Lecture 7
Pricing I: Market Power

15.0.11/0111 Economic Analysis for Business Decisions
Oz Shy

Some common terminology

Monopoly: A single seller that can raise price to restrict supply (could be protected against entry by patent rights, regulations, or by leveraging complementary markets)

Cartel: Firms joining together to restrict output and raise prices (example: OPEC)

Monopsony: Single buyer (example: a large firm hiring in a small town (restricts hiring to lower wages)

Oligopoly (oligopsony): Firms can exercise 'some' degree of market power

Monopoly in the news

Automotive News
MONDAY, SEPTEMBER 28, 2015 | VW COULD LOSE BIG AROUND

China says it will punish Audi, Chrysler for monopoly behavior

An Audi car drives past Tiananmen Square. The carmaker is among foreign companies whose pricing practices for spare parts have come under scrutiny.

The National Development and Reform Commission (NDRC), responsible for enforcing rules against anti-competitive pricing, today said that it had found Chrysler in Shanghai and Audi in Hubei to be engaging in monopolistic behavior.

BEIJING (Reuters) -- China said it will punish Audi and Chrysler as well as some 10 Japanese spare-parts makers for violating the country's anti-monopoly law.

Monopoly in the news

The New York Times

BUSINESS DAY

Drug Goes From $13.50 a Tablet to $750, Overnight

Specialists in infectious disease are protesting a gigantic overnight increase in the price of a 62-year-old drug that is the standard of care for treating a life-threatening parasitic infection.

The drug, called Daraprim, was acquired in August by Turing Pharmaceuticals, a start-up run by a former hedge fund manager. Turing immediately raised the price to $750 a tablet from $13.50, bringing the annual cost of treatment for some patients to hundreds of thousands of dollars.

The monopoly

- is a price-setter, not a price taker, hence
- a monopoly does not have a supply curve
- Unlike a competitive firm (price taker), a monopoly must study the demand very carefully!
- Chooses a price/quantity pair on the demand curve to maximize profit
- Legal issues: Antitrust will be discussed later on in the course

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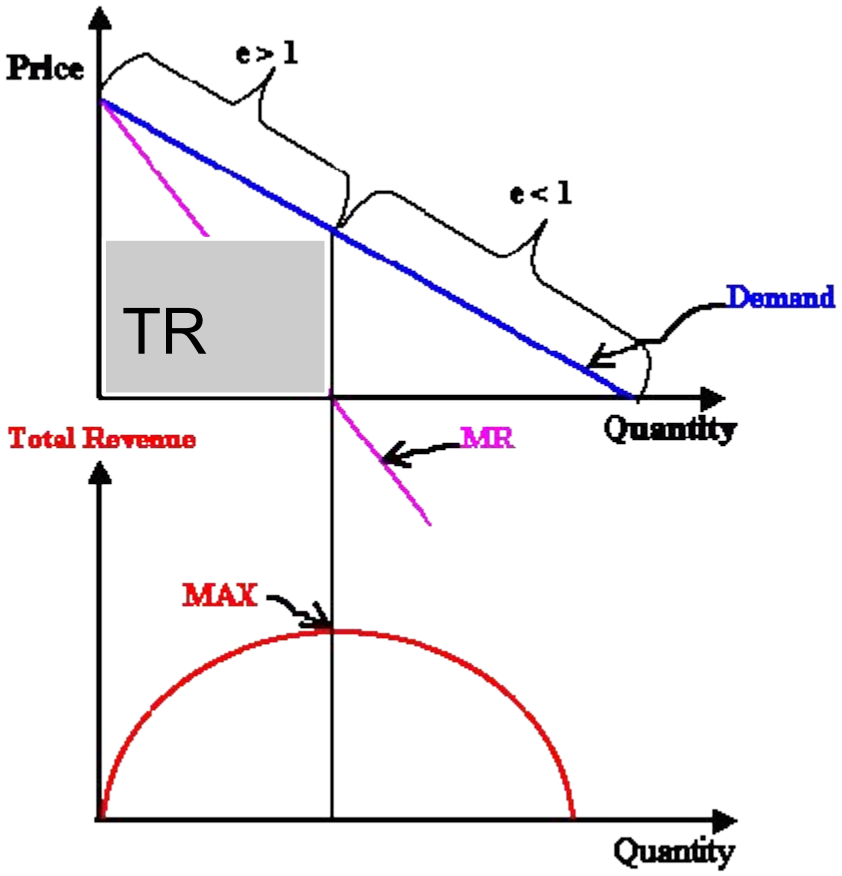
Note: Setting high prices need not always be illegal. Preventing competition is illegal

The marginal-revenue (MR) function



Definition:

MR = the increase in total revenue resulting from a small (one unit) increase in output (quantity sold)

$$MR(Q) = \frac{dTR(Q)}{dQ} \approx \frac{\Delta TR(Q)}{\Delta Q}$$

MR > 0 if the demand is elastic

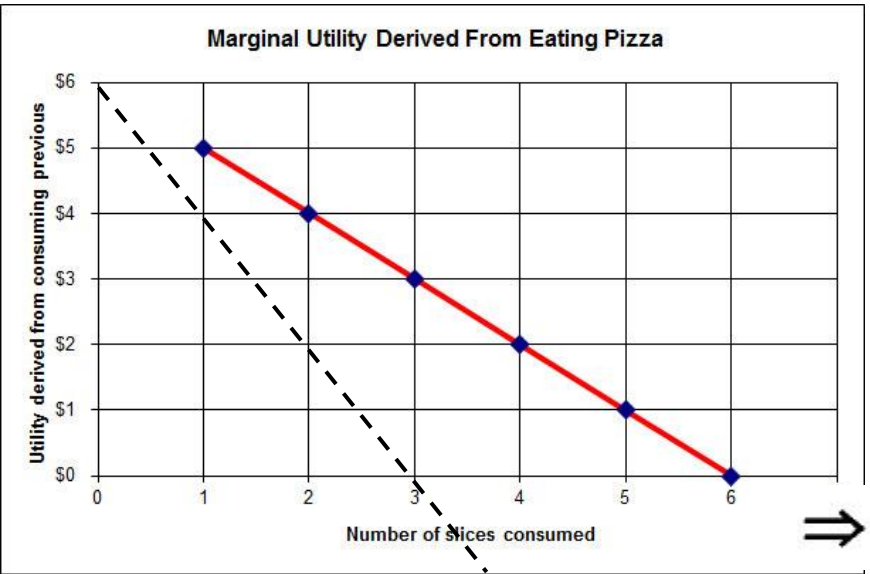
MR < 0 if the demand is inelastic

MR = 0 unit elasticity (revenue is maximized)

Commonly used formula: $MR(Q) = P + \frac{\Delta P}{\Delta Q} Q \leq P$

The marginal-revenue (MR) function: An example

P	Q	TR = P x Q	MR	MR (formula)
6	0	0	n/a	6
5	1	5	5	4
4	2	8	3	2
3	3	9	1	0
2	4	8	-1	-2
1	5	5	-3	-4
0	6	0	-5	-6



Remark: Here, MR(2)=3 is the revenue change from selling the 2nd unit, etc.

Formula to memorize (No need to memorize the proof):
If P(Q) = a - b Q, then
MR(Q) = a - 2 b Q
In the example on the left:

$$P = 6 - Q$$
$$\Rightarrow MR(Q) = 6 - 2Q$$

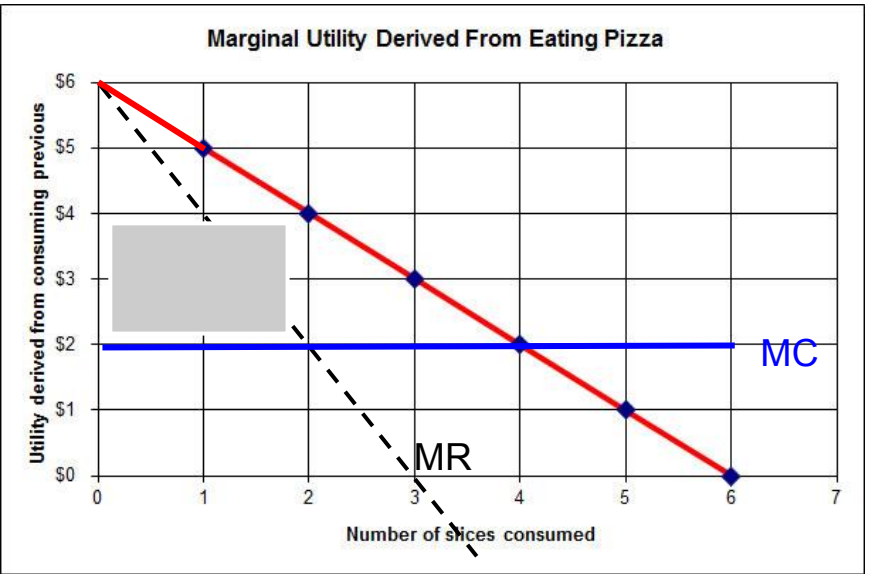
The maximum revenue output is found from:

$$0 = MR(Q) = 6 - 2Q$$
$$\Rightarrow Q^* = 3 \Rightarrow p^* = \$3 \Rightarrow TR = \$9$$

The monopoly's profit-maximizing output (and price)

The monopoly's profit maximizing output is found from MR(Q) = MC(Q), as long as the resulting price satisfies: P ≥ ATC (Q) in the long-run and P ≥ AVC(Q) in the short-run

Example: TC(Q) = 5 + 2 Q, hence MC(Q) = $2
MR(Q)=MC(Q) implies 6 - 2Q = 2, hence Q^m = 2 units & P^m = $4

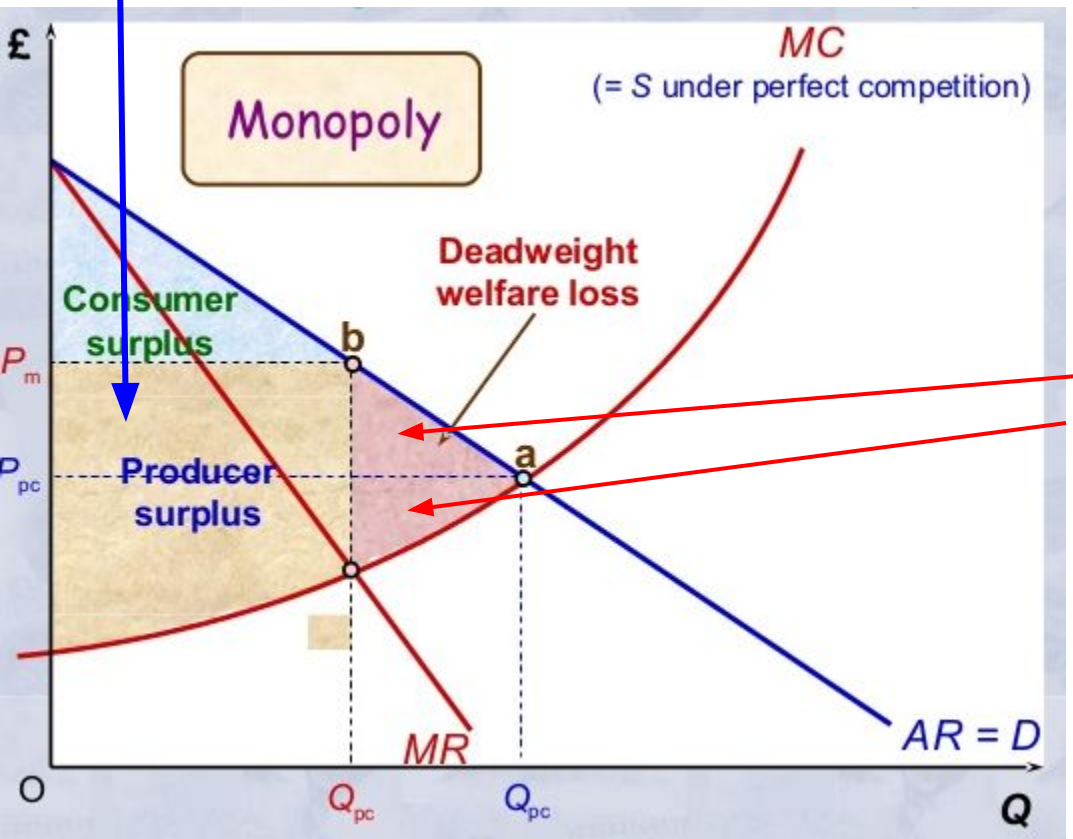


Short-run profit = shaded area
= $\prod^{SR}$= ($4 - $2) 2 = $4 >0

But, in the LR, taking fixed costs into account, the firm makes a loss because
$\prod^{LR}$= ($4 - $2) 2 - $5 < 0

What's wrong with having a monopoly seller?

Consumer advocates "complain" about high prices (surplus transfer from consumers to the firm)



Economists "complain" about inefficiency associated with uncaptured surplus (deadweight loss) due to output reduction

Price markup: Definition

$$\text{Markup} = \frac{P - MC}{P}$$

To express in % terms, simply multiply by 100

Example 1 from slide #6: P^m = \$4 and MC = \$2

$$\text{Markup} = \frac{\$4 - \$2}{\$4} = \frac{1}{2} = 50\%$$

Example 2:
Competitive firm
P=MC, so
markup = 0

Largest markup in the grocery store

Price markup and price elasticity: Important relationship

In a monopoly equilibrium: $$\text{Markup} = \frac{P - MC}{P} = -\frac{1}{E_p}$$

Note: Yes, also MR = MC (one condition implies the other)

Example from Slide #7: Let's verify that the formula is "working"
Slide #7 shows that the markup is 0.5 or 50%
Let's compute the price elasticity at equilibrium: P=$4 and Q=2

$$E_p = \frac{dQ}{dP} \cdot \frac{P}{Q} = (-1)\frac{4}{2} = -2 \Rightarrow -\frac{1}{E_p} = 0.5 = 50\%$$

Implications: (1) Higher elasticity implies lower markup
(2) Lower elasticity implies higher markup

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