Lecture 3

Cost, Supply & Competitive Markets

Economics & Society

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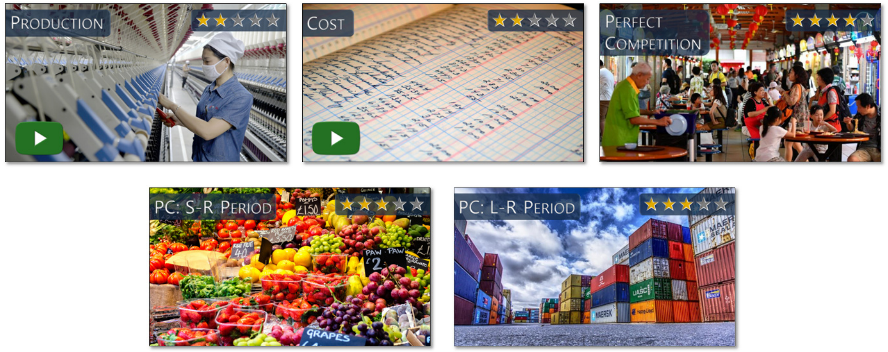
1

Cost, Supply & Competitive Markets



3

18

Perfect Competition

- We have discussed how <u>consumers</u> ***choose optimally*** and how <u>firms</u> think about ***production*** and ***cost***
- Now, we will examine how <u>consumers</u> and <u>firms</u> ***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***

19

1. Large number of firms

* **How large** large number" of firms?
* When firms are many, each holds a ***tiny market share***
* If a single firm ***increases*** its price
* If a single firm ***decreases*** its price
* The PC firm ***takes its price*** from the market
* Thus, the PC firm, views the ***demand*** for its product as a "***fixed price***"

2. Product homogeneity

* All products have ***small or big differences***
* ***Physical differences*** among products do not matter, it matters what ***the consumer*** believes for each good:
  * If consumers cannot tell the difference, the products are ***homogeneous***
  * If consumers think that there is any meaningful difference, they are ***heterogeneous***.
* Heterogeneous products, such as ***brand names***, can charge higher prices because they may be ***perceived*** as better…

  thus, they ***cannot be considered*** under the PC model

3. Free entry and exit

* In PC, market ***entry*** or ***exit*** must have ***no restrictions*** or 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 the ***difference*** between ***revenue*** (R) and ***cost*** (C) : $\Pi = R - C$
- ***How*** do we hit the level of production (q) where this ***difference is maximum***?
- If by producing an extra unit, the revenue from that unit ***exceeds*** its cost:
  - This unit ***adds to profit*** – so, go ahead and ***produce it***
  - That is, if $MR > MC$, then ***increase*** q.
- If by producing an extra unit, the cost of that unit ***exceeds*** the revenue from it:
  - This unit ***contributes negatively to profit*** – so, do ***not produce it***
  - That is, if $MR < MC$, then ***cut down*** q.
- When $MR = MC$, output is at the ***optimal level*** under ***any market structure***

  we often ***denote*** that level of profit maximizing output by q^*

Profit maximization in PC

- In every market, the seller ***maximizes*** profit when

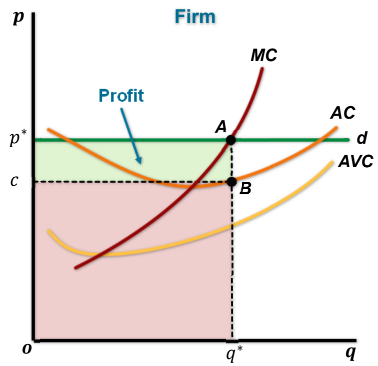
$$MR = MC$$

- In PC, the seller does not have the power to ***set the price***
- Thus, ***revenue from every extra unit*** (MR) is constant and ***equal to the price***
- So, the ***profit maximizing condition*** becomes

under PC, profit is maximized when the cost for producing an extra unit equals the market price

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

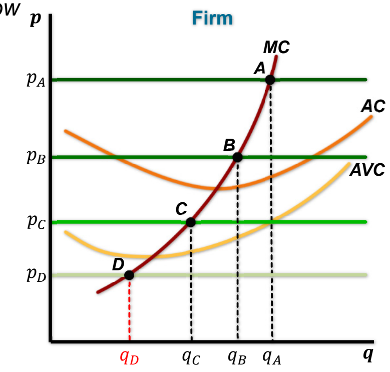


Losses & shutdown

- A firm produces ***chairs***:
  - ***Capital*** is leased for \$120 / day for 1 year
  - ***Labor*** costs \$8 per chair and the worker can make 10 chairs a day.
- Cost per chair is: $AC = {}^{\$120}/_{10} + \$8 = \$20$
- If $p = \$11$, should the firm ***shut down***?:
  - The firm makes operating loss of \$20 – \$11 = \$9 per chair or ***\$90*** per day
  - If it shuts down, losses will be ***\$120*** per day
  - When p is below AC $(\$20)$ but above AVC $(\$8)$ → ***keep operating*** in the S-R.
- If $p = \$7$, operating losses would be \$20 – \$7 = \$13 per chair or ***\$130*** per day:
  - If it shuts down, losses will be ***\$120*** per day
  - When p is below AVC $(\$8)$ → ***shut down*** immediately

S-R supply curve

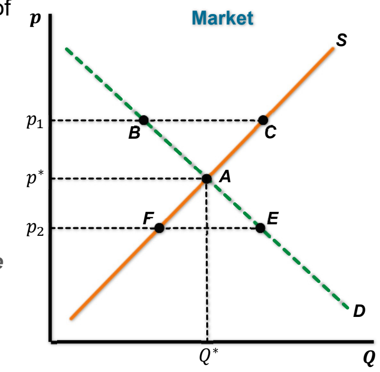
- The ***supply curve*** for a PC firm answers: *"how much q it will produce for every possible p?"*
- PC firms always ***set quantity*** where $p = MC$:
  - For price p_A, firm produces q_A
  - For price p_B, firm produces q_B
  - For price p_C, firm produces q_C
  - For price p_D, firm ***shuts down***.
- 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.



28

Market price in PC

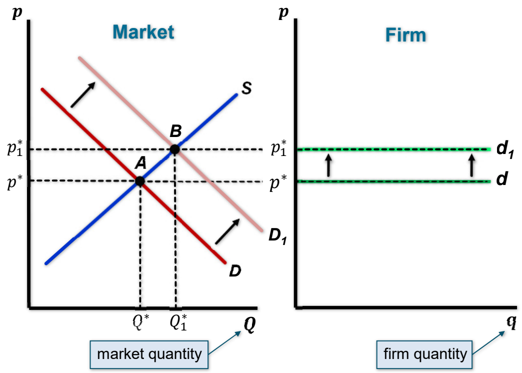
- The price in PC results from the ***interaction*** of market demand and market supply
- YET firms ***may know*** their supply but ***ignore*** the position of the market demand
  - had they ***not ignored*** D, they would ***price*** at p^*
- If firms price at p_1, production (p_1C) ***exceeds*** quantity 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***.



29

Market demand vs. Firm demand

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

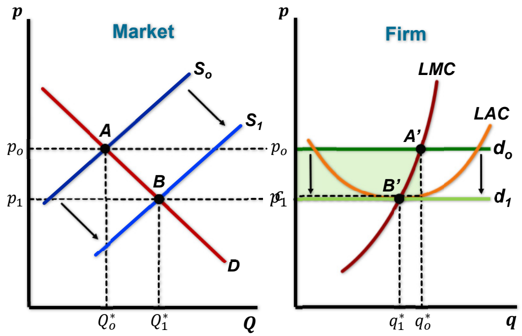


30

31

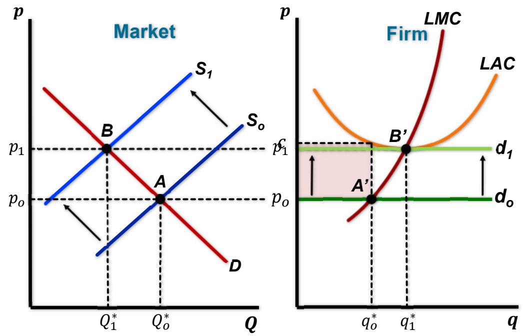
PC in the long-run: profit

- 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 every PC firm in the market ***earns*** $\Pi = 0$

  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]***

Thank you!

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

WARNING!

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