Today's compelling question

What tools does the Federal Reserve System have at its disposal?

Objectives: Students will be able to …

--Identify monetary policy tools available to the Fed.
--Describe the relationship among bank reserves, interest rates, and the goals of maximum employment and price stability.
--Describe the key components of the Fed's dual mandate.
--ID the ways in which monetary policy tools can be used to achieve economic objectives.
--Analyze policy strategies given economic conditions.

Questions for you

Do you have a savings account?

How about a checking account?

What do banks do with the money you deposit?

Today

We're going to take a closer look at banks, and specifically the Fed. Some of you will be acting as bankers and other players in the system.

Terms to know

Bank reserves: Currency held by banks in their vaults plus their deposits at Federal Reserve Banks.

Required reserves: Funds that a depository institution must hold in reserve against specified deposits as vault cash or deposits with Federal Reserve Banks.

Excess reserves: Amount of funds held by a depository institution in its account at a Federal Reserve Bank in excess of its required reserve balance.

Interest: The price of using someone else's money.

Interest rate: The percentage of the amount of a loan that is charged for a loan.

Question for you

What would happen if a bank wanted to make a loan, but did not have enough reserves to do so?

Terms to know

Federal funds market: The market in which banks can borrow or lend reserves, allowing banks temporarily short of their required reserves to borrow from banks that have excess reserves.

Federal funds rate: The interest rate at which a depository institution lends funds that are immediately available to another depository institution overnight.

Federal Reserve System: The central bank system of the United States.

Terms to know

Monetary policy: The actions of a central bank to influence the cost and availability of money and credit to achieve the national economic goals.

Tools that the Fed has in its toolbox to influence money supply/interest rates:

- **Discount rate:** The interest rate charged by the Fed to banks for loans obtained through the Fed's discount window.
- **Open-market operations:** The buying and selling of government securities through primary dealers by the Fed in order to influence the money supply.
- **Reserve requirements:** Funds that Banks must hold in cash, either in their vaults or on deposit at a Reserve Bank.
- **Interest on reserves:** Interest paid by Federal Reserve Banks on required and excess reserves held by banks.

Open market operations simulation

We're going to participate in a simulation to demonstrate how the Federal Reserve uses open market operations to influence the economy through interest rates.

Open Market Operations Simulation

Federal Reserve (teacher)	The Federal Reserve gets money—reserves of $60,000—and the Federal Reserve Portfolio Tracker.
Primary Dealers (three students)	Primary dealers buy and sell government securities from the Federal Reserve.
Investors (six students)	Each investor gets a $10,000 Government Security and an Investor Balance Sheet.
Banks (six students)	Each bank gets two deposit slips.
Treasurer (one student)	Treasurer gets the Treasurer's Balance Sheet for the class.

Question for banks

Do you have any money to lend?

No. The banks don't have the excess reserves necessary to make loans.

The treasurer should record the initial total value of government securities held by investors, and the total value of securities held by the Federal Reserve.

Investor Balance Sheet	Assets (securities)	Assets (deposits)	Total Assets (securities + deposits)
Initial	$60,000	$0	$60,000
End of Round 1			
End of Round 2			

Bank Balance Sheet	Assets (money/reserves)	Liabilities (deposits)	Net Assets (assets - liabilities)
Initial	$0	$0	$0
End of Round 1			
End of Round 2			

Federal Reserve Portfolio Tracker	Government Securities
Initial	$0
End of Round 1	
End of Round 2	

And now a word from the Fed

I'm the Fed, and I have a portfolio of government securities and money/reserves. The Fed is going to conduct open market operations to influence the level of bank reserves and therefore interest rates.

The Fed is going to buy $60,000 in government securities, each worth $10,000.

And here's how it works

The Fed is going to give each Primary Dealer $20,000 money/reserves to buy one $10,000 security from the portfolio of two Investors.

Primary Dealers will then pay Investors with money/reserves from the Fed.

Primary Dealers should deliver the government securities to the Fed.

And here's how it works, continued

Investors should deposit the money/reserves in their bank.

Bankers should give the Investor a yellow deposit slip.

All participants should update their balance sheets and report totals to the treasurer.

Investor Balance Sheet	Assets (securities)	Assets (deposits)	Total Assets (securities + deposits)
Initial	$60,000	$0	$60,000
End of Round 1	$0	$60,000	$60,000
End of Round 2			

Bank Balance Sheet	Assets (money/reserves)	Liabilities (deposits)	Net Assets (assets - liabilities)
Initial	$0	$0	$0
End of Round 1	$60,000	$60,000	$0
End of Round 2			

Federal Reserve Portfolio Tracker	Government Securities
Initial	$0
End of Round 1	$60,000
End of Round 2	

Questions for you

What happened to the level of money/reserves (the assets) in the banking system?

The level of reserves increased by $60,000 for the class.

What happened to the amount of liabilities at the banks?

Liabilities – deposits owed to investors – increased by $60,000.

Reminder about reserve requirements

How much would the banks be required to hold if the required reserve ratio was 10 percent?
$6,000

How much would be available for banks to loan to their customers?
$54,000

If the Fed raised the reserve ratio to 20 percent, what would the numbers be?
$12,000 and $48,000.

Questions for you

What happened to Investors' balance sheets?

Securities decreased by $60,000, but deposits (an asset for investors), increased by $60,000.

What happened to the value of the securities on the Federal Reserve's balance sheet?

Government securities increased by $60,000.

Money

Federal Reserve

Fed buys bonds

Primary Dealers

Banks

Bank reserves increase

Bonds

Interest rates decrease

Borrowing increases

Expansionary monetary policy: Actions taken by the Federal Reserve to increase the growth of the money supply and the amount of credit available.

So if the Fed buys bonds …

What happens to the level of reserves (money) in the banking system?

What is likely to happen to interest rates if there are more excess reserves available for loans?

If interest rates are lower, how will consumers and businesses respond?

If consumers buy more goods and services, how will producers respond?

So if the Fed buys bonds, continued …

How will increased production affect employment?

Where does the Fed get the reserves it uses to buy securities?

Because the Fed is the nation's monetary authority, it can create the reserves necessary to accomplish its policy goals. The Fed can put new reserves into the system at will.

Inflation?

And now for something completely different

The Fed might find it necessary to improve economic conditions by decreasing the level of reserves in the banking system. In this round, the Fed will sell six government securities worth $10,000 each, for a total sale of $60,000. The Fed will sell two government securities to each Primary Dealer. Each Primary Dealer should work with two Investors, buying $10,000 in money/reserves from each. The Primary Investors should pay the Fed for the government securities it sold.

… And update your balance sheets and report.

Investor Balance Sheet	Assets (securities)	Assets (deposits)	Total Assets (securities + deposits)
Initial	$60,000	$0	$60,000
End of Round 1	$0	$60,000	$60,000
End of Round 2	$60,000	$0	$60,000

Bank Balance Sheet	Assets (money/reserves)	Liabilities (deposits)	Net Assets (assets - liabilities)
Initial	$0	$0	$0
End of Round 1	$60,000	$60,000	$0
End of Round 2	$0	$0	$0

Federal Reserve Portfolio Tracker	Government Securities
Initial	$0
End of Round 1	$60,000
End of Round 2	$0

Questions for you

Where did Investors get the money needed?
They withdrew from their deposits at the bank.

What happened to the level of money/reserves in bank system?
It decreased by $60,000.

Did bank balance sheets change as a result?
Both sides of the balance sheet went down.

What happened to Investor balance sheets?
Securities up $60,000. Deposits down $60,000.

Fed balance sheet? Securities down $60,000.

Bonds

Federal Reserve

Fed sells bonds

Money

Primary Dealers ← Banks ← Bank reserves decrease

↓

Interest rates increase

↓

Borrowing decreases

Contractionary monetary policy: Actions taken by the Federal Reserve to decrease the growth of the money supply and the amount of credit available.

So if the Fed sells bonds …

What happens to the level of reserves in the banking system?

What is likely to happen to interest rates if there are less excess reserves available for loans in the banking system?

If interest rates are higher, what will happen to borrowing by consumes and businesses for purchases of goods and services?

So if the Fed sells bonds, continued …

If consumers buy fewer goods and services, how will producers respond?

How will the decrease in production affect employment?

To summarize, how will higher interest rates affect production, employment, and inflation?

Terms to know

Central bank: An institution that oversees and regulates the banking system and quantity of money in the economy.

Dual mandate: The Federal Reserve's responsibility to use monetary policy to promote maximum employment and price stability.

- **Price stability**—A low and stable rate of inflation maintained over an extended period of time. The Fed has a longer-run goal of 2 percent inflation.
- **Maximum employment**—The Fed does not have a specific unemployment target but regularly publishes a forecast for the longer-run unemployment rate.

So the Fed's tools are …

Open-market operations, which we demonstrated today – the buying and selling of government securities (bonds).

Does the Fed set the federal funds rate?
No. It announces a target and then uses open-market operations to hit the target.

Does the Fed set the discount rate?
Yes (which is the rate banks pay to borrow reserves from the Fed).

The Fed's tools are, continued …

In addition to open-market operations and changing the discount rate …

The Fed can change the reserve requirement but rarely does. The last time was 1992.

The Fed can also pay interest on reserves, which it started doing only in 2008.