Chapter 11

MONEY AND MONETARY POLICY

Essentials of Economics in Context (Goodwin, et al.), 2nd 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 in responding to inflation and recessions and introduced to monetary policy under the 'limited reserves' and the 'ample reserves' systems. You will also get an overview of classical, Keynesian and monetarist policies in the final section.

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 operates under the ample reserves system to influence 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
nonbank financial institution
financial
intermediary
liability
bank reserves
fractional reserve system
required reserves
excess reserves
open market operations
Federal Open Market Committee (FOMC)
monetary base

money multiplier
federal funds rate
quantitative easing (QE)
discount rate
interest on reserves balances (IORB) rate
reservation rate
arbitrage
overnight reverse repurchase agreement (ON RRP) rate
administered interest rate
accelerator principle
expansionary monetary policy
accommodative monetary policy
contractionary monetary policy
liquidity trap
credit rationing
quantity equation
velocity of money
quantity theory of money
monetary neutrality
money supply rule
monetarism
modern monetary theory

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, checkable deposits, and other liquid accounts such as savings, credit union share accounts, and money market 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 M1 plus small certificates of deposit and retail money market funds.

5. A medium of exchange that is valuable because a government says that it has value is known as _____.

6. _____ refers to buying a financial asset in the hope of exploiting changes in its future price to achieve short-term financial gains.

7. The portion of bank reserves that a bank must keep on reserve are known as _____.

8. The portion of bank reserves that banks are permitted to lend or invest are known as _____.

9. 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 _.

10. 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.

11. 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 _____.

12. The interest rate that banks pay one another when they borrow on an overnight basis is called the _____.

13. The interest paid by the Fed to banks on funds that banks hold at the Fed is called _____.

14. When interest rates are so low that the Central Bank finds it impossible to lower them any further, the economy is in a _____.

15. 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.

16. The theory that assumes that the velocity of money is constant in the equation $M \times V = P \times Y$ is the _____.

17. _____ is the idea that changes in the money supply may affect only prices, while leaving output unchanged.

True or False

18. 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.

19. Nelson takes a $100 bill he had in his wallet and deposits it into his checking account. Thus, M1 increases by $100.

20. A contractionary or "tight" money policy entails a decrease in the IORB rate to lower the federal funds rate.

21. When the Fed conducts open market operations, it is either buys or sells U.S. Treasury bonds to influence the level of money supply in the economy.

22. Quantitative easing refers to the purchase of a diverse collection of financial assets to increase the money supply.

Short Answer

23. What are the three roles of money? And what are two types of money?

24. Identify the three tools of monetary policy under the limited reserves monetary system. How did the Fed influence interest rates in this system?

25. What new tools were introduced with the Federal Reserve's ample reserve monetary system?

26. Describe monetary policy under the ample reserves monetary system.

27. Explain the sequence of links connecting an expansionary monetary policy with interest rates, investment, aggregate demand, and output.

28. 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:

a. What assumptions does the classical theory make about the variables in the quantity equation?

b. What assumptions does monetarist theory make about the variables?

c. What assumptions do Keynesian-oriented theories make?

d. How does monetarist theory use the quantity equation to explain the deflation and fall in output in the U.S. during the Great Depression?

e. How might a Keynesian-oriented theorist use the quantity equation to explain the cause of hyperinflation?

f. 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 $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 puts it in a small certificate of deposit. 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 in a monetary system with ample reserves. (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 be 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?

   a. Checking accounts, precious metal, real estate, share of stock
   b. Checking accounts, precious metal, share of stock, real estate
   c. Checking accounts, share of stock, precious metal, real estate
   d. Checking accounts, share of stock, real estate, precious metal
   e. 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?

   a. It must be durable.
   b. It must be portable.
   c. It must be generally acceptable.
   d. It must be differentiated.
   e. It must be scarce.

6. Which of the following is not a function of the financial system?

a. to intermediate the movement of funds between savers and investors
b. to facilitate investment in financial assets
c. to support speculation in financial markets
d. to reduce risks associated with creation of asset bubbles
e. All of the above are key functions of the financial sector

7. Suppose Tabatha takes $500 from her savings account and deposits it in her checking account. What is the change in M1 and M2?

a. M1 increases and M2 decreases
b. M1 increases and M2 remains unchanged
c. M1 and M2 both increase
d. M2 increases and M1 remains unchanged
e. M1 and M2 both remain unchanged

8. Which of the following is *not* one of the functions of the Federal Reserve?

a. Performing banking functions for private banks
b. Issuing Treasury bills and bonds
c. Regulating banks
d. Promoting confidence and stability in the financial sector
e. Conducting monetary policy.

9. An open market purchase by the Fed

a. increases bank reserves, loans, and deposits, and thus increases the money supply.
b. decreases bank reserves, loans, and deposits, and thus decreases the money supply.
c. increases bank reserves, loans, and deposits, and thus decreases the money supply.
d. decreases bank reserves, loans, and deposits, and thus increases the money supply.
e. None of the above.

10. Suppose the Fed buys $15 million worth of government bonds from Richland bank. Which of the following is Richland Bank most likely to do?

a. Reduce its outstanding loans by $15 million.
b. Borrow more reserves at the “discount window”
c. Borrow more reserves from other banks.
d. Make new loans totaling about $15 million.
e. None of the above

11. Which of the following is *not* one of the Fed's monetary policy tools?

    a. Buying bonds on the open market
    b. Selling bonds on the open market
    c. Raising or lowering taxes
    d. Raising or lowering the reserve requirement ratio
    e. Raising or lowering the discount rate

12. Why did the Fed switch to an ample reserves monetary system after the 2008 crisis?

    a. because there was a bank run in 2008
    b. because of a change in banking regulations that did not allow the Fed to buy and sell Treasury bonds
    c. because flooding the banking system with money after the 2008 crisis meant that changes in money supply could no longer affect fed funds rate
    d. because the discount rate fell to zero percent after the crisis
    e. All of the above.

13. Under the ample reserves system, when the Fed wants to raise the federal funds rate it:

    a. Lowers the reserve requirement
    b. Increases the IORB rate and the ON RRP rate
    c. Sells Treasury bonds on the open market
    d. Lowers the discount rate
    e. Both (a) and (d)

14. Which of the following is not an example of an administered rate?

    a. Interest on Reserve Balances (IORB) rate
    b. Discount rate
    c. Overnight Reverse Repurchase Agreement (ON RRP) rate
    d. Federal funds rate
    e. None of the above.

15. Suppose the Fed wanted to engage in an expansionary monetary policy. Which of the following should it do?

    a. Increase the ON RRP rate.
    b. Increase the reserve requirement ratio.
    c. Increase the discount rate.
    d. Lower the IORB rate.
    e. Lower taxes.

16. Which of the following best describes the sequence of events in the conduct of contractionary monetary policy in the ample reserves monetary system (in an economy with low inflation and a stable banking system)?

a. The Fed raises the IORB rate, which leads to an increase in the fed funds rate and a decrease in investment spending, which decreases aggregate demand and output.
b. The Fed decreases investment spending, which leads to a decrease in aggregate demand and output, and a decrease in the federal funds rate.
c. The Fed lowers the discount rate, which decreases the fed funds rate, which leads to a decrease in investment spending, aggregate demand and output.
d. The Fed buys bonds to lower fed funds rate which leads to a decrease in investment spending and aggregate demand and output.
e. The Fed lowers the ON RRP rate, which leads to an increase in investment spending and a decline in aggregate demand and output.

17. During a liquidity trap,

a. as the Fed increases the money supply, the interest rate falls significantly.
b. increases in the money supply have no effect on the interest rate.
c. as the Fed increases the money supply, the interest rate rises substantially.
d. once the Fed increases the money supply, it can no longer control it, which leads to hyperinflation.
e. 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. speculation
7. required reserves
8. excess reserves
9. open market operations
10. money multiplier
11. discount rate
12. federal funds rate
13. interest on reserves balances (IORB) rate
14. liquidity trap
15. quantity equation
16. quantity theory of money
17. monetary neutrality
18. True.
19. False, M1 remains unchanged. There has just been a change in the composition of M1, but the size of M1 remains the same.
20. False. With "tight" policy, the interest rate *rises*.
21. True.
22. True
23. 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.
24. The three tools of monetary policy under the limited reserves monetary system are: open market operations (buying and selling of bonds), discount rate, and reserve requirement. In this system, the Fed could increase the (growth of) money supply by either buying bonds (open market operations), lowering the reserve requirement ratio, or lowering the discount rate. With increased money supply, federal funds rate would decline. If, instead, the Fed lowered the (growth of the) money supply by either selling bonds, raising the reserve requirement ratio, or raising the discount rate, the federal funds rate would increase.
25. Two new interest rates—the interest on reserves balances (IORB) rate and the overnight reverse repurchase agreement (ON RRP) rate—were introduced in the Fed's toolbox with its ample reserves monetary system. The IORB rate is the rate paid by the Fed to banks on funds that banks hold at the Fed, whereas the ON RRP rate is the interest earned on deposits made by financial institutions, other than banks, for their deposits at the Fed.
26. Under the ample reserves monetary system, the Fed directly steers the federal funds rate by changing its administered interest rates—the discount rate which sets the upper bound on the fed funds rate, and the IORB rate and the ON RRP rate that set the lower bound on the fed funds rate. An expansionary monetary policy involves

lowering the administered rates to lower the fed funds rate and stimulate aggregate demand, while a contractionary policy involves raising the administered rates to increase the fed funds rate and lower aggregate demand.

27. An expansionary monetary policy will lower interest rates, which tends to encourage intended investment, leading to an increase in aggregate demand and output (GDP).

28. 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 = 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.

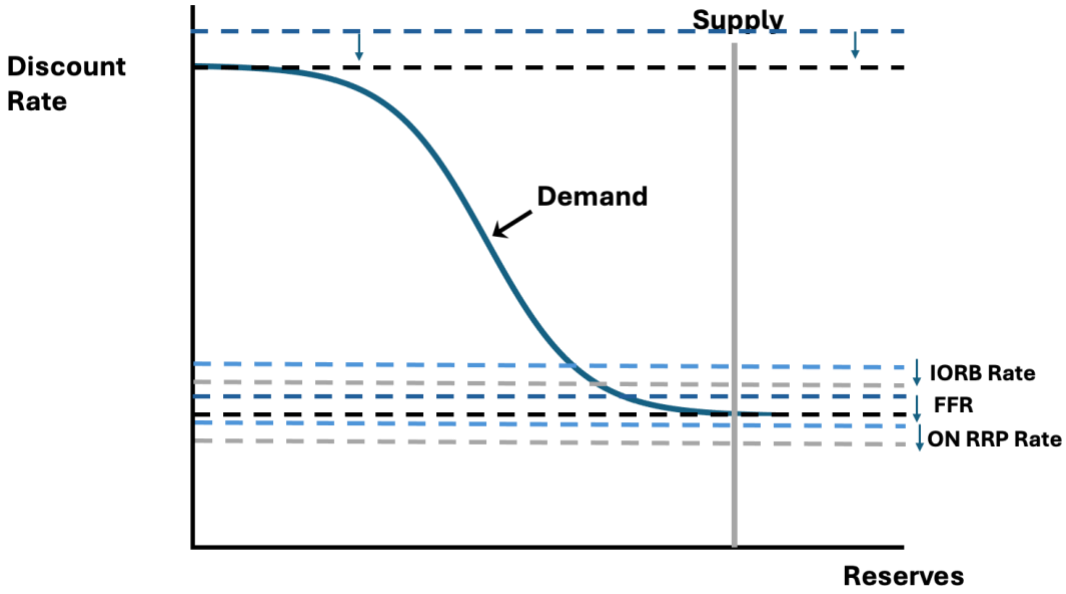
2.

a) TrustMe Bank's reserves increases by $5 million when the Fed purchases $5 million worth of bonds from it.

b. $5 million

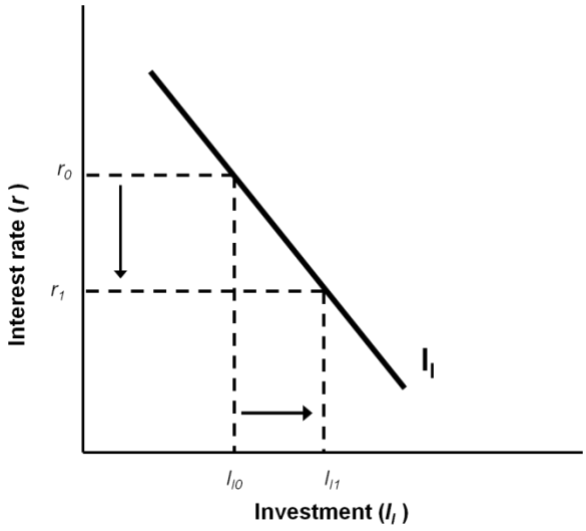
c. $5 million × 2 = $10 million

3. Effects of an expansionary monetary policy:
a. Expansionary monetary policy involves lowering the administered rates (discount rate, IORB rate and ON RRP rate) to steer the federal funds rate (FFR) downwards.



*Note the blue lines represent the values of interest rates before the expansionary policy, and the black and grey lines represent the new interest rates after the policy has been implemented.

b.



Answers to Self Test Questions

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