Economic Growth Exercises

13.03.2011 (updated 19.03.2011) Christian Groth

Corrections and help for Problem VI.1[1]

VI.1

Line 1 should read:

Consider a closed market economy with constant population, L utility maximizing households, and M

Question b) should read:

b) Show that in equilibrium

$$\begin{aligned} r &= \alpha\bar{A} - \delta, \quad \text{where} \quad k \equiv K/L \quad \text{and} \quad \bar{A} \equiv A^{\frac{1}{\alpha}}(\gamma L)^{\frac{1-\alpha}{\alpha}}, \\ Y &= \sum_i Y_i = \sum_i y_i L_i = y \sum_i L_i = yL = Ak^{\alpha}G^{1-\alpha}L = A^{1/\alpha}(\gamma L)^{(1-\alpha)/\alpha}kL \equiv \bar{A}K. \end{aligned}$$

The *hint* to question g) should read:

g) .... *Hint:* by a procedure analogue to that in question b) it can be shown that in equilibrium the aggregate production now is

$$Y = \left(A\gamma^{\lambda(1-\alpha)}K^{\alpha}L^{1-\alpha}\right)^{\frac{1}{1-\lambda(1-\alpha)}}.$$

NEW: We immediately see that $\partial y/\partial\gamma > 0$, which is the simple answer to a rather trivial question, given the production function. A more interesting question would have been:

> Suppose $0 < \lambda \leq 1$. Given K and L, what level of G and γ, respectively, maximizes $Y - G$ (i.e., the amount of output which is left for private consumption and capital investment)? Briefly provide the intuition behind your result. *Hint:* by a procedure analogue to that in question b) it can be shown that in equilibrium the aggregate production now is $Y = AK^{\alpha}(G^{\lambda}L)^{1-\alpha}$.

[1] The updating consists of the following:
1. Three places $\bar{g}$ is changed into γ.
2. Under "NEW" further changes or comments are given.

NEW: Before question h), add the following:

From now, let $0 < \lambda < 1$ and $n \geq 0$.

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