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. (Click on “Meeting calendars and information” and then 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 in the previous FOMC statement? If yes, by how much does it differ?
   c. Does the statement comment on current macroeconomic conditions in the United States? How does it describe the U.S. economy?

1. Answers will vary depending on when you look up the information. As of February 2012, the latest statement was issued January 25, after the January 24–25 FOMC meeting.
   a. On January 25, 2012, the Fed announced that it had kept the target range for the federal funds rate unchanged at 0% to 0.25%.
   b. No, the target rate remained the same. In fact, on January 25, the FOMC anticipated that the federal funds rate would remain “exceptionally low” at least through late 2014.
   c. Yes, the statement comments on current macroeconomic conditions. It states that “the economy has been expanding moderately, notwithstanding some slowing in global growth. While indicators point to some further improvement in overall labor market conditions, the unemployment rate remains elevated. Household spending has continued to advance, but growth in business fixed investment has slowed, and the housing sector remains depressed. Inflation has been subdued in recent months, and longer-term inflation expectations have remained stable.”

2. How will the following events affect the demand for money? 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.

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 and funds in checking accounts, 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. a. Go to www.treasurydirect.gov. Under “Individuals,” go to “Learn about Treasury Bills, Notes, Bonds, and TIPS.” Click on “Treasury bills.” Under “at a glance,” click on “rates in recent auctions.” What is the investment rate for the most recently issued 26-week T-bills?
b. Go to the website of your favorite bank. What is the interest rate for six-month CDs?
c. Why are the rates for six-month CDs higher than for 26-week Treasury bills?

3. a. Answers will vary. On February 16, 2012, the investment rate for the most recently issued 26-week T-bills was 0.132%.
b. Answers will vary. At www.ingdirect.com, the interest rate for six-month CDs on February 16, 2012, was 0.50%.
c. Treasury bills generally pay a lower interest rate than other short-term assets because they are considered especially safe. This makes investors willing to buy them even if they offer a somewhat lower return than other assets. Normally, the difference in rates is small. But when investors become nervous, the difference between U.S. government debt and other types of debt rises.

4. Go to www.treasurydirect.gov. Under “Individuals,” go to “Learn about Treasury Bills, Notes, Bonds, and TIPS.” Click on “Treasury notes.” Under “at a glance,” click on “rates in recent auctions.” Use the list of Recent Note, Bond, and TIPS Auction Results to answer the following questions.
a. What are the interest rates on 2-year and 10-year notes?
b. How do the interest rates on the 2-year and 10-year notes relate to each other? Why is the interest rate on the 10-year note higher (or lower) than the interest rate on the 2-year note?

4. a. Answers will vary. On January 31, 2012, the interest rate on the most recently issued 2-year note was 0.25% and the interest rate on the most recently issued 10-year note was 0.125%.
b. The interest rate on the 10-year note is lower than the interest rate on the 2-year note. Long-term interest rates reflect the average expectation in the market about what’s going to happen in the future to rates that have a shorter term, like 2 years. When a 10-year note rate is lower than a 2-year note rate, the market is signaling that it expects rates with terms less than 10 years to remain low, or fall, in the future. When a 10-year note rate is higher than a 2-year note rate, the market is signaling that it expects rates with terms less than 10 years to rise in the future.
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 monetary policy closes the recessionary gap?

Solution

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, lowers the interest rate and encourages 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 the aggregate price level change as 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 reduce the supply of money, raise the interest rate and reduce investment spending. The reduction in investment spending will lead consumers to reduce 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 $\frac{M}{H}$.

b. If the central bank is instead committed to maintaining an interest rate target of $r_1$, then as the economy slides into recession, how should the central bank react? Using your diagram from part a, demonstrate the central bank’s reaction.

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, $E_2$. 
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, $r_1$.

![Diagram](image)

8. Suppose that the money market in Westlandia is initially in equilibrium and the central bank decides to decrease the money supply.

a. Using a diagram like the one in Problem 7, explain what will happen to the interest rate in the short run.

b. What will happen to the interest rate in the long run?

Solution

8. a. In the short run, the money supply curve will shift to the left, to $MS_2$, and the interest rate will rise from $r_1$ to $r_2$.

![Diagram](image)
b. Over time, the aggregate price level will fall. This will reduce money demand, shifting the money demand curve left from $MD_1$ to $MD_2$, which causes the equilibrium interest rate to fall again.

9. 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

9. 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 output, the short-run aggregate supply curve will shift to the left (from $SRAS_1$ to $SRAS_2$). 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%.
10. 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.

10. If price stability is the only goal of monetary policy, then during recessions resulting from a leftward shift of 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 a low but non-zero inflation rate. 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 inflation low, it would be at the expense of a deeper recession in the short run.

11. 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 Brittania 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?
11. According to the accompanying diagram, monetary policy will be more effective in Albernia and less effective in Brittania. In Albernia a relatively small change in the money supply will lead to a large change in the interest rate, but in Brittania a relatively large change in the money supply will lead to only a small change in the interest rate.

12. 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?

13. Because of the economic slowdown associated with the 2007–2009 recession, the Federal Open Market Committee of the Federal Reserve, between September 18, 2007 and December 16, 2008, lowered the federal funds rate in a series of steps from a high of 5.25% to a rate between zero and 0.25%. The idea was to provide a boost to the economy by increasing aggregate demand.

   a. Use the liquidity preference model to explain how the Federal Open Market Committee lowers the interest rate in the short run. Draw a typical graph that illustrates the mechanism. Label the vertical axis “Interest rate” and the horizontal axis “Quantity of money.” Your graph should show two interest rates, \( r_1 \) and \( r_2 \).

   b. Explain why the reduction in the interest rate causes aggregate demand to increase in the short run.

   c. Suppose that in 2013 the economy is at potential output but that this is somehow overlooked by the Fed, which continues its monetary expansion. Demonstrate the effect of the policy measure on the AD curve. Use the LRAS curve to show that the effect of this policy measure on the AD curve, other things equal, causes the aggregate price level to rise in the long run. Label the vertical axis “Aggregate price level” and the horizontal axis “Real GDP.”
13. a. The Federal Reserve Open Market Committee increases the money supply, which shifts the money supply curve to the right, from $MS_1$ to $MS_2$. An increase in the money supply drives the interest rate down, from $r_1$ to $r_2$.

b. Because aggregate prices are sticky in the short run, a fall in the interest rate leads to a rise in investment and consumer spending. This increase in investment and consumer spending leads to a rightward shift of the aggregate demand curve.

c. Although in the short run a rise in the interest rate leads to an increase in the quantity of goods and services demanded, in the long run nominal wages will rise. This will cause the economy to end up at $E_2$ at a higher price level.
Appendix: Reconciling the Two Models of the Interest Rate

1. Using a figure similar to Figure 15A-1, explain how the money market and the loanable funds market react to a reduction in the money supply in the short run.

Solution

1. 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.

2. 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 influencing real GDP in the short run and the long run?

Solution

2. 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. 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 arise 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 the 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.