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Lecture 4

Monopoly & Market Efficiency

Economics
& Society

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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

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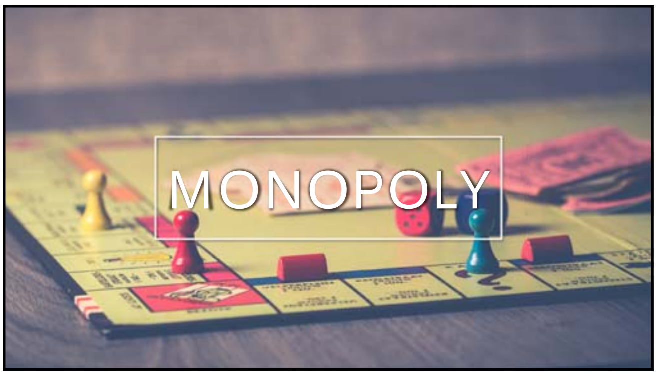

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Monopoly assumptions

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
   - Network goods.

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

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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***
  monopolists 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 in every market structure, the monopolist ***maximizes profit*** when
  $$MR = MC$$
* In monopoly, MR is ***NOT*** the price

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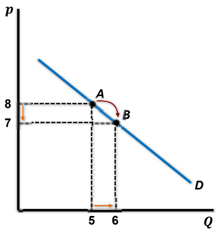
Price and MR

- The monopolist serves ***the entire*** market demand
- If, ***for example***, the monopolist sells 5 units at a price $8

  price must be decreased to $7 to sell 6 units
- The seller cannot sell the 6th unit unless they ***decrease the price*** to $7

  not only for the extra unit, ***for all units***
- Thus, in monopoly, the revenue from selling an extra unit is lower than the ***price***

$$MR < p$$



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MR for linear demand

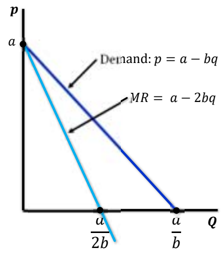
- Consider a ***linear*** demand

$$p = a - bq$$

- 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



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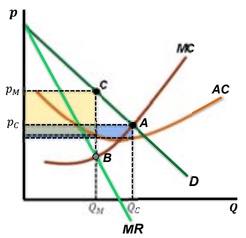
Profit maximization in monopoly

- 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
- ***Price*** in monopoly will always be
- ***Quantity*** in monopoly will always be



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An example

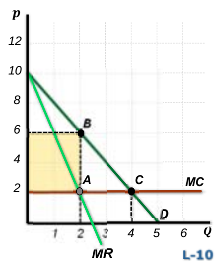
- A monopolist faces ***demand*** $p = 10 - 2Q$ and $MC = 2$
- The ***marginal revenue*** will be: $MR = 10 - 4Q$
- The ***equilibrium condition*** suggests that

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

- 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 $\Pi = (2 - 2) \cdot 4 = 0$



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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 ***markup*** as a percentage of *MC*

- Profit is ***maximized when*** the seller marks the *MC* up by $\frac{-1}{1+\varepsilon_d}$
- If, ***for example***, $\varepsilon_d = -5$

  the ***markup*** is

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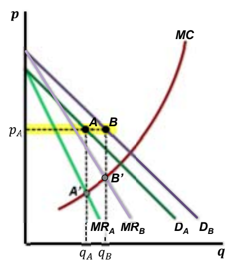
Supply curve in monopoly

- 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 monopolistic market



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Assessing market power

- We ***measure*** the market power of a monopolist by the extent to which ***price exceeds the MC***
- In reality, however, pure monopoly is a ***rare case*** at best
- Nevertheless, market power ***also exists*** in industries with ***more than one firms***
  when there is ***some degree of substitution*** among products 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 ***does not guarantee*** profit
- If the product has ***insufficient demand***, monopolization will not help…
- Market power is affected by the difference of ***price*** from
- Profit depends on the difference of ***price*** from
- A firm may have ***high market power*** but ***low profit*** (or even losses) due to high average costs relative to the demand

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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

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

- 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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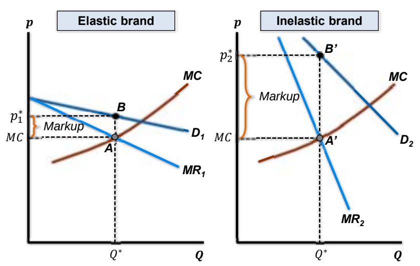
Elasticity and markup

- 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

- ***Why*** do some firms have considerable market power, while others have ***little or none***?
- Market power is determined by ***ability*** to set price above *MC*
  which is affected by the ***brand's elasticity of demand***
- The brand's elasticity of demand is ***determined by***:
  1. Elasticity of demand for the ***product*** in general
  2. The ***number*** of competitive brands
  3. The ***intensity of competition*** among brands

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Market power

1. Elasticity of market demand

* The ***lower*** the elasticity of demand for the product in general
  the ***lower*** the elasticity of demand for each brand
* For ***instance***, if the demand for cars becomes ***less elastic***
  the demand for VW cars will become ***less elastic*** as well
* Generally, the demand for the product is ***less elastic*** than the demand for the brand
  this is due to the ***ease of substitution***

Market power

2. Number of firms

* The market power for a brand ***decreases*** as more brands enter the industry
  consumers are offered more chances for
* Incumbent firms would like to create ***barriers to entry*** to keep new firms out of market

Market power

3. Intensity of competition

* In some industries, firms are ***aggressive*** in gaining market share:
  * Undercut prices, run offers, aggressive R&D etc.
  * ***Prices*** may fall close to competitive levels
  * Reducing or eliminating ***market power***.
* In other industries, firms ***collude***:
  * Agree to ***moderate*** competition and ***co-exist***
  * ***Prices*** stay way above *MC*
  * Firms maintain substantial ***market power***

Market power

How to create market power

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

Thank you!

You may stay for consultation or discussion

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