

Problem set on Ramsey-Cass-Koopmans model

Consider the RCK model with a rate of population growth n and a rate of growth in total factor productivity g . Assume that:

$$U = \int_{t=0}^{\infty} e^{-\rho t} \frac{C_t^{1-\theta}}{1-\theta} dt$$

Recall the phase diagram graph with k on the horizontal axis and c on the vertical axis. Using graphs like this, show what happens to the economy over time in response to each of the events described below. Assume that before the event occurred the economy was in a long-run steady state. Use the following symbols to label points:

- (1) to label the initial LRSS before the event
- (2) to label the point that is the combination of c and k prevailing immediately after the event
- (3) to label the combination of c and k some time after the event, but before the economy is again in a LRSS
- (4) to label the combination of c and k when the economy is again in a LRSS.

Events:

- a) An increase in the rate of time-discount ρ
- b) An increase in the rate of TFP growth g
- c) A sudden, unexpected destruction of capital