Chap. 13

- Monetary Policy
- Predominant Tool
- Open Market Operations

**Open Market Operation:** A purchase (or sale) by the Fed of government securities from (or to) the public

<table>
<thead>
<tr>
<th>Net Purchase</th>
<th>ΔM &gt; 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Sale</td>
<td>ΔM &lt; 0</td>
</tr>
</tbody>
</table>

**Expected Impact of OMO**

<table>
<thead>
<tr>
<th>Nominal</th>
<th>ΔY &gt; 0</th>
<th>Nominal</th>
<th>ΔY &lt; 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real</td>
<td>ΔP &gt; 0</td>
<td>Real</td>
<td>ΔP ≤ 0</td>
</tr>
</tbody>
</table>

Typically ΔM > 0
- Fed supports income expansion
• Explain how an open market operation changes the money supply

• Explain what determines the demand for money
Chap. 13

- monetary policy
- predominant tool

Open Market Operations: open market operation - a purchase (or sale) by the Fed of government securities from (or to) the public

- Net purchase: $\Delta M > 0$
- Net sale: $\Delta M < 0$

Expected impact of OMO:

- Nominal:
  - $\Delta y > 0$
  - $\Delta y < 0$

- Real:
  - $\Delta p > 0$

Typically $\Delta M > 0$

- Fed supports income expansion
• Explain how an open market operation changes the money supply

• Explain what determines the demand for money
Chapter 13

- **remember vocabulary**

  - \( i \): nominal (market) rate of interest
  - \((i - \Delta P/P)\): real rate of interest
  - \( Y \): nominal GDP
  - \( Y/P \): real GDP
  - \( M^p \): demand for nominal cash balances
  - \( M^p/P \): demand for real cash balances
  - \( \hat{i} \): expected nominal rate of interest
  - \((\Delta P/P)\): expected inflation rate

---

**Key learning objectives:**

- What determines the demand for real cash balances?

\[
\frac{M^d}{P} = f(i, \hat{i}, \Delta GDP)
\]
- Key graph
- Ch. 13

opportunity cost of holding cash balances

- Demand for real cash balances
- Supply of real cash balances
Chapter 13

- Supply of real cash balances
- \( \frac{\Delta M^s}{\Delta P} \)
- Cash balances \( M \)
- A change in \( M^s \) (nominal)
- Cash balances does not change \( P \)

\[ \frac{\Delta P}{\Delta M} = 0 \]

- Not likely to be true

Take Econ 302 for a further analysis
> money
  > checkable deposits
  > nominal cash balances: $M_c$
  > real cash balances: $(\frac{M_c}{P})$

- market rate of interest
  - short term rate of interest
  - Treasury Bill rate of interest

- opportunity cost of holding cash balances
  - short term rate of interest
  - interest rate on check deposits
  - opp. cost of holding cash balances
If you wish, you can change the options for this chart.


Starting year/month/day: 1990 1 5
Ending year/month/day: 2002 17 31

Gif height: 290
Gif width: 545

1.75% very low
money
- checkable deposits

functions of money
- medium of exchange
- store of value
- liquidity for unexpected events
- unit of account

Q: What determines the demand for money?
Chapter 13: What Determines $M^D$?

- What interest rate?
- What definition of $M$?

Do interest rates matter?

First answer: Yes!
• Demand
  
  • transactions demand for money
  
  • square root law

  \[ M^D = \sqrt{\frac{b \cdot Y}{2i}} = b \cdot Y^{1.5} \cdot i^{-0.5} \]

  b: conversion (liquidity) cost

  Y: income

  i: opp. cost. of holding cash balances

  **elasticities**

<table>
<thead>
<tr>
<th>( \frac{\Delta M^D}{M^D} )</th>
<th>( \frac{\Delta b}{b} )</th>
<th>( \frac{\Delta i}{i} )</th>
<th>( \frac{\Delta Y}{Y} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>.50</td>
<td>-.50</td>
<td>+.50</td>
<td></td>
</tr>
</tbody>
</table>
The Demand for Money in the United States

- Effect of increase in real GDP
- Effect of financial innovation

Interest rate (percent per year)

Real M1 (trillions of 1992 dollars)

(a) M1 demand
The Demand for Money in the United States

Effect of increase in real GDP

Effect of financial innovation

Real M2 (trillions of 1992 dollars)

Interest rate (percent per year)

(b) M2 demand

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