

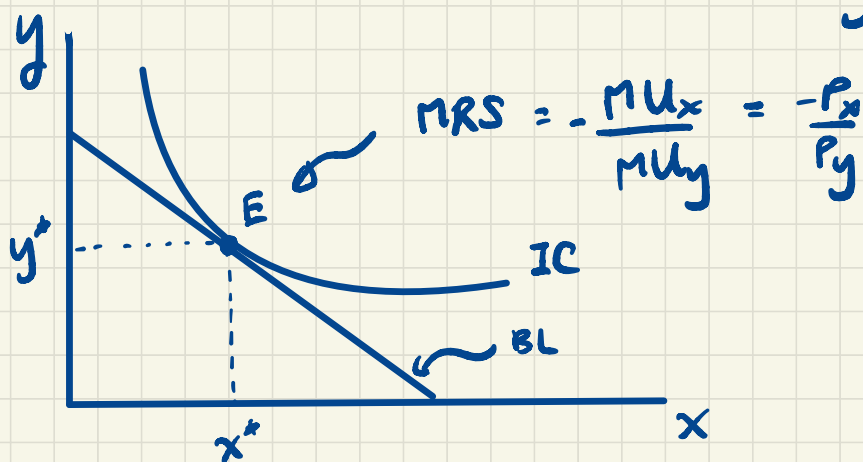
Review : Materials after midterm.

① Consumer Theory

→ Consumer's utility maximization.

• IC → $U(x, y)$: slope is MRS.

• Budget line : slope is $-\frac{P_x}{P_y}$.



→ Applications :

- Income changes

- Price of good changes

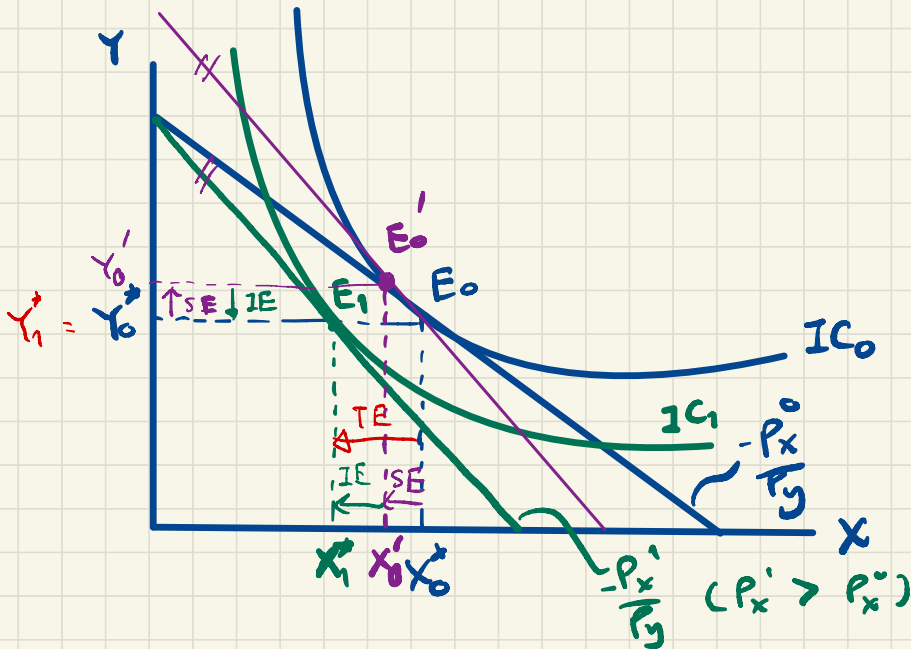
↗ slope
↘ (x^*, y^*)

{ income effect
substitution effect } Hicksian Approach.

Ex. Consider U-max problem.

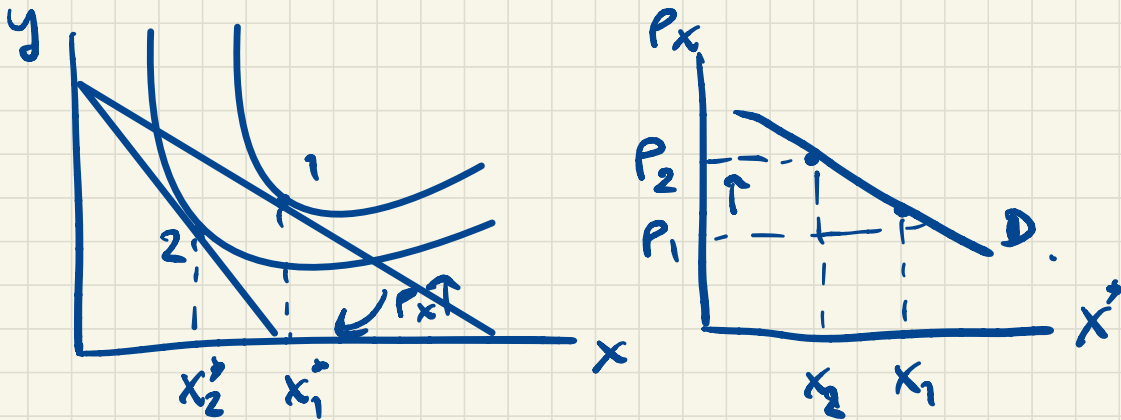
Suppose P_x increases, everything else constant. Identify IE & SE.

Intuition : $P_x \uparrow \Rightarrow X^* \downarrow$ (b/c x is relatively more expensive).
 $\Rightarrow Y^* ?$ ($SE^Y > 0, IE^Y < 0$)



$$\left. \begin{aligned} \text{For } X, \quad SE &= X_0' - X_0^* < 0 \\ IE &= X_1^* - X_0^* < 0 \end{aligned} \right\} TE = X_1^* - X_0^*$$

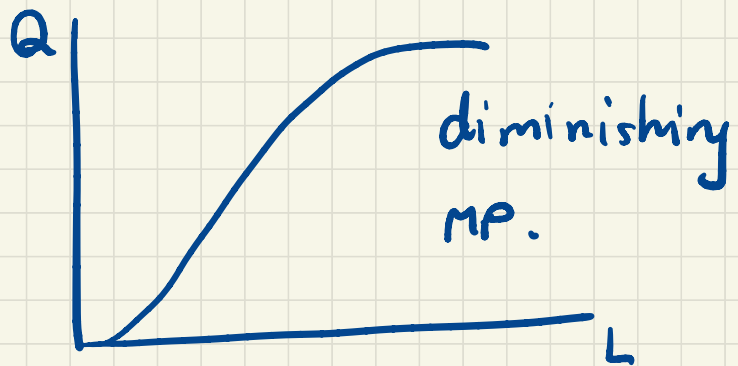
$U - \max \rightarrow$ Derive demand curve.



② Production Theory

	Cost	Production
SR	TC, TFC, TVC MC, AC	$Q = f(L, \bar{k})$
LR	No fixed cost $C = wL + rK$	$Q = f(L, K)$ $\rightarrow$ isoquant.

- SR : Production : $Q = f(L)$.

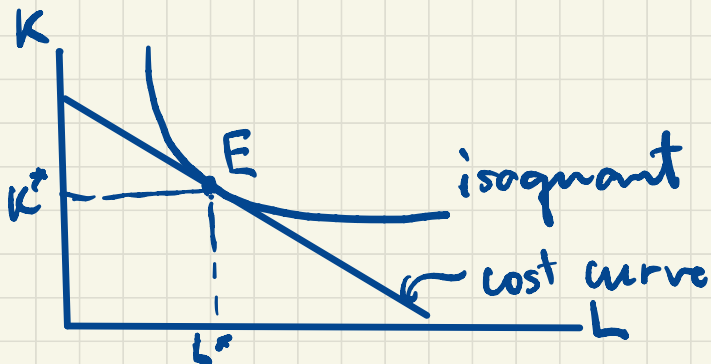


- Cost : $c = c(Q)$

↳ MC

AC : AVC, AFC.

- LR : Production : $Q = f(L, K)$

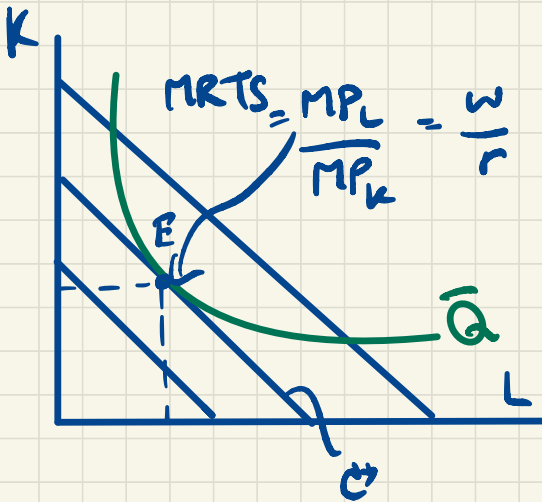


Cost - Minimization

$$\text{Min } C = wL + rK$$

L, K

$$\text{s.t. } Q(L, K) = \bar{Q}$$

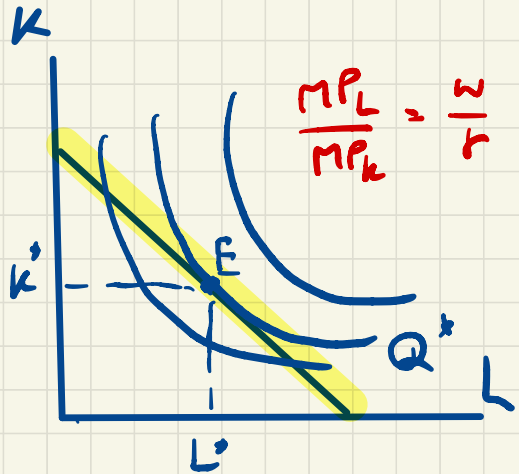


Output - Maximization

$$\text{Max } Q(K, L)$$

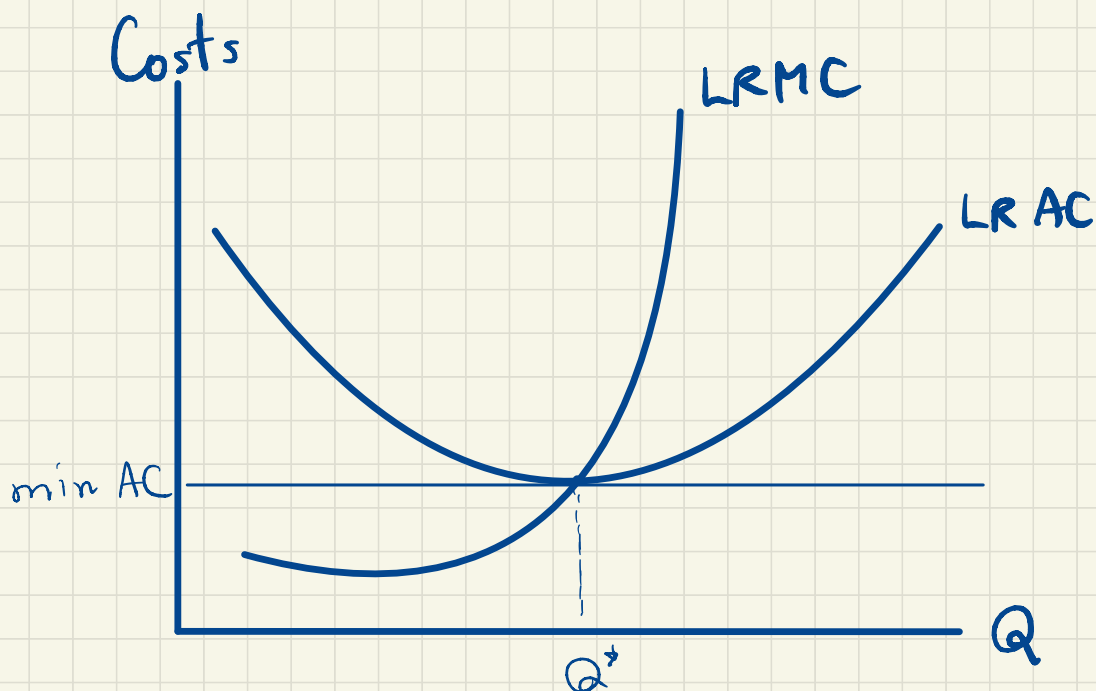
L, K

$$\text{s.t. } wL + rK = \bar{C}$$



⇒ Least-cost combination

↳ Derive LRTC, LRAC, LRMC



③ Market Structure.
 Perfect compⁿ
 Monopoly

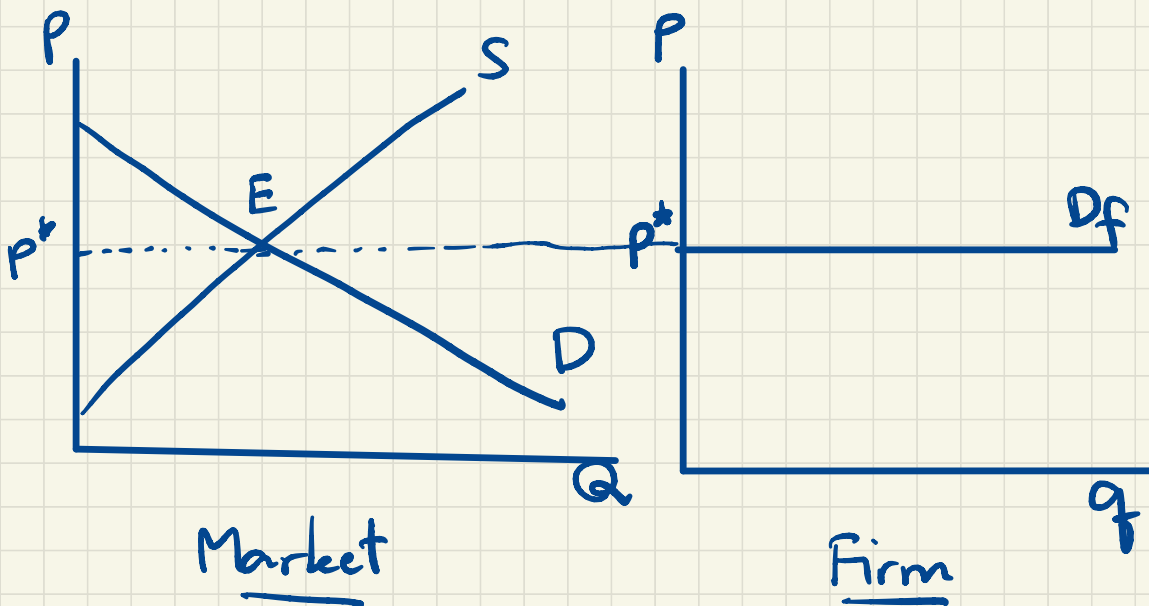
• Firm: $\text{Max}_Q \pi = \textcircled{P} \cdot Q - TC(Q)$

Productⁿ

• Perfect competition : $P = \bar{P}$.

• Monopoly : $P = P(Q)$

Perfect Competition

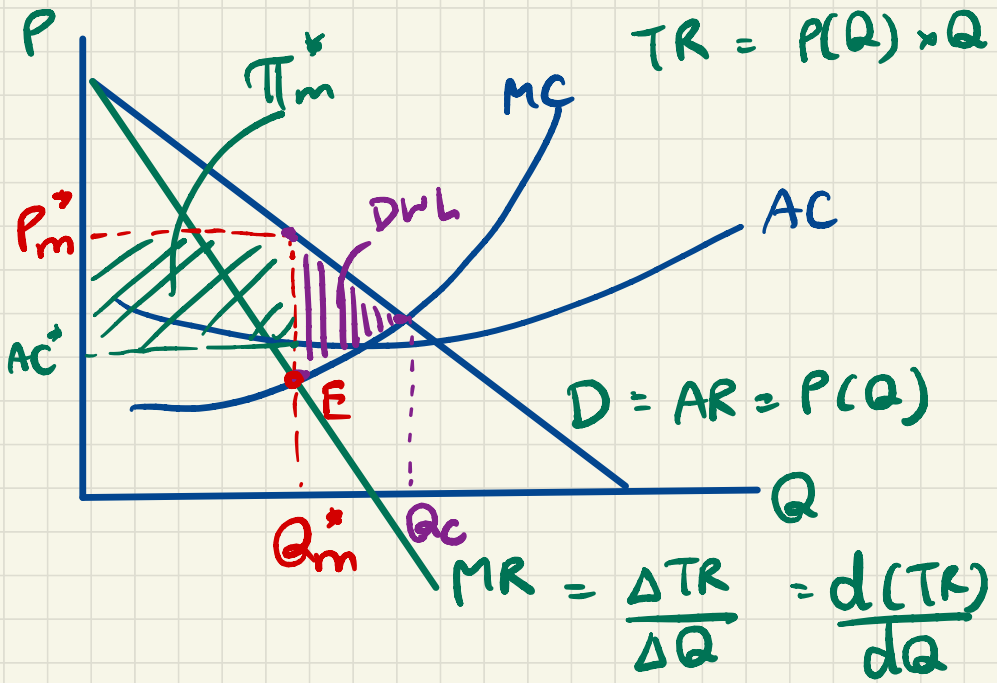


• $\pi\text{-max} : P = MC.$

↳ Given different price,
we can derive the firm's
supply curve.

• LR: $\underbrace{P = LRMC}_{\text{Allocative efficiency}} = \underbrace{\min LRAC}_{\text{Productive eff.}} = P$

Monopoly - faces the entire demand



π -max: $MR = MC$

$$\Rightarrow Q_m^* \text{ \& } P_m^*$$

$$\hookrightarrow P_m^* > P_c^*$$

$Q_m^* < Q_c^* \rightarrow$ Allocatively inefficient.

LR: $P > \min LRAC$
 $\rightarrow$ Productively inefficient.

④ Factor Market

* Competitive factor mkt.

① competitive output mkt

② monopoly "————"

Comp're : $MFC = MRP_L = v \cdot MP_L$

$$\Rightarrow w = P \times MP_L$$

Monopoly : $MFC = MRP_L$

$$\Rightarrow w = MRP_L$$

