

## Chapter 11

# MONEY AND MONETARY POLICY

*Essentials of Economics in Context* (Goodwin, et al.), 1<sup>st</sup> Edition

### Chapter Overview

In this chapter, you will be introduced to a standard treatment of money and monetary policy. You will get an overview of the relationship between money and the average price level, and will learn about the role and functions of money, different types of money, and the concept of liquidity as it applies to money. You will learn about the role of the Federal Reserve and how the decisions made at the Fed impact the macroeconomy. You will be introduced to the market for federal funds, and learn how the Federal Reserve attempts to expand or cool off the economy using monetary policy. You will also be introduced to the quantity equation, the quantity theory of money, and monetarism.

### Objectives

After reading and reviewing this chapter, you should be able to:

1. Describe the functions and types of money.
2. Describe the measures of the money supply and explain the liquidity continuum.
3. Explain how banks create money.
4. Understand the basic workings of central banks.
5. Describe the tools the Federal Reserve can use to carry out monetary policy.
6. Understand how the Fed uses open market operations to influence the federal funds rate.
7. Explain how monetary policy is expected to affect investment and aggregate demand.
8. Become familiar with the notions of “liquidity trap” and “credit rationing.”
9. Understand the quantity equation, the quantity theory of money, and monetarism.

### Key Terms

monetary policy	barter
liquidity	credit money
commodity money	exchange value
intrinsic value	gold standard
fiat money	M1
M2	financial intermediary
Liability	bank reserves
fractional reserve system	required reserves
excess reserves	open market operations
Federal Open Market Committee (FOMC)	monetary base
money multiplier	discount rate
quantitative easing (QE)	federal funds rate

accelerator principle  
accommodative monetary policy  
liquidity trap  
quantity equation  
quantity theory of money  
money supply rule  
modern monetary theory

expansionary monetary policy  
contractionary monetary policy  
credit rationing  
velocity of money  
monetary neutrality  
monetarism

## Active Review

### *Fill in the Blank*

1. The fact that money can be immediately used in exchange, whereas valuable jewelry cannot, illustrates the fact that money is very \_\_\_\_\_.
2. The measure of the money supply that includes currency in circulation, traveler's checks, and checking accounts is called \_\_\_\_\_.
3. When something contains *intrinsic value* and also serves as a medium of exchange it is known as \_\_\_\_\_.
4. The \_\_\_\_\_ definition of the money supply is broad enough to include savings deposits as well as checkable deposits and currency.
5. A medium of exchange that is valuable because a government says that it has value is known as \_\_\_\_\_.
6. The portion of bank reserves that a bank must keep on reserve are known as \_\_\_\_\_.
7. The portion of bank reserves that banks are permitted to lend or invest are known as \_\_\_\_\_.
8. When the Federal Open Market Committee (FOMC) directs the Federal Reserve Bank in New York to buy or sell government bonds on the open market, it is conducting \_\_\_\_\_.
9. The ratio of the money supply to the monetary base is called the \_\_\_\_\_, and in the U.S. is empirically estimated to have a value close to two.
10. The interest rate that the Fed charges banks on loans it makes to banks so they can to meet their reserve requirements is called the \_\_\_\_\_.
11. The interest rate that banks pay one another when they borrow on an overnight basis is called the \_\_\_\_\_.

12. When interest rates are so low that the Central Bank finds it impossible to lower them any further, the economy is in a \_\_\_\_\_.
13. In cases where inflation is a significant problem and the banking system is unstable, it is useful to use the \_\_\_\_\_, which analyzes the relationships between the money supply, the velocity of money, the price level, and real output.
14. The theory that assumes that the velocity of money is constant in the equation  $M \times V = P \times Y$  is the \_\_\_\_\_.
15. \_\_\_\_\_ is the idea that changes in the money supply may affect only prices, while leaving output unchanged.

*True or False*

16. When a government finances its expenditures by printing money rather than collecting taxes, this can lead to “too much money chasing too few goods” and hyperinflation.
17. Nelson takes a \$100 bill he had in his wallet and deposits it into his checking account. Thus, M1 increases by \$100.
18. A contractionary or “tight” money policy entails a decrease (or fall in the growth rate of) the money supply, M1, leading to a lower interest rate.
19. When the Fed conducts open market operations, it is either trying to keep the federal funds rate at its existing level, or trying to push the federal funds rate up or down.
20. Quantitative easing refers to the purchase of a diverse collection of financial assets to increase the money supply.

*Short Answer*

21. What are the three roles of money? And what are two types of money?
  
22. Explain the difference between *required reserves* and *excess reserves*.

23. Identify the three tools of monetary policy, and what the Fed would do to increase (or decrease) the (growth of the) money supply.
24. Explain the sequence of links connecting an expansionary monetary policy with interest rates, intended investment, aggregate demand, and output.
25. Suppose the economy is characterized by inflation problems and an unstable banking system. Use the quantity equation,  $M \times V = P \times Y$ , to answer the following questions:
- What assumptions does the classical theory make about the variables in the quantity equation?
  - What assumptions does monetarist theory make about the variables?
  - What assumptions do Keynesian-oriented theories make?
  - How does monetarist theory use the quantity equation to explain the deflation and fall in output in the U.S. during the Great Depression?
  - How might a Keynesian-oriented theorist use the quantity equation to explain the cause of hyperinflation?
  - Provide two cases where inflation is caused by some factor other than an increase in the money supply.

## Problems

1. Jane Doe has the following assets.

\$100 in her wallet

\$800 in her checking account

\$1,000 in her savings account

A \$20 traveler's check from her last business trip to China.

A \$300 outstanding credit card bill.

\$3,000 in a small certificate of deposit

A car worth \$5,000.

A house, worth \$200,000.

- a. Identify which are in M1, which are in M2, or in neither M1 nor M2.
- b. Suppose she takes the \$100 in her wallet and deposits it in her checking account. What is the change in M1 and M2?
- c. Suppose she takes \$400 from her checking account and deposits it in her savings account. What is the change in M1 and M2?

2. Suppose the Fed buys \$5 million worth of government bonds from TrustMe bank.

- a. How does the purchase of government bonds affect TrustMe bank's reserves?
- b. How much in new loans can TrustMe Bank make, after the Fed makes this purchase? (Assume the borrowers deposit the amount they borrow in other banks.)
- c. Assume that when the new loans are deposited in other banks in the banking system, all these banks loan out all of their excess reserves. Assume further that the money multiplier equals 2. By how much has the money supply increased from the Fed's bond purchase?

3. Suppose the Fed conducts an expansionary monetary policy. (Assume an economy with low inflation and a stable banking system). Illustrate graphically the effects of this expansionary monetary policy on:

a) The market for federal funds

b) Investment spending

### Self Test

1. Hyperinflation ...

- a. is often defined as any annual inflation rate higher than 10 percent.
- b. describes the German economy after World War II.
- c. can become so severe that people resort to barter.
- d. means that people tend to save money much more aggressively.
- e. none of these statements is accurate.

2. Which of the following is NOT a function of money?

- a. A hedge against inflation.
- b. A unit of account.
- c. A store of value.
- d. A medium of exchange.
- e. All of these are functions of money.

3. Which of the following is NOT a type of money described in the textbook?

- a. Fishhooks as money.
- b. Fiat money.
- c. Commodity money.
- d. Silver coins as money.
- e. All of these are types described in the text.

4. Which of these sequences best captures the liquidity continuum?
- Checking accounts, precious metal, real estate, share of stock
  - Checking accounts, precious metal, share of stock, real estate
  - Checking accounts, share of stock, precious metal, real estate
  - Checking accounts, share of stock, real estate, precious metal
  - Precious metal, checking accounts, share of stock, real estate
5. Which of the following is *not* one of the characteristics necessary for commodity money to be used as money?
- It must be durable.
  - It must be portable.
  - It must be generally acceptable.
  - It must be differentiated.
  - It must be scarce.
6. Which of the following is *not* included as “money” in M1?
- Currency in circulation
  - Checkable deposits
  - Traveler’s checks
  - The use of a credit card
  - The use of debit cards that take funds from a checking account
7. Suppose Tabatha takes \$500 from her savings account and deposits it in her checking account. What is the change in M1 and M2?
- M1 increases and M2 decreases
  - M1 increases and M2 remains unchanged
  - M1 and M2 both increase
  - M2 increases and M1 remains unchanged
  - M1 and M2 both remain unchanged
8. Which of the following is NOT a component of the M2 definition of the money supply?
- Certificates of deposit
  - Checking account deposits
  - Retail money market funds
  - Travelers checks
  - All of these are components of the M2 definition of the money supply.

9. Which of the following is *not* one of the functions of the Federal Reserve?
- Performing banking functions for private banks
  - Issuing Treasury bills and bonds
  - Regulating banks
  - Promoting confidence and stability in the financial sector
  - Conducting monetary policy.
10. An open market purchase by the Fed
- increases bank reserves, loans, and deposits, and thus increases the money supply.
  - decreases bank reserves, loans, and deposits, and thus decreases the money supply.
  - increases bank reserves, loans, and deposits, and thus decreases the money supply.
  - decreases bank reserves, loans, and deposits, and thus increases the money supply.
  - None of the above.
11. Suppose the Fed buys \$15 million worth of government bonds from Richland bank. Which of the following is Richland Bank most likely to do?
- Reduce its outstanding loans by \$15 million.
  - Borrow more reserves at the “discount window”
  - Borrow more reserves from other banks.
  - Make new loans totaling about \$15 million.
  - None of the above
12. Suppose the Fed makes an open market purchase of \$3 million. Assume that the money multiplier equals 2. What is the change in the money supply?
- The money supply has increased by \$1.5 million.
  - The money supply has increased by \$6 million.
  - The money supply had decreased by \$1.5 million.
  - The money supply has decreased by \$6 million.
  - None of the above.
13. Suppose the Fed makes an open market sale of \$8 million in bonds. Assume the money multiplier is equal to 2. What is the change in the money supply?
- The money supply has increased by \$4 million.
  - The money supply has decreased by \$4 million.
  - The money supply has increased by \$16 million.
  - The money supply has decreased by \$16 million.
  - None of the above.



14. Which of the following is *not* one of the Fed's monetary policy tools?
- Buying bonds on the open market
  - Selling bonds on the open market
  - Raising or lowering taxes
  - Raising or lowering the reserve requirement ratio
  - Raising or lowering the discount rate
15. Suppose the Fed wanted to engage in an expansionary monetary policy. Which of the following should it do?
- Sell bonds on the open market.
  - Increase the reserve requirement ratio.
  - Increase the discount rate.
  - Buy bonds on the open market.
  - Lower taxes.
16. Which of the following best describes the sequence of events in the conduct of contractionary monetary policy using open market operations (in an economy with low inflation and a stable banking system)?
- The Fed raises the interest rate, which leads to a decrease in intended investment spending and a decrease in the supply of federal funds, which decreases aggregate expenditure and output.
  - The Fed decreases intended investment spending, which leads to a decrease in aggregate expenditure and output, and a decrease in the supply of federal funds and the interest rate.
  - The Fed sells bonds, which decreases the supply of federal funds, which raises the interest rate, which leads to a decrease in intended investment spending, aggregate expenditure and output.
  - The Fed buys bonds, which increases the supply of federal funds, which lowers the interest rate, and leads to a decrease in intended investment spending and aggregate expenditure and output.
  - The Fed lowers the interest rate, which leads to an increase in intended investment spending and an increase in the supply of federal funds, which decreases aggregate expenditure and output.
17. During a liquidity trap,
- as the Fed increases the money supply, the interest rate falls significantly.
  - increases in the money supply have no effect on the interest rate.
  - as the Fed increases the money supply, the interest rate rises substantially.
  - once the Fed increases the money supply, it can no longer control it, which leads to hyperinflation.
  - monetary policy is highly effective in expanding the economy

18. Which theory (or theories) assumes that the velocity of money is *not* constant, in the quantity equation  $M \times V = P \times Y$ ?
- a. Classical theory
  - b. Monetarist theory
  - c. Keynesian-influenced theories
  - d. The theory expounded by Milton Friedman and Anna Jacobson Schwartz
  - e. None of the above

**For the next two questions, consider the following choices:**

- I. the Classical theory**
- II. Monetarism**
- III. Keynesian-oriented theories**

19. Which of the above theories would be in agreement with the following statement?  
“The Fed should not use interventionist monetary policy, but should adopt a money supply rule such that the money supply is only allowed to grow at a steady rate -- the same rate as real GDP.”
- a. I
  - b. II
  - c. III
  - d. I and II
  - e. I, II, and III
20. Which of the above theories would be in agreement with the following statement?  
“Inflation is always and everywhere a monetary phenomenon.”
- a. I
  - b. II
  - c. III
  - d. I and II
  - e. I, II, and III

## Answers to Active Review Questions

1. liquid
2. M1
3. commodity money
4. M2
5. fiat money
6. required reserves
7. excess reserves
8. open market operations
9. money multiplier
10. discount rate
11. federal funds rate
12. liquidity trap
13. quantity equation
14. quantity theory of money
15. monetary neutrality
16. True.
17. False, M1 remains unchanged. There has just been a change in the composition of M1, but the size of M1 remains the same.
18. False. With “tight” policy, the interest rate *rises*.
19. True.
20. True
21. The three roles of money are: medium of exchange, store of value, and unit of account. Two types of money are commodity money and fiat money. Commodity money is a good that is used as money that is also valuable in itself. Fiat money is a medium of exchange used as money because the government declares it as such and people accept it.
22. Banks generate much of their profit from the use of other peoples’ money. Checking account deposits entrusted to banks are also known as “demand deposits” because the depositors have access to their money whenever they want. Consequently banks are obligated to hold a minimal portion of these deposits in liquid reserves. This portion is a percentage (set by the Federal Reserve in the U.S.) of total deposits and is known as **required reserves**. All of the reserves a bank has beyond this category of required reserves are referred to as **excess reserves**.
23. The three tools of monetary policy are: open market operations (buying and selling of bonds), discount rate, and reserve requirement. To increase the (growth of the) money supply, the Fed could either buy bonds, lower the reserve requirement ratio, or lower the discount rate. To decrease the (growth of the) money supply, the Fed could either sell bonds, raise the reserve requirement ratio, or raise the discount rate.
24. An expansionary monetary policy will lower interest rates, which tends to encourage intended investment, leading to an increase in aggregate expenditure and output (GDP).
25. a. Classical theory assumes that velocity is constant, and that the economy is always constant at the full employment level of income.  
b. Monetarism also assumes that velocity is constant, but relaxes the assumption that the economy is always constant at full employment, and believes that output can

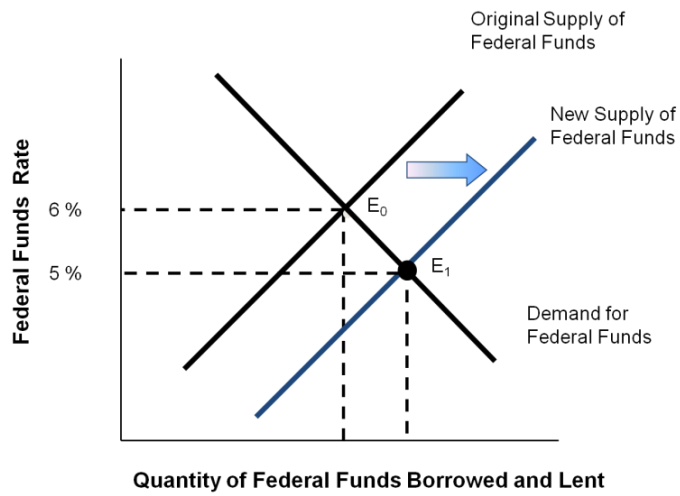
- fall with bad monetary policy.
- c. Keynesian-oriented theories assume none of the variables (in particular neither velocity or output) are constant.
  - d. The monetarists thought that the bad monetary policy of decreasing the money supply caused both a drop in the price level (deflation) and a fall in output during the Great Depression.
  - e. A dramatic rise in the money supply (especially if the central bank is monetizing deficits) and/or the velocity of money could trigger hyperinflation.
  - f. Inflation could be caused by an increase in the velocity of money, or by rise in prices of imports.

### Answers to Problems

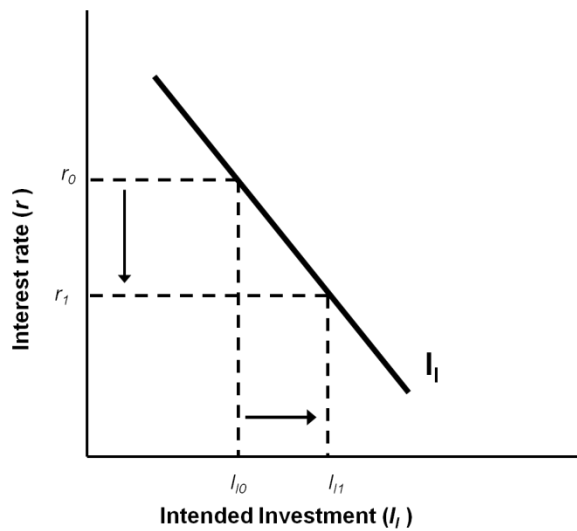
1.
  - a. The following are in M1, M2, or neither:
    - \$100 in her wallet = M1
    - \$800 in her checking account = M1
    - \$1,000 in her savings account = M2
    - A \$20 traveler's check from her last business trip to China = M1
    - A \$300 outstanding credit card bill = Neither
    - \$3,000 in a small certificate of deposit = M2
    - A car worth \$5,000 = Neither
    - A house, worth \$200,000 = Neither
  - b. M1 and M2 remain unchanged, since both cash and checking account deposits are counted in both M1 and M2.
  - c. M1 decreases by \$400, and M2 remains unchanged.
2.
  - a) TrustMe Bank's reserves increases by \$5 million when the Fed purchases \$5 million worth of bonds from it.
  - b. \$5 million
  - c.  $\$5 \text{ million} \times 2 = \$10 \text{ million}$

3. Effects of an expansionary monetary policy:

a.



b.



### Answers to Self Test Questions

- |       |       |
|-------|-------|
| 1. C  | 11. D |
| 2. A  | 12. B |
| 3. E  | 13. D |
| 4. C  | 14. C |
| 5. D  | 15. D |
| 6. D  | 16. C |
| 7. B  | 17. B |
| 8. E  | 18. C |
| 9. B  | 19. D |
| 10. A | 20. D |