Econ 201: Introduction to Economic Analysis
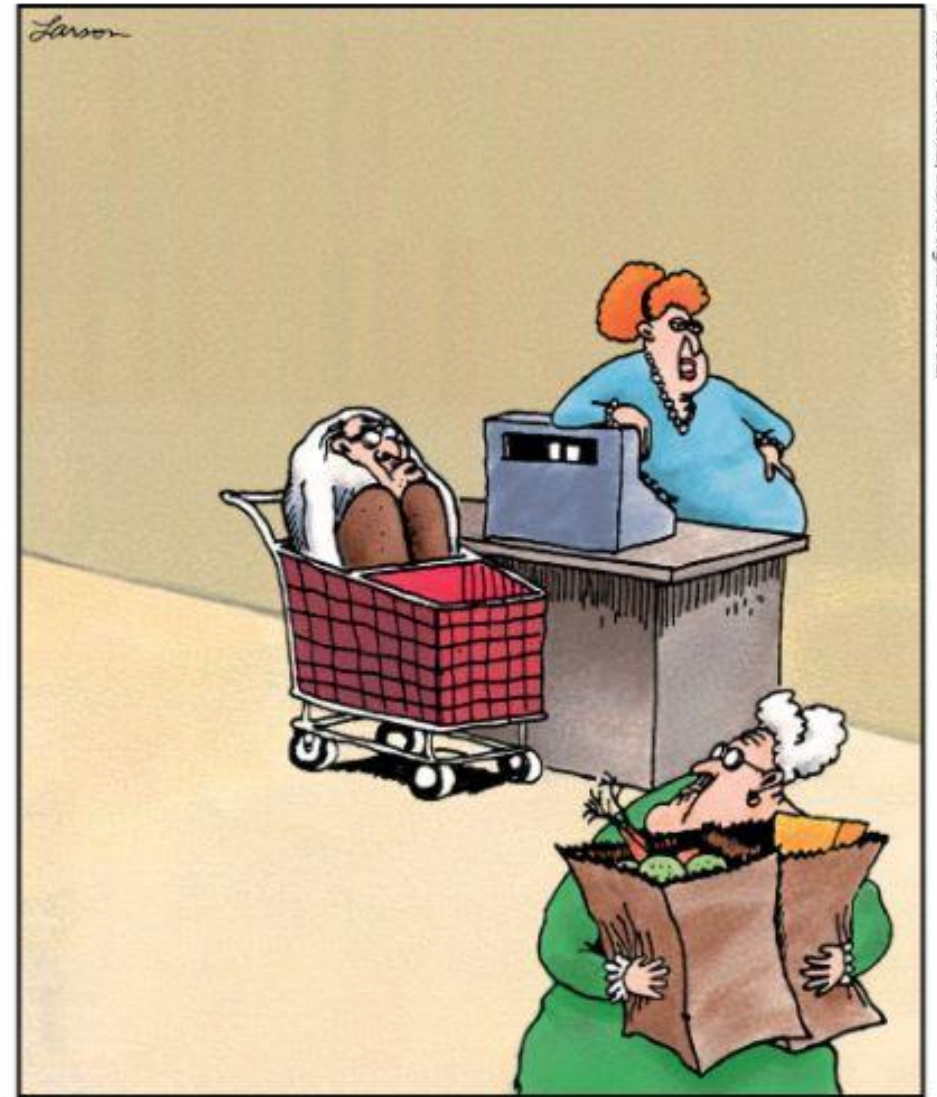
October 7 Lecture: Monopoly

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Daily dose of The Far Side

www.thefarside.com

"Oh, Mrs. Oswald ... you've forgotten something again."

Preview of this class session

- Monopoly: One seller
- How monopoly forms
- Demand and marginal revenue for monopoly
- Profit maximization for monopoly
- Elasticity and markup
- Social cost of monopoly
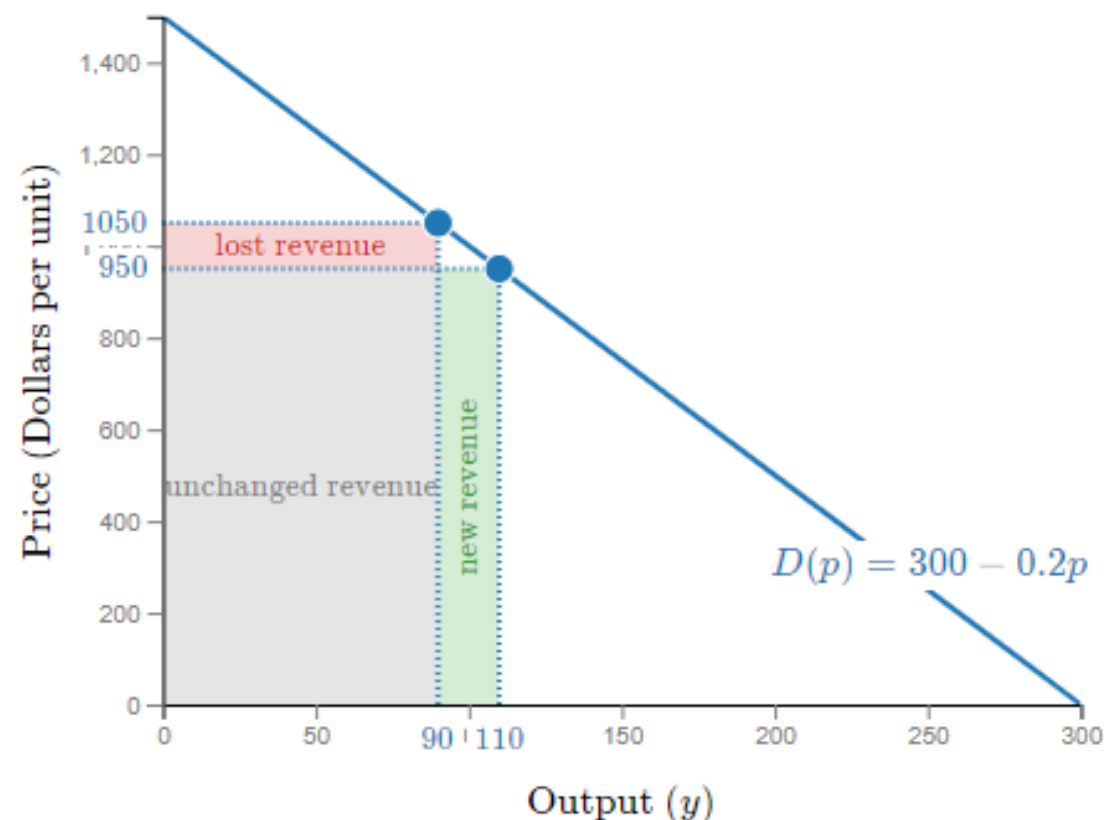- Regulation
- Natural monopoly

Pure monopoly

- **Single seller** chooses price along market demand curve
  - Market demand = firm demand when there is only one seller
- Sources of monopoly power
  - **Barriers to entry**
  - Control of **unique resources** (materials, patents, legal franchise)
  - **Switching costs** for consumers
  - **Natural monopoly**: pervasive economies of scale
  - Differentiated product: "**monopolistic competition**"
    - Many firms selling slightly differentiated product
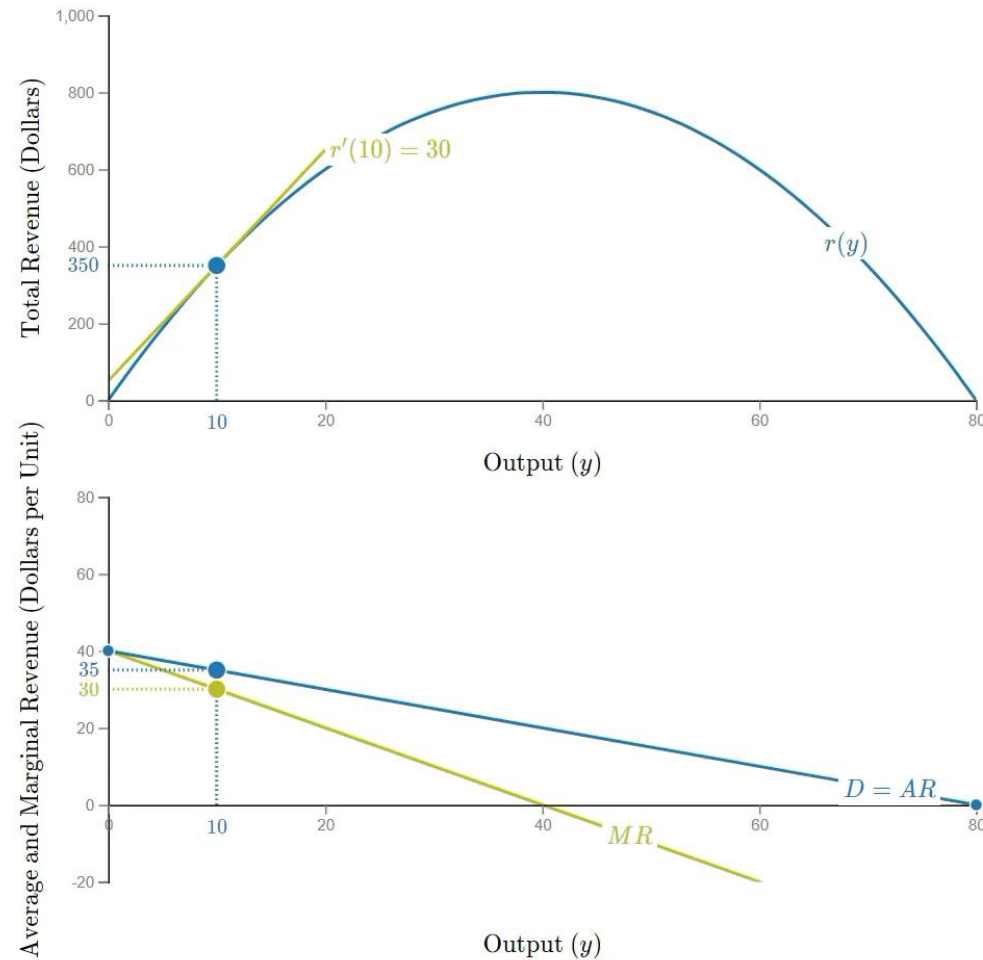   - Free entry to limit profit in long run

Demand and marginal revenue (graph)

- Demand = average revenue slopes downward

- Since AR slopes downward, MR lies below it

- To sell another unit of output, monopoly lowers price on ALL units
  - We study price discrimination in next class

- Marginal revenue = added revenue from additional units minus lost revenue from lowering price on others

Figure: Price (Dollars per unit) vs. Output (y). Regions labeled "lost revenue," "unchanged revenue," and "new revenue." $D(p) = 300 - 0.2p$

https://www.econgraphs.org/graphs/micro/producer_theory/profit_max/decomposing_marginal_revenue

Demand and marginal revenue (second graph)

Demand and marginal revenue (numbers)

Q	P = AR	TR = P × Q	MR = ΔTR	MR = AR − (Q − 1) ΔP
0	10	0		
1	9	9	9 − 0 = 9	
2	8	16	16 − 9 = 7	8 − (1) 1 = 7
3	7	21	21 − 16 = 5	7 − (2) 1 = 5
4	6	24	24 − 21 = 3	6 − (3) 1 = 3
5	5	25	25 − 24 = 1	5 − (4) 1 = 1
6	4	24	24 − 25 = −1	4 − (5) 1 = −1

Profit maximization: MR = MC in graphs
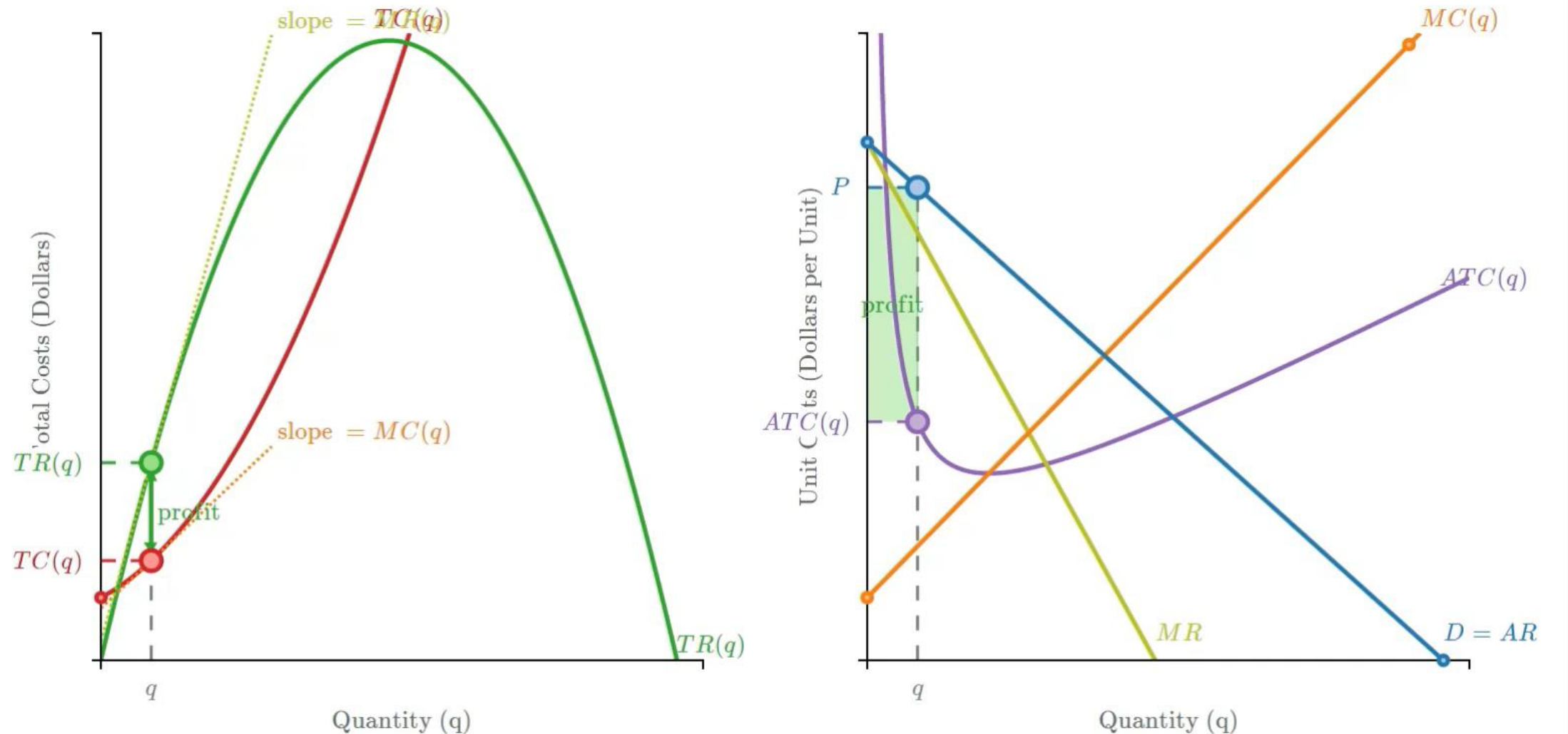
Profit maximization in words

- Produce at Q where MR = MC
    - Assuming $P >$ AVC
- Charge price given by demand curve at that Q
- Price > marginal cost here, so marginal value to consumer > marginal cost of resources to produce
    - "Contrived scarcity" = inefficiency of monopoly
- No "supply curve" for monopoly
    - Monopoly does not choose Q in response to given P
   - It chooses both Q and P from "menu" given by its demand curve

Markup ratio for monopoly

- Monopoly firms set price above marginal cost

- How much?

- "Lerner index" is markup as proportion of price: $\dfrac{P - MC}{P}$

  - 15% markup over MC → 0.15 Lerner index

- Textbook (p. 348) shows relationship between index and demand elasticity:

$$\frac{P - MC}{P} = -\frac{1}{E^d}$$

- Lower elasticity of demand → more market power and higher markup ratio

Social cost of monopoly

- Perfect competition is efficient:
  - P = MC
  - Marginal value to consumer = marginal resource cost of production
- Monopoly produces where P > MC
- Deadweight loss = Lost consumer surplus minus gained producer surplus
- Two effects:
  - Transfer from consumers to monopoly
  - Loss to society overall
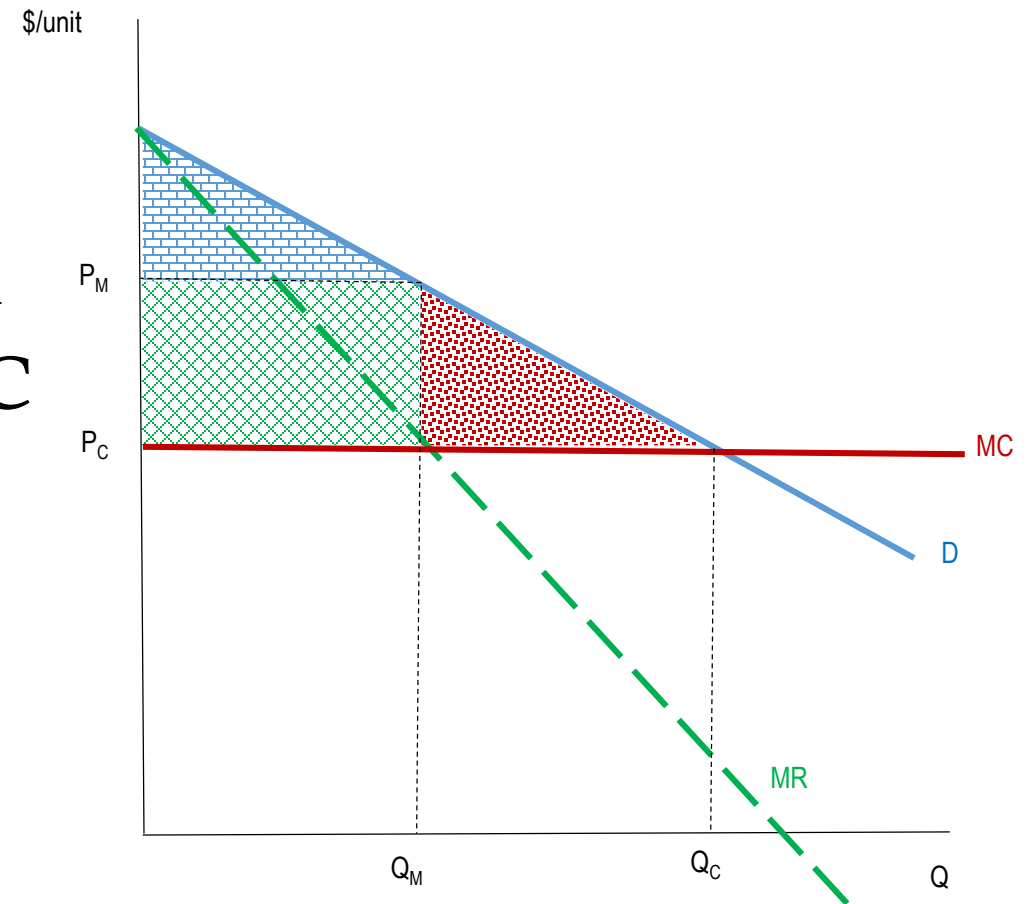
Regulation of monopoly

- Goals of regulation
  - Increase consumer surplus
  - Promote competition when feasible
- Antitrust laws prevent formation of monopolies and collusion
- Regulators may set ceiling price
  - Demand is horizontal at P_R on left
  - MR = P over this range
  - Vertical jump down where P_R intersects demand curve
- Problem: How does regulator know D and MC?

$/unit

P_M

P_R

P_C

MC

D

MR

Q_M Q_R Q_C Q
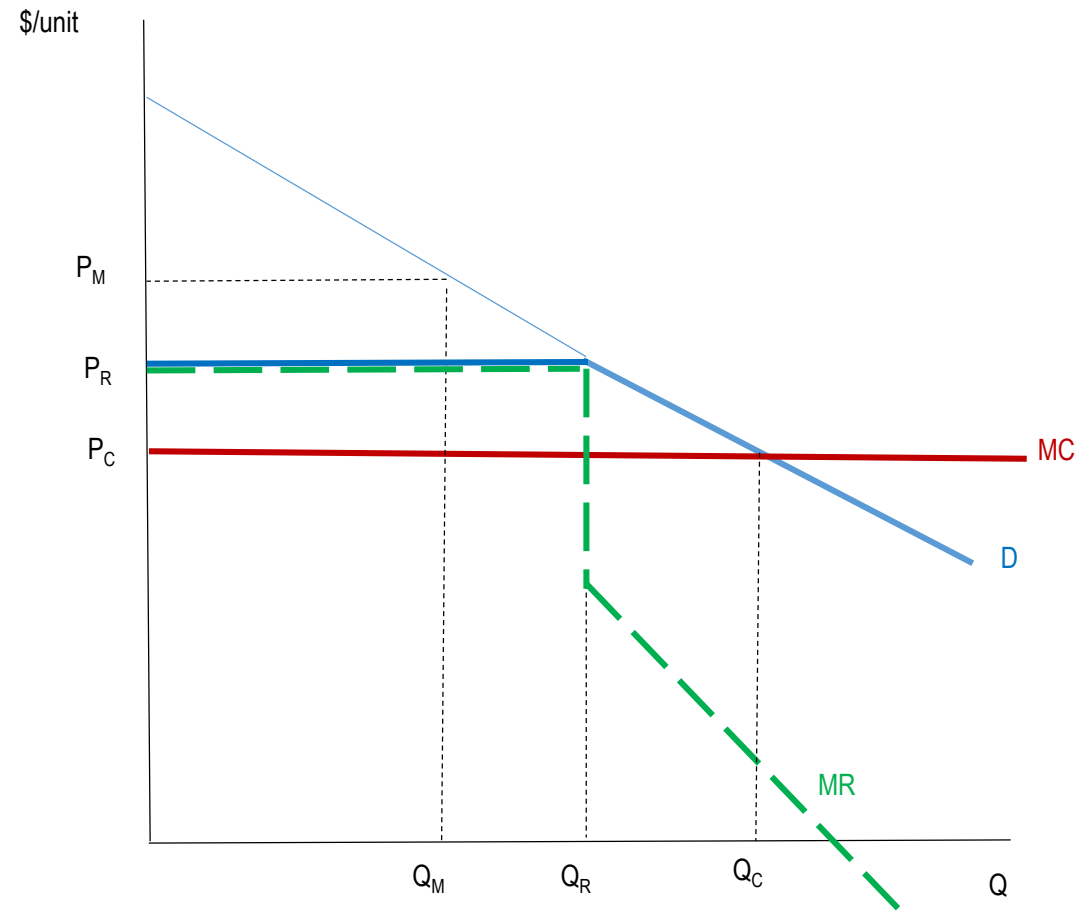
Natural monopoly

- What if economies of scale are so large that LRAC is still falling when one firm satisfies total market demand?

- Unregulated monopoly: Q_M, P_M

- Competitive (efficient): Q_C, P_C
  - Firm makes losses, would need subsidy to stay in business

- Lowest price at which monopoly breaks even is Q_B, P_B

- Full efficiency is impossible in this situation

$/unit

P_M
P_B
P_C

MR
D
LRAC
LRMC

Q_M Q_B Q_C Q
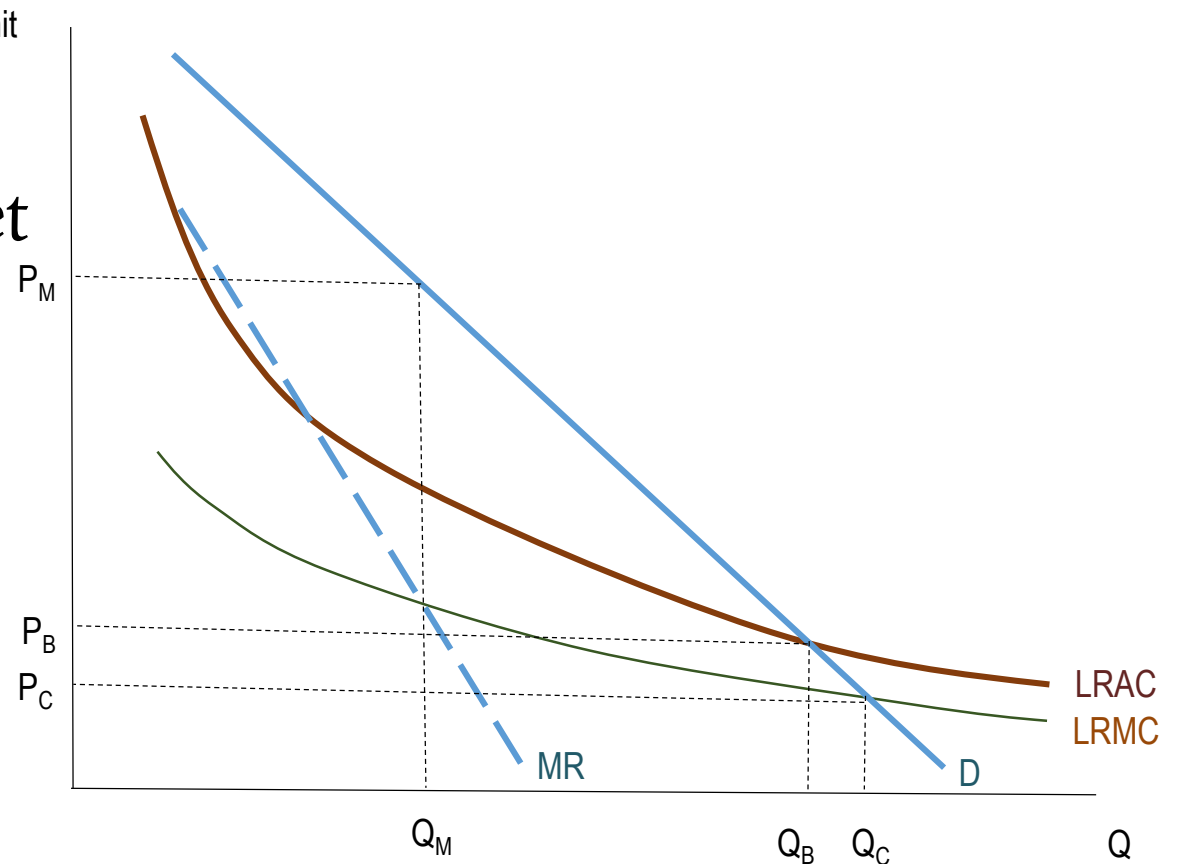
Review

- Monopoly faces downward-sloping market demand curve
- MR < P for monopoly firms
- Monopoly produces where P > MR = MC
- This leads to deadweight loss because marginal value to consumers (P) exceeds the marginal cost of resources (MC): contrived scarcity
- Governments may try to prevent or regulate monopolies
- Some industries may be natural monopolies where multiple producers are not feasible due to economies of scale

Daily diversion

Another bad economist joke …

There is a story about the last May Day parade in the Soviet Union. After the tanks and the troops and the planes and the missiles rolled by, there came ten people dressed in black.

"Are they spies?" asked the Russian Premier.

"They are economists," replied the KGB director. "Imagine the havoc they will wreak when we set them loose on the Americans."

What comes next?

- Friday's class builds on monopoly theory, looking at monopolistic competition and price discrimination

- Case study for Friday considers whether colleges use financial aid to price-discriminate

- Problem Set #5 (due on Wednesday, October 14) applies these topics to some questions about monopolies