Chapter 17

The Money Supply Process
Figure 17.1
The Money Supply Process

Monetary Base
Determined by
The Fed

×

Money Multiplier
Determined by
The Fed
The Banking System
The Nonbank Public

= 

Money Supply
The Fed and the Monetary Base

- The Fed can control the money supply by changing the monetary base.
- The monetary base is equal to currency in circulation and reserves held by banks.
- The Fed’s principal liabilities are currency in circulation and reserves.
- The Fed’s principal assets are government securities and discount loans.
Changing the Monetary Base

- The Fed changes the monetary base by changing the levels of its assets.
- In an open market purchase the Fed buys government bonds and increases the base.
- In an open market sale the Fed sells government bonds and decreases the base.
- The Fed can also change reserves and the base through changes in discount loans.
Figure 17.2
The Effect of Open Market Operations

- **Open Market Purchase**
  - **The Fed**
    - Purchase government securities
  - **Nonbank Public**
    - Hold as currency
    - Currency in circulation increases
    - Deposit checks in banking system
    - Reserves increase
  - **Banks**
    - Hold as vault cash
    - Reserves increase
    - Deposit in Fed account
    - Reserves increase
  - **Monetary base increases**
Figure 17.3
The Effect of Discount Loans

Discount Loans
The Fed

Sets discount rate
Discount Rate

Banks

Decide to borrow
Loan

Reserves increase
Monetary base increases
The Simple Deposit Multiplier

- The money multiplier links monetary base changes to changes in the money supply.
- Simple deposit multiplier:
  \[ \Delta D = \Delta R \left( \frac{1}{R/D} \right) \]; where \( D \) = deposits, \( R \) = reserves, and \( R/D \) = required reserve ratio.
Decisions of the Nonbank Public

- The simple deposit multiplier model incorrectly assumes no currency and no excess reserves.
- Behavior of the nonbank public and banks influences the money supply.
- The ratio of cash to checkable deposits is called the currency-deposit ratio, \((C/D)\).
- Changes in \(C/D\) by nonbank public will change the money supply.
### Table 17.2 Determinants of the Currency-Deposit Ratio

<table>
<thead>
<tr>
<th>Determinants</th>
<th>Causes $C/D$ to...</th>
<th>Because...</th>
</tr>
</thead>
<tbody>
<tr>
<td>An increase in...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>wealth</td>
<td>fall</td>
<td>in general, $C/D$ decreases with rising income and wealth in the economy.</td>
</tr>
<tr>
<td>expected returns on deposits</td>
<td>fall</td>
<td>an increase in interest rates offered on checkable deposits increases the public’s demand for those deposits relative to currency and decreases $C/D$.</td>
</tr>
<tr>
<td>riskiness of deposits</td>
<td>rise</td>
<td>under normal circumstances, default risk does not affect $C/D$. During banking panics, an increase in the perceived riskiness of deposits increases $C/D$.</td>
</tr>
<tr>
<td>liquidity of deposits</td>
<td>no change</td>
<td>under normal circumstances, there is little difference in the liquidity of currency and checkable deposits and thus little or no effect on $C/D$.</td>
</tr>
<tr>
<td>information or anonymity value of cash</td>
<td>rise</td>
<td>an increase in the demand for anonymity, owing to black-market, tax evasion, other illegal activities, or desirability abroad increases $C/D$.</td>
</tr>
</tbody>
</table>
Bank Behavior: Excess Reserves and Discount Loans

- Banks sometimes hold excess reserves, reducing the size of the money multiplier.
- Banks’ decisions to incur discount loans affect the size of the monetary base.
- Banks generally hold small levels of excess reserves, but the amount fluctuates over time.
- The level of discount loans is determined by banks.
# Table 17.3 Determinants of Excess Reserves and Discount Loans

<table>
<thead>
<tr>
<th>Determinants of Excess Reserves and Discount Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>An increase in . . .</strong></td>
</tr>
<tr>
<td>market interest rates</td>
</tr>
<tr>
<td>average level or variability</td>
</tr>
<tr>
<td>of deposit outflows</td>
</tr>
<tr>
<td>market interest rates relative</td>
</tr>
<tr>
<td>to the discount rate</td>
</tr>
</tbody>
</table>
Deriving the Money Multiplier and the Money Supply

- The money supply equals the money multiplier times the monetary base.
- The monetary base = nonborrowed base + discount loans.
- The money multiplier depends on the required reserve ratio, \( ER/D \), and \( C/D \).
## Table 17.4 Variables in the Money Supply Process

<table>
<thead>
<tr>
<th>Variables in the Money Supply Process</th>
<th>An increase in the . . .</th>
<th>Based on the actions of . . .</th>
<th>Causes the money supply to . . .</th>
<th>Because . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>nonborrowed base, $B_{non}$</td>
<td>the Fed (open market operations)</td>
<td>rise</td>
<td>the monetary base rises, and more reserves are available for deposit expansion.</td>
<td></td>
</tr>
<tr>
<td>reserve requirements, $R/D$</td>
<td>the Fed (reserve requirements)</td>
<td>fall</td>
<td>fewer reserves can be lent out, and the money multiplier falls.</td>
<td></td>
</tr>
<tr>
<td>discount rate</td>
<td>the Fed (discount policy)</td>
<td>fall</td>
<td>discount loans become more expensive, reducing borrowed reserves and the monetary base.</td>
<td></td>
</tr>
<tr>
<td>currency-deposit ratio, $C/D$</td>
<td>the nonbank public (portfolio decisions)</td>
<td>fall</td>
<td>the money multiplier falls, reducing deposit expansion.</td>
<td></td>
</tr>
<tr>
<td>excess reserves relative to deposits, $ER/D$</td>
<td>banks (portfolio decisions)</td>
<td>fall</td>
<td>the money multiplier falls, reducing deposit expansion.</td>
<td></td>
</tr>
<tr>
<td>expected deposit outflows</td>
<td>the nonbank public (transactions considerations)</td>
<td>fall</td>
<td>excess reserves rise relative to deposits, reducing the money multiplier and deposit expansion.</td>
<td></td>
</tr>
</tbody>
</table>
| variability of deposit outflows     | the nonbank public (transactions and portfolio considerations) | fall                           | excess reserves rise relative to deposits, reducing the money multiplier and deposit expansion.