Introductory Macroeconomics

In-Tutorial #8
Week Starting 3rd May 2021

Questions.

1. In the context of the Solow-Swan model, use a diagram to show the qualitative effect of an increase in the population growth rate, n, upon the steady state level of output per capita. Do these results seem sensible to you?

2. If we look at economic history we see that growth rates of output per capita were typically very low prior to the 1750s. In the post-1750 period, a set of countries has attained sustained growth in output per capita of about 2 per cent per year. In the context of the Solow-Swan model, what changes could account for a sustained increase in economic growth in the post-1750 period?

3. Suppose we consider a production function with the following functional form, $\frac{Y_t}{L_t} = A\frac{K_t}{L_t}$. In this case, A is the level of technology and $\frac{K_t}{L_t}$ is the level of capital per worker. Capital per worker accumulates according to the following equation:

$$\frac{K_{t+1}}{L_{t+1}} = (1-d)\frac{K_t}{L_t} + \frac{I_t}{L_t}.$$

   (a) Maintain the standard assumption that investment is equal to a constant proportion of output. That is, $I_t = \theta Y_t$. Use the above information to derive an equation that describes the growth rate of capital per worker for this economy.

   (b) Does this economy have a steady state of capital per worker? If not, what will happen to this economy over time? What is the key difference between this environment and the Solow-Swan model that we discussed in lectures and the textbook?