SECTION 3

The Federal Reserve System

What Is the Federal Reserve System?

- In 1913, Congress passed the Federal Reserve Act. This act established the Federal Reserve System, which is also known as “the Fed.” The Fed is the central bank of the United States.

- The Board of Governors of the Federal Reserve System is the governing body of the Federal Reserve System.
The United States is broken up into 12 Federal Reserve districts.

The major policy-making group within the Fed is the **Federal Open Market Committee (FOMC)**. This 12-member policy-making group has the authority to conduct open market operations.
What Does the Fed Do?

- The Fed has six major responsibilities:

  1. Control the money supply.

  2. Supply the economy with paper money, or Federal Reserve notes. Federal Reserve notes are printed at the Bureau of Engraving and Printing in Washington, D.C.

  3. Hold bank reserves. Each bank that is a member of the Federal Reserve System is required to keep a reserve account with its district bank. Reserve accounts are similar to checking accounts.
4. Provide check-clearing services.
   
a. For example, suppose that Harry writes a $1,000 check and sends it to Ursula.

b. Ursula receives the check, takes it to her local bank, and deposits it into her checking account. The balance in her account rises by $1,000.

c. Ursula’s bank sends the check to its Federal Reserve district bank. The reserve bank increases the reserve account of Ursula’s bank by $1,000 and decreases the reserve account of Harry’s bank by $1,000.

d. The reserve bank sends the check to Harry’s bank, which then reduces the balance in Harry’s checking account by $1,000.
The Check-Clearing Process

1. Harry and Ursula
   Harry writes a $1,000 check on his Miami bank and sends it to Ursula in Savannah.

2. Ursula and her Savannah bank
   Ursula endorses the check and deposits it in her local (Savannah) bank. The balance in her checking account increases by $1,000.

3. The Savannah bank and the Federal Reserve Bank of Atlanta
   Ursula’s local (Savannah) bank sends the check to the Federal Reserve Bank of Atlanta, which increases the reserve account of the Savannah bank by $1,000 and decreases the reserve account of the Miami bank by $1,000.

4. The Federal Reserve Bank of Atlanta and the Miami bank
   The Federal Reserve Bank of Atlanta sends the check to Harry’s bank in Miami, which then reduces the balance in Harry’s account by $1,000.
5. Supervise member banks. If the Fed finds that a bank has not followed established banking standards, it can pressure the bank to do so.

6. Serve as the lender of last resort for banks suffering cash management problems.
6. What is the structure of the Board of Governors of the Federal Reserve System?
   - 7 Members, each appointed to a 14-year term by the president of the U.S. with Senate approval.

7. What is the FOMC and what does it do?
   - Federal Open Market Committee – the major policy-making group within the Fed

8. What is the structure of the FOMC?
   - Made up of 12 members (7 from the Board of Governors; 5 from the district banks)

15. What government agency prints paper money and how does it reach the public?
   - Bureau of Engraving and Printing prints the money and issues it to the 12 Federal Reserve district banks which then issue it to the banks in their district.
The Money Creation Process

Different Types of Reserves

- Banks have three types of reserves: total, required, and excess.
- A bank’s **total reserves** are the sum of the bank’s deposits in its reserve account at the Fed plus its vault cash. For example, if a bank has $10 million in its reserve account and $5 million cash in its vault, its total reserves are $15 million.
- Total reserves can be divided into two types: required and excess.
- Required reserves are the minimum amount of reserves a bank must hold against its deposits as mandated by the Fed. A reserve requirement is a Fed regulation, requiring a bank to keep a certain percentage of its deposits in its reserve account with the Fed or in its vault as vault cash. For example, if the Fed requires a bank to hold 20 percent of its deposits in reserve, and the bank has $50 million in deposits, the required reserves are $10 million.

- Excess reserves are any reserves held beyond the required amount. For example, if a bank has $15 million in total reserves and the Fed requires that it keep $10 million in required reserves, the bank has $5 million in excess reserves.
Types of Bank Reserves

- Total reserves = Deposits at the Fed + Vault cash
  Example: Deposits in reserve account + $10 million
  Vault cash = $5 million
  Total reserves = $15 million

- Required reserves = Reserve requirement x Checking account deposits
  Example: Reserve requirement = 20%
  Checking account deposits = $50 million
  Required reserves = $10 million

- Excess reserves = Total reserves – Required reserves
  Example: Total reserves = $15 million
  Required reserves = $10 million
  Excess reserves = $5 million
How Banks Increase the Money Supply

- Banks are not allowed to print currency. However, banks can create checking account deposits.

- When a customer deposits money in a checking account, that deposit increases the amount of money that the bank has on hand in its vault.

- If the bank pays out less in withdrawals than it accepts in deposits during the day, the bank will have excess reserves at the end of the day. These excess reserves can then be lent out in the form of loans.

- These loans are deposited in other accounts, or other banks, continuing the cycle and creating more money.

- For example, a $5,000 deposit in a checking account could allow the banking system to create an additional $25,000 in the money supply.
Initial Deposit $1,000

Reserve Requirement
  Required Reserve

Cash Tips

Bank

First Loan $900
  $1,000
  10%
  $100

Deposit $900
  $900
  10%
  $90

Second Loan $810
  Deposit $810
  $810
  10%
  $81

Third Loan $729
  Deposit $729
  $810
  10%
  $81
Creation of Money by Banks

A $5,000 deposit into a checking account could change the money supply by as much as $25,000.

\[
\text{Change in money supply} = \frac{1}{\text{Reserve requirement \%}} \times \text{Change in bank reserves}
\]

\[
\text{Change in money supply} = \frac{1}{0.20 \ (20\%)} \times $5,000
\]

\[
= $25,000
\]
Total reserves = Deposits at the Fed + Vault cash
Required reserves = Reserve requirement x Checking account deposits
Excess reserves = Total reserves – Required reserves
Change in money supply = 1/Reserve Requirement x Change in Reserves

Reserve Requirement is 10%

<table>
<thead>
<tr>
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<th>Vault cash</th>
<th>Checking account deposits</th>
<th>Total reserves</th>
<th>Required reserves</th>
<th>Excess reserves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
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<td>$12</td>
<td>$1</td>
<td>$9</td>
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<tr>
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<tr>
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<td>$30</td>
<td>$2</td>
<td>$2</td>
</tr>
<tr>
<td>Bank D</td>
<td>$16</td>
<td>$4</td>
<td>$20</td>
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<th>Excess reserves</th>
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<td>$20</td>
<td>$4</td>
<td>$16</td>
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</tbody>
</table>
If the vault cash at Bank C decreased $1 million, the excess reserves in the bank would ______________ by ______________.

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<tr>
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<tr>
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<td>$1</td>
<td>$30</td>
<td>$4</td>
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</tbody>
</table>
If the Fed increased the reserve requirement to 15%, the required reserves in Bank B would _____________ to _____________ and the bank’s excess reserves would _____________ to _______________.

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Bank B</td>
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<td>$10</td>
<td>$1</td>
<td>$20</td>
<td>$11</td>
<td>$3</td>
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</table>
If the Fed decreased the reserve requirement to 5%, the required reserves in Bank D would ______________ to ____________ and the bank’s excess reserves would _____________ to ________________.

<table>
<thead>
<tr>
<th></th>
<th>Deposits in the reserve account at the Fed</th>
<th>Vault cash</th>
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</thead>
<tbody>
<tr>
<td>Bank D</td>
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<td>$4</td>
<td>$40</td>
<td>$20</td>
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<td>$4</td>
<td>$40</td>
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<td>$2</td>
<td>$18</td>
</tr>
</tbody>
</table>
Suppose checking account deposits at bank A increased $1 million through a cash deposit by a new account holder. Vault cash at the bank would _____________ to _______________, total reserves would _______________ to _______________, and excess reserves would _______________ to _______________.

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Bank A</td>
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</table>
SECTION 5

Fed Tools for Changing the Money Supply

Changing the Federal Reserve Requirement

- The Fed has three tools that it can use to raise or lower the money supply.
  - the reserve requirement
  - open market operations
  - the discount rate
Changing the Reserve Requirement

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

- Lower reserve requirement = Increase in money supply.
- Higher reserve requirement = Decrease in money supply.
Conducting Open Market Operations

- The Federal Open Market Committee (FOMC) conducts **open market operations** by buying and selling government securities.

- When the FOMC makes an open market purchase, it increases the money supply. When an open market sale is made, the money supply falls.
Changing the Discount Rate

- The **federal funds** rate is the interest rate one bank charges another for a loan.

- The **discount rate** is the interest rate the Fed charges a bank for a loan.

- When the discount rate is decreased, the money supply rises. When the discount rate is increased, the money supply falls.
### Fed Monetary Tools and Their Effect on the Money Supply

<table>
<thead>
<tr>
<th>Monetary tool</th>
<th>Effect on money supply</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reserve requirement</strong></td>
<td></td>
</tr>
<tr>
<td>Raise the reserve requirement</td>
<td>↓</td>
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<tr>
<td>Lower the reserve requirement</td>
<td>↑</td>
</tr>
<tr>
<td><strong>Open market operations</strong></td>
<td></td>
</tr>
<tr>
<td>Buy government securities</td>
<td>↑</td>
</tr>
<tr>
<td>Sell government securities</td>
<td>↓</td>
</tr>
<tr>
<td><strong>Discount rate</strong></td>
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</tr>
<tr>
<td>Raise the discount rate</td>
<td>↓</td>
</tr>
<tr>
<td>Lower the discount rate</td>
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</tr>
</tbody>
</table>