MICROECONOMICS I.
"B"

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week 12

Monopoly

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The course was prepaerd by Gergely Kőhegyi, using *Jack Hirshleifer, Amihai Glazer and David Hirshleifer (2009) Mikroökonómia. Budapest: Osiris Kiadó, ELTECON-books (henceforth HGH)*, and *Gábor Kertesi (ed.) (2004) Mikroökonómia előadásvázlatok. http://econ.core.hu/ kertesi/kertesimikro/ (henceforth KG).*

Monopoly

Definition 1. Pure monopoly *is a market structure with only one firm on the market.*

- Reasons for a monopoly to emerge:
  - Efficiency (natural monopoly): the market is small compared to an efficient firm scale (e.g.: energy sector, transportation, etc.)
  - Legal boundaries
    - Patent, Know How, copyright (e.g.: Biro (ball pen), Windows, Blood Sugar Sex Magic, Unicum, etc)
    - Government regulation (e.g. MATÁV)
  - Barrier to entry or exit. (cost, legal, lobby, etc.)
  - The crowding out of a firm already on the market. (e.g.: Standard Oil)
- The market structure can change. A firm can be alone in a market at one period, while others can enter the market later (e.g. IBM).
- A pure monopoly is only a model, which we can use as good proximation in certain situations.
- If a firm is alone on a market, then it is NOT PRICE TAKER! What would its revenue and profit be?

Note 1. *Costs depend on the technology and not on the market structure. But on the long run, in certain markets, a firm with strong market power can change its technology easier, and thus lower its costs.*

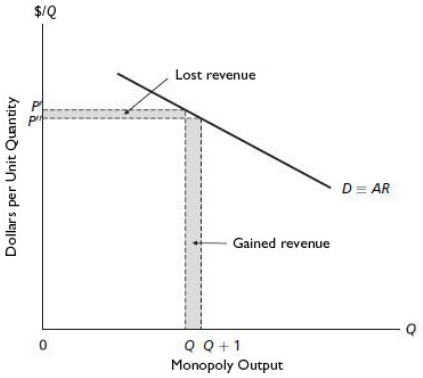
The optimum of the monopoly

Marginal revenue of the monopoly

- Monopoly is not price taker
- Thus it does not take price as constant
- $\frac{\Delta P}{\Delta q} \neq 0$, where $P(q)$ is the inverse demand function
- Then $MR(q) = \frac{\Delta P(q)}{\Delta q} q + P(q)$

- If the law of demand holds, i.e. $\frac{\Delta P}{\Delta q} < 0$, then $MR(q) < P(q)$, i.e. marginal revenue is under the inverse demand curve.

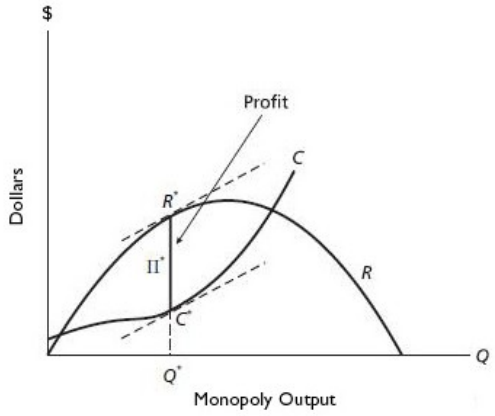
Marginal revenue
Changing the quantity does not always change revenue with the same amount.



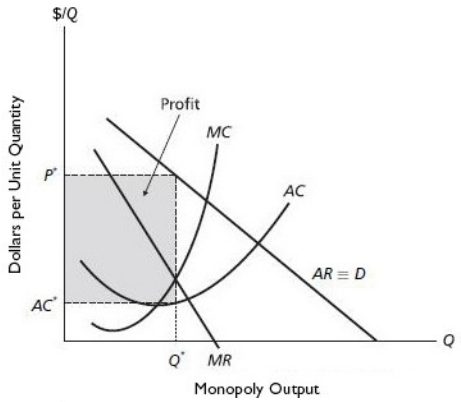
Statement 1. *Given any linear demand curve $P = A - BQ$, marginal revenue is $MR = A - 2BQ$. (So the MR curve starts at the vertical intercept of the demand curve on the P-axis and then falls twice as fast as the demand curve.)*

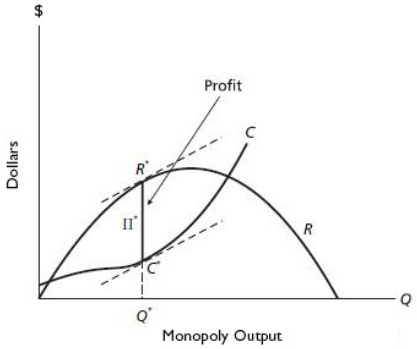
Monopolist's profit-maximizing optimum

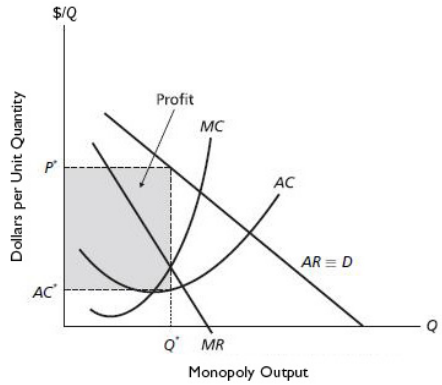
Profit maximum
Maximum profit occurs, where the vertical difference between the total revenue and the total cost curve is the greatest. The revenue curve is non-linear because the firm is not price-taker.



Profit-maximizing output
The profit-maximizing output q^* of the monopoly is, where marginal cost intersects with the marginal revenue curve $MR = MC$. Profit-maximizing price is given by the demand curve at q^*.





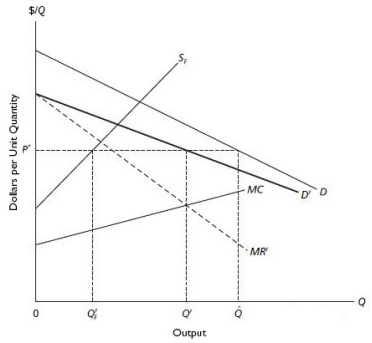


Statement 2. *A profit-maximizing monopoly firm always chooses a price-quantity solution in the range of* elastic demand *along the market demand curve.*

An application: Monopolist with competitive fringe

Monopoly with competitive fringe

D is the overall market demand curve. After horizontally subtracting the supply curve S_F of the price-taking fringe firms, the large firm has an effective demand curve D' and a marginal revenue MR'. The optimal output of the large firm: Q', of the fringe: Q_F, total output: $\hat{Q} = Q' + Q_F$.



Monopoly and welfare

Competition versus monopoly

$(P = 132 - 8q/100;\ C = 100[128 + 69Q/100 - 14(Q/100)^2 + (Q/100)^3])$

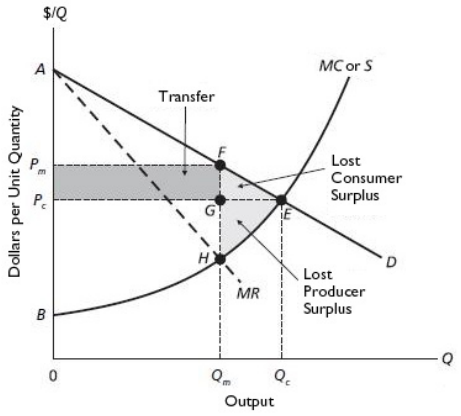
Q	P	R	MR	C	MC (exact)	η
0	132	0	132	12 800	69	$-\infty$
100	124	12 400	116	18 400	44	$-15,5$
200	116	23 200	100	21 800	25	$-7,25$
300	108	32 400	84	23 600	12	$-4,5$
400	100	40 000	68	24 400	5	$-3,125$
500	92	46 000	52	24 800	4	$-2,3$
600	84	50 400	36	25 400	9	$-1,75$
700	76	53 200	20	26 800	20	$-1,36$
800	68	54 400	4	29 600	37	$-1,06$
900	60	54 000	-12	34 400	60	$-0,83$
1000	52	52 200	-28	41 800	89	$-0,65$
...						

Statement 3. *The monopoly output solution occurs where marginal cost = marginal revenue. Since competitive firms produce where marginal cost = price and since marginal revenue < price, a monopolized industry charges higher price and produces smaller output than a competitive industry with the same cost and demand functions.*

Monopoly and economic efficiency

Deadweight-loss

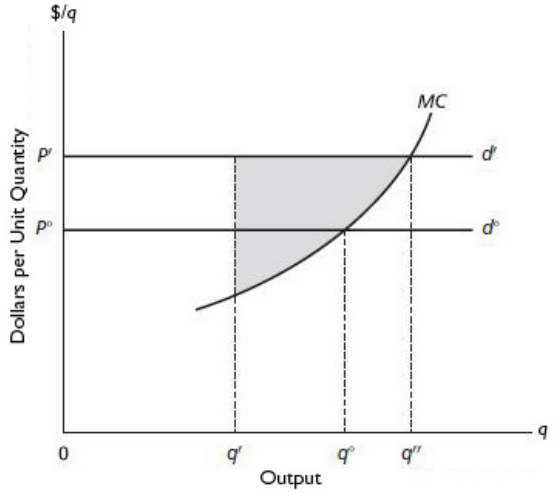
Monopoly produces deadweight-loss (the area of the FHE triangle), which is due to the fact that the monopoly is not a price-taker (and not due to the "evil" nature of the firm).



Statement 4. *In comparison with the competitive outcome, monopoly involves a transfer from consumers to suppliers. There is also an efficiency loss, the sum of the reduction in consumer surplus and producer surplus due to reduced trade.*

Cartels

A cartel is a group of firms behaving as a collective monopoly. Each firm in a cartel agrees to produce less than it would under unrestrained competition. The aim is of course to raise the price so that all can reap higher profits.



Consequence 1. *Cartels can raise prices above the competitive level only by cutting industry output. But at the higher prices, a member firm can profit by covertly producing even more than at the competitive equilibrium. Nonmembers can do the same and, since they need not disguise their actions, can gain even more. The added production of members and of nonmembers combine to subvert the cartel.*

Government intervention to decrease welfare loss

- Competition policy
- State takeover
- Economic regulation

Competition policy

The first famous regulation in competition policy: Sherman Act (1890)

- 1. section. Every contract, combination in the form of trust or otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations, is declared to be illegal. Every person who shall make any contract or engage in any combination or conspiracy hereby declared to be illegal shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding $100,000,000 if a corporation, or, if any other person, $1,000,000, or by imprisonment not exceeding 10 years, or by both said punishments, in the discretion of the court.
- 2. section. Every person who shall monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations, shall be deemed guilty of a felony, and, on conviction thereof, shall be punished by fine not exceeding $100,000,000 if a corporation, or, if any other person, $1,000,000, or by imprisonment not exceeding 10 years, or by both said punishments, in the discretion of the court.

Later provisions (USA):

- Rule of Reason
- Clayton-act: 1914
- Federal Trade Commission: 1914

Indicted industry cartels – price movements after indictment

	Number of cases	Prices rose	Prices fell	Unclear or mixed
Before 1976	10	7	1	2
After 1976	15	9	2	5

Eu

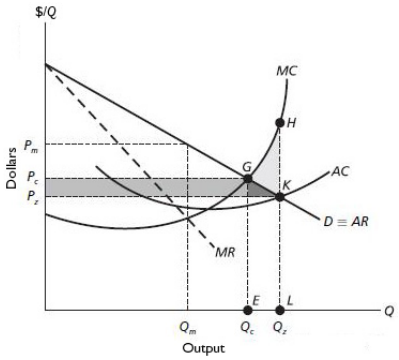
Hungary:

- Competition act (1996/LVII. act)
- Hungarian Competition Authority (GVH): independent organization (+sector specific regulatory bodies)
- Main areas in competition-regulation:
  - Prohibition of the agreements limiting competition (cartel (horizontal≠vertical), vertical restrictions, firm agreements): e.g.: Insurance companies (6,8 billion HUF fine!) (2006), Movie-cartel (2002), "Pacal"-cartel (2001), Highway-cartel (2006)
  - Abuse of market power: E.g.: Microsoft, OTP
  - Prohibition of unfair competition
  - Deceit of consumers (not consumer but competition protection)
  - Controlling mergers
- How can we achieve that the actors do not have a reason to limit competition? (If we know the desired equilibrium, how do we set the rules of the game, so that this equilibrium emerges?)
- Tools: laws, regulations, provisions, organizations, concessions, etc.

Regulation of monopolies

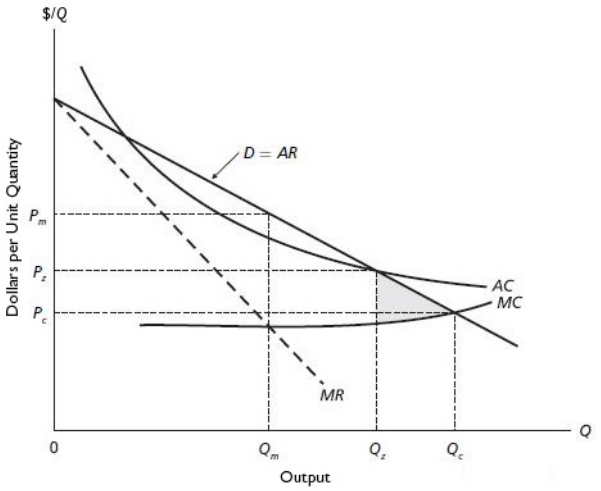
Increasing costs

The regulatory solution, fixing price so that the monopolist receives zero economic profit: $AR = AC$. If this occurs in the range where AC rises, regulated output will be even greater than the competitive equilibrium output. In comparison with the competitive solution, the lightly shaded rectangle is a transfer from suppliers to consumers. The dotted area GHK is an efficiency loss due to excessive output.



Decreasing costs

The regulatory solution, fixing price so that the monopolist receives zero economic profit: $AR = AC$. If this occurs in the range where AC is falling, regulated output is greater than the profit-maximizing monopoly output, but is less that the ideally efficient output, where $MC = AR$. In comparison with the efficient outcome the dotted areas represent losses of consumer surplus and producer surplus due to *inefficient* output.

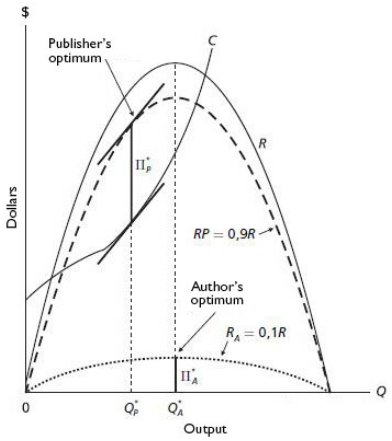


Statement 5. *If the average cost curve is rising in the relevant range, the regulatory zero-profit solution increases output beyond the monopolist's profit-maximizing solution. Such regulation is inefficient, leading to output the is "too large" in comparison with the monopolist's "too small" output. With a falling average cost curve, on the other hand, the regulatory zero-profit solution increases output insufficiently. The supposed inefficiency of monopoly may be exaggerated, however. The pressure of outsiders anxious to enter the industry limits the monopolist's ability to exploit consumers.*

Application: Author versus publisher

E

Total revenue from customers is shown by the R curve. Of this revenue 10% goes to the author (R_a curve) and 90% to the publisher (R_p curve). The publisher prefers a smaller output than the author.

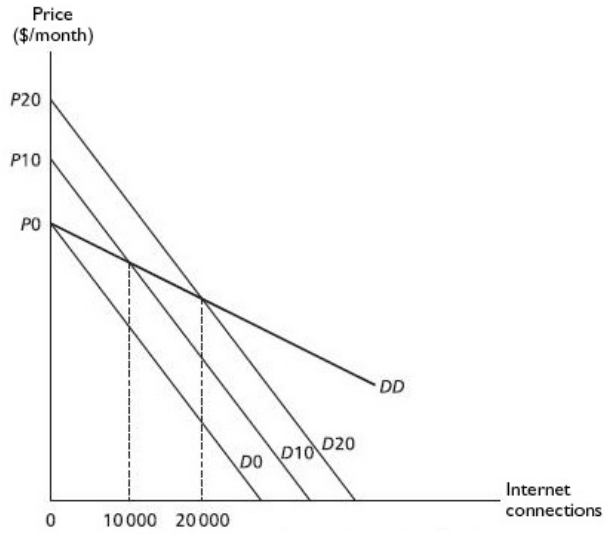


Network externalities

A person's demand for a good is usually independent of how much others buy. Sometimes, however, a person values a good more highly the greater the number of other people buying it. Such goods are said to exhibit positive network externalities.

Network effect

The horizontal axis measures the number of consumers connecting to the Internet. The more steeply sloped curves show, for any specified price, the number of consumers desiring to connect as a function of the number of others they expect to be connected. Owing to the network effect $D10$ lies to the right of $D0$, and so on. For consistency, however, expectations must be correct.



Monopoly or competition?

Network effects might possibly lock an industry into an inferior technology. A technologically inferior brand might have been the first to enter the market, thus gaining a network advantage great enough to attain a monopoly. Or, many firms may be in the market, but all follow a single format that might possibly be technologically inferior. (e.g. QWERTY)