

**Consumption Demand**  
*Additional Homework Problems*  
ECON 3133  
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1. Suppose that we have a consumption function of the form

$$C = 220 + 0.9 \times Y_p,$$

where  $Y_p$  is permanent disposable income. Suppose that consumers estimate their permanent disposable income by a simple average of disposable income in the present and previous years:

$$Y_p = 0.5 \times (Y_d + Y_{d-1}),$$

where  $Y_d$  is disposable income this year and  $Y_{d-1}$  is disposable income last year.

- a. Suppose that disposable income is equal to \$4,000 in year 1 and is also equal to \$4,000 in year 2. What is consumption in year 2?
  - b. Suppose that disposable income increases to \$5,000 in year 3 and then remains at \$5,000 in all future years. What is consumption in years 3 and 4 and all remaining years? Explain why consumption responds the way it does to an increase in income.
  - c. What is the short-run marginal propensity to consume? What is the long-run marginal propensity to consume?
  - d. Explain why this formulation of consumption may provide a more accurate description of consumption than the simple consumption function that depends only on current income.
2. Suppose that the consumption function is given by

$$C = 270 + 0.63 \times Y - 1,000 \times R$$

rather than by the traditional consumption function. Add this consumption function to the other four equations of the macro model:

$$\begin{aligned} Y &= C + I + G + (X - IM) \\ M^s &= (0.1583 \times Y - 1,000 \times R) \times P \\ I &= 1,000 - 2,000 \times R \\ (X - IM) &= 525 - 0.1 \times Y - 500 \times R. \end{aligned}$$

Assume government spending is \$1,200 and the money supply is \$900.

- a. Derive an algebraic expression for the IS curve for this model and plot it to scale. Compare it with the IS curve with the traditional consumption function. Which is steeper, why?
- b. Derive the aggregate demand curve and plot it to scale. How does it compare with the aggregate demand curve with the traditional consumption function?

3. Suppose that actual GDP is below potential GDP, that inflation is low, and that the President and Congress want to cut taxes in order to increase aggregate demand and bring the economy back to potential.
  - a. Describe the situation using an IS-LM diagram. Show where you want the IS curve to move in order to reach potential.
  - b. In light of the forward-looking theory of consumption, describe some of the problems that might arise with the tax cut plan.
4. Explain the following puzzle: saving depends positively on the interest rate, investment depends negatively on the interest rate, and saving equals investment. How does an increase in the money supply that lowers the interest rate and thereby increases investment also increase saving? It would seem that with the lower interest rate, saving would be lower. What is going on?
5. Suppose a family wants a smooth consumption profile and does not wish to leave a bequest. Indicate how each of the following factors would affect the magnitude of the marginal propensity out of a temporary change in income.
  - a. The size of the temporary income change.
  - b. The length of the family's planning horizon.
  - c. The rate of interest.
6. Suppose that the President and the Congress agreed to raise personal income taxes by \$100 billion per year starting in 2014 in an attempt to reduce the budget deficit by 2016. However, the legislation actually increased taxes only until 2016; starting in 2017, taxes would automatically be lowered back down by \$100 billion, what would be the effect of this tax increase on consumption demand? Use the forward-looking theory of consumption to explain what the impact of the tax increase would be.