

Final Exam

*Directions: Answer all questions - they are weighted equally. Remember, to receive full credit you must provide **complete explanations** for your answers. Relax and Good Luck.*

1. Consider the following simple structural macroeconomic model:

$$\begin{aligned} \text{consumption} & : c = a + b(y - t) \\ \text{investment} & : i = i_0 - dr \\ \text{money demand} & : m^d = ey - fr \\ \text{government} & : g = g_0 \\ \text{taxes} & : t = t_0 \\ \text{money supply} & : m^s = m_0 \\ \text{goods market eq} & : y = c + i + g \\ \text{money market eq} & : m^s = m^d \end{aligned}$$

The terms (a, b, d, e, f) are positive coefficients while the following are exogenous (t_0, g_0, m_0, i_0) . Represent the model in reduced form.

2. Within the context of the Lucas Imperfect Information model, answer the following
 - (a) It was assumed that agents in the model formed expectations rationally. This implied that they knew that the aggregate price level, p , was distributed normally with mean of μ_p and variance of σ_p^2 while the relative price of good i , r_i , was distributed normally with mean of 0 and variance of σ_r^2 . Furthermore, it was known that p and r_i were independently distributed. What did this imply for the distribution of the price of good i , p_i ?
 - (b) Explain what factors determine the slope of the aggregate supply curve.
3. Blinder makes the following statement with regard to Poole's analysis: "...it is hard to think of an aspect of monetary policy in which theory and practice have interacted more fruitfully." Why does he make such a strong statement? Use graphs to support your answer.

4. In the paper by Clarida, Gali, and Gertler, they show that the IS curve can be written in two ways:

$$x_t = \underbrace{-\varphi [i_t - E_t (\pi_{t+1})] + E_t (x_{t+1}) + g_t}_{\text{term 1}} = E_t \left[\underbrace{\sum_{i=0}^{\infty} \{-\varphi [i_{t+i} - E_t (\pi_{t+1+i})] + g_{t+i}\}}_{\text{term 2}} \right]$$

Show how term 1 implies term 2 and discuss the importance of this result.

5. 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, θ_t is the current tax rate on profits, ψ_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?
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?

7. One of the Federal Reserve's mission assigned by the Congress is to guarantee price stability in the US. Referring to a discussion between the Chairman and Janet Yellen as reported by L. Meyer, explain how different members of the FOMC define price stability.