ECO 318, Winter 2019, Midterm

Instructions: This exam is a mix of technical and non-technical questions. Non-technical questions do not require long answers, one or two concise paragraphs should suffice.

Answer 3 of 4 Questions.

1. Consider the model of Gali, Chapter 2. Suppose that the monetary authority uses the following policy rule:

$$i_t = \rho + \phi(p_t - p^*) + (1 - \phi)E_t[p_{t+1} - p^*] \tag{0.1}$$

a. Derive conditions for determinacy of equilibrium.

b. Assume that the monetary authority chooses a value of ϕ that results in indeterminacy. Write prices/inflation as a function of a sunspot.

Continuing on to Chapter 3 of Gali.

c. Linearize the following equation: $E_t[(\frac{C_{t+1}}{C_t})^{-\sigma}] = \beta R_t$.

d. How would the representative firm's price setting problem change if it knows that it is able to re-set its price every two periods?

2. Consider the model of Acemoglu and Zilibotti (1997). Suppose that the parameter γ decreases.

a. In the static equilibrium (which considers only as single period), how would this parameter change affect the model's endogenous variables?

b. Do you think that this policy change will increase or decrease the time it takes for the model to converge to the good (all sectors being open) steady state? [Note: You will not be able to show this result mathematically so you will have to rely on intuition.]

Now consider the model of Evans, Honkapohja, and Romer (1998).

c. Suppose that B, the marginal product of labor increases. How would you expect this to impact the model's steady states?

d. Do the results of the model under adaptive learning (*e.g.* multiple stable steady states) suggest one should never use the assumption of perfect foresight?

3. Consider the Solow Model as designed in class.

a. Suppose that TFP growth depends on capital so that $g = k^{\omega}$ where $\kappa > 0$. Represent the model as a single differential equation in capital.

b. How does ω affect convergence to the interior steady state?

Now consider the overlapping generations model as designed in class:

c. Suppose that agents become more patient. Show the impact on steady state capital and consumption.

d. Provide economic intuition for your result from part c.

4. Consider the parameter θ as it appears in households' instantaneous utility function, $U(C_t) = \frac{C_t^{1-\theta}}{1-\theta}$

a. What do higher values of θ imply about households' preferences.

b. In the infinite Horizon Model as designed in class, demonstrate the effects of an unexpected increase in θ on consumption and capital over time.

Now consider the overlapping generations model as designed in class. Furthermore, suppose that older households enjoy consumption less so that their lifetime utility equals $\frac{C_{1,t}^{1-\theta}}{1-\theta} + \frac{\beta(\chi C_{2,t+1})^{1-\theta}}{1-\theta}$

c. Re-derive the Euler Equation for consumption.

d. How might you incorporate the notion that older households like consumption less than younger households into the Infinite Horizon Model?

Bonus: What is the single biggest improvement you would make to the empirical design of Cecchetti and Kharroubi (2012).