Lecture 3

Cost, Supply & Competitive Markets

Economics & Society

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Perfect Competition

> PC

- We have discussed how consumers ***choose optimally*** and how firms think about ***production*** and ***cost***
- Now, we will examine how consumers and firms ***interact***
- Let's start from an ***ideal environment*** of competition
- A market is perfectly competitive when ***3 assumptions*** hold:
  1. There exists a ***large number*** of sellers
  2. The product is ***homogeneous***
  3. There are ***no barriers*** for sellers and buyers to participate in the market.
- Let's examine these assumptions ***one by one***

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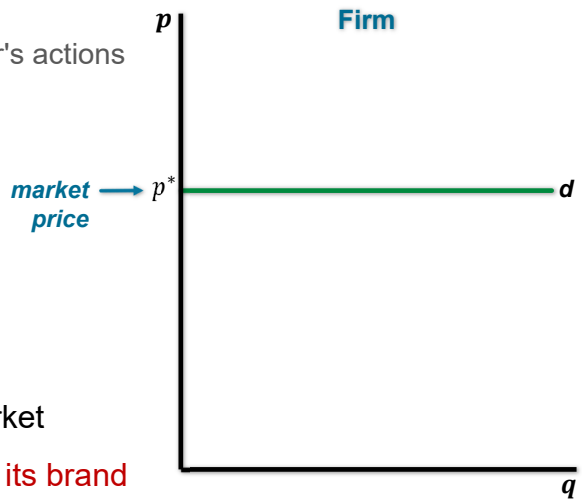
1. Large number of firms

- ***How large*** is "a large number of firms"?
  enough, so firms ***do not care*** for each other's actions
- When firms are many, each holds a ***tiny market share***
- If a single firm ***increases*** its price
  nobody will buy from that firm
- If a single firm ***decreases*** its price
  it will just lose money
- The PC firm ***takes its price*** from the market
- Thus, the PC firm, views the ***demand*** for its brand as a "***fixed price***"



2. Product homogeneity

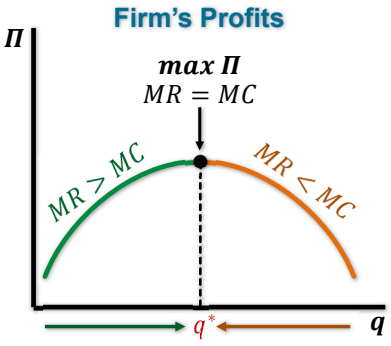
- All brands of the product have ***small or big differences***
- It is NOT the ***physical differences*** among brands that matter
  BUT what the consumer ***believes*** for each brand:
  - If consumers cannot tell the difference, products are ***homogeneous***
  - If consumers find any meaningful difference, they are ***heterogeneous***.
- ***Brand names*** that can effectively charge higher prices because they may be ***perceived*** as better ***cannot be considered*** under the PC model

3. Free entry and exit

- In PC, market ***entry*** or ***exit*** must have ***no restrictions*** (barriers)
  - no one should be ***prohibited*** or ***prevented*** from becoming a seller
- This ***does not imply*** that a PC seller does not face ***fixed costs***
  - fixed costs can be considered a barrier only when they are ***high enough*** to prevent most potential sellers from entering the industry
- Markets that ***resemble*** a PC environment can be:
  - stock markets, online marketplaces, farmers markets, hawker centers etc.

Generalized profit maximization condition

- Profit (Π) is defined as the ***difference*** of ***revenue*** (R) and ***cost*** (C): $\Pi = R - C$
- The ***problem*** each firm must solve is: "at ***which q*** is my profit maxed?"
- For quantities q, where the revenue from each unit (MR) ***exceeds*** its cost (MC)
  - these units ***add to profit***
- For quantities q, where the cost of each unit (MC) ***exceeds*** the revenue from it (MR)
  - these units ***decrease profit***
- The ***optimal*** q is when $MR = MC$:
  - Usually ***denoted*** q^*
  - Same under ***any market structure***

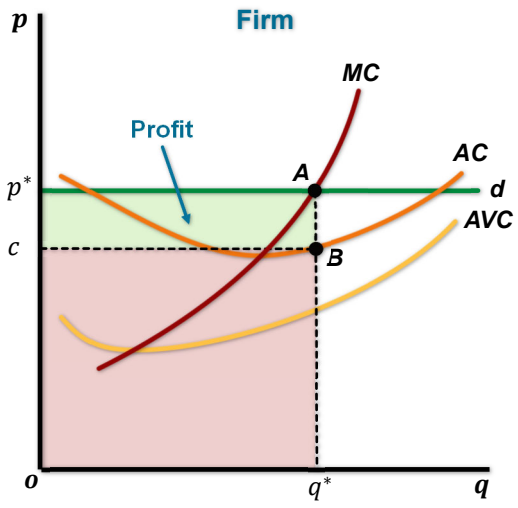


Profit maximization in PC

- In every market, the seller ***maximizes*** profit when
$$MR = MC$$
- In PC, ***revenue from every extra unit*** (MR) ***IS*** the ***market price***
  - So, the ***profit maximizing condition*** becomes
$$p = MC$$
- In other markets, firms may have the ***power to set*** different price for each q:
  - So, MR ***is NOT*** the market price
  - Profit maximization condition ***remains*** $MR = MC$

Choosing output: Short-run

- To maximize profit, the individual PC firm ***will produce*** the quantity (q^*) for which $p = MC$:
  - Total revenue is $p^* \times q^*$ (area p^*Aq^*o)
  - Cost per unit is c
  - Total cost is $c \times q^*$ (area cBq^*o)
  - Total profit is p^*ABc

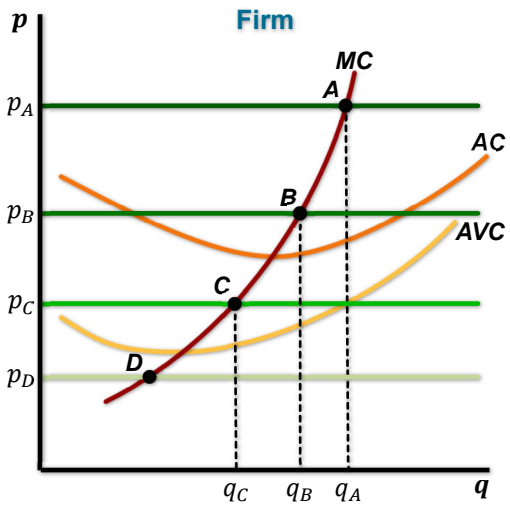


Losses & shutdown

- A firm produces ***chairs***:
  - ***Capital*** is leased for \$120 / day for 1 year
  - ***Labor*** costs \$80 / day and the worker can make 10 chairs a day.
- Cost per chair is: $AC = \overset{\text{AFC}}{\$120/10} + \overset{\text{AVC}}{\$80/10} = \$20$
- If $p = \$11$, should the firm ***shut down***?:
  - The firm makes operating loss of \$20 – \$11 = \$9 per chair or ***\$90*** per day
  - Shut down losses are ***\$120*** per day
  - When p is below AC ($\$20$) but above AVC ($\$8$)
- If $p = \$7$, operating losses would be \$20 – \$7 = \$13 per chair or ***\$130*** per day:
  - Shut down losses still are ***\$120*** per day
  - When p is below AVC ($\$8$)

S-R supply curve

- The ***supply curve*** for a PC firm answers: *"how much q it will produce for every possible p?"*
- PC firms always ***set quantity*** where $p = MC$:
  - For price p_A, firm produces q_A
  - For price p_B, firm produces q_B
  - For price p_C, firm produces q_C
- For every given price, quantity supplied is ***on the MC***
- The PC firm's ***supply curve*** is the portion of the *MC* curve above the *AVC* curve



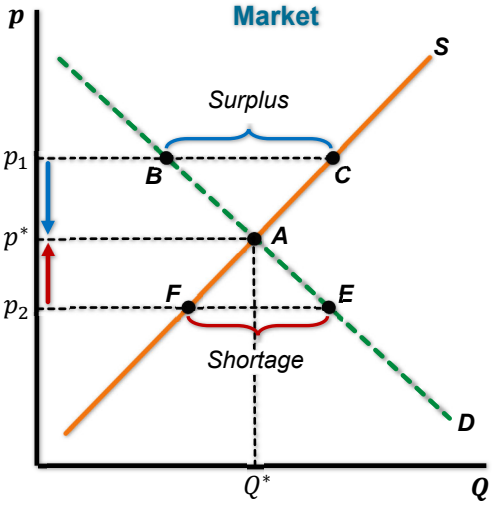
Market price in PC

- The price in PC results from the ***interaction*** of market <u>demand</u> and market <u>supply</u>
- YET firms ***may know*** their supply but ***ignore*** the position of the market demand

  had they ***not ignored*** D, they would ***price*** at p^*
- If firms price at p_1, production (p_1C) ***exceeds*** quantity demanded (p_1B),

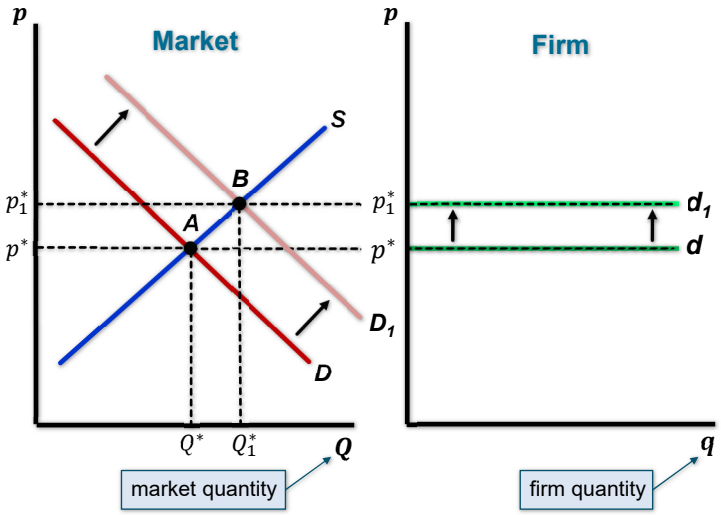
  firms will take this as a ***signal*** to ***lower the price***
- If firms price at p_2, quantity demanded (p_2E) ***exceeds*** production (p_2F),

  firms will take this as a ***signal*** to ***raise the price***



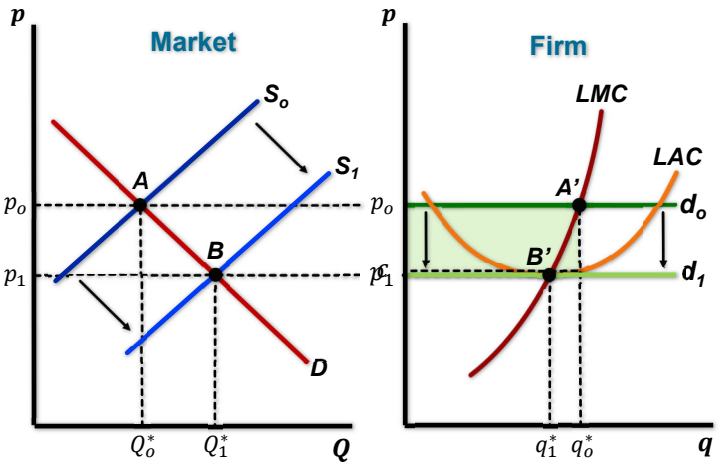
Market demand vs. Firm demand

- p^* is determined in the ***market***
- Every firm takes p^* as ***given***
- If, say, the product becomes ***more popular***
  - ***Demand*** increases to D_1
  - ***Market price*** becomes p_1^*
  - Firms who ***still sell*** at p^* will start experiencing ***shortages*** and ***take the hint*** that price must increase to p_1^* ▲▲



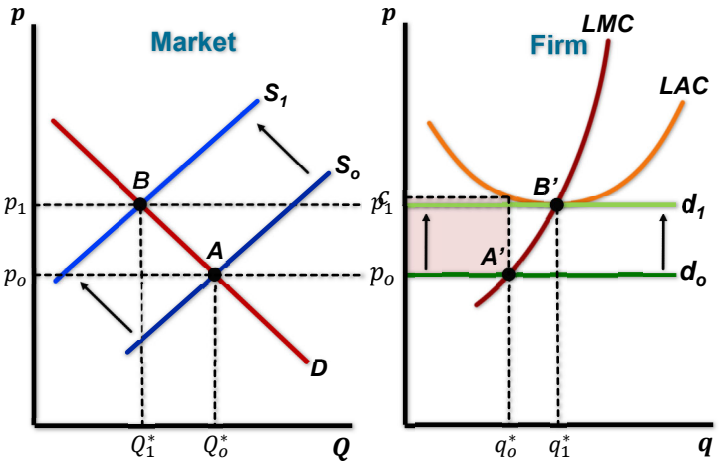
PC in the long-run: profit

- In the S-R, firms may earn ***profits***
- S-R profits, will ***attract*** new firms in the L-R:
  - The entry of new firms will ***increase*** market supply
  - Price will ***drop***
  - Till profit will be ***eliminated***…



PC in the long-run: losses

- In the S-R, firms may have ***losses***
- S-R losses, will ***push*** some firms ***out*** in the L-R:
  - The exit of firms will ***decrease*** market supply
  - Price will go ***up***
  - Till losses are ***eliminated***…



Long-run competitive equilibrium

- In the L-R, the PC market will ***equilibrate*** once ***entry*** or ***exit stops***
- This will happen when <u>every PC firm</u> in the market ***earns*** $\boldsymbol{\Pi = 0}$

  S-R profits vanish because of ***entry***, NOT because of doing business poorly

- When $\Pi = 0$, the owner ***still earns*** their opportunity salary

  thus, they have ***no reason to exit*** ***[see PS3-q3]***

- Zero L-R profit simply means that ***profit opportunities*** do not last forever

  unless there is ***innovation***, ***differentiation***, or ***barriers of entry***

Thank you!

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

WARNING!

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