

Economics 607
 Fall 2011
 Homework 3
 Due 10/27

1. In the following model:

$$y_t = a + b(M_t - E_{t-1}M_t) + cy_{t-1} + e_t$$

$$M_t = g + hy_{t-1} + v_t$$

- (a) Show that only unanticipated changes in money matter in the determination of y_t .
- (b) Show that if the monetary authority has superior information, then the policy ineffectiveness proposition shown in (a) is no longer valid (that is, suppose that the Fed knows and can react to the output shock, e_t , so that $M_t = g + fe_t + hy_{t-1} + v_t$).

2. Explain the history and significance of the Lucas critique.

3. Consider the model

$$y_t = \lambda y_{t-1} + \alpha(P_t - E_{t-1}P_t) + v_t$$

$$P_t = \gamma + \beta M_t + \delta P_{t-1} + w_t$$

$$M_t = \theta_0 + \theta_1 y_{t-1} + \theta_2 P_{t-1} + u_t$$

- (a) Illustrate the Lucas' critique.
- (b) Show that money is neutral.
- (c) Show that the neutrality result no longer holds when the monetary authority has current information on the value of w_t .

4. In the following model:

$$y_t = a + b(\pi_t - E_{t-1}\pi_t) + cy_{t-1} + e_t$$

$$\pi_t = f + \Delta M_t + u_t, \quad u_t = \rho u_{t-1} + w_t$$

$$\Delta M_t = g + hy_{t-1} + v_t$$

Show that relaxing either the NRH or the assumption of RE overturns neutrality (the Fed sets the values of g and h).

5. Find the solution for P_t in the model

$$\begin{aligned}y_t^d &= a + bE_t P_{t+1} - cP_t + e_t^d \\y_t^s &= f - gE_{t-1} P_{t+1} + hP_t + e_t^s.\end{aligned}$$

6. Find the solution for P_t in

$$P_t = a + bE_{t-1} P_t + cE_{t-1} P_{t+1} + dE_{t-2} P_t + eu_{t-2} + fu_{t-1} + u_t.$$

7. Find the solution for P_t in

$$P_t = a + bE_{t-1} P_{t+1} + u_t, \text{ where } u_t = \rho u_{t-1} + e_t$$

8. Find the solution for P_t in

$$P_t = a + bE_{t-1} P_t + cE_{t-2} P_{t+2} + u_t, \text{ where } u_t = \rho u_{t-1} + e_t.$$

9. Given the model

$$\begin{aligned}y_t &= \beta_1(M_t - P_t) + \beta_2 E_{t-1}(P_{t+1} - P_t) + v_t \\y_t &= \alpha_1(P_t - E_{t-1} P_t) + w_t \\M_t &= \theta_1 v_{t-1} + e_t\end{aligned}$$

use undetermined coefficients to find the solution for P_t .