

Partner assignments

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Problems

Romer's Problem 1.12 with the following modification:

- Follow Romer's suggested solution strategy to get the math, then widen your focus once you have the mathematical result to figure out the economic meaning.
- **Add the following part (f):** When technological progress is embodied in capital, we can make either of two assumptions: (1) that an improvement in technology affects *all installed capital* as well as new capital, or (2) that an improvement in technology affects *only new capital* and does not improve the productivity of the capital already installed.
 - Which assumption does each part of Problem 1.12 make?
 - What, if any, difference does it make for the behavior of the growth model?

Romer's Problem 2.6 with the following modifications:

- **Add to part (a):** Differentiate both sides of the $\dot{c} = 0$ equation with respect to g to derive an expression for $\frac{\partial k^*}{\partial g}$ and verify that its sign corresponds to your graphical answer.
- **Add to part (b):** Use the $\dot{k} = 0$ equation and your answer above (remembering that k^* is a function of g) to derive an expression for $\frac{\partial c^*}{\partial g}$ and verify that its sign corresponds to your graphical answer. (The utility function condition in Romer's equation (2.2) is useful here.)
- **In part (d),** it is useful to start by using the $\dot{k} = 0$ equation to write the steady-state saving rate $s^* = \frac{f(k^*) - c^*}{f(k^*)}$ solely as a function of k^* . You can then use the result of the part (a) extension above.
- **Do not do Romer's part (e).** It is just algebra and not economically enlightening. Instead substitute the following question:
 - **New part (e):** Write a short paragraph describing the economic question posed in this problem and what your answer means.

Romer's Problem 2.7 with the following modification:

- ***In part (a):*** The parameter θ measures how unwilling households are to accept non-smooth consumption over time. Given that $g > 0$ implies that the equilibrium consumption path for each consumer must rise over time, **explain the intuition of your result.**
- ***In part (b):*** Assume that the downward shift is proportional, not parallel. In other words, both $f(k)$ and $f'(k)$ fall at each level of k .
- ***In part (c):*** Be sure to consider both curves in this question.