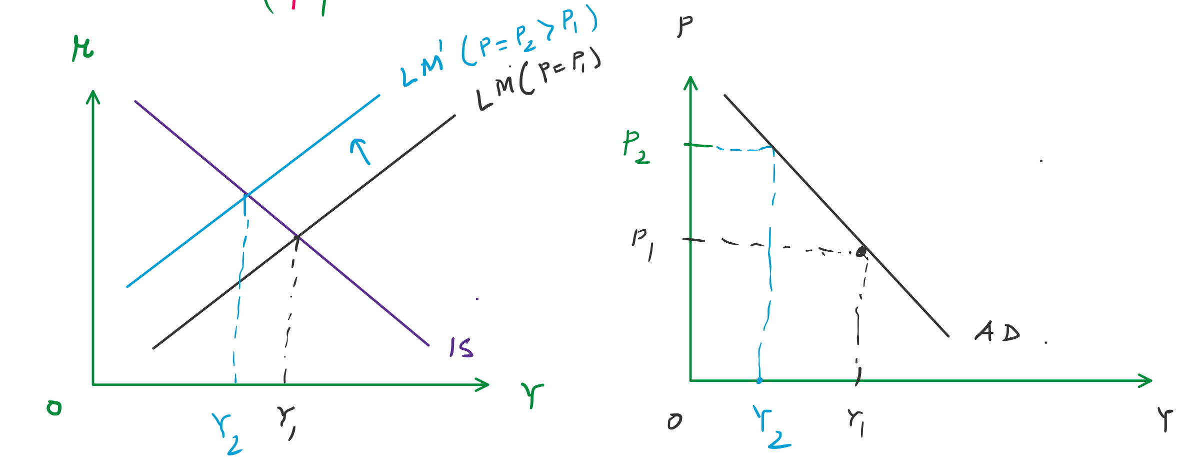
AD - AS Model

Recall: Keynesian Theory [SKM + ISLM]

IS: $Y = C(Y) + I(r) + G$

LM: $\left(\frac{\bar{M}}{P\uparrow}\right) = L(Y, r)$

$\rightarrow$ construct the AD curve.



AS: Agg short run prodn fn: $Y = F(L, \bar{K})$

[Optimal output (at given price) $\rightarrow$ Optimal level of L]

Assuming a competitive setup, $Y = F(L, \bar{K})$, $F_L > 0$, $F_{LL} < 0$.

$\therefore$ Optimal choice of Labour [through π-max].

$$\pi = R - C = P.Y - wL - r\bar{K}.$$

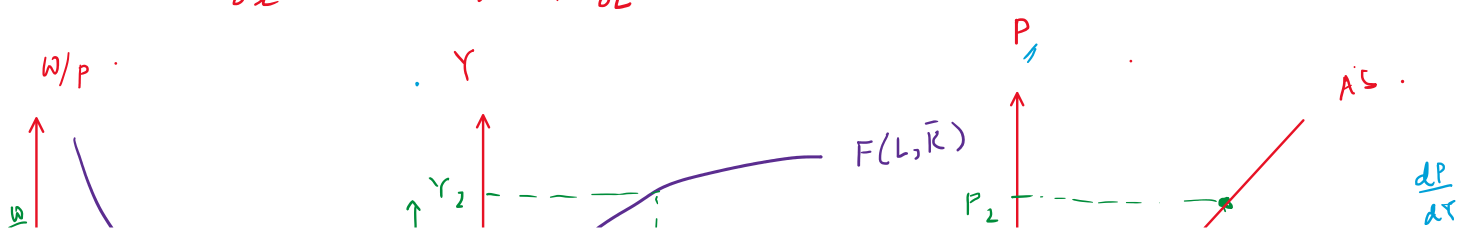
$$\pi = P \cdot F(L, \bar{K}) - wL - r\bar{K}$$

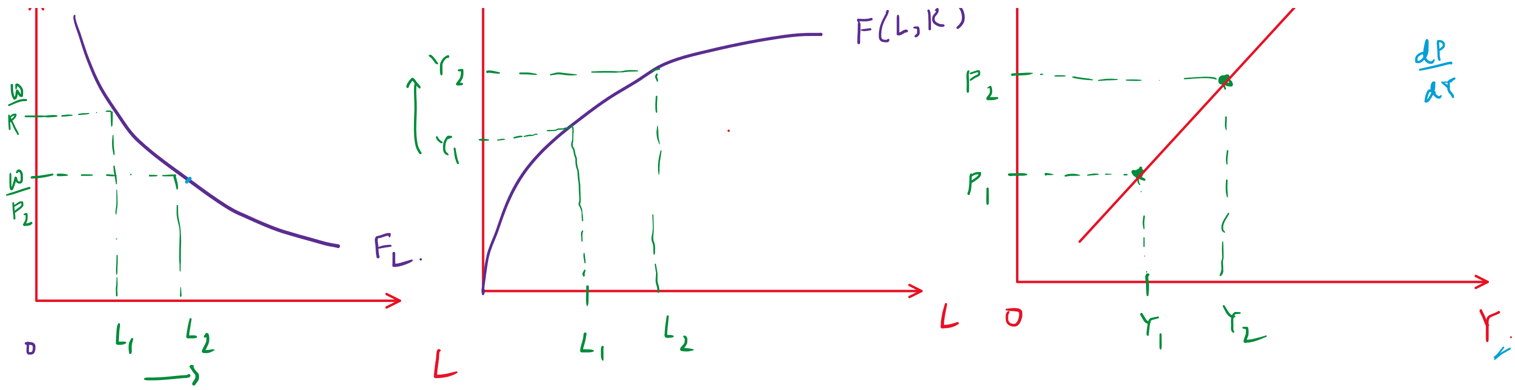
FOC: $\frac{\partial \pi}{\partial L} = 0 \Rightarrow P \cdot \frac{\partial F}{\partial L} - w = 0 \Rightarrow P \cdot F_L - w = 0.$

$$\Rightarrow \boxed{F_L = \frac{w}{P}}$$

$u = f(x, y)$ | $Y = F(L, \bar{K})$

$\frac{\partial u}{\partial x} = \phi(x, y)$ | $\frac{\partial Y}{\partial L} = \phi(L, \bar{K})$





Prodn fn: $Y = F(L, \bar{K})$ ---- (i)

$\therefore$ Optimal labour employment: $F_L = \dfrac{W}{P}$ --- (ii) Find $\dfrac{dP}{dY}$.

Diff. (i): $dY = \left(\dfrac{\partial F}{\partial L}\right) . dL = F_L . dL . \Rightarrow \dfrac{dY}{F_L} = dL$

Diff (ii). $F_{LL} . dL = -\dfrac{W}{P^2} . dP$.

Replace: $F_{LL}\left(\dfrac{dY}{F_L}\right) = -\dfrac{W}{P^2} . dP$.

$$\therefore \left.\frac{dP}{dY}\right|_{AS} = \frac{\left(\overset{<0}{F_{LL}}/\overset{>0}{F_L}\right) < 0}{-W/P^2 \quad < 0} > 0 .$$

N = No. of Labour units.
L = No. of employed.
U = No. of unemployed.

$\Rightarrow$ Rate of unemployment $= \dfrac{U}{N} = u$.

$\Rightarrow$ Rate of employment $= \dfrac{L}{N} = e$

$e + u = 1$

Found the natural rate of unemployment (u_n)

$e_n = 1 - u_n$