

chapter 15 (31)

Monetary Policy

Chapter Objectives

Students will learn in this chapter:

- What the money demand curve is.
- Why the liquidity preference model determines the interest rate in the short run.
- How the Federal Reserve implements monetary policy, moving the interest rate to affect aggregate output.
- Why monetary policy is the main tool for stabilizing the economy.
- How the behavior of the Federal Reserve compares to that of other central banks.
- Why economists believe in monetary neutrality—that monetary policy affects only the price level, not aggregate output, in the long run.

Chapter Outline

Opening Example: On his show “Mad Money” on the cable network CNBC in August 2007, Jim Kramer began screaming about the actions of the Federal Reserve. The overview of why Jim Kramer was screaming leads into the chapter’s coverage of the role of the Federal Reserve in conducting monetary policy.

I. The Demand for Money

A. The Opportunity Cost of Holding Money

1. The opportunity cost of holding money is measured by the foregone return that could be earned by holding other financial assets.
2. *Definition:* **Short-term interest rates** are the interest rates on financial assets that mature within six months or less.
3. *Definition:* **Long-term interest rates** are the interest rates on financial assets that mature a number of years in the future.

B. The Money Demand Curve

1. *Definition:* The **money demand curve** shows the relationship between the quantity of money demanded and the interest rate.
2. The money demand curve is negatively sloped, indicating that a higher interest rate leads to a higher opportunity cost of holding money and thus reduces the nominal quantity of money demanded.

C. Shifts of the Money Demand Curve

1. The most important factors causing the money demand curve to shift are:
 - changes in the aggregate price level
 - changes in real GDP

- changes in banking technology
- changes in banking institutions

II. Money and Interest Rates

A. The Equilibrium Interest Rate

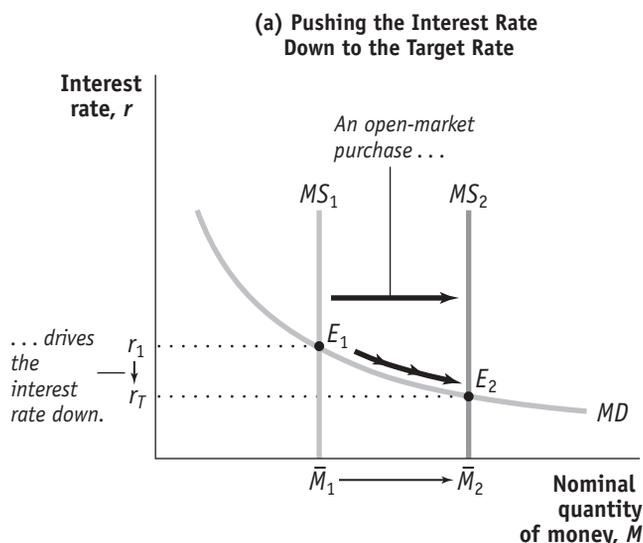
1. *Definition:* According to the **liquidity preference model of the interest rate**, the interest rate is determined by the supply and demand for money.
2. *Definition:* The **money supply curve** shows how the nominal quantity of money supplied varies with the interest rate.
3. Equilibrium in the money market is determined where the money supply curve, which is vertical at the quantity of money supplied chosen by the Fed, intersects the money demand curve. This is illustrated in Figure 15-3 (Figure 31-3) in the text.

B. Two Models of Interest Rates?

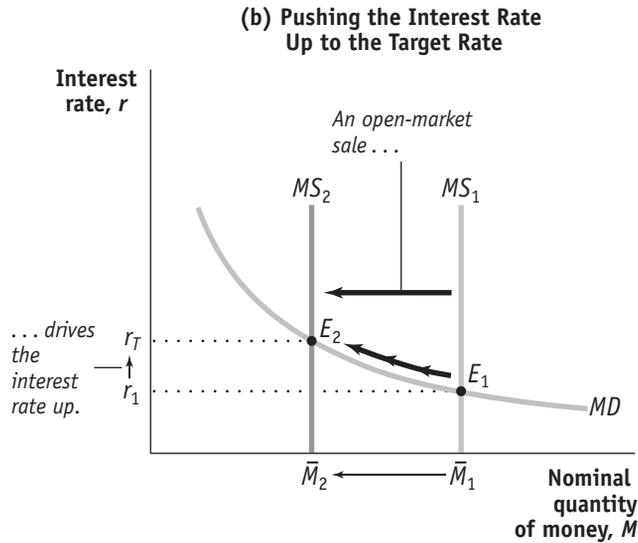
1. Both the loanable funds model and the liquidity preference model of the interest rate are correct. The most important insight from the liquidity preference model of the interest rate is that it shows us how monetary policy works.

C. Monetary Policy and the Interest Rate

1. *Definition:* The **target federal funds rate** is the Federal Reserve's desired federal funds rate.
2. The Open Market Desk of the Federal Reserve Bank of New York adjusts the money supply through the purchase and sale of Treasury bills until the actual federal funds rate equals the target federal funds rate.
3. If the actual federal funds rate is greater than the target federal funds rate, the Fed will increase the money supply by making an open-market purchase of Treasury bills, which will increase the money supply and push the money supply curve to the right, thereby lowering the interest rate.



4. If the actual federal funds rate is lower than the target federal funds rate, the Fed will decrease the money supply by making an open-market sale of Treasury bills, which will decrease the money supply and push the money supply curve to the left, thereby raising the interest rate.



III. Monetary Policy and Aggregate Demand

A. Expansionary and Contractionary Monetary Policy

1. *Definition:* **Expansionary monetary policy** is monetary policy that increases aggregate demand.
2. Expansionary monetary policy reduces the interest rate, causing the aggregate demand curve to shift to the right, and so is used to eliminate a recessionary gap.
3. *Definition:* **Contractionary monetary policy** is monetary policy that reduces aggregate demand.
4. Contractionary monetary policy increases the interest rate, causing the aggregate demand curve to shift to the left, and so is used to eliminate an inflationary gap.

B. Monetary Policy, Income, and Expenditure

1. Other things equal, a lower interest rate leads to higher planned investment spending. So a reduction in the interest rate shifts AE_1 upward to AE_2 . So the equilibrium level of real GDP rises to Y_2 .
2. Other things equal, a higher interest rate leads to lower planned investment spending. So a reduction in the interest rate shifts AE_1 downward to AE_2 . So the equilibrium level of real GDP falls to Y_2 .

C. Monetary Policy in Practice

1. *Definition:* The **Taylor rule for monetary policy** is a rule for setting the Federal funds rate that takes into account both the inflation rate and the output gap.
2. Monetary policy, rather than fiscal policy, is the main tool of stabilization policy.

D. Inflation Targeting

1. *Definition:* **Inflation targeting** occurs when the central bank sets an explicit target for the inflation rate and sets monetary policy in order to hit that target.

IV. Money, Output, and Prices in the Long Run

A. Short-Run and Long-Run Effects of an Increase in the Money Supply

1. In the short run, an increase in the money supply causes a rightward shift of the aggregate demand curve. As a result, real GDP and the aggregate price level both rise.
2. In the long run, an increase in the money supply will cause the aggregate demand curve to shift to the right, thereby raising the average level of prices. This in turn will cause the short-run aggregate supply curve to shift to the left, due to the higher wages demanded by laborers, ultimately causing real GDP to decrease. Thus, in the long run, an increase in the money supply has no effect on real GDP but raises the aggregate price level.

B. Monetary Neutrality

1. *Definition:* There is **monetary neutrality** when changes in the money supply have no real effects on the economy.
2. Most economists believe that money is neutral in the long run.

C. Changes in the Money Supply and the Interest Rate in the Long Run

1. In the short run, an increase in the nominal money supply increases the real money supply and reduces the interest rate. However, in the long run, the increase in all prices reduces the real money supply back to its original level.
2. In the long run, the equilibrium interest rate in the economy matches the supply and demand for loanable funds that arise at potential output in the market for loanable funds.

Teaching Tips

The Demand for Money

Creating Student Interest

Prior to class, obtain data on current interest rates for various financial instruments, such as money market accounts, 6-, 12-, and 24-month certificates of deposit, and Treasury bills and bonds. Present the interest rates for each of these in a table on the board for students to analyze. Explain that the interest rates on these financial instruments typically rise as the length of term of the investment increases. These interest rates represent the opportunity cost of holding money, since they indicate the potential rate of return that would be foregone compared to the very low rate of return associated with holding money.

Presenting the Material

Begin by discussing the notion of the opportunity cost of holding money. Afterward, distinguish between the nominal money demand curve and the real money demand curve and the effect that changes in the aggregate price level, real aggregate spending, technology, and institutions have on each curve. In addition, discuss the concept of the velocity of money from intuitive and mathematical perspectives.

Money and Interest Rates

Creating Student Interest

Ask students if they have ever heard news stories of the Fed raising or lowering the federal funds rate. Explain that the Federal Open Market Committee sets a target federal funds rate, which it achieves through the buying and selling of U.S. Treasury bills in the open market.

Presenting the Material

It is important to begin with the concept of equilibrium in the money market using a graph such as that shown in Figure 15-3 (Figure 31-3). Afterward, alter this graph to demonstrate the impact of monetary policy on the money supply and the equilibrium interest rate, as shown in Figures 15-4 and 15-5 (Figures 31-4 and 31-5) in the text.

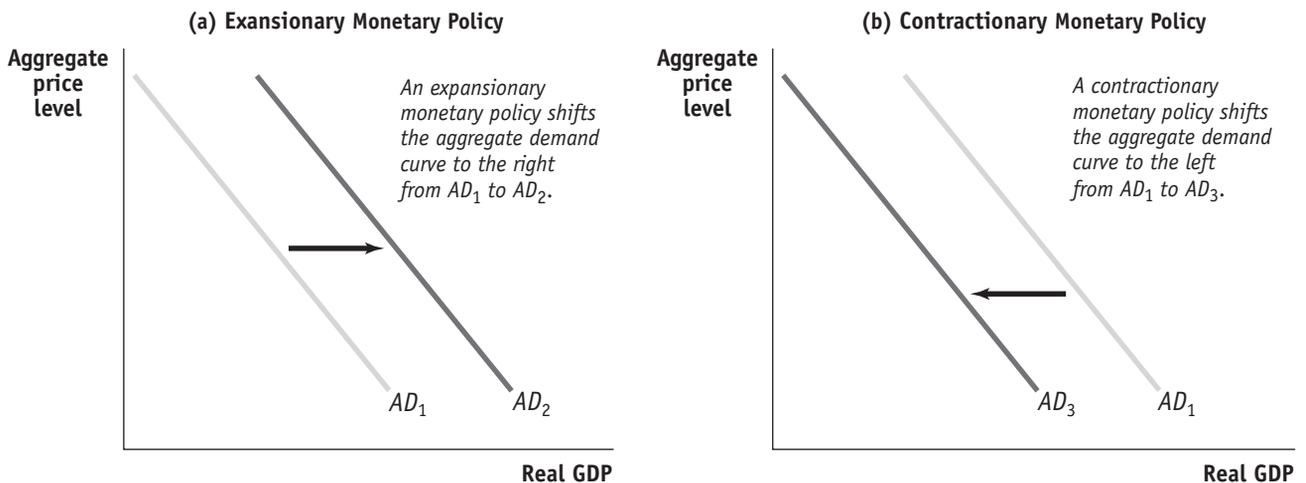
Monetary Policy and Aggregate Demand

Creating Student Interest

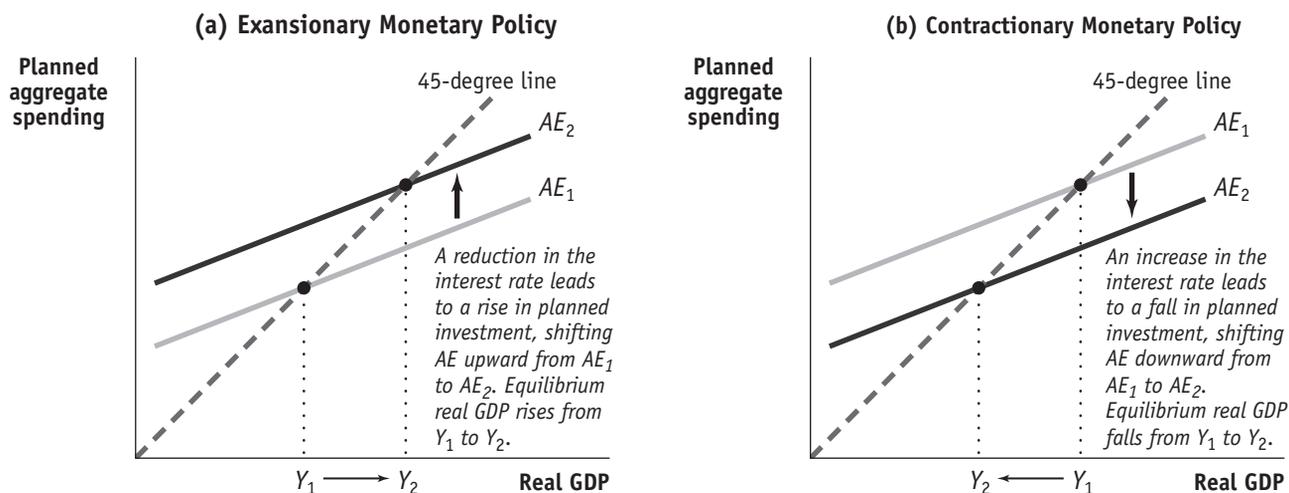
Ask students why the Fed initiates monetary policy. Undoubtedly, someone will respond that the Fed initiates monetary policy to affect the state of the macroeconomy. Explain to students that in this section of the chapter they will learn how to graphically illustrate the effect of monetary policy on aggregate output and the aggregate price level, using the AS-AD model that was developed in the previous chapter.

Presenting the Material

Use Figure 15-7 (Figure 31-7) in the text to illustrate the manner in which contractionary monetary policy and expansionary monetary policy can shift the AD curve.



It is also important to demonstrate the effect of monetary policy in terms of the income expenditure model. This is illustrated in Figure 15-8 (Figure 31-8).



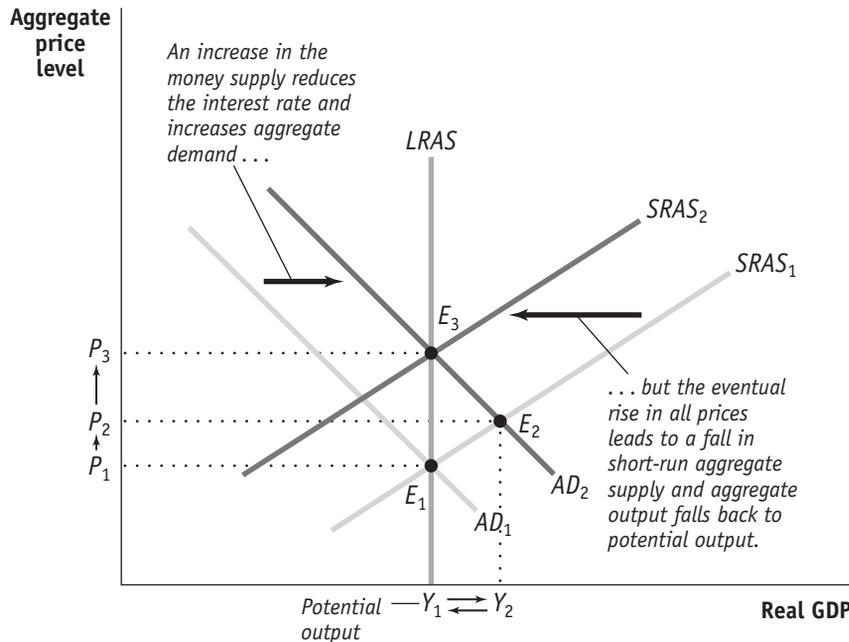
Money, Output, and Prices in the Long Run

Creating Student Interest

Ask students if they have ever heard the phrases, “a loose monetary policy” or “a tight monetary policy” used in the media. Indicate to them that these phrases are more brief ways of saying expansionary monetary policy, and contractionary monetary policy, respectively. Such phrases are sometimes used by the news media to simplify the presentation of economic concepts to the general public.

Presenting the Material

Use the AS-AD model to analyze the impact of monetary policy on the level of aggregate output and the aggregate price level. Begin the analysis from a short-run perspective, when prices are sticky. For example, in the short-run, expansionary monetary policies shift the aggregate demand curve to the right, which results in an increase in real GDP and an increase in the aggregate price level. However, in the long run, when all wages and prices are fully flexible, expansionary monetary policy will generate not only an increase in aggregate demand, but also a decrease in short-run aggregate supply, due to higher costs of production. As a result, in the long run, monetary policy will leave aggregate output unchanged at the level of potential output, while increasing the aggregate price level. This process, known as monetary neutrality, is illustrated in Figure 15-11 (Figure 31-11) in the text.



Common Student Pitfalls

- **The target versus the market.** Make sure students understand that interest rates are set by supply and demand in the money market. The fact that the Fed sets the interest rates does not mean that the money market does not function. The Fed sets a target federal funds rate and pursues that target by adjusting the supply of money so that the equilibrium interest rate equals the target they have set.
- **When the Fed can change monetary policy.** Students may mistakenly believe that the Fed is restricted to altering monetary policy just eight times a year at its regularly scheduled meetings. This, however, is not the case. There have been some instances in which the Fed has convened between its regularly scheduled meetings to adjust key monetary policy tools. This was especially true in 2001, when the Fed met and reduced the federal funds rate 10 times in an effort to circumvent a recession.
- **Money supply aggregate supply.** Students may mistakenly think that changes in the money supply affect aggregate supply. This misperception is most likely due to their seeing the word *supply* in each phrase. Emphasize to students that a change in the money supply affects key interest rates in the economy, such as the prime rate of interest paid by very large business borrowers, and mortgage interest rates paid by consumers. As a result, changes in the money supply affect consumer spending and business investment and, therefore, shift the aggregate demand curve, not the aggregate supply curve.
- **Long run versus short run and money neutrality.** Students may mistakenly think that the concept of monetary neutrality applies in both the short run and the long run. Emphasize to the class that the concept of monetary neutrality applies only in the long run, when all prices and wages are fully flexible.

Case Studies in the Text

Economics in Action

A Yen for Cash—This EIA discusses the opportunity cost of holding money in Japan and compares the Japanese use of cash versus credit compared to Americans.

Ask students the following questions:

1. How have interest rates affected the use of electronic payment cards in Japan? (Answer: Due to low interest rates in Japan, the Japanese people choose to use cash for most transactions rather than electronic payment cards such as credit, debit, or ATM cards.)
2. How has the industry structure of retailers in Japan affected the use of electronic payment cards in this country? (Answer: Since most retailers in Japan are small mom-and-pop businesses which have been reluctant install the technology necessary to accept electronic payments, many people in Japan continue to use cash to pay for goods and services.)

The Fed Reverses Course—This EIA reviews the Fed’s monetary policy decisions between 2004 and 2008.

Ask students the following questions:

1. What monetary policy had the Fed been pursuing prior to the summer of 2007? (Answer: generally raising interest rates)
2. What monetary policy did the Fed begin pursuing in 2007? (Answer: expansionary—decreasing the Federal funds rate)
3. Why did the Fed reverse course in 2007? (Answer: the crisis in financial markets)

What the Fed Wants, the Fed Gets—This EIA discusses the evidence regarding whether or not the Fed’s monetary policy actions lead to economic expansions or contractions.

Ask students the following questions:

1. What relationship does the data show between interest rates and the state of the economy? (Answer: High interest rates are associated with an expanding economy and low interest rates are associated with a slumping economy.)
2. Why does this relationship hold? (Answer: Because the Fed raises interest rates to combat inflation when the economy expands and lowers interest rates to strengthen the economy when it is slumping.)
3. How did Christina Romer and David Romer determine whether or not monetary policy matters? (Answer: They looked at the effects of monetary policy decisions during times when they weren’t in response to the business cycle.)

International Evidence of Monetary Neutrality—This EIA presents data that shows a more or less proportional relationship between money and the aggregate price level, which supports the idea of money neutrality in the long run.

Ask students the following questions:

1. Are there differences in the annual percentage increases in the money supply in developed nations compared with those in less developed nations? (Answer: Economic data do indicate that the annual percentage of increase in the money supply in developed nations is far smaller than that in less developed nations.)
2. Do economic data support the theory of monetary neutrality? (Answer: Yes, economic data do support the theory of monetary neutrality. In particular, less-developed nations, such as Bolivia, with high rates of money growth have experienced very high rates of inflation, while developed nations, such as the United States, with relatively low rates of money growth, have experienced comparatively low rates of inflation.)

For Inquiring Minds

Fear and Interest Rates—This FIM explains how the difference between the interest rate paid on Treasury Bonds and the interest rate paid on other short-term assets can be seen as a measure of fear about the safety of assets.

Long-term Interest Rates—This FIM explains how investors decide between short-term and long-term investments.

Global Comparison

Inflation Targets—This Global Comparison presents the target inflation rates of five central banks.

Activities

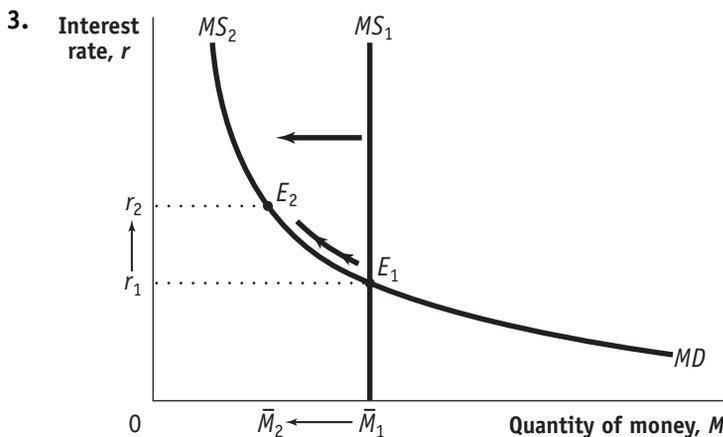
You're on the Federal Open Market Committee (15 minutes)

Pair students and ask them to complete the following exercises.

1. Assume you are a member of the Federal Open Market Committee. The economic data indicate that inflationary pressures are growing in the economy. What policy would you recommend regarding the target federal funds rate?
2. How in practice can the Fed achieve the change in the target federal funds rate you recommended in answering question 1?
3. Illustrate your response to question 1 with a graph of the money market showing the impact of the policy you recommended to prevent inflation.

Answers:

1. In an effort to reduce inflationary pressure in the economy, the Fed Open Market Committee should set a higher target level for the federal funds rate. Doing so will slow the economy down and reduce the upward pressure on wages and prices of goods and services.
2. In practice, the Fed Open Market Committee will sell U.S. Treasury bills to raise the actual federal funds rate until it equals the higher target federal funds rate.

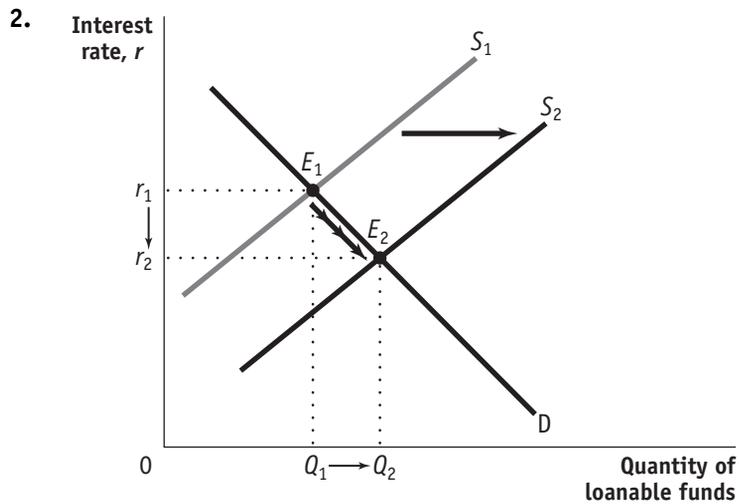
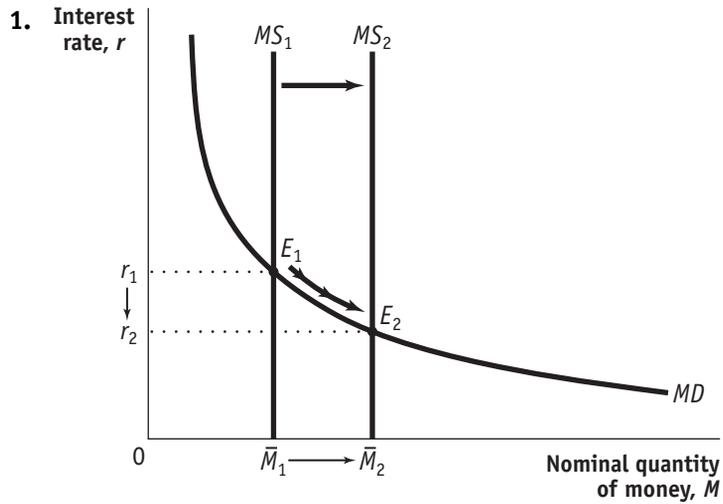


Determining the Interest Rate (15 minutes)

Pair students and ask them to complete the following exercises.

1. Draw a graph showing how the short-run interest rate is determined using the liquidity preference model.
2. Draw a graph showing how the short-run interest rate is determined using the loanable funds model.

Answers:



When Is Money Neutral? (15 minutes)

Pair students and ask them to answer the following thought questions.

1. What does the term *monetary neutrality* mean to an economist?
2. Does monetary neutrality occur in the short run? Explain your answer.
3. Does monetary neutrality occur in the long run? Explain your answer.

Answers:

1. Monetary neutrality occurs when changes in the money supply have no effect on real aggregate output.
2. Monetary neutrality does not occur in the short run. This is because expansionary monetary policy does cause the aggregate demand curve to

shift to the right, without affecting the short-run supply curve, resulting in an increase in aggregate output in the short run.

3. Monetary neutrality does occur in the long run. Specifically, in the long run, when all wages and prices are fully flexible, expansionary monetary policy will generate not only an increase in aggregate demand, but also a decrease in short-run aggregate supply, due to higher costs of production. As a result, in the long run, monetary policy will leave aggregate output unchanged at the level of potential output, while increasing the aggregate price level.

Web Resources

The following website provides data for selected interest rates provided by the Federal Reserve: <http://www.federalreserve.gov/releases/h15/>.

Consider using the Federal Reserve's "Fed Challenge" competition as the basis for a class activity. Information and resources are available on the New York Fed's web site: <http://www.newyorkfed.org/education/index.html>.

