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CUET · ECONOMICS · CLASS XII · CODE 309

Market Equilibrium

CUET unit: Forms of Market

By **UniDrill** · NCERT-grounded study material

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📌 Snapshot

- Consumer behaviour (demand) and firm behaviour (supply) together determine market price and quantity in a perfectly competitive market.
- Equilibrium holds under two regimes: (i) a fixed number of firms, and (ii) free entry and exit of identical firms.
- Excess demand and excess supply are corrected through the "Invisible Hand" mechanism that drives price adjustment.
- Demand and supply curves shift — individually and simultaneously; the same framework applies to the labour market.
- Two applications of government intervention follow: price ceiling and price floor.

📖 Detailed Notes

2.1 Core concepts

- A perfectly competitive market consists of buyers and sellers driven by self-interest — consumers maximise preferences, firms maximise profits — and these objectives are compatible at equilibrium (NCERT §5.1, p. 71–72).
- Equilibrium is a situation where the plans of all consumers and firms match and the market clears, i.e. market supply equals market demand at the equilibrium price p and equilibrium quantity q: $q_D(p) = q_S(p)$ (NCERT §5.1, p. 72).
- If market supply exceeds demand at a price there is excess supply; if market demand exceeds market supply at a price there is excess demand. Equilibrium can equivalently be defined as a zero excess demand-zero excess supply situation (NCERT §5.1, p. 72).
- The Adam Smith "Invisible Hand" raises price when there is excess demand and lowers price when there is excess supply, driving the market towards equilibrium (NCERT §5.1 box "Out-of-equilibrium Behaviour", p. 72).
- With a fixed number of firms, equilibrium is the intersection of market demand DD and market supply SS. At $p_1 < p$, excess demand forces price up; at $p_2 > p$, excess supply forces price down (NCERT §5.1.1, Fig. 5.1, p. 72–73).

- In the worked example with qD = 200 − p and qS = 120 + p, equating gives p = 40 and q = 160 kg of wheat; algebraic excess demand = 80 − 2p; excess supply = 2p − 80 (NCERT §5.1.1, Example 5.1, p. 73–74).
- Labour market: households supply labour, firms demand it. A profit-maximising firm hires labour up to w = MRPL where MRPL = MR × MPL; for a perfectly competitive firm MR equals price, so MRPL equals the Value of Marginal Product of Labour (VMPL) (NCERT §5.1.1 box "Wage Determination", p. 74–75).
- Demand for labour slopes downward because of the law of diminishing marginal product: at a higher wage, MPL must rise to maintain w = VMPL, which means less labour is employed (NCERT §5.1.1 box "Wage Determination", p. 75).
- An individual's labour supply curve is backward-bending — at low wages the substitution effect (leisure becomes costlier) dominates so labour rises with wage; at high wages the income effect dominates so labour falls with wage. The market labour supply curve, however, is upward sloping (NCERT §5.1.1 box, p. 76).
- Demand shift with fixed firms: rightward shift in DD raises both equilibrium price and quantity; leftward shift lowers both. The direction of change in p and q is the same (NCERT §5.1.1 "Demand Shift", Fig. 5.2, p. 76–77).
- Supply shift with fixed firms: rightward shift in SS lowers price and raises quantity; leftward shift raises price and lowers quantity. The directions of change in p and q are opposite (NCERT §5.1.1 "Supply Shift", Fig. 5.3, p. 78–79).
- Simultaneous shifts (Table 5.1): if both DD and SS shift rightward (leftward), quantity increases (decreases) unambiguously but price may rise, fall or remain unchanged depending on magnitudes; if DD and SS shift in opposite directions, price changes unambiguously but quantity is ambiguous (NCERT §5.1.1, Table 5.1, p. 80).
- With free entry and exit of identical firms, the equilibrium price is always equal to the minimum average cost of the firms (p = min AC) because supernormal profits attract entry and losses cause exit until each firm earns only normal profit (NCERT §5.1.2, p. 81).
- Under free entry-exit, equilibrium quantity equals market demand at p = min AC, and equilibrium number of firms n0 = q0/q0f where q0f is each firm's output (NCERT §5.1.2, p. 81–82).
- In Example 5.2 with qD = 200 − p and qfs = 10 + p (p ⩾ 20), equilibrium p0 = 20 (= min AC), q0 = 180, each firm supplies 30, so n0 = 180/30 = 6 firms (NCERT §5.1.2, Example 5.2, p. 82).
- Under free entry-exit, a shift in demand changes equilibrium quantity and number of firms in the same direction as the shift, but leaves the equilibrium price unchanged at min AC (NCERT §5.1.2 "Shifts in Demand", Fig. 5.6, p. 82–83).
- Compared with a fixed number of firms, demand shifts have a larger effect on quantity and no effect on price when entry-exit is free (NCERT §5.1.2, p. 83).

- Price ceiling is a government-imposed upper limit on the price of a good; when set below the equilibrium price it creates excess demand (shortage), often handled via rationing through fair price shops, with possible side-effects of long queues and black markets (NCERT §5.2.1, Fig. 5.7, p. 84–85).
- Price floor is a government-imposed lower limit on the price of a good; when set above the equilibrium price it creates excess supply. Familiar examples are agricultural price-support programmes and minimum-wage legislation (NCERT §5.2.2, Fig. 5.8, p. 85).

2.2 Definitions to memorise

Term	Definition	Page
Equilibrium	A situation where the plans of all consumers and firms in the market match and market supply equals market demand.	72
Excess demand	At a given price, market demand exceeds market supply.	72
Excess supply	At a given price, market supply exceeds market demand.	72
Equilibrium price (p*)	The price at which market demand equals market supply.	72
Equilibrium quantity (q*)	The quantity bought and sold at the equilibrium price.	72
Marginal Revenue Product of Labour (MRPL)	Additional revenue earned by employing one extra unit of labour; MRPL = MR × MPL.	75
Value of Marginal Product of Labour (VMPL)	Price of the commodity times MPL; equals MRPL in a perfectly competitive firm.	75
Price ceiling	Government-imposed upper limit on the price of a good or service.	84
Price floor	Government-imposed lower limit on the price of a good or service.	85
Normal profit	Profit level just enough to cover explicit costs and opportunity costs of the firm.	Glossary
Supernormal profit	Profit earned over and above normal profit.	Glossary
Perfect competition	Market with many small price-taking firms, homogeneous product and free entry-exit	71
Invisible Hand	Adam Smith's metaphor for price adjustment that clears markets through self-interest	72
Market clearing	State of equilibrium where qD = qS at p*	72

Term	Definition	Page
Free entry-exit equilibrium	Long-run equilibrium where p = min LRAC and every firm earns zero supernormal profit	81
Wage rate	Price of labour services per unit time	75
Backward-bending labour supply	Individual labour-supply curve that turns leftward at high wages because the income effect dominates	76
Rationing	Allocation mechanism (e.g., fair price shops) used when a price ceiling creates excess demand	84
Minimum Support Price (MSP)	Agricultural price floor announced by the government	85
Black market	Illegal market that emerges when price ceilings create persistent shortages	84
Substitution effect (labour)	Higher wages make leisure costlier, raising hours worked	76
Income effect (labour)	Higher wages raise real income, encouraging more leisure	76
Demand shift	Movement of the entire demand curve due to non-price factors (income, tastes, related prices)	76–77
Supply shift	Movement of the entire supply curve due to non-price factors (input costs, technology, taxes)	78–79
Number of firms (n)	n = market quantity ÷ output of representative firm in long-run equilibrium	82

2.3 Diagrams / processes to remember

- Figure 5.1: Market equilibrium with fixed number of firms — intersection of SS and DD at (p, q); illustrates excess supply above p and excess demand below p (p. 72).
- Figure 5.2: Shifts in demand with fixed firms — rightward shift moves equilibrium to G (higher p, higher q); leftward shift moves to F (lower p, lower q) (p. 77).
- Figure 5.3: Shifts in supply with fixed firms — leftward shift raises p and lowers q; rightward shift lowers p and raises q (p. 78).
- Labour market diagram: upward-sloping market labour supply meets downward-sloping labour demand at equilibrium wage w* (p. 75).
- Figure 5.4: Simultaneous shifts — rightward shifts of both curves; opposite shifts (rightward SS, leftward DD) (p. 80).
- Figure 5.5: Free entry-exit — equilibrium at intersection of DD with horizontal price line p0 = min AC (p. 81).
- Figure 5.6: Demand shifts under free entry-exit — quantity changes but price stays fixed at min AC (p. 83).

- Figure 5.7: Price ceiling pc below p* creates excess demand qc – qc' in the wheat market (p. 84).
- Figure 5.8: Price floor pf above p* creates excess supply qf' – qf (p. 85).

2.5 Key formulas

Formula	Meaning	NCERT page
Equilibrium: $q^s(p) = q^d(p)$	Market clears when supply equals demand at p*	72
Excess demand = $q^d - q^s$ at $p < p^*$	Pushes price up	72
Excess supply = $q^s - q^d$ at $p > p^*$	Pushes price down	72
MRPL = MR × MPL	Marginal revenue product of labour	75
VMPL = p × MPL	Value of marginal product of labour (competitive only)	75
Wage in competitive labour market: w* where market labour demand = market labour supply	Equilibrium wage	75
Free entry-exit equilibrium: p = min LRAC	Long-run zero supernormal profit	81
Price ceiling binds when $pc < p^*$	Creates excess demand and rationing	84
Price floor binds when $pf > p^*$	Creates excess supply and surplus	85
Shift effects (fixed firms): ↑D ⇒ ↑p, ↑q; ↑S ⇒ ↓p, ↑q	Comparative-statics direction	77–78
Shift effects (free entry-exit): ↑D ⇒ no Δp, ↑q via more firms	Long-run quantity adjustment	83
Backward-bending individual labour supply vs upward-sloping market supply	Aggregation outcome	75
Tax on producers shifts S leftward; tax on consumers shifts D leftward	Statutory vs economic incidence	86

2.4 Common confusions / NTA trap points

- Students confuse equilibrium price (a per-unit money figure) with equilibrium quantity (units bought/sold); always check what the question asks.
- The MRPL = MR × MPL formula: under perfect competition (only), MR = price, so MRPL = VMPL. Don't apply this to monopoly markets.

- Direction of change in supply shifts: rightward SS shift lowers price but raises quantity — students often mistakenly assume both move together as in demand shifts.
- Free entry-exit eliminates supernormal profit but firms still earn normal profit; "no profit" is wrong — normal profit is built into costs.
- Price ceiling must be set below the equilibrium price to bite; if set above, it is non-binding. Similarly a price floor must be above p*. NTA distractors flip these.
- The individual labour supply is backward-bending but the market labour supply curve is upward-sloping — easy to confuse.

🎯 Practice MCQs

📊 PYQ Alignment

This chapter is one of the most consistently tested topics in CUET Economics, contributing roughly 10–12 MCQs across past CUET papers. Expect numerical questions on solving qD = qS for p and q, conceptual questions on excess demand/supply directions, statement-based and assertion-reason items on price ceiling vs price floor and on equilibrium under fixed-number-of-firms vs free-entry-exit regimes, and matching/diagrammatic questions on shifts in demand and supply (Table 5.1 is a perennial favourite).

CUET 2024 — Actual PYQs from this chapter

Q.3 (CUET 2024) Match List-I with List-II List-I List-II (A) Equilibrium (I) Plans of all consumers and firms match (B) Excess supply (II) Demand decreases with increase in income (C) Inferior good (III) Supply greater than market demand (D) Price ceiling (IV) Upper limit imposed by government Options:

- A) A-I, B-II, C-III, D-IV B) A-I, B-III, C-II, D-IV C) A-I, B-II, C-IV, D-III D) A-III, B-IV, C-I, D-II Tests: Equilibrium, excess supply, inferior goods, price ceiling Answer: Not in extracted key