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ECON 2316

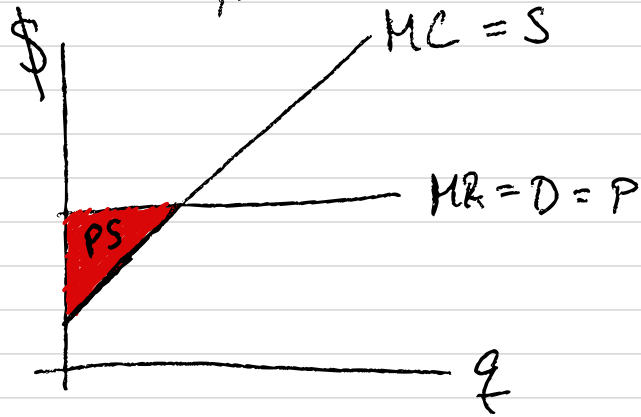
Lecture 13
Competition and Market Power

Producer Surplus

for each unit

- Price I got minus price I was willing to accept

Market price → MC



From last time: We produce if variable profit is non-negative

$\rightarrow P_q - VC \cdot q \geq 0$

$\rightarrow PS = VC \cdot q$ = variable profit

$\rightarrow PS = P_q - VC$

$\rightarrow \pi = P_q - TC$

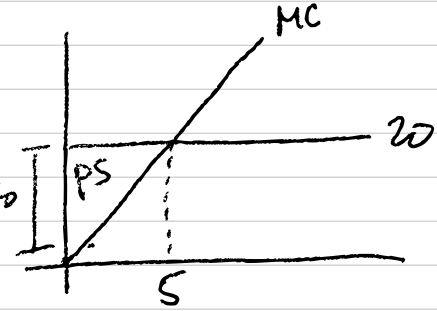
Example

$TC = 30 + 2q^2$

$P = 20$

→ Find 1 firm's PS

→ $MC = 4q = \partial TC / \partial q$



$PS = \frac{1}{2}(20)(5) = 50$

Short Run Market Supply

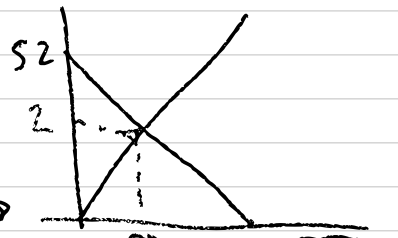
- SR market supply is horizontal summation of firm supply curve
- Recall: $E_S = \frac{P}{Q_S}\frac{dQ_S}{dP}$

Example 2

Suppose $Q_d = 52 - P$

100 identical firms

Each firm: $MC = 4q$



→ What is market PS?

$PS = 50$

$= \frac{1}{2} \cdot 2 \cdot 50$

for 1 firm: $MR = MC$

$P = 4q \Rightarrow q = \frac{P}{4}$

$Q_S = 25P = 100q$

$25P = 52 - P \Rightarrow \boxed{P = 2, Q = 50}$

Alt: $PS = TR - VC$ (for 1 firm) $\leftarrow \int MC\,dq$

$= (0.5 \cdot 2) - (2 \cdot 0.5^2)$

$= 1/2 \Rightarrow 1/2 \cdot 100 = \boxed{50}$

In L.R., $PS = \pi$ because $PS = TR - VC$ and $TC = VC$

In S.R, $PS \neq \pi$ because $PS = TR - VC$ and $TC \neq VC$

In SR

$PS = TR - VC$

$\pi = TR - VC - FC$ $\leftarrow$ in LR, $FC = 0$, so $PS = \pi$ for a firm

Example 3

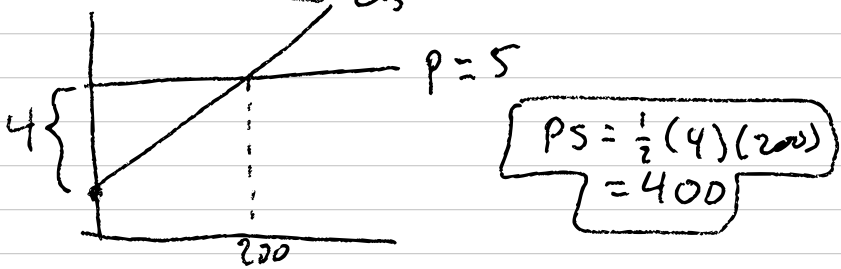
100 firms, $TC = 500 + q + q^2$

for 1 firm:

$MC = 1 + 2q$, $MR = P$

$P = 1 + 2q \Rightarrow \boxed{q = \frac{P-1}{2} = \frac{1}{2}P - \frac{1}{2}}$

$\therefore \boxed{Q_s = 50P - 50}$



$\boxed{PS = \frac{1}{2}(4)(200) = 400}$

Or: for 1 firm, $PS = TR - VC$

$TR - VC = Pq - (q + q^2)$ $\quad q = 0.5P - 0.5$

$= 5(2) - (2 + 2^2)$ $\quad = 0.5(5) - 0.5 = 2$

$= 10 - 6 = 4$

$4 \cdot 100 = \boxed{PS_M = 400}$ ✓

Long Run Supply

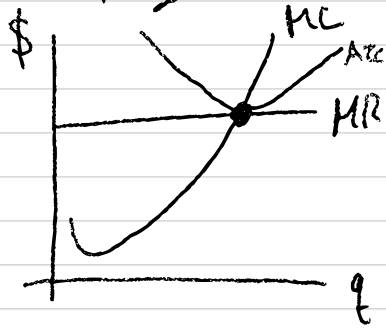
- In LR, firm chooses q where $MC = MR = P$
- Firms enter w/ pos profits, leave w/ negative

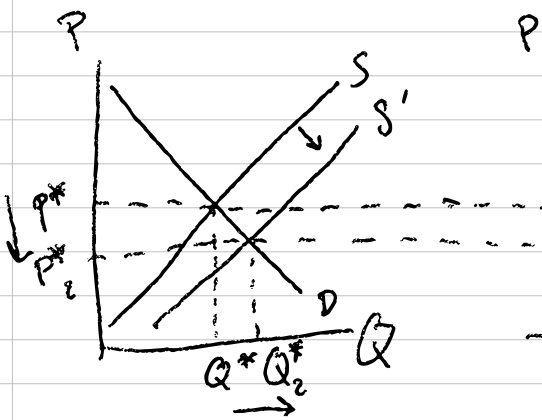
In LR:

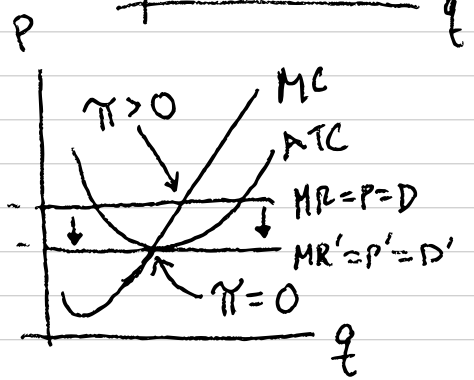
- $MR = P$
- $MC = MR$
- $P = ATC$

} $P = MC = ATC = \min(ATC)$

$\uparrow$ b/c $\pi = 0$ in L.R.

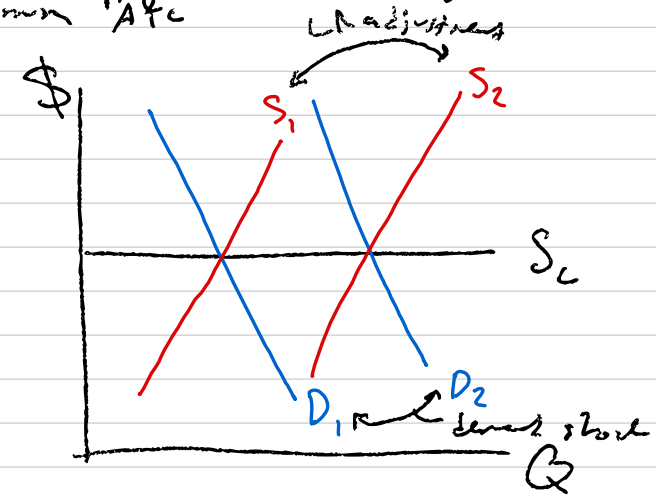






Firms enter w/ positive profit

In LR, supply curve is exactly at each firm's minimum ATC



Increasing & Decreasing Cost Industries

Increasing costs
- ex. oil rigs → to increase ↑, drill more holes, which is costly
- output ↑, input prices ↑

Vice versa for decreasing cost industry
- output ↑, input prices ↓

Economic Surplus (or Total Surplus)

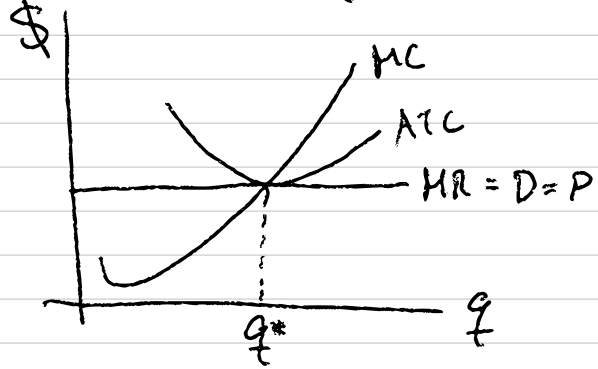
$$TS = CS + PS$$

Productive efficiency: produce at min. ATC

Allocative efficiency:
- All consumers who want to buy, can
- All producers who want to sell, can

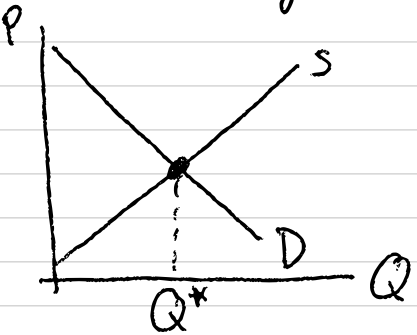
Perfect Competition is efficient

Productive efficiency - q where ATC minimized



q^* is productively efficient

Allocative efficiency -



Q^* is allocatively efficient

Deadweight Loss

↳ Any time $P \neq MC$, we have deadweight loss
↳ net loss in TS when not in competitive equilibrium

Example: Price ceiling