

The Welfare Impact of Market Power

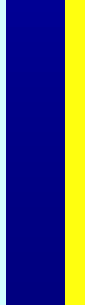
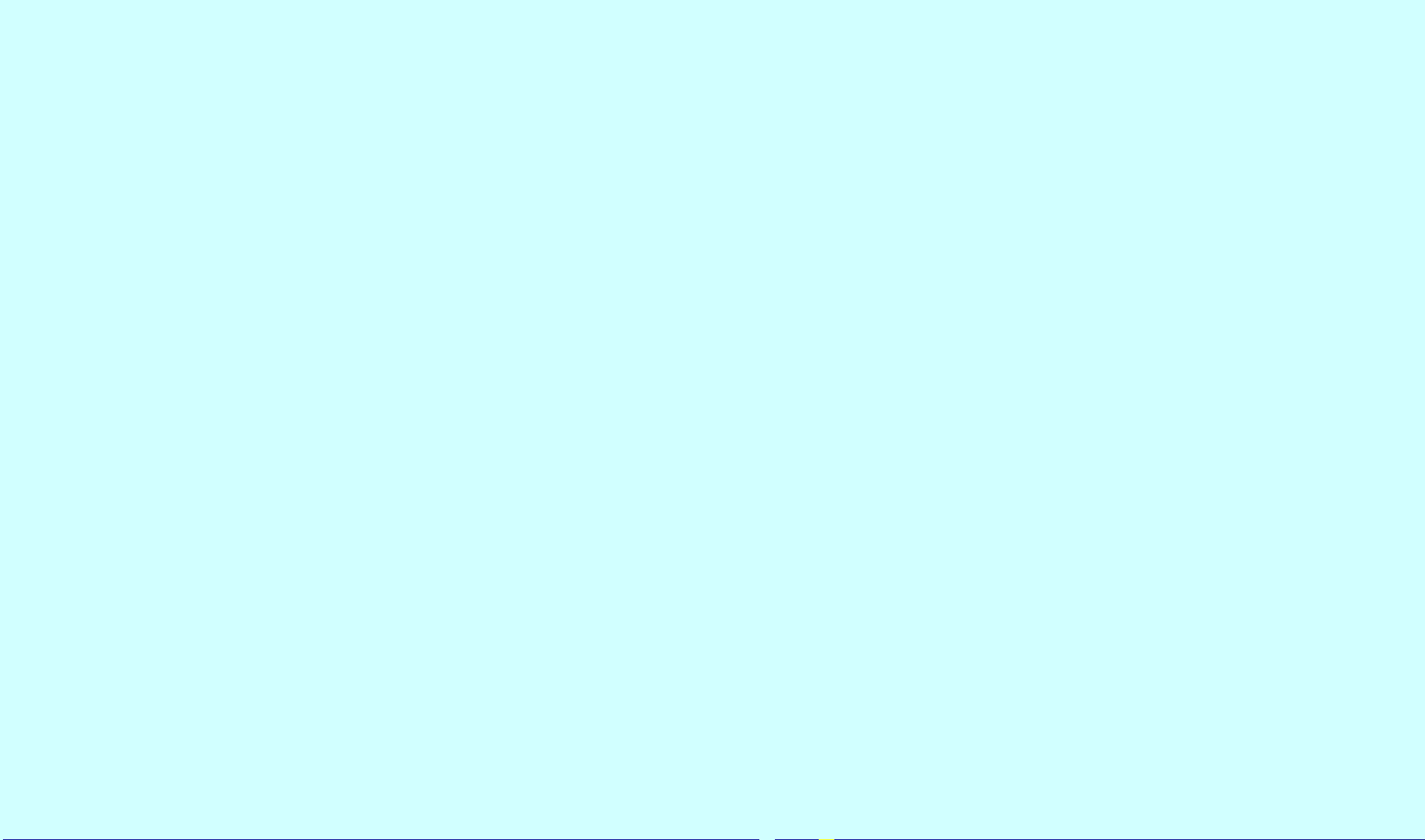
By Kevin Hinde



Aims

- ❖ This set of notes covers two lectures.
- ❖ I aim to
- ❖ explore the theoretical detail and contrasts between perfect competition and monopoly.
- ❖ examine the empirical work in this field
- ❖ You should note in particular that the empirical literature is concerned with the measurement of losses from market power in general (i.e. oligopoly). This is the subject of the next topic.

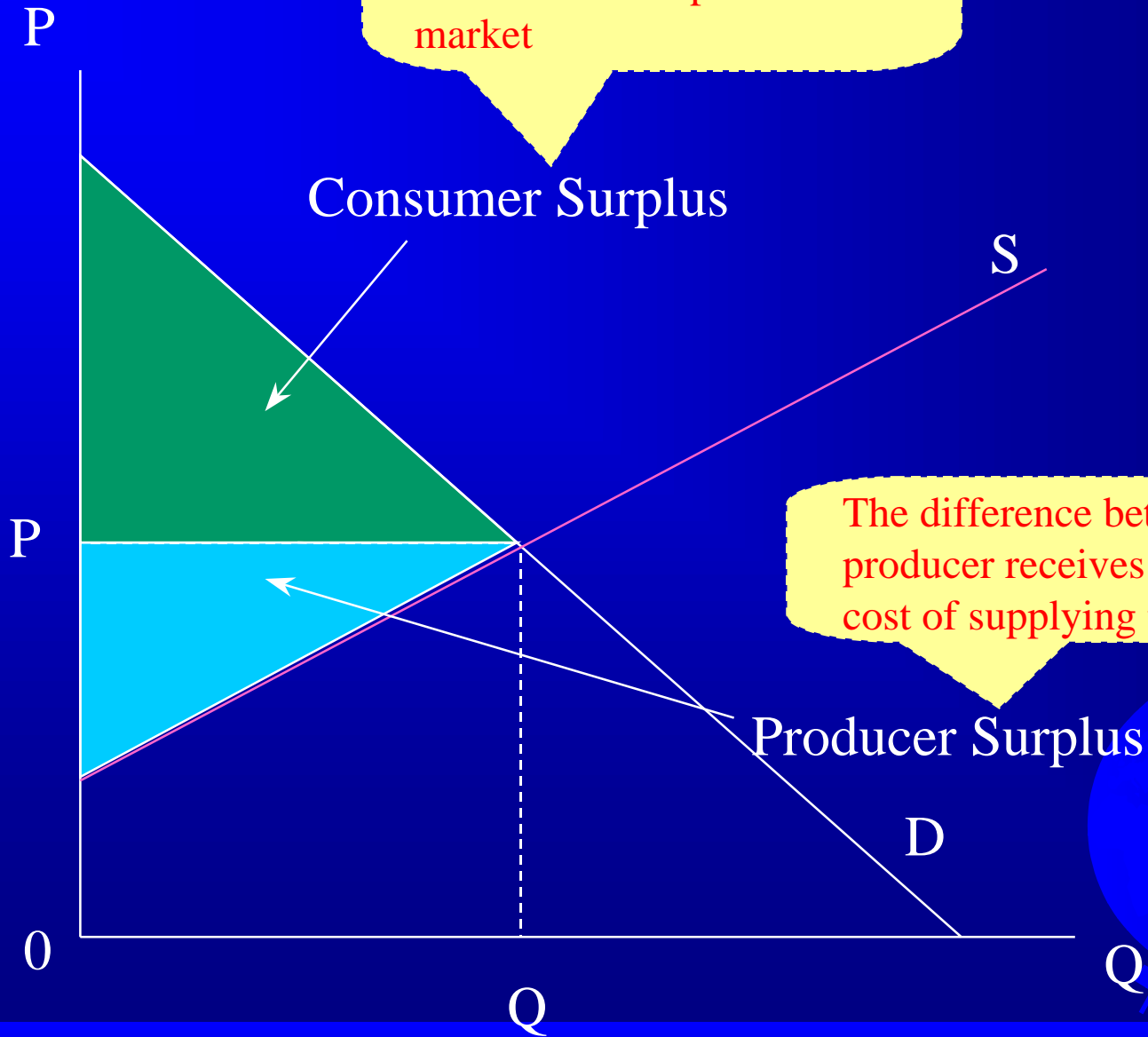




Consumer and Producer Surplus



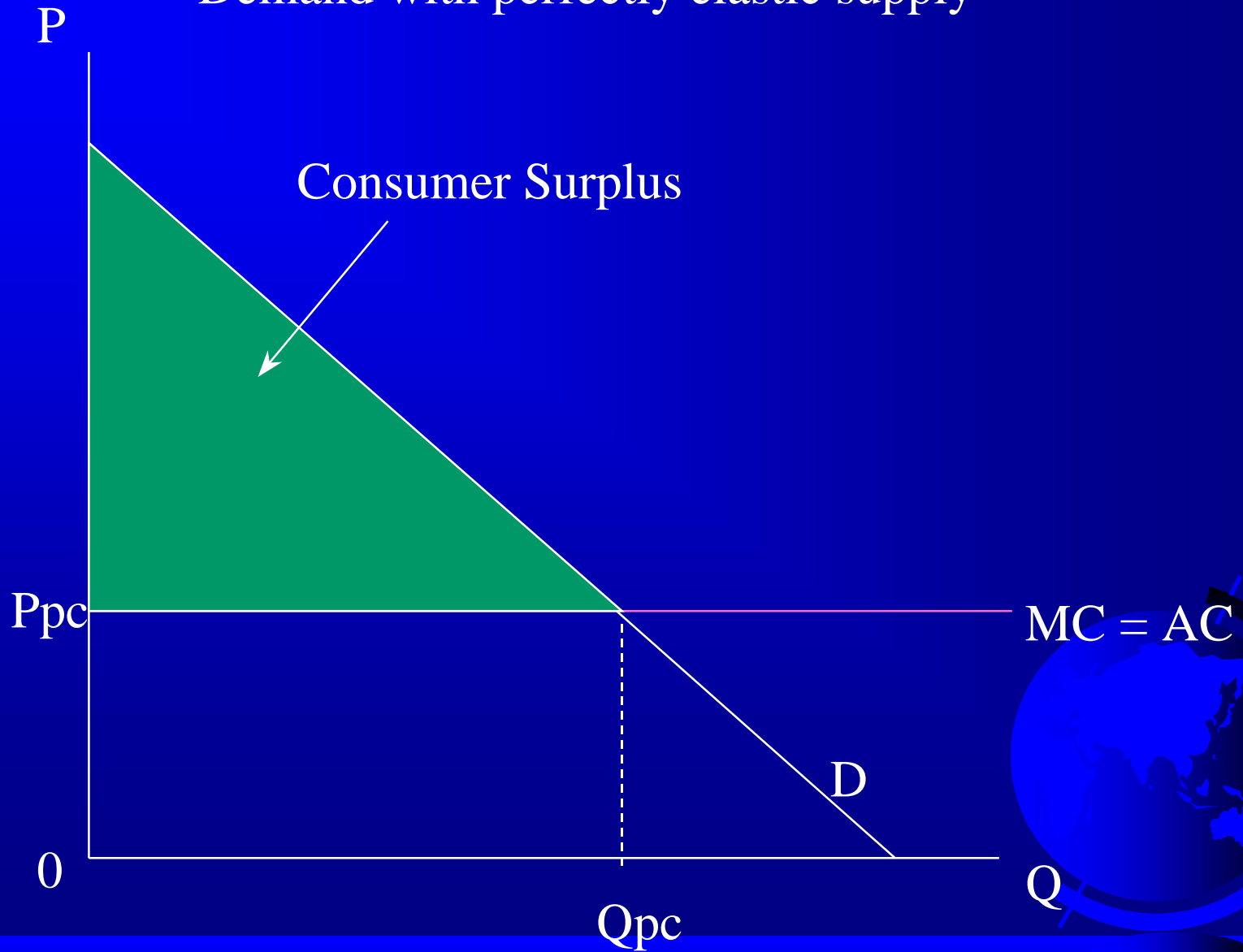
Consumers are willing to pay more than they have to because of the operation of the market



The difference between what the producer receives and the marginal cost of supplying that unit.



Demand with perfectly elastic supply



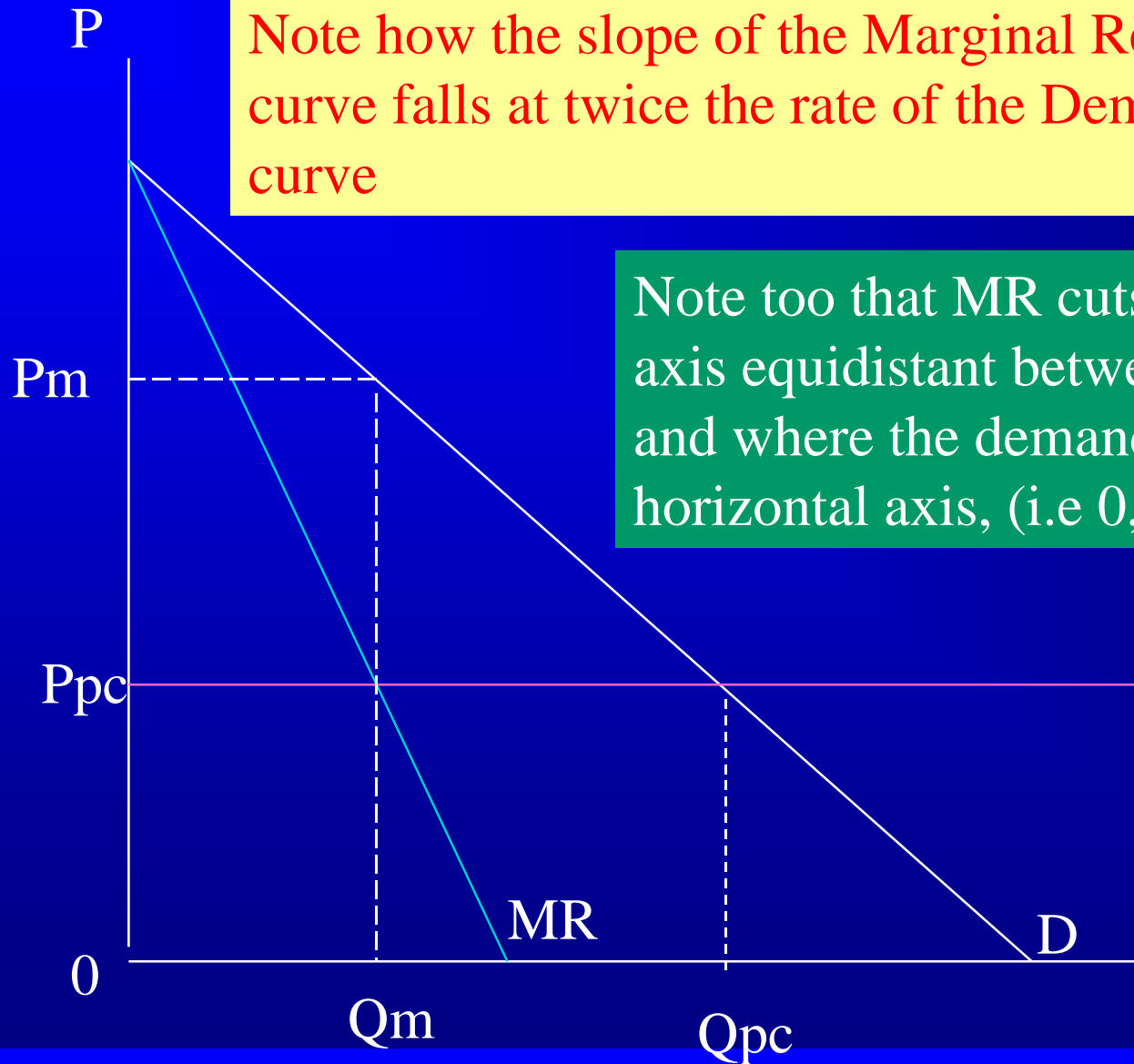
Perfect Competition and Monopoly



The Twice as Steep Rule

- ❖ With a linear demand curve, e.g.
- ❖ $P = a - bQ$
- ❖ Total Revenue (TR)
- ❖ $TR = PQ = (a - bQ) Q = aQ - bQ^2$
- ❖ Marginal revenue (MR)
- ❖ $MR = a - 2bQ$
- ❖ marginal revenue falls twice as steeply as demand



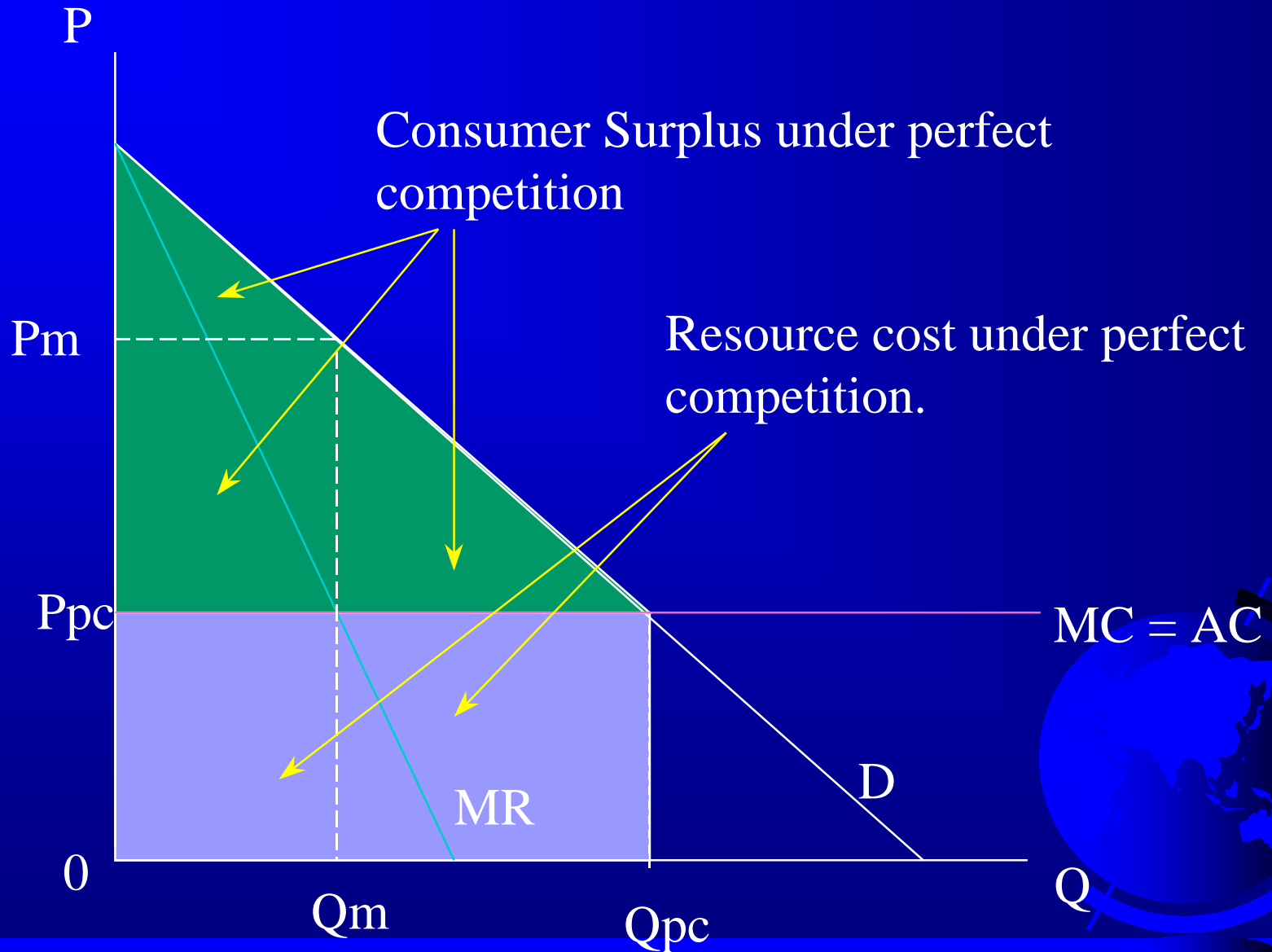


Note how the slope of the Marginal Revenue curve falls at twice the rate of the Demand curve

Note too that MR cuts the horizontal axis equidistant between the origin and where the demand curve cuts the horizontal axis, (i.e $0, MR = MR, D$)



Welfare and Perfect Competition



Welfare and Perfect Competition

- ❖ Allocative Efficiency
- ❖ Productive Efficiency
- ❖ Dynamic Efficiency

- ❖ Pareto Optimality



Monopoly and Welfare



Introduction

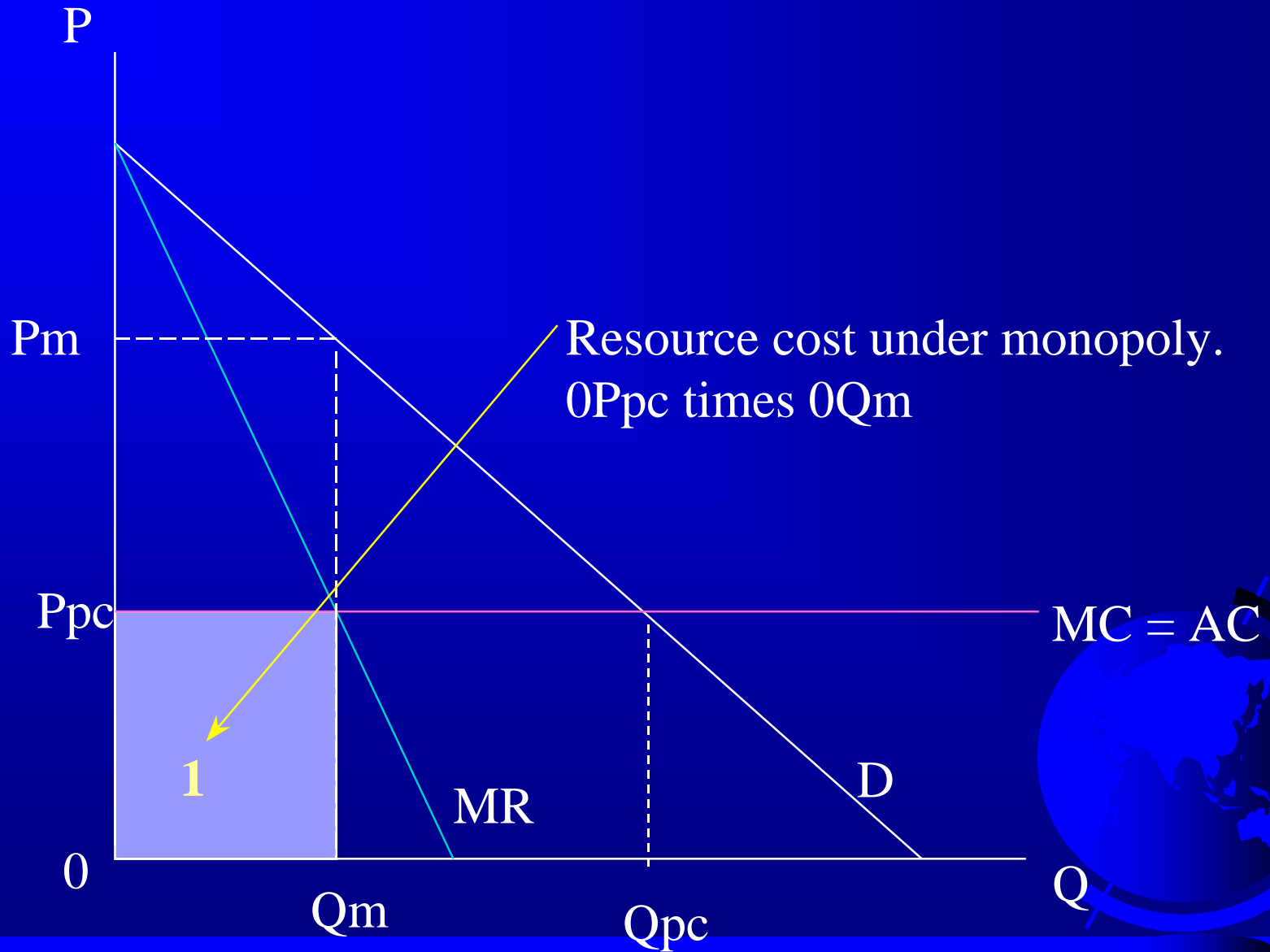
- ❖ A monopoly refers to a market where there is a single seller and many buyers.
- ❖ In the pure case entry is blockaded.

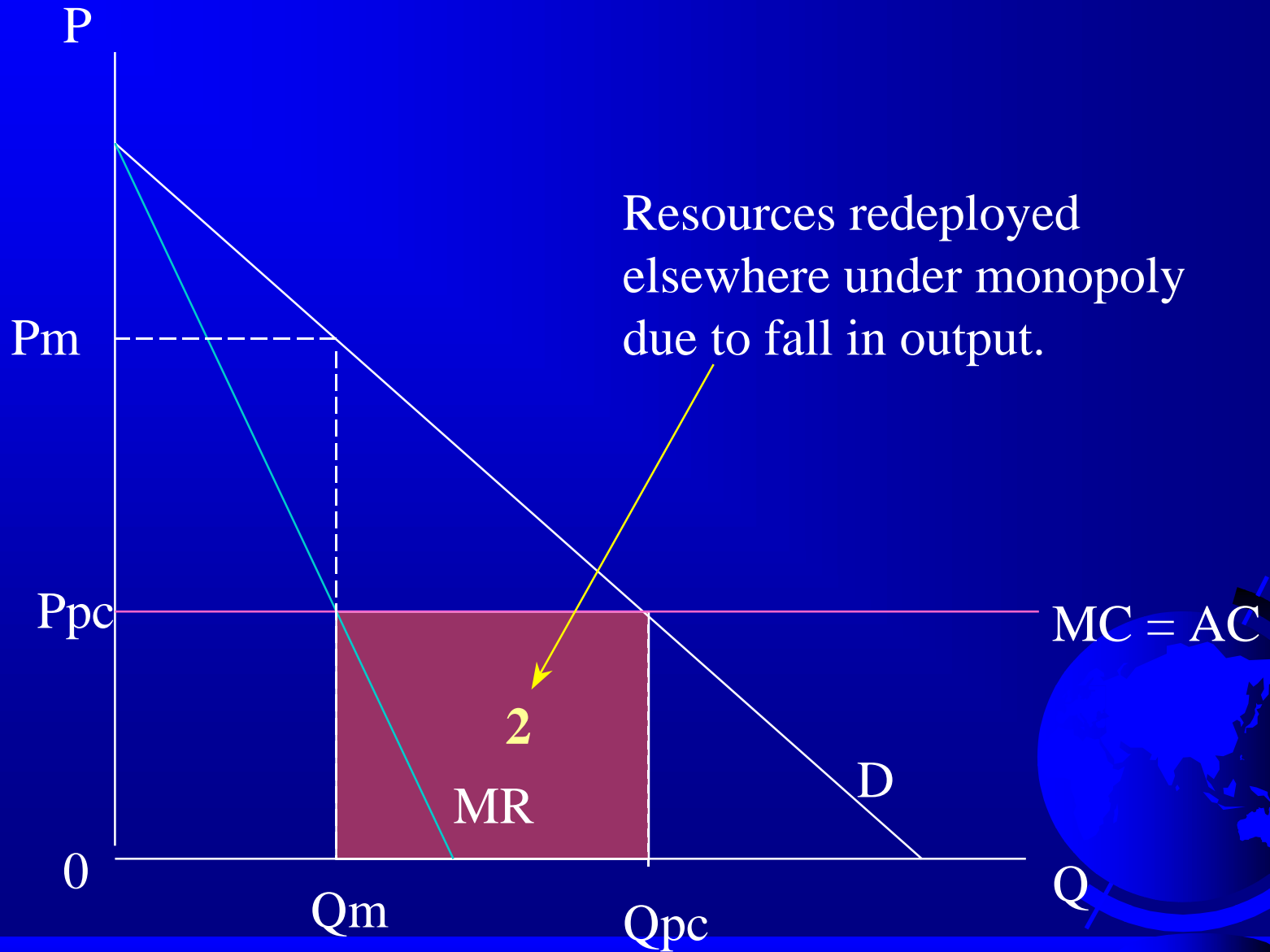


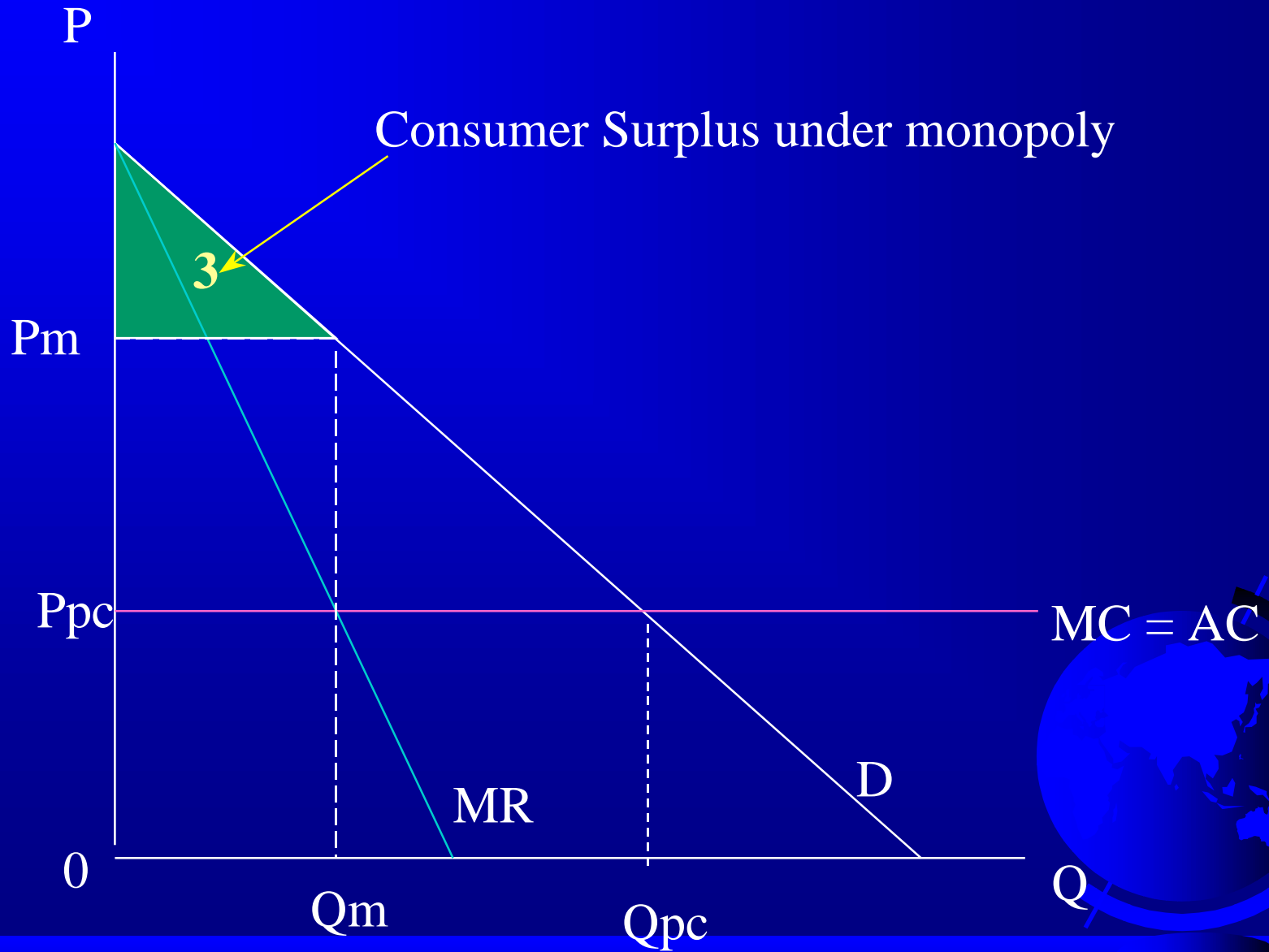
Introduction

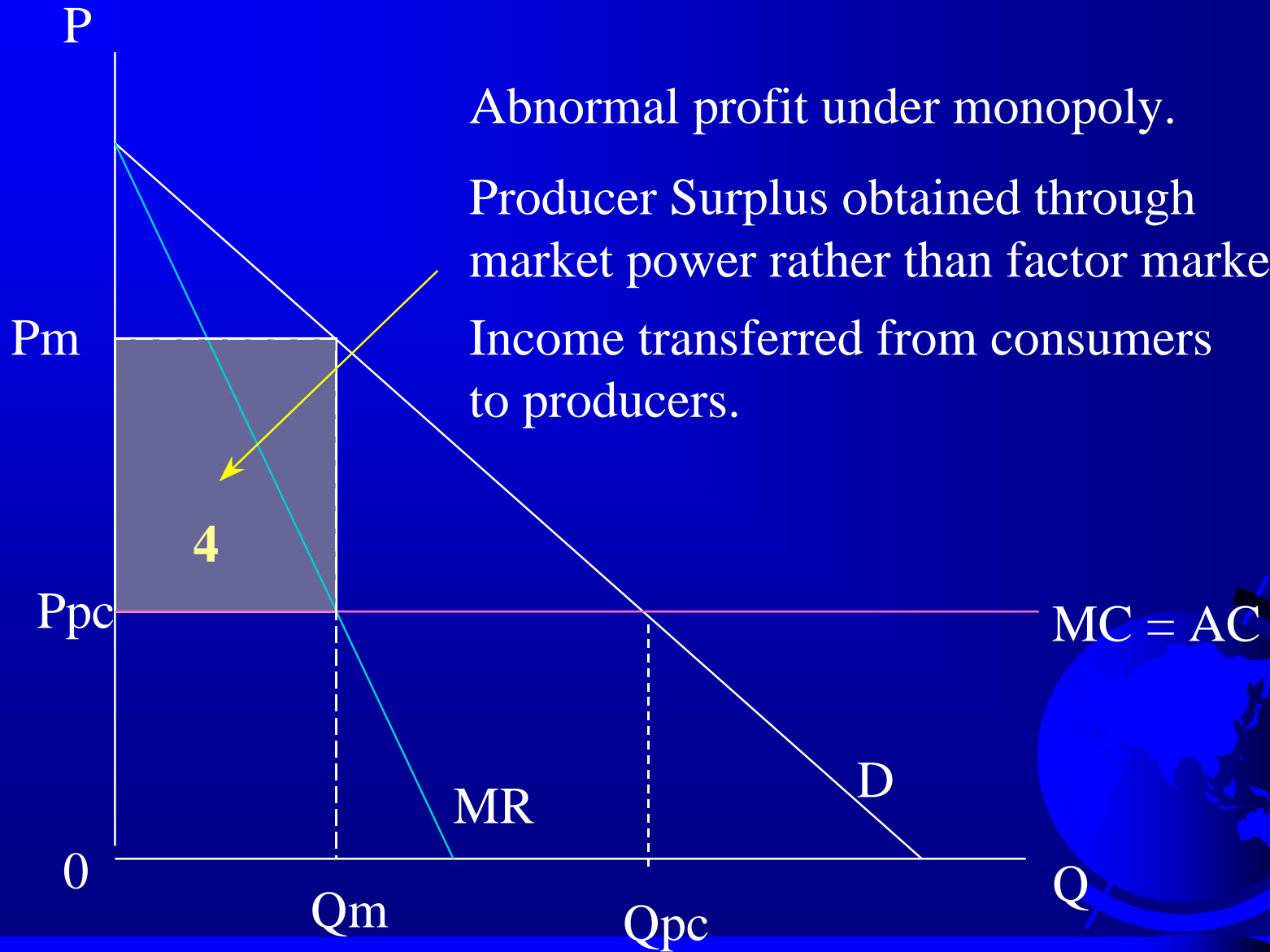
- ❖ Spatial aspects of the market are important in determining whether a monopoly exists.
- ❖ Monopolies tend to be defined within the context of political boundaries and legal jurisdictions. They can arise
 - via statute for political reasons
 - via patents, copyright and trademarks which protect intellectual property or the discovery of some unique resource
 - Naturally, that is because it would be inefficient for two or more firms to produce a good or service.

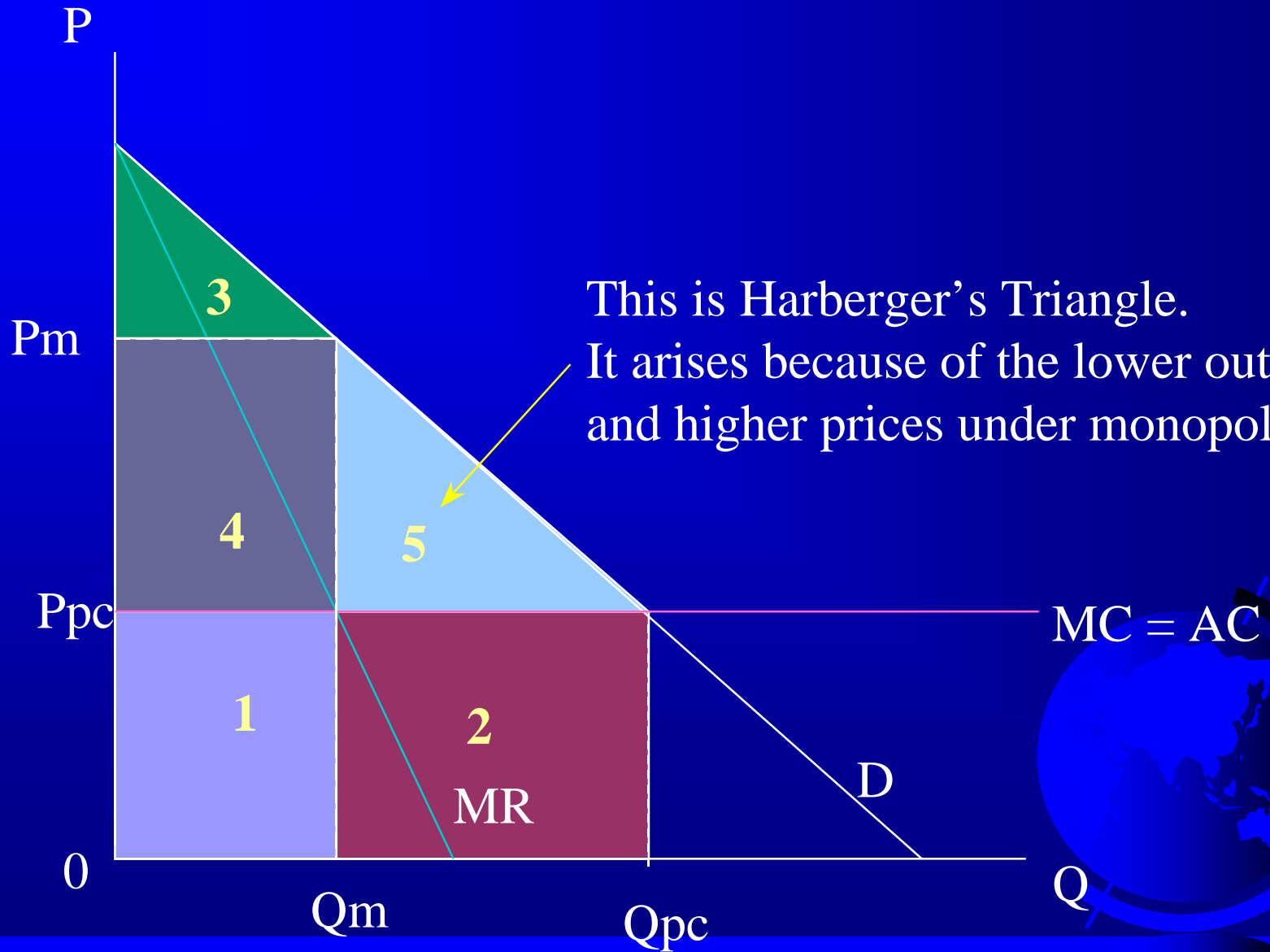








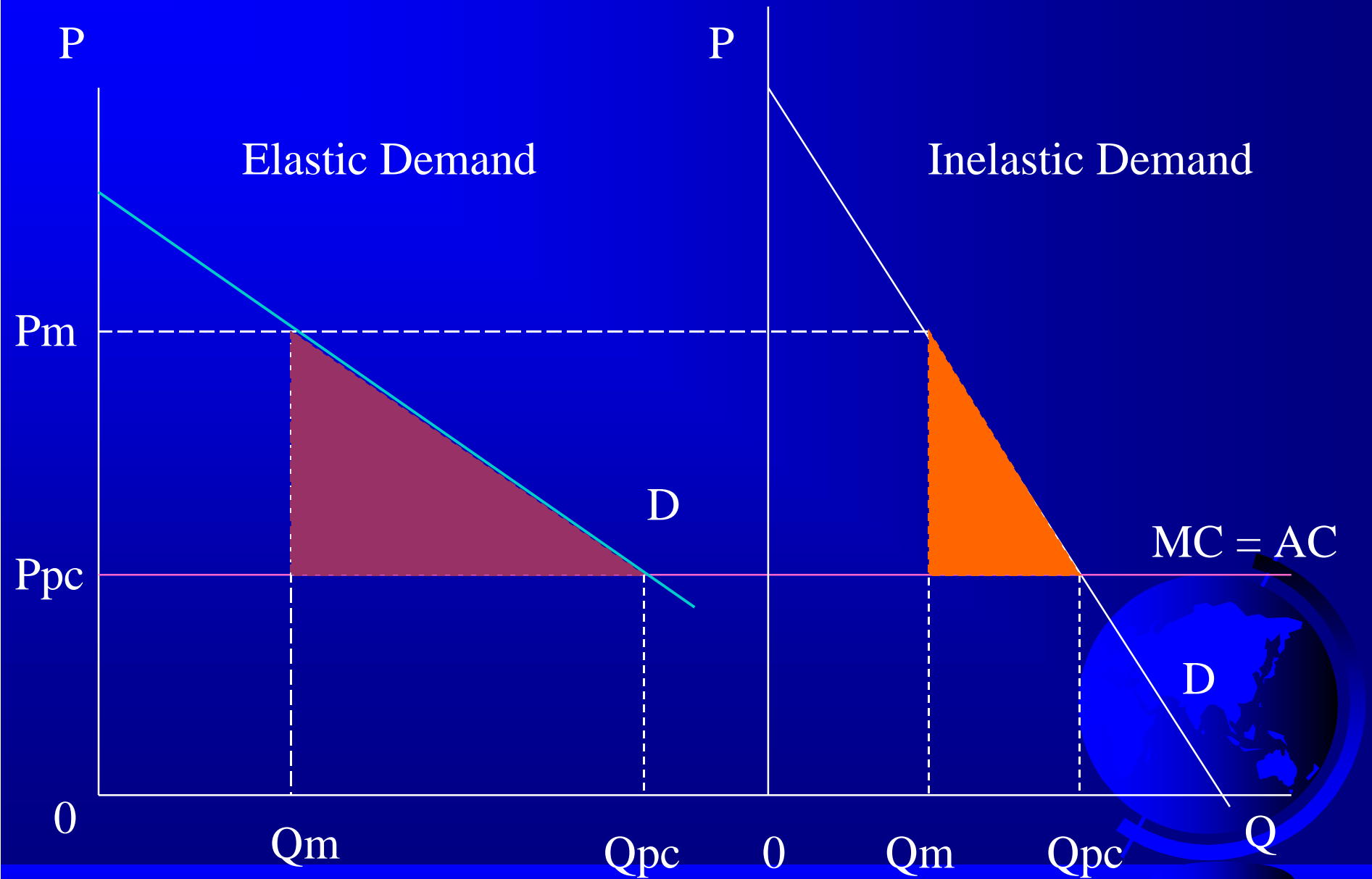




This is Harberger's Triangle.
 It arises because of the lower output
 and higher prices under monopoly.



Welfare Loss and Elasticity



- ❖ The welfare loss from monopoly

$$WL = \frac{1}{2} (Q_{pc} - Q_m)(P_m - P_{pc}) = \frac{1}{2} \cdot dQ \cdot dP$$

- ❖ Clearly, this bears a relationship with price elasticity of demand, e , at P_m, Q_m .
- ❖ And the Lerner index of market power
- ❖ $(P_m - MC)/P_m = 1/e$



❖ The link with MR and thus elasticity is fairly obvious.

❖ As

❖ $MR = P - P/e$

Note.

$$MR = P + \frac{dP}{dQ} \cdot Q = P \left(1 + \frac{Q}{P} \cdot \frac{dP}{dQ} \right) = P \left(1 - \frac{1}{e} \right) = P - \frac{P}{e}$$

❖ So

❖ $P - MR = P/e$

❖ In equilibrium $MR = MC$

❖ so

❖ $(P - MC)/P = 1/e$

❖ Note that a mark up of 25% indicates an e of 4.



Harberger's Study

❖ Harberger (AER, 1954) suggested

$$\text{WL} = \frac{1}{2} \cdot e \cdot P_m \cdot Q_m \cdot (dP/P_m)^2$$

❖ where $(P_m - MC)/P_m = (dP/P_m)$

❖ i.e. it was based on

- ◆ the price elasticity of demand
- ◆ Sales revenue and
- ◆ the mark - up on price (squared)

❖ Harberger estimated the welfare loss for US corporations in the 1920s at only around 0.1% of GNP.



Measurement Problems with Harberger

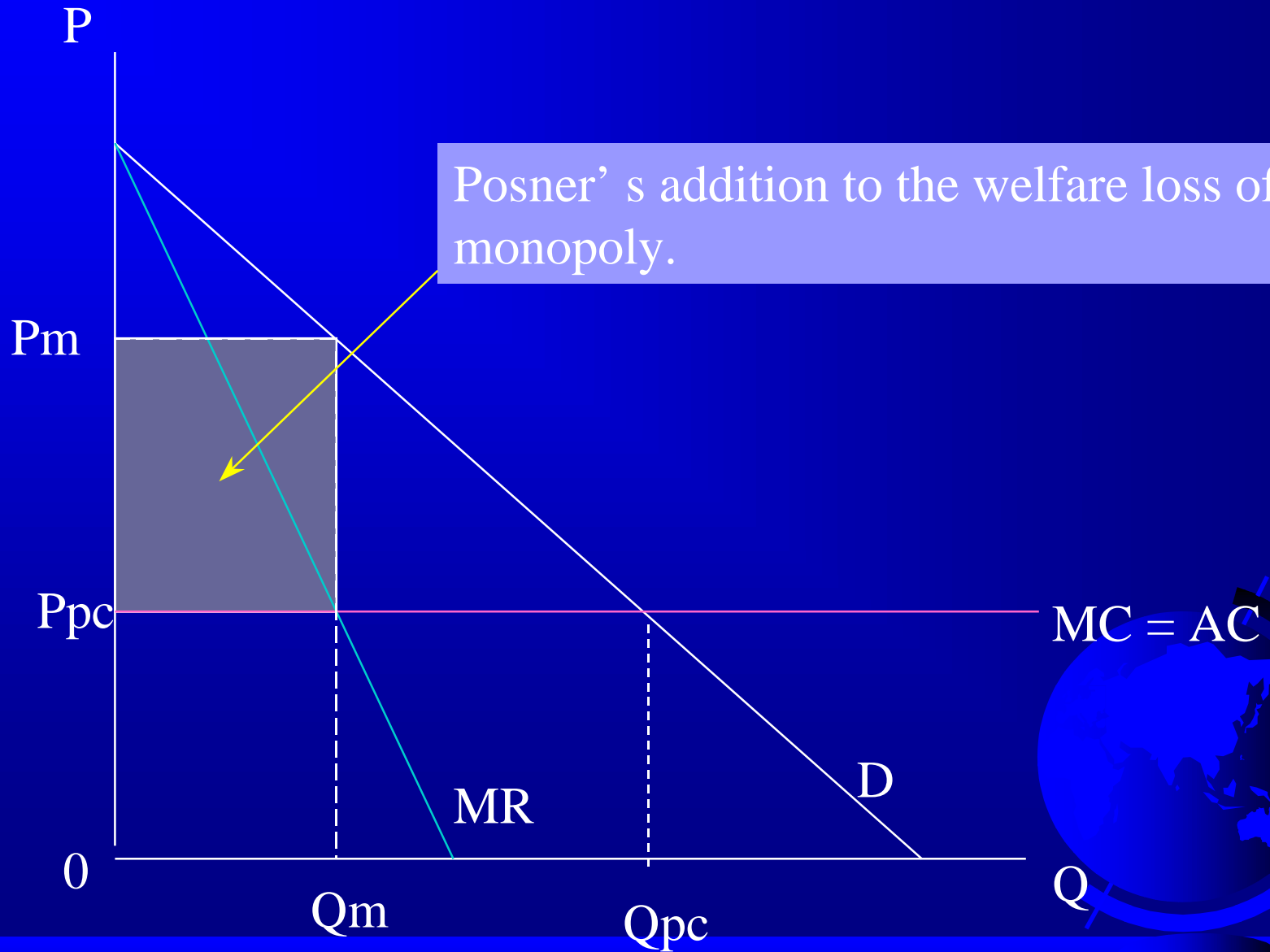
- ❖ He assumed that elasticity was 1.
- ❖ He used industry data.
 - ◆ So the profits of firms exercising market power are offset by the losses of firms making losses because of inefficiencies.
 - ◆ These firms are in a short run disequilibrium. They may leave the market or they may not. Their losses are a cost to society but not because they have market power.
- ❖ Other problems too.



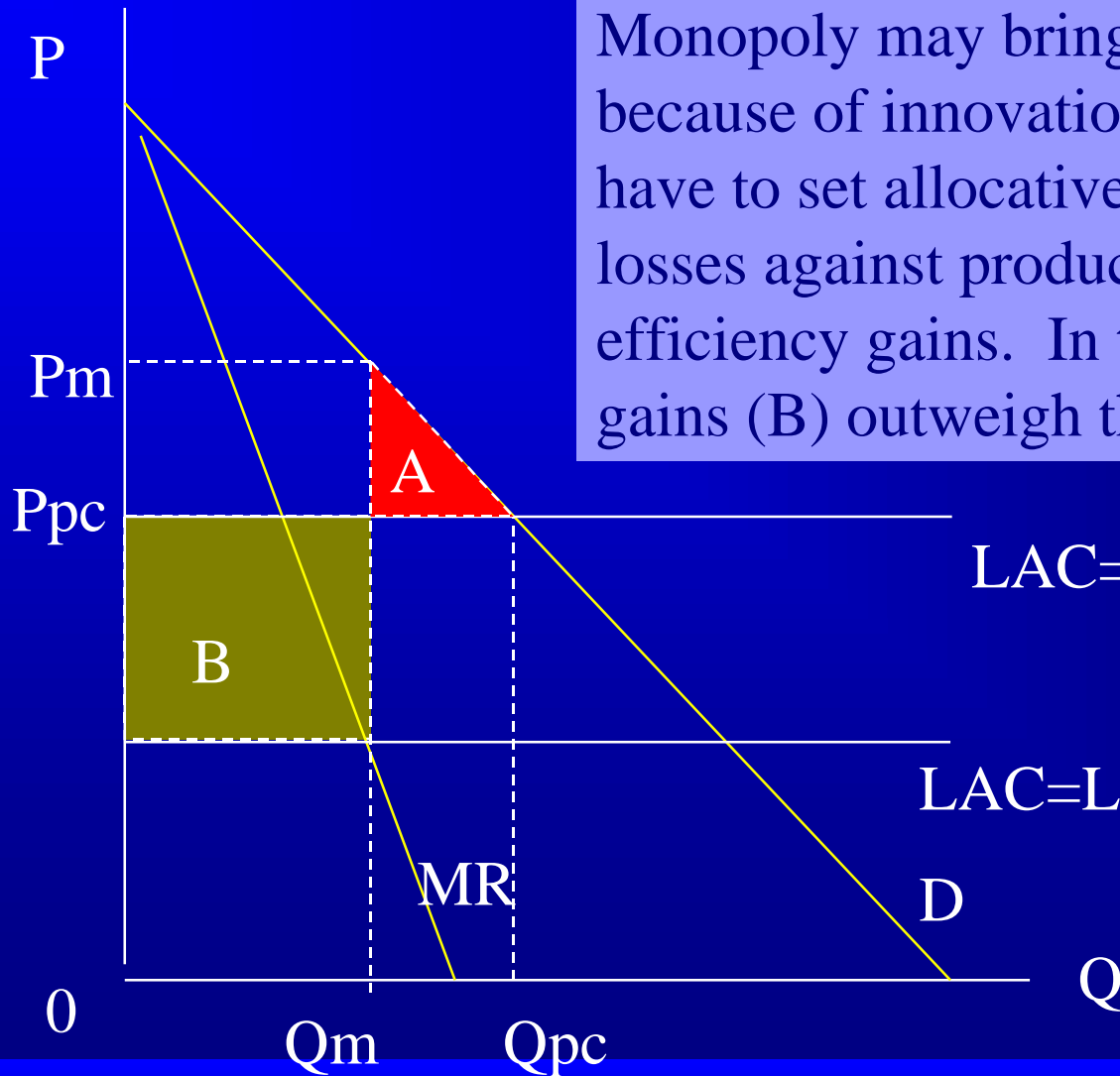
Posner (1975) and Welfare Loss

- ❖ The opportunity to earn monopoly profits will attract resources into competing for these profits.
- ❖ Thus, the cost of monopoly should reflect the opportunity cost of these resources.
 - Competition for these resources means all abnormal profits are social costs as the firms marginal expenditures on obtaining monopoly equate with their marginal benefits.
- ❖ Resources consumed include
 - lobbying and bribery.
 - Forming cartels
 - registering patents
 - various forms of non-price strategic behaviour (e.g. advertising)





Monopoly and Efficiency



Monopoly may bring lower costs because of innovation. So we have to set allocative efficiency losses against productive efficiency gains. In this case the gains (B) outweigh the losses (A).



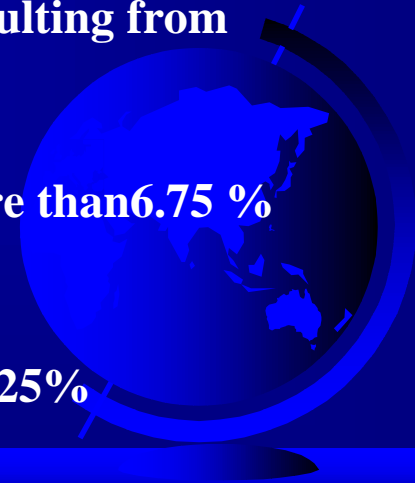
Total Welfare Loss (TWL)

$$T W L = \frac{1}{2} e P_m Q_m \left[\frac{\Delta P}{P_m} \right]^2 - Q_m \Delta C$$

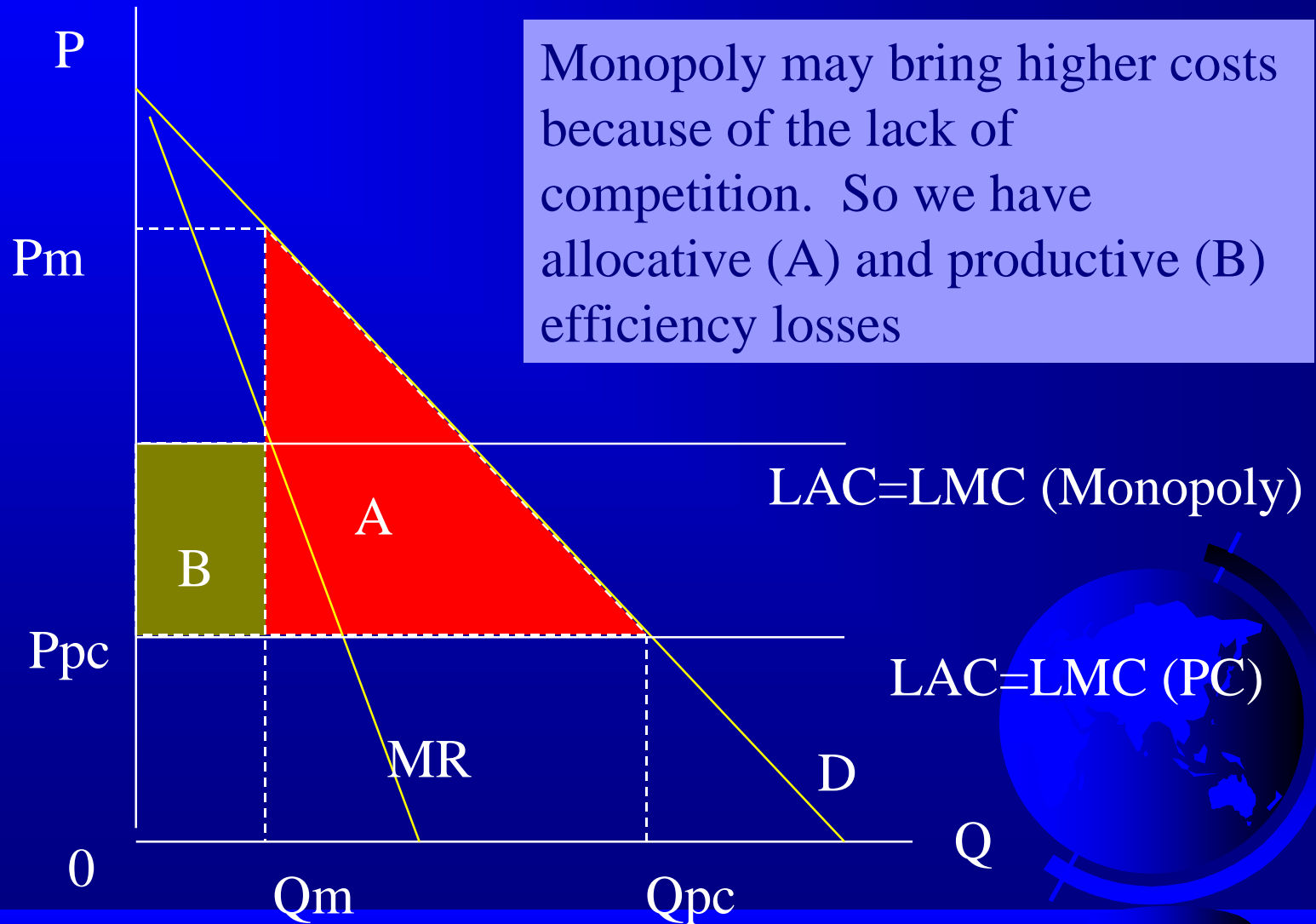
$$Q_m \Delta C \succ \frac{1}{2} e P_m Q_m \left[\frac{\Delta P}{P_m} \right]^2$$

$$\frac{\Delta C}{P_m} \succ \frac{1}{2} e \left[\frac{\Delta P}{P_m} \right]^2$$

- ❖ So the greater is e the larger the percentage cost saving from monopoly needed to offset the welfare loss of a given price increase resulting from the monopoly.
- ❖ eg. p increases by 15%. If e is high (6) costs must fall by more than 6.75 % for welfare to be improved.
- ❖ If e is 2 monopolisation results in a net gain if costs fell by 2.25%



X-inefficiency and Monopoly



Cowling and Mueller

❖ Cowling and Mueller (EJ, 1978) suggested

$$\text{WL} = \frac{1}{2} \cdot e \cdot P_m \cdot Q_m \cdot (dP/P_m) \cdot (1/e)$$

$$\text{WL} = \frac{1}{2} \cdot Q_m \cdot dP$$

❖ Which is half the monopoly profits of the firm.



Cowling and Mueller

- ❖ Their study showed how firm level data boosted the size of welfare losses.
- ❖ Re-working Harberger the loss was 0.4% of gross corporate output.
- ❖ Their analysis showed the loss at nearly 4% of gross corporate output.
- ❖ They also adjusted their method to take account of advertising and the 'Cost of monopolisation' suggested by Posner.
- ❖ This suggested an upper bound of welfare loss at 13.14% of gross corporate output.



Problems with Cowling and Mueller

- ❖ Assumes that the firm is the market. There is considerable substitutability between products.
- ❖ Assumes that all advertising is persuasive.
- ❖ There are a variety of other views of why dominance arises, including the obvious - that efficient firms become big.
- ❖ Analysis of welfare loss using oligopoly models leads to different results - See Ferguson and Ferguson (1995).



And Finally.....

- ❖ Summary
- ❖ Have you covered the learning outcomes?
- ❖ Any Questions?

