Delete this before using. Doable in 1 hour. Q9 requires parentheses, 1/(1-), in the formula.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Before presenting the Solow model, it is worth stepping back to consider exactly what a model is and what it is for. In modern economics, a model is a mathematical representation of some aspect of the economy. It is easiest to think of models as toy economies populated by robots. . . . The best models are often very simple but convey enormous insight into how the world works.

Charles Jones

Barreto

Macro Topics

Introducing the Solow Model with KAcc.xls

MaddisonData.xls taught you basic economic growth literacy. You know about log scales, the Rule of 70, seemingly small differences that actually matter a great deal, 2% per year as a good rate of growth for real GDP per person for an industrialized economy, and the fact that we don’t know why some countries are rich and others poor.

The Solow Model is a framework for what we know about growth. It is quite complicated and we will do only the basic model. We begin with KAcc.xls. Today we figure out how to find the steady-state (equilibrium) solution and next time we’ll do some comparative statics with this introductory model.

Initial Equilibrium

f(L, K)

Y

C

new K (added to initial K)

I

1. Where is s, the saving rate, in this diagram? Why is it important?
2. Is there growth in this model? The answer is, “Maybe, but not permanently.” Explain this.

**Wait. We’ll go over your answers and make sure they are correct before continuing.**

I clicked the Rand button and got this economy:



1. Is this economy above or below its steady-state position? How do you know?
2. What will happen next year? Let’s fill in the boxes below together:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |

**Wait.**

Open KAcc.xls and set the parameters to the values above.

1. Click 1 Year a few times. In your own words, write down the steps in the process.
2. Find the steady-state solution and report your answer below. Explain how you know it’s the answer.

Copy the *EqPath* sheet and rename the copied sheet “ClassEx.”

**Wait.**

1. Click the Rand button to get your own economy. Find the steady-state solution. Report *k\** below.
2. Start from k = 0.01 (in cell B10). What effect does this have on the steady solution?

Start from k = 100 (in cell B10). What effect does this have on the steady solution?

What does initial k have to do with the steady-state solution?

1. The *Algebra* sheet shows that the answer can also be found via analytical methods, producing this formula:



Create a cell formula that computes this value for your economy. Does the analytical approach substantively agree with the simulation (numerical) method?

1. Why can’t this model explain US economic performance in the 20th century?

HW: Watch the second video in KAcc.xls and do tasks 5 and 7.