Perfect Competition & Monopoly

AQA A-Level Economics

Profit Maximisation · Perfect Competition · Monopoly · Barriers to Entry · Efficiency · Price Discrimination

Revenue, Profit & the MC = MR Rule

Revenue:

Total revenue (TR) = P × Q. Average revenue (AR) = TR ÷ Q = price, so the AR curve is the demand curve. Marginal revenue (MR) is the extra revenue from selling one more unit.

Profit = Total Revenue – Total Cost

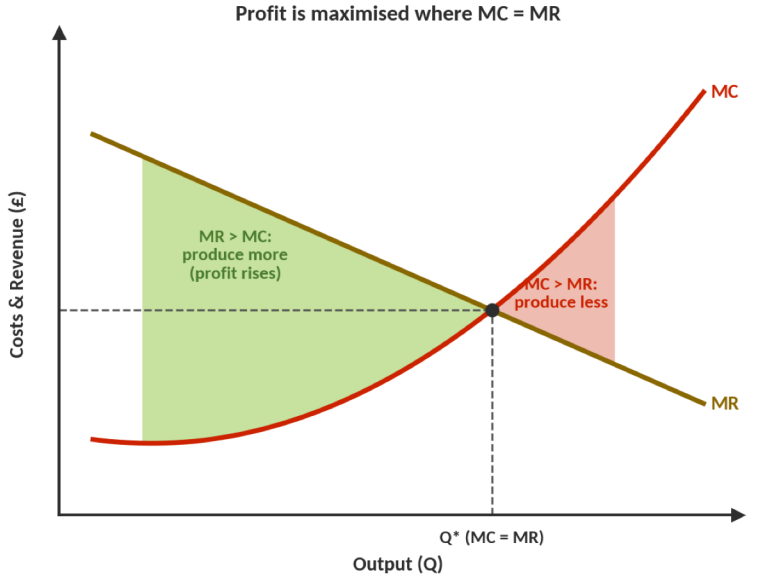
Normal vs supernormal profit:

Normal profit is the minimum profit needed to keep a firm in the industry (AR = AC). It counts as a cost. Supernormal profit is any profit above this (AR > AC).

The profit-maximising rule:

Profit is maximised where MC = MR. If MR > MC, producing one more unit adds to profit. If MC > MR, the last unit reduces profit — so output should be cut.

Short-run shutdown rule: a firm keeps producing at a loss as long as price covers average variable cost (AR ≥ AVC).



Real-World Example

Energy firms 2022: soaring gas prices gave Shell (~$40bn) and BP (~$28bn) record supernormal profits — the UK responded with the Energy Profits Levy windfall tax.

Perfect Competition: Characteristics

A theoretical benchmark — no real market meets every assumption, but it is used to judge all others:

Many Buyers and Sellers

Each firm is so small relative to the market that it cannot influence the market price on its own.

e.g. One UK wheat farmer's output is a tiny fraction of total world wheat supply.

Homogeneous (Identical) Products

All firms sell identical products, so consumers have no reason to prefer one firm over another.

e.g. Grade 1 wheat or crude oil of a given quality — no branding or product differentiation.

Perfect Information

Buyers and sellers know all prices and production methods, so no firm can charge more than the others.

e.g. Price comparison websites move some markets closer to perfect information.

Freedom of Entry and Exit

There are no barriers to entry or exit, so firms enter when supernormal profits exist and leave when making losses.

e.g. Street food and market stalls have very low start-up costs and few barriers.

Firms Are Price Takers

Each firm must accept the market price. Its demand curve is perfectly elastic (horizontal), so P = AR = MR.

e.g. Raise the price above the market price and the firm sells nothing at all.

Profit Maximisation

All firms aim to maximise profit by producing where MC = MR.

e.g. In reality, many firms have other objectives (see Business Objectives).

Perfect Competition: Short Run & Long Run

Short run:

The market price is set by industry demand and supply. Each firm is a price taker and produces where MC = MR. Firms can make supernormal profits, normal profits or losses in the short run.

Adjustment to the long run:

Supernormal profits attract new firms (no barriers to entry) → industry supply shifts right → price falls until only normal profit is made. If firms make losses, some leave → supply shifts left → price rises.

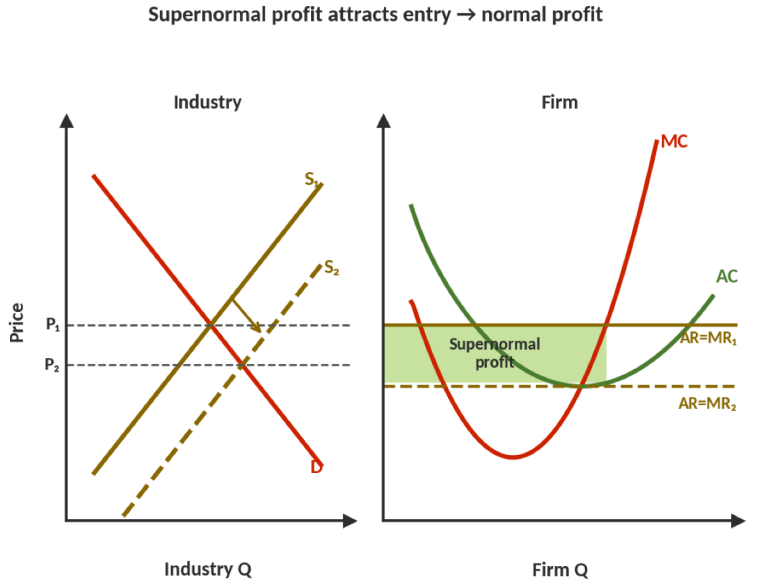
Long-run equilibrium:

P = AR = MR = MC = minimum AC. Every firm makes only normal profit.

Why it matters:

In the long run perfect competition is both allocatively efficient (P = MC) and productively efficient (min AC).

The firm's supply curve is the part of its MC curve above AVC.



Real-World Example

Agricultural markets come closest: thousands of farmers sell near-identical wheat at a price set by global supply and demand — each farmer is a price taker.

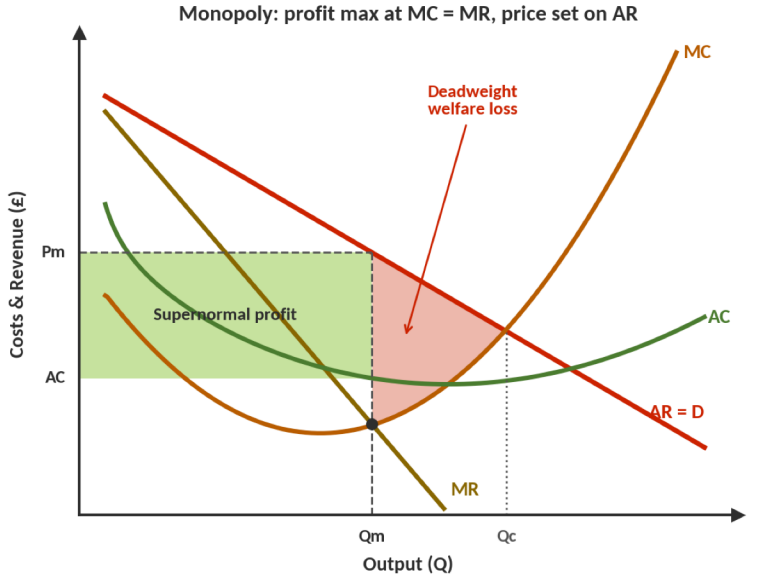
Monopoly

Definition:
A pure monopoly is a single seller of a good with no close substitutes. In the UK, a firm with over 25% market share is treated as having monopoly power by the CMA.

Key features:
High barriers to entry. The firm is a price maker — it faces the downward-sloping market demand curve, so MR is below AR.

Equilibrium:
Profit is maximised where MC = MR. The monopolist sets the highest price consumers will pay for that output (read off the AR curve). Supernormal profits persist in the long run because barriers prevent entry.

Compared with perfect competition:
Price is higher and output lower. P > MC, so there is a deadweight welfare loss — consumer surplus is lost or transferred to the producer.



Real-World Example

Google handles around 90% of UK online searches. Its dominance lets it charge high advertising prices — and has drawn scrutiny from the CMA.

Barriers to Entry

Barriers to entry prevent new firms entering a market — they are the main source of long-run monopoly power:

Economies of Scale

Established firms at MES have much lower average costs than a small new entrant can achieve.

e.g. Aircraft manufacturing — Airbus and Boeing dominate as MES is enormous.

Legal Barriers

Patents, copyrights and government licences give firms the legal right to be the only supplier.

e.g. Pharmaceutical patents last 20 years; only licensed firms can run a UK rail franchise.

Brand Loyalty & Advertising

Heavy advertising creates strong brand loyalty, so new firms face high marketing costs to win customers.

e.g. Coca-Cola spends billions a year on marketing — very hard for a new cola to compete.

Control of Resources or Outlets

Owning key raw materials or distribution channels shuts rivals out of the market.

e.g. De Beers once controlled most of the world's rough diamond supply.

Sunk Costs

Costs that cannot be recovered if a firm leaves the market make entry risky.

e.g. Building a mobile phone network or an oil refinery involves huge sunk costs.

Anti-Competitive Practices

Incumbents may use predatory pricing or limit pricing to deter or drive out new entrants.

e.g. Predatory pricing is illegal under the Competition Act 1998.

Types of Efficiency

Definition:

How well scarce resources are used. Static efficiency is at a point in time; dynamic efficiency is over time.

Allocative efficiency: P = MC **Productive efficiency: minimum AC**

Key types of efficiency:

Allocative Efficiency (P = MC)

Resources are allocated to produce the goods consumers value most. The price consumers pay equals the cost of producing the last unit — welfare is maximised.

e.g. Perfect competition achieves P = MC. A monopoly sets P > MC, so too little is produced and a deadweight loss results.

Productive Efficiency (Min AC)

Output is produced at the lowest possible average cost — at the minimum point of the AC curve. No resources are wasted.

e.g. Perfectly competitive firms produce at minimum AC in the long run. A monopoly usually does not.

Dynamic & X-Efficiency

Dynamic efficiency: costs fall and products improve over time through investment and innovation. X-inefficiency: costs are higher than necessary due to lack of competitive pressure.

e.g. Monopolies can use supernormal profits for R&D (dynamic efficiency) — but may become lazy and wasteful (X-inefficiency).

Monopoly vs Perfect Competition: Evaluation

Monopoly is not always worse — the outcome depends on costs, investment and how the firm uses its profits:

Costs of Monopoly

Higher prices and lower output than in a competitive market — consumer surplus is transferred to the producer.

Allocatively inefficient (P > MC), causing a deadweight welfare loss.

Productively inefficient — does not produce at the minimum of the AC curve.

X-inefficiency: without competitive pressure, costs may rise and quality and choice may fall.

Unequal distribution of income — profits go to shareholders.

e.g. Rail and water customers face no alternative supplier, so poor service has few consequences.

Benefits of Monopoly

Economies of scale: a large firm may have lower costs than many small firms, so prices could be lower.

Dynamic efficiency: supernormal profits can fund R&D and innovation.

Natural monopoly: one firm avoids wasteful duplication of infrastructure.

Stability: secure profits allow long-term investment planning.

International competitiveness: large domestic firms can compete with global rivals.

e.g. Pharmaceutical patents grant temporary monopolies, rewarding firms that invest billions in new medicines.

Price Discrimination

Definition:

Price discrimination is when a firm charges different prices to different consumers for the same good or service, for reasons not related to differences in cost.

Conditions needed:

1. The firm must have price-making (monopoly) power. 2. Markets must be separated, with different PEDs. 3. Resale between markets must be prevented.

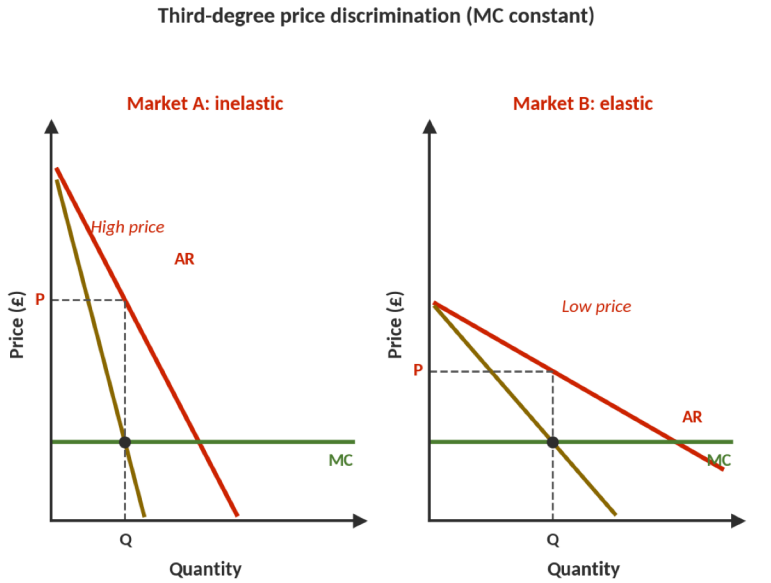
Third-degree price discrimination:

The firm charges a higher price in the market with inelastic demand and a lower price in the market with elastic demand, setting MC = MR in each.

Evaluation:

Some consumers pay lower prices; extra revenue can fund services (e.g. off-peak trains). ✗ Consumer surplus is turned into producer profit; some consumers pay much more.

First-degree: each consumer charged the maximum they will pay. Second-degree: prices vary with quantity bought (e.g. bulk discounts).



Real-World Example

UK rail: peak commuters have inelastic demand and pay high fares; off-peak travellers and railcard holders have more elastic demand and pay less for the same journey.

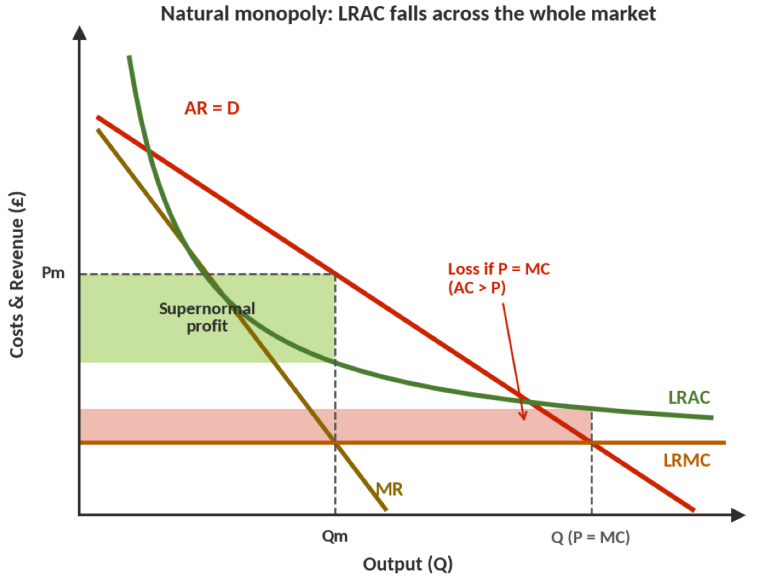
★ Bonus: Natural Monopoly

Definition:
A natural monopoly exists where economies of scale are so large that one firm can supply the whole market at a lower average cost than two or more firms could.

Why it happens:
Very high fixed and infrastructure costs, and low marginal costs, mean LRAC falls across the entire range of market demand — e.g. water pipes, the national grid and rail track.

The regulation problem:
Left alone, the firm sets MC = MR — high price, low output. Forcing P = MC (allocative efficiency) means P < AC, so the firm makes a loss and would need a subsidy.

Policy options:
Nationalisation; price regulation (e.g. RPI − X price caps by Ofwat and Ofgem); or average cost pricing (P = AC), so the firm makes normal profit.



Real-World Example

Thames Water: a regional natural monopoly serving ~16 million customers, regulated by Ofwat. Debts of over £15bn have led to calls for renationalisation.

Summary: Key Terms & Relationships

Key Term	Meaning
Average revenue (AR)	TR ÷ Q = price. The AR curve is the firm's demand curve.
Marginal revenue (MR)	The extra revenue from selling one more unit.
Profit maximisation	Occurs where MC = MR.
Normal profit	The minimum profit needed to keep a firm in the industry. AR = AC.
Supernormal profit	Profit above normal profit. AR > AC. Attracts entry if there are no barriers.
Perfect competition	Many firms, identical products, perfect information, free entry. Firms are price takers.
Monopoly	A single seller with high barriers to entry. Price maker. UK legal definition: 25%+ market share.
Barriers to entry	Economies of scale, legal barriers, brand loyalty, sunk costs, anti-competitive practices.
Allocative efficiency	P = MC. Resources produce what consumers value most.
Productive efficiency	Production at the minimum point of the AC curve.
Dynamic / X-efficiency	Dynamic: innovation lowers costs over time. X-inefficiency: costs higher than necessary.
Price discrimination	Charging different prices to groups with different PEDs for the same good.
Natural monopoly	LRAC falls across the whole market — one firm can supply most cheaply.