

Monetary Policy

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There have been three great inventions since the beginning of time: fire, the wheel and central banking.

— *Will Rogers*

Chapter Goals

- Explain how monetary policy works in the AS/AD model
- Summarize the structure and duties of the Fed
- Describe how the Fed changes the supply of money primarily through open market operations

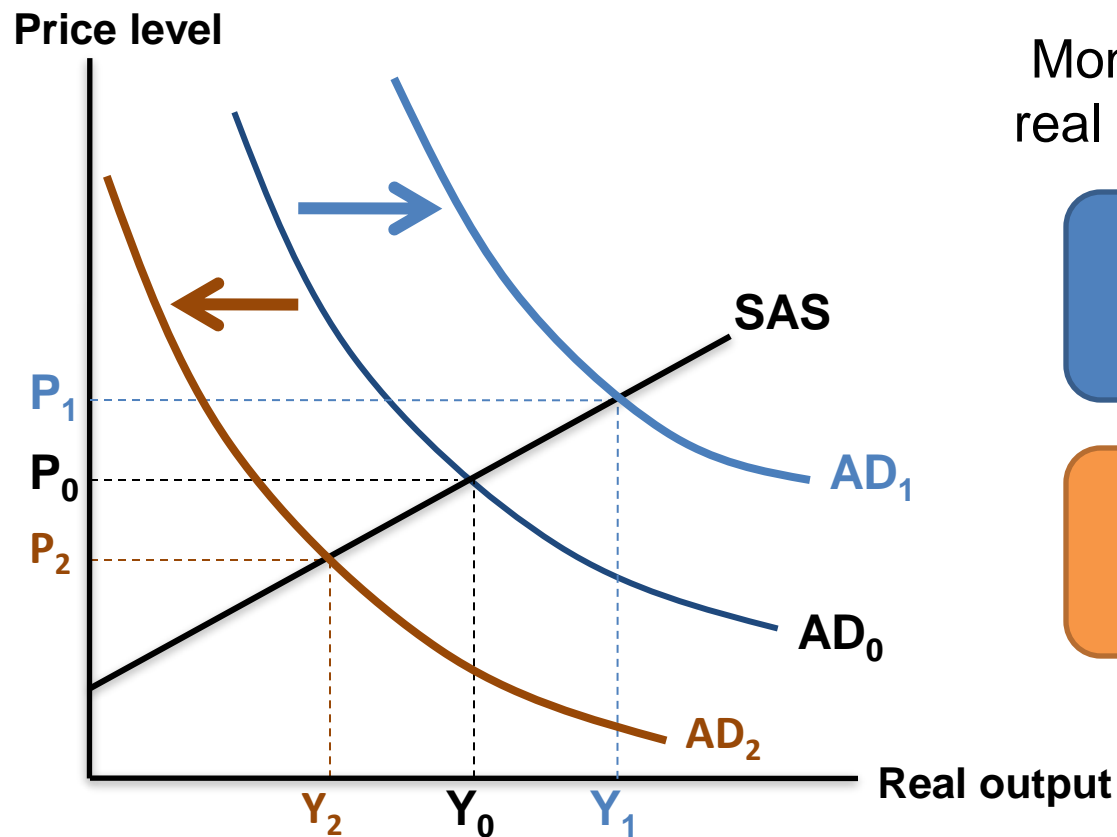
Chapter Goals

- Define the Federal funds rate and discuss how the Fed uses it as an intermediate target
- Explain the Taylor rule and its relevance to monetary policy
- Define the yield curve and explain how its shape reflects the limit of the Fed's ability to control the economy

Monetary Policy

- **Monetary policy** is a policy of influencing the economy through changes in the banking system's reserves that influence the money supply and credit availability in the economy
 - Fiscal policy is controlled by the government directly
 - Monetary policy is controlled by the U.S. central bank, the Federal Reserve Bank (the Fed)
 - Monetary policy works through its influence on credit conditions and the interest rate in the economy

Monetary Policy

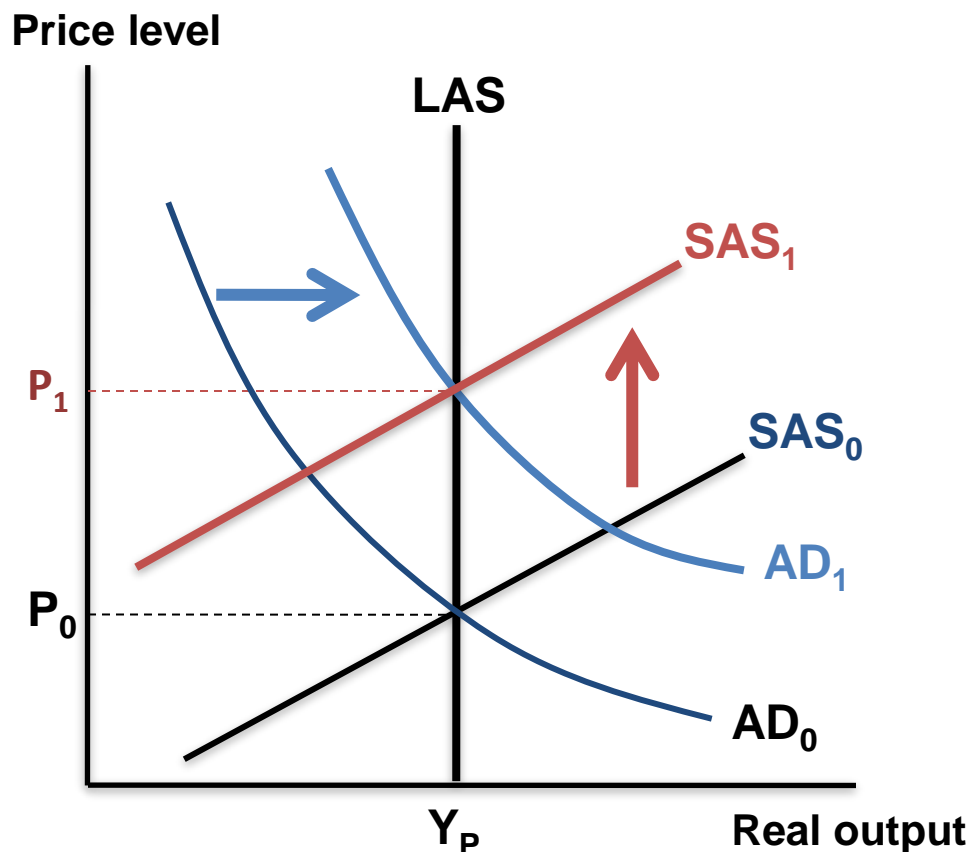


Monetary policy affects both real output and the price level

Expansionary monetary policy shifts the AD curve to the right

Contractionary monetary policy shifts the AD curve to the left

Monetary Policy



If the economy is at or above potential, expansionary monetary policy will cause input costs to rise

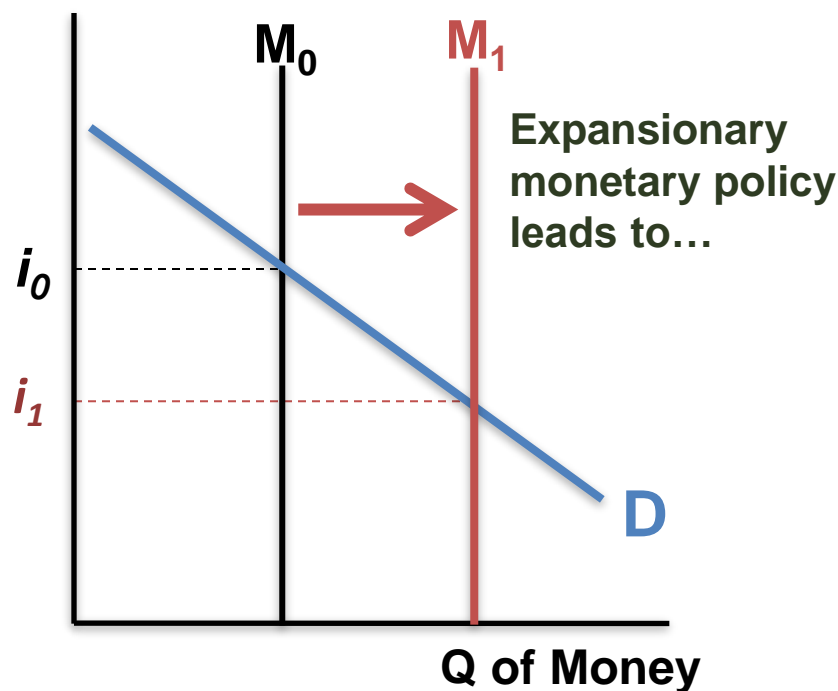
Rising input costs will eventually shift the SAS curve up so that real output remains unchanged

The only long-run effect of expansionary monetary policy when the economy is above potential is to increase the price level

Monetary Policy and the Money Market

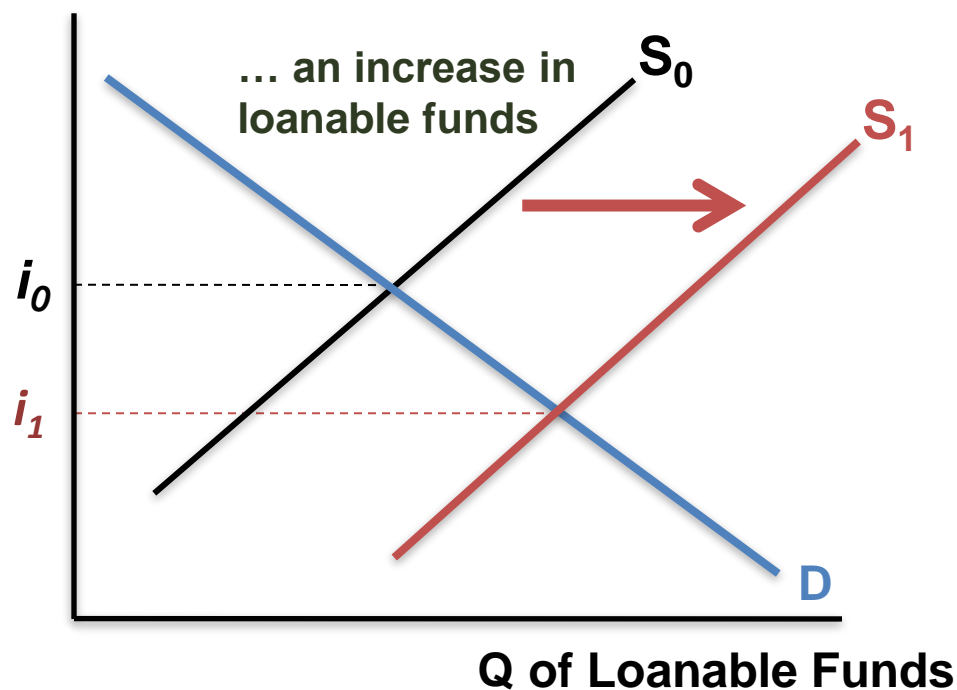
Money Market

Interest Rate



Loanable Funds Market

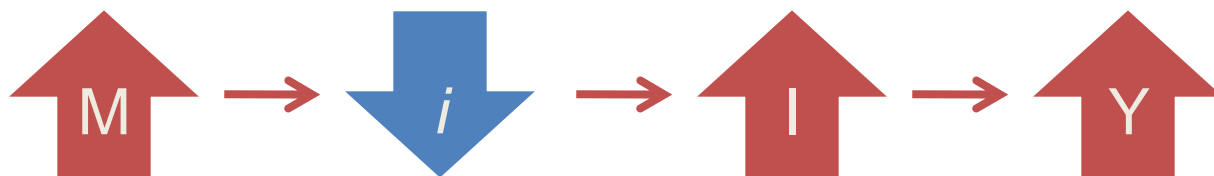
Interest Rate



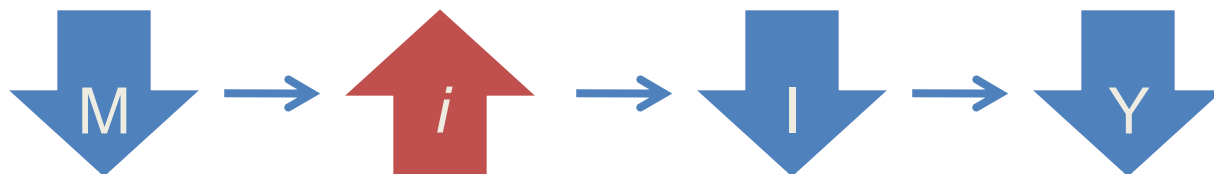
- The decline in interest rates increases investment spending, which shifts the aggregate demand curve out to the right

Monetary Policy

- **Expansionary monetary policy** is a policy that increases the money supply and decreases the interest rate and it tends to increase both investment and output



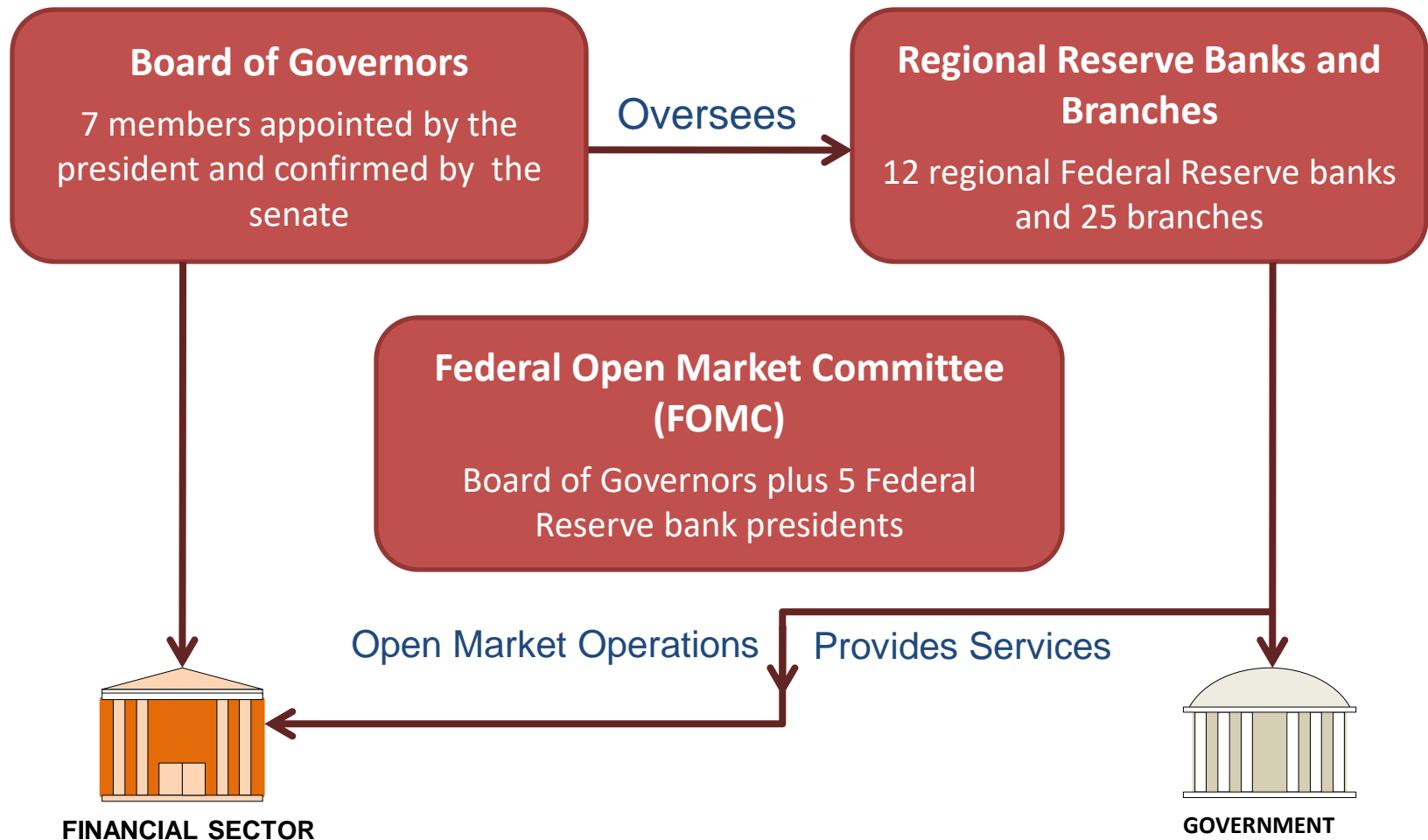
- **Contractionary monetary policy** is a policy that decreases the money supply and increases the interest rate, and it tends to decrease both investment and output



Monetary Policy and the Fed

- A **central bank** is a type of banker's bank whose financial obligations underlie an economy's money supply
 - The central bank in the U.S is the Fed
 - If commercial banks need to borrow money, they go to the central bank
 - If there's a financial panic and a run on banks, the central bank is there to make loans
- The ability to create money gives the central bank the power to control monetary policy

Structure of the Fed



Duties of the Fed

- Conducts monetary policy (influencing the supply of money and credit in the economy)
- Supervises and regulates financial institutions
- Lender of last resort to financial institutions
- Provides banking services to the U.S. government
- Issues coin and currency
- Provides financial services to commercial banks, savings and loan associations, savings banks, and credit unions

The Conduct of Monetary Policy

- The Fed influences the amount of money in the economy by controlling the monetary base
 - **Monetary base** is vault cash, deposits of the Fed, and currency in circulation
- Monetary policy affects the amount of reserves in the banking system
 - **Reserves** are vault cash or deposits at the Fed
 - Reserves and interest rates are inversely related

Open Market Operations

- Open market operations are the primary way in which the Fed changes the amount of reserves in the system
 - **Open market operations** are the Fed's buying and selling of government securities
 - To expand the money supply, the Fed buys bonds
 - To decrease the money supply, the Fed sells bonds

Open Market Operations

- An open market *purchase* is expansionary monetary policy that tends to reduce interest rates and increase income
 - When the Fed buys bonds, it deposits money in banks' account with the Fed
 - Bank reserves are increased, and when banks loan out the excess reserves, the money supply increases

Open Market Operations

- An open market *sale* is a contractionary monetary policy that tends to raise interest rates and lower income
 - When the Fed sells bonds, it receives checks drawn against banks
 - The bank's reserves are reduced and the money supply decreases

The Reserve Requirement and the Money Supply

- The **reserve requirement** is the percentage the Fed sets as the minimum amount of reserves a bank must have
- The money multiplier is $(1+c)/(r+c)$
 - The Fed can increase the money supply by decreasing the reserve requirement, which increases the money multiplier
 - The Fed can decrease the money supply by increasing the reserve requirement, which decreases the money multiplier

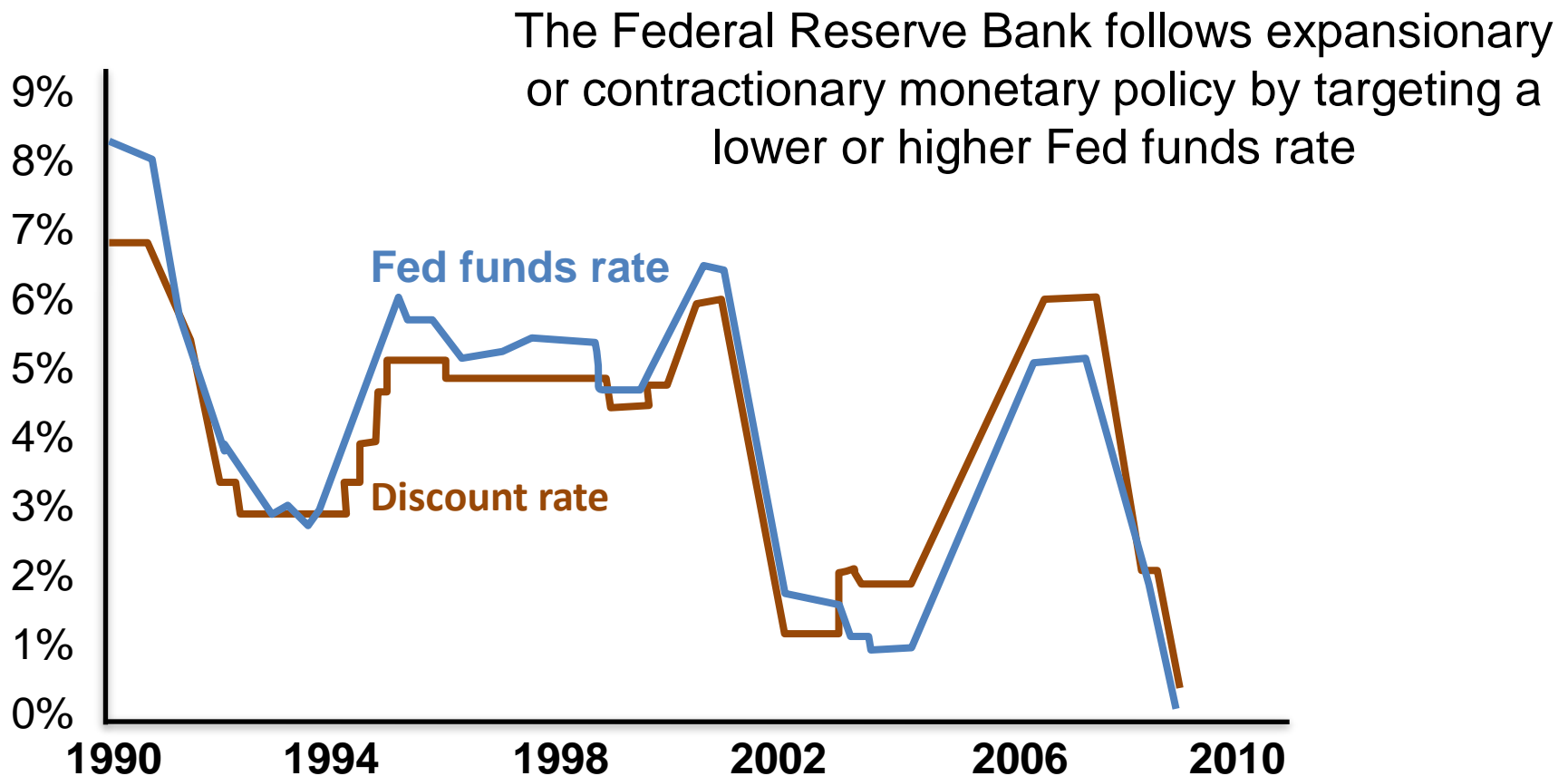
Borrowing from the Fed and the Discount Rate

- In case of a shortage of reserves, a bank can borrow reserves directly from the Fed
- The **discount rate** is the interest rate the Fed charges for those loans it makes to banks
 - An increase in the discount rate makes it more expensive to borrow from the Fed and may decrease the money supply
 - A decrease in the discount rate makes it less expensive to borrow from the Fed and may increase the money supply

The Fed Funds Market

- Banks with surplus reserves loan these reserves to banks with a shortage in reserves
 - **Fed funds** are loans of excess reserves banks make to each other
 - **Fed funds rate** is the interest rate banks charge each other for Fed funds
- By selling bonds, the Fed decreases reserves, causing the Fed funds rate to increase
- By buying bonds, the Fed increases reserves, causing the Fed funds rate to decrease

The Fed Funds Rate and the Discount Rate since 1990



Offensive and Defensive Actions

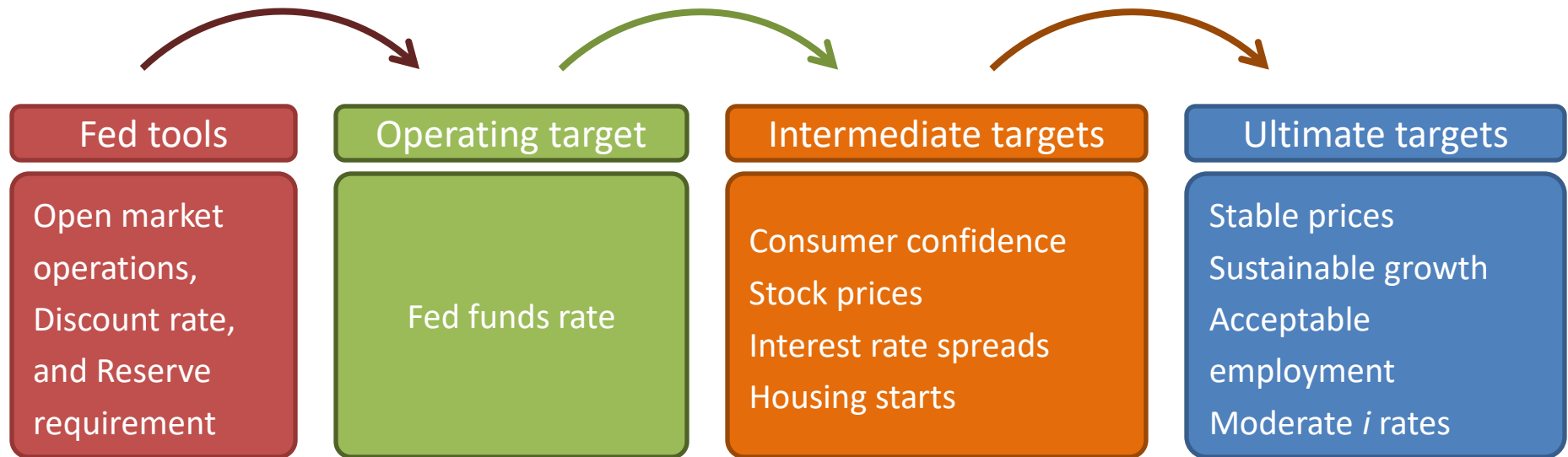
- **Defensive actions** are designed to maintain the current monetary policy
 - The Fed buys bonds during emergencies
 - Reserves would otherwise decrease because individuals and businesses don't get to the bank with their cash
- Offensive actions are designed to have expansionary or contractionary effects on the economy

The Fed Funds Rate as an Operating Target

- Monetary policy affects interest rates
- The Fed looks at the Federal funds rate and other targets to determine whether monetary policy is tight or loose
- If the Fed funds rate is above the Fed's target range, it buys bonds to increase reserves and lower the Fed funds rate
- If the Fed funds rate is below the Fed's target range, it sells bonds to decrease reserves and raise the Fed funds rate

The Complex Nature of Monetary Policy

While the Fed focuses on the Fed funds rate as its operating target, it also has its eye on its ultimate targets: *stable prices, acceptable employment, sustainable growth, and moderate long-term interest rates*

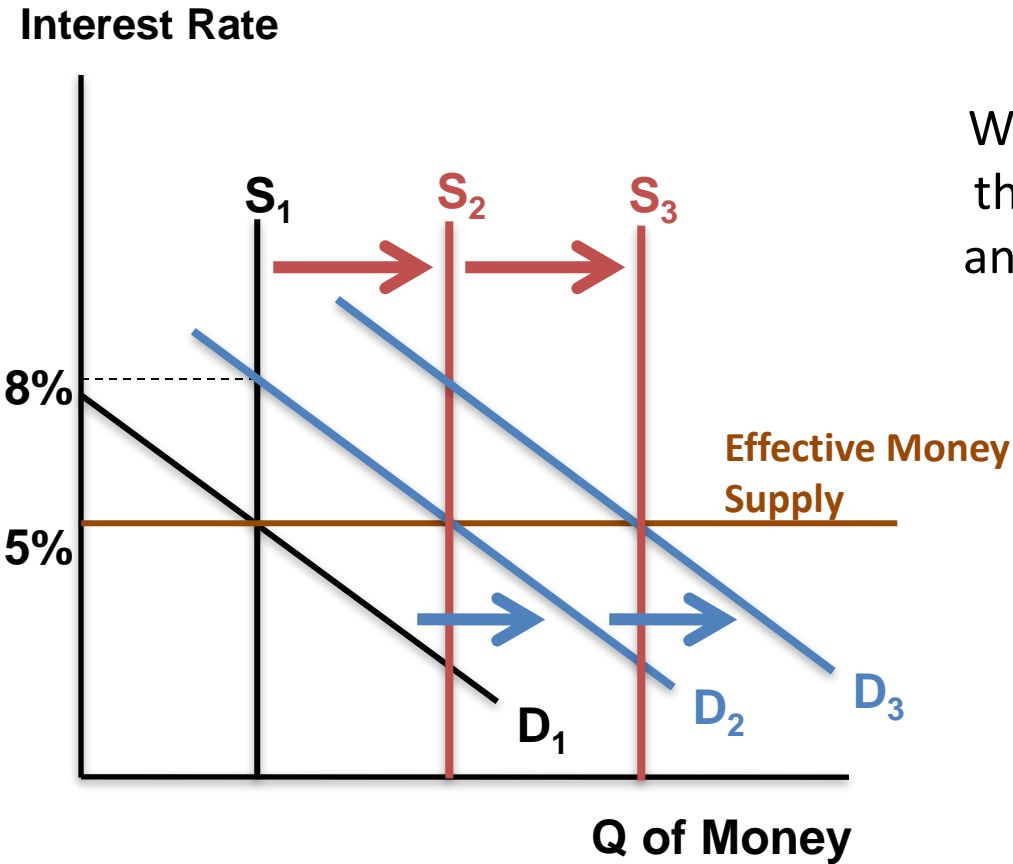


The Taylor Rule

- The Taylor rule is a useful approximation for predicting Fed policy
- Formally the Taylor rule is:

$$\begin{aligned} \text{Fed funds rate} = & 2\% + \text{Current inflation} \\ & + 0.5 \times (\text{actual inflation less desired} \\ & \text{inflation}) \\ & + 0.5 \times (\text{percent deviation of aggregate} \\ & \text{output from potential}) \end{aligned}$$

The Effective Supply Curve for Money



When the Fed chooses a monetary rule that targets the interest rate, it creates an **effective money supply curve** that is horizontal at the target rate

The Fed adjusts the supply of money to changes in the demand for money at the targeted rate

Limits to the Fed's Control of the Interest Rate

- The Fed may not be able to shift the entire yield curve up or down, but may make it steeper, flatter or inverted
- A **yield curve** is a curve that shows the relationship between interest rates and bonds' time to maturity
- When faced with a financial crisis, the Fed may use **quantitative easing**, Fed policy that does not directly affect the interest rate
- An example is buying assets other than bonds

Maintaining Policy Credibility

- Policy makers are very concerned about establishing policy credibility because they believe that it is necessary to prevent inflationary expectations from becoming built into the system
- **Nominal interest rates** are the rates you actually see and pay
- **Real interest rates** are nominal interest rates adjusted for expected inflation
- Nominal interest rate = Real interest rate
+ Expected inflation rate

Maintaining Policy Credibility

- The real interest rate cannot be observed since it depends on expected inflation, which cannot be directly observed
- Making a distinction between nominal and real rates adds another uncertainty to the effect of monetary policy
- If expansionary policy leads to expectations of increased inflation, nominal rates will increase and leave real rates unchanged

Monetary Policy Regimes

- Most economists believe that a monetary regime, not a monetary policy, is the best approach to policy
 - A **monetary regime** is a predetermined statement of the policy that will be followed in various situations
 - A monetary policy is a response to events chosen without a predetermined framework
- Monetary regimes are now favored because rules can help generate market expectations
- An explicit monetary policy regime has problems because special circumstances arise where it makes sense to deviate from the regime

Chapter Summary

- Monetary policy influences the economy through changes in the banking system's reserves that affect the money supply and credit availability
- Expansionary monetary policy works as follows:

$$\uparrow \mathbf{M} \rightarrow i \downarrow \rightarrow \uparrow \mathbf{I} \rightarrow \uparrow \mathbf{Y}$$

- Contractionary monetary policy works as follows:

$$\downarrow \mathbf{M} \rightarrow \uparrow i \rightarrow \downarrow \mathbf{I} \rightarrow \downarrow \mathbf{Y}$$

- The Federal Open Market Committee (FOMC) makes the actual decisions about monetary policy

Chapter Summary

- The Fed is the central bank of the U.S; it conducts monetary policy and regulates financial institutions
- Open market operations are the Fed's most important policy tool
 - To expand the money supply, the Fed buys bonds, which increases their price and decreases interest rates
 - To decrease the money supply, the Fed sells bonds, which decreases their price and increases interest rates

Chapter Summary

- When the Fed buys bonds, the price of bonds rises and interest rates fall. When the Fed sells bonds, the price of bonds falls and interest rates rise
- A change in reserves changes the money supply by the change in reserves times the money multiplier
- The Federal funds rate is the rate at which one bank lends reserves to another bank
 - It is the Fed's primary operating target

Chapter Summary

- The Taylor rule states: Set the Fed funds rate at 2 plus current inflation plus half the difference between actual and desired inflation plus half the percent difference between actual and potential output
- The yield curve shows the relationship between interest rates and bonds' time to maturity
- Although the Fed controls short-term interest rates more directly, its effect on long-term rates is indirect
- Fed policy intended to shift the yield curve might instead change its shape and therefore not have the intended impact on investment