure (outlay) method** – Marshall:

Price change	Total expenditure	Elasticity
Price falls, TE rises / price rises, TE falls	Moves opposite to price	Ep > 1
TE unchanged	Constant	Ep = 1
Price falls, TE falls / price rises, TE rises	Moves with price	Ep < 1

3. **Point (geometric) method** – on a straight-line demand curve, Ep at a point = **lower segment ÷ upper segment**. At the mid-point Ep = 1; at the price-axis intercept Ep = ∞; at the quantity-axis intercept Ep = 0.
4. **Arc method** – for large changes, using averages.

Determinants of price elasticity

Nature of the good (necessity/luxury), availability of substitutes, proportion of income spent, number of uses, habits, time period (more elastic in the long run), postponement of consumption, price range.

Income elasticity and cross elasticity

FORMULA Income and cross elasticity

Income elasticity Ey = % change in quantity demanded ÷ % change in income

Cross elasticity Exy = % change in quantity of X ÷ % change in price of Y

Elasticity	Value	Interpretation
Ey > 1	Positive, above one	Luxury
0 < Ey < 1	Positive, below one	Necessity
Ey < 0	Negative	Inferior good
Exy > 0	Positive	Substitutes
Exy < 0	Negative	Complements
Exy = 0	Zero	Unrelated goods

WORKED EXAMPLE Price elasticity numericals

(a) Price of a pen falls from ₹10 to ₹8; demand rises from 100 to 130.

% ΔQ = 30/100 × 100 = 30%; % ΔP = 2/10 × 100 = 20%. Ep = 30 ÷ 20 = **1.5** (elastic).

TE before = ₹1,000; after = ₹1,040 → TE rises when price falls → elastic (confirms).

(b) Arc elasticity: P from ₹10 to ₹8, Q from 100 to 130. = (30/230) ÷ (2/18) = 0.1304 ÷ 0.1111 = **1.17**.

(c) Income rises from ₹20,000 to ₹25,000; demand for a good falls from 10 kg to 8 kg. Ey = (−20%) ÷ (25%) = **−0.8** → inferior good.

Importance of elasticity

Pricing decisions by firms and monopolists (price discrimination), taxation policy (tax goods with inelastic demand for revenue), international trade (devaluation), wage determination, joint products pricing, and predicting the effect of price changes on revenue.

EXAM TIP Always state the sign convention. Write "Ep = −1.5; in absolute terms 1.5 > 1, so demand is elastic."

FORMULA Elasticity measures used in numericals

Price elasticity (proportionate method) $e_p = (\Delta Q/Q) \div (\Delta P/P)$; arc elasticity = $(\Delta Q/\Delta P) \times (P_1 + P_2)/(Q_1 + Q_2)$

Total outlay method: price ↓ and outlay ↑ → elastic (e > 1); outlay unchanged → unitary; outlay ↓ → inelastic

Point elasticity on a linear demand curve = lower segment ÷ upper segment

Income elasticity $e_y = (\Delta Q/Q) \div (\Delta Y/Y)$: > 1 luxury, 0–1 necessity, < 0 inferior good

Cross elasticity $e_{xy} = (\Delta Q_x/Q_x) \div (\Delta P_y/P_y)$: positive – substitutes; negative – complements; zero – unrelated

Advertisement (promotional) elasticity = (ΔQ/Q) ÷ (ΔA/A)

WORKED EXAMPLE Elasticity numericals

(a) Price falls from ₹10 to ₹8; quantity rises from 100 to 130. e_p = (30/100) ÷ (2/10) = **1.5** (elastic).

(b) Arc method for the same data: (30/2) × (18/230) = **1.17**.

(c) Income rises 10%, demand for a good falls 5% → e_y = −0.5 → **inferior good**.

2.3 Theory of consumer behaviour

Utility is the want-satisfying power of a commodity. It is subjective, relative, and not the same as usefulness (a cigarette has utility to a smoker).

- **Total utility (TU)** – total satisfaction from consuming all units.
- **Marginal utility (MU)** – addition to total utility from one more unit: MUn = TUn − TUn−1.

Units of ice cream	TU (utils)	MU (utils)
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	−5

Relationship between TU and MU

- When MU is positive and falling, TU rises at a diminishing rate.
- When MU = 0, TU is **maximum** (point of satiety).
- When MU is negative, TU falls.

Assumptions: utility is measurable in cardinal numbers (utils); marginal utility of money is constant; utilities are independent; consumer is rational; consumption is continuous.

Law of diminishing marginal utility (DMU)

"Other things remaining the same, as a consumer consumes more and more units of a commodity, the marginal utility from each successive unit **goes on diminishing**." (Gossen's first law; stated by Marshall.)

Exceptions/limitations: hobbies and rare collections (stamps), misers (money), drunkards (initially), music and poetry (initial units), indivisible goods, change in tastes or income during consumption.

Law of equi-marginal utility (Gossen's second law)

A consumer with limited income gets **maximum satisfaction** when he allocates his income in such a way that the **marginal utility of the last rupee spent on each good is equal**.

FORMULA **Consumer equilibrium – cardinal approach**

One good: MUx = Px × MUm (MU of money); i.e. MUx / Px = MUm

Two goods: MUx / Px = MUy / Py = MUm

WORKED EXAMPLE **Equi-marginal utility**

Income ₹6; Px = ₹1, Py = ₹1. Marginal utilities:

Units 1–6 of X: 20, 18, 16, 14, 12, 10. Units 1–6 of Y: 16, 14, 12, 10, 8, 6.

Spend rupee by rupee on the higher MU: X1 (20), X2 (18), X3 (16) and Y1 (16), X4 (14) and Y2 (14).

Equilibrium: **4 units of X and 2 units of Y** – MUx/Px = 14 = MUy/Py; ₹6 spent. Total utility = 20+18+16+14+16+14 = 98 utils (maximum).

Consumer's surplus (Marshall)

Consumer's surplus = what a consumer is **willing to pay** − what he **actually pays**.

FORMULA **Consumer's surplus**

CS = Total utility (in money) − (Price × Quantity) = Σ MU − P × Q

WORKED EXAMPLE **Consumer's surplus**

Willingness to pay for 1st to 4th cup of tea: ₹20, ₹16, ₹12, ₹8. Market price ₹8. Consumer buys 4 cups.

Total willingness = ₹56; actual payment = 4 × ₹8 = ₹32. **Consumer's surplus = ₹24.**

Utility cannot be measured in numbers, but the consumer can **rank** preferences. Developed by **J.R. Hicks and R.G.D. Allen** (1934), based on earlier work of Edgeworth and Pareto.

Assumptions

Rationality; ordinal utility; **diminishing marginal rate of substitution**; consistency and transitivity of choices (if A > B and B > C, then A > C); non-satiety (more is preferred to less).

Indifference curve (IC)

An **indifference curve** is the locus of all combinations of two goods that give the consumer the **same level of satisfaction**; the consumer is indifferent among them.

Combination	Apples	Oranges	MRSxy
A	1	15	–
B	2	11	4
C	3	8	3
D	4	6	2
E	5	5	1

An **indifference map** is a set of ICs; a higher IC represents a higher level of satisfaction.

Marginal rate of substitution (MRS)

√× FORMULA Marginal rate of substitution

MRSxy = −ΔY / ΔX = MUx / MUy (units of Y the consumer is willing to give up for one more unit of X)

MRS **diminishes** along an IC because as the consumer has more of X and less of Y, he values each additional X less and each remaining Y more.

Properties of indifference curves

1. **Slope downward** from left to right (to keep satisfaction constant, more of X needs less of Y).
2. **Convex to the origin** – because of diminishing MRS.
3. **Never intersect** each other (would violate transitivity and non-satiety).
4. **Higher IC = higher satisfaction.**
5. Do not touch either axis (normally – consumer wants both goods).
6. Need not be parallel.

Budget line (price line)

The **budget line** shows all combinations of two goods a consumer can buy with his given income and prices.

√× FORMULA Budget line

Px · X + Py · Y = M; slope = −Px / Py; X-intercept = M/Px; Y-intercept = M/Py

- Change in income → **parallel shift** of the budget line.
- Change in price of one good → **rotation** of the budget line.

Consumer equilibrium – ordinal approach

The consumer is in equilibrium at the point where the **budget line is tangent to the highest attainable indifference curve**:

1. **Necessary condition**: MRSxy = Px / Py (slope of IC = slope of budget line).
2. **Sufficient condition**: the IC is **convex** to the origin at the point of tangency (MRS diminishing).

WORKED EXAMPLE Budget line

Income ₹200; Px = ₹10, Py = ₹20. Maximum X = 20 units; maximum Y = 10 units. Slope = −10/20 = −0.5.

If MRSxy at a combination is 2, i.e. MRS > Px/Py (0.5), the consumer values X more than its market price relative to Y – he should buy **more X** and less Y until MRS falls to 0.5.

Price effect = income effect + substitution effect (Hicks)

Good	Substitution effect	Income effect	Price effect
Normal	Negative (more X when Px falls)	Negative (more X)	Negative – law of demand holds
Inferior (non-Giffen)	Negative	Positive but weaker	Negative
Giffen	Negative	Positive and stronger	**Positive** – exception to law of demand

Income consumption curve (ICC) and price consumption curve (PCC)

- **ICC** – locus of equilibrium points as income changes (prices constant); used to derive the **Engel curve**.
- **PCC** – locus of equilibrium points as the price of one good changes; used to derive the **demand curve**.

Cardinal vs ordinal approach

Basis	Cardinal (Marshall)	Ordinal (Hicks–Allen)
Measurement	Utility measurable in utils	Only ranking possible
Marginal utility of money	Constant	Not assumed
Tool	MU curves	Indifference curves and budget line
Equilibrium	MUx/Px = MUy/Py = MUm	MRSxy = Px/Py
Price effect split	Not explained	Income + substitution effects
Giffen paradox	Cannot explain	Explains

⚠ COMMON MISTAKE **Do not say ICs are concave. They are convex to the origin because MRS diminishes. Also, two ICs can never cross.**

Revealed preference (Samuelson) – brief

Consumer's preferences are **revealed** by his actual choices in the market; no need for utility measurement or ICs. Proves the law of demand for normal goods.

2.4 Supply and market equilibrium

Supply is the quantity of a commodity that producers are willing and able to offer for sale at a given price during a given period.

Law of supply

Other things remaining the same, the quantity supplied **rises** with a rise in price and falls with a fall in price – a **direct relationship**; the supply curve **slopes upward**.

Determinants of supply

Price of the good, prices of factors (input costs), technology, prices of other goods, number of firms, goals of the firm, government policy (taxes, subsidies), expectations, natural factors.

Market equilibrium

Equilibrium price is the price at which **quantity demanded = quantity supplied**. At a higher price there is excess supply (surplus) pushing price down; at a lower price there is excess demand (shortage) pushing price up.

WORKED EXAMPLE **Equilibrium from equations**

Qd = 100 − 2P and Qs = 20 + 2P.

At equilibrium Qd = Qs → 100 − 2P = 20 + 2P → 4P = 80 → **P = ₹20**. Q = 100 − 40 = **60 units**.

If the government fixes a maximum price (price ceiling) of ₹15: Qd = 70, Qs = 50 → **shortage of 20 units** (black market / rationing may arise).

If it fixes a minimum support price of ₹25: Qd = 50, Qs = 70 → **surplus of 20 units** (government must buy the surplus).

Effect of shifts on equilibrium

Change	Equilibrium price	Equilibrium quantity
Increase in demand	Rises	Rises
Decrease in demand	Falls	Falls
Increase in supply	Falls	Rises
Decrease in supply	Rises	Falls
Equal increase in demand and supply	Unchanged	Rises

NOTE Market equilibrium and social efficiency

Equilibrium where Qd = Qs. An increase in demand (supply constant) raises price and quantity; an increase in supply (demand constant) lowers price and raises quantity. **Consumer surplus** = what consumers are willing to pay − what they pay; **producer surplus** = price received − minimum acceptable price. At competitive equilibrium total surplus is **maximum** – allocative (social) efficiency; price ceilings/floors create **deadweight loss**.

WORKED EXAMPLE Qd = 100 − 2P and Qs = 40 + 4P → 100 − 2P = 40 + 4P → **P = 10, Q = 80.**

Chapter 3: Theory of Production and Cost

Production is the creation of utility by transforming inputs (factors) into output. A **production function** shows the technical relationship between physical inputs and the maximum output.

FORMULA Production function

Q = f(L, K) – output depends on labour and capital (with given technology)

Cobb–Douglas form: Q = A · L^α · K^β; if α + β = 1 → constant returns to scale

Short run and long run

Basis	Short run	Long run
Factors	Some fixed (plant, machinery), some variable (labour, raw materials)	All factors are variable
Law	Law of variable proportions (returns to a factor)	Returns to scale
Costs	Fixed and variable costs	Only variable costs

- **Total product (TP)** – total output with given inputs.
- **Average product (AP)** = TP / L.
- **Marginal product (MP)** = ΔTP / ΔL = TPn – TPn–1.

"When more and more units of a variable factor are combined with a fixed quantity of other factors, the **total product first increases at an increasing rate, then at a diminishing rate, and finally declines**." Equivalently, the marginal product of the variable factor eventually diminishes.

Labour	TP	MP	AP	Stage
1	10	10	10	I
2	24	14	12	I
3	36	12	12	I/II boundary (AP max)
4	44	8	11	II
5	48	4	9.6	II
6	48	0	8	II/III boundary (TP max)
7	45	−3	6.4	III

Three stages

Stage	TP	MP	AP	Name
I	Rises at increasing then diminishing rate	Rises, reaches max, then falls; MP > AP	Rises to max (MP = AP at end)	**Increasing returns** to the factor
II	Rises at diminishing rate to max	Falls, becomes zero	Falls	**Diminishing returns – rational stage of production**
III	Falls	Negative	Falls	**Negative returns**

Causes

- **Stage I**: better utilisation of fixed factor; specialisation and division of labour; indivisibility of fixed factor.
- **Stage II**: fixed factor becomes scarce relative to variable factor; imperfect substitutability.
- **Stage III**: overcrowding; fixed factor overused; workers obstruct each other.

REMEMBER **A rational producer always operates in Stage II, where MP is positive but falling and AP is falling. When MP = 0, TP is maximum; when MP = AP, AP is maximum.**

Returns to scale refer to the change in output when **all inputs are changed in the same proportion**.

Type	Output change compared with input change	Example
Increasing returns to scale (IRS)	Output increases **more** than proportionately	Inputs doubled → output triples
Constant returns to scale (CRS)	Output increases in the **same** proportion	Inputs doubled → output doubles

Type	Output change compared with input change	Example
Decreasing returns to scale (DRS)	Output increases **less** than proportionately	Inputs doubled → output rises by 50%

Causes – economies and diseconomies of scale

Internal economies (within the firm)	Internal diseconomies
Technical (large machines, linked processes)	Management difficulties – coordination and control
Managerial (specialist managers)	Labour problems; communication gaps
Marketing (bulk buying and selling)	Rising input prices due to large demand
Financial (cheaper credit)	Delays in decision-making
Risk-bearing (diversification)	–
External economies (to all firms in an industry)	**External diseconomies**
Infrastructure, skilled labour pool, ancillary industries, information	Congestion, pollution, higher land prices

⚖ LEGAL PROVISION Producer's equilibrium (least-cost combination)

Isoquant – combinations of two inputs giving the same output; slope = **MRTS** (diminishing). **Isocost line** – combinations with the same total outlay; slope = w/r. Equilibrium where the isoquant is **tangent** to the isocost: MRTS_LK = w/r, i.e., MP_L/w = MP_K/r. **Cobb–Douglas** Q = A L^a K^b: a + b = 1 constant, > 1 increasing, < 1 decreasing returns to scale.

Cost	Meaning
Explicit cost	Actual money payments to outside factors (wages, rent, raw material)
Implicit cost	Imputed cost of owner's own factors (own capital, own building, own salary)
Accounting cost	Explicit costs only
Economic cost	Explicit + implicit costs (including **normal profit**)
Opportunity cost	Value of next best alternative forgone
Private cost / social cost	Cost to the firm / cost to society including externalities
Sunk cost	Already incurred and cannot be recovered
Fixed cost (TFC)	Does not change with output – rent, salary of permanent staff, depreciation, interest
Variable cost (TVC)	Changes with output – raw material, power, wages of casual labour

√× FORMULA Short-run cost formulas

TC = TFC + TVC

AFC = TFC / Q; AVC = TVC / Q; ATC (AC) = TC / Q = AFC + AVC

MC = ΔTC / ΔQ = ΔTVC / ΔQ = TCn − TCn−1

Q	TFC	TVC	TC	AFC	AVC	AC	MC
0	60	0	60	–	–	–	–
1	60	40	100	60	40	100	40
2	60	70	130	30	35	65	30
3	60	90	150	20	30	50	20
4	60	120	180	15	30	45	30
5	60	170	230	12	34	46	50
6	60	240	300	10	40	50	70

Shapes of short-run cost curves

- **TFC** – horizontal straight line.
- **TVC** – starts from origin; inverse-S shaped (law of variable proportions).

- **TC** – same shape as TVC, starting from the TFC level.
- **AFC** – continuously falls; a **rectangular hyperbola** (never touches axes).
- **AVC, AC and MC** – **U-shaped** due to the law of variable proportions.
- **MC cuts AVC and AC at their minimum points** from below.
- The gap between AC and AVC (= AFC) narrows as output rises.

Relationship between AC and MC

- When MC < AC, AC falls.
- When MC = AC, AC is at its minimum.
- When MC > AC, AC rises.
- MC reaches its minimum before AC.

Long-run average cost (LAC) curve

- **LAC is the envelope** of short-run average cost (SAC) curves – it is called a **planning curve**.
- It is **U-shaped** (flatter than SAC) due to economies and diseconomies of scale.
- The point where LAC is minimum gives the **optimum scale of plant**.
- Empirically, many LAC curves are **L-shaped**.

FORMULA **Revenue**

TR = P × Q; AR = TR / Q = P; MR = ΔTR / ΔQ

Relation: MR = AR (1 − 1/e), where e = price elasticity of demand

- Under **perfect competition** AR = MR = price (horizontal line).
- Under **imperfect competition** AR slopes down and MR lies below AR; when AR is a straight line, MR falls at twice the rate (bisects the horizontal distance).
- When e = 1, MR = 0 and TR is maximum.

EXAM TIP **In cost questions, always complete the full table (TFC, TVC, TC, AFC, AVC, AC, MC) – partial tables lose marks. Check that AFC × Q = TFC.**

WORKED EXAMPLE **Cost numericals**

TFC ₹100; TVC for 1–4 units: 40, 70, 90, 120. TC = 140, 170, 190, 220. MC = 40 (first unit: 140 − 100), 30, 20, 30. AVC at 3 units = 90/3 = **30**; ATC at 4 units = 220/4 = **55**. MC cuts AVC and ATC at their **minimum** points.

Chapter 4: Price Determination in Different Markets

A **market** is a system where buyers and sellers interact to exchange goods at a price; it need not be a physical place.

Feature	Perfect competition	Monopoly	Monopolistic competition	Oligopoly
Number of sellers	Very large	One	Large	Few
Product	Homogeneous	Unique, no close substitute	Differentiated	Homogeneous or differentiated
Entry and exit	Free	Blocked	Free	Difficult
Price control	None – price taker	Considerable – price maker	Some	Considerable but interdependent
Demand curve (AR)	Perfectly elastic (horizontal)	Downward sloping, inelastic	Downward sloping, highly elastic	Kinked / indeterminate
Selling cost	Nil	Small (informative)	High	Very high
Example	Agricultural produce (approximately), stock market	Indian Railways, electricity distribution in an area	Restaurants, soaps, toothpaste	Telecom, airlines, cement, automobiles

√× FORMULA Profit-maximisation conditions

1. MC = MR (first-order condition)
2. MC curve cuts MR from below / slope of MC > slope of MR (second-order condition)

Profit per unit = AR − AC; Total profit = (AR − AC) × Q

Features

Large number of buyers and sellers; homogeneous product; free entry and exit; perfect knowledge; perfect mobility of factors; no transport cost; no government interference. Firm is a **price taker**; industry determines price.

Short-run equilibrium of a firm

The firm produces where **MC = MR = P** and MC is rising. It may earn:

Situation	Condition	Result
Supernormal profit	P > AC	Abnormal profit
Normal profit	P = AC	Break-even
Loss but continue	AVC ≤ P < AC	Covers variable cost and part of fixed cost
Shut-down point	P = minimum AVC	Indifferent between producing and shutting
Shut down	P < AVC	Stops production

The portion of the **MC curve above minimum AVC** is the short-run **supply curve** of the firm.

Long-run equilibrium

Supernormal profits attract new firms, losses drive firms out, until every firm earns only **normal profit**:

√× FORMULA Long-run equilibrium under perfect competition

P = AR = MR = MC = minimum LAC (= SAC)

Firms produce at the **minimum point of LAC** – optimum size; no excess capacity.

WORKED EXAMPLE **Perfect competition numerical**

Market price ₹20. Firm's TC = 50 + 2Q + 0.5Q². MC = 2 + Q.

Equilibrium: P = MC → 20 = 2 + Q → **Q = 18**. TR = 360; TC = 50 + 36 + 162 = 248. **Profit = ₹112** (supernormal – new firms will enter in the long run).

Monopoly (Greek *monos* = single, *polein* = seller) is a market with a **single seller** of a product with **no close substitutes**, and **barriers to entry**.

Sources of monopoly power

Legal (patents, copyrights, licences), control over raw materials, economies of scale (natural monopoly), government ownership, cartels, huge capital requirement.

Equilibrium

The monopolist produces where **MC = MR**, and charges the price from the demand (AR) curve. Since AR > MR, **P > MC**.

- **Short run**: profit, normal profit or loss.
- **Long run**: usually **supernormal profit** continues because entry is blocked.
- A monopolist always operates on the **elastic portion** of the demand curve (where MR > 0, i.e. e > 1).
- No unique supply curve under monopoly.

WORKED EXAMPLE **Monopoly numerical**

Demand: P = 100 − 2Q → TR = 100Q − 2Q² → MR = 100 − 4Q. MC = 20 (constant, no fixed cost).

MR = MC → 100 − 4Q = 20 → **Q = 20**; P = 100 − 40 = **₹60**.

Profit = (60 − 20) × 20 = **₹800**.

Under perfect competition, P = MC = 20 → Q = 40. Monopoly gives **lower output and higher price** – a deadweight loss = ½ × (60 − 20) × (40 − 20) = ₹400.

Price discrimination

Price discrimination is charging different prices to different buyers for the same product, for reasons not related to cost differences.

Degree	Pigou's classification	Example
First degree (perfect)	Each buyer charged his maximum willingness – consumer surplus fully captured	Doctor charging rich/poor patients differently
Second degree	Different prices for different blocks/quantities	Electricity slab tariffs
Third degree	Market divided into groups with different elasticities	Railway fares by class, student discounts, export vs domestic price

Conditions: monopoly power, markets can be separated (no resale), different elasticities of demand. Under third-degree discrimination, the monopolist equates **MR1 = MR2 = MC** and charges a **higher price in the market with less elastic demand**.

Features

Large number of firms; **product differentiation** (brand, quality, packaging, location, after-sales service); freedom of entry and exit; **selling costs** (advertisement); some control over price; group instead of industry.

Equilibrium

- **Short run**: MC = MR; may earn supernormal profit, normal profit or loss.
- **Long run**: free entry eliminates supernormal profits; firm earns **normal profit**, where the **AR curve is tangent to the LAC curve** (AR = AC) to the **left of the minimum point** of LAC.
- Result: **excess capacity** – output is less than the optimum (minimum LAC) level; price higher than under perfect competition.

Selling costs

Costs incurred to change the demand curve of a product – advertisement, salesmen, displays, free samples. Production costs create the product; selling costs create demand for it (Chamberlin).

Oligopoly – a market with **a few sellers** whose decisions are **interdependent**. **Duopoly** is a special case with two sellers.

Features

Few sellers; interdependence in decision-making; advertisement and selling costs crucial; group behaviour; barriers to entry; indeterminate demand curve; price rigidity; possibility of collusion.

Kinked demand curve model (Paul Sweezy, 1939)

Explains **price rigidity**. If a firm raises its price, rivals do **not** follow – demand above the current price is **elastic**. If it lowers price, rivals **follow** – demand below is **inelastic**. The demand curve has a **kink** at the prevailing price, and the MR curve has a **discontinuous (vertical) gap** below the kink. MC can move within this gap without changing price or output – hence prices are sticky.

Other oligopoly models

Model	Idea
Cournot duopoly (1838)	Each firm decides output assuming rival's output is fixed
Bertrand (1883)	Firms compete on price
Cartel / collusive oligopoly	Firms jointly fix price and output (OPEC) – illegal under Competition Act, 2002
Price leadership	Dominant or low-cost firm sets price; others follow
Game theory (prisoner's dilemma)	Strategic interdependence; Nash equilibrium

REMEMBER **In India, anti-competitive agreements and abuse of dominant position are prohibited by the Competition Act, 2002, enforced by the Competition Commission of India (CCI).**

4.7 Game theory and oligopoly

- **Game theory** studies strategic interaction where each firm's payoff depends on rivals' choices. Elements: **players, strategies, payoffs**.
- **Dominant strategy** – best for a player whatever the rival does. **Nash equilibrium** – each player's strategy is the best response to the other's; no one gains by changing alone.
- **Prisoners' dilemma** – both firms would gain by cooperating (keeping prices high), but each has an incentive to cheat (cut price); the equilibrium (both cut) is worse for both – explains price wars and the instability of **cartels**.

WORKED EXAMPLE **Two firms choose High or Low price. Payoffs (A, B): High–High (10, 10), High–Low (2, 15), Low–High (15, 2), Low–Low (5, 5). "Low" is dominant for both → Nash equilibrium Low–Low (5, 5) even though High–High is better for both.**

REMEMBER **Other oligopoly models – kinked demand curve (Sweezy: price rigidity; MR has a gap), price leadership (dominant, low-cost, barometric), collusion/cartels (OPEC). Under monopoly, price discrimination (first, second, third degree) is possible if markets can be separated and elasticities differ: charge a higher price where demand is less elastic.**

FORMULA **Key relations**

MR = AR (1 − 1/e). Monopolist never operates where e < 1 (MR negative). Short-run shut-down point: P < minimum AVC. Long-run normal profit under perfect and monopolistic competition: P = AC.

Chapter 5: Determination of National Income

5.1 Macro-economic aggregates and measurement

National income is the **money value of all final goods and services produced by the normal residents of a country during a year**, after allowing for depreciation and including net factor income from abroad. It is a **flow** concept (measured over a period), not a stock.

REMEMBER **Only final goods are counted, to avoid double counting. Intermediate goods (raw materials, semi-finished goods used in production during the year) are excluded.**

Concept	Meaning
Final goods	Goods meant for final consumption or investment, not for resale or further processing in the same year
Intermediate goods	Goods used up as inputs in production during the year
Domestic territory	Political frontiers + territorial waters + ships/aircraft operated by residents + embassies and military establishments abroad; excludes foreign embassies in India
Normal resident	Person or institution whose centre of economic interest lies in the country (usually living for one year or more)
Depreciation (consumption of fixed capital)	Fall in value of fixed assets due to normal wear and tear and expected obsolescence
Net factor income from abroad (NFIA)	Factor income earned by residents abroad − factor income earned by non-residents in the domestic territory
Net indirect taxes (NIT)	Indirect taxes − subsidies
Transfer payments	One-sided payments with no goods/services in return (old-age pension, scholarships) − **not** included in national income

Aggregates of national income

√× FORMULA **National income aggregates**

GDP at market price (GDPmp) = Value of final goods and services produced within the domestic territory in a year

GNPmp = GDPmp + NFIA

NDPmp = GDPmp − Depreciation

NNPmp = GNPmp − Depreciation

NDPfc (Domestic income) = NDPmp − Net indirect taxes

NNPfc (National income) = NNPmp − NIT = NDPfc + NFIA

Market price − NIT = Factor cost; Gross − Depreciation = Net; Domestic + NFIA = National

Other related concepts

- **Personal income** = National income − undistributed corporate profits − corporate tax − social security contributions + transfer payments.
- **Personal disposable income** = Personal income − personal direct taxes − miscellaneous fees and fines.
- **Per capita income** = National income ÷ population.
- **Real GDP** = GDP at **constant prices** (base-year prices) − shows real growth. **Nominal GDP** = GDP at current prices.
- **GDP deflator** = (Nominal GDP ÷ Real GDP) × 100.
- **GVA (Gross Value Added) at basic prices** = GVA at factor cost + production taxes − production subsidies. India reports GVA at basic prices and GDP at market prices.

In a simple two-sector economy (households and firms), households supply factor services to firms and receive factor incomes (rent, wages, interest, profit); firms produce goods and sell them to households. **Real flow** (goods

and factor services) moves in one direction; **money flow** (payments) moves in the opposite direction. **Leakages** (saving, taxes, imports) and **injections** (investment, government expenditure, exports) are added in three-sector and four-sector models.

National income can be measured at three phases – production, distribution and disposition – and all three give the same result: **Output = Income = Expenditure**.

1. Value added (product) method

√× FORMULA Value added

Value of output = Sales + Change in stock

Gross value added at market price (GVAmp) = Value of output − Intermediate consumption

NDPfc = Σ GVAmp of all sectors − Depreciation − NIT; National income = NDPfc + NFIA

Precautions: exclude sale of second-hand goods (only brokerage counted), intermediate goods, self-consumption of services by households (household chores), illegal activities; include own-account production of goods (farmer's own consumption), imputed rent of owner-occupied houses.

2. Income method

√× FORMULA Income method

NDPfc = Compensation of employees + Operating surplus (rent + royalty + interest + profit) + Mixed income of self-employed

National income (NNPfc) = NDPfc + NFIA

- **Compensation of employees** = wages and salaries in cash and kind + employer's contribution to social security.
- **Profit** = corporate tax + dividends + undistributed profits.

Precautions: exclude transfer payments, capital gains, windfall gains (lottery), sale proceeds of shares/bonds, interest on national debt (consumption loans), and death duties/gift tax.

3. Expenditure method

√× FORMULA Expenditure method

GDPmp = Private final consumption expenditure (C) + Government final consumption expenditure (G) + Gross domestic capital formation (I) + Net exports (X − M)

Gross domestic capital formation = Gross fixed capital formation + Change in stock

Precautions: exclude expenditure on intermediate goods, second-hand goods, financial assets (shares), transfer payments.

WORKED EXAMPLE Calculating national income (₹ crore)

Private final consumption expenditure 800; Government final consumption expenditure 200; Net domestic capital formation 150; Net exports −20; Consumption of fixed capital 60; Net indirect taxes 90; Net factor income from abroad −10; Compensation of employees 730; Operating surplus 250; Mixed income 60.

Expenditure method: NDPmp = 800 + 200 + 150 + (−20) = 1,130. NDPfc = 1,130 − 90 = 1,040. NNPfc = 1,040 + (−10) = **1,030**.

Income method: NDPfc = 730 + 250 + 60 = 1,040. NNPfc = 1,040 + (−10) = **1,030** – both methods agree ✓.

If your two answers ever differ, recheck which items are gross/net and at market price/factor cost.

GDPmp = NDPmp + depreciation = 1,130 + 60 = 1,190.

- Large **non-monetised** (subsistence) sector – farmers consume own produce.
- **Unorganised/informal sector** – no proper records.

- Illiteracy and lack of accounts among small producers.
- **Double counting** risk.
- Problem of **valuing** depreciation, inventories and services of housewives.
- Black money and parallel economy.
- Inadequate statistical data and occupational overlap (one person, many jobs).

WORKED EXAMPLE **National income numerical**

GDP at market price ₹1,000 crore; depreciation 80; net indirect taxes 60; net factor income from abroad −20. NDP_MP = 920; NNP_MP = 900; **NNP at factor cost (National Income) = 900 − 60 = ₹840 crore**. GVA at basic prices = GDP_MP − product taxes + product subsidies.

5.2 Keynes' two-sector model

Keynes held that in the short run, the level of income and employment depends on **effective demand** (aggregate demand at the point of equilibrium with aggregate supply). An economy can be in equilibrium at **less than full employment** (underemployment equilibrium).

FORMULA **Keynesian equilibrium**

Two-sector: Y = C + I; Equilibrium where AD = AS or Saving = Investment

Three-sector: Y = C + I + G; four-sector: Y = C + I + G + (X − M)

Aggregate demand (AD)	Aggregate supply (AS)
Total planned expenditure on final goods at each level of income: C + I (+ G + NX)	Total output (= income) the economy produces; shown by the 45° line where Y = AD

Effective demand

Effective demand is the level of AD at which it equals AS. It determines output and employment. If AD falls short of full-employment output → **deflationary gap** (unemployment). If AD exceeds full-employment output → **inflationary gap**.

The **consumption function** (propensity to consume) shows the relationship between consumption and income: C = f(Y).

FORMULA **Consumption function**

C = a + bY, where a = autonomous consumption (consumption at zero income), b = MPC

APC = C / Y; MPC = ΔC / ΔY

S = Y − C = −a + (1 − b)Y; APS = S/Y; MPS = ΔS/ΔY

APC + APS = 1; MPC + MPS = 1

Keynes' psychological law of consumption

"Men are disposed, as a rule and on the average, to increase their consumption as their income increases, but **not by as much as the increase in their income**." Thus **0 < MPC < 1**, and APC falls as income rises.

Income (Y)	Consumption (C)	Saving (S)	APC	MPC	APS	MPS
0	50	−50	–	–	–	–
100	125	−25	1.25	0.75	−0.25	0.25
200	200	0	1.00	0.75	0	0.25
300	275	25	0.92	0.75	0.08	0.25
400	350	50	0.875	0.75	0.125	0.25

At Y = 200, C = Y – the **break-even point** (saving = 0).

Determinants of consumption

Subjective factors: motives to save – precaution, foresight, improvement, independence, enterprise, pride, avarice; business motives. **Objective factors**: income distribution, windfall gains/losses, fiscal policy, rate of interest, expectations, credit availability, wealth, change in prices.

In macroeconomics, **investment** means addition to the **physical stock of capital** (machinery, buildings, inventories) – not purchase of shares.

- **Autonomous investment** – independent of income (government investment, investment due to innovation); horizontal line.
- **Induced investment** – depends on income/profit expectations; rises with income.
- **Gross investment** = net investment + depreciation.

Marginal efficiency of capital (MEC)

MEC is the **expected rate of return** on an additional unit of a capital asset – the rate of discount that equates the present value of expected returns with the supply price (cost) of the asset.

√x FORMULA Marginal efficiency of capital

Supply price C = R1/(1 + r) + R2/(1 + r)² + ... + Rn/(1 + r)^n, where r = MEC

Investment is undertaken as long as MEC > rate of interest; equilibrium where MEC = rate of interest

Determinants of investment: MEC (expectations, technology, demand), rate of interest, business confidence ("**animal spirits**"), government policy, availability of credit.

The **multiplier** (developed by **R.F. Kahn**, 1931 – employment multiplier; used by **Keynes** – investment multiplier) shows how many times income increases as a result of an initial increase in investment.

√x FORMULA Multiplier

k = ΔY / ΔI = 1 / (1 − MPC) = 1 / MPS

With taxes and imports (open economy): k = 1 / [1 − MPC(1 − t) + MPM]

Government expenditure multiplier = 1/(1 − MPC); tax multiplier = −MPC/(1 − MPC); balanced budget multiplier = 1

MPC	MPS	Multiplier
0.5	0.5	2
0.75	0.25	4
0.8	0.2	5
0.9	0.1	10

Working of the multiplier

An investment of ₹100 crore becomes income for workers and suppliers. With MPC = 0.8, they spend ₹80 crore, which becomes others' income, who spend ₹64 crore, and so on. Total increase = 100 + 80 + 64 + ... = 100 × 1/(1 − 0.8) = **₹500 crore**.

Leakages of the multiplier

Saving, payment of debts, purchase of old shares and securities, hoarding of idle cash, imports, taxes, price inflation (reduces real income), and undistributed profits.

Assumptions and limitations

Constant MPC; no time lag; closed economy; existence of excess capacity and unemployed resources; consumer goods available; net increase in investment. In less developed countries the multiplier works weakly because of supply bottlenecks, disguised unemployment and the non-monetised sector.

WORKED EXAMPLE **Equilibrium income and multiplier**

C = 100 + 0.75Y; I = 200 (autonomous).

Equilibrium: Y = C + I → Y = 100 + 0.75Y + 200 → 0.25Y = 300 → **Y = 1,200**. C = 100 + 900 = 1,000. S = Y − C = 200 = I ✓.

If investment rises by 50: k = 1/0.25 = 4 → ΔY = 200 → new Y = **1,400**.

If full-employment income is 1,600, the **deflationary gap** = (1,600 − 1,200) ÷ 4 = **100** extra spending needed.

If all people try to save more, aggregate demand and income fall; in the end total saving may not increase (and may even fall). What is good for an individual (thrift) may be bad for the economy as a whole – an example of the **fallacy of composition**.

COMMON MISTAKE **Do not count purchase of shares as "investment" in macroeconomics – it is a financial transfer. Investment means real capital formation.**

5.3 Three-sector and four-sector models

Model	Equilibrium condition	Multiplier
Two-sector	Y = C + I	1/(1 − b) = 1/MPS
Three-sector (with government, lump-sum tax)	Y = C + I + G; C = a + b(Y − T)	Expenditure 1/(1 − b); **tax multiplier −b/(1 − b)**; balanced-budget multiplier = **1**
Three-sector (proportional tax t)	C = a + b(1 − t)Y	1/[1 − b(1 − t)]
Four-sector (open economy)	Y = C + I + G + (X − M); M = M_o + mY	**1/(1 − b + m)** (with tax rate t: 1/[1 − b(1 − t) + m])

WORKED EXAMPLE **Equilibrium income**

C = 100 + 0.8Y, I = 200 → Y = (100 + 200)/(1 − 0.8) = **1,500**; multiplier 5.

With G = 100 and lump-sum T = 100: Y = (100 − 0.8 × 100 + 200 + 100)/0.2 = **1,600** (balanced budget raised Y by 100).

Open economy: C = 100 + 0.8Y, I = 200, X = 100, M = 50 + 0.05Y → Y = (100 + 200 + 100 − 50)/(0.25) = **1,400**; multiplier 4.

NOTE **Leakages and injections**

Saving, taxes and imports are **leakages**; investment, government spending and exports are **injections**. Equilibrium: S + T + M = I + G + X. **Inflationary gap** – aggregate demand exceeds AD at full employment; **deflationary gap** – AD falls short.

Chapter 6: Business Cycles

- **Business cycles** are recurrent fluctuations in aggregate economic activity (output, income, employment) – periodic but **not regular** in length or amplitude.

Phase	Features
Expansion (boom)	Rising output, employment, demand, prices, profits, credit, investment and stock prices
Peak	Upper turning point; full capacity; inflation, shortages, rising costs; growth stops
Contraction (recession)	Falling demand, output, employment, profits; investment cut; pessimism
Trough (depression)	Lowest point; mass unemployment, idle capacity, low prices and interest rates
Recovery	Revival of demand and investment; leads to expansion

Features: occur periodically; affect all sectors (synchronous); international in nature; **capital-goods and durable-goods industries fluctuate more** than consumer non-durables; cumulative (self-reinforcing).

Theories / causes	Explanation
Internal – Keynes	Fluctuations in **aggregate effective demand**, especially investment (marginal efficiency of capital)
Hawtrey	Purely **monetary** – expansion and contraction of bank credit
Hayek	Over-investment theory – monetary over-investment
Schumpeter	**Innovations** create waves of investment
Pigou	Psychological – waves of **optimism and pessimism**
Samuelson / Hicks	Interaction of **multiplier and accelerator**
External	Wars, natural disasters, technology shocks, oil prices, pandemic (COVID-19 recession 2020)

Indicators: leading (stock prices, new orders, building permits, consumer expectations) change before the economy; **coincident** (GDP, industrial production, retail sales); **lagging** (unemployment rate, interest rates, inventories) change after.

REMEMBER **Business cycles matter for business – timing of investment, inventory, pricing and hiring decisions; firms use counter-cyclical strategies and diversification.**

Chapter 7: Public Finance

7.1 Fiscal functions of government (Musgrave)

Function	Meaning
Allocation	Provide public goods and correct market failures (resources to socially desirable uses)
Distribution	Reduce inequality – progressive taxes, transfers, subsidies
Stabilisation	Control inflation and unemployment – fiscal policy
Regulation (sometimes added)	Rules for markets, environment, consumer protection

7.2 Market failure

Cause	Meaning / example
Market power	Monopoly restricts output and raises price → deadweight loss
Externalities	Costs or benefits to third parties not reflected in price. Negative production externality – factory pollution (MSC > MPC → over-production); negative consumption – smoking; positive – vaccination, education (MSB > MPB → under-production)
Public goods	**Non-rival** and **non-excludable** (defence, street lights) → **free-rider problem**, markets under-provide. **Quasi-public / impure** goods – partly rival or excludable (roads with tolls). **Common-pool resources** – rival but non-excludable (fisheries) → "tragedy of the commons"
Incomplete / asymmetric information	**Adverse selection** (before the transaction – "market for lemons", insurance) and **moral hazard** (after – insured person takes more risk)
Merit goods	Under-consumed if left to market – education, health; **demerit goods** over-consumed – alcohol, tobacco

7.3 Government intervention

- Correcting externalities: **Pigouvian tax** equal to marginal external cost; subsidies for positive externalities; **tradable emission permits** (cap and trade); direct regulation; **Coase theorem** – private bargaining if property rights are clear and transaction costs low.
- Price controls: **price ceiling** (maximum price below equilibrium → shortage, black market, rationing); **price floor/minimum support price** (above equilibrium → surplus, government procurement).
- Information: mandatory disclosure, labelling, licensing, standards. Market power: competition law (Competition Act, 2002; CCI).

7.4 Fiscal policy

Fiscal policy is the policy of the government regarding **taxation, public expenditure and public borrowing** to achieve macroeconomic objectives.

Objectives

Economic growth; full employment; price stability; reducing inequality of income and wealth; balanced regional development; mobilisation of resources for development; external balance.

Instruments

Instrument	How it works
Taxation	Direct (income tax, corporate tax) and indirect (GST, customs); higher taxes reduce demand
Public expenditure	Development (infrastructure, health, education) and non-development (defence, interest); raises AD
Public borrowing / debt	Internal (market loans, small savings) and external; finances deficits
Deficit financing	Borrowing from RBI/creating money (now restricted)
Budget	Annual financial statement balancing these instruments

Types of fiscal policy

- **Expansionary fiscal policy** – increase government spending or cut taxes (used in recession).
- **Contractionary fiscal policy** – reduce spending or raise taxes (used in inflation).
- **Automatic stabilisers** – progressive income tax and unemployment benefits automatically moderate the business cycle.
- **Discretionary fiscal policy** – deliberate changes by the government.

Fiscal policy vs monetary policy

Basis	Fiscal policy	Monetary policy
Authority	Government (Ministry of Finance)	Central bank (RBI)
Instruments	Taxes, expenditure, borrowing	Repo, CRR, SLR, OMO
Time lag	Longer decision lag; implemented through budget	Shorter decision lag; longer transmission lag
Effect	Direct effect on demand, distribution	Indirect through credit and interest rates
Objective emphasis	Growth, distribution, development	Price stability

Under **Article 112** of the Constitution, the Government presents to Parliament an **Annual Financial Statement** – estimated receipts and expenditure for the financial year (1 April to 31 March). The Union Budget is presented on **1 February** (since 2017) by the Finance Minister. The Railway Budget was merged with the General Budget in 2017.

Components of the budget

Account	Receipts	Expenditure
Revenue account	**Tax revenue** (income tax, corporation tax, GST, customs, excise) and **non-tax revenue** (interest receipts, dividends and profits from PSUs and RBI, fees, fines, grants)	Revenue expenditure – does not create assets or reduce liabilities: salaries, interest payments, subsidies, pensions, grants to States
Capital account	Borrowings and other liabilities, recovery of loans, disinvestment (other receipts)	Capital expenditure – creates assets or reduces liabilities: infrastructure, purchase of machinery, loans to States, repayment of debt

REMEMBER **A receipt is capital if it creates a liability (borrowing) or reduces an asset (disinvestment, loan recovery). Expenditure is capital if it creates an asset or reduces a liability.**

Budget deficits

FORMULA **Budget deficits**

Revenue deficit (RD) = Revenue expenditure − Revenue receipts

Fiscal deficit (FD) = Total expenditure − Total receipts excluding borrowings = Borrowings and other liabilities

Primary deficit (PD) = Fiscal deficit − Interest payments

Effective revenue deficit = Revenue deficit − Grants for creation of capital assets

WORKED EXAMPLE **Budget deficits (₹ lakh crore – hypothetical)**

Revenue receipts 30; Revenue expenditure 37; Capital receipts (non-debt: loan recovery + disinvestment) 1; Capital expenditure 11; Interest payments 12.

Total expenditure = 37 + 11 = 48. Total receipts excluding borrowings = 30 + 1 = 31.

Revenue deficit = 37 − 30 = 7. **Fiscal deficit** = 48 − 31 = 17. **Primary deficit** = 17 − 12 = 5.

Significance of deficits

- **Revenue deficit** – government dissaving; borrowing used for consumption.
- **Fiscal deficit** – total borrowing requirement; high FD leads to debt burden, inflation, crowding out of private investment.
- **Primary deficit** – borrowing for current needs excluding interest on past debt.

FRBM Act, 2003

The **Fiscal Responsibility and Budget Management Act, 2003** sets rules for fiscal discipline: reduce fiscal and revenue deficits, keep debt sustainable, transparency through Medium-Term Fiscal Policy Statements. After the N.K. Singh Committee (2017), the focus shifted to a **debt target** (general government debt 60% of GDP; Centre 40%) and a fiscal deficit target of 3% of GDP. The Centre has since moved to a **debt-to-GDP glide path** (aiming for a declining debt ratio) – check the latest budget for current targets.

√x FORMULA Deficit measures

Revenue deficit = revenue expenditure − revenue receipts; Fiscal deficit = total expenditure − (revenue receipts + non-debt capital receipts) = borrowings; **Primary deficit = fiscal deficit − interest payments**; Effective revenue deficit = revenue deficit − grants for creation of capital assets.

Chapter 8: Money Market

Money is anything that is **generally accepted** as a medium of exchange and measure of value. "Money is what money does" (Walker).

Function type	Functions
Primary	**Medium of exchange**; **measure (unit) of value**
Secondary	**Store of value**; **standard of deferred payments**; **transfer of value**
Contingent	Basis of credit; distribution of national income; equalising marginal utilities; liquidity

Barter system and its difficulties

Lack of **double coincidence of wants**, lack of common measure of value, indivisibility of goods, difficulty of storing value, and difficulty of deferred payments.

Kinds of money

Commodity money, metallic money (full-bodied, token), paper money (convertible, inconvertible – **fiat money**), bank (credit) money – demand deposits, **digital money** – UPI balances in bank accounts, **Central Bank Digital Currency (e₹)** issued by RBI as a pilot from 2022.

8.2 Demand for money

Theory	Key idea
Fisher – quantity theory (transactions)	MV = PT; money demanded for transactions; P ∝ M (V and T constant)
Cambridge – cash balance (Marshall, Pigou)	Md = kPY – people hold a fraction k of income as money; k = 1/V
Keynes – liquidity preference	Three motives: **transactions** and **precautionary** (depend on income) and **speculative** (inversely related to the interest rate). **Liquidity trap** – at a very low interest rate, demand for money becomes perfectly elastic and monetary policy is ineffective
Friedman – modern quantity theory	Demand for money as an asset depends on permanent income, returns on bonds, equities, physical goods and inflation; stable function
Baumol (inventory approach) and Tobin (portfolio approach)	Baumol: transactions demand depends on interest rate and brokerage cost (square-root formula); Tobin: speculative demand from risk aversion and portfolio diversification

8.3 Supply of money

Measure	Components
M0 (Reserve money / high-powered money)	Currency in circulation + bankers' deposits with RBI + other deposits with RBI
M1 (Narrow money)	Currency with the public + demand deposits with banks + other deposits with RBI
M2	M1 + savings deposits with post office savings banks (earlier) / M1 + short-term time deposits (new aggregates)
M3 (Broad money)	M1 + **time deposits** with banks
M4	M3 + total post office deposits (excluding NSCs)

Money multiplier = M3 / M0. Money supply depends on high-powered money and the money multiplier (which depends on CRR, currency-deposit ratio, excess reserves).

√x FORMULA Money multiplier

Money supply M = m × H, where H = high-powered money (reserve money M0 = currency in circulation + bankers' deposits with RBI + other deposits with RBI)

m = (1 + c) ÷ (c + r), c = currency–deposit ratio, r = reserve ratio. Higher c or r → smaller multiplier.

Simple credit multiplier = 1/r. EXAMPLE: c = 0.2, r = 0.1 → m = 1.2/0.3 = **4**.

- Determinants of money supply: RBI's policy (reserve money), banks' reserve behaviour, public's currency preference, government deficit financing. **Cryptocurrency** – private digital tokens using blockchain, not legal tender in India; **CBDC (e₹)** – RBI's digital rupee, legal tender (pilot from 2022).

8.4 Monetary policy and the RBI

Monetary policy is the policy of the central bank regarding the **cost (interest rates), availability and supply of money and credit** to achieve macroeconomic objectives.

Objectives

Price stability (primary – inflation targeting), keeping in mind the objective of **growth**; exchange rate stability; financial stability; full employment.

Monetary Policy Framework (2016)

- RBI Act amended in **2016** to provide a statutory basis for **flexible inflation targeting**.
- **Inflation target**: **4% CPI (Combined) inflation, with a tolerance band of ±2%** (2%–6%), set by the Government in consultation with RBI for five-year periods (retained for 2021–26; check for any revision).
- **Monetary Policy Committee (MPC)**: **6 members** – 3 from RBI (Governor as chairperson, Deputy Governor in charge of monetary policy, one RBI officer) and 3 external members appointed by the Government; meets at least **4 times a year** (in practice 6); decisions by majority; Governor has a **casting vote**.
- If inflation stays outside the band for **three consecutive quarters**, RBI must report reasons to the Government.

Instruments of monetary policy

Quantitative (general) instruments	Meaning
Repo rate	Rate at which RBI lends short-term funds to banks against government securities – the **key policy rate**
Standing Deposit Facility (SDF)	Rate at which RBI absorbs liquidity from banks without collateral – **floor** of the LAF corridor (repo – 25 bps), introduced April 2022
Reverse repo rate	Rate at which RBI borrows from banks against securities (now less important; SDF is the floor)
Marginal Standing Facility (MSF)	Overnight borrowing by banks from RBI beyond LAF – **ceiling** of the corridor (repo + 25 bps); **Bank Rate** is aligned with MSF
Cash Reserve Ratio (CRR)	% of net demand and time liabilities (NDTL) banks must keep as cash with RBI; no interest paid
Statutory Liquidity Ratio (SLR)	% of NDTL banks must maintain in liquid assets – cash, gold, approved government securities
Open Market Operations (OMO)	RBI buys (injects liquidity) or sells (absorbs liquidity) government securities
Liquidity Adjustment Facility (LAF)	Repo and reverse repo/SDF operations for day-to-day liquidity, including variable rate repo auctions

Qualitative (selective) instruments	Meaning
Margin requirements	Difference between value of security and loan amount; raising margin reduces credit for speculation
Credit rationing	Ceilings on credit to particular sectors
Moral suasion	Persuasion and advice to banks

Qualitative (selective) instruments	Meaning
Direct action	Penal measures against non-complying banks
Priority sector lending	Directed credit to agriculture, MSMEs, education, housing etc.

NOTE **The current values of repo, SDF, MSF, CRR and SLR change after MPC meetings. Check the latest RBI monetary policy statement before your exam rather than memorising old figures.**

Expansionary vs contractionary policy

Policy	Purpose	Tools
Expansionary (cheap money)	Fight recession, boost growth	Cut repo, CRR, SLR; buy securities (OMO)
Contractionary (dear money)	Control inflation	Raise repo, CRR; sell securities

WORKED EXAMPLE **CRR and liquidity**

NDTL of banks = ₹200 lakh crore. If RBI cuts CRR by 0.5 percentage point, primary liquidity released = 0.5% × 200 = **₹1 lakh crore**. Through the credit multiplier, total credit can rise by more than this amount.

Credit creation by commercial banks

FORMULA **Credit multiplier**

Credit multiplier = 1 / Required reserve ratio; Total deposits created = Initial deposit × 1/r

WORKED EXAMPLE **Credit creation**

Initial deposit ₹10,000; reserve ratio 10%. Maximum deposits = 10,000 × 1/0.10 = ₹1,00,000. Credit created = ₹90,000.

Transmission and limitations of monetary policy in India

Weak transmission of policy rates to lending rates (improved by **External Benchmark Lending Rate** linked loans from 2019), large informal sector, government borrowing, supply-side inflation (food, fuel) not controlled by monetary tools, and global factors.

EXAM TIP **A good answer on monetary policy always mentions the 4% ± 2% CPI target, the 6-member MPC, and the LAF corridor (SDF – repo – MSF).**

Chapter 9: International Trade

9.1 Theories of international trade

Theory	Idea
Mercantilism	Trade surplus and accumulation of gold = national wealth; zero-sum view; protectionism
Absolute advantage (Adam Smith, 1776)	Each country specialises in goods it produces at **absolutely lower cost**
Comparative advantage (David Ricardo, 1817)	Trade benefits both even if one country is better at everything – specialise where the **opportunity cost is lower** (labour theory of value)
Heckscher–Ohlin (factor endowment)	A country exports goods that use its **abundant factor** intensively (labour-abundant India → labour-intensive goods); factor-price equalisation tendency
Leontief paradox	US (capital-abundant) exported labour-intensive goods – contrary to H-O
New trade theory (Paul Krugman)	**Economies of scale**, product differentiation and network effects explain trade between similar countries (intra-industry trade); first-mover advantage

WORKED EXAMPLE **Comparative advantage**

India: 1 unit of cloth = 2 hours, wheat = 4 hours; UK: cloth 3 hours, wheat 4 hours. India has an absolute advantage in cloth (2 < 3 hours); wheat costs the same 4 hours in both. Opportunity cost of cloth: India 0.5 wheat, UK 0.75 wheat → India specialises in **cloth**, UK in **wheat**.

9.2 Instruments of trade policy

Instrument	Meaning
Tariffs	Taxes on imports (or exports) – **specific** (per unit), **ad valorem** (% of value), compound/mixed, **anti-dumping duty**, **countervailing duty** (against export subsidies), safeguard duty
Non-tariff measures	**Import quotas**, licensing, technical barriers (TBT), sanitary and phytosanitary (SPS) measures, **voluntary export restraints**, local content requirements
Export-related	Export subsidies, export taxes, export restrictions
Dumping	Selling abroad below normal (home) price – predatory, persistent, sporadic; counter with anti-dumping duty

9.3 Trade negotiations

- **GATT (1947)** → **WTO** (1 January 1995, Marrakesh Agreement; headquarters Geneva; India a founder member). Principles: **MFN (non-discrimination)**, **national treatment**, transparency, reciprocity, special treatment for developing countries. Agreements: GATT 1994, **GATS** (services), **TRIPS** (intellectual property), TRIMS, Agreement on Agriculture (amber, blue, green boxes), Dispute Settlement Understanding. Ministerial Conference is the top body.
- Regional trade agreements: FTA, customs union, common market, economic union (e.g., SAFTA, ASEAN–India FTA, India–UAE CEPA, India–Australia ECTA).

9.4 Exchange rates

- **Exchange rate** = price of one currency in terms of another. **Direct quote** (₹ per $) and **indirect quote** ($ per ₹).
- Systems: **fixed/pegged**, **floating** (market-determined), **managed float** (India – RBI intervenes to curb volatility).
- ₹ **depreciates** when ₹/$ rises (e.g., 83 → 86) – exports become cheaper, imports dearer. **Devaluation/revaluation** – official change under a fixed system.
- Determinants: demand for and supply of foreign exchange – imports, exports, capital flows, interest rates, inflation differentials (**purchasing power parity**), speculation. **Nominal vs real exchange rate** (real = nominal × foreign price/domestic price).

9.5 International capital movements

Type	Meaning
FDI	Investment with **lasting interest and control** (10% or more of equity in a listed company – Indian practice) – green-field, brown-field (mergers & acquisitions); horizontal, vertical, conglomerate
FPI	Portfolio investment in shares/bonds **without control**; more volatile ("hot money")
Other	External commercial borrowings (ECB), loans, NRI deposits, foreign aid

Benefits of FDI: capital, technology, employment, exports, competition. **Concerns:** profit repatriation, crowding out, control of strategic sectors. **Balance of payments** – current account (trade, services, transfers, income) + capital/financial account.

Trends and composition

- India's major exports: petroleum products, engineering goods, gems and jewellery, pharmaceuticals, electronic goods, textiles, chemicals, rice, and **software services**.
- Major imports: crude oil and petroleum, electronics, gold, coal, machinery, chemicals, edible oils.
- Major trading partners: USA, China, UAE, Saudi Arabia, EU countries.
- India usually has a **merchandise trade deficit** but a **services trade surplus**; **remittances** (India is the world's largest recipient) support the current account.

Balance of payments (BoP)

Account	Contents
Current account	Trade in goods (visible), services (invisibles), primary income (investment income), secondary income (remittances, grants)
Capital and financial account	FDI, FPI, external commercial borrowings, banking capital, NRI deposits, change in reserves

- **Balance of trade** = exports of goods – imports of goods.
- BoP always balances in accounting sense; a deficit/surplus refers to the balance before reserve changes.

Foreign Trade Policy and institutions

- **Foreign Trade Policy 2023** (from 1 April 2023) – no end date; focuses on incentives to remission (RoDTEP), export promotion through districts as export hubs, e-commerce exports, and rupee trade settlement.
- **DGFT** (Directorate General of Foreign Trade) administers trade policy; **EXIM Bank** finances exports; **ECGC** provides export credit insurance; Export Promotion Councils; **Special Economic Zones (SEZ Act, 2005)**.
- India is a founding member of the **WTO** (1 January 1995).
- **FEMA, 1999** replaced FERA, 1973 – violations are civil offences.
- **FDI**: automatic route for most sectors; government route for sensitive sectors; DPIIT policy.

COMMON MISTAKE **Do not write that NITI Aayog allocates funds to States – it is a think tank; funds are allocated through the Finance Commission and Union ministries.**

EXAM TIP **For Indian economy questions, structure answers as: background → measures/policy → achievements → problems → suggestions. Quote approximate shares with "about" and the year of data.**

Chapter 10: Indian Economy

10.1 Indian economy in the pre-independence period

- **Ancient and medieval India** – prosperous; famous for textiles, metallurgy and trade (India's share of world GDP was large in 1700, estimated around a quarter VERIFY).
- **Colonial period: de-industrialisation** (decline of handicrafts due to cheap British goods and discriminatory tariffs), **drain of wealth** (Dadabhai Naoroji), commercialisation of agriculture, land revenue systems (**Permanent Settlement 1793 – zamindari**, ryotwari, mahalwari), famines, railways built mainly for raw-material export, stagnant per-capita income, low literacy and life expectancy at independence.

10.2 Indian economy from independence to 1991

- Planning Commission set up in **March 1950** (chairman – Prime Minister); India followed **Five-Year Plans** from 1951 to 2017 (12 plans).

Plan	Period	Focus / model
First	1951–56	Agriculture (Harrod–Domar model)
Second	1956–61	Heavy industries (**Mahalanobis model**)
Third	1961–66	Self-reliance; failed due to wars and drought; plan holidays 1966–69
Fourth	1969–74	Growth with stability
Fifth	1974–79	Removal of poverty (*Garibi Hatao*)
Sixth	1980–85	Poverty removal, employment
Seventh	1985–90	Food, work, productivity; annual plans 1990–92
Eighth	1992–97	Human development; LPG reforms (Rao–Manmohan model)
Ninth	1997–2002	Growth with social justice
Tenth	2002–07	Monitorable targets
Eleventh	2007–12	Faster and more inclusive growth
Twelfth	2012–17	Faster, more inclusive and sustainable growth

NITI Aayog

The **NITI Aayog (National Institution for Transforming India)** replaced the Planning Commission on **1 January 2015**.

Basis	Planning Commission	NITI Aayog
Approach	Top-down; one-size-fits-all	Bottom-up; **cooperative federalism**
Role	Allocated funds to ministries and States	**Think tank**; policy advice; no fund allocation
States	Limited role	Governing Council includes all Chief Ministers and LGs
Planning	Five-Year Plans	15-year vision, 7-year strategy, 3-year action agenda (and now Viksit Bharat @2047 vision)

Structure: Chairperson (Prime Minister), Vice-Chairperson, full-time members, part-time members, ex-officio members (Union Ministers), CEO, Governing Council, Regional Councils. Initiatives: **Atal Innovation Mission**, Aspirational Districts Programme, SDG India Index, Export Preparedness Index.

- Features of 1950–90: mixed economy with a dominant **public sector**; **Industrial Policy Resolutions 1948 and 1956**; licence-permit raj; import substitution; **Green Revolution** (mid-1960s – HYV seeds, fertilisers, irrigation); bank nationalisation (**1969**, 1980); MRTP Act 1969; FERA 1973; "Hindu rate of growth" (~3.5%).
- **1991 crisis:** high fiscal deficit, balance-of-payments crisis (foreign exchange reserves enough for about two weeks of imports), inflation, Gulf war oil shock.

10.3 Economic reforms since 1991

In **1991**, India faced a severe **balance of payments crisis** (foreign exchange reserves enough for only about two weeks of imports), high fiscal deficit, high inflation and a fall in remittances due to the Gulf war. The Government (PM P.V. Narasimha Rao, FM Dr Manmohan Singh) launched the **New Economic Policy** based on **Liberalisation, Privatisation and Globalisation (LPG)**.

Component	Measures
Liberalisation	Abolition of industrial licensing (except a few industries); reduction of reserved sectors for the public sector; MRTP restrictions removed (later Competition Act 2002); financial sector reforms (Narasimham Committee) – interest rate deregulation, lower CRR/SLR; tax reforms; FEMA replaced FERA
Privatisation	**Disinvestment** of government equity in PSUs; reduction of public sector monopoly; strategic sales; autonomy to PSUs (Navratna, Maharatna)
Globalisation	Reduction of import tariffs and quantitative restrictions; **rupee convertibility on current account** (1994); encouragement of FDI and FPI; long-term trade policy; joining the WTO (1995)

Impact of reforms

Positive: higher GDP growth, growth of services and IT, larger foreign exchange reserves, increase in FDI, greater competition and consumer choice, improvement in technology. **Criticisms**: neglect of agriculture, jobless growth in some periods, rising inequality, regional imbalance, informalisation of labour, vulnerability to global shocks.

10.4 Indian economy after 1991 – recent developments

- **Institutions and policies:** NITI Aayog (1 January 2015, replaced the Planning Commission), **GST** (1 July 2017), **IBC 2016**, demonetisation (8 November 2016), **Make in India** (2014), Digital India, Start-up India, **PLI schemes** (2020), Atmanirbhar Bharat (2020), UPI and digital payments, Jan Dhan–Aadhaar–Mobile (JAM).
- **Sectors:** services contribute over half of GVA; agriculture employs the largest share of the workforce; manufacturing share stagnant around 15–17% of GVA VERIFY.
- Employs roughly **40–45%** of the workforce but contributes only about **16–18%** of GVA (check latest Economic Survey).
- **Green Revolution** (mid-1960s) – high-yielding variety seeds, fertilisers, irrigation; led by **M.S. Swaminathan**; mainly wheat and rice, Punjab–Haryana–western UP.
- Problems: small and fragmented holdings, dependence on monsoon, low productivity, lack of credit and marketing, post-harvest losses, indebtedness.
- Government measures: **Minimum Support Price (MSP)**, **PM-KISAN** (₹6,000 per year in three instalments), **PM Fasal Bima Yojana** (crop insurance), Kisan Credit Card, **e-NAM** (National Agriculture Market), Soil Health Card, PM Krishi Sinchai Yojana, FPOs (Farmer Producer Organisations).
- Industrial policy resolutions: **1948**, **1956** (public sector dominance – Schedules A, B, C), **1991** (liberalisation).
- **Make in India** (2014), **Production Linked Incentive (PLI)** schemes (2020 onwards) for electronics, pharma, automobiles, textiles, etc., **Start-up India**, **Atmanirbhar Bharat** (2020).
- Index of Industrial Production (**IIP**) measures industrial output (base 2011-12; check revision).
- Problems: infrastructure gaps, power, land acquisition, labour laws (now consolidated into **four labour codes**, in force from 21 November 2025), credit, regional concentration.

The **services (tertiary) sector** contributes **more than 50%** of India's GVA – trade, hotels, transport, communication, finance, real estate, IT and IT-enabled services, public administration, health and education. India is a leading exporter of **software and business services**. Growth drivers: IT revolution, liberalisation, rising incomes, digital public infrastructure (**Aadhaar, UPI, DigiLocker, ONDC**).