

Monetary Policy

1. Go to the FOMC page of the Federal Reserve Board's website (<http://www.federalreserve.gov/FOMC/>) to find the statement issued after the most recent FOMC meeting. (Go to the bottom of the web page and click on the most recent statement listed in the calendar.)
 - a. What is the target federal funds rate?
 - b. Is the target federal funds rate different from the target federal funds rate from the previous FOMC statement? If yes, by how much does it differ?
 - c. Does the statement comment on macroeconomic conditions in the United States? How does it describe the U.S. economy?

Solution

1. Answers will vary depending on when you look up the information. As of July 2005, the latest statement was issued June 30, after the June 29–30 FOMC meeting.
 - a. On June 30, 2005, the Fed announced that it had raised its target for the federal funds rate to 3¼%.
 - b. Yes, the target federal funds rate is 25 basis points higher (the target had been 3% before the June 29–30 FOMC meeting).
 - c. It states that even with this increase in the federal funds rate, the committee believes that “monetary policy remains accommodative.” Coupled with the growth in productivity, monetary policy is “providing ongoing support to economic activity.” It also comments that “although energy prices have risen further, the expansion remains firm and labor market conditions continue to improve gradually.”
2. How will the following events affect the nominal demand for money as defined by M1? In each case, specify whether there is a shift of the demand curve or a movement along the demand curve and its direction.
 - a. There is a fall in the interest rate from 12% to 10%.
 - b. Thanksgiving arrives and, with it, the beginning of the holiday shopping season.
 - c. McDonald's and other fast-food restaurants begin to accept credit cards.
 - d. The Fed engages in an open-market purchase of U.S. Treasury bills.

Solution

2.
 - a. Any decrease in the interest rate will lead to an increase in the quantity of money demanded (a movement down the money demand curve) but no shift in the money demand curve.
 - b. When the holiday shopping season starts, consumers anticipate an increase in expenditures and so, at each income level, increase the demand for money. The money demand curve shifts to the right.
 - c. As McDonald's and other fast-food restaurants begin to accept credit cards, it reduces the demand for money, assuming that households put more money in savings instead of holding currency. The money demand curve shifts to the left.
 - d. When the Fed engages in open-market operations, it will change the money supply (the money supply curve will shift). This will affect the interest rate and consequently the quantity of money demanded. An open-market purchase of U.S. Treasury bills by the Fed will increase the money supply, lowering the interest rate and increasing the quantity of money demanded. This is a downward movement along the money demand curve.

3. The accompanying table shows nominal GDP, M1, and M2 in billions of dollars in five-year increments from 1960 to 2000 as published in the *2005 Economic Report of the President*. Complete the table by calculating the velocity of money using both M1 and M2. What trends or patterns in the velocity of money do you see? What might account for these trends?

| Year | Nominal GDP (billions of dollars) | M1 (billions of dollars) | M2 (billions of dollars) | Velocity using M1 | Velocity using M2 |
|------|--|-----------------------------------|-----------------------------------|-------------------------|-------------------------|
| 1960 | \$526.4 | \$140.7 | \$312.4 | ? | ? |
| 1965 | 719.1 | 167.8 | 459.2 | ? | ? |
| 1970 | 1,038.5 | 214.4 | 626.5 | ? | ? |
| 1975 | 1,638.3 | 287.1 | 1,016.2 | ? | ? |
| 1980 | 2,789.5 | 408.5 | 1,599.8 | ? | ? |
| 1985 | 4,220.3 | 619.8 | 2,495.7 | ? | ? |
| 1990 | 5,803.1 | 824.8 | 3,279.2 | ? | ? |
| 1995 | 7,397.7 | 1,127.0 | 3,641.2 | ? | ? |
| 2000 | 9,817.0 | 1,087.9 | 4,932.5 | ? | ? |

Solution

3. The velocity is calculated as nominal GDP (from the second column of the table) divided by the nominal quantity of money (M1 or M2, from the third or fourth column of the table). The accompanying table shows that velocity using M1 increased dramatically (by 141%) from 1960 to 2000; velocity using M2 remained approximately constant from 1960 to 1990 and then increased by 15%. The increase in velocity using M1 coupled with the stability of velocity using M2 indicates people shifted from currency and checkable deposits to money market funds, time deposits, and savings deposits.

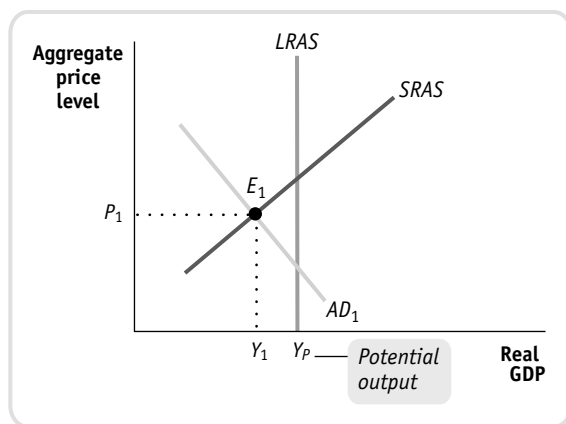
| Year | GDP (billions of dollars) | M1 (billions of dollars) | M2 (billions of dollars) | Velocity using M1 | Velocity using M2 |
|------|------------------------------|-----------------------------|-----------------------------|-------------------|-------------------|
| 1960 | \$526.4 | \$140.7 | \$312.4 | 3.74 | 1.69 |
| 1965 | 719.1 | 167.8 | 459.2 | 4.29 | 1.57 |
| 1970 | 1,038.5 | 214.4 | 626.5 | 4.84 | 1.66 |
| 1975 | 1,638.3 | 287.1 | 1,016.2 | 5.71 | 1.61 |
| 1980 | 2,789.5 | 408.5 | 1,599.8 | 6.83 | 1.74 |
| 1985 | 4,220.3 | 619.8 | 2,495.7 | 6.81 | 1.69 |
| 1990 | 5,803.1 | 824.8 | 3,279.2 | 7.04 | 1.77 |
| 1995 | 7,397.7 | 1,127.0 | 3,641.2 | 6.56 | 2.03 |
| 2000 | 9,817.0 | 1,087.9 | 4,932.5 | 9.02 | 1.99 |

4. The accompanying table shows the annual growth of M1 and nominal GDP in Japan during the early 2000s. What must have been happening to velocity during this time?

| Year | M1 growth | Nominal GDP growth |
|------|-----------|--------------------|
| 2000 | 8.2% | 2.9% |
| 2001 | 8.5% | 0.4% |
| 2002 | 27.6% | -0.5% |
| 2003 | 8.2% | 2.5% |

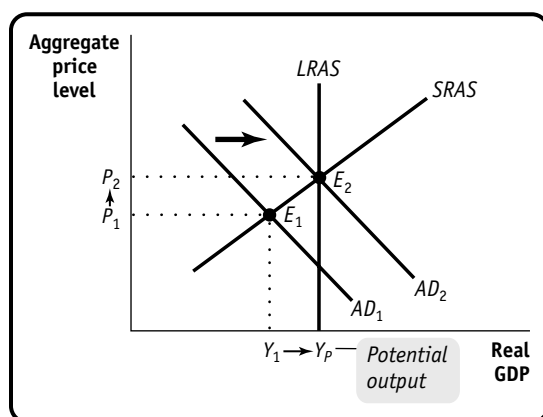
Solution

4. Since M1 was increasing substantially from 2000 to 2003 (and reached a growth rate of 27.6% in 2002) and nominal GDP growth was weak (and negative in 2002), velocity must have decreased dramatically. In Japan at this time, interest rates were very low, so the public held the increase in M1 in currency.
5. An economy is facing the recessionary gap shown in the accompanying diagram. To eliminate the gap, should the central bank use expansionary or contractionary monetary policy? How will the interest rate, investment spending, consumer spending, real GDP, and the aggregate price level change as the monetary policy closes the recessionary gap?

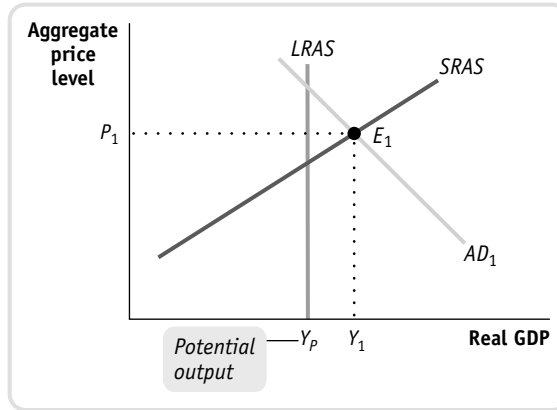


Solution

5. The central bank can use expansionary monetary policy to eliminate the recessionary gap. The central bank could engage in an open-market purchase of U.S. Treasury bills. This would increase the money supply, lowering the rate of interest and encouraging an increase in investment spending. The increase in investment spending will kick off the multiplier process, leading consumers to increase their spending. The final situation is illustrated in the accompanying diagram by the movement of the AD curve from its initial position, AD_1 , to its new location, AD_2 . Real GDP and the aggregate price level will rise.

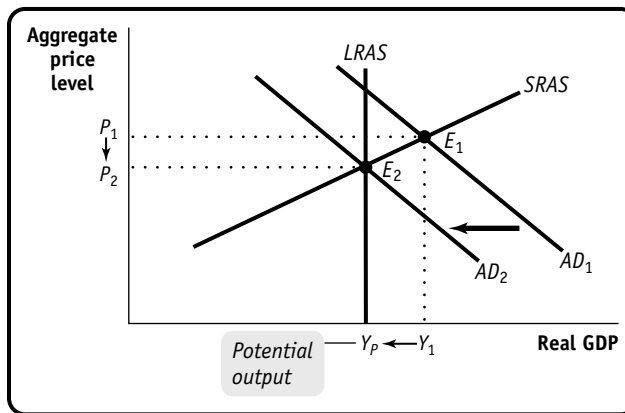


6. An economy is facing the inflationary gap shown in the accompanying diagram. To eliminate the gap, should the central bank use expansionary or contractionary monetary policy? How will the interest rate, investment spending, consumer spending, real GDP, and aggregate price level change as the monetary policy closes the inflationary gap?



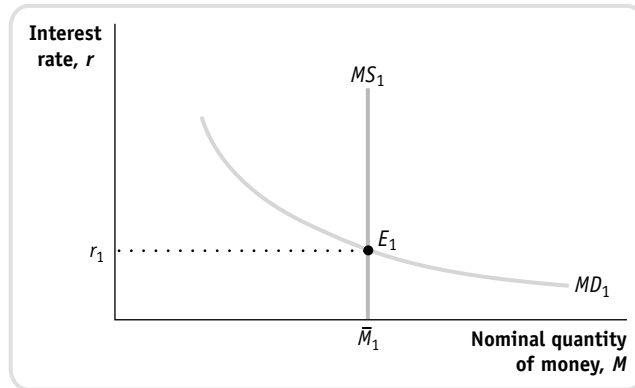
Solution

6. The central bank can use contractionary monetary policy to eliminate the inflationary gap. The central bank could engage in an open-market sale of U.S. Treasury bills. This would decrease the supply of money, raising the interest rate and causing investment spending to fall. The decrease in investment spending will lead consumers to decrease their spending. The final situation is illustrated in the accompanying diagram by the movement of the AD curve from its initial position, AD_1 , to its new location, AD_2 . Real GDP and the aggregate price level will fall.



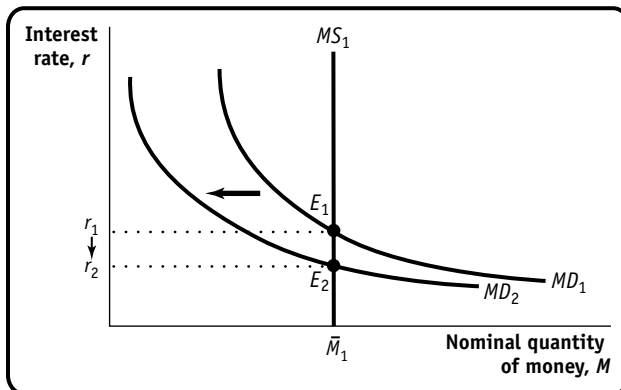
7. In the economy of Eastlandia, the money market is initially in equilibrium when the economy begins to slide into a recession.
- a. Using the accompanying diagram, explain what will happen to the interest rate if the central bank of Eastlandia keeps the money supply constant at M_1 .

- b. If the central bank is instead committed to maintaining an interest rate target of r_1 , how should the central bank react as the economy slides into recession?

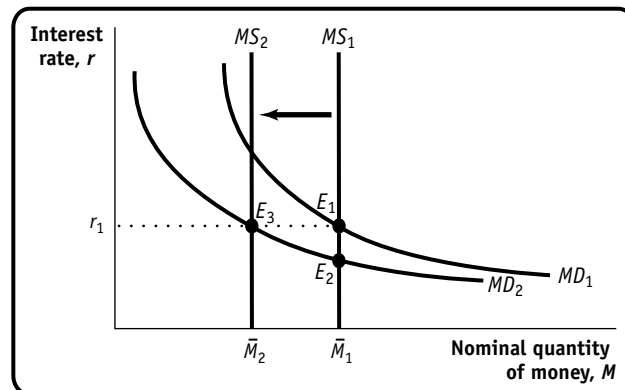


Solution

7. a. Beginning at equilibrium point E_1 in the accompanying money market diagram, when the economy of Eastlandia goes into recession, aggregate spending will fall and the money demand curve will shift to the left, from MD_1 to MD_2 , moving the money market from its initial equilibrium, E_1 , to a new equilibrium at E_2 . If the central bank keeps the quantity of money constant, the interest rate will decrease to r_2 , shown at the new equilibrium point, E_2 . The decrease in the interest rate would encourage investment spending and would help close the recessionary gap.



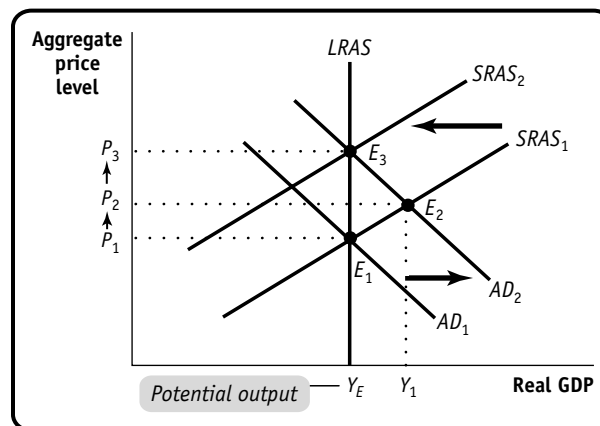
- b. If the central bank is committed to maintaining an interest rate target of r_1 , then the central bank will reduce the money supply as the economy goes into recession, from MS_1 to MS_2 , in the accompanying diagram, eliminating the potential for interest rates to fall. The new equilibrium in the money market is at E_3 , with the interest rate at its target rate, r_1 .



8. An economy is in long-run macroeconomic equilibrium with an unemployment rate of 5% when the government passes a law requiring the central bank to use monetary policy to lower the unemployment rate to 3% and keep it there. How could the central bank achieve this goal in the short run? What would happen in the long run? Illustrate with a diagram.

Solution

8. If the economy is in long-run macroeconomic equilibrium with an unemployment rate of 5%, then the long-run aggregate supply curve must be vertical at a real GDP that is associated with a 5% unemployment rate. This long-run macroeconomic equilibrium is E_1 in the accompanying diagram. In the short run, the central bank can engage in expansionary monetary policy to shift the aggregate demand curve to the right (from AD_1 to AD_2) and reduce the unemployment rate to 3%. Over time, because real GDP exceeds potential real GDP, the short-run aggregate supply curve will shift to the left (from $SRAS_1$ to $SRAS_2$). So to keep the unemployment rate at 3% in the short run, the central bank would have to engage in continuous increases in the money supply, shifting the aggregate demand curve to the right as the short-run aggregate supply curve shifts to the left, and the aggregate price level will go higher and higher. However, the central bank cannot keep the unemployment rate at 3% in the long run, since, in the long run, money is neutral. In the long run, output will return to its potential level and the unemployment rate will return to 5%.

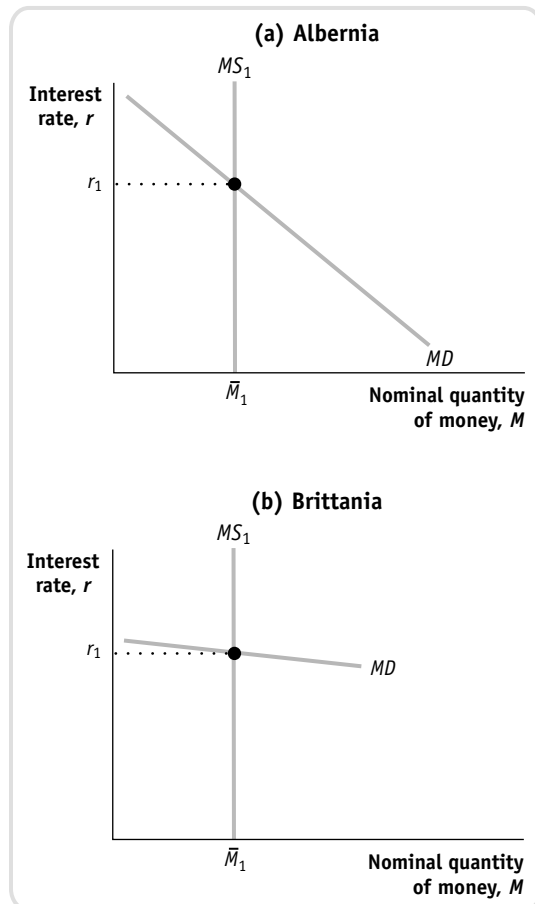


9. According to the European Central Bank website, the treaty establishing the European Community “makes clear that ensuring price stability is the most important contribution that monetary policy can make to achieve a favourable economic environment and a high level of employment.” If price stability is the only goal of monetary policy, explain how monetary policy would be conducted during recessions. Analyze both the case of a recession that is the result of a demand shock and the case of a recession that is the result of a supply shock.

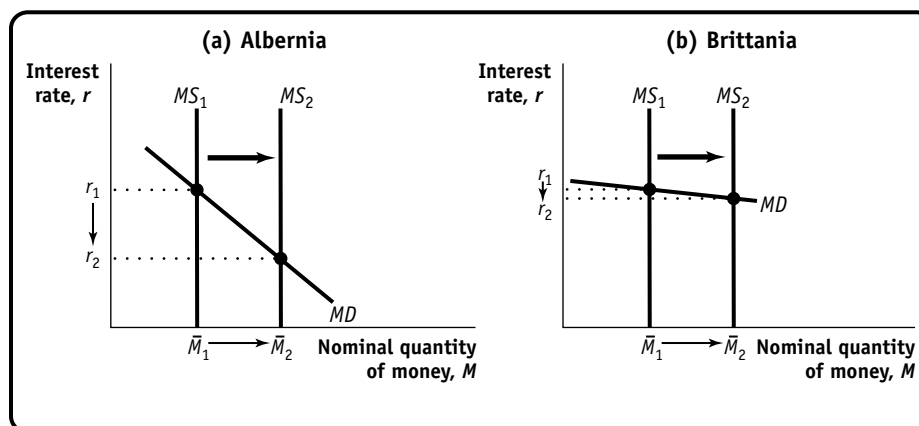
Solution

9. If price stability is the only goal of monetary policy, then during recessions resulting from a leftward shift in the aggregate demand curve, as the aggregate price level falls, the central bank would engage in expansionary monetary policy. This would lower interest rates, encourage investment spending, and eliminate the recessionary pressure while keeping prices constant. However, if the recession is the result of a leftward shift of the short-run aggregate supply curve, the recession would be accompanied by increases in the aggregate price level and the central bank would engage in contractionary monetary policy. The contractionary monetary policy would raise interest rates and discourage investment spending, shifting the aggregate demand curve to the left. Although the policy would keep prices constant, it would be at the expense of a deeper recession.

10. The effectiveness of monetary policy depends on how easy it is for changes in the money supply to change interest rates. By changing interest rates, monetary policy affects investment spending and the aggregate demand curve. The economies of Albernia and Britannia have very different money demand curves, as shown in the accompanying diagram. In which economy will changes in the money supply be a more effective policy tool? Why?



- Solution**
10. According to the accompanying diagram, monetary policy will be more effective in Albernia and less effective in Britannia. In Albernia a relatively small change in the money supply will lead to a large change in the interest rate, but in Britannia a relatively large change in the money supply will lead to only a small change in the interest rate.



- 11.** During the Great Depression, businesspeople in the United States were very pessimistic about the future of economic growth and reluctant to increase investment spending even when interest rates fell. How did this limit the potential for monetary policy to help alleviate the Depression?

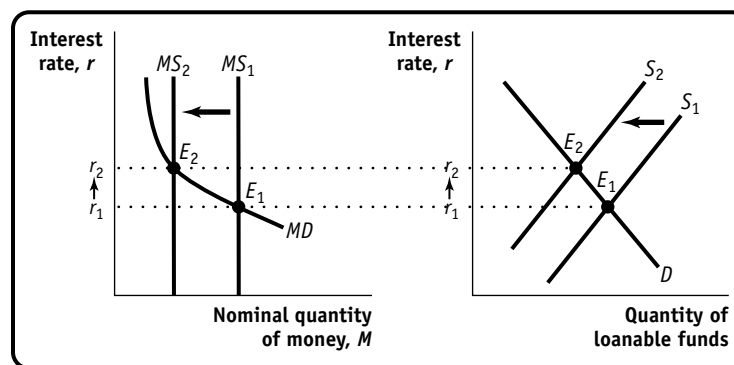
Solution

- 11.** Monetary policy is effective when changes in the money supply change the interest rate and, in turn, the change in the interest rate changes investment spending. If businesspeople are very pessimistic about the future of economic growth and reluctant to increase investment spending when interest rates decrease, monetary policy will not be very effective in shifting the aggregate demand curve to the right. Since this was the situation during the Great Depression, monetary policy had little to offer policy makers trying to promote economic growth.

- 12.** Using a figure similar to Figure 14-11, explain how the money market and the loanable funds market react to a reduction in the money supply in the short run.

Solution

- 12.** In the accompanying diagram, both the money market and the loanable funds market are initially in equilibrium at the same rate of interest, r_1 . A decrease in the money supply shifts the money supply curve leftward to MS_2 and the equilibrium interest rate rises to r_2 . The increase in the interest rate leads to a decrease in real GDP, which generates a decrease in savings through the multiplier process. This decrease in savings shifts the supply curve for loanable funds leftward to S_2 . Consequently, the equilibrium interest rate in the loanable funds market rises. The new equilibrium interest rate in the loanable funds market equals the rate in the money market because savings fall by exactly enough to match the fall in investment spending.



- 13.** Contrast the short-run effects of an increase in the money supply on the interest rate to the long-run effects of an increase in the money supply on the interest rate. Which market determines the interest rate in the short run? Which market does so in the long run? What are the implications of your answers for the effectiveness of monetary policy in the short run and the long run in influencing real GDP?

Solution

13. In the short run, the interest rate is determined in the money market: the short-run equilibrium interest rate is determined where money demand equals money supply. Beginning with an economy in long-run macroeconomic equilibrium, an increase in the money supply will lead to a fall in the interest rate in the money market. The fall in the interest rate will lead to an increase in real GDP, followed by an increase in savings through the multiplier process. The increase in savings will increase the supply of loanable funds, leading to a fall in the interest rate in the loanable funds market as well. So in the short run an expansionary monetary policy will increase real GDP; similarly, a contractionary monetary policy will reduce real GDP in the short run.

In the long run, real GDP cannot differ from potential output. So in the long run, the interest rate is determined in the loanable funds market: the long-run equilibrium interest rate equalizes the supply of loanable funds and the demand for loanable funds that arises when aggregate output is equal to potential output. In the long run an increase in the money supply will ultimately result in an increase in nominal wages. The short-run aggregate supply curve will shift leftward and real GDP will fall. As real GDP falls, savings will fall as well, leading to a reduction in the supply of loanable funds and a rise in interest rate. This process will continue until aggregate output is equal to potential output. The interest rate in the money market will also rise, as a higher aggregate price level in the long run leads to an increase in the nominal demand for money. So in the long run the Fed cannot influence the interest rate and monetary policy will have no effect on real GDP.

