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:

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

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 Chapter 3 of Gali.

c. Suppose that the parameter α increases. How will this impact the New Keynesian Phillips Curve?

d. Suppose that c_t is exceptionally high and likely to fall in the future. How will this affect the representative firm's discounting of future periods?

2. Consider the model of Acemoglu and Zilibotti (1997). Suppose that the parameter D increases.

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.]

c. Is there a value of D that would eliminate the randomness of how long it takes for an economy to fully converge to the high growth steady state?

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

d. True or False? Agents in the model will always be able to learn the high and low growth steady states, but not the medium growth steady state.

3. Consider the Solow Model as designed in class.

a. Suggest a modification to the model that would result in three steady states, two of which are stable.

b. Start at the model's highest (in terms of k) stable steady state from part a . Now suppose that k is immediately cut in half. Show how the model might converge back to a steady state.

c. Do you think that the adaptive learning framework used by Evans, Honkapohja, and Romer (1998) would be useful for selecting among the steady states from part a?

d. In the overlapping generations model where agents' instantaneous utility equals $\frac{C_{i,t}^{1-\theta}}{1-\theta}$, describe what happens to agent's behavior as $\theta \to \infty$.

4. Consider the Infinite Horizon Model as developed in class.

a. Suppose that population growth is determined by $n = c_t^{\phi}$. Provide an economic interpretation of ϕ and discuss the implications of positive versus negative values.

b. Decide if ϕ should be negative or positive. Furthermore, assume that households take n as given. Show how different values of ϕ affect the model's steady state.

c. Now instead of assuming that $n = c_t^{\phi}$, assume that households choose n to maximize their utility where, in addition to utility from consumption, they also obtain utility from fertility equal to νn (constant marginal utility of fertility). Briefly describe how you would set up the representative household's optimization problem.

d. Is your equilibrium from part c Pareto efficient?

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