III) Monopsony in Factor Market and Perfect Competition in Product Market:

Monopsony: one buyer in the factor mkt. [i.e monopsonist faces the entire labour supply curve in the factor market]

Prodn fn: $q = q(L, \bar{K})$, $\frac{\partial q}{\partial L} > 0$, $\frac{\partial^2 q}{\partial L^2} < 0$.

Perfect competition in product mkt $\Rightarrow P = \bar{P}$

Since the monopsonist faces the entire labour supply,

Let the inverse labour curve be: $W = W(L)$, $W' > 0$

$\therefore \; \Pi = \bar{P} \cdot q(L, \bar{K}) - W(L) \cdot L$ → Total Expense (TE).

For Π-max: $\frac{\partial \pi}{\partial L} = 0 \Rightarrow \bar{P} \cdot MP_L - W' \cdot L - W = 0$.

$\Rightarrow \bar{P} \cdot MP_L = W' \cdot L + W$.

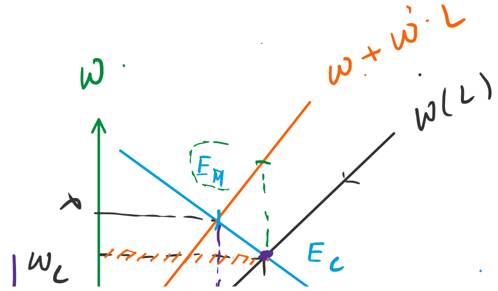
$\Rightarrow \boxed{VMP_L = ME}$ → solves for L^*

gives $w^* = w^*(L^*)$

Q. Consider perfect comp in the product mkt. Compare b/w perfectly comp firm in the factor mkt & a monopsonist in the factor mkt.

(I) Perfect competition in factor mkt:

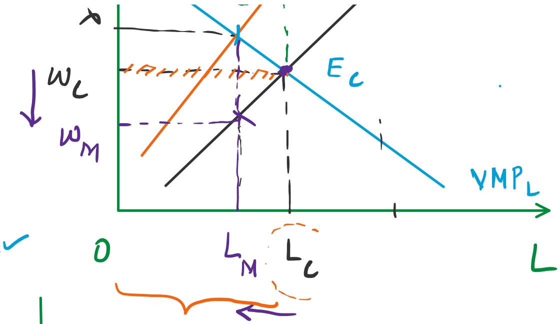
Opt. condition: $\boxed{VMP_L = W}$



Opt. condition: $\boxed{VMP_L = W}$

(II) Monopsonist in factor mkt:

Opt. condition: $VMP_L = \boxed{W + W' \cdot L}$ >0



$(W_C - W_M)$: Monopsonistic Exploitation

Interpretation:

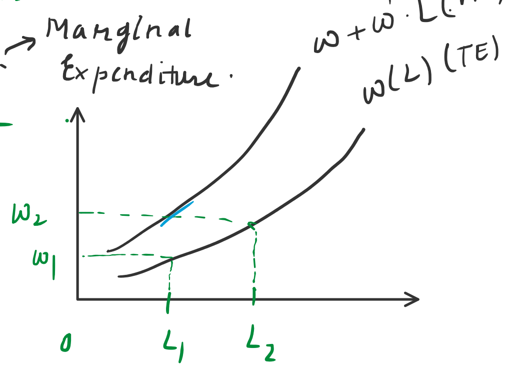
$VMP_L = W$.

$\Rightarrow$ $P \cdot MP_L = W$ → Marginal cost.

↳ Marginal benefit.

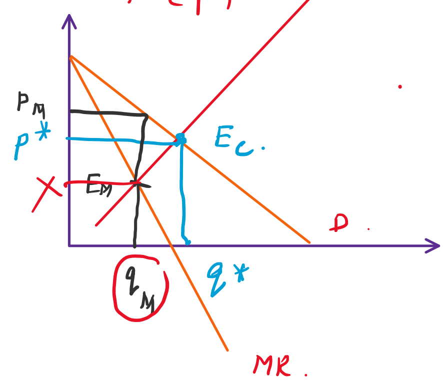
$VMP_L = W + W' \cdot L$

↳ Marginal benefit



$MR = MC \Rightarrow q^*$

$p^* = p^*(q^*)$



Q. Consider a monopsonist that can employ male & female labour with their labour supply fns being: $L_F = 100 w_F$ and $L_M = 9 w_M^2$. [w_F & w_M are wage rate for male, female respectively]. The producer can sell his output in a competitive mkt and Rs. 5; and each worker hired can produce 2 units of output.

(i) Find the π-max employment & wage rate for the monopsonist.

Inverse ss. fn: $w_F = \dfrac{L_F}{100}$, $w_M = \dfrac{\sqrt{L_M}}{3}$.

$P = 5$, $MP_L^M = MP_L^F = 2$.

$$\pi = P \cdot q(L_M, L_F) - w_M \cdot L_M - w_F \cdot L_F .$$

$$\pi = P \cdot q(L_M, L_F) - \frac{L_M^{3/2}}{3} - \frac{L_F^2}{100} .$$

For π-max:

$$\frac{\partial \pi}{\partial L_M} = 0 \Rightarrow P \cdot MP_L^M - \frac{\cancel{3}}{2} \cdot \frac{1}{\cancel{3}} \cdot \sqrt{L_M} = 0 \quad \text{---- (i)} .$$

$$\frac{\partial \pi}{\partial L_F} = 0 \Rightarrow P \cdot MP_L^F - \frac{L_F}{50} = 0 \quad \text{---- (ii)} .$$

(i). $5 \cdot 2 = \frac{1}{2} \cdot \sqrt{L_M} \Rightarrow L_M^* = 400 . \Rightarrow w_M^* = \frac{\sqrt{400}}{3} = \frac{20}{3}$.

(ii) $5 \cdot 2 = \frac{L_F}{50} \Rightarrow L_F^* = 500 . \Rightarrow w_F^* = \frac{500}{100} = 5$

HW .

(ii) If the monopolist has to pay the same wage to both kinds of labour, find the optimal employment & wage rate & compare the profits in the 2-scenarios.

Q. Consider a setup with monopsonist in the factor mkt and a monopolist in the good's mkt as follows:

Production fn: $q = q(L, \bar{k})$, $q_L > 0$, $q_{LL} < 0$.

Mkt demand: $P = P(q)$, $P' < 0$.

Labour supply: $w = w(L)$, $w' > 0$.

i) Find the optimal condition . $\left[\frac{\partial \pi}{\partial L} = 0 \right]$.

ii) What should be restriction on the Mkt dem...

∂L] .

u) What should be restriction on the Mkt demand curve & the labour supply curve s.t the sufficiency condition is satisfied.

[$\frac{\partial^2 \pi}{\partial L^2} < 0 \Rightarrow$ check!] .