Consumption → (X^*, Y^*)

- Budget constraint:

$$P_x \cdot X + P_y \cdot Y = B$$

- Max Utility : $U(X, Y)$
  - → Indifference curve

Consumer's Utility Maximization

$$\text{Max } U(X,Y) \quad \text{s.t. } P_x \cdot X + P_y \cdot Y = B.$$

Eqm : $E(X_0, Y_0)$ is where

① $P_x \cdot X_0 + P_y \cdot Y_0 = B$

② $MRS = -\frac{P_x}{P_y}$

(slope of IC) (slope of BC)

Production → (L^*, K^*)

- Isocost:

$$wL + rK = C$$

- Isoquant → Output

$$Q = f(L,K)$$

Maximize Output

$$\text{Max } f(L,K) \quad \text{s.t. } wL + rK = \bar{C}$$

($\bar{C}$: fixed)

Eqm: $E(L^*, K^*)$ is

at ① $wL^* + rK^* = \bar{C}$

② $MRTS = -\frac{w}{r}$

$MRTS = -\frac{MP_L}{MP_K}$

Minimize Cost

$$\text{Min } C = wL + rK \quad \text{s.t. } f(L,K) = \bar{Q}$$

($\bar{Q}$: fixed.)

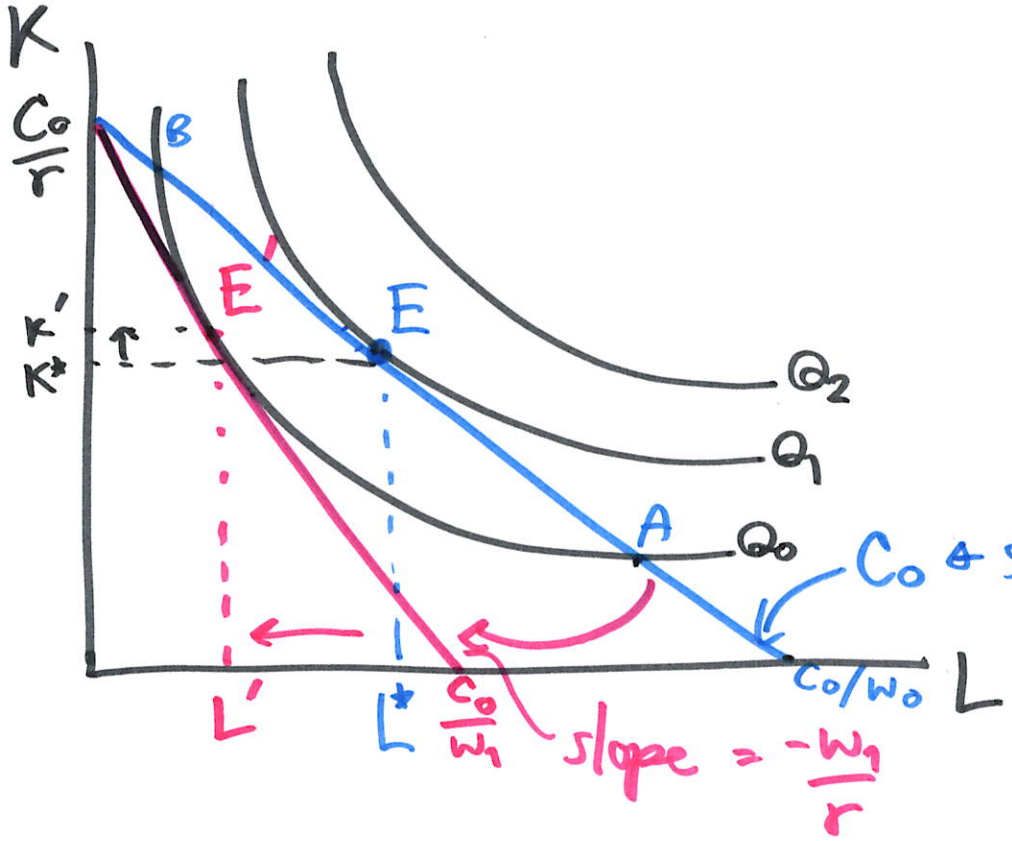
Eqm: $E(L^*, K^*)$ is

@ ① $f(L^*, K^*) = \bar{Q}$

② $MRTS = -\frac{w}{r}$

Quiz #5(a) Q.2(b)

Output maximization



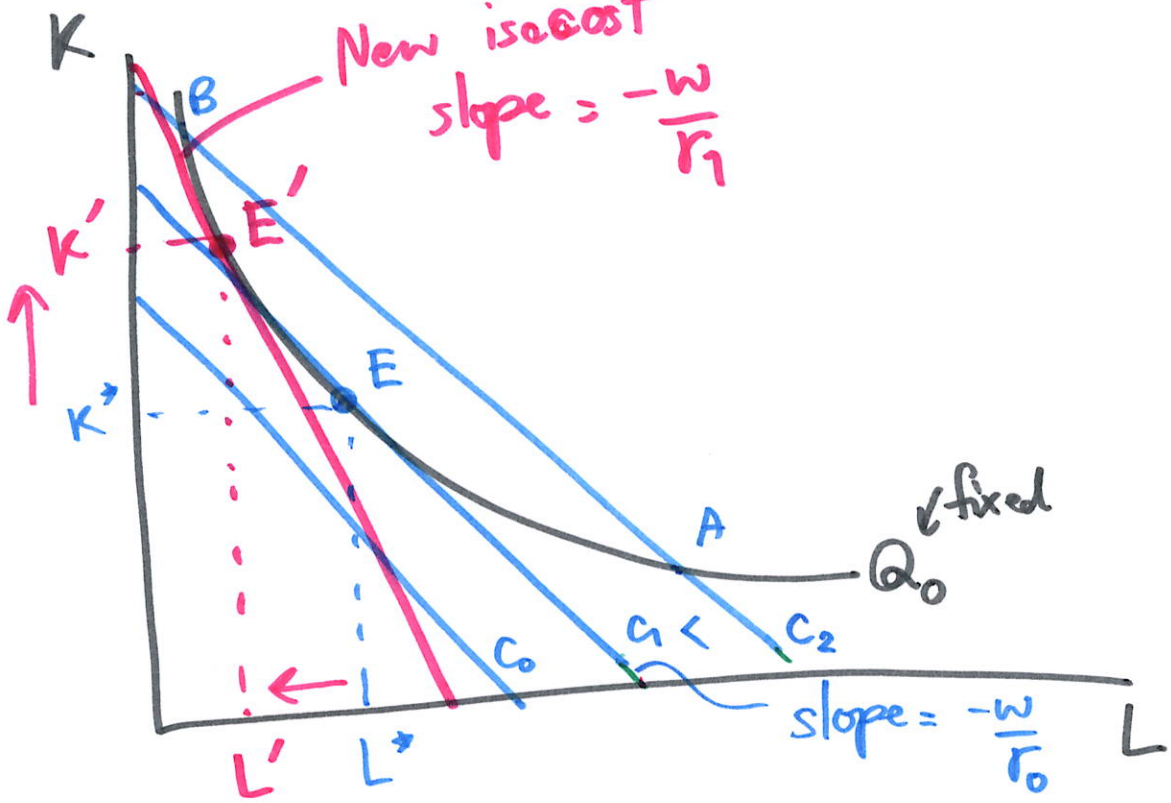
Suppose w increases, everything else constant.

Suppose wage increases from w_0 to w_1.

$\Rightarrow \frac{w_0}{r} < \frac{w_1}{r}$

Quiz #5(b) Q.2(b)

Cost Minimization.



Suppose r ~~increases~~ decrease, everything else constant.

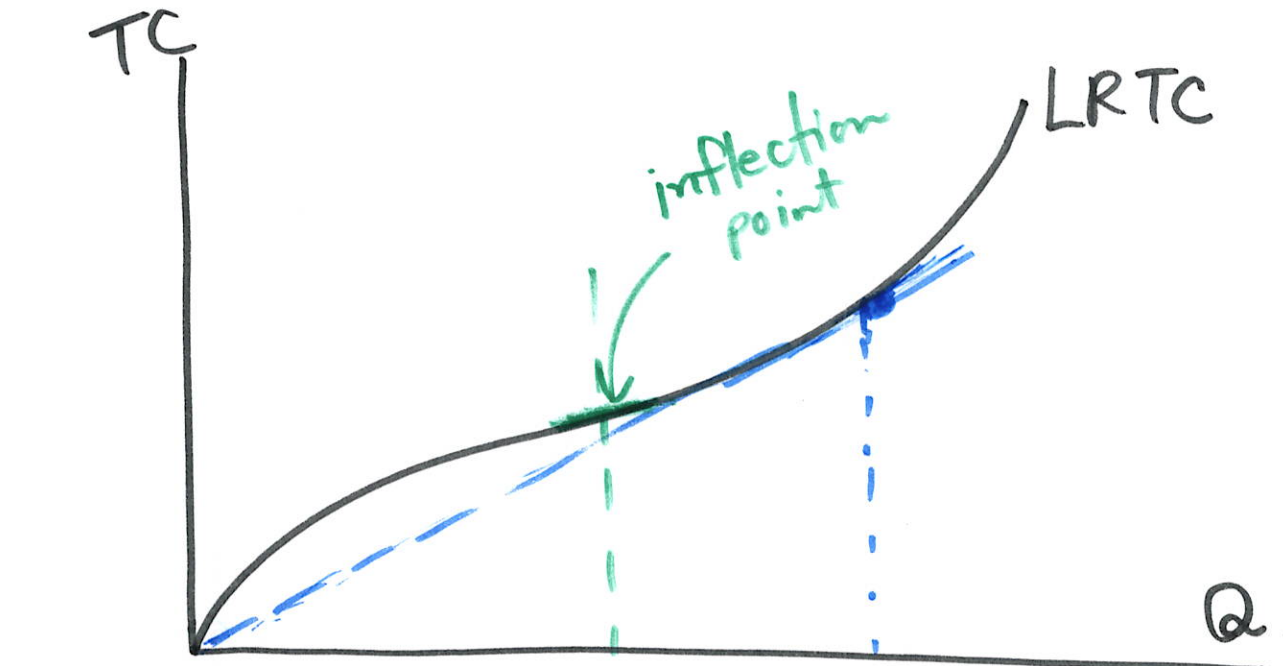
Assume r decreases from r_0 to r_1. ($r_0 > r_1$)

$\Rightarrow \left|\frac{w}{r_0}\right| < \left|\frac{w}{r_1}\right|$

"flatter" "steeper"

r decreases $\Rightarrow$ capital is less expensive.

$\Rightarrow$ use more of K.



$$LRAC = \frac{LRTC}{Q}$$

$$LRMC = \frac{\Delta LRTC}{\Delta Q}$$