

Lecture Guide: How the Federal Reserve Implements Monetary Policy

Lesson Authors

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Standards and Benchmarks (see page 24)

Lesson Description

The Federal Reserve (Fed) is the central bank of the United States. Its congressionally mandated objectives are to promote maximum employment and price stability. This lesson focuses on how the Federal Open Market Committee (FOMC) conducts monetary policy to achieve this dual mandate. The discussion begins by tracing out the transmission of monetary policy from the FOMC's setting of its policy interest rate target to market interest rates and, ultimately, employment and inflation outcomes. Students then learn about the tools the Fed uses to ensure that market interest rates are aligned with the FOMC's target interest rate. The economic concepts of reservation rate and arbitrage are taught. Finally, examples of how the FOMC responds to various economic shocks are presented to reinforce the key concepts covered in this lesson.

Grade Level

High School or College

Concepts

Administered rates	Inflation
Arbitrage	Interest on reserve balances
Contractionary monetary policy	Maximum employment
Discount rate	Monetary policy
Dual mandate	Open market operations
Expansionary monetary policy	Overnight reverse repurchase agreement offering rate
Federal funds rate	Price stability
Federal Open Market Committee (FOMC)	Reservation rate
Federal Reserve System	Reserve balance accounts

Objectives

Students will be able to

- identify the ways in which monetary policy tools can be used to achieve economic objectives;
- identify and explain the function of the Fed’s monetary policy tools;
- describe the key components of the Fed’s dual mandate;
- describe how the Fed sets the stance of monetary policy;
- analyze the linkages between the Fed’s policy interest rate, market interest rates, the decisions of households and businesses, and the economic goals of maximum employment and price stability;
- explain how reservation rate and arbitrage ensure the Fed’s administered rates effectively guide the federal funds rate; and
- analyze policy strategies given economic conditions.

Compelling Question

How does the Fed conduct monetary policy to achieve price stability and maximum employment?

Time Required

50 minutes (for lecture, assuming assessments are done outside of class)

Materials

- PowerPoint Slides
 - Handouts 1 and 2, one copy of each for each student
-

Procedure

1. Distribute *Handout 1: Student Notetaking Guide* to each student and begin the lesson by discussing the following:
 - How does the Federal Reserve influence the economy? (*Answers will vary.*)
2. Display Slide 2 and explain that the Federal Reserve (Fed) is the central bank of the United States. The U.S. Congress has given the Fed two objectives, which we call the “**dual mandate**”—to promote **maximum employment** and **price stability**. The Fed conducts **monetary policy** to move the economy toward this dual mandate. Review the definitions on the slide and discuss the following:
 - There are a lot of data the Fed can look at to assess whether the economy is at maximum employment. These include various measures of the unemployment rate, employment numbers, and labor force participation numbers.

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- When the Fed sees that the economy is falling short of (or is above) maximum employment, it adjusts its monetary policy to move the economy toward maximum employment.
 - There are many ways to measure **inflation** (the change in the level of prices) as well. And there is a question of what rate of inflation is best for the economy. The Fed has stated that it seeks to achieve inflation that averages 2 percent over time, using a specific measure called the personal consumption expenditures index.
 - When the Fed thinks that inflation is too high (or low) for an extended period of time, it will adjust monetary policy to steer the economy back toward the desired level of inflation.
3. Display Slide 3. Explain to the students that they are now going to look at who within the Fed makes these decisions. Discuss the following:
- The **Federal Open Market Committee**, or **FOMC**, is the group within the **Federal Reserve System** that conducts (or sets the stance of) monetary policy. It does this primarily by setting the target range for the **federal funds rate (FFR)**.
 - The FOMC is made up of 19 participants—the 12 Federal Reserve Banks' presidents plus the seven governors (if all seats are filled) from the Board of Governors of the Federal Reserve System.
 - Refer to the map on the slide and ask students which Federal Reserve District they live in.
 - Of the 19 FOMC participants, 12 of the FOMC members vote on policy at any given meeting.
4. Display Slide 4. Tell the students that this is a picture of an FOMC meeting, held at the Board of Governors in Washington, D.C. All 19 FOMC participants attend FOMC meetings. The presidents report on economic conditions in their respective districts and participate in the monetary policy discussions, but only five of the 12 presidents are designated as voting members in a given year and join the seven governors to vote on policy decisions.
5. Display Slide 5 and tell the students that as they move through this discussion—on how the Fed implements monetary policy—the flow diagram will be their guide. As an overview, ask students to read through the bullets and the boxes on the slide. Discuss the following:
- How do you think a change in interest rates (Box 2) affects consumers' and producers' decisions (Box 3)? (*Answers will vary. Lower interest rates encourage spending and investment.*)
 - Do you think an increase in interest rates encourages or discourages saving? (*Answers will vary. Higher interest rates encourage saving.*)
 - Do you think an increase in interest rates encourages or discourages borrowing? (*Answers will vary. Higher interest rates discourage borrowing.*)
6. Display Slide 6. Tell the students that the FOMC conducts monetary policy (sets the stance of policy) by setting a target range for the federal funds rate, a key interest rate in the economy. Discuss the federal funds market by explaining the following:

- Banks hold funds (or cash) in their “checking accounts” at the Fed, called **reserve balance accounts**.
 - Banks that need funds to make payments or pay customers can borrow from banks that have excess funds.
 - The transfer of funds from one bank’s reserve account to another bank’s reserve account is termed a federal funds transaction, and the agreed interest rate in this transaction is the federal funds rate.
7. Display Slide 7. Discuss the following:
- The federal funds market is an electronic payments market where banks that need funds/reserves go to borrow funds from banks and Federal Home Loan Banks that have excess funds/reserves.
 - For each transaction today, funds are transferred from the lender’s reserve balance account at the Fed to the borrower’s reserve balance account at the Fed.
 - At that time, there is an agreement to reverse the payment the next day, where the funds returned are a bit more than borrowed, reflecting the interest payment.
 - The interest rate that the borrower and lender agree on is called the federal funds rate.
 - NOTE: It is important to emphasize that the federal funds rate is market-determined by the borrowers and lenders. The Fed does not set the federal funds rate.
8. Display Slide 8. Discuss the following:
- The FOMC sets a target range for the federal funds rate; it is the range where it wants the federal funds transactions to take place.
 - When the FOMC moves the target range for the federal funds rate higher or lower, the FOMC knows the federal funds rate and other interest rates in the economy will be affected and then influence the spending and investing decisions made by consumers and producers.
 - For example, if the FOMC lowers the target range for the federal funds rate, this will lower interest rates in the economy and encourage consumers and businesses to take loans to spend and invest.
9. Display Slide 9. Tell the students that when the FOMC meets, it sets a target range for the federal funds rate. Discuss the following:
- The figure has time on the x-axis and basis points on the y-axis.
 - Basis points are related to percentage points. Basis points are used when the percentage points are small. So, 25 basis points = 0.25 percent.
 - The figure shows the target range set by the FOMC over time in gray.
 - The FOMC has been setting the target range (the width of the gray region) to 25 basis points.

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- In 2018, the target range was moved up multiple times as the FOMC evaluated the economy as gaining momentum and inflation moving up toward 2 percent.
 - In 2019, the target range was moved down a number of times when foreign economies were underperforming and the FOMC saw this as a potential drag on the U.S. economy.
 - In March 2020, when the COVID-19 pandemic hit the economy, the FOMC quickly moved the target range for the federal funds rate to 0.00 to 0.25 percent, near zero.
10. Display Slide 10. Note that the Fed uses its monetary policy implementation tools to ensure that the federal funds rate stays within the target range. This slide shows that its actions work. Discuss the following:
- Remember that the federal funds rate is not “set” by the Fed but determined in the federal funds market.
 - The red line is the market-determined median federal funds rate (from all the transactions in the federal funds market).
 - This rate, called the effective federal funds rate, is inside the target range (gray region) set by the FOMC.
 - To summarize, the FOMC *conducts* monetary policy by setting the target range for the federal funds rate.
 - Our next topic: How does the Fed ensure the federal funds rate is inside the target range?
11. Display Slide 11. Discuss the following:
- What does the word “implement” mean? (*Answers will vary.*)
 - Tell the students that implement means to put a decision or policy into effect.
 - Tell the students to notice the red “implementation” arrow. Explain that the Fed “implements” the policy decisions made by the FOMC with its monetary policy implementation tools.
12. Display Slide 12. Explain that the Fed has four tools in its toolbox to implement monetary policy. Discuss the following:
- Three of the tools are linked to interest rates that the Fed sets or administers. These tools and their associated **administered rates** (in green text) are used to steer the market-determined federal funds rate into the FOMC’s target range. These tools also interact with other market interest rates to help set overall financial conditions.
 - The following key abbreviations are used throughout the remainder of the discussion:
 - **Interest on reserve balances** (IORB)
 - Overnight reverse repurchase agreement (ON RRP)
 - The fourth tool is **open market operations**—the purchase and sale of government securities—which is used to adjust the level of supply of reserves in the banking system (in blue text).

13. Display Slide 13. Tell the students that this visual shows each of the Fed's tools on a single graph. Discuss the following:
 - The green arrows show the three administered rates; that is,
 - IORB rate
 - ON RRP rate
 - Discount rate
 - The blue arrow points to the supply of reserves curve, which is influenced by open market operations.

14. Tell the students that understanding how these tools work requires understanding the demand and supply for reserves in the banking system.¹ Explain that the demand curve has three segments. Discuss the following:
 - The top portion of the demand curve is capped by the **discount rate** that the Fed sets.
 - The middle of the curve is downward sloping because banks will demand a greater quantity of reserves the lower the interest rate. Banks want these funds on hand in case of an emergency need for cash.
 - The bottom portion is nearly flat because, at some point, banks do not find much benefit from holding additional reserves.

15. Tell the students that the supply curve is vertical because only the Fed can supply reserves to the banking system. The Fed adjusts the supply with its open market operations.
 - When the Fed buys securities, it pays for them by adding funds/cash into banks' reserve balance accounts, which shifts the supply curve to the right.
 - When the Fed sells securities, it receives funds for them by subtracting funds/cash from banks' reserve balance accounts, which shifts the supply curve to the left.

16. Tell the students that, like any supply and demand graph, the price is determined by the equilibrium point, which is where supply and demand intersect. On this graph, the "price" of reserves is the federal funds rate, indicated by "FFR."

17. Tell the students that the supply curve intersects the flat part of the demand curve (on the right side of the figure) on purpose. In this position, the Fed is supplying an "ample" level of reserves to the banking system. Discuss the following:
 - "Ample reserves" means the supply curve intersects the demand curve where small movements in the supply curve will not affect the equilibrium federal funds rate much; this occurs on the flat part of the demand curve.
 - In January 2019 the FOMC stated that it would implement monetary policy over the longer run with ample reserves.

- The tools explained in this discussion are designed to adjust the federal funds rate when reserves are ample.

18. Tell the students that the rest of the discussion will focus on how each of the tools helps the Fed accomplish its dual mandate goals.

Tool #1: Interest on Reserve Balances

19. Display Slide 14. Remind the students that as the central bank of the United States, the Fed acts as a bank for banks. Discuss the following:

- The Fed serves some of the same functions that commercial banks serve for people and businesses; it takes deposits and it gives loans.
- When banks deposit funds in their reserve balance accounts at the Fed, they earn the interest on reserve balances rate.
- Remember, because the Fed can set the rate at whatever level it thinks is appropriate, it is called an administered rate.
- Banks always know they can put their excess funds in their accounts at the Fed and earn the interest on reserve balances rate.
- Also, the Fed can be counted on for being there to return their funds when banks want to withdraw them. So, for banks, holding funds in their reserve balance accounts is a “risk-free” investment option.
- The interest rate is expressed as “IORB rate” on the graph.

20. Display Slide 15. Tell the students that the interest on reserve balances rate is an effective guide for (helps steer) the federal funds rate because of two key economic concepts—**reservation rate** and **arbitrage**.

21. Explain that a reservation rate is the lowest rate that banks are willing to accept for lending out their funds. Tell the students the next few slides show how the interest on reserve balances rate acts like a reservation rate.

22. Display Slide 16. Tell the students that, like people, banks seek to earn a return on their money and that they have several options. Banks say, “I know I can deposit funds at the Fed in my reserve balance account and earn the interest on reserve balances rate; now let me look in the market for other opportunities and see what I can get there.” This slide shows three options for how banks may want to invest their excess funds overnight. Discuss the following:

- Banks can deposit excess funds at their Federal Reserve Bank and earn the interest on reserve balances rate.
- They can lend excess funds to other banks in the federal funds market and earn the federal funds rate.
- They can invest in Treasury bills and earn the Treasury bill rate.

- All of these options provide banks with an overnight return on their money with very little risk.
23. Display Slide 17. Discuss the following:
- What if the federal funds rate and the Treasury bill rate were around 2 percent while the interest on reserve balances rate was 2.5 percent? (*Answers will vary.*)
 - If you were the bank wanting to invest your money, what would you do? (*Answers will vary.*)
24. Display Slide 18. Tell the students that banks would deposit their funds at the Fed to earn the interest on reserve balances rate because it returns the highest amount across similar investment options. Summarize the following points with the students:
- Interest on reserve balances is a risk-free investment option for banks.
 - Because banks seek the best return on their money, they will not lend or invest for less than they can earn by depositing at the Fed.
 - So, the interest on reserve balances rate is a reservation rate for banks.
25. Display Slide 19. Discuss the following:
- What will happen to the other interest rates? (*Answers will vary.*)
26. Explain that arbitrage is the simultaneous purchase and sale of funds (or goods) in order to profit from a difference in price. Tell the students the next few slides show how arbitrage ensures that the interest on reserve balances rate can be used to guide the federal funds rate and interest rates on other similar investment options.
27. Display Slide 20. Discuss the following:
- Recall from the previous slides that the interest on reserve balances rate acts as a reservation rate. This means that when given the option of earning 2 percent in the federal funds market or 2.5 percent by depositing their funds at the Fed, banks will deposit their funds in their reserve balance accounts at the Fed to earn the higher interest on reserve balances rate.
 - Will the federal funds rate stay at 2 percent? (*Answers will vary.*)
28. Display Slide 21. Tell the students that the federal funds rate would not stay far below the interest on reserve balances rate because arbitrage would close the gap between the two rates. Discuss the following:
- Banks would see a way to make a profit from the difference in rates.
 - They would borrow money in the federal funds market at 2 percent and deposit that same money at the Fed and earn 2.5 percent.

- The profit in this example is 50 basis points (a 0.5 or $\frac{1}{2}$ percentage point) for every dollar invested.
 - This action is arbitrage.
29. Display Slide 22. Explain that many banks will see this opportunity; they will borrow in the federal funds market at the federal funds rate and deposit at the Fed to earn the higher interest on reserve balances rate. This action by many banks will pull the federal funds rate up toward the interest on reserve balances rate. Discuss the following:
- The increase in demand for reserves in the federal funds market will allow lenders to start asking more for their funds, which puts upward pressure on the federal funds rate, and the federal funds rate will rise.
 - The arbitrage will continue until the federal funds rate rises to the level that banks no longer see the opportunity to profit. Profits go to zero when the federal funds rate is at the same level as the interest on reserve balances rate.
 - So arbitrage ensures that the federal funds rate does not fall far below the interest on reserve balances rate.
 - Arbitrage is what makes interest on reserve balances an effective tool for guiding the federal funds rate.
30. Display Slide 23. Tell the students that arbitrage also works if the federal funds rate is above the interest on reserve balances rate. Discuss the following:
- How would arbitrage pull the federal funds rate down toward the interest on reserve balances rate? (*Answers will vary.*)
31. Display Slide 24. Discuss the following:
- If the federal funds rate is above the interest on reserve balances rate, then banks will seek to increase the return on their money by withdrawing funds from their reserve balance accounts at the Fed and lending these funds out in the federal funds market.
 - In the example, the return (or profit) on this transaction is 50 basis points.
32. Display Slide 25. Explain that many banks will take similar actions. More available funds for loan in the federal funds market pushes down the federal funds rate that borrowing banks must pay, moving the federal funds rate down toward the interest on reserve balances rate.
33. Display Slide 26. Summarize the following key points for students:
- Arbitrage ensures that, along with other short-term interest rates, the federal funds rate does not fall far below or rise far above the interest on reserve balances rate.
 - Recall we started this discussion with Box 1 going to Box 2 and considering the question, "How does the Fed ensure its target range for the federal funds rate transmits to market interest rates?"

- We now know that with arbitrage at work, when the FOMC sets the target range for the federal funds rate, it is confident that the federal funds rate will trade in this target range because the Fed can increase or decrease the interest on reserve balances rate to steer the market-determined federal funds rate up or down as needed.
- When the FOMC raises the target range for the federal funds rate, the Fed raises the interest on reserve balances rate, which moves the federal funds rate up into the new target range.
- When the FOMC lowers the target range for the federal funds rate, the Fed lowers the interest on reserve balances rate, which moves the federal funds rate down into the new target range.

Tool #2: Overnight Reverse Repurchase Facility, with its Overnight Reverse Repurchase Agreement Offering Rate

34. Display Slide 27. Discuss the following:

- Interest on reserve balances is only available to banks and a few other institutions.
- The Fed has an overnight reverse repurchase facility that is open to a broader set of financial institutions that are active in financial markets where short-term interest rates are determined.
- This facility allows these large, financial institutions to deposit their funds and earn the **overnight reverse repurchase agreement offering rate** offered by the Fed.
- When an institution deposits funds at the Fed, it gets a Treasury security as collateral. There is also an agreement to reverse the transaction the next day: The Fed pays back the funds with interest, and the Treasury security is returned to the Fed. This agreement to swap funds and Treasury securities today and reverse it tomorrow is called a reverse repurchase agreement.
- The rate is expressed as “ON RRP rate” on the graph.

35. Explain to the students that the overnight reverse repurchase agreement offering rate works for these institutions similar to the way the interest on reserve balances rate works for banks. Discuss the following:

- The overnight reverse repurchase agreement offering rate is an *administered rate* the Fed sets.
- The overnight reverse repurchase agreement offering rate acts like a *reservation rate* for these financial institutions.
- The overnight reverse repurchase agreement offering rate interacts with market rates through *arbitrage*.

36. Tell the students that the overnight reverse repurchase agreement facility is a supplementary tool because its overnight reverse repurchase agreement offering rate helps set a floor for the federal funds rate.²

Tool #3: The Discount Window, with its Discount Rate

37. Display Slide 28. Tell the students that the third administered rate set by the Fed is the discount rate. Discuss the following:
- The Fed is the central bank and it serves as a bank for other banks.
 - Banks that need extra funds can always borrow from the Fed through the discount window.
 - When banks take loans from the Fed, they pay an interest rate called the discount rate.
 - Because banks have access to funds from the Fed at the discount rate, they should not be willing to pay a higher interest rate to borrow the money somewhere else, including the federal funds market.
 - Because this sets a maximum rate that banks should be willing to pay for funds, it sets a ceiling for the federal funds rate.
 - Graphically, because it sets a maximum rate and acts as a ceiling, the discount rate caps the demand curve.

Tool #4: Open Market Operations

38. Display Slide 29. The last monetary policy implementation tool is open market operations. Define open market operations as the buying and selling of government securities. Discuss the following:
- When the Fed buys securities, it pays for them by adding reserves to banks' reserve balance accounts.
 - You can think of this as like buying something at a store with a debit card. Money is subtracted from your checking account and placed in the checking account at the store's bank.
 - When the Fed sells securities, banks pay for the securities by having reserves subtracted from their reserve balance accounts.
39. Tell the students that when the Fed adjusts the supply of reserves in the banking system it is using open market operations. Discuss the following:
- The Fed has stated it will operate with an "ample" level of reserves in the banking system.
 - On the graph, an "ample" level of reserves means that the supply curve remains far to the right in the figure, where the supply curve intersects the flat portion of the demand curve (so that small shifts in the supply curve do not affect the equilibrium federal funds rate).
 - The Fed uses open market operations to ensure that the level of reserves remains large enough to be ample.
 - When the Fed wants to increase the level of reserves in the banking system, it buys government securities in the open market and pays for the securities by crediting (adding to) the reserve balance account at the seller's bank.

- When the Fed buys securities, the level of reserves increases (shifting the supply curve to the right).
- There are some factors in the economy that will cause the supply of reserves to naturally shrink over time, so the Fed will need to periodically conduct open market operations to purchase securities and add reserves.
- Graphically, this means that if the supply curve drifts to the left, so that reserves might no longer be ample, the Fed will use open market purchases of securities to shift supply back to the right.

The Tools Work Together: The Fed Lowers and Raises the Federal Funds Rate By Decreasing and Increasing the Administered Rates, Respectively

40. Tell the students that the Fed uses its administered rates to ensure the federal funds rate moves up or down in order to implement the policy decision of the FOMC. Discuss the following:
 - Suppose there is something going on in the economy that causes the FOMC to lower the target range for the federal funds rate. How might the Fed adjust its administered rates to make sure the federal funds rate (the market-determined rate) moves into the FOMC's new target range? (*Answers will vary.*)
41. Display Slide 30. Explain that the graph shows the shift down in the Fed's administered rates when the FOMC lowers the target range for the federal funds rate. Tell the students to notice that the ends of the demand curve move down but that the supply curve is unchanged. (NOTE: Slides must be in presentation mode to see the animation.) Discuss the following:
 - Suppose there is something going on in the economy that causes the FOMC to raise the target range for the federal funds rate. How might the Fed adjust its administered rates to make sure the federal funds rate (the market-determined rate) moves into the FOMC's new target range? (*Answers will vary.*)
42. Display Slide 31. Explain that the graph shows the shift up in the Fed's administered rates when the FOMC raises the target range for the federal funds rate. Tell the students to notice that the ends of the demand curve move up but that the supply curve is unchanged.

Examples of Expansionary and Contractionary Policy

43. Tell the students that the last few slides will tie together the FOMC's policy action—moving the target range for the federal funds rate—with its goal of meeting its dual mandate of maximum employment and price stability.
44. Display Slide 32. Present the following scenario:
 - Suppose the economy weakens and employment falls short of maximum employment. Meanwhile, the inflation rate, which might have recently been steady around 2 percent, is showing signs of decreasing. Discuss the following:

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- Given the economic conditions in the scenario, how might the Fed conduct monetary policy to achieve maximum employment and price stability? (*Answers will vary.*)
 - Explain that the FOMC might decide to use **expansionary monetary policy** to provide stimulus for the economy.
45. Display Slide 33. Discuss the steps using the boxes and the following:
- Box 1: The FOMC will decrease the target range for the federal funds rate.
 - Red arrow and dashed box: To implement the FOMC's policy change, the Fed would decrease its administered rates—interest on reserve balances rate, overnight reverse repurchase agreement offering rate, and discount rate—accordingly.
 - Box 2: Because the administered rates are reservation rates, and because banks and other institutions arbitrage across investment options, lowering the administered rates pushes the federal funds rate and other market interest rates lower. These lower market interest rates make borrowing money more affordable.
 - Box 3: Lower interest rates decrease the savings rate and the cost of borrowing money, which encourages consumers to increase spending on goods and services and businesses to invest in new equipment.
 - Box 4: The increase in both consumption spending by consumers and investment spending by businesses increases the overall demand for goods and services in the economy.
 - With increased production, businesses are likely to hire additional employees and spend more on other resources, which moves the economy toward the Fed's maximum employment goal.
 - In short, lower interest rates can be used to stimulate a weak economy back, moving it toward the Fed's dual mandate.
46. Tell the students the Fed's monetary policy tools can be effective for moving the economy back toward maximum employment when the economy weakens (as just reviewed). But what if the economy overheats? Students should now turn to look at the price stability part of the dual mandate.
47. Display Slide 34. Assume the economy is growing at a very fast rate; inflation has been above the Fed's 2 percent target for a considerable time and is rising. At the same time, the unemployment rate is very low. In this case, the FOMC might decide to use **contractionary monetary policy** to bring inflation back to the Fed's goal of averaging 2 percent over time.
48. Display Slide 35. Discuss the steps using the boxes and the following:
- Box 1: The FOMC will increase the target range for the federal funds rate.
 - Red arrow and dashed box: To implement the FOMC's policy change, the Fed would increase the administered rates—interest on reserve balances rate, overnight reverse repurchase agreement offering rate, and discount rate—to steer market rates toward the FOMC's target.

- Box 2: Because the administered rates are reservation rates, and because banks and institutions arbitrage, raising the administered rates pushes the federal funds rate and other market interest rates higher. These higher interest rates make borrowing money more costly.
- Box 3: Higher interest rates increase the cost of borrowing money and make saving more advantageous, which discourages consumers from spending on some goods and services and reduces businesses' investment in new equipment.
- Box 4: The decrease in both consumption spending by consumers and investment spending by businesses decreases the overall demand for goods and services in the economy.
- With decreased demand for goods and services, upward pressure on wages and prices dampens. As these changes transmit to the broad economy, inflationary pressures diminish, and the inflation rate will fall back toward 2 percent.

49. So, higher interest rates can be used to restrain inflation and move the economy back to the Fed's dual mandate.

Conclusion

50. Display Slide 36. Review the Fed's monetary policy implementation tools discussed in this lesson, placing special emphasis on the primary function of each tool.

51. Display Slide 37. To conclude the lesson, ask the students the following review questions:

- What are the Fed's dual mandate goals? (*The Fed is mandated by Congress to promote maximum employment and price stability.*)
- What does it mean to conduct monetary policy? (*FOMC conducts monetary policy by setting a target range for the federal funds rate, a key interest rate in the economy. It does this with the goal of moving the economy toward the Fed's dual mandate.*)
- What does it mean to implement monetary policy? (*The Fed implements monetary policy by using its tools to steer the federal funds rate into the target range set by the FOMC.*)
- What is the Fed's primary tool for implementing monetary policy? (*Interest on reserve balances is the Fed's primary tool for adjusting the federal funds rate.*)
- How does the interest on reserve balances rate serve as a reservation rate? (*Banks will not lend or invest for less than they can earn by depositing their funds at the Fed.*)
- Give an example of banks arbitraging between the federal funds market and interest on reserve balances. (*If the federal funds rate is far enough below the interest on reserve balances rate, banks will borrow funds in the federal funds market at the federal funds rate and deposit them at the Fed to earn the interest on reserve balances rate.*)
- How does arbitrage ensure that the federal funds rate does not fall far below the interest on reserve balances rate? (*As banks borrow at the federal funds rate and deposit those monies to earn the interest on reserve balances rate, the increase in demand for federal funds will push the federal funds rate higher and close the gap.*)

- What is the discount rate? (*The discount rate is the interest rate charged by the Fed to banks for loans obtained through the Fed's discount window.*)
- How does the discount rate act as a ceiling for the federal funds rate? (*Banks should not be willing to pay a higher interest rate to borrow the money in the federal funds market or any other market.*)
- How does the Fed use open market operations to ensure reserves remain ample? (*The Fed buys U.S. Treasury securities and pays for these securities by crediting the reserve account of the seller, thereby increasing reserves in the banking system.*)
- What would the FOMC do if the economy is in recession and not meeting its maximum employment and price stability dual mandate? (*The FOMC would lower the target range for the federal funds rate. Then, the Fed would lower its administered rates—interest on reserve balances rate, overnight reverse repurchase agreement offering rate, and discount rate—which encourages more accommodative financial conditions and boosts spending by households and businesses, which in turn encourages production and employment and may put upward pressure on prices.*)

Reinforcement Activity

Use the activity and discussion questions below to review key information. Tell the students that you are going to read headlines pertaining to monetary policy and that they will answer questions with a thumbs-up or a thumbs-down.

Headline: Unemployment soars while inflation shows signs of decreasing

- Based on the headline, give a thumbs-up if the Fed should conduct expansionary monetary policy, or give a thumbs-down if it should conduct contractionary monetary policy. (*Expansionary/thumbs-up*)
- Give a thumbs-up if an expansion means raising the target range for the federal funds rate, or give a thumbs-down if it means lowering the target range. (*Lowering/thumbs-down*)
- Give a thumbs-up if the Fed should increase the administered rates, or give a thumbs-down if it should decrease the administered rates. (*Decrease/thumbs-down*)
- For each of the following scenarios, give a thumbs-up to signify an increase, or give a thumbs-down to signify a decrease:
 - If the Fed decreases its administered rates, will the federal funds rate likely increase or decrease? (*Decrease/thumbs-down*)
 - Will other interest rates likely increase or decrease? (*Decrease/thumbs-down*)
 - Will the quantity of new consumer and business loans likely increase or decrease? (*Increase/thumbs-up*)
 - Will new production of goods and services likely increase or decrease? (*Increase/thumbs-up*)
 - Will employment likely increase or decrease? (*Increase/thumbs-up*)

Headline: As prices continue to rise, inflation worries grow

- Based on the headline, give a thumbs-up if the Fed should conduct expansionary monetary policy, or give a thumbs-down if it should conduct contractionary monetary policy. (*Contractionary/thumbs-down*)
- Give a thumbs-up if a contraction means raising the target range for the federal funds rate, or give a thumbs-down if it means lowering the target range. (*Raising/thumbs-up*)
- Give a thumbs-up if the Fed should increase the administered rates, or give a thumbs-down if it should decrease the administered rates. (*Increase/thumbs-up*)
- For each of the following scenarios, give a thumbs-up to signify an increase, or give a thumbs-down to signify a decrease:
 - If the Fed increases its administered rates, will the federal funds rate likely increase or decrease? (*Increase/thumbs-up*)
 - Will other interest rates likely increase or decrease? (*Increase/thumbs-up*)
 - Will the quantity of new consumer and business loans likely increase or decrease? (*Decrease/thumbs-down*)
 - Will new production of goods and services likely increase or decrease? (*Decrease/thumbs-down*)
 - Will inflation likely increase or decrease? (*Decrease/thumbs-down*)

Multiple Choice Questions

Use the multiple choice questions below to assess key information.

1. What are the Fed's dual mandate goals?
 - A. Maximum employment and price stability**
 - B. Low unemployment and high inflation
 - C. Economic growth and low interest rates
 - D. Rising stock market values and low interest rates
2. When the FOMC conducts monetary policy, it sets the target range for
 - A. the federal funds rate.**
 - B. the interest on reserve balances rate.
 - C. the overnight reverse repurchase agreement offering rate.
 - D. open market operations.
3. Which monetary policy implementation tool is the primary tool the Fed uses to steer the federal funds rate into the FOMC's target range?
 - A. Open market operations
 - B. Interest on reserve balances**
 - C. Overnight reverse repurchase agreement facility
 - D. Discount rate

4. Which monetary policy tool is a supplementary tool that sets a floor for the federal funds rate?
 - A. Open market operations
 - B. Interest on reserve balances
 - C. Overnight reverse repurchase agreement facility**
 - D. Discount rate

5. Which monetary policy tool serves as a ceiling for the federal funds rate?
 - A. Open market operations
 - B. Interest on reserve balances
 - C. Overnight reverse repurchase agreement facility
 - D. Discount rate**

6. Which best describes how arbitrage makes interest on reserve balances an effective tool?
 - A. If the federal funds rate falls far below the interest on reserve balances rate, banks will borrow at the federal funds rate and deposit at the interest on reserve balances rate to earn a profit, which will increase the demand for federal funds and raise the federal funds rate.**
 - B. If the overnight reverse repurchase agreement offering rate falls far below the interest on reserve balances rate, banks will borrow at the overnight reverse repurchase agreement offering rate and deposit at the interest on reserve balances rate to earn a profit, which will increase the demand for federal funds and raise the overnight reverse repurchase agreement offering rate.
 - C. If the discount rate is far above the interest on reserve balances rate, banks will borrow at the discount rate and deposit at the interest on reserve balances rate to earn a profit, which will increase the demand for federal funds and raise the discount rate.
 - D. If the interest on reserve balances rate falls very far below the federal funds rate, banks will borrow at the interest on reserve balances rate and lend these funds out at the federal funds rate to earn a profit, which will increase the demand for funds and raise the interest on reserve balances rate.

7. Which best describes how interest on reserve balances serves as a reservation rate?
 - A. Because interest on reserve balances is a risk-free option, banks should not be willing to lend their funds for less than they can earn on their reserve balances.**
 - B. Because the Fed offers several interest rates, banks will choose the highest rate, which is interest on reserve balances.
 - C. Because the interest on reserve balances rate is set below the federal funds rate, banks will borrow at the interest on reserve balances rate and lend these out at the federal funds rate, which will raise the interest on reserve balances rate.
 - D. Because interest on reserve balances is a risk-free option, banks will always seek a higher return elsewhere.

8. Which best describes how the FOMC conducts monetary policy to increase employment during a recession to achieve its maximum employment objective?
- A. It increases the target rate range for the federal funds rate.
 - B. It decreases the target rate range for the federal funds rate.**
 - C. It sells Treasury securities in the open market to decrease the federal funds rate.
 - D. It buys Treasury securities in the open market to increase the federal funds rate.
9. Assume economic growth is very strong and the inflation rate has been above the Fed's price stability goal for some time. Which of the following would best describe an appropriate policy implementation?
- A. Raise the target range for the federal funds rate and simultaneously increase the interest on reserve balances rate, overnight reverse repurchase agreement offering rate, and discount rate.**
 - B. Raise the target range for the federal funds rate and use open market operations to decrease the level of reserves in the banking system.
 - C. Lower the target range for the federal funds rate and simultaneously decrease the interest on reserve balances rate, overnight reverse repurchase agreement offering rate, and discount rate.
 - D. Lower the target range for the federal funds rate and simultaneously raise the interest on reserve balances rate and discount rate, and lower the overnight reverse repurchase agreement offering rate.
10. What role do open market operations play in monetary policy?
- A. The Fed uses open market operations to move the federal funds rate higher and lower.
 - B. The Fed uses open market operations to move the interest on reserve balances rate higher and lower.
 - C. The Fed uses open market operations to move the discount rate higher and lower.
 - D. The Fed uses open market operations to ensure that the level of reserves remains ample.**

Assessment

Distribute a copy of *Handout 2: Assessment—Essay/Free Response* to each student. Allow time for students to work, then review their answers using the information below.

Essays should include the following information:

- *Contractionary monetary policy is advised.*
- *This is because inflation has been above the FOMC's aim of 2 percent over the longer run for some time; its current reading of 4 percent is quite above 2 percent, and there seems to be continuing wage pressures. This price situation is happening at the same time employment seems to be around its maximum level.*
- *The FOMC should raise the target range for the federal funds rate.*
- *The administered rates (interest on reserve balances rate, overnight reverse repurchase agreement offering rate, discount rate) should all be increased.*
- *Raising the administered rates will guide the federal funds rate higher.*
- *The higher federal funds rate will put upward pressure on other market interest rates.*
- *Higher interest rates would likely encourage saving and discourage spending, which would reduce production and reduce the demand for more employment over time.*
- *A decrease in demand for goods and services, as well as a reduction in firms' desire for more employment, would likely put less upward pressure on prices and wages and reduce the inflation rate over time.*
- *This policy action would help fulfill the Fed's dual mandate by moving the inflation rate back toward its longer-run goal of 2 percent and employment back toward the assessment of maximum employment.*
- *Open market operations are not needed unless reserve balances in the banking system were evaluated as becoming so small that they were no longer ample.*

Handout 1: Student Notetaking Guide (page 1 of 2)

The Fed’s dual mandate goals include the following:

- 1.
- 2.

What role does the FOMC play in monetary policy?

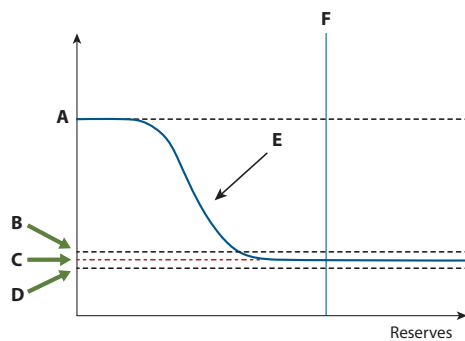
List the tools in the Fed’s toolbox and the administered rates in the table below.

Policy implementation tool	Administered rate
	N/A

How does interest on reserve balances act as a reservation rate?

How does arbitrage ensure that interest on reserve balances is an effective guide for the federal funds rate?

Identify the parts of the monetary policy graph in the table below.

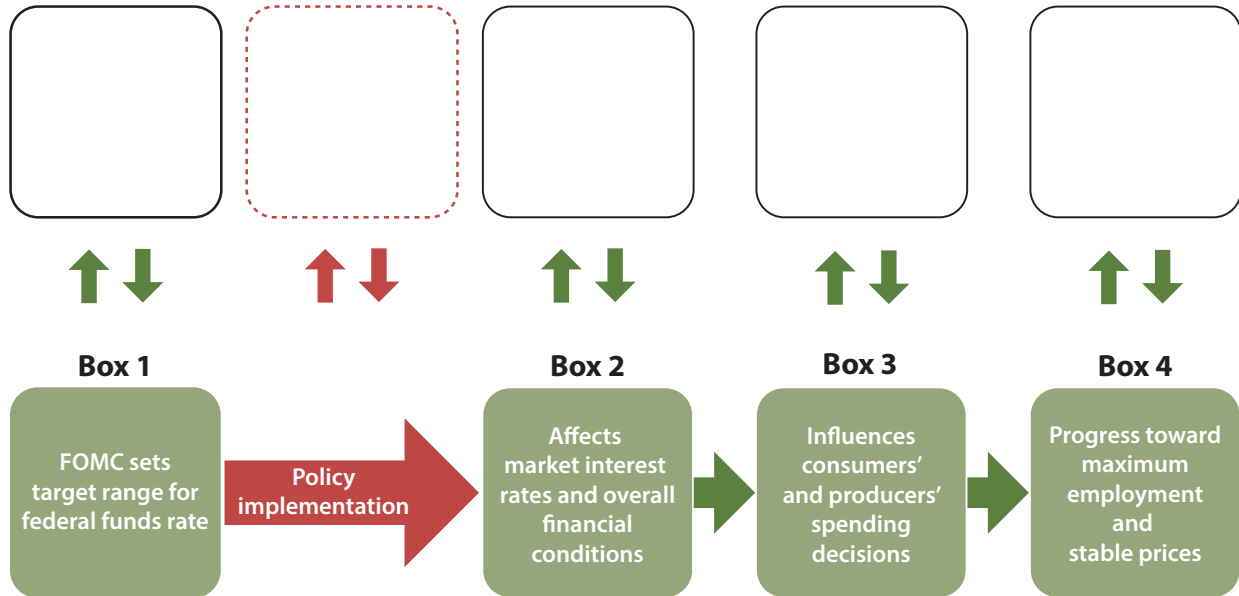


Letter	Label
A	
B	
C	
D	
E	
F	

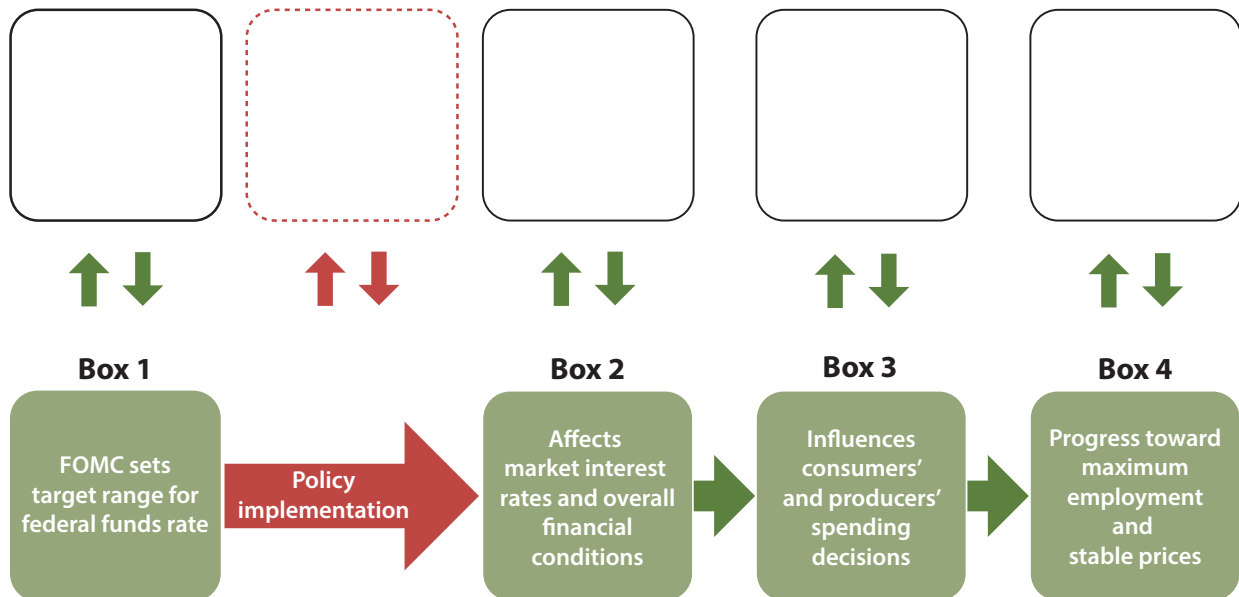
Rate/tool	In practice
	The Fed’s primary tool for guiding the federal funds rate
	The supplementary tool that acts like a floor for the federal funds rate
	The rate that puts a ceiling on the federal funds rate
	The tool that can be used to ensure reserves remain ample

Handout 1: Student Notetaking Guide (page 2 of 2)

Case 1: The economy weakens (Write the proper course of action in the boxes below and circle the appropriate arrows.)



Case 2: Inflation is rising (Write the proper course of action in the boxes below and circle the appropriate arrows.)



Handout 2: Assessment—Essay/Free Response

Constructed Response Essay Question

Imagine you are a Federal Reserve economist. You are preparing a memo on policy suggestions for the president of your Reserve Bank, who will help decide the direction of future monetary policy.

Examine “Current State of the Economy” below and make a policy recommendation: Should the FOMC pursue expansionary or contractionary monetary policy? Make sure you provide reasons for your recommendation. Identify the four monetary policy tools and how they could be used to pursue the policy recommendation. Specifically, describe how use of the tools will influence the federal funds rate, interest rates in general, and economic activity. Conclude by describing how the policy will help fulfill the Fed’s dual mandate.

Current State of the Economy

The inflation rate has been above 2 percent for quite some time; the most recent data show an inflation rate of 4 percent. At the same time, you are hearing employers complain about having a difficult time finding qualified workers to fill positions and having to raise wages and benefits to lure workers from other businesses. Meanwhile, the unemployment rate has fallen to a very low level.

Additional Resources

More information about how the Federal Reserve implements monetary policy

Ihrig, Jane; Senyuz, Zeynep and Weinbach, Gretchen. "Implementing Monetary Policy in an 'Ample-Reserves' Regime: The Basics (Note 1 of 3)". Board of Governors of the Federal Reserve System *FEDS Notes*, July 1, 2020; <https://www.federalreserve.gov/econres/notes/feds-notes/implementing-monetary-policy-in-an-ample-reserves-regime-the-basics-note-1-of-3-20200701.htm>.

Ihrig, Jane; Senyuz, Zeynep and Weinbach, Gretchen. "Implementing Monetary Policy in an 'Ample-Reserves' Regime: Maintaining an Ample Quantity of Reserves (Note 2 of 3)." Board of Governors of the Federal Reserve System *FEDS Notes*, August 28, 2020; <https://www.federalreserve.gov/econres/notes/feds-notes/implementing-monetary-policy-in-an-ample-reserves-regime-maintaining-an-ample-quantity-of-reserves-note-2-of-3-20200828.htm>.

Ihrig, Jane; Senyuz, Zeynep and Weinbach, Gretchen. "Implementing Monetary Policy in an 'Ample-Reserves' Regime: When in Crisis (Note 3 of 3)." Board of Governors of the Federal Reserve System *FEDS Notes*, October 2, 2020; <https://www.federalreserve.gov/econres/notes/feds-notes/implementing-monetary-policy-in-an-ample-reserves-regime-when-in-crisis-note-3-of-3-20201002.htm>.

Ihrig, Jane and Wolla, Scott. "The Fed's New Monetary Policy Tools." Federal Reserve Bank of St. Louis *Page One Economics: Econ Primer*, August 2020; <https://research.stlouisfed.org/publications/page1-econ/2020/08/03/the-feds-new-monetary-policy-tools>.

Ihrig, Jane and Wolla, Scott. "How Does the Fed Influence Interest Rates Using Its New Tools?" Federal Reserve Bank of St. Louis *Open Vault Blog*, August 5, 2020; <https://www.stlouisfed.org/open-vault/2020/august/how-does-fed-influence-interest-rates-using-new-tools>.

Ihrig, Jane and Wolla, Scott. "Let's Close the Gap: Revising Teaching Materials to Reflect How the Federal Reserve Implements Monetary Policy." Board of Governors of the Federal Reserve System *Finance and Economics Discussion Series (FEDS)*, October 2020; <https://www.federalreserve.gov/econres/feds/lets-close-the-gap-revising-teaching-materials-to-reflect-how-the-federal-reserve-implements-monetary-policy.htm>.

For a complete list of resources, visit the Federal Reserve Bank of St. Louis "Teaching the New Tools of Monetary Policy" webpage at <https://www.stlouisfed.org/education/teaching-new-tools-of-monetary-policy>.

Voluntary National Content Standards in Economics³

Standard 20: Fiscal and Monetary Policy

Benchmarks: Grade 12

7. Monetary policies are decisions by the Federal Reserve System that lead to changes in the supply of money, short-term interest rates, and the availability of credit. Changes in the growth rate of the money supply can influence overall levels of spending, employment, and prices in the economy by inducing changes in the levels of personal and business investment spending.
8. The Federal Reserve System's major monetary policy tool is open market purchases or sales of government securities, which affects the money supply and short-term interest rates. Other policy tools used by the Federal Reserve System include making loans to banks (and charging a rate of interest called the discount rate). In emergency situations, the Federal Reserve may make loans to other institutions. The Federal Reserve can also influence monetary conditions by changing depository institutions' reserve requirements.
9. The Federal Reserve targets the level of the federal funds rate, a short-term rate that banks charge one another for the use of excess funds. This target is largely reached by buying and selling existing government securities.
10. The Federal Reserve tends to increase interest rate targets when it feels the economy is growing too rapidly and/or the inflation rate is accelerating. It tends to lower rate targets when it wants to stimulate the short-term growth of the economy.

Notes

¹ For more information on the demand and supply curves, please see Ihrig, Jane and Wolla, Scott. "The Fed's New Monetary Policy Tools." Federal Reserve Bank of St. Louis *Page One Economics: Econ Primer*, August 2020; <https://research.stlouisfed.org/publications/page1-econ/2020/08/03/the-feds-new-monetary-policy-tools>.

² More details of how the overnight reverse repurchase agreement facility works is discussed in Ihrig, Jane; Senyuz, Zeynep and Weinbach, Gretchen. "The Fed's 'Ample-Reserves' Approach to Implementing Monetary Policy." Board of Governors of the Federal Reserve System *Finance and Economics Discussion Series (FEDS)*, February 2020; <https://www.federalreserve.gov/econres/feds/the-feds-ample-reserves-approach-to-implementing-monetary-policy.htm>.

³ The most recent version (2010) of the *Voluntary National Content Standards in Economics* does not align with the Fed's ample reserves implementation of monetary policy. You can read our recommendations for updating the *Voluntary National Content Standards in Economics* at <https://www.federalreserve.gov/econres/feds/files/2020092pap.pdf>.