Market Power Slides

Econ 360

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Learning Outcomes/Goals

1. Compare and contrast characteristics of different market structures.
2. Identify marginal revenue for each market structure.
3. Identify conditions for profit maximization in each market structure and calculate the profit maximizing price and quantity.
4. Graphically and algebraically derive the deadweight loss due to market power in the short and long run.
5. Predict how this deadweight loss would change based on changes in the elasticity of market demand.
6. Calculate the markup a monopoly charges and identity monopoly rent graphically and algebraically.

Where We Are

- We have solved for equilibrium price and quantity in perfect competition.
- We have therefore also found each firm's profit maximizing price and quantity in a perfect competition setting.
- But, perfect competition is not generally realistic.
- In reality, firms do have some power to set prices, or **market power**.
- We will learn about some of these other market structures.
- The focus of these slides is Monopoly.

Why Monopoly?

- Monopoly is the most extreme case of market power.
- Only 1 firm that dominates the market.
- This will make it easier to get the basic idea.
- We can then turn to other more nuanced market structures.

Goal of Monopoly: Profit Maximization

- All firms are profit maximizing, and monopoly firms are no different.
- Profit π is still total revenue-total cost.
- Profit maximizing condition is marginal revenue=marginal cost.
- But marginal revenue here will be different than in perfect competition.

Marginal Revenue and Market Power

- A monopoly is a **price setter** rather than a price taker.
- So a monopoly sets the price.
- **How does this matter for marginal revenue?**

Marginal Revenue and Market Power: Example

- Suppose a monopoly sells phones.
- At a price of $100, the monopoly can sell 10 phones.
- So total revenue of 10 phones is $1000.
- In order to sell the 11th phone, the monopoly needs to reduce the price to $90.
  - This is because we assume demand increases as price decreases.
- So total revenue of 11 phones is $990.
- Therefore marginal revenue from the 11th phone is not $90, it is -$10!

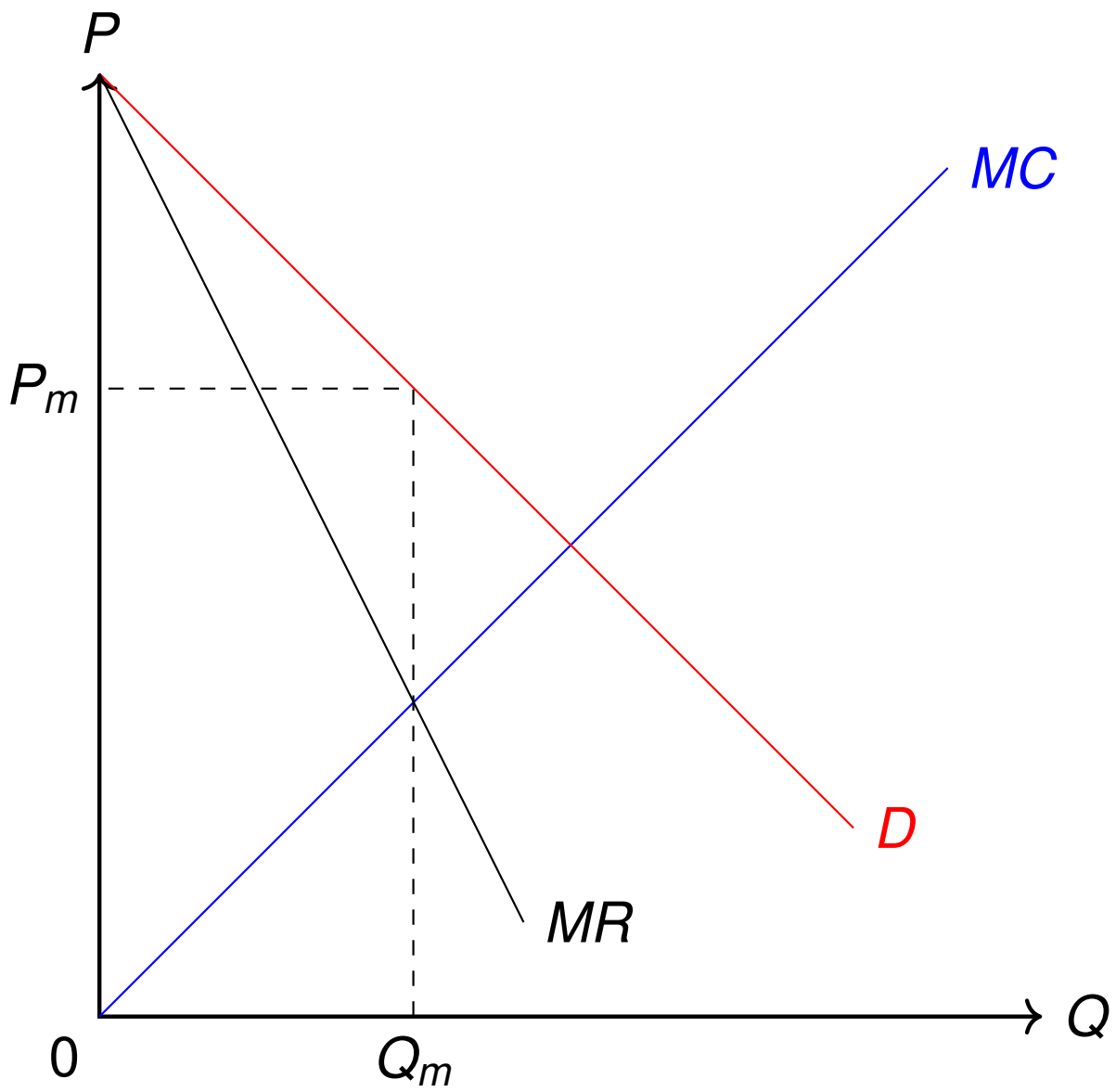
Marginal Revenue Mathematically

- Suppose the demand function is given by $P(Q) = a - bq$.
- The inverse demand function, solving for Q, is therefore $Q(P) = \frac{a}{b} - \frac{P}{b}$.
- The monopolist chooses quantity q.
- Total revenue is price times quantity, or $(a - bq) \cdot q = aq - bq^2$.
- Marginal revenue is simply the derivative of total revenue with respect to quantity.
- $MR = a - 2bq$.
- **Note**: For linear demand equations, marginal revenue always has the same slope as the demand curve with twice the slope.

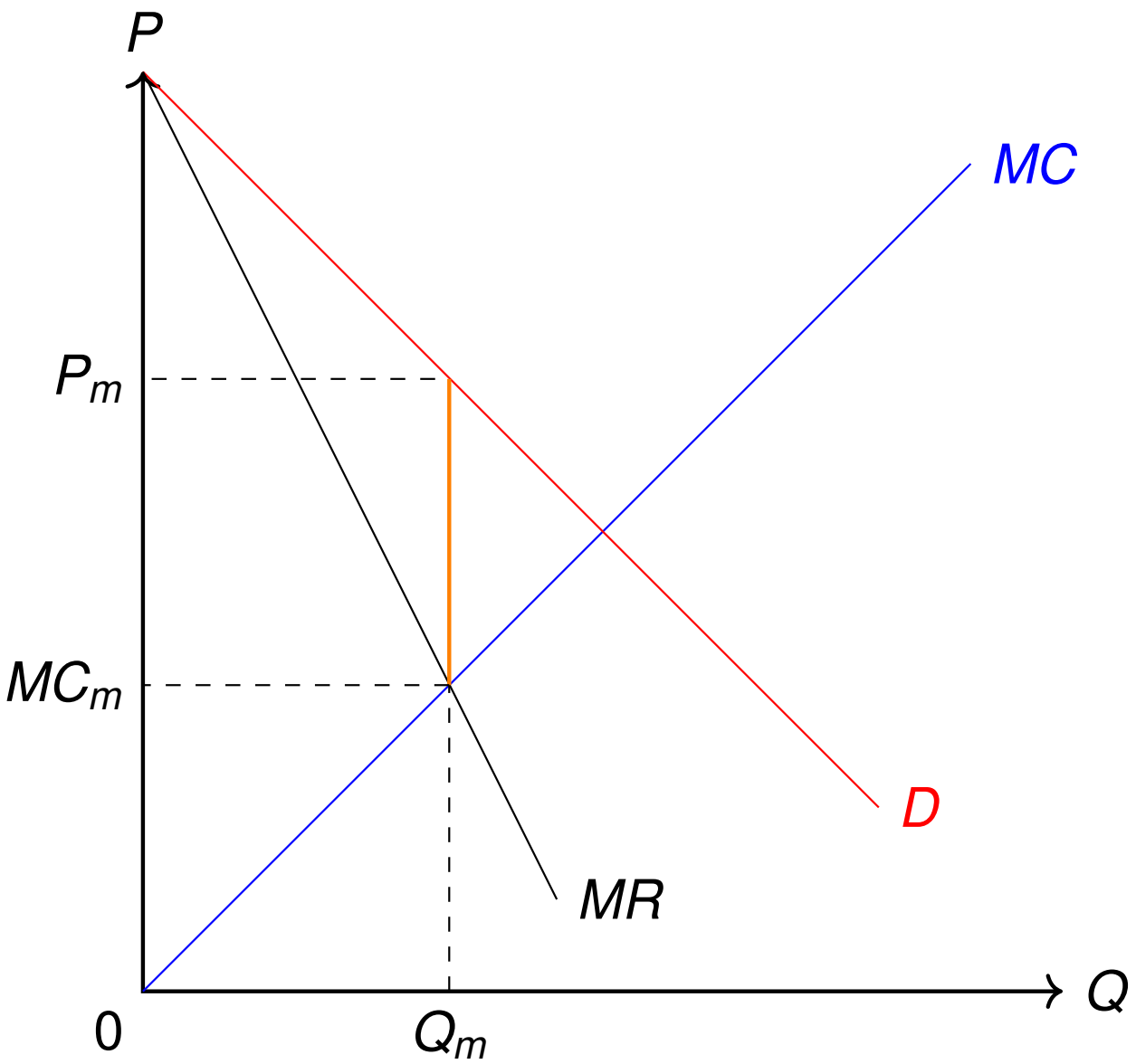
Profit Maximization

- We now find where MR=MC to find the profit maximizing quantity.
  - I will call this quantity Q_m.
  - I reserve Q^* for the quantity under perfect competition.
- Since the monopolist has market power, the price will not be equal to marginal cost.
- Instead, the monopolist will charge a price premium over marginal cost.
- We call this premium “monopoly rent”.
- The price a monopolist charges is P_m, or the price according to the demand curve at Q_m.

Monopoly Graphically



Monopoly Rent Graphically (in Orange)



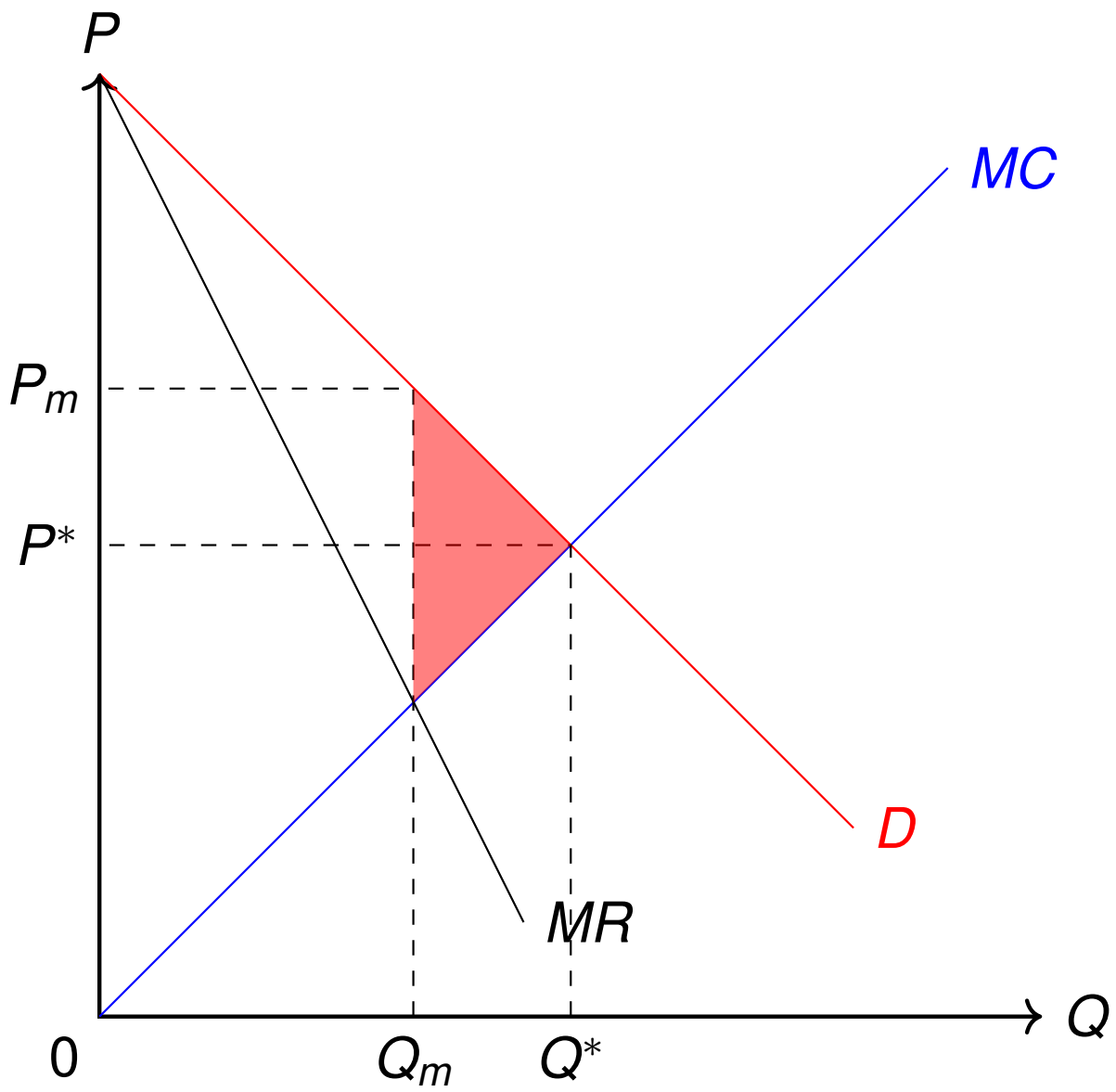
Monopoly Markup

- Often economists like to represent this monopoly rent as a percentage charged above marginal cost.
  - Example: suppose the monopoly price is \$10 and the marginal cost is \$8.
  - The monopoly rent is \$2.
  - The markup would be $\frac{10}{8} = 1.25$.

Market Power and Deadweight Loss

- Note that a monopoly is restricting quantity compared to perfect competition.
- This allows the monopoly to charge a higher price compared to perfect competition.
- This quantity restriction prevents trades with positive total surplus from happening, and therefore results in deadweight loss.
- In the graph below I add in the area of deadweight loss, shaded in red, and prices and quantities that would occur in perfect competition.

Monopoly DWL Graphed



Monopoly and Elasticity

- In class, we are going to explore how the elasticity of demand affects the size of monopoly rent and the markup.

- We will also explore how the elasticity of demand affects the size of the deadweight loss due to a monopoly.

Monopoly and Price Discrimination

- Suppose there is only 1 movie theater in a town.
- The movie theater has both a student price and a regular adult price.
- **Question for class**: how would a monopoly figure out how much to charge for a student ticket using our profit maximizing framework?

Other Market Structures

- Monopoly-1 firm.
- **Duopoly/Oligopoly**-2/few firms.
- **Monopolistic Competition**-many firms.
- Perfect Competition-infinitely many firms.

Monopoly: Quick Reference

- 1 firm.
- Barriers to entry that means no other firm can enter.
- Positive profit in both the short run and the long run.
- Sets price and quantity.
- Example: Electric company.

Duopoly/Oligopoly: Quick Reference

- 2/few firms.
- High barriers to entry.
- Positive profit in both the short run and the long run.
- Set prices/quantities through strategic interactions.
  - Uses Game Theory models beyond the scope of this course.
- Example: Plane manufacturers.

Monopolistic Competition: Quick Reference

- Many firms.
- Some barriers to entry, but new firms can overcome them in the long run.
- Positive profit in the short run, zero profit in the long run.
- Sets price and quantity initially but then become price takers.
- Example: Car manufacturers.

Perfect Competition: Quick Reference

- Infinitely many firms.
- Zero barriers to entry.
- Positive or negative profit in the short run, zero profit in the long run.
- Price takers.
- Example: Milk producers.