b. Over each range of income (1,000 to 1,500, 1,500 to 2,000, and so on), calculate the marginal propensity to consume. Calculate the marginal propensity to save. What is the multiplier?

c. By assuming there is no change in the level of the *MPC* and the *MPS* and planned investment jumps by 125 and is sustained at that higher level, recompute the table. What is the new equilibrium level of *Y*? Is this consistent with what you compute using the multiplier?

4.4 This chapter argues that saving and spending behavior depend in part on wealth (accumulated savings and inheritance), but our simple model does not incorporate this effect. Consider the following model of a simple economy:

$$C = 50 + 0.8Y + 0.1W$$
$$I = 200$$
$$W = 500$$
$$Y = C + I$$
$$S = Y - C$$

If you assume that wealth (*W*) and investment (*I*) remain constant (we are ignoring the fact that saving adds to the stock of wealth), what are the equilibrium levels of GDP (*Y*), consumption (*C*), and saving (*S*)? Now suppose that wealth increases by 100 percent to 1,000. Recalculate the equilibrium levels of *Y*, *C*, and *S*. What impact does wealth accumulation have on GDP? Many were concerned with the large increase in stock values in 2016 and 2017. Does this present a problem for the economy? Explain.

4.5 You are given the following data concerning Freedonia, a legendary country:

(1) Consumption function: $C = 200 + 0.8Y$
(2) Investment function: $I = 100$
(3) $AE \equiv C + I$
(4) $AE = Y$

a. What is the marginal propensity to consume in Freedonia, and what is the marginal propensity to save?

b. Graph equations (3) and (4) and solve for equilibrium income.

c. Suppose equation (2) is changed to (2′) $I = 110$. What is the new equilibrium level of income? By how much does the $10 increase in planned investment change equilibrium income? What is the value of the multiplier?

d. Calculate the saving function for Freedonia. Plot this saving function on a graph with equation (2). Explain why the equilibrium income in this graph must be the same as in part b.

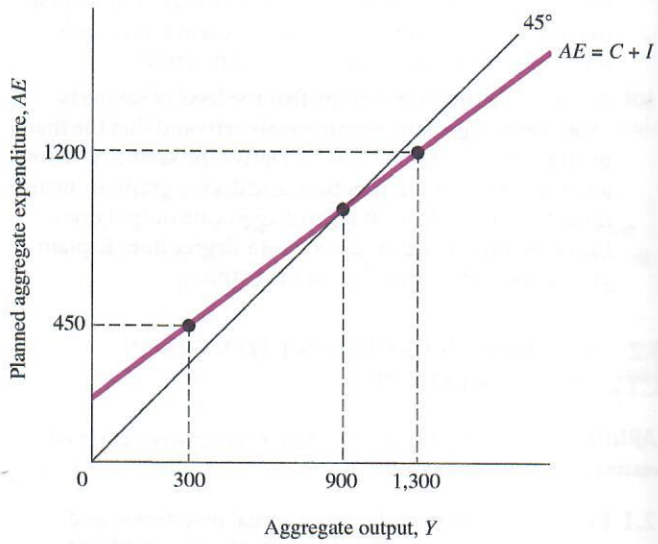
4.6 **[Related to the *Economics in Practice* on p. 475]** Suppose the economy enters an unexpected recession. What would happen to the unplanned inventory of a company like General Motors? What would happen to the unplanned inventory if the economy experiences a larger-than-expected expansion? Construct a graph that shows planned aggregate expenditure and aggregate output and identify each of these situations on the graph. What needs to happen to output in each situation to reach equilibrium?

23.5 THE MULTIPLIER

LEARNING OBJECTIVE: Describe the multiplier process and use the multiplier equation to calculate changes in equilibrium.

5.1 Explain the multiplier intuitively. Why is it that an increase in planned investment of $100 raises equilibrium output by more than $100? Why is the effect on equilibrium output finite? How do we know that the multiplier is $1/MPS$?

5.2 **[Related to the *Economics in Practice* on p. 478]** If households decide to save more, saving in the aggregate may fall. Explain this in words.



5.3 Use the graph to answer the questions that follow.

a. What is the value of the *MPC*?

b. What is the value of the *MPS*?

c. What is the value of the multiplier?

d. What is the amount of unplanned investment at aggregate outputs of 300, 900, and 1,300?

5.4 According to the Bureau of Economic Analysis, during the recession of 2008–2009, household saving as a fraction of disposable personal income increased from a low of just over 1 percent in the first quarter of 2008 to 5 percent in the second quarter of 2009. All else equal, what impact would this change in saving have on the *MPC*, *MPS*, and multiplier? How would this change affect equilibrium output when planned investment changes?