

Imperfect Competition

AP Microeconomics • Unit 4

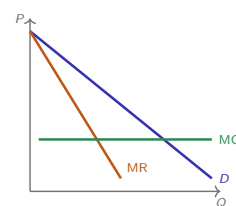
AP Microeconomics



Imperfect Competition

What we will cover

- 1 Market power & barriers
- 2 Monopoly
- 3 Price discrimination
- 4 Monopolistic competition
- 5 Oligopoly & game theory



1

Market power

Imperfect Competition

↳ Market power

Imperfect competition & market power

An **imperfectly competitive market** 不完全竞争市场: a firm faces a **downward-sloping demand curve** 向下倾斜的需求曲线, giving it **market power** 市场势力 – it can set $P > MC$.

- **Monopoly** 垄断 – one firm
- **Oligopoly** 寡头 – a few firms
- **Monopolistic competition** – many, differentiated
- **Monopsony** 买方垄断 – one buyer

Barriers to entry 进入壁垒 protect long-run economic profit.



Scale and control can create market power

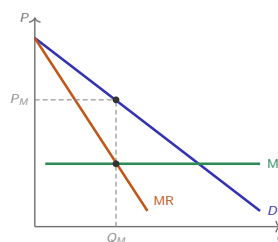
2

Monopoly

Imperfect Competition

↳ Monopoly

Monopoly



A monopoly is a **price maker** 价格制定者. Since it must cut price on every unit, **MR lies below D**.

- produce where $MR = MC$ (Q_M)
- price up on D (P_M)

$P_M > MC$: allocatively inefficient – a **deadweight loss** 无谓损失.

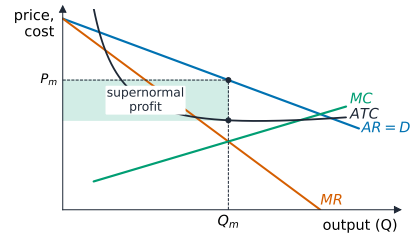
A large utility plant: monopoly and market – one



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

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

A large utility plant: monopoly and market – two



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

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Monopoly – worked example

Find Q_M and P_M

Demand $P = 100 - Q$, so $MR = 100 - 2Q$ (twice as steep). Constant $MC = 20$.
 $MR = MC$: $100 - 2Q = 20 \Rightarrow Q_M = 40$. Price on D : $P_M = 100 - 40 = \$60$.
 $P_M = 60 > MC = 20$ – the wide gap is both the profit and the deadweight loss.

A **natural monopoly** 自然垄断 (water, power) has such large fixed costs that one firm serves the whole market at lower average cost than two.

3

Price discrimination

Price discrimination

Price discrimination 价格歧视: charge different buyers different prices. It needs three things:

market power
(price maker)

sort by will-
ingness to
pay 支付意愿

prevent re-
sale 转售

Perfect price discrimination 完全价格歧视: charge each buyer their max. Output rises to $P = MC$ (efficient, no deadweight loss) – but the firm captures all consumer surplus.

4

Monopolistic competition

Monopolistic competition

Many firms, each with a **differentiated product** 差异化产品 (restaurants, salons) – a little market power, a downward-sloping demand.

Short run

produce $MR = MC$;
profit or loss possible

Long run

free entry → zero profit;
 D **tangent** 相切 to ATC

Two lasting flaws: $P > MC$ (inefficient) and **excess capacity** 过剩产能. Firms use **non-price competition** 非价格竞争 – branding, advertising.

Monopolistic competition, in detail



Market structures range from perfect competition to monopoly

5 Oligopoly & game theory

Oligopoly

A few large firms with **mutual interdependence** 相互依存 – each firm's best move depends on its rivals.

Collusion 合谋

form a **cartel** 卡特尔 – restrict output, raise price toward monopoly

Unstable

each member is tempted to **cheat** and sell more – cartels break apart

Game theory – the prisoner's dilemma

	B	
	High	Low
A: High	10, 10	2, 12
A: Low	12, 2	5, 5

Nash

A **payoff matrix** 收益矩阵 shows each firm's profit.

■ **dominant strategy** 优势策略: best whatever the rival does – here "Low"

■ **Nash equilibrium** 纳什均衡: neither gains by switching alone

Both pick Low (5, 5) though both prefer (10, 10) – the **prisoner's dilemma** 囚徒困境.

Monopoly, antitrust, and why oligopolists fail to cooperate

a monopoly 垄断	a single seller with no close substitutes, protected by barriers to entry 进入壁垒
the barriers	legal, natural (economies of scale), control of an input, or a network effect
antitrust 反垄断 law	governments may break up or block; or regulate a natural monopoly's price toward $P = MC$
the regulator's problem	at $P = MC$ a natural monopoly makes a loss, so it needs a subsidy or a fair-return price instead
oligopolists are interdependent 相互依赖	each firm's best move depends on what the others do
the prisoners' dilemma 囚徒困境	shows why firms often fail to cooperate: both would gain by colluding 勾结, and each gains more by defecting

Find each player's dominant strategy first, then the equilibrium. The dilemma is that the equilibrium is worse for both than the cooperative outcome.

A prisoners' dilemma

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

Nash equilibrium

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

Key points

Market power $\Rightarrow$ downward demand, $MR < P$, $P > MC$

Monopoly: $MR = MC$, price up on D ; deadweight loss

Monop. competition: long-run normal profit, excess capacity

Oligopoly: interdependence $\rightarrow$ prisoner's dilemma

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.

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Recap

Unit 4 – key takeaways

1 Power

downward demand so $MR < P$

2 Monopoly

$MR=MC$ then up to demand; DWL because $P > MC$

3 Mon. comp.

zero long-run profit with excess capacity

4 Oligopoly

dominant strategy and Nash from the matrix

Check yourself

- 1 Why does a monopoly's MR lie below its demand curve?
- 2 What creates deadweight loss under monopoly?
- 3 Monopolistic competition in the long run: what profit?
- 4 In the prisoner's dilemma, what is the dominant strategy?

Answers 1. it must cut price on every unit to sell one more 2. output below the efficient level 3. zero economic profit 4. to defect – both are worse off