

ECO 305: Intermediate Macroeconomics
Week 4 Homework: Solow Growth Model

Write your answers in the space provided or on your own paper. When you have finished, scan or take pictures of your work, combine all images to a single PDF file, assure that all pictures are oriented right-side up, and upload your work as a single PDF file to the Canvas Assignment area. You may use <https://online2pdf.com/> to combine your images to a single PDF file.



That's Solo, not Solow...

1. What does the Solow model predict for what type of economies should grow at relatively high rates and what type of economies should grow at relatively low rates? Use the graphical Solow model to show why this is the case.

2. Describe and illustrate the long-run impact of an improvement in machine learning technology that allows automation of tasks that improve productive possibilities for companies across an economy.
 - (a) Use the Solow growth model to illustrate the change in long-run capital-per worker. Describe why you shift anything you shift.
 - (b) Use the production function to show how the change in long-run capital-per-worker affects the long-run output per worker.

3. Describe and illustrate the long-run impact of a drop in the growth rate of the population in a country.
 - (a) Use the Solow growth model to illustrate the change in long-run capital-per worker. Describe why you shift anything you shift.
 - (b) Use the production function to show how the change in long-run capital-per-worker affects the long-run output per worker.

4. Suppose a government changes its tax policy to increase sales taxes (i.e. a tax on consumers' purchases goods and services) and decreases taxes on income from capital gains (i.e. taxes on interest earned from saving), and in such a way that total taxes and government expenditures do not change.
- (a) Use the Solow growth model to illustrate the change in long-run capital-per worker. Describe why you shift anything you shift.
 - (b) Use the production function to show how the change in long-run capital-per-worker affects the long-run output per worker.
- (c) Use the result above to comment on whether such a change in tax policy would be beneficial or harmful to the economy.
- (d) Are sales taxes regressive or progressive? Are sales taxes distortionary? Are taxes on capital gains regressive or progressive? Are capital gains taxes distortionary? Use the answer to these questions to comment on whether such a change in tax policy would be beneficial or harmful to the economy.