Unemployment, Output, AS-AD

- In the news
- Determining the natural rate
- From labor markets to aggregate supply
- From IS-LM to aggregate demand
Determining the natural rate

- Assume expected price equals actual ($P_e = P$)
- From wage-setting relation we have:
  \[ W/P = F(u,z) \]
- From price setting we have:
  \[ W/P = 1/(1 + m) \]
- Unemployment ($u$) is determined by:
  \[ F(u,z) = 1/(1+m) \]
Determining the natural rate:

\[ \frac{1}{1 + m} \]
An increase in unemployment insurance raises the natural rate:
An increase in the markup raises the natural rate:
From unemployment to employment

- Since $u$ is defined as
  \[ U = 1 - \frac{N}{L} \]
- The natural level of employment ($N_n$):
  \[ N_n = L(1-u_n) \]

Where $L = \text{labor force}$
From employment to output:

• Since $Y = N$, the natural rate of output is given by
  \[ Y_n = N_n = L(1-u_n) \]

• The natural rate of output therefore satisfies:
  \[ F(1 - Y_n/L) = 1/(1+m) \]

• The natural rate of output is the level of output that prevails when $P = P^e$
Aggregate Supply

• Now relax assumption \( P = P_e \)
• Wage setting implies:
  \[ W = P_e(1+m)F(1-Y/L,z) \]
• Price setting implies:
  \[ P = (1+m)W \]
• Combining these gives a relationship between output \( Y \) and the current price level \( P \):
  \[ P = P_e(1+m)F(1-Y/L,z) \]
Aggregate Supply:

\[ P \]

\[ P^e \]

\[ Y_n \]
Aggregate Demand

- IS curve:
  \[ Y = C(Y-T) + I(Y,i) + G \]
- LM:
  \[ \frac{M}{P} = YL(i) \]
- In the IS-LM model, as \( P \) increases, real income \( Y \) falls.
- Intuition: holding \( M \) fixed an increase in \( P \) reduces real balances (\( M/P \)) and shifts LM curve up.
An increase in P shifts the LM curve up causing output to fall.
Aggregate Demand:

\[ P \]

\[ Y \]

\[ P^e \]

\[ Y_n \]