



Monetary Tools




Tools of Monetary Policy

- Changing the reserve requirement
- Changing the discount rate
- Executing open market operations (buying and selling government securities) and thereby affecting the Federal funds rate




Changing the Reserve Requirement

- The *reserve requirement* is the percentage the Federal Reserve System sets as the minimum amount of reserves a bank must have.




Required Reserves and Excess Reserves

- The amount banks keep in reserve for checking accounts (also called demand deposits) depend:
 - Partly on the reserve requirement.
 - Partly on how much they think they need for safety.




Required Reserves and Excess Reserves

- Banks hold as little in reserves as possible since they earn no interest on them.
- In the late 2000s, required reserves for demand deposits were about 10 percent, and zero for all other accounts.




The Reserve Requirement and the Money Supply

- The Fed can increase or decrease the money supply by changing the reserve requirement.




The Reserve Requirement and the Money Supply*

- If the Fed decreases the reserve requirement, it expands the money supply.
 - Banks have more money to lend out.
 - The money multiplier increases.



The Reserve Requirement and the Money Supply*

- If the Fed increases the reserve requirement, it contracts the money supply.
 - Banks have less money to lend out.
 - The money multiplier decreases.



The Reserve Requirement and the Money Supply*

- The approximate real-world money multiplier in the economy is:
$$1/(r + c)$$

r = the percentage of deposits banks hold in reserve
 c = the ratio of money people hold in cash to the money they hold as deposits



The Reserve Requirement and the Money Supply

- In reality, banks keep 10% in reserves ($r = 0.1$) and the cash-to-deposits ratio is 40% ($c = 0.4$).
- The realistic approximation of the money multiplier for demand deposits is:
$$1/(0.1 + 0.4) = 1/0.5 = 2$$




What If There Is a Shortage of Reserves

- The bank can borrow reserves from another bank in the Federal funds market and pay the Federal Funds rate.
- It can stop making new loans and keep as reserves the proceeds of loans that are paid off.




What If There Is a Shortage of Reserves

- The bank can sell Treasury bonds in order to get reserves.
- The bonds themselves cannot be used as reserves (they are sometimes called secondary reserves) but the cash that comes from their sales does.




Changing the Discount Rate

- A bank can borrow reserves directly from the Fed, if it experiences a shortage of reserves.
- The *discount rate* is the rate of interest the Fed charges for those loans it makes to banks.




Changing the Discount Rate

- By changing the discount rate, the Fed can expand or contract the level of bank reserves and the money supply.




Changing the Discount Rate*

- An increase in the discount rate makes it more expensive for banks to borrow from the Fed.
- A decrease in the discount rate makes it less expensive for banks to borrow from the Fed.




Changing the Discount Rate

- In practice, the discount rate is generally a slightly higher than other rates banks would have to pay to borrow reserves.




Executing Open Market Operations

- Changes in the discount rate and reserve requirements are not used in day-to-day operations of the Fed.
- These tools are used for major changes.




Executing Open Market Operations

- For day-to-day operations the Fed uses a third tool, open market operations.
- *Open market operations* are the Fed's buying and selling of government securities.




Executing Open Market Operations**

- To expand money supply, the Fed buys bonds.
- To contract money supply, the Fed sells bonds.




An Open Market Purchase

- An open market purchase is an example of expansionary monetary policy.
- *Expansionary monetary policy* is a monetary policy that tends to reduce interest rates and raise income.



An Open Market Purchase

- When the Fed buys bonds, it deposits the money in federal government accounts at a bank.
- Bank cash reserves rise, encouraging banks to lend out the excess.
- The money supply rises.




An Open Market Sale

- An open market sale is an example of contractionary monetary policy.
- **Contractionary monetary policy** is a monetary policy that tends to raise interest rates and lower income.



An Open Market Sale

- Here, the Fed sells bonds.
- In return for the bond, the Fed receives a check drawn against a bank.
- The bank's reserve assets are reduced and money supply falls.

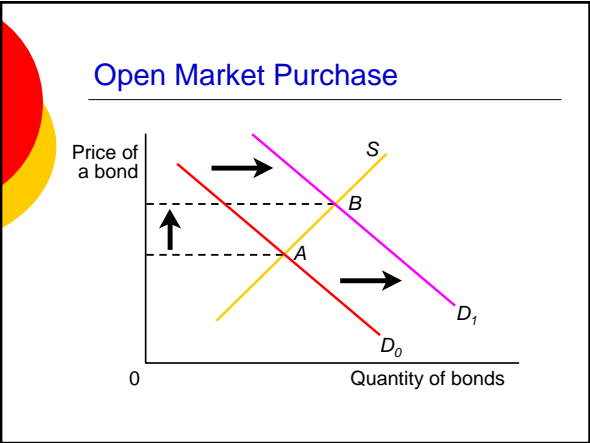


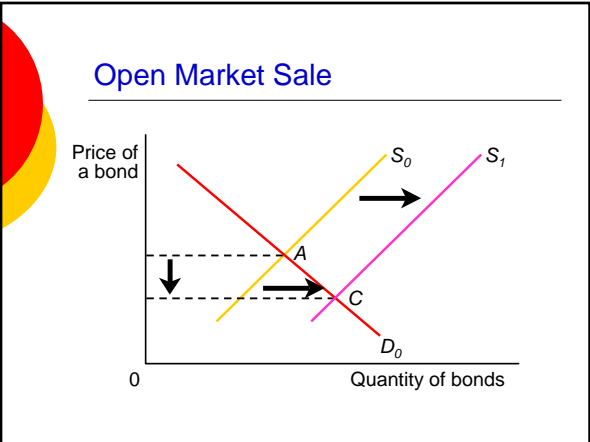
Bond Prices and Interest Rates

- The Fed raises the demand for bonds when it buys bonds in an open market purchase.
- Bond prices rise and interest rates fall.

Bond Prices and Interest Rates

- The Fed increases the supply of bonds when it sells bonds in the open market.
- Bond prices fall and interest rates rise.









The Fed Funds Market

- Banks with surplus reserves can lend them to banks with a reserve shortage.
- They are lent overnight as Fed funds.



The Fed Funds Market

- **Fed funds** – loans of reserves banks make to each other.
- **Federal funds rate** – the interest rate banks charge each other for Fed funds.
- **Federal funds market** – the market in which banks lend and borrow reserves.



The Fed Funds Market*

- By selling bonds, the Fed reduces reserves and increases the Fed funds rate.
- When the Fed buys bonds, it increases reserves, causing the Fed funds rate to fall.



The Fed Funds Rate and the Discount Rate since 1990

