Resource Allocation and 'the Market'

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Lecture 5: Resource allocation and 'the market'

This lecture should enable you to:

- ❑ Understand the concept of 'the market'
- ❑ Explain how markets relate to (allocative) efficiency
- ❑ Describe conditions required for a 'perfect' market to work
- ❑ Illustrate what happens when some of these conditions do not hold
- ❑ Apply these concepts to the case of the market for health (care) goods

What is 'the market'?

❑ A market is where producers and consumers meet (physically or virtually) to trade goods/services

❑ 'The market' is short-hand for a 'perfectly competitive market'; one form of market structure

❑ *Perfectly* competitive markets:

- generate optimal outcomes
  - Consumers maximise utility/benefit (allocative efficiency)
  - Producers minimise cost (technically & economically efficient)
- work 'costlessly' (price-mechanism)

❑ 'The market' is therefore the 'ideal' structure

- Where we start with the analysis of markets generally

Demand revision (lecture 3)

❑ Demand = willingness and ability to pay for a good at each and every price, over a given period of time, subject to all else being constant

- Maximize utility/benefit, subject to income
- Choices based on assessment of (diminishing) marginal benefit (MB) that is obtained from consumption of each unit of a good
- MB = maximum willingness to pay for unit of good

❑ Demand curve therefore represents MB obtained at each price

Demand curve

Price
$

2

1.50

D=MB

No. Chocolate Bars

0

2

4
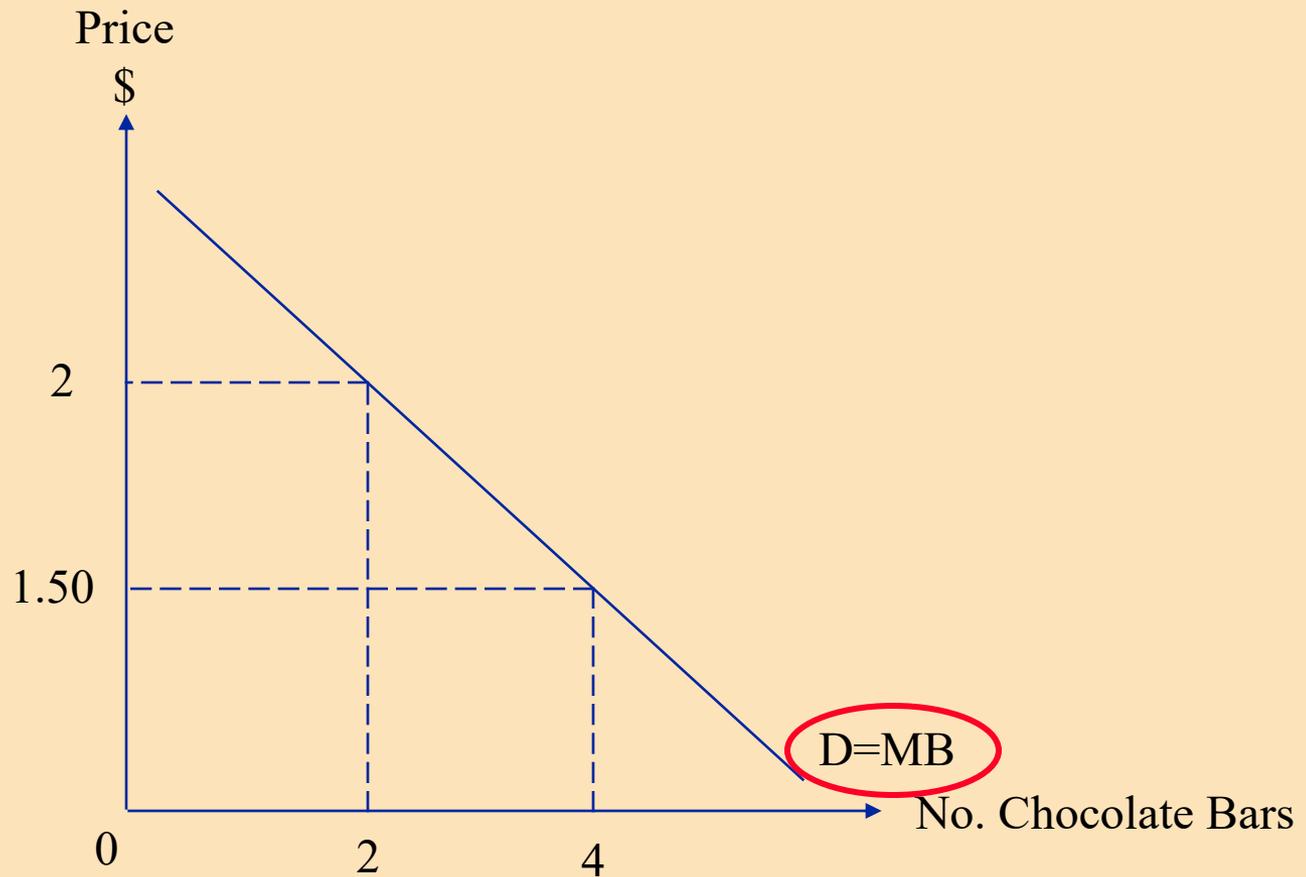
Supply revision (lecture 4)

❑ Supply = willingness and ability to sell a good at each and every price, over a given period of time, subject to all else being constant

- Producer supply driven by assessment of the marginal cost (MC) incurred from production of each unit of a good

- MC curve firm faces is upward sloping because of diminishing marginal productivity (returns)

- Maximize profit where MR (price)=MC

❑ Supply curve therefore represents MC of each additional unit produced

Supply curve

Price
$

2

1.50

0   2   4

S=MC

No. Chocolate Bars
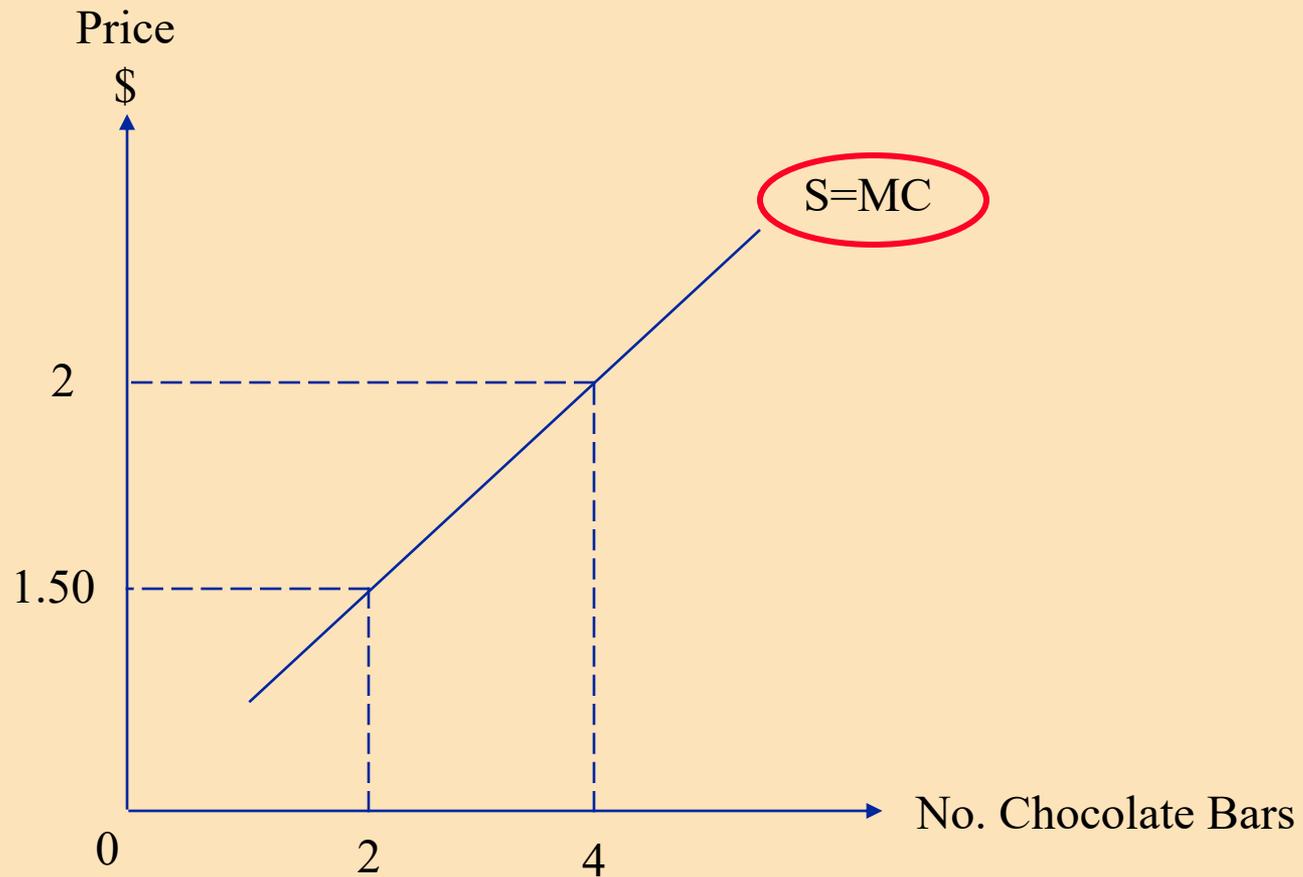
Efficiency revision

❑ **Technical Efficiency** = meeting a given objective using least resources (isoquant)

❑ **Economic Efficiency** = meeting a given objective at least cost (where slopes of isoquant and isocost curves are equal, where they touch)

❑ **Allocative Efficiency** = producing the pattern of output (supply) that matches the pattern of demand

- what should be produced, and how much of it?

Allocative efficiency and 'equilibrium'

❑ Equilibrium is where the quantity demanded by consumers equals the quantity supplied by firms

- As demand=MB, and supply=MC, point of equilibrium, where demand=supply, is where MB=MC

❑ Equilibrium is therefore the optimal level of societal production and consumption of a good, compared with all other possible goods that could be produced with those resources

❑ Achieved through the 'price mechanism'

Market equilibrium: demand (MB) = supply (MC)

Price
$

S=MC

Equilibrium:
D=S, MB=MC

2

D=MB

No. Chocolate Bars

0

200
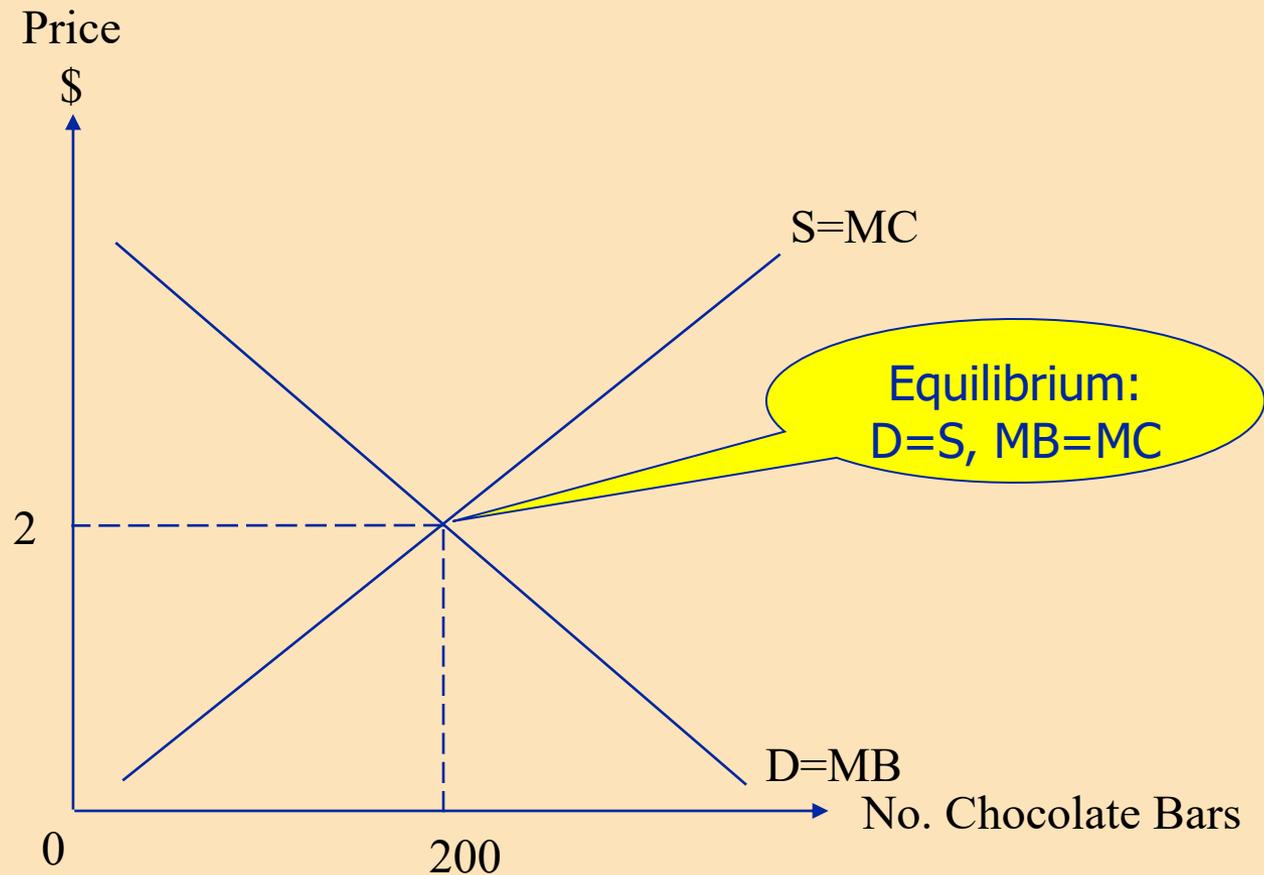
The price mechanism

❑ Equilibrium is where the quantity demanded by consumers equals the quantity supplied by firms at a particular price

❑ If there is an exogenous (external) shock which changes demand or supply, this generates a *price signal* to consumers and producers to react to restore equilibrium

- Price will (automatically) rise when there is excess demand and will fall when there is excess supply
- Remember, in perfectly competitive market, consumers and producers are *price takers*, and respond to changes in price, which restores equilibrium

Excess demand

Price
$

2

1

0

A

B

E

S

D

100   200   300

No. Chocolate Bars
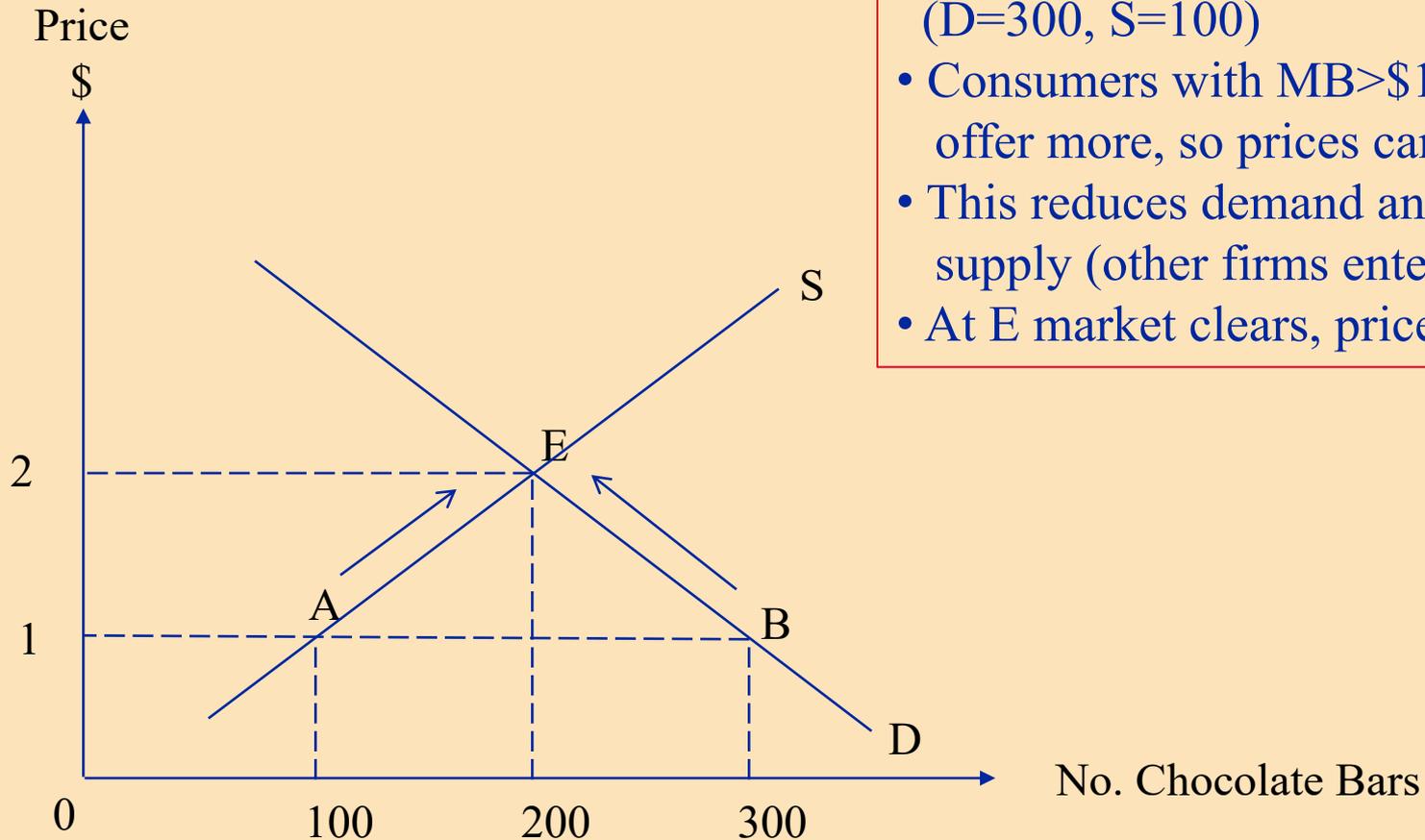
- At Price of $1, Demand > Supply (D=300, S=100)
- Consumers with MB>$1 will offer more, so prices can rise
- This reduces demand and increases supply (other firms enter)
- At E market clears, price stable at $2

Excess supply

Price
$

3

2

0   100   200   300

No. Chocolate Bars

A   B

S

E

D
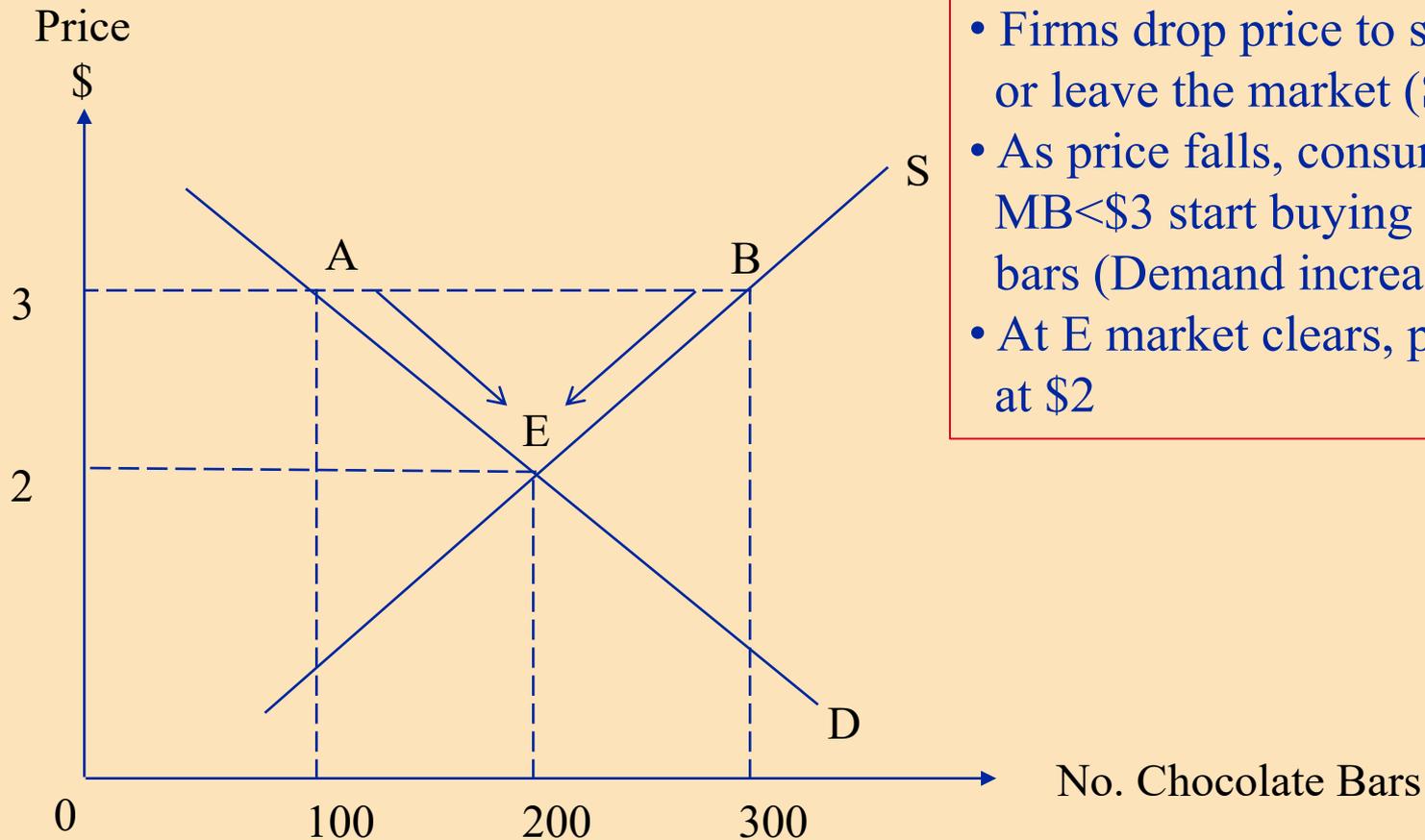
- At Price $3, Demand < Supply (D=100 and S=300)
- Firms drop price to sell stocks, or leave the market (Supply falls)
- As price falls, consumers with MB<$3 start buying chocolate bars (Demand increases)
- At E market clears, price stable at $2

Important Conditions (for perfectly competitive markets)

❑ Markets are perfectly competitive only where:
- Firms:
  - face atomistic competition (individual firms make up a small part of the supply) implying that they are price-takers
  - seek to maximise profits
  - face no barriers to entry or exit (eg professional registration, high fixed costs such as hospital or high-tech equipment etc)
- Consumers:
  - seek to maximise utility/benefit
  - are perfectly informed of benefits and prices of *all* goods
  - bear all costs and receive all benefits (no externalities)
- There are no 'Public Good' characteristics
- There is product homogeneity (price is only factor)
- Transactions are costless

Market Failure

❑ These conditions are rarely (if ever) met

❑ *But* … the purpose of the perfect market model is not to describe reality, but provide benchmark to:

- understand how and why markets 'fail' to be 'perfect'
- understand the implications of such 'failure'
- evaluate corrective action that may be undertaken

❑ Remember, having no 'market' does *not* remove central problem of allocation of scarce resources

- Government intervention in (health care) markets generates different, possibly bigger, 'failures' (lecture 8)

❑ Six main causes of market 'failure' in health (care)

Market Failure and health (care)

1. Lack of atomistic competition (monopoly, oligopoly) (this lecture)
2. Non-profit maximization (this lecture)
3. Uncertainty (insurance markets, moral hazard and adverse selection) (lecture 6)
4. Externalities (lecture 6)
5. Public Goods (lecture 6)
6. Imperfect information (and supplier induced demand) (lecture 7)

❑ Note: equity is ***not*** a market *failure,* but an additional/alternative objective to (or a constraint placed upon) efficiency (lecture 8)

1. Atomistic competition

❑ Perfectly competitive markets have a large number of sellers (firms, producers) so:
- Each seller's size is so small (like an atom!), relative to the market as a whole, that it can't influence price
- No firm has more market power than another
- Firms are *price takers*

❑ Thus, no matter how many units a firm sells, it will still only be able to charge market price (p*):
- p*= average revenue (AR) for each unit sold
- p* = marginal revenue (MR) for each extra unit sold

Perfectly competitive <u>firm</u>

Firms are *price takers*:
- For each *individual* firm, face perfectly elastic demand curve (AR/MR)
- Price =AR=MR
- Profits maximized where MR=MC

Price

Marginal Cost (MC)

Average cost (AC)

p*

Average Revenue/Marginal Revenue (AR/MR)

Quantity

q*
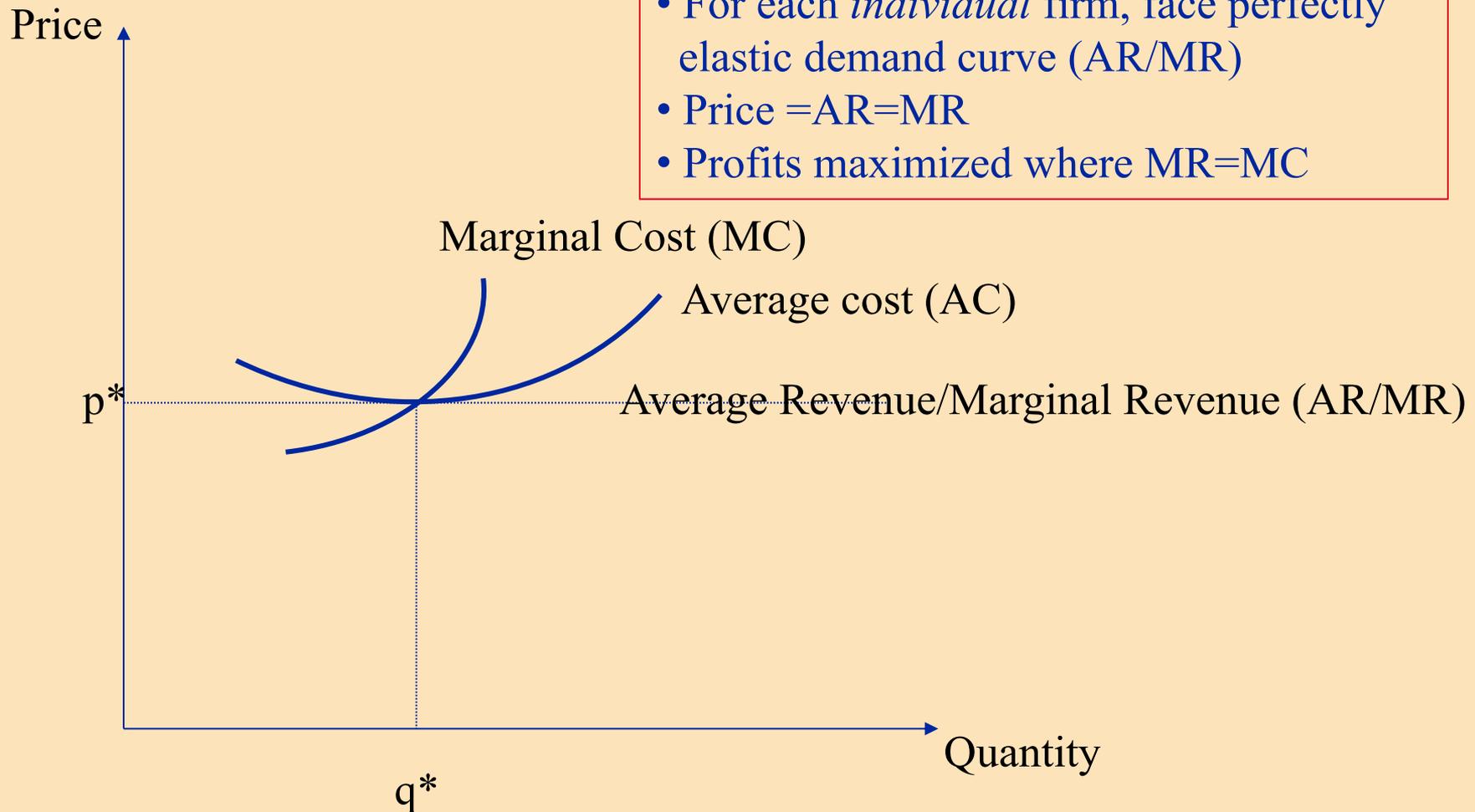
Importance of free entry and exit

❑ Excess demand leads to higher prices

  • Other firms attracted to the market

  • Market re-adjusts, as supply increases prices come down again to equilibrium price (earlier slide)

❑ Excess supply leads to prices being reduced

  • Some firms leave the market and make something else

  • Market re-adjusts, as supply decreases prices rise again to equilibrium price (earlier slide)

❑ Requires another assumption of perfect competition – that there are 'no barriers to the free entry and exit of firms'

Perfectly competitive <u>market</u>

Price
$

Demand =MB

Supply=Marginal Cost

p*
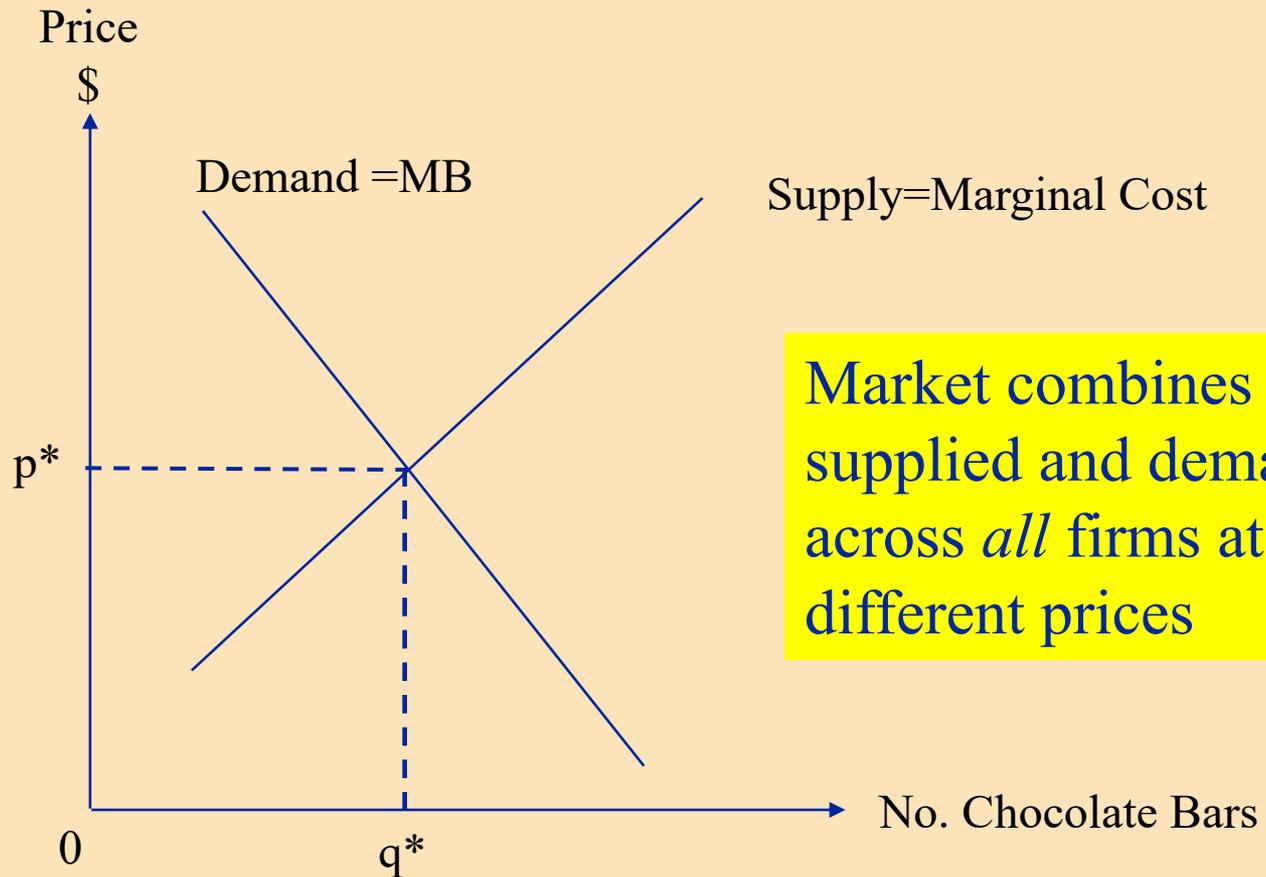
Market combines output supplied and demanded across *all* firms at different prices

0

q*

No. Chocolate Bars

Monopoly (only 1 firm in Market)

Price

- In a monopoly, only 1 firm
- Market 'power' enables it to be 'price setter', not 'price taker'
- Price obtained depends on quantity firm sells

Demand = MB

(Also average revenue for firm = AR)

Marginal Revenue =MR
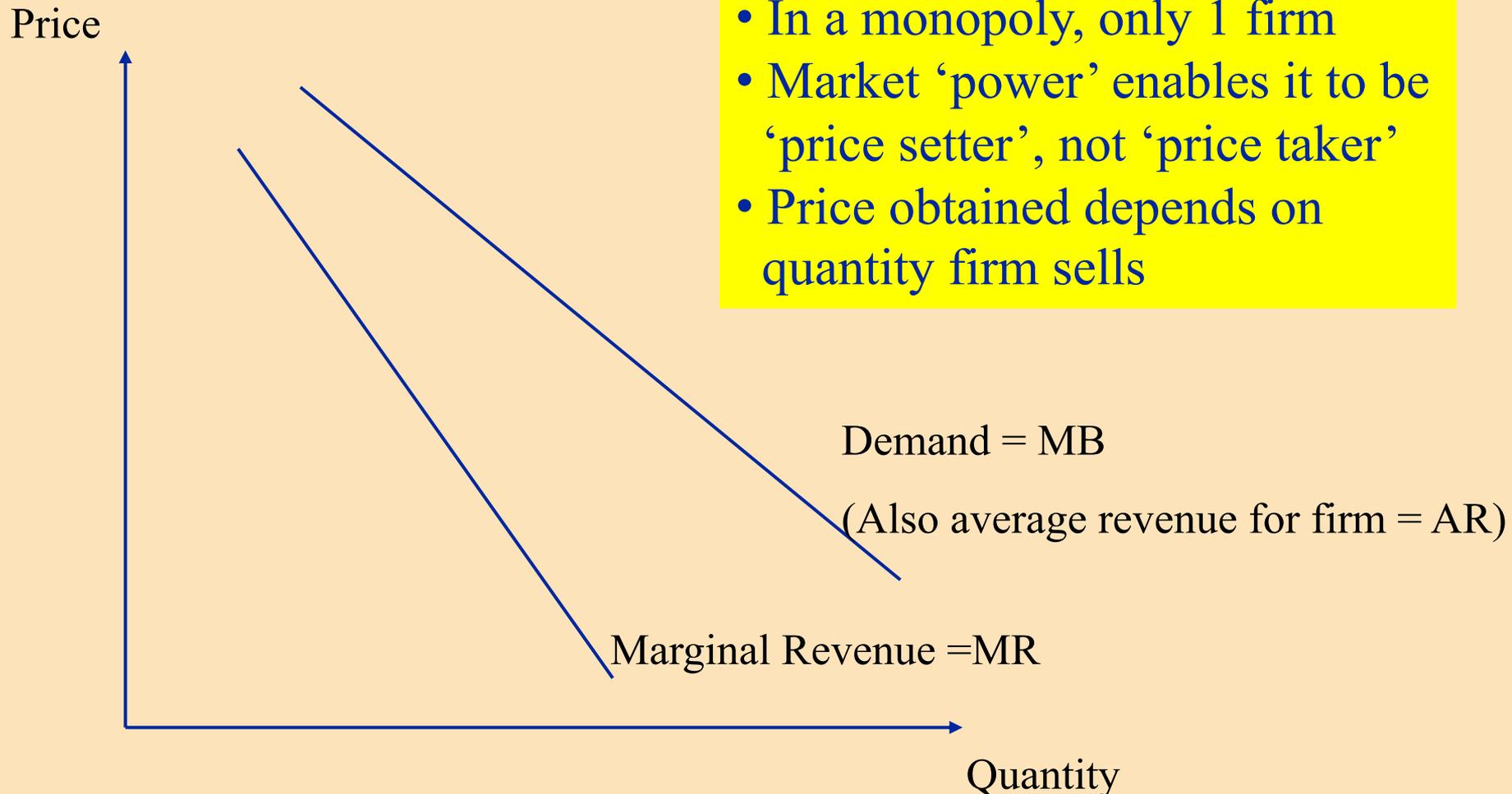
Quantity

Why MR<AR in monopoly

| Price $	Quantity demanded (Q)	Total revenue TR (PxQ)	Average revenue = TR/Q (=P)	Marginal revenue = change TR/Change Q
10	10	100	10	
8	20	160	8	6
6	40	240	6	4
4	80	320	4	2
2	160	320	2	0

Still produce where MC=MR

Table 4.3 Revenue, costs and profits for a profit-maximising fertility clinic providing assisted reproduction techniques (ARTs) with some market power in setting prices

ARTs per month	AR	TR	MR	TC	AC	MC	TR–TC	MR–MC
0		0		100 000			−100 000	
100	2100	210 000	2100	250 000	2500	1500	−40 000	600
200	2000	400 000	1900	360 000	1800	1100	40 000	800
300	1900	570 000	1700	440 000	1466	800	130 000	900
400	1800	720 000	1500	510 000	1275	700	210 000	800
500	1700	850 000	1300	590 000	1180	800	260 000	500
600	1600	960 000	1100	690 000	1150	1000	270 000	100
700	1500	1 050 000	900	810 000	1157	1200	240 000	−300
800	1400	1 120 000	700	950 000	1187	1400	170 000	−700
900	1300	1 170 000	500	1 110 000	1233	1600	60 000	−1100
1000	1200	1 200 000	300	1 290 000	1290	1800	−90 000	−1500

Monopoly
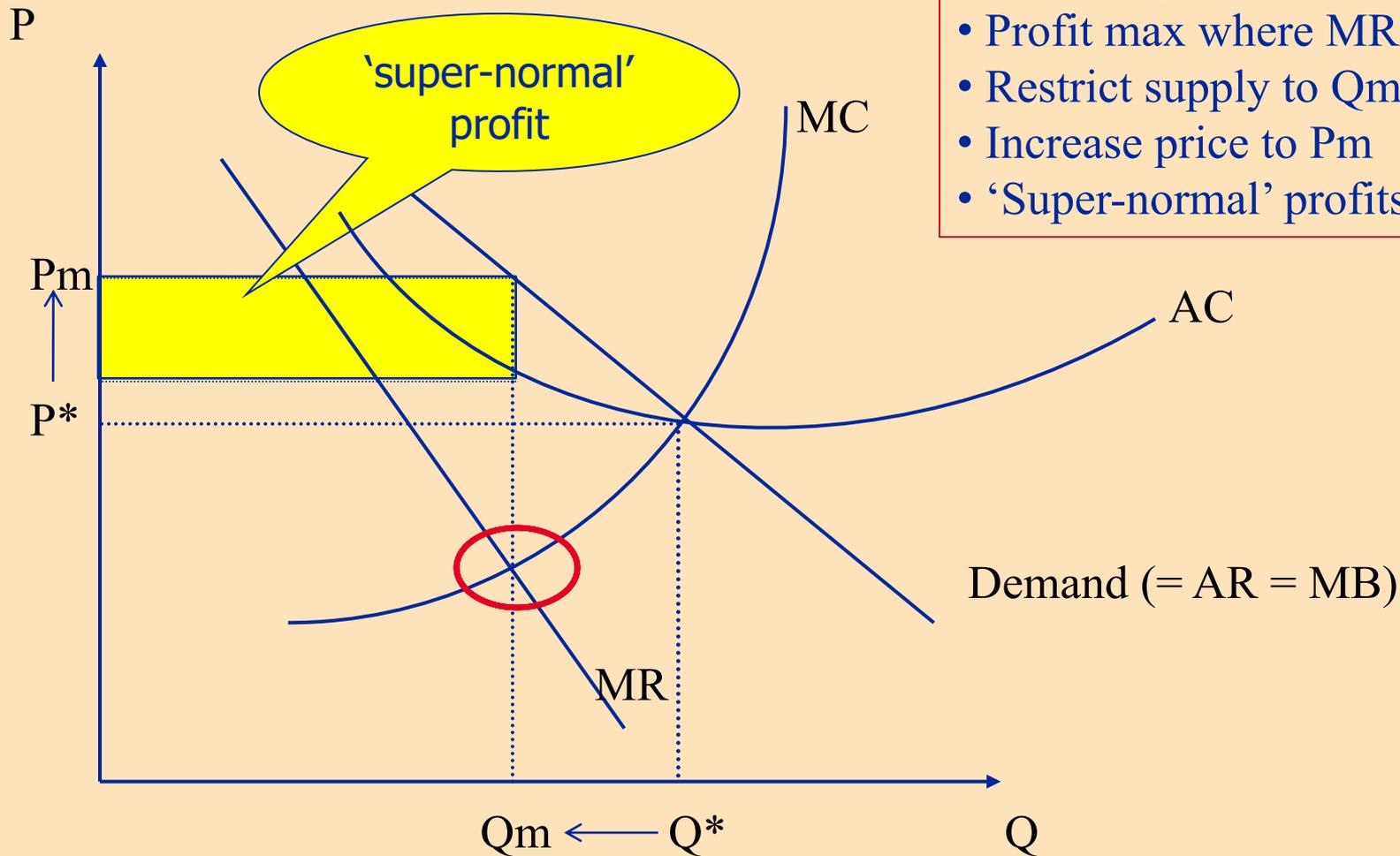
Monopoly results in…

❑ Economic inefficiency (no competition)

❑ Allocative inefficiency

- Monopolist has an incentive to restrict output and push price up compared with competitive market
- Result is output $Q_m < Q^*$, which means that $MB > MC$

❑ Incentive is to generate 'super-normal' profits:

- Normal profits are the return that owner/investor wants from firm and hence are factored in to production as a (fixed) 'cost' of production
- A monopoly can set price higher than MC and AC, and thus generate returns over and above that (minimum level) required to keep them in the market

Other forms of market structure

❑ Between PC and monopoly lie a range of other possible market structures, such as:

- Monopolistic (or imperfect) competition
  – Product differentiation or imperfect information gives firms *some* market power in setting prices differently to other firms in the market and hence demonstrate some monopoly-like characteristics. Eg competing doctors or health facilities

- Oligopoly
  – Few firms with interdependency in decisions, often implicit or explicit collusion (cartel) leading to stable (but high) prices and non-price competition (eg on quality of goods) – act *together* as a monopoly. Eg local hospital price schedules

❑ Critical factor determining actual behaviour under non-PC market structures is level of *contestability* (barriers to entry and exit)

Other forms of market structure

Table 4.2 Alternative market structures

Market structure	Number of firms in the market	Entry into market	Type of product	Control of provider over price	Examples
Perfect competition	Many	Unrestricted	Undifferentiated	None	Internet pharmacies
Monopolistic competition	Many	Unrestricted	Differentiated	Some	Medicines in the medium and long run
Oligopoly	Few	Restricted	Either undifferentiated or differentiated	Some	Hospital services; GP services; private health insurance
Monopoly	One	Restricted/ completely blocked	Unique	Considerable	Medicines in the short run; public health insurance

2. Non-profit maximisation

- ❑ So far assumed firms seek to maximize profits
- ❑ Alternatives to profit-maximization include:
  - Maximize revenue – 'managerial theory of the firm'
    - – Salaries often linked to revenue, gives prestige, avoids redundancy…subject to shareholders profit expectations
  - Mixed objectives – 'behavioural theory of the firm'
    - – Different actors within firm (eg managers & clinicians) have different objectives which require negotiation
  - Non-profit motives (eg worker co-operatives)
    - – More philanthropic motives, determine importance of distribution of services, quality, (differential) prices etc
- ❑ Important because much of health policy is designed to influence behaviour of producers

2. *Non-profit maximisation*

Table 4.4 Hospital ownership types in the United States

Characteristic	Ownership type		
	Public	Private	
		Not-for-profit	For-profit
Owners	The public	Stakeholders	Shareholders
Key decision makers	Government officials	Volunteer Board of Trustees	Paid corporate officers
Goals	Multiple (for example equity, efficiency), often conflicting, frequently change with elections	Ambiguous	Profit maximisation
Sources of finance	Government, fees	Patient fees and charges, donations	Patient fees and charges
Market	Determined by government	Mission-driven, determined by clients	Determined by people's buying power

A final word…

- ❑ (Perfectly) competitive markets 'ideal'
  - Technically, economically and allocatively efficient
  - Market equilibrium: D=S, MC=MB
- ❑ But markets fail and reasons to believe markets for health care are particularly likely to fail
  - Have looked at market structure and profit motive, and next three lectures will look at: uncertainty and insurance (L6), externalities and public goods (L6), imperfect information (L7), equity (L8)
- ❑ Governments respond in different ways, as will cover in next three lectures
- ❑ But remember – governments can fail as well!