

## 1 Due 06/02 (in class)

1. In his critique of economic policy analysis, Lucas derived the following demand curve for capital (i.e. investment) in a hypothetical industry:

$$k_t(1 - \delta) + i_t = \frac{1}{\lambda} E_t(a_{t+1}) - \frac{b}{\lambda^2} \left[ \frac{r_t}{1 - \theta_t} + \delta \right] + \frac{b}{\lambda^2} \left[ \frac{\psi_t(1 + r_t) - E_t(\psi_{t+1})(1 - \delta)}{(1 - \theta_t)} \right] \quad (1)$$

where  $r_t$  denotes the current one-period interest rate,  $\theta_t$  is the current tax rate on profits,  $\psi_t$  is the investment tax credit. Answer the following:

- Explain why the factors on the right-hand side of eq.(1) affect investment demand.
  - What two properties were used to derive this investment demand function.
  - Lucas criticized Hall and Jorgenson's analysis of the 1962 tax credit - where did they go wrong?
2. Consider the following IS-LM model:

$$Y = a_0 + a_1 r + u$$

$$M = b_0 + b_1 Y + b_2 r + v$$

where  $u, v$  denote random shocks to the goods and money market respectively. Express the model in reduced form under the assumption that the money supply is the instrument of monetary policy.

3. Blinder states (on p.27): "Returning to Poole's dichotomy, let me remind you of his basic conclusion: that large LM shocks militate in favor of targeting interest rates while large IS shocks militate in favor of targeting the money supply." Explain why Poole reached this conclusion.
4. Using the Poole model, prove that the optimal setting of the money supply (when  $M$  is the instrument) is given by:

$$M^* = \frac{Y_f(a_1 b_1 + b_2) - a_0 b_2 + a_1 b_0}{a_1}$$

5. In the model of monetary policy by Walsh, he derives the monetary policy rule as:

$$\pi = \pi^T - \alpha(x - u)$$

What determines the slope ( $\alpha$ ) of this function? How does this term relate to the "new policy trade-offs" as described by John Taylor?

6. Estimates of the Taylor rule during the sample period 1960-1979 produce the following (ignoring constants) values:

$$R_t = 0.813(\pi_t - \pi^*) + 0.252(y_t - \bar{y}_t)$$

What is the implication of these estimates? In particular, do they help to explain the U.S. economic experience during this time?