

## 22

# MACRO EQUILIBRIUM

### OVERVIEW

1. In a simple two sector economy, total spending is the spending by consumers and business. Total output is the output of the economy, real gross domestic product. We also know that total income and total output are the same. In equilibrium, total spending must equal total output.
2. If total spending is more than total output, then output will rise because consumers and business are buying more than is produced, inventories will fall, and business will increase production. Note that unemployed resources are assumed.
3. If total spending is less than total output, then output will fall because consumers and business are buying less than is produced, inventories will rise, and business will decrease production.
4. An alternate way to view equilibrium involves saving and investment. Saving is an outflow from the income stream, and investment is an inflow. If the inflow, investment, is greater than the outflow, saving, the level of income rises. When saving is greater than investment, the level of income falls. Only when investment equals saving does equilibrium occur.
5. Aggregate demand is the total demand for output at each price level. Aggregate supply is the amount produced at each price level. Equilibrium occurs at the intersection of aggregate supply and aggregate demand. This market determines the equilibrium level of price and level of income.

### MATCHING

- |       |    |                  |    |   |
|-------|----|------------------|----|---|
| _____ | 1. | total spending   | a. | the total demand for output by consumers and business at each price level |
| _____ | 2. | total output     | b. | the output of the economy   |
| _____ | 3. | equilibrium      | c. | the total output produced by the economy at each price level              |
| _____ | 4. | aggregate demand | d. | consumption plus investment   |
| _____ | 5. | aggregate supply | e. | a balance of forces   |

### TRUE-FALSE

- \_\_\_\_\_ 1. When consumption plus investment is greater than total output, then income will fall.
- \_\_\_\_\_ 2. When consumption plus investment is less than total output, then income will fall.
- \_\_\_\_\_ 3. When more flows into the bath tub than goes out the drain, the level of income will rise.
- \_\_\_\_\_ 4. If saving is greater than investment, then income falls.
- \_\_\_\_\_ 5. In equilibrium, the output and the income are the same.

### PROBLEMS

1. Suppose that we have the following information.

Y	C	I	C + I
700	590	200	
800	660	200	
900	730	200	
1000	800	200	
1100	870	200	
1200	940	200	
1300	1010	200	

- a. Find C + I by adding C to I at each Y. At Y = 700, C = 590 and I = 200. So C + I = 790. Continue for each Y.
- b. At the 800 level of income which is larger, total output or total spending? \_\_\_\_\_  
 What will happen to total output? \_\_\_\_\_ Why? \_\_\_\_\_
- c. At the 1200 level of income which is larger, total output or total spending?  
 \_\_\_\_\_ What will happen to total output? \_\_\_\_\_  
 Why? \_\_\_\_\_
- d. Where is the equilibrium level of income? \_\_\_\_\_ Why?  
 \_\_\_\_\_

2. a. Use the following information together with  $Y = C + S$  to find the amount saved at each level of income.

Y	C	S	I	C + I
700	590	110	200	
800	660		200	
900	730		200	
1000	800		200	
1100	870		200	
1200	940		200	
1300	1010		200	

- b. Find the equilibrium level of income by using  $S = I$ . \_\_\_\_\_
- c. At the 800 level of income what will happen to the level of income? \_\_\_\_\_  
 Why? \_\_\_\_\_
- d. At the 1200 level of income what will happen to the level of income? \_\_\_\_\_  
 Why? \_\_\_\_\_
- e. Find  $C + I$  at each level of income. Is  $Y = C + I$  at the same level of income where  $S = I$ ?  
 \_\_\_\_\_

#### IN THE NEWS

1. Often inventories are considered an important predictor of the economy. When inventories rise, the level of income is expected to fall. When inventories fall, the level of income is expected to rise.
- a. Why do we expect this inverse relation between inventories and the level of income?  
 \_\_\_\_\_  
 \_\_\_\_\_
- b. What happens to inventories as the level of income reaches equilibrium?  
 \_\_\_\_\_
2. The following table contains real GDP and the change in inventories for the period when real GDP last fell. A negative change in inventories means inventories decrease.<sup>1</sup>

Year	Real GDP (\$ billions)	Change in inventories
1979	1479	7.3
1980	1475	-4.4
1981	1512	11.3

<sup>1</sup> Data from *The Economic Report of the President 1985*, Table B-1, page 232, U.S. Department of Commerce, Bureau of Economic Analysis. Used by permission.  
 Study Guide for Chapter 22, *Introductory Economics*, 4<sup>th</sup> Edition, Copyright 2006,  
 Arleen and John Hoag

1982	1480	-10.4
1983	1534	-3.6

- a. In 1979 inventories went up \$7.3 billion. Would you expect GDP in 1980 to be higher or lower than in 1979? \_\_\_\_\_ Why? \_\_\_\_\_  
\_\_\_\_\_
- b. In 1980 inventories went down \$4.4 billion. Would you expect GDP in 1981 to be higher or lower than in 1980? \_\_\_\_\_ Why? \_\_\_\_\_  
\_\_\_\_\_
- c. In 1981 inventories went up \$11.3 billion. Would you expect GDP in 1982 to be higher or lower than in 1981? \_\_\_\_\_
- d. In 1982 inventories went down \$10.4 billion. Would you expect GDP in 1983 to be higher or lower than in 1982? \_\_\_\_\_
3. One problem frequently cited in the 1981 - 1982 recession was that Americans saved only a small percentage of their income. That means that there was very little investment and reduced growth because saving is a source of investment funds. The implication is that Americans should save more.
- a. What will happen to the equilibrium level of income if only saving increases?  
\_\_\_\_\_
- b. What will happen to the equilibrium level of income if only investment increases?  
\_\_\_\_\_
- c. What will happen to the equilibrium level of income if both saving and investment increase equally? \_\_\_\_\_ Why? \_\_\_\_\_  
\_\_\_\_\_
4. Some economists argue that when taxes on business fall, there will be an increase in investment. The ability to change investment by altering taxes offers a way to also change income.
- a. If taxes on business are lowered, what would happen to income? \_\_\_\_\_  
\_\_\_\_\_
- b. Explain how the level of income reaches the new equilibrium. \_\_\_\_\_  
\_\_\_\_\_
5. Consumers usually behave in predictable ways. But sometimes there will be an increase in consumption where there seems to be no reason for it. Consumers simply reduce saving and consume more.
- a. When one of these changes occurs, what happens to the consumption function?  
\_\_\_\_\_

---

b. What happens to the equilibrium level of income? Explain. \_\_\_\_\_

---

### PRACTICE TEST

Circle the correct answer.

1. Equilibrium in a world with consumers and business occurs where:
  - a.  $Y = C + I$ .
  - b. total output equals total spending.
  - c. at the full employment level of income.
  - d. both a and b.
  
2. If total spending is less than total output, income:
  - a. rises.
  - b. falls.
  - c. does not change.
  - d. not enough information to tell.
  
3. What is the result if  $Y = 1600$ ,  $C = 400$ , and  $I = 1,000$ ?
  - a. Shortage
  - b. Surplus
  - c. Falling inventories
  - d. Rising income
  
4. In a world of only consumers and business, if investment is less than saving, then:
  - a. income rises.
  - b. income falls.
  - c. income does not change.
  - d. there is not enough information to tell.
  
5. Aggregate demand and aggregate supply together determine:
  - a. the price level.
  - b. the level of output.
  - c. both a and b.
  - d. none of the above.

### ANSWERS

#### Matching

1. d
2. b
3. e

4. a
5. c

True-False

1. F
2. T
3. T
4. T
5. T

Problems

1.a.	Y	C	I	C + I
	700	590	200	790
	800	660	200	860
	900	730	200	930
	1000	800	200	1000
	1100	870	200	1070
	1200	940	200	1140
	1300	1010	200	1210

- b. At the 800 level of income total spending,  $C + I$ , is larger than total output,  $Y$ . Total output will rise. Since more is spent than is produced, inventories will fall, and firms will increase production. Thus total output rises.
- c. At the 1200 level of income, total output,  $Y$ , is larger than total spending,  $C + I$ . Total output will fall. Since less is spent than is produced, inventories will rise, and firms will decrease production. Thus total output falls.
- d. The equilibrium level of income is 1000 because only at that level of income does total spending equal total output. There is no increase or decrease in inventories and thus no reason for business to adjust production.

2. a.	Y	C	S	I	C + I
	700	590	110	200	790
	800	660	140	200	860
	900	730	170	200	930
	1000	800	200	200	1000
	1100	870	230	200	1070
	1200	940	260	200	1140
	1300	1010	290	200	1210

- b. The equilibrium level of income occurs at 1000 where  $S = I$ .
- c. At 800, the amount saved is less than the amount invested so that outflows are less than inflows, and the level of income rises.
- d. At 1200, the amount saved is more than the amount invested so that outflows are more than inflows, and the level of income falls.

- e. The equilibrium level of income is where both  $S = I$  and  $Y = C + I$  occurs. These conditions occur at the same 1000 level of income.

### In the News

- 1.a. When inventories go up, it is a signal to firms to reduce production. That means that firms will lay off workers and output falls. When inventories go down, it is a signal to firms to increase production. That means that firms will employ more workers and output rises.
  - b. Once equilibrium is reached, there is no change in inventories. Firms are producing just exactly the amount purchased, since there is no change in inventories, and firms have no incentive to reduce or increase the level of production.
- 2.a. Lower. When inventories go up, firms will reduce production and the output will fall.
  - b. Higher. When inventories go down, firms will increase production and the output will rise.
  - c. Lower.
  - d. Higher.
- 3.
  - a. By saving more, there is more outflow so that the level of income will fall.
  - b. By investing more, there is more inflow so that the level of income will rise.
  - c. The equilibrium level of income remains unchanged when investment and saving increase equally. This is because the inflow and outflow are equal.
- 4.a. When taxes are lowered, the assumption is that business has more to spend and investment rises. That means that there is more inflow and the level of income rises.
  - b. By increasing investment, there is more inflow. Thus the level of income goes up. But since saving goes up as income goes up, saving will also rise. If saving is still less than investment, the inflow is still larger than the outflow, so income goes up again, and so does saving. This process will continue until saving and investment are equal.
- 5.
  - a. The consumption function will increase.
  - b. When consumption goes up, income will go up. There is a larger amount of spending and firms produce more to maintain inventories. So the level of income and output will rise.

### Practice Test

1.d., 2.b., 3.b., 4.b., 5.c.