Saving, Investment, and Consumption

1. Consider the following recent testimony by Alan Greenspan:

“In general, for reasons I have testified to previously, if long-term fiscal stability is the criterion, it is far better, in my judgment, that the surpluses be lowered by tax reductions than by spending increases.”

a. Using the simple classical model of saving and investment, demonstrate the effect of an increase in government spending on national saving, public saving, private saving, investment, and interest rates.

b. Using the simple classical model of saving and investment, demonstrate the effect of a decrease in taxes on government spending on national saving, public saving, private saving, investment, and interest rates.

c. Based on your analysis in parts a. and b., explain why it might be preferable to reduce the budget surplus by decreasing taxes rather than by increasing government spending.

2. In the first presidential debate of 1984, Walter Mondale made the statement that “everybody, every economist, every businessman” agrees that deficits affect interest rates. In point of fact, that statement, particularly as it concerns economists, is very far from true. Consider a fiscal policy that increases the budget deficit.

a. Construct an example that demonstrates that the budget deficit may not affect interest rates. Explain intuitively why the deficit is not related to the interest rate in your example.

b. Does your answer in part a. indicate that the size of government ($G$) is irrelevant as far as interest rates are concerned? If yes, explain. If no, construct a counter-example and explain.

3. Suppose that $u(c_t) = c_1 - \theta t (1-\theta)$, and agents are two period-lived, so that $t = 1, 2$.

a. Specify the household’s optimization problem, and find its solution.

b. What does your solution tell you about the effect on consumption of a change in the interest rate?

4. Empirical evidence suggests that there are two consumption functions. For household data and for short time-series, a Keynesian consumption function appears to work well. For long time-series, the consumption function appears to have a constant average propensity to consume. In the 1950s, Franco Modigliani and Milton Friedman each proposed theories of consumption consistent with the empirical evidence.

a. According to Modigliani’s theory, what determines saving and consumption behavior, and what equation describes the consumption function?

b. According to Friedman’s theory, what determines saving and consumption behavior, and what equation describes the consumption function?

5. Consider a financially repressed country.

a. Suppose that a financial liberalization program is introduced that entails the removal of interest rate ceilings. Demonstrate that such a program may lead to an increase in saving.

b. Empirically, Bandiera et. al. find that financial reform reduces saving. How do you reconcile this empirical finding with the example you constructed in part a.?

6. Suppose that the US, a large country, reduces its budget surplus substantially over the course of the next few years. All else equal, demonstrate how this policy will effect national saving, investment, the trade balance, capital flows, and the exchange rate in the small open economies of the world.
7. Consider the simple Solow growth model. Assume for simplicity that there is no technological progress.
   a. Derive the time path of the capital stock per worker.
   b. Describe the steady state equilibrium.
   c. What implications can be drawn from your characterization of the dynamics and equilibrium of the model?
   d. Suppose that the saving rate increases. Demonstrate graphically what happens to the steady state values of capital per worker, output per worker, and consumption per worker.
   e. Sketch the transitional dynamics of output per worker, consumption per worker, and the natural log of total output as the economy moves to its new steady state.
   f. How will the interest rate be affected during the transition? (Hint: First, find an expression for $\frac{\dot{r}}{r}$, the growth rate of the interest rate. Then, examine this condition to determine its sign during the transition to the new steady state.)
   g. Does the Solow growth model provide an acceptable theoretical description of the observed growth process? Explain.

8. Answer the following questions about empirical applications in the growth literature.
   a. What is the purpose of “growth accounting” exercises? What is the “Solow residual?”
   b. What is a “Barro regression,” and what is its purpose?