Chapter 14

MONETARY POLICY

FUNDAMENTAL QUESTIONS

1. What does the Federal Reserve do?

The Federal Reserve is the central bank of the United States. As such, the Fed accepts deposits from and makes loans to financial institutions, acts as a banker for the federal government, supervises the banking system, and controls the money supply.

The **Federal Open Market Committee (FOMC)** is the policymaking body of the Federal Reserve. It consists of the seven-member Federal Reserve Board and five of the twelve Federal Reserve Bank presidents, who serve on a rotating basis. The FOMC issues directives to the Federal Reserve Bank of New York, which implements its directives.

2. How is monetary policy set?

The Fed's ultimate policy objective is economic growth with stable prices, but it cannot control output or the price level directly. Instead, the Fed uses the money supply as an intermediate target. It controls the money supply, which in turn affects real GDP and the level of prices.

3. What are the tools of monetary policy?

The tools of monetary policy are the **reserve requirement, the discount rate, and open market operations.** The reserve requirement is the percentage of deposits that financial institutions must keep on hand or at the Fed. The higher the reserve requirement, the smaller the amount of deposits banks can create and the smaller the money supply. The discount rate is the rate of interest the Fed charges banks. If the Fed wants to increase the money supply, it lowers the discount rate. Open market operations are the buying and selling of bonds to change the money supply. The Fed buys bonds if it wants to increase the money supply and sells bonds to decrease the money supply. Open market operations are the Fed's most important tool.

4. What role do central banks play in the foreign exchange market?

Central banks may intervene in the foreign exchange market to stabilize or change exchange rates. For example, the Fed might buy francs to bolster the price of the franc if U.S. goods and services became too expensive for the French.

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5. What are the determinants of the demand for money?

There are three aspects to the demand for money. Consumers and firms demand money in order to conduct transactions (the **transactions demand for money**), to take care of emergencies (the **precautionary demand for money**), and to be able to take advantage of a fall in the price of an asset that they want (the **speculative demand for money**).

The amount of money held depends on the interest rate and nominal income. Increases in nominal income generate a greater volume of transactions, so more money is needed. The demand for money is therefore positively related to nominal income. The interest rate is the opportunity cost of holding money. A higher interest rate means that it costs more to hold money, so less money will be held. The demand for money is negatively related to the interest rate.

6. How does monetary policy affect the equilibrium level of real GDP?

Monetary policy refers to controlling the money supply. An increase in the money supply decreases interest rates, which increases consumption and investment. The increases in consumption and investment increase aggregate demand, which increases the equilibrium level of real GDP. A decrease in the money supply increases interest rates, which decreases consumption and investment. The decreases in consumption and investment decrease aggregate demand, which decreases the equilibrium level of real GDP. So increases in the money supply are expansionary, whereas decreases in the money supply are contractionary.

Key Terms

Federal Open Market Committee (FOMC)
intermediate target
equation of exchange
velocity of money
quantity theory of money
FOMC directive
legal reserves
federal funds rate
discount rate
open market operations
foreign exchange market intervention
sterilization
transactions demand for money
precautionary demand for money
speculative demand for money

Quick-Check Quiz

Section 1: The Federal Reserve System

1. Which of the following is *not* a function of the Fed?
   a. accepting deposits from banks
   b. making loans to banks
   c. controlling taxes
   d. acting as a banker for the federal government
   e. controlling the money supply

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2. The __________ is/are the policymaking entity of the Fed.
   a. Federal Reserve chairman
   b. Federal Reserve Board
   c. twelve Federal Reserve district banks
   d. twelve Federal Reserve Bank presidents
   e. FOMC

3. The Fed's most important function is
   a. providing services to the banking community.
   b. controlling the money supply.
   c. supervising the banking community.
   d. clearing checks.
   e. holding bank reserves.

Section 2: Implementing Monetary Policy

1. The ultimate goal of monetary policy is
   a. economic growth with stable prices.
   b. stable exchange rates.
   c. stable interest rates.
   d. a low federal funds rate.
   e. steady growth in bank reserves.

2. According to the equation of exchange,
   a. if the money supply increases and velocity is constant, real GDP must rise.
   b. if the money supply increases and velocity is constant, nominal GDP must rise.
   c. an increase in the money supply causes an increase in the price level.
   d. an increase in the money supply causes an increase in real GDP and higher prices.
   e. if the money supply increases, nominal GDP must rise.

3. To increase the money supply, the Fed could
   a. increase the reserve requirement and the discount rate, and sell bonds.
   b. increase the reserve requirement and the discount rate, and buy bonds.
   c. decrease the reserve requirement and the discount rate, and sell bonds.
   d. decrease the reserve requirement and the discount rate, and buy bonds.
   e. increase the reserve requirement, decrease the discount rate, and buy bonds.

4. Consider the First National Bank of Rozzelle. The bank has deposits of $600,000, loans of $500,000, vault cash of $30,000, and deposits at the Fed of $70,000. The reserve requirement is 4 percent. The bank's legal reserves are __________, and excess reserves are __________. The deposit expansion multiplier is __________, and the banking system could create a maximum of __________ in new money.
   a. $30,000; $6,000; 25; $150,000
   b. $30,000; $26,000; 25; $650,000
   c. $100,000; $96,000; 25; $2,400,000
   d. $100,000; $76,000; 4; $304,000
   e. $100,000; $76,000; 25; $1,900,000

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5. If the Fed wants to decrease the money supply, it can
   a. buy bonds.
   b. sell bonds.
   c. lower the reserve requirement.
   d. lower the federal funds rate.
   e. lower the discount rate.

6. Suppose that the U.K. pound is currently equivalent to $1.596 and that the Fed wants the dollar to depreciate versus the pound. The Fed will most likely
   a. buy dollars.
   b. buy pounds.
   c. sell dollars.
   d. sell pounds.
   e. ask the U.K. central bank to buy pounds.

7. If the Fed intervened in the foreign currency market to buy another currency, the domestic money supply would __________ and the Fed might __________ bonds to offset its foreign currency operations. This process is called __________.
   a. decrease; buy; sterilization
   b. decrease; sell; sterilization
   c. increase; sell; sterilization
   d. increase; buy; sterilization
   e. increase; sell; depreciation

8. According to the equation of exchange, if the money supply is $800 million, real GDP is $4,338 million, and nominal GDP is $5,200 million, then the velocity of money is equal to
   a. 5.4225.
   b. 2.00.
   c. 1.198709.
   d. 6.5.
   e. 1538.

9. According to the quantity theory of money, as decrease in the money supply in an economy operating below full capacity will shift the aggregate demand curve
   a. to the left, thereby lowering prices and real GDP.
   b. to the left, thereby raising prices and lowering real GDP.
   c. to the left, thereby raising prices and leaving real GDP unchanged.
   d. to the right, thereby increasing prices and real GDP.
   e. to the right, thereby leaving prices and real GDP unchanged.

Section 3: Monetary Policy and Equilibrium Income

1. A student who cashes a check at the student union in order to go shopping is an example of the
   a. transactions demand for money.
   b. speculative demand for money.
   c. precautionary demand for money.
   d. income effect.
   e. substitution effect.

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2. An increase in the interest rate will cause
   a. an increase in the demand for money.
   b. an increase in the quantity demanded of money.
   c. a decrease in the demand for money.
   d. a decrease in the quantity demanded of money.
   e. an increase in the supply of money.

3. A decrease in nominal income will cause
   a. an increase in the demand for money.
   b. an increase in the quantity demanded of money.
   c. a decrease in the demand for money.
   d. a decrease in the quantity demanded of money.
   e. a decrease in the supply of money.

4. The supply of money is
   a. a positive function of interest rates.
   b. a negative function of interest rates.
   c. a positive function of income.
   d. a negative function of income.
   e. independent of income and interest rates.

5. A bond selling for $998 pays $54.89 in interest annually. The current interest rate is
   a. .18.
   b. .055.
   c. .82.
   d. .945.
   e. .125.

6. If the interest rate is above the equilibrium rate, there is an excess ___________ money. People will ___________ bonds, and the interest rate will ___________ .
   a. demand for; sell; rise
   b. demand for; sell; drop
   c. demand for; buy; drop
   d. supply of; buy; drop
   e. supply of; sell; rise

7. If the Fed wants to increase equilibrium income, it should ___________ the supply of money, which will ___________ interest rates. The change in interest rates will ___________ consumption and investment, causing aggregate demand to ___________ .
   a. decrease; increase; decrease; decrease
   b. decrease; decrease; increase; increase
   c. increase; decrease; increase; increase
   d. increase; increase; decrease; decrease
   e. increase; increase; increase; increase

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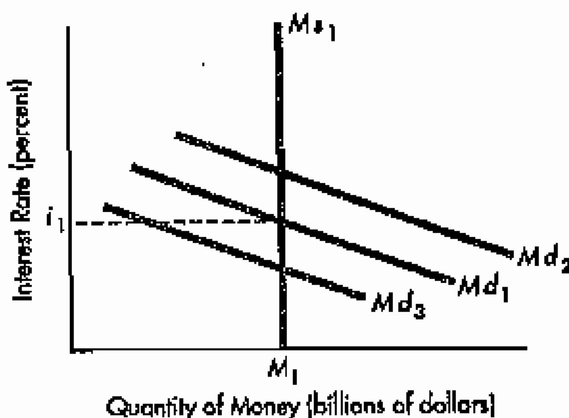
8. Consider the graph below. The demand for money is Md_1, and the supply of money is Ms_1. The equilibrium interest rate is i_1, and the equilibrium quantity of money is M_1. If income decreases,



a. the demand for money shifts to Md_2, and the interest rate and equilibrium quantity rise.
b. the demand for money shifts to Md_2, and the interest rate rises.
c. the demand for money shifts to Md_3, and the interest rate and equilibrium quantity fall.
d. the demand for money shifts to Md_3, and the interest rate falls.
e. the supply of money shifts to the left, the interest rate rises, and the equilibrium quantity of money falls.

9. A bond sells for $990 and has a yield of 8.5 percent. The bond must be paying ________ in interest annually.
   a. $84.15
   b. $8,415
   c. $8.415
   d. $116.47
   e. $1,164.71

Practice Questions and Problems

Section 1: The Federal Reserve System

1. The Federal Reserve System was intended to be a ________ (centralized, decentralized) system.
2. There are ________ Federal Reserve districts, each with its own Federal Reserve Bank.
3. Monetary policy is largely set by the ________ .
4. The chairperson of the Federal Reserve Board of Governors is appointed by the ________ and serves a ________ -year term. Governors serve ________ -year terms.
5. Each of the Fed's twelve district banks has a ________ -member board of directors.

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6. The __________ is the official policymaking body of the Federal Reserve System. It consists of the Board of Governors plus __________ of the Federal Reserve Bank presidents.
7. List the six main functions of the Fed.

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8. The most important function of the Fed is __________ .
9. The Federal Reserve is the __________ bank of the United States.
10. The __________ has been called the second most powerful person in the United States.
11. The president of the __________ Federal Reserve Bank is always a member of the FOMC.

Section 2: Implementing Monetary Policy

1. The goal of monetary policy is __________ with __________ .
2. An __________ is an objective used to achieve some ultimate policy goal.
3. $MV = PQ$ is the __________ .
4. The __________ of money is the average number of times each dollar is spent on final goods and services in a year.
5. The __________ states that if the money supply increases and the velocity of money is constant, nominal GDP must rise.
6. In the late 1970s and early 1980s, the M1 velocity of money __________ (fluctuated erratically, remained relatively stable).
7. The Fed monitors __________ , __________ , and __________ and considers them in setting policy.
8. The Federal Reserve Bank of __________ implements monetary policy for the Fed.
9. A(n) __________ is instructions issued by the FOMC to the Federal Reserve Bank in New York to implement monetary policy.
10. List the three tools the Fed uses to change reserves.

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11. Large banks must hold a __________ (greater, smaller) percentage of deposits in reserve than do small banks.

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12. ____________ deposits are time deposits held by business firms.
13. Legal reserves consist of ____________ and ____________ .
14. The Fed can reduce the money-creating potential of the banking system by ____________ (raising, lowering) the reserve requirement.
15. The ____________ rate is the rate of interest the Fed charges banks. In other countries, this rate is called the ____________ rate.
16. Banks borrow from other banks in the ____________ market.
17. If the Fed wants to increase the money supply, it ____________ (raises, lowers) the discount rate.
18. ____________ are the buying and selling of government bonds by the Fed and are the Fed's major monetary policy tool.
19. To increase the money supply, the Fed ____________ (buys, sells) bonds.
20. ____________ indicate how the money supply should react to a change in the short-run target.
21. The Fed has been using ____________ as its short-run operating target since the fall of 1979.
22. ____________ is the buying and selling of foreign exchange by a central bank in order to move exchange rates up or down.
23. If the Fed wants the dollar to appreciate against the yen, it will buy ____________ (dollars, yen).
24. ____________ is the use of open market operations to offset the effects of a foreign exchange market intervention on the domestic money supply.
25. If the Fed wishes to support a foreign currency, it ____________ (increases, decreases) the domestic money supply, unless offsetting operations are undertaken.
26. List the four other factors that the Fed considers in its FOMC directives.

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27. The Bank of McDonald has the following balance sheet:

Assets		Liabilities	
Vault cash	$ 20,000	Deposits	$400,000
Deposits in the Fed	30,000		
Loans	350,000		

If this bank's reserve requirement is 5 percent,

a. legal reserves are ___________ .
b. required reserves are ___________ .
c. excess reserves are ___________ .
d. the deposit expansion multiplier is ___________ .
e. this bank can create ___________ of additional deposits.
f. the banking system could create a maximum of ___________ .

28. ___________ are checking accounts and other deposits that can be used to pay third parties.

29. If the Fed were worried about inflation, it might ___________ (raise, lower) interest rates.

Section 3: Monetary Policy and Equilibrium Income

1. The ___________ demand for money is a demand to hold money in order to spend it on goods and services.
2. The ___________ demand for money is a demand to hold money to take care of emergencies.
3. The ___________ demand for money is created by uncertainty about the value of other assets.
4. The demand for money depends on ___________ and ___________ .
5. There is a(n) ___________ relationship between the interest rate and the quantity of money demanded.
6. The greater the nominal income, the ___________ (greater, smaller) the demand for money.
7. The ___________ sets the money supply.
8. The supply of money ___________ (does, does not) depend on interest rates and nominal income.
9. The formula for the current interest rate of a bond is ___________ .
10. A bond pays $200 a year in interest and sells for $2,500. The current interest rate is ___________ .
11. As bond prices increase, the current interest rate ___________ .

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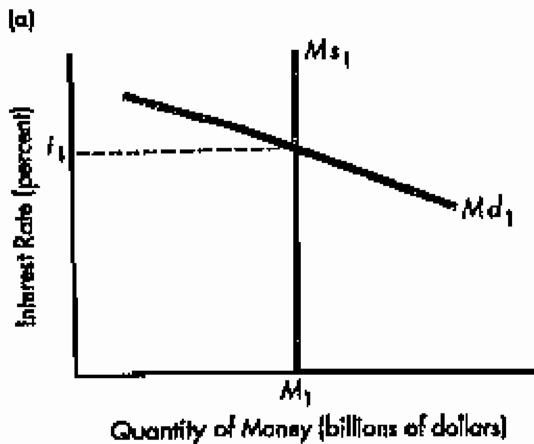
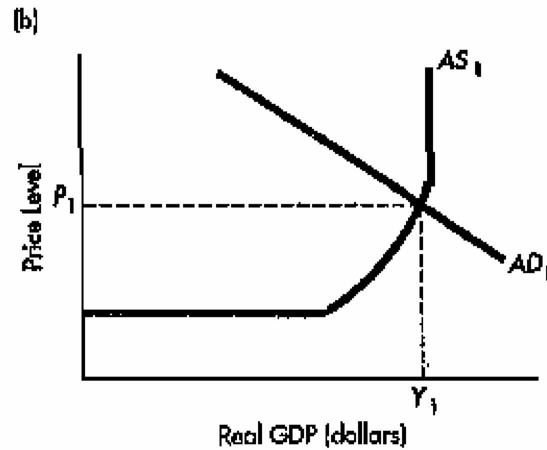
12. A decrease in the money supply causes interest rates to __________ (rise, fall), which causes consumption and investment to __________ (rise, fall). The changes in consumption and investment cause aggregate demand to __________ (increase, decrease), which causes equilibrium income to __________ (rise, fall). Use the graphs below to illustrate the sequence of events following a decrease in the money supply.





13. Norm and Debbie keep 1.5 months' income in a NOW account for emergencies. This is an example of the __________ demand for money.
14. A young couple cash in a bond to buy a crib and changing table to prepare for the birth of their first child. This is an example of the __________ demand for money.
15. If nominal income increases, the demand for money __________ (shifts to the left, does not change, shifts to the right).
16. You read in the *Wall Street Journal* that the bond markets rallied yesterday (bond prices increased). Interest rates must have __________ (increased, decreased).
17. A bond sells for $975 and pays $68.25 in interest annually. The current rate of interest is __________. If the bond market plummets (demand falls), the price of this bond will __________ (rise, fall) and the interest rate will __________ (rise, fall).

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Thinking About and Applying Monetary Policy

I. More on Foreign Exchange Market Intervention

If the Fed feels that the price of the dollar in terms of Japanese yen is unacceptably high, it may choose to intervene directly in the foreign exchange markets. To bolster the yen, the Fed will __________ (buy, sell) yen. In the process, the domestic money supply will __________ (increase, decrease).

In the absence of any sterilization actions by the Fed, domestic interest rates will __________ (increase, decrease) as a result of the change in the money supply. The change in domestic interest rates will __________ (increase, decrease) the demand for U.S. securities. The dollar will __________ (appreciate, depreciate) in value. The effect of the change in the money supply has __________ (reinforced, opposed) the Fed's actions in the foreign exchange market.

II. Bond Prices and Interest Rates

a. Fill in the gaps in this typical article from the *Wall Street Journal:*

"The benchmark 30-year Treasury bond rose more than ¼ point to 106, a gain of more than $2.50 for a bond with a $1,000 face amount. Its yield, which moves in the __________ (same, opposite) direction from the price, __________ (rose, fell) to 6.65%. . . ."

b. "More investors and economists are beginning to believe that interest rates are headed higher, although many think long-term bond yields won't move as fast as short-term rates. . . , Mr. Olsen . . . believes there will be a significant sell-off in the bond market."

Why would higher interest rates precipitate a significant sell-off in the bond market?

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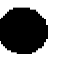

Chapter 14 Homework Problems

Name ______________________________

1. What is the central bank of the United States called, and what does it do?

2. What is the name of the policymaking body at the central bank, who are its members, and what is its ultimate policy objective?

3. What are the three tools of monetary policy? Which one is most important?

4. Each of the following is an example of one of the three reasons why people demand money. Write in the matching reason.
   a. Ashley is going to the grocery store to buy tonight's dinner.

   b. Shawn is saving money so he can buy a new refrigerator when they go on sale.

   c. Joel is putting 5 percent of his paycheck in the bank in case he loses his job.

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5. Suppose you read the following headline in the newspaper:

   "Fed Worried About Inflation; Considering Raising Interest Rates"

   a. If the Fed wanted interest rates to rise, would it want to increase or decrease the money supply?

   b. Would the Fed change the money supply by buying or selling bonds? Why?

   c. If interest rates did go up, what would you expect to happen to each of the following, and why?
      i. The price of bonds

      ii. Aggregate demand

      iii. Real GDP

      iv. The price level

If your instructor assigns these problems, write your answers above, then tear out this page and hand it in.

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Answers

Quick-Check Quiz

Section 1: The Federal Reserve System

1. c; 2. e; 3. b
If you missed any of these questions, you should go back and review Section 1 of Chapter 14.

Section 2: Implementing Monetary Policy

1. a; 2. b (Answer a is false, and the others are true only if certain assumptions are made. For c to be true, velocity must be constant and the economy must be at full employment, so that Q cannot rise. For d to be true, velocity must be constant and there must be some unemployment in the economy. Answer e may be true if velocity is constant.); 3. d; 4. c [LR = vault cash + deposits at the Fed = $30,000 + $70,000 = $100,000. $RR = rD$ = .04($600,000) = $24,000. $ER = LR - RR$ = $100,000 – $24,000 = $76,000. The deposit expansion multiplier = $1/r$ = 1/.04 = 25. The change in the money supply = $1/r(ER)$ = 25($76,000) = $1,900,000.]; 5. b; 6. b (The Fed can keep this up indefinitely, since it can create dollars to buy pounds. It does not need the help of the U.K. central bank to depreciate the dollar.); 7. c; 8. d; 9. a
If you missed any of these questions, you should go back and review Section 2 of Chapter 14.

Section 3: Monetary Policy and Equilibrium Income

1. a; 2. d; 3. c; 4. c; 5. b; 6. d; 7. c; 8. d; 9. a
If you missed any of these questions, you should go back and review Section 3 of Chapter 14.

Practice Questions and Problems

Section 1: The Federal Reserve System

1. decentralized
2. twelve
3. Board of Governors
4. president; four; fourteen
5. nine
6. Federal Open Market Committee (FOMC); five
7. provides currency
   holds reserves
   clears checks
   supervises commercial banks
   acts as a banker for the federal government
   controls the money supply
8. controlling the money supply
9. central
10. Fed chairperson
11. New York

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Section 2: Implementing Monetary Policy

1. economic growth; stable prices
2. intermediate target
3. equation of exchange
4. velocity
5. quantity theory of money
6. fluctuated erratically
7. commodity prices; interest rates; foreign exchange rates
8. New York
9. FOMC directive
10. reserve requirement
    discount rate
    open market operations
11. greater
12. Nonpersonal time
13. vault cash; deposits in the Fed
14. raising
15. discount; bank
16. federal funds
17. lowers
18. Open market operations
19. buys
20. Short-run operating targets
21. bank reserves
22. Foreign exchange market intervention
23. dollars
24. Sterilization
25. increases
26. federal funds rate
    growth of real GDP
    rate of inflation
    foreign exchange rate of the dollar
27. a. \$50,000 (LR = vault cash + deposits in the Fed = \$20,000 + \$30,000)
    b. \$20,000 [$RR = rD = .05(\$400,000)$]
    c. \$30,000 ($ER = LR - RR$ = \$50,000 – \$20,000)
    d. 20 ($1/r = 1/.05$)
    e. \$30,000 (the amount of ER)
    f. \$600,000 [change in money supply = deposit expansion multiplier × excess reserves = 20(\$30,000)]
28. Transactions accounts
29. raise

Section 3: Monetary Policy and Equilibrium Income

1. transactions
2. precautionary
3. speculative
4. nominal income; interest rates
5. inverse

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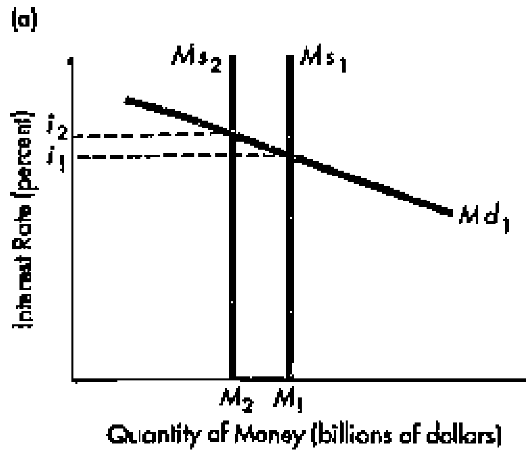
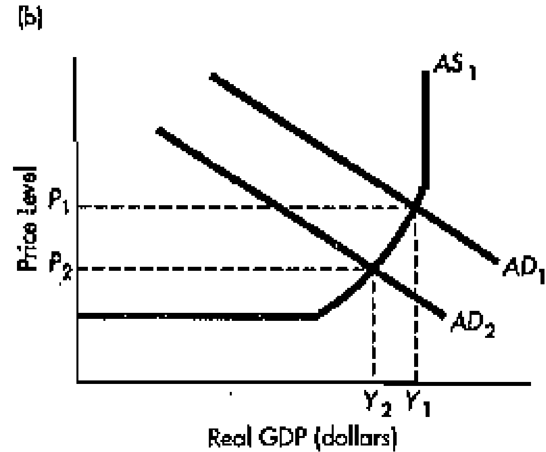
6. greater
7. Federal Reserve
8. does not
9. annual interest payment/bond price
10. .08 (annual interest payment/bond price = $200/$2,500 = .08)
11. decreases
12. rise; fall; decrease; fall





13. precautionary
14. transactions
15. shifts to the right
16. decreased
17. .07 (annual interest payment/bond price = $68.25/$975 = .07); fall; rise

Thinking About and Applying Monetary Policy

I. More on Foreign Exchange Market Intervention

buy; increase; decrease; decrease; depreciate; reinforced

II. Bond Prices and Interest Rates

a. opposite; fell
b. Bond prices drop as interest rates rise. If owners of bonds expect higher interest rates, they will want to sell their bonds before the prices of the bonds decrease.

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