Model 5 – Dynamic Aggregate Demand – Aggregate Supply

Mankiw, Macroeconomics, Seventh Edition, Chapter 14

1. IS curve becomes: \( Y(t) = Y_p(t) - \alpha^*(r(t) - \rho) + \varepsilon(t) \) where \( \varepsilon \) is distributed normally

2. Fisher Equation: \( r(t) = i(t) - \pi^e(t,t+1) \)
   Where \( \pi^e(t,t+1) \) is expected inflation rate from \( t \) to \( t + 1 \)

3. Phillips Curve: \( \pi(t) = \pi^e(t-1,t) + \Phi^*(Y(t) - Y^p(t)) + \nu(t) \)

4. Inflation Expectations: \( \pi^e(t,t+1) = \pi(t-1,t) \) or \( \pi(t) \) – Naïve expectations

5. Monetary Policy Rule: \( i(t) = \pi(t) + \rho + \theta\pi^*(\pi(t) - \pi^*) + \theta_y^*(Y(t) - Y^p(t)) \)
   - If \( \theta_y = 0 \) then only inflation matters;
   - If \( \theta\pi = 0 \) then only output matters

Dynamic Aggregate Demand:
\[ Y(t) = Y_p(t) - \left[ \alpha^*\theta_y/(1 + \alpha^*\theta_y) \right] \pi^e(t) + \left[ 1/(1 + \alpha^*\theta_y) \right] \varepsilon(t) \]
with slope \( \Delta\pi/\Delta Y = -\frac{1 + \alpha^*\theta_y}{\alpha^*\theta\pi} \)

Dynamic Aggregate Supply:
\[ \pi(t) = \pi^e(t-1,t) + \Phi^*(Y(t) - Y^p(t)) + \nu(t) \] where \( \pi^e(t-1,t) = \pi(t-1) \)
with slope \( \Delta\pi/\Delta Y = \Phi \)

Exogenous Variables: \( Y^p, \rho, \varepsilon(t), \nu(t), \pi(t)^* \)