

Imperfect Competition

AP Microeconomics

Imperfect Competition and Market Power



A car assembly line: market power and firm scale differ under imperfect competition

Most real markets are **imperfectly competitive** 不完全竞争: firms have some **market power** 市场势力 – the ability to set price rather than take it. The source of that power is a **downward-sloping demand curve** facing the firm, which means that to sell one more unit the firm must **lower the price on all units**.



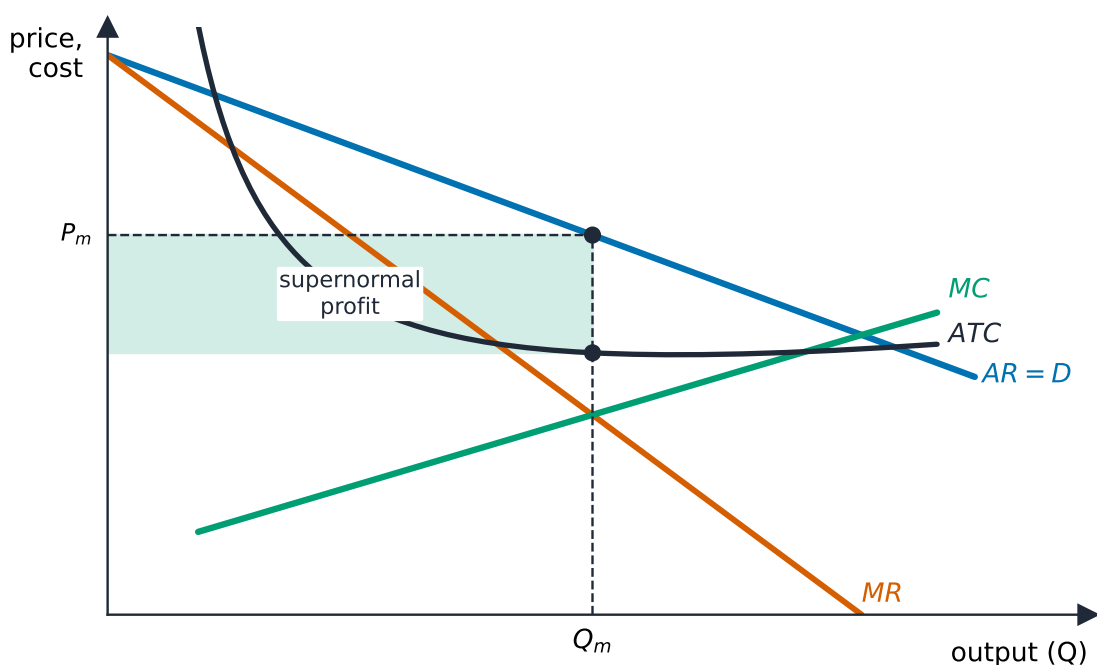
Market structures range from perfect competition to monopoly

Because of this, **marginal revenue is below price** ($MR < P$) for every firm with market power. On a straight-line demand curve the MR curve has the same intercept but **twice the slope**, lying below demand. This one fact – $MR < P$ – separates every imperfect market from perfect competition and explains why they produce **less** and charge **more**.

Worked example. A firm with market power faces demand $P = 100 - Q$. Selling 1 unit gives $P = \$99$ and total revenue $\$99$; selling a 2nd forces the price down to $\$98$ on **both** units, so revenue rises to $2 \times 98 = \$196$. The marginal revenue of that 2nd unit is $196 - 99 = \$97$ – below its $\$98$ price. In general $MR = 100 - 2Q$, falling twice as fast as demand.

Monopoly

A **monopoly** 垄断 is a single seller of a product with no close substitutes, protected by **barriers to entry** 进入壁垒 (economies of scale – a **natural monopoly** 自然垄断 – control of a key resource, patents, or government license).



A monopoly maximises profit where $MC = MR$ and can earn supernormal profit

- The monopolist maximizes profit at $MR = MC$, then charges the **highest price the demand curve allows** at that quantity (read price up to the demand curve, not the MR curve).
- Compared with perfect competition it produces **less** and charges **more**, earning long-run economic profit because entry is blocked.
- This under-production creates **deadweight loss** 无谓损失 – the monopoly is **allocatively inefficient** because $P > MC$: the last unit is worth more than it costs, yet is not made.

Governments may respond with **antitrust** 反垄断 law, or regulate a natural

monopoly's price toward $P = MC$ (**socially optimal**, but may cause a loss) or $P = ATC$ (**fair-return**, break-even).

Exam skill: the monopoly graph is a staple – show quantity at $MR = MC$, price up on the demand curve, and shade profit (between P and ATC) and deadweight loss (the triangle to the competitive quantity).



A large utility plant: monopoly and market power mean a single firm can set price above marginal cost

Price Discrimination

Price discrimination 价格歧视 is charging different buyers different prices for the same good. It requires **market power**, the ability to **separate** buyers by willingness to pay, and the ability to **prevent resale**.

Under **perfect (first-degree) price discrimination**, the firm charges each buyer their maximum price. The result: the firm produces the **efficient** quantity (where $P = MC$, no deadweight loss), but converts **all** consumer surplus into **producer surplus** (profit). Real examples – student discounts, airline fares, coupons – are partial versions.

Monopolistic Competition

Monopolistic competition 垄断竞争 has **many** firms selling **differentiated** 差异化 products with **easy entry and exit** (restaurants, salons, clothing brands). Product differentiation gives each firm a **downward-sloping** demand curve and thus some price-setting power.

- **Short run:** like a monopoly – produce at $MR = MC$, and profit or loss is possible.
- **Long run:** easy entry competes away profit, so each firm earns **zero economic profit**, producing where demand is **tangent** to ATC.
- Because it still charges $P > MC$ and does **not** produce at minimum ATC, it has **excess capacity** 过剩产能 and is neither allocatively nor productively efficient. The trade-off society accepts is **product variety** and choice.

Oligopoly and Game Theory

An **oligopoly** 寡头垄断 is a market with a **few** large, **interdependent** 相互依存 firms (cars, airlines, phones). Because each firm's best move depends on rivals' moves, we analyze them with **game theory** 博弈论.

- A **payoff matrix** 收益矩阵 shows each firm's profit for every combination of choices.
- A **dominant strategy** 优势策略 is a firm's best choice **regardless** of what the rival does.
- A **Nash equilibrium** 纳什均衡 is an outcome where **no** firm can do better by unilaterally changing its choice.
- The classic **prisoners' dilemma** 囚徒困境 shows why firms often fail to cooperate: both would gain by **colluding** 勾结 (acting like a monopoly), but each has an incentive to cheat, so they end up at the competitive-ish, lower-profit outcome. **Collusion** and **cartels** 卡特尔 are unstable for the same reason (and usually illegal).

Worked example. Two firms each choose a **High** or **Low** price. Profits (A, B): both High $\rightarrow (10, 10)$; A Low, B High $\rightarrow (14, 4)$; A High, B Low $\rightarrow (4, 14)$; both Low $\rightarrow (6, 6)$. For A: if B plays High, Low (14) beats High (10); if B plays Low, Low (6) beats High (4) – so **Low is A's dominant strategy**, and by symmetry B's too. The Nash equilibrium is **both Low** (6, 6), worse for both than the cooperative (10, 10) – the prisoners' dilemma in action.

		Firm B		
		High price	Low price	(A, B) payoffs
Firm A	High price	10 / 10	4 / 14	
	Low price	4 / 14	6 / 6	

Nash equilibrium

Each firm's dominant strategy is Low — so both end at (6, 6), worse than (10, 10).

Nash: each plays a best response given the other · here Low is dominant for both

A prisoners' dilemma: each firm's dominant strategy is Low, giving the Nash equilibrium

Exam skill: be able to find each firm's dominant strategy and the Nash equilibrium from a 2×2 payoff matrix, and explain why the cooperative outcome is hard to sustain.

Exam tips

- A firm with market power faces a downward-sloping demand, so $MR < P$ (MR has twice the slope).
- A monopoly produces where $MR = MC$, then charges the price **up on the demand curve**; it makes deadweight loss because $P > MC$.
- Under perfect price discrimination the firm produces the efficient quantity but captures all consumer surplus.
- Monopolistic competition earns zero long-run profit with excess capacity (product variety is the trade-off).
- In an oligopoly find the **dominant strategy** and **Nash equilibrium** from the payoff matrix; the cooperative outcome is hard to sustain.