Agenda

• Equilibrium in the Labor Market: The FE Line.
• Equilibrium in the Goods Market: The IS Curve.
• What is Money?
• Portfolio Allocation & the Demand for Assets

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Equilibrium in the Labor Market

• Equilibrium in the labor market leads to employment at its full-employment level ($N$) and output at its full-employment level ($\bar{Y}$).

  ➢ The full employment level of output is determined by the full-employment level of employment and the current levels of capital and productivity.

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The FE Line

• The FE line is the combinations of output ($Y$) and the real interest rate ($r$) that establish equilibrium in the labor market.

  ➢ Because labor market equilibrium is unaffected by changes in the real interest rate, the FE line is vertical.
The FE Line

Factors that shift the FE line:

- The full-employment line shifts right because of:
  - A beneficial supply shock,
  - An increase in labor supply, and/or
  - An increase in the capital stock.

An increase in A

Equilibrium in the Goods Market

- The goods market is in equilibrium when desired investment, \( I^d \), equals desired national saving, \( S^d \).
  
  - That is, when \( I^d = S^d \).

- If the goods market is not in equilibrium, then the real interest rate adjusts to bring about equilibrium.
The IS Curve

• The IS curve is the combinations of output ($Y$) and the real interest rate ($r$) that establish equilibrium in the goods and services market.
  ➢ Or where $I^d = S^d$.

Deriving the IS Curve

• To derived the IS curve:
  ➢ Start in the $I^d-S^d$ diagram and find the level of output ($Y_0$) and the real interest rate ($r_0$) where $I^d = S^d$.
  ➢ Then change the level of output (to $Y_1$) and find the new real interest rate ($r_1$) that re-establishes equilibrium so that $I^d = S^d$ at $Y_1$.
  ➢ Repeat.
The IS Curve

- The slope of the IS curve reflects the real interest rate sensitivity of desired savings ($S^d$), desired consumption ($C^d$) and desired investment ($I^d$).

The IS Curve: The adjustment mechanism

- Suppose we are to the right of the IS curve:
  - At any given real interest rate ($r$), desired savings is greater than desired investment and either:
    - $R$ must decrease to reduce $S^d$ and increase $I^d$, and/or
    - $Y$ must decrease to increase $S^d$.
  - The adjustment mechanism in the goods market is primarily through changes in output.
The IS Curve
• Factors that shift the IS curve:
  ➢ The IS curve shifts to the right because of:
    • an increase in expected future output,
    • an increase in wealth,
    • an increase in government purchases,

The IS Curve
• Factors that shift the IS curve:
  ➢ The IS curve shifts to the right because of:
    • a decline in taxes,
      – if Ricardian equivalence doesn’t hold,
    • an increase in the expected future marginal product of capital, and/or
    • a decrease in the effective tax rate on capital.

An increase in government purchases

What Is Money?
• Money is any asset that is widely used and accepted as payment.
What Is Money?

• The three functions of money:
  ➢ **Medium of exchange.**
    • Money is used to make (and finalize) transactions.
  ➢ Unit of account.
    • The basic unit for measuring economic value.
  ➢ Store of value.
    • Money can be used to hold wealth.

What Is Money?

• Measuring money—the monetary aggregates:
  ➢ Distinguishing what assets count as money from those that do not is sometimes difficult.
  ➢ Two monetary aggregates (or measures):
    • M1
    • M2

What Is Money?

• Measuring money—M1:
  ➢ M1 consists of:
    • Currency and traveler’s checks held by the public.
    • Demand deposits (which pay no interest).
    • Other checkable deposits (which may pay interest).
  ➢ All components of M1 are used in making payments, so M1 is the closest money measure to our theoretical description of money.

What Is Money?

• Measuring money—M2:
  ➢ M2 consists of:
    • M1,
    • Savings deposits,
    • Small (< $100,000) time deposits,
    • Non-institutional MMMF balances, and
    • Money-market deposit accounts (MMDAs).
Table 7.1 U.S. Monetary Aggregates

<table>
<thead>
<tr>
<th>Aggregate</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>1392.3</td>
</tr>
<tr>
<td>Currency</td>
<td>741.8</td>
</tr>
<tr>
<td>Travelers' checks</td>
<td>6.9</td>
</tr>
<tr>
<td>Demand deposits</td>
<td>327.0</td>
</tr>
<tr>
<td>Other checkable deposits</td>
<td>316.6</td>
</tr>
<tr>
<td>M2</td>
<td>6775.2</td>
</tr>
<tr>
<td>Components of M1</td>
<td></td>
</tr>
<tr>
<td>Savings deposits, including MMDAs</td>
<td>3602.7</td>
</tr>
<tr>
<td>Small-denomination time deposits</td>
<td>1050.2</td>
</tr>
<tr>
<td>MMMFs (noninstitutional)</td>
<td>730.1</td>
</tr>
</tbody>
</table>

Note: Numbers may not add to totals shown owing to rounding. Source: Federal Reserve Statistical Release H.6, June 22, 2006. Data are not seasonally adjusted.

What Is Money?

• The money supply ($M$):
  
  ➢ The money supply or money stock is the amount of money circulating in the economy.
    
    • Owned by the non-bank public.

What Is Money?

• The central bank changes the money supply through open (or closed) market operations.
  
  • Open market operations are the buying and selling of financial assets by the central bank in the open market.
  
  • Closed market operations are the buying and selling of financial assets by the central bank directly from the government.

• Where does money come from?
  
  • Currency and coins are issued by the government.

  • “Other” money is issued by the financial system.
    
    – But heavily influenced by the central bank.

• The amount of money in circulation in the economy is controlled by the central bank.
What Is Money?

• Open market operations:
  ➢ To increase the money supply, the central bank buys financial assets from the public with newly created money.
    • This is an open-market purchase.
  ➢ To reduce the money supply, the central bank sells financial assets to the public and removes money from circulation.
    • This is an open-market sale.

What Is Money?

• Closed market operations:
  ➢ The central bank could also buy newly issued government bonds directly from the government (i.e., the Treasury).
    • This is the same as the government financing its expenditures directly by printing money.
    • This happens frequently in some countries (though is forbidden by law in the United States).

Portfolio Allocation & the Demand for Assets

• The portfolio allocation decision:
  ➢ How do people decide on the allocation of their wealth among various assets?
  ➢ Various factors to consider:
    • Expected returns,
    • Risk,
    • Liquidity, and
    • Time to maturity.

Portfolio Allocation & the Demand for Assets

• Expected return:
  ➢ The rate of return on an asset is its increase in value per unit of time.
    • Because returns not known in advance, people must estimate their expected return.
  ➢ Other things equal, investors prefer assets with the highest expected return.
Portfolio Allocation & the Demand for Assets

• **Risk:**
  
  ➢ **Risk** is the degree of uncertainty about an asset’s return.
  
  ➢ **Other things equal**, investors prefer assets with the **lowest risk**.
    • Because, in general, people are **risk-adverse**.

Portfolio Allocation & the Demand for Assets

• **Liquidity:**
  
  ➢ **Liquidity** is the ease and quickness with which an asset can be traded.
  
  ➢ **Other things equal**, investors prefer assets with the **highest liquidity**.

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Portfolio Allocation and the Demand for Assets

• **Time to maturity:**
  
  ➢ **Time to maturity** is the amount of time until an asset matures and the investor is repaid principal.
  
  ➢ **Other things equal**, investors prefer assets with the **shortest maturity**.
    • A **term-risk premium** exists, i.e., long-term interest rates typically exceed short-term interest rates to compensate investors for holding longer-term bonds.

Portfolio Allocation & the Demand for Assets

• **The Demand for Various Assets:**
  
  ➢ There are trade-offs among expected return, risk, liquidity, and time to maturity.
    • Assets with low risk, high liquidity, and short maturity also have low expected returns.
    • Risk can also be reduced by diversifying the portfolio of assets.
Portfolio Allocation & the Demand for Assets

• The Demand for Various Assets:
  ➢ The amount a wealth holder wants of an asset is his or her demand for that asset.
  ➢ The sum of asset demands equals total wealth.
    • Or the supply of assets.