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Lecture 4

Monopoly & Market Efficiency

Economics & Society

SMU

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Previously in E&S

- Production function
- Cost of production
  - short-run vs. long-run
- Returns and Economies of Scale
- Assumptions of PC
- Profit maximization condition
  - in general and in PC
- S-R supply of a PC firm
- L-R Supply of a PC firm

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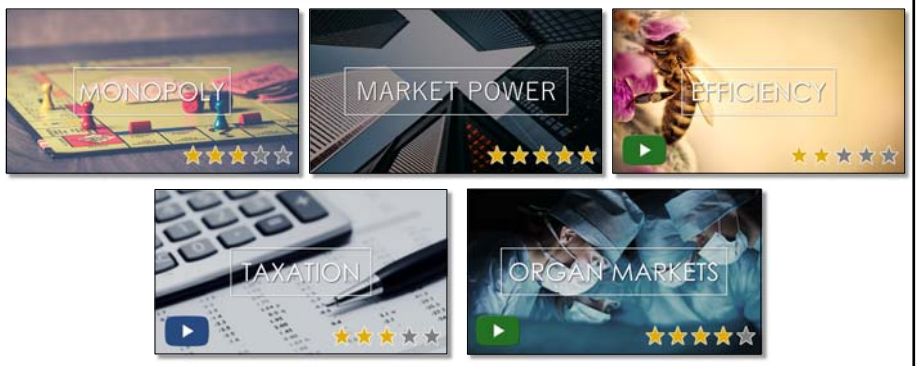
Monopoly & Market Efficiency

Estimated duration: 110min



Lecture 4

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Monopoly assumptions

A market is a ***pure monopoly*** when:

1. There is only one ***seller*** but many ***buyers***
2. The ***product*** has no (close) substitutes
3. Existence of ***barriers*** to entry:
   - Legal: patents, copyright, licensing, exclusive relations
   - Economies of scale able to cover the entire market
   - Access to resources, physical access to the market
   - Network goods.

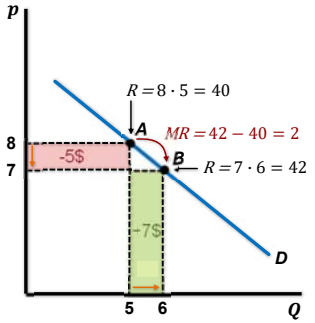
* ***Examples*** of (near) monopolistic markets:
  patented medications, water utilities, airports, MRT

Price setting

* The monopolist is the ***entire supply-side*** of the market
  has ***complete control*** over the whole quantity offered for sale
* The monopolist is ***NOT a price taker***
  the seller can ***set*** the price
* Still, however, the monopolist must ***consider the market demand***:
  - Raising the price ***decreases sales*** but ***increases revenue per unit***
  - Dropping the price ***increases sales*** but ***decreases revenue per unit***.
* As with every market structure, the monopolist ***maximizes profit*** when
  $$MR = MC$$
* In monopoly, MR is ***NOT*** the price

Price and MR

* The monopolist serves ***the entire*** market demand
* If the monopolist sets the price at \$8
  will serve ***all 5 consumers*** who are willing to pay \$8
* If the seller wants to sell ***additional units***
  the price must be ***decreased***
* If the price is ***decreased*** to \$7:
  - The seller ***earns*** +\$7 from selling a 6th unit
  - BUT ***loses*** -\$1 from each of the previous 5 units
  - MR of the 6th unit is \$7 – \$5 = +\$2.
* Thus, in monopoly, ***always*** $MR < p$



MR for linear demand

* Consider a ***linear*** demand

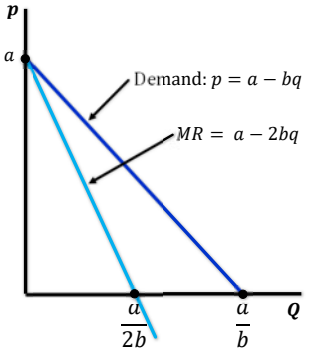
$$p = a - bq$$

y-intercept, slope

* Then, ***marginal revenue*** is

$$MR = a - 2bq$$

* ***When*** demand is a straight line, then the *MR*:
  1. Is also a ***straight*** line
  2. Starts from the ***same*** y-intercept
  3. Has ***double*** the slope

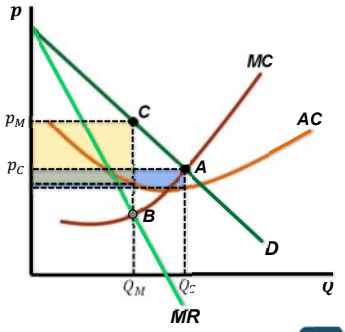


Profit maximization in PC vs. Monopoly

- If this was a PC market, the profit maximizing ***price*** would be at *A*, where $D = MC$
- In monopoly, the ***generalized*** profit maximization condition applies:

$$MR = MC$$

  - Monopolist ***maximizes profit*** at Q_M because at *B*: $MR = MC$
  - ***Price*** p_M is given by the demand curve at *C*.
- ***Profit*** in monopoly will always be ***higher***
- ***Price*** in monopoly will always be ***higher***
- ***Quantity*** in monopoly will always be ***lower***



An example

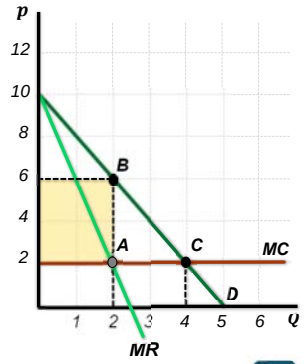
- A monopolist faces ***demand*** $p = 10 - 2Q$ and $MC = 2$
- The ***marginal revenue*** will be: $MR = 10 - 4Q$
- The ***equilibrium condition*** suggests that

$$MR = MC \quad \text{or} \quad 10 - 4Q = 2 \quad \text{or} \quad Q = 2$$

- Price is $p = 10 - 2 \cdot 2 = 6$
- Profit is $\Pi = (p - AC) \cdot Q = (6 - 2) \cdot 2 = 8$
- If this was a ***competitive market***

$$p = MC \quad \text{or} \quad 10 - 2Q = 2 \quad \text{or} \quad Q = 4$$

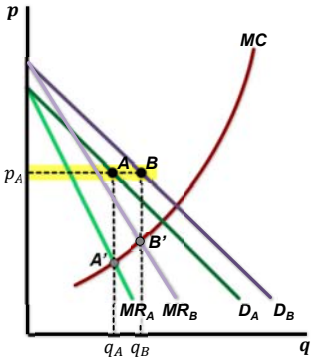
- Then, $p = 10 - 2 \cdot 4 = 2$ and $\Pi = (2 - 2) \cdot 4 = 0$



Supply curve in monopoly

- A supply curve is supposed to determine the ***relationship*** between price and quantity supplied
- In PC, quantity supplied for each price is given by the ***MC curve***
- In monopoly, there is ***no unique correspondence*** between price and quantity supplied
- Depending on the demand, the seller may maximize profit by producing ***different quantities*** for the ***same price***

there is ***no supply curve*** for a monopolistic market



A "rule-of-thumb" for pricing

- Applying the '$MR = MC$ method' to set price may be ***impractical*** for the seller
- Instead, a ***rule of thumb*** can be applied in practice

$$MR = MC \quad \text{is equivalent to} \quad p = MC \cdot \left[1 + \frac{-1}{1 + \varepsilon_d}\right]$$

where $\frac{-1}{1+\varepsilon_d}$ is the

- Profit is ***maximized when*** the seller marks the *MC* up by $\frac{-1}{1+\varepsilon_d}$

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Assessing market power

- Market power is NOT an ***abstract*** notion
  - market power is the extent to which ***price exceeds the MC***
- Thus, market power can even exist in industries with ***more than one firms***
  - when there is ***some degree of substitution*** among brands but ***not perfect*** substitution
- The ***markup rule*** for profit maximization ***applies*** even with more than one firms

$$p = MC \cdot \left[1 + \frac{-1}{1 + \varepsilon_d}\right]$$

but now ε_d refers to elasticity of demand ***for the firm's brand***, not for the product in general

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Market power and profit

- Market power should NOT be ***confused*** with profit
- If a brand has ***insufficient demand***, monopolization will not help…
- Market power is the difference between ***price*** and ***MC***
- Profit depends on ***quantity*** sold and the difference between ***price*** and ***AC***
- A firm may have ***high market power*** but ***low profit*** (or even losses) due to high average costs or low sales

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Supermarkets vs. Convenience stores

Supermarket
- Cheaper ***prices***
- Takes more ***time*** to shop
- ***Far*** away from customers
- Store ***elasticity*** -11
- ***Markup*** calculated to 10%

Convenience store
- More ***expensive***
- ***Quicker*** service
- ***Closer*** to customer
- Store ***elasticity***, near -6
- ***Markup*** much higher, 20%.

- Convenience store has ***more market power***
  - higher ***markup*** than supermarket
- Supermarkets have usually ***higher profits***
  - ***higher volume*** of sales and ***lower AC***

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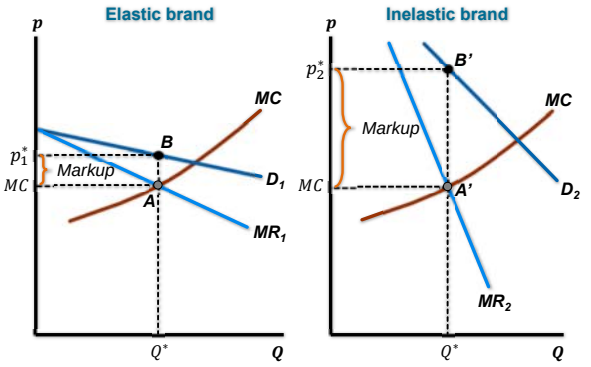
Elasticity and markup

- The optimal markup for ***any firm*** with market power depends on the brand's elasticity

$$\frac{-1}{1+\varepsilon_d}$$

- Elastic brands will have a ***low*** markup
- Inelastic brands will have a ***high*** markup



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Sources of market power

Market power for a brand ***originates*** in its ***elasticity of demand***

1. The brand is always ***more elastic*** than the product in general:
   - This is due to the ***substitution effect***
   - YET, The elasticity of the brand is ***positively affected*** by the elasticity of the product
   - If the demand of ***cars*** becomes less elastic, ***VW cars*** will also become less elastic.
2. A brand's elasticity increases as ***more brands*** enter the industry:
   - Consumers are offered more chances for ***substituting*** the product
   - This is why a PC firm has ***no*** market power.
3. A brand's elasticity increases with the ***intensity of competition*** among brands:
   - If firms compete ***aggressively,*** prices may fall close to competitive levels
   - If firms agree to ***moderate*** competition and ***co-exist***, prices stay above *MC*

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How to create market power

1. ***Work*** on your product

   innovate or ***differentiate*** so that consumers cannot ***substitute it easily*** with other products
2. ***Close the door*** behind you

   create ***barriers to entry*** so that potential competitors will keep out of your profits
3. ***"Kill"*** the competition

   apply strategies that can constrict the competition and ***drive rivals out*** of business

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Thank you!

(you are welcomed to stay for *consultation* or *discussion*)

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WARNING!

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