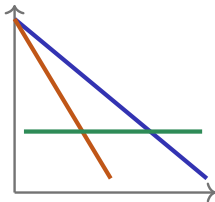


Imperfect Competition

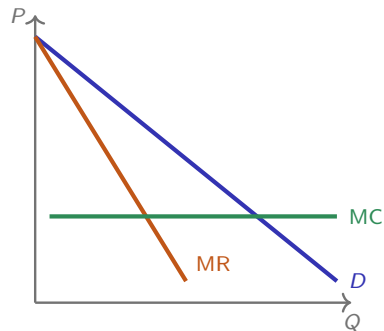
AP Microeconomics ■ Unit 4

AP Microeconomics



What we will cover

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





Imperfect competition & market power

An **imperfectly competitive market** : a firm faces a **downward-sloping demand curve** , giving it **market power** – it can set $P > MC$.

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

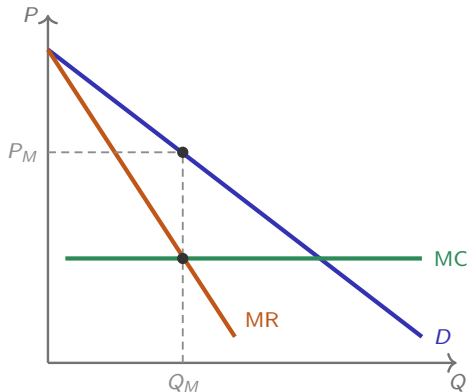
Barriers to entry protect long-run economic profit.



Scale and control can create market power



Monopoly



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

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

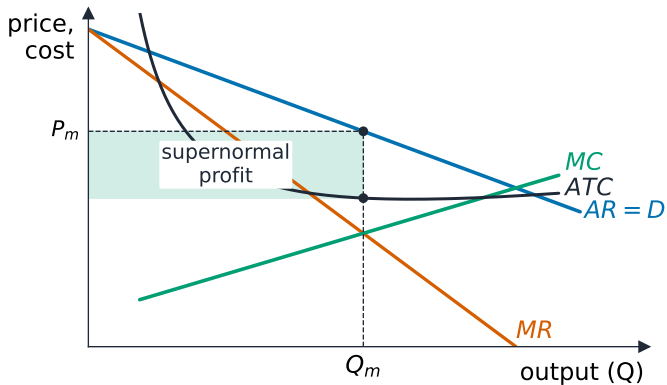
$P_M > MC$: allocatively inefficient – a **deadweight loss**.

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 – two



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

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



Price discrimination

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

market power
(price maker)

sort by **willing-**
ness to pay

prevent **resale**

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



Monopolistic competition

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

Short run

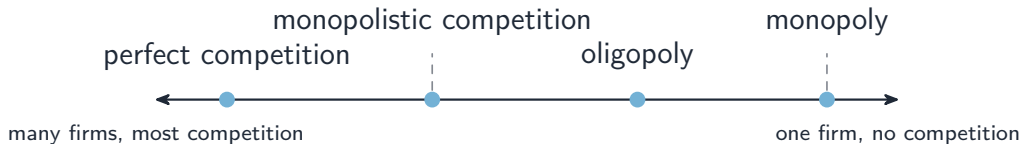
produce $MR = MC$;
profit or loss possible

Long run

free entry $\rightarrow$ zero profit;
 D **tangent** to ATC

Two lasting flaws: $P > MC$ (inefficient) and **excess capacity**. Firms use **non-price competition** – branding, advertising.

Monopolistic competition, in detail



Market structures range from perfect competition to monopoly



Oligopoly

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

Collusion

form a **cartel** – 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	B: Low
A: High	10, 10	2, 12
A: Low	12, 2	5, 5

Nash

A **payoff matrix** shows each firm's profit.

- **dominant strategy** : best whatever the rival does – here “Low”
- **Nash equilibrium** : neither gains by switching alone

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

Monopoly, antitrust, and why oligopolists fail to cooperate

a monopoly

a single seller with no close substitutes, protected by barriers to entry

the barriers

legal, natural (economies of scale), control of an input, or a network effect

antitrust 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

each firm's best move depends on what the others do

the prisoners' dilemma

shows why firms often fail to cooperate: both would gain by colluding, 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

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.



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