

Advanced Macroeconomics

2014/15 Winter term

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Tutorial 2: Solow Growth Model

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1. Derive the dynamics of motion of the auxiliary variable $\tilde{k} = K/AL$, capital per effective labour, and discuss the results.

Use the following results and identities to assist your analysis:

$$g \equiv \frac{1}{A} \frac{dA}{dt}, \text{ growth rate of technology (exogenously given)}$$

$$n \equiv \frac{1}{L} \frac{dL}{dt}, \text{ growth rate of labour (exogenously given)}$$

$$\dot{K} \equiv \frac{dK}{dt} = I - \delta K, \text{ net investment}$$

$$I = S, \text{ savings and investment equilibrium}$$

$$S = sY, \text{ constant savings rate (exogenously given)}$$

2. Derive the long-run value of \tilde{k} and discuss its meaning.
3. Derive and discuss the long-run growth rates of Output (Y) and Output per Capita (Y/L) defined as:

$$\frac{\dot{Y}}{Y} \equiv \text{growth rate of output}$$

$$\frac{d(Y/L)/dt}{Y/L} \equiv \text{growth rate of output per capita}$$