

Macroeconomics - Problem Set #2

1. Econometric part:

TBA

2. Mathematical part - Dynamic inefficiency in OLG model:

Consider the following set up of the Diamond OLG mode. Individuals born in period t solve the following problem

$$\max_{c_{1,t}, s_{t+1}, c_{2,t+1}} \left(\ln c_{1,t} + \frac{1}{1+\rho} \ln c_{2,t+1} \right),$$

subject to

$$\begin{aligned} c_{1,t} + (1+\tau)s_{t+1} &= w_t + \gamma_t \\ c_{2,t+1} &= (1+r_{t+1})s_{t+1} \end{aligned}$$

where τ is the tax rate on savings and γ_t is a lump-sum rebate. The government chooses γ_t to satisfy $\gamma_t = \tau s_{t+1}$, while individuals treat w_t , r_{t+1} and γ_t as fixed. Per capita net output is

$$f(k_t) = Ak_t^{1-\alpha}$$

where $k_t = K_t/L_t$ gives the capital per worker (or capital-labor ratio).

- (a) Characterize the solution to the households' maximization problem and solve for optimal saving.
- (b) Characterize the solution to the firms' maximization problem.
- (c) Solve for the saving function $k_{t+1} = \Psi(k_t)$ and show that it satisfies $\Psi' > 0 > \Psi''$, $\Psi(0) = \lim_{k_t \rightarrow \infty} \Psi'(k_t) = 0$ and $\lim_{k_t \rightarrow \infty} \Psi(k_t) = \lim_{k_t \rightarrow 0} \Psi'(k_t) = \infty$. Deduce that the mode has a single stable steady state equilibrium, in which $k^* > 0$.
- (d) Per capita consumption is given by

$$c_t = \frac{L_t c_{1,t} + L_{t-1} c_{2,t}}{L_t + L_{t-1}}$$

Show that the following equation holds in equilibrium:

$$c_t = \frac{1+n}{2+n} (k_t + f(k_t) - (1+n)k_{t+1})$$

- (e) Solve for the steady state values of k_t , c_t and r_t . Show that per capita consumption in the steady state is strictly increasing in τ if the real interest rate is less than n .

3. Reading + essay:

Paul Krugman: How Did Economists Get It So Wrong, published on September 2, 2009 in New York Times

In this assignment, I would like you to read and comment on the opinion piece, published By Paul Krugman (Nobel prize for economics, 2008) in NYT. This article has started a heated debate on the usefulness of macroeconomics in the view of the current events in the global economy. I would like you to answer these question

1. What is the main postulate of Mr. Krugman? How does he support his opinion?
2. What part of his argumentation do you agree with, and why? Support your opinion.
3. What part of his argumentation don't you agree and why? Support your opinion.
4. In general, what is your opinion on the failure of macroeconomics in predicting the crisis?

Remember that the original article is an opinion piece. For more objective view of the problematics, you might want to read the original Blanchard paper (find on Moodle), or some of the responses (I will post the response from Cochraine, however, you can find lots of discussion online). Hope you will enjoy the real macro war!

Should be delivered via moodle only, by **November, 21st, 23:55**. You have to be enrolled in Moodle, too, not only in SIS, to be able to post problem set there.