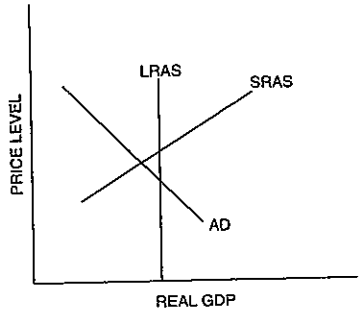
Monetary Policy

Monetary policy is the action of the Federal Reserve (the Fed) to prevent or address extreme economic fluctuations. The Fed uses its monetary policy tools to influence equilibrium interest rates in the money market through its control of bank reserves. The Fed lowers interest rates through expansionary monetary policy to prevent or address recessions, and it raises interest rates through contractionary monetary policy to prevent or address inflation. Monetary policy is transmitted to the economy through changes in aggregate demand. Monetary policy will have both short-run and long-run effects in the economy. In the following figures, long-run aggregate supply, short-run aggregate supply, and demand curves are represented by LRAS, SRAS, and AD.

Figure 4-7.1

Effects of Monetary Policy in the Economy (Recession)



1. Suppose that initially the economy is at the intersection of AD and SRAS in Figure 4-7.1.

   (A) What monetary policy can the Fed implement to move the economy to full-employment?

   (B) If the Fed is going to use open market operations, it should (*buy / sell*) Treasury securities.

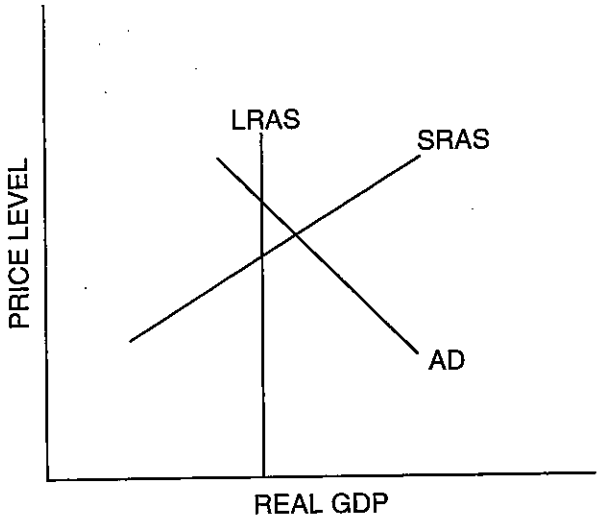
   (C) The effect will *(increase / decrease)* Treasury security (bond) prices.

   (D) In the short run, what is the effect on nominal interest rates? Explain.

   (E) In the short run, what happens to real output? Shift the curve on the graph to show how the Fed's action results in a change in real output and explain why the shift occurs.

   (F) In the short run, what happens to the price level? Explain how the Fed's action results in a change to the price level.

Figure 4-7.2
Effects of Monetary Policy in the Economy (Inflation)



2. Suppose that initially the economy is at the intersection of AD and SRAS in Figure 4-7.2.

   (A) What monetary policy can the Fed implement to move the economy to full-employment?

   (B) If the Fed is going to use open market operations, it should (*buy / sell*) Treasury securities.

   (C) The effect will *(increase / decrease)* Treasury security (bond) prices.

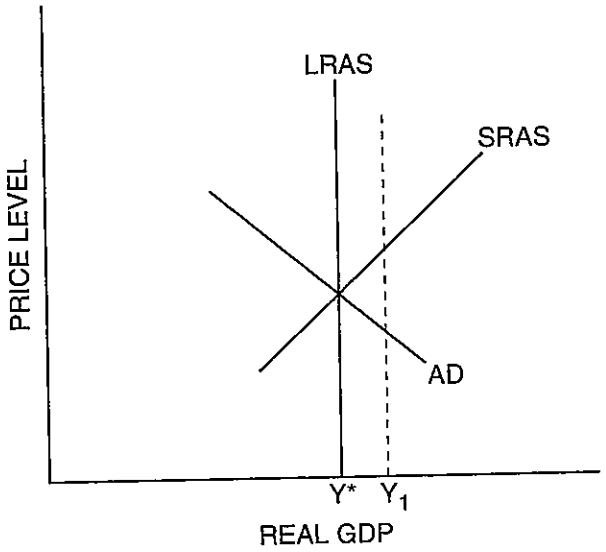
   (D) In the short run, what is the effect on nominal interest rates? Explain.

   (E) In the short run, what happens to real output? Shift the curve on the graph to show how the Fed's action results in a change in real output and explain why the shift occurs.

   (F) In the short run, what happens to the price level? Explain how the Fed's action results in a change to the price level.

3. In the situation shown in Figure 4-7.3, suppose that the monetary authorities decide to maintain the level of employment represented by the output level Y_1 by using expansionary monetary policy.

Figure 4-7.3
Monetary Policy in the Long Run



(A) Explain the effect of the expansionary monetary policy on the price level and output in the short run.

(B) Explain the effect on the price level and output in the long run.

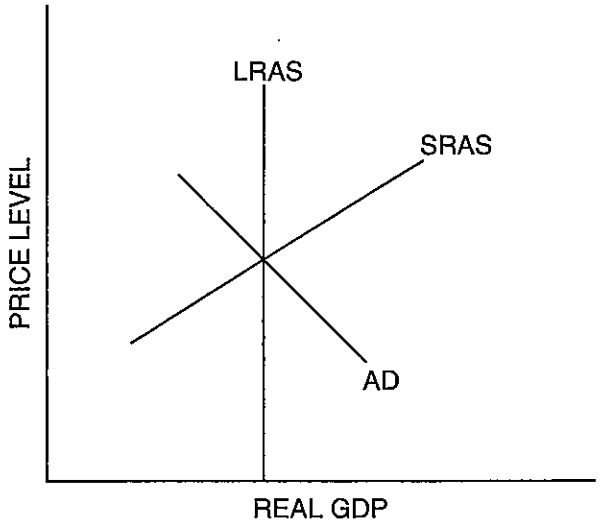
(C) Explain what you think will happen to the nominal rate of interest and the real rate of interest in the short run as the Fed continues to increase the money supply. Explain why.

(D) Explain what you think will happen to the nominal rate of interest and the real rate of interest in the long run. Explain why.

4. Many economists think that moving from short-run equilibrium to long-run equilibrium may take several years. List three reasons why the economy might not immediately move to long-run equilibrium.

5. Briefly summarize the long-run impact of an expansionary monetary policy on the economy.

Figure 4-7.4
Expansionary Monetary Policy



6. Suppose that initially the economy is at the intersection of AD and SRAS as shown in Figure 4-7.4. Now, the Fed decides to implement expansionary monetary policy to increase the level of employment.

   (A) In the short run, what happens to real output? Explain why.

   (B) In the short run, what happens to the price level? Explain why.

(C) In the short run, what happens to employment and nominal wages? Explain why.

(D) In the short run, what happens to nominal interest rates and real interest rates?

(E) In the long run, what happens to real output? Explain why.

(F) In the long run, what happens to the price level? Explain why.

(G) In the long run, what happens to employment and nominal wages? Explain why.

(H) In the long run, what happens to the nominal interest rate and the real interest rate?

Real versus Nominal Interest Rates

If you bought a one-year bond for $1,000 and the bond paid an interest rate of 10 percent, at the end of the year would you be 10 percent wealthier? You will certainly have 10 percent more money than you did a year earlier, but can you buy 10 percent more? If the price level has risen, the answer is that you cannot buy 10 percent more. If the inflation rate were 8 percent, then you could buy only 2 percent more; if the inflation rate were 12 percent, you would be able to buy 2 percent less! The *nominal interest rate* is the rate the bank pays you on your savings or the rate that appears on your bond or car loan. The *real interest rate* represents the change in your purchasing power. The *expected real interest rate* represents the amount you need to receive in real terms to forgo consumption now for consumption in the future.

The *Fisher Equation* shows the relationship between the nominal interest rate, the real interest rate, and the inflation rate as shown below:

$$r = i - \pi$$

where

r = the real interest rate

i = the nominal interest rate

π = the inflation rate.

In the previous example with the 10 percent bond, if the inflation rate were 6 percent, then your real interest rate (the increase in your purchasing power) would be 4 percent (6 = 10 – 4).

Obviously banks and customers do not know what inflation is going to be, so the interest rates on loans, bonds, and so forth are set based on expected inflation. The expected real interest rate is

$$re = i - \pi e$$

where

πe = the expected inflation rate.

The equation can be rewritten as $i = re + \pi e$.

A bank sets the nominal interest rate equal to its expected real interest rate plus the expected inflation rate. However, the real interest rate it actually receives may be different if inflation is not equal to the bank's expected inflation rate.

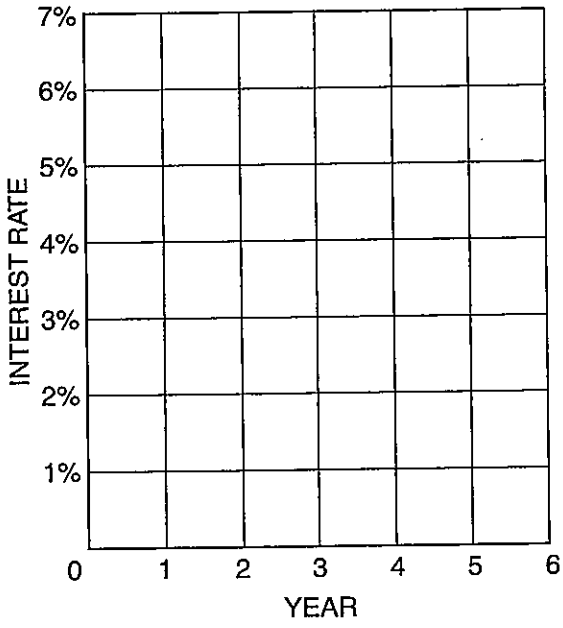
According to the Fisher Equation, if the Federal Reserve increases the money supply, the price level will increase. The resulting inflation will increase the nominal interest rate, decrease the real interest rate, or some combination of the two. This is known as the *Fisher Effect*. In the short run, increases in the money supply decrease the nominal interest rate and real interest rate. In the long run, an increase in the money supply will result in an increase in the price level and the nominal interest rate.

Table 4-9.1
Real and Nominal Interest Rates

Year	Nominal interest rate (%)	Inflation rate (%)	Real interest rate (%)
1	5.02	1.87	
2	5.07	1.85	
3	4.78	1.14	
4	4.64	1.56	
5	5.82	2.29	
6	3.39	1.95	

1. Table 4-9.1 provides the nominal interest rates and inflation rates for the Years 1–6. Compute the real interest rates and then graph the nominal and real interest rates on Figure 4-9.1.

Figure 4-9.1
Real and Nominal Interest Rates



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MULTIPLE-CHOICE SAMPLE QUESTIONS

Circle the letter of each correct answer.

1. The M0 definition of money includes which of the following?
   (A) Currency
   (B) Demand deposits
   (C) Savings accounts
   (D) Small time deposits
   (E) Money market accounts

2. If the legal reserve requirement is 25 percent, the value of the simple deposit expansion multiplier is
   (A) 2.
   (B) 4.
   (C) 5.
   (D) 10.
   (E) 1.0.

3. When money is used as a standard of value, a person is
   (A) earning more money than before.
   (B) purchasing a necessity.
   (C) making a financial transaction.
   (D) making price comparisons among products.
   (E) writing a check for groceries.

4. Which of the following are true statements about the federal funds rate?
   I. It is the same thing as the discount rate.
   II. It is the interest rate that banks charge each other for short-term loans.
   III. It is influenced by open market operations.
   (A) I only
   (B) II only
   (C) III only
   (D) I and II only
   (E) II and III only

5. Suppose the Federal Reserve buys $400,000 worth of securities from the securities dealers on the open market. If the reserve requirement is 20 percent and the banks hold no excess reserves, what will happen to the total money supply?
   (A) It will be unchanged.
   (B) It will contract by $2,000,000.
   (C) It will contract by $800,000.
   (D) It will expand by $2,000,000.
   (E) It will expand by $800,000.

6. All of the following are financial assets *except*
   (A) loans.
   (B) stocks.
   (C) bonds.
   (D) bank deposits.
   (E) required reserves.

7. A commercial bank holds $500,000 in demand deposit liabilities and $120,000 in reserves. If the required reserve ratio is 20 percent, which of the following is the maximum amount by which this single commercial bank and the maximum amount by which the banking system can increase loans?

	Amount created by single bank	Amount created by banking system
(A)	$5,000	$25,000
(B)	$20,000	$80,000
(C)	$20,000	$100,000
(D)	$30,000	$150,000
(E)	$120,000	$500,000

8. Which of the following does the Federal Reserve use most often to combat a recession?
   (A) Selling securities
   (B) Buying securities
   (C) Reducing the reserve requirement
   (D) Increasing the discount rate
   (E) Increasing the federal funds rate

9. To reduce inflation, the Federal Reserve could
   (A) expand the money supply in order to raise interest rates, which increases investment.
   (B) expand the money supply in order to lower interest rates, which increases investment.
   (C) contract the money supply in order to lower interest rates, which increases investment.
   (D) contract the money supply in order to raise interest rates, which decreases investment.
   (E) buy bonds and decrease the discount rate to encourage borrowing.

10. Reserves, the money supply, and interest rates are most likely to change in which of the following ways when the Federal Reserve sells bonds?

	Reserves	Money supply	Interest rates
(A)	Increase	Increase	Increase
(B)	Increase	Increase	Decrease
(C)	Decrease	Increase	Decrease
(D)	Decrease	Decrease	Increase
(E)	Decrease	Decrease	Decrease

11. Which of the following actions by the Federal Reserve will result in an increase in banks' excess reserves?
   (A) Buying bonds on the open market
   (B) Selling bonds on the open market
   (C) Increasing the discount rate
   (D) Increasing the reserve requirement
   (E) Increasing the federal funds rate

12. Aggregate demand and aggregate supply analysis suggests that, in the short run, an expansionary monetary policy will shift
   (A) the aggregate demand curve to the left.
   (B) the aggregate supply curve to the left.
   (C) the aggregate demand curve to the right.
   (D) the aggregate supply curve to the right.
   (E) both the aggregate demand and supply curves to the left.

13. Which of the following combinations of monetary policy actions would definitely cause a decrease in aggregate demand?

	Discount rate	Open market operations	Reserve requirement
(A)	Decrease	Buy bonds	Decrease
(B)	Decrease	Sells bonds	Decrease
(C)	Increase	Buy bonds	Increase
(D)	Increase	Sells bonds	Decrease
(E)	Increase	Sells bonds	Increase

14. A decrease in the mortgage rate will cause which of the following to happen in the loanable funds market?
   (A) Demand will increase.
   (B) Demand will decrease.
   (C) Supply will increase.
   (D) Supply will decrease.
   (E) The equilibrium interest rate will fall.

15. What will happen to the supply of loanable funds and the equilibrium interest rate if the Federal Reserve buys government securities?

	Supply	Interest rate
(A)	Increase	Increase
(B)	Increase	Decrease
(C)	Decrease	Decrease
(D)	Decrease	Decrease
(E)	Decrease	Remain unchanged

16. The real interest rate is simply stated as the
    (A) price of borrowed money in the future.
    (B) inflation rate minus the CPI.
    (C) nominal interest rate over time.
    (D) nominal interest rate minus the expected inflation rate.
    (E) nominal interest rate plus the expected inflation rate.

17. What is the present value of $110 paid one year from now if the interest rate is 10 percent?
    (A) $121
    (B) $110
    (C) $100
    (D) $99
    (E) $11

18. The neutrality of money refers to the situation where
    (A) money has not been the cause of war.
    (B) increases in interest rates are matched by decreases in the price of bonds.
    (C) increases in interest rates are matched by increases in the price of bonds.
    (D) increases in the money supply eventually result in no change in real output.
    (E) decreases in the money supply result in increases in the interest rate in the short run.

19. Expansionary monetary policy results in which of the following in the short run?
    I. The money supply increases.
    II. The nominal interest rate decreases.
    III. The real interest rate decreases.
    IV. Bond prices decrease.

    (A) I and II only
    (B) I, II, and III only
    (C) I, II, and IV only
    (D) III and IV only
    (E) IV only

20. GDP is represented in the equation of exchange as
    (A) Q.
    (B) PQ.
    (C) MV.
    (D) V.
    (E) PQ/V.