

Homework 2

Matthew Aaron Looney

2/11/2018

Romer Assumptions and Formulas:

$$Y_i = L_i \quad (\text{pg 268, eq 6.37: output=Labor})$$

$$\eta \quad (\text{pg 271: elasticity of demand})$$

$$\frac{1}{\gamma - 1} \quad (\text{pg 271: labor supply elasticity})$$

$$C_i = \frac{Y_i P_i}{P} \quad (\text{pg 293: revenue over price index})$$

$$Y = \frac{M}{P} \rightarrow \ln(y) = \ln(m) - \ln(p) \quad (\text{pg 269, 6.41: Aggregate Demand})$$

Problem 1

a. In the Lucas Imperfect Information model, producers do not observe the aggregate price level perfectly. How does this model set up a signal extraction problem and how do firms solve it?

Lucas(1972) and Phelps(1970) supposed that perhaps producers do not observe the aggregate price level perfectly.

The model starts with the standard utility maximization problem of $U_i = C_i - \frac{1}{\gamma} L_i^\gamma$ (apply above assumptions; revenue over price index and output equals labor). If producers take prices as given and we assume they know their own price and price index then the utility maximizing problem wrt Y_i is given by the following:

$$\ln(y_i) = \frac{1}{\gamma - 1} [\ln(p_i) - \ln(p)] \quad (\text{pg 293, eq 6.75:})$$

b. What is the Lucas supply curve and what are its implications? How is it different from the expectations-augmented Phillips curve?

c. How do the implications of this model tie into the famous Lucas critique?