

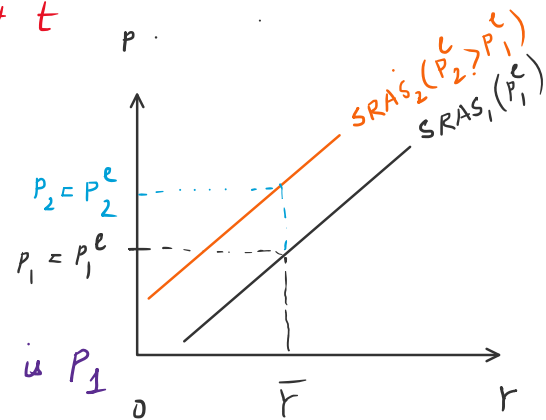
[Neo-Keynesian setup introduces a dynamic framework]

SRAS:
$$Y_t - \bar{Y} = \alpha (P_t - P_t^e), \alpha > 0 \quad \forall t$$

Okun's Law:
$$Y_t - \bar{Y} = -\beta (u_t - u_n), \beta > 0 \quad \forall t$$

Note: In the current pd ($t=0$)
form exp about $t=1 \Rightarrow P_1^e$.

When pd 1 is realized, actual price is P_1
and $P_1 \neq P_1^e$.



\therefore SRAS for $t=1 \Rightarrow SRAS_1: Y_1 - \bar{Y} = \alpha (P_1 - P_1^e), \alpha > 0$.

When pd 1 enters, form exp about $t=2 \Rightarrow P_2^e (> P_1^e)$

When pd 2 is realized, actual price is P_2 & $P_2 \neq P_2^e$

\therefore SRAS for $t=2 \Rightarrow SRAS_2: Y_2 - \bar{Y} = \alpha (P_2 - P_2^e), \alpha > 0$.

Phillip's Curve: Relationship b/w inflation (π_t) & unemployment (u_t).

Consider pd 't':-

$SRAS_t: Y_t - \bar{Y} = \alpha (P_t - P_t^e), \alpha > 0 \quad \dots (i)$

$Okun's\ Law: Y_t - \bar{Y} = -\beta (u_t - u_n), \beta > 0 \quad \dots (ii)$

From (i) & (ii):
$$\alpha (P_t - P_t^e) = -\beta (u_t - u_n)$$

$$P_t - P_t^e = -\frac{\beta}{\alpha} (u_t - u_n)$$

$$\underbrace{(P_t - P_{t-1})}_{\text{change in the actual price from pd (t-1) to (t) = } \pi_t} - \underbrace{(P_t^e - P_{t-1})}_{\text{diff b/w exp price for pd t \& realized price for pd (t-1) = } \pi_t^e} = -\frac{\beta}{\alpha} (u_t - u_n)$$

change in the actual price from pd (t-1) to (t) = π_t .
diff b/w exp price for pd t & realized price for pd (t-1) = π_t^e

$$\therefore \pi_t - \pi_t^e = -\gamma (u_t - u_n)$$

$$\text{or, } \boxed{\pi_t = \pi_t^e - \gamma (u_t - u_n), \quad \gamma > 0} \Rightarrow \text{Phillip's curve}$$

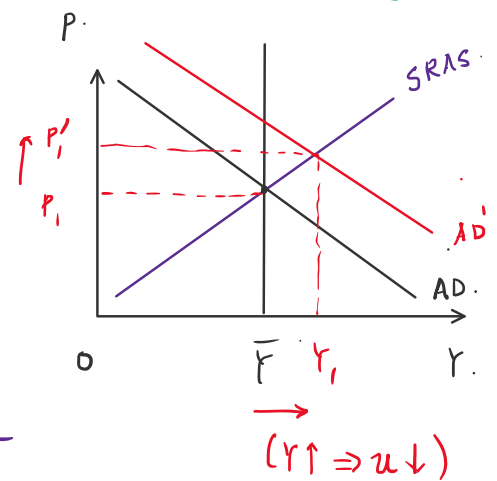
Factors determining inflation:-

(i) π_t^e : expected inflation rate. Inflation occurs because it is expected.

(ii) $(u_t - u_n)$: difference b/w actual unemployment rate & the natural rate of unemployment.

Reason: $u_t \downarrow \Rightarrow \text{Employment } \uparrow \Rightarrow Y \uparrow \Rightarrow P \uparrow \Rightarrow \pi_t \uparrow$.

This situation occurs under a "Demand Pull Inflation" where a counter-recessionary macroeconomic policy increases output, reduces unemployment and puts an upward pressure on price level.



a. How is π_t^e formed?

Expectation of inflation comes from the inflation rate that was already prevalent in the economy previously.

rate that was already prevalent in the economy previously, i.e. π_t^e depends upon π_{t-1} . say: $\pi_t^e = \theta \cdot \pi_{t-1}$, $\theta > 0$

Rewriting the Phillip's curve as:

$$\pi_t = \theta \cdot \pi_{t-1} - \gamma (u_t - u_n), \quad \theta, \gamma > 0$$

Note: If $\theta = 1$, $\pi_t^e = \pi_{t-1}$

$$\pi_t = \pi_{t-1} - \gamma (u_t - u_n)$$

$$\underbrace{(\pi_t - \pi_{t-1})}_{\text{Change in inflation}} = -\gamma \underbrace{(u_t - u_n)}_{\text{Difference b/w actual unemployment rate \& the natural rate of unemployment}} \quad \text{----- (*)}$$

Change in inflation

Difference b/w actual unemployment rate & the natural rate of unemployment.

From (*): $\Delta \pi_t = -\gamma (u_t - u_n)$ $[\Delta \pi_t = \pi_t - \pi_{t-1}]$

(i) If $u_t > u_n \Rightarrow \Delta \pi_t < 0$ [Inflation Rate decreases]

(ii) If $u_t < u_n \Rightarrow \Delta \pi_t > 0$ [Inflation Rate increases]

(iii) If $\bar{u}_t = \bar{u}_n \Rightarrow \Delta \pi_t = 0 \Rightarrow \boxed{\pi_t = \pi_{t-1}}$

[Inflation Rate remains unchanged]

$\therefore u_n$ is that level of unemployment rate at which inflation rate remains unchanged.

This is why u_n is also known as:

"Non-Accelerating Inflationary Rate of Unemployment" (NAIRU)

"-naturalizing Inflationary Rate of Unemployment" (NAIRU).
 [Alternative interpretation of u_n].

HW

8. Consider an economy characterized by imperfect factor mkt and good's mkt described as follows:

Agg production fn: $Y = N$. [N = employed Labour]

Price setting rule: $P = (1+m) \cdot W$, $m > 0$ [m = monopoly power]
 (Goods mkt)

Wage setting rule: $W = P^e F(u, z)$, $F_u = \frac{\partial F}{\partial u} < 0$, $F_z = \frac{\partial F}{\partial z} > 0$
 (Factor mkt) [u = unemployment rate,
 z = unemployment benefits].

[L = Total Labour]

(i) Derive the SRAS for the economy & plot it in the P-Y plane.