AP Macro Lecture Guide: How the Fed Implements Monetary Policy

Lesson Authors

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Standards and Benchmarks (see page 20)

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 begins with a description of how the Federal Open Market Committee (FOMC) conducts monetary policy to achieve this dual mandate. Then, using the College Board's reserve market graph, the discussion shifts to how a central bank might use monetary policy tools to influence market interest rates and, ultimately, employment and inflation outcomes. Finally, examples of how a central bank 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
Arbitrage
Reserve balance accounts
Discount rate
Dual mandate
Federal funds rate
Federal Open Market Committee (FOMC)
Federal Reserve System
Full employment
Inflation
Interest on reserve balances
Maximum employment
Monetary policy
Open market operations
Policy rate
Reservation rate

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 a central bank's monetary policy tools;
- describe central bank objectives such as price stability and full employment;
- describe how a central bank sets the stance of monetary policy;
- analyze the linkages between a central bank's policy interest rate, market interest rates, the decisions of households and businesses, and the economic goals such as full employment and price stability;
- explain how reservation rate and arbitrage ensure a central bank's administered interest rates effectively guide the policy rate; and
- analyze policy strategies given economic conditions.

Compelling Question

How does a central bank conduct monetary policy to achieve price stability and full employment?

Time Required

90-120 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. Discuss 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**"—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.

- 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. 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 and tell students that they will now 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. Explain 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 students that as they move through this discussion—how the Fed and other central banks implement 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 lower interest rates affect consumers' and producers' decisions? (*Answers will vary. Lower interest rates encourage spending and investment.*)
   - How do you think higher interest rates affect consumers' and producers' decisions? (*Answers will vary. Higher interest rates discourage spending and investment.*)

6. Display slide 6. Explain 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. The policy rate is the interest rate that a central bank uses to set and communicate its monetary policy stance. In the United States, the FOMC uses the federal funds rate as the policy rate. Discuss the following points to introduce the **federal funds market**:

- 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 and discuss the following:
   - The federal funds market is an electronic payments market where banks that need funds/reserves go to borrow funds from 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 and 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. Explain that when the FOMC meets, it sets a target range for the federal funds rate. Discuss the following:
   - The figure shows 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.

- 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.
- In 2022, the FOMC raised the target range in response to inflation that exceeded the Fed's 2 percent inflation target.

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 and discuss the following:
    - What does the word "implement" mean? (*Answers will vary*.)
    - Explain that implement means to put a decision or policy into effect.
    - Tell 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 tools to implement monetary policy in its toolbox. Discuss the following:
    - Two of the tools (in green text) are linked to interest rates that the Fed sets or administers. These tools and their associated **administered interest rates** are used to steer the market-determined policy rate into the FOMC's target range. These tools also interact with other market interest rates to help set overall financial conditions.
    - The last tool (in blue text) 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.

NOTE: Beginning with slide 13, the graphs displayed reflect the model developed by the College Board for the AP Macro Course and Exam Description. The College Board takes a more international approach, so from this point forward we use the following terms: "Central bank" instead of "Federal Reserve," "policy rate" instead of "federal funds rate," and "interest on reserves" instead of "interest on reserve balances rate."

13. Display slide 13. Tell students that this is the College Board ample reserves graph showing the Fed's tools on a single graph. The Federal Reserve uses an ample reserves framework to implement policy. This means that the supply curve intersects the demand curve at a point where small changes in the supply of reserves will not affect the policy rate, on the flat part of the demand curve.

14. Display slide 14. Explain 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 policy rate, indicated by "PR" on the graph. The policy rate on this model represents the federal funds rate in the U.S.

    NOTE: The discount rate is indicated by the unlabeled dashed line that forms the upper bound, extending from the upper plateaued section of the demand for reserves line. Discount rates will be discussed in later slides.

15. Display slide 15. Remind students that the supply curve intersects the demand curve in the horizontal, or flat, part of the demand curve. Explain that the supply curve is vertical because only the central bank can supply reserves to the banking system. The central bank adjusts the supply with its open market operations.
    - When the central bank buys securities, it pays for them by adding funds/cash into banks' reserve accounts, which shifts the supply curve to the right.
    - When the central bank sells securities, it receives funds for them by subtracting funds/cash from banks' reserve accounts, which shifts the supply curve to the left.

16. Display slide 16. Tell students that in order to understand how these tools work, they must first understand 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 central bank 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 of the curve is nearly flat because, at some point, banks do not derive much benefit from holding additional reserves.

[1] For more 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*, August 2020; https://research.stlouisfed.org/publications/page1-econ/2020/08/03/the-feds-new-monetary-policy-tools.

17. Explain that the remainder of the discussion focuses on how the tools used by central banks under an ample reserves model help them reach their broad economic goals of stable prices and full employment.

Tool #1: Interest on Reserves

18. Display slide 17. Remind students that a central bank acts as a bank for banks. Discuss the following:
    - The central bank 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 accounts at the central bank, they earn interest on reserves at a particular interest rate.
    - Remember, because the central bank can set the rate at whatever level it thinks is appropriate, it is called an administered rate.
    - Banks know they can put their excess funds in their accounts at the central bank and always earn the interest on reserves rate.
    - Also, the central bank can be counted on to return their funds when banks want to withdraw them. So, for banks, holding funds in their reserve accounts is a "risk-free" investment option.
    - The interest on reserves rate is shown on the graph as the dotted line extending from the bottom portion of the demand curve.

19. Display slide 18. Tell students that the interest on reserves rate is an effective guide for (helps steer) the policy rate because of two key economic concepts—**reservation rate** and **arbitrage**. Explain that a reservation rate is the lowest rate that banks are willing to accept for lending out their funds. Tell students slides 19-21 show how the interest on reserves rate acts like a reservation rate.

Note: Reservation rate and arbitrage are not within the scope of the AP exam but help explain why interest on reserves affects the policy rate.

20. Display slide 19. Tell students that, like people, banks seek to earn a return on their money and they have several options. Banks say, "I know I can deposit funds at the central bank in my reserve account and earn the interest on reserves rate; now let me look in the market for other opportunities and see what I can get there." This slide shows three options for banks that want to invest their excess funds overnight. Discuss the following:
    - Banks can deposit excess funds at their central bank and earn the interest on reserves rate.
    - They can lend excess funds to other banks in the reserves market and earn the policy rate (FFR in the U.S).
    - 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.

21. Display slide 20. Discuss the following situation:
    - What if the policy rate and the Treasury bill rate were around 2 percent while the interest on reserves 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. Students will recognize that they could earn higher interest by depositing their excess funds with the central bank*.)

22. Display slide 21. Tell students that banks would deposit their funds at the central bank to earn the interest on reserves rate because it returns the highest amount across similar investment options. Summarize the following points:
    - Interest on reserves 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 central bank.
    - So, the interest on reserves rate is a reservation rate for banks.

23. Display slide 22. Tell students that the second economic concept that makes interest on reserves an effective guide for (helps steer) the policy rate is **arbitrage**. Explain that arbitrage is the simultaneous purchase and sale of funds (or goods) in order to profit from a difference in price. Tell students the next few slides show how arbitrage ensures that the interest on reserves rate can be used to guide the policy rate and interest rates on other similar investment options.

24. Display slide 23. Discuss the following:
    - Recall from previous slides that the interest on reserves rate acts as a reservation rate. This means that when given the option of earning 2 percent in the reserves market or 2.5 percent by depositing their funds at the central bank, banks would deposit funds in their reserve accounts at the central bank to earn the higher interest on reserves rate.
    - Will the policy rate stay at 2 percent if the interest on reserves rate is at 2.5 percent? (*Answers will vary. Students will likely identify that the interest rates will not stay the same but may not yet be able to articulate why or how they will change.*)

25. Display slide 24. Tell students that the policy rate would not stay far below the interest on reserves 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 reserves market at 2 percent and deposit that same money at the central bank and earn 2.5 percent.
    - The profit in this example is 50 basis points (or 0.5 or ½ percentage point) for every dollar invested.
    - This action is arbitrage.

26. Display slide 25. Explain that many banks will see this opportunity; they will borrow in the reserves market at the policy rate and deposit at the central bank to earn the higher interest on reserves rate. This action by many banks will pull the policy rate up toward the interest on reserves rate by increasing the demand for reserves. Discuss the following:
    - The increase in demand for reserves in the reserves market will allow lenders to start asking more for their funds, which puts upward pressure on the policy rate, and the policy rate will rise.
    - The arbitrage will continue until the policy rate rises to the level that banks no longer see the opportunity to profit. Profits go to zero when the policy rate is at the same level as the interest on reserves rate.
    - Therefore, arbitrage ensures that the policy rate does not fall far below the interest on reserves rate.
    - Arbitrage is what makes interest on reserves an effective tool for guiding the policy rate.

27. Display slide 26. Tell students that arbitrage also works if the policy rate is above the interest on reserves rate. Discuss the following:
    - How would arbitrage pull the policy rate down toward the interest on reserves rate? (*Answers will vary. Students will likely identify that the interest rates will not stay the same but may not yet be able to articulate why or how they will change.*)

28. Display slide 27. Discuss the following:
    - If the policy rate is above the interest on reserves rate, then banks will seek to increase the return on their money by withdrawing funds from their reserve accounts at the central bank and lending those funds out in the reserves market.
    - In the example, the return (or profit) on this transaction is 50 basis points.

29. Display slide 28. Explain that many banks will take similar actions. More available funds for loan in the reserves market pushes down the policy rate that borrowing banks must pay, moving the policy rate down toward the interest on reserves rate.

Tool #2: The Discount Rate

30. Display slide 29. Tell students that the next tool that helps the central bank accomplish its dual mandate goals is the discount rate. The discount rate is one of the administered rates set by the central bank to guide the policy rate. Discuss the following:
    - The central bank serves as a bank for other banks.
    - Banks that need extra funds can always borrow from the central bank at the discount window.
    - When banks take loans from the central bank, they pay an interest rate called the discount rate.

- Because banks have access to funds from the central bank at the discount rate, they should not be willing to pay a higher interest rate to borrow the money somewhere else, including the reserves market.
- Because this sets a maximum rate that banks should be willing to pay for funds, it sets a ceiling for the policy rate.
- Graphically, because it sets a maximum rate and acts as a ceiling, the discount rate caps the demand curve. The discount rate is indicated as the upper dotted line on slide 29.

31. Display slide 30 and summarize the following key points:
    - We now know that with arbitrage at work, policymakers can confidently set the target range for the policy rate and be assured that trade will occur within that range. The central bank can increase or decrease the interest on reserves rate to steer the market-determined policy rate up or down as needed.
    - When policymakers raise the target range for the policy rate, the central bank raises the interest on reserves rate, which moves the policy rate up into the new target range.
    - When policymakers lower the target range for the policy rate, the central bank lowers the interest on reserves rate, which moves the policy rate down into the new target range.

Supporting Tool: Open Market Operations

32. Display slide 31. 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 central bank buys securities, it pays for them by adding reserves to banks' reserve accounts.
    - This is like buying something at a store with a debit card. Money is subtracted from your checking account and placed in the checking account of the store's bank.
    - When the central bank sells securities, banks pay for the securities by having reserves subtracted from their reserve accounts.

33. Display slide 32. Tell students that when the central bank adjusts the supply of reserves in the banking system it is using open market operations. Discuss the following:
    - The central bank has stated it will operate with an "ample" level of reserves in the banking system.
    - An "ample" level of reserves means that the supply curve remains far to the right in the graph, 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 policy rate).
    - The central bank uses open market operations to ensure that the level of reserves remains large enough to be ample. Why? There are some factors in the economy that will cause the

supply of reserves to naturally shrink over time, so the central bank will need to periodically conduct open market operations to purchase securities and add reserves. Graphically, this means that if the supply curve shifts too far left it will intersect with the downward sloping portion of the demand curve, which interferes with the ability of the administered rates to steer the policy rate. In this case, to ensure that reserves remain ample, the central bank will use open market purchases of securities to shift supply back to the right.

- When the central bank 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 account at the seller's bank.
- When the central bank buys securities, the level of reserves increases (shifting the supply curve to the right).

Examples of Expansionary and Contractionary Policy

34. Tell students that the last few slides will tie together policymakers' policy action—moving the target range for the policy rate—with their goal of full employment and price stability.

35. Display slide 33 and present this scenario: Suppose the economy weakens and employment falls short of full employment. Meanwhile, the inflation rate, which might have recently been steady at around 2 percent, is showing signs of decreasing. Given the economic conditions, how does the central bank conduct monetary policy to achieve full employment and price stability? (*The central bank will lower the administered interest rates in order to steer the policy rate lower*.)

36. Display slide 34. Explain that policymakers might decide to use expansionary monetary policy to provide stimulus for the economy. Policymakers would decrease the central bank's administered interest rates in order to achieve a lower policy rate.

37. Display slide 35. Tell students to notice that the ends of the demand curve move lower but that the supply curve is unchanged, as is the downward sloping portion of the demand curve. Only the ends of the demand curve shift representing the change to administered rates.
(NOTE: Slides must be in presentation mode to see the animation.)

38. Display slide 36 to illustrate that policy implementation comes after the policymakers decide to decrease the target for the policy rate.

39. Display slide 37. The graph on the left shows the central bank using its administered rates to lower the policy rate, and the corresponding effect on the AS/AD in the graph on the right. Discuss the steps using the boxes and the following:

    - Because the administered rates are reservation rates, and because banks and other institutions arbitrage across investment options, the lower administered rates push the **policy rate** and other **market interest rates** lower. These lower market interest rates make borrowing money more affordable.

- 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.
- The increase in **consumer spending** and **business investment** (interest-sensitive consumption) increases the overall demand for goods and services in the economy, shifting **aggregate demand** to the right (from AD1 to AD2).
- With increased production, businesses are likely to hire additional employees and spend more on other resources. **Real output** increases, which moves the economy toward the central bank's **full employment** goal.
- While not the objective of the policy, the model shows that an increase in AD will push **price level** higher. This isn't always the case in the real economy.
- In short, lower interest rates can be used to stimulate a weak economy, moving it toward the central bank's goal of full employment.

40. Display slide 38. Now, assume the economy is growing at a very fast rate; inflation has been above the central bank's target for a considerable time and is rising. At the same time, the unemployment rate is very low. Given the economic conditions in this scenario, how does the central bank conduct monetary policy to achieve full employment and price stability? (*Answers will vary but students should indicate that the central bank should raise administered rates.*)

41. Display slide 39. In this case, policymakers might decide to use contractionary monetary policy to bring inflation back to the central bank's target rate over time. This means policymakers will raise the target range for the policy rate. Explain that the graph shows the upward shift in the central bank's administered rates when policymakers raise the target range for the policy rate.

42. Display slide 40. Tell students to notice that the ends of the demand curve move up but the supply curve is unchanged, as is the downward sloping portion of the demand curve. Only the ends of the demand curve shift, representing the change to administered rates.

43. Display slide 41 to illustrate that policy implementation comes after the policymakers decide to increase the target for the policy rate.

44. Display slide 42. The graph shows the central bank using its administered rates to increase the policy rate, and the corresponding effect on the AS/AD graph. Discuss the steps using the boxes and the following:
    - Because the administered rates are reservation rates, and because banks and other institutions arbitrage across investment options, the higher administered rates push the **policy rate** and other **market interest rates** higher. These higher market interest rates make borrowing money less affordable.

- 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.
- The decrease in **consumption spending** and **business investment** (interest-sensitive consumption) decreases the overall demand for goods and services in the economy, shifting **aggregate demand** to the left (from AD1 to AD2).
- With decreased demand for goods and services, upward pressure on wages and prices dampens. As these changes transmit to the broader economy, **real output decreases**, inflationary pressures diminish, and the **inflation rate** will fall back towards the target rate.
- NOTE: Contractionary monetary policy is shown on the AS/AD model as a leftward shift of the AD curve, which results in a lower price level, or deflation and lower output (recession). In reality, deflation is rare. If well executed, contractionary monetary policy can achieve a lower unemployment rate, and slower output growth without causing deflation and recession. This is often referred to as a "soft landing."
- So, higher interest rates can be used to restrain inflation and move the economy back to the central bank's target inflation rate.

Conclusion

45. Display slide 43. Review the key features of monetary policy with ample reserves, placing special emphasis on the primary function of each of the rates and tools.

46. Display slide 44. To conclude the lesson, ask students the following review questions:
    - How does the interest on reserves rate serve as a reservation rate? (*Banks will not lend or invest for less than they can earn by depositing their funds at the central bank.*)
    - How does arbitrage ensure that the policy rate does not fall far below the interest on reserves rate? (*As banks borrow at the policy rate and deposit those monies to earn the interest on reserves rate, the increase in demand for funds will push the policy rate higher and close the gap.*)
    - What is the discount rate? (*The discount rate is the interest rate charged by the central bank to banks for loans obtained through the central bank's discount window.*)
    - How does the discount rate act as a ceiling for the policy 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 central bank use open market operations in an ample reserves framework? (*In an ample reserves framework, the central bank uses open market operations to ensure that the level of reserves remains large enough to be ample and to conduct quantitative easing.*)

Reinforcement Activity

Use the activity and discussion questions below to review key information. Tell students that you are going to read headlines pertaining to monetary policy and 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 central bank should conduct expansionary policy, or 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 policy rate or a thumbs-down if it means lowering the target range. (*Lowering/thumbs-down*)
- Give a thumbs-up if the central bank should increase the administered rates or 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 a thumbs-down to signify a decrease:
    - If the central bank decreases its administered interest rates, will the policy 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 central bank should conduct expansionary policy, or 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 policy rate or a thumbs-down if it means lowering the target range. (*Raising/thumbs-up*)
- Give a thumbs-up if the central bank should increase the administered rates or 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 a thumbs-down to signify a decrease:
    - If the central bank increases its administered interest rates, will the policy 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 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 policymakers conduct monetary policy, they set the target range for
   a. the policy rate.
   b. the interest on reserves rate.
   c. the reserve requirement.
   d. open market operations.

3. In a banking system with ample reserves, which monetary policy implementation tool is the primary tool the central bank uses to steer the policy rate into policymakers' target range?
   a. Open market operations
   b. Interest on reserves
   c. Overnight reverse repurchase agreement facility
   d. Discount rate

4. Which monetary policy tool acts as a floor for the policy rate?
   a. Open market operations
   b. Interest on reserves
   c. Overnight reverse repurchase agreement facility
   d. Discount rate

5. Which monetary policy tool serves as a ceiling for the policy rate?
   a. Open market operations
   b. Interest on reserves
   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 policy rate falls far below the interest on reserves rate, banks will borrow at the policy rate and deposit at the interest on reserves rate to earn a profit, which will increase the demand for federal funds and raise the policy rate.

   b. If the reserve requirement falls far below the interest on reserves rate, banks will borrow at the prime rate and deposit at the interest on reserves rate to earn a profit, which will increase the demand for federal funds and raise the reserve requirement.

   c. If the discount rate is far above the interest on reserves rate, banks will borrow at the discount rate and deposit at the interest on reserves rate to earn a profit, which will increase the demand for federal funds and raise the discount rate.

   d. If the interest on reserves rate falls very far below the policy rate, banks will borrow at the interest on reserves rate and lend these funds out at the policy 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 the interest on reserves rate serves as a reservation rate?

   a. Because interest on reserves is a risk-free option, banks should not be willing to lend their funds for less than they can earn on their reserves.

   b. Because the central bank offers several interest rates, banks will choose the highest rate, which is interest on reserve balances.

   c. Because the interest on reserves rate is set below the policy rate, banks will borrow at the interest on reserves rate and lend these funds at the policy rate, which will raise the interest on reserve balances rate.

   d. Because interest on reserves is a risk-free option, banks will always seek a higher return elsewhere.

8. Which statement best describes how policymakers conduct monetary policy during a recession in order to increase employment and thus achieve their full employment objective?

   a. They increase the target rate range for the policy rate.

   b. They decreases the target rate range for the policy rate.

   c. They sell securities in the open market to decrease the policy rate.

   d. They buy securities in the open market to increase the policy 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. Simultaneously increase the interest on reserves rate and the discount rate.

   b. Use open market operations to decrease the level of reserves in the banking system.

   c. Simultaneously decrease the interest on reserves rate and the discount rate.

   d. Simultaneously raise the interest on reserves rate and lower the discount rate.

10. What role do open market operations play in monetary policy in a banking system with ample reserves?

    a. The central bank uses open market operations to move the policy rate higher and lower.

    b. The central bank uses open market operations to move the interest on reserve balances rate higher and lower.

    c. The central bank uses open market operations to move the discount rate higher and lower.

    d. The central bank uses open market operations to ensure that the level of reserves remain ample.

Handout 1: 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?

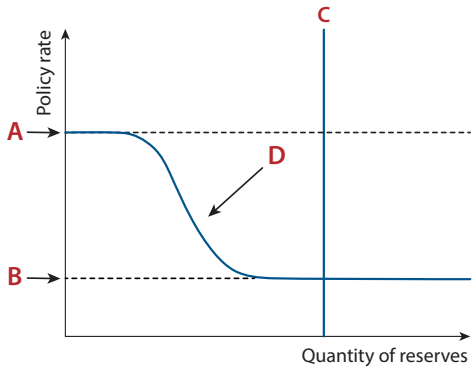
List the tools in the Fed's toolbox and the administered rates in the table below.

Policy implementation tool	Administered rate
	N/A

How do interest on reserves act as a reservation rate?

How does arbitrage ensure that interest on reserves is an effective guide for the policy rate?

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

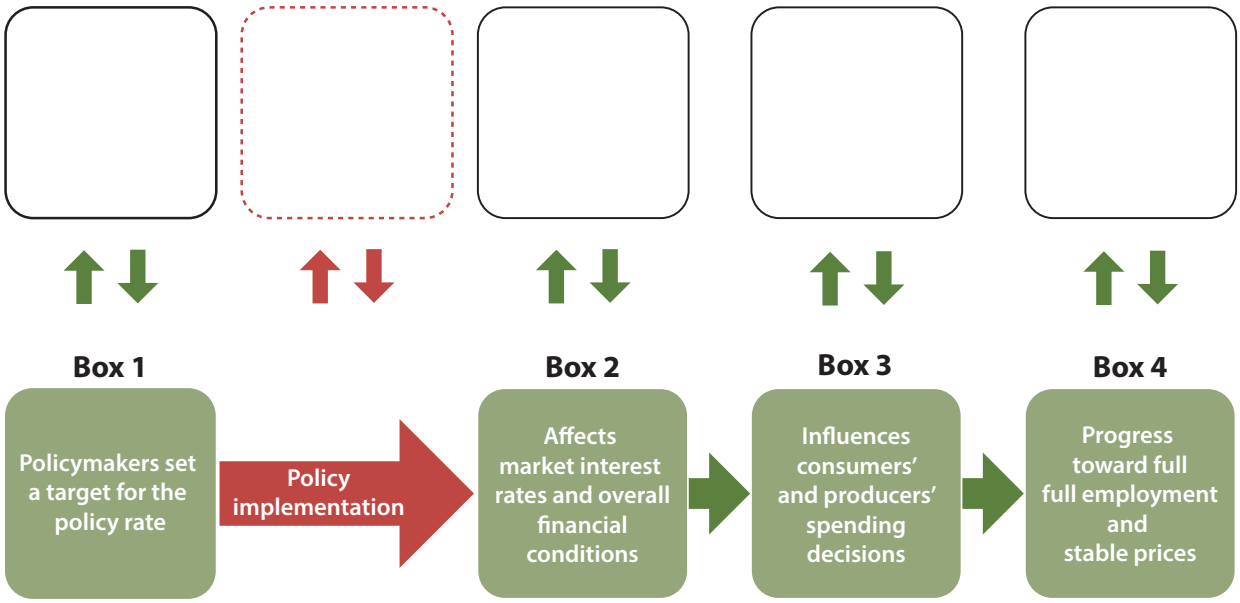


Letter	Label
A	
B	
C	
D	

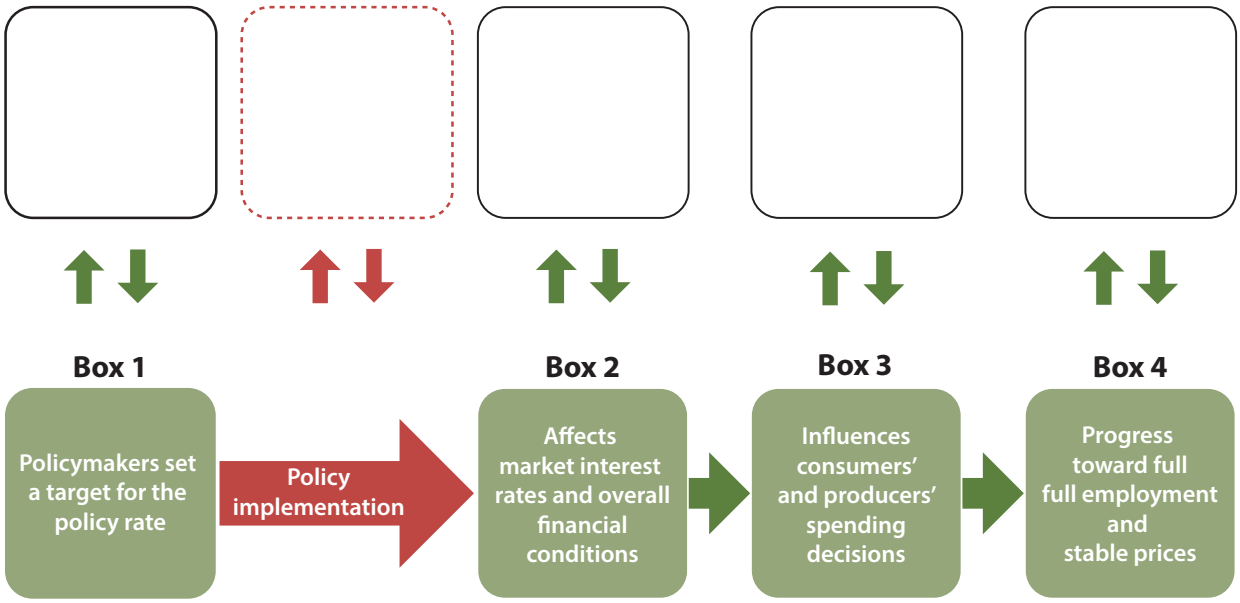
Rate/tool	In practice
	The primary tool for guiding the policy rate, acting as a floor
	The rate that puts a ceiling on the policy rate
	The tool that can be used to ensure reserves remain ample

Handout 1: 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.)



Standards and Benchmarks

Voluntary National Content Standards in Economics

Standard 20: Fiscal and Monetary Policy[2]

- **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 policy 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.

[2] The most recent version (2010) of the Voluntary National Content Standards 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 here: https://www.federalreserve.gov/econres/feds/files/2020092pap.pdf.