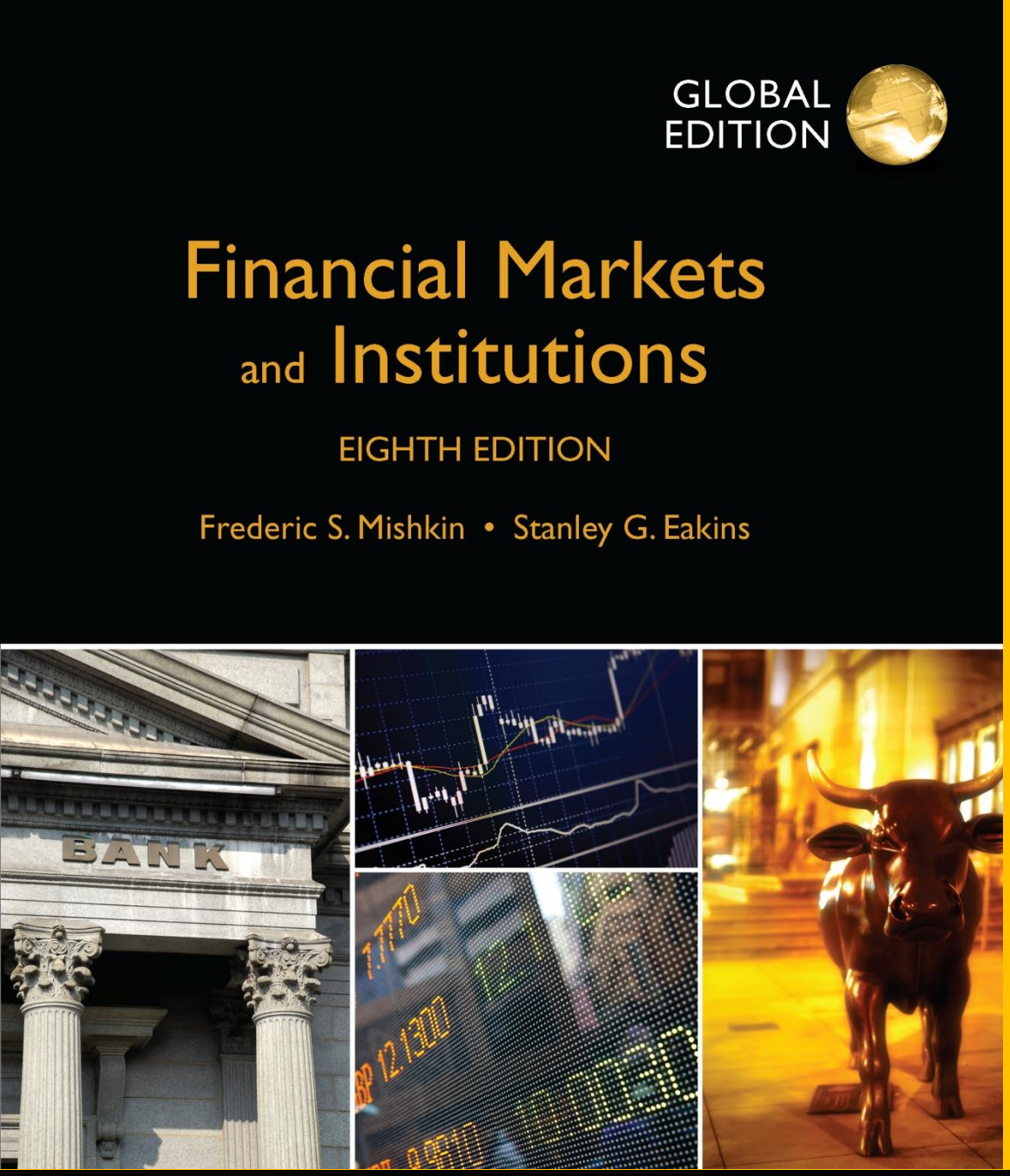



# Part 5

# Financial Markets

GLOBAL EDITION

# Financial Markets and Institutions

EIGHTH EDITION

Frederic S. Mishkin • Stanley G. Eakins


## Chapter 11

## The Money Markets

# Now that's a lot!

In its 2013 annual report, Apple listed $18 billion in short-term securities on its balance sheet, plus $11 billion in actual cash equivalents. Apple does not keep this in its local bank. But where?

This is, of course, this topic of chapter 11—Money Markets.

# Chapter Preview

- We review the money markets and the securities that are traded there. In addition, we discuss why the money markets are important in our financial system. Topics include:
  - The Money Markets Defined
  - The Purpose of Money Markets
  - Who Participates in Money Markets?
  - Money Market Instruments
  - Comparing Money Market Securities

# The Money Markets Defined

- The term “money market” is a misnomer. Money (currency) is not actually traded in the money markets.
- The securities in the money market are short term with high liquidity; therefore, they are close to being money.

# The Money Markets Defined

- Money Markets Defined
  1. Usually sold in large denominations ($1,000,000 or more)
  2. Low default risk
  3. Mature in one year or less from their issue date, although most mature in less than 120 days

# The Money Markets Defined: Why Do We Need Money Markets?

- The banking industry should handle the needs for short-term.
- Banks have an information advantage.
- Banks, however, are heavily regulated.
- Creates a distinct cost advantage for money markets over banks.

# The Money Markets Defined: Cost Advantages

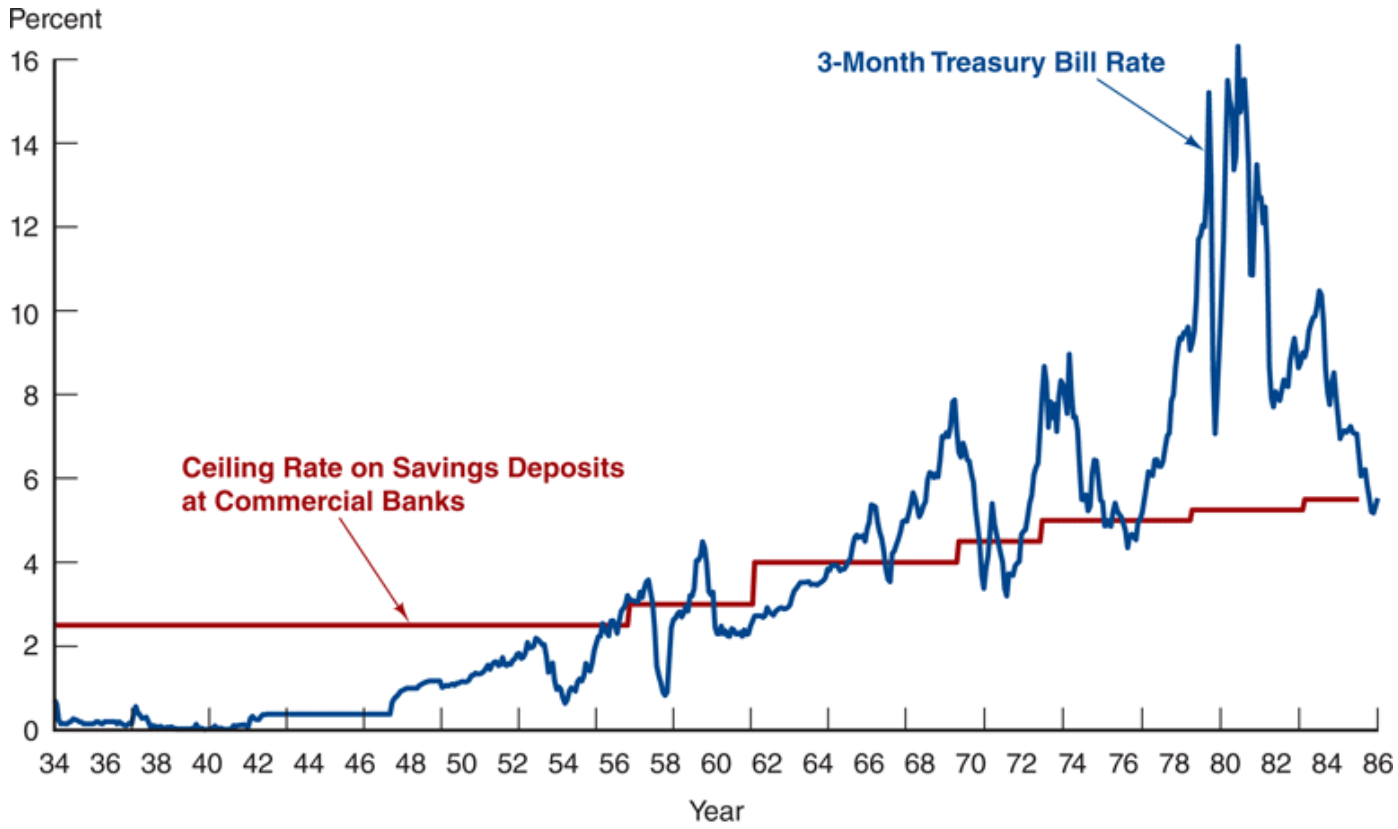
- Reserve requirements create additional expense for banks that money markets do not have
- Regulations on the level of interest banks could offer depositors lead to a significant growth in money markets, especially in the 1970s and 1980s.
- When interest rates rose, depositors moved their money from banks to money markets.

# The Money Markets Defined: Cost Advantages

- The cost structure of banks limits their competitiveness to situations where their informational advantages outweighs their regulatory costs.
- Limits on interest banks could offer was not relevant until the 1950s. In the decades that followed, the problem became apparent.

# 3-month T-bill rates and Interest Rate Ceilings

**Figure 11.1** Three-Month Treasury Bill Rate and Ceiling Rate on Savings Deposits at Commercial Banks, 1933 to 1986




*Source:* http://www.stlouisfed.org/default.cfm.

# The Purpose of Money Markets

- Investors in Money Market: Provides a place for warehousing surplus funds for short periods of time
- Borrowers from money market provide low-cost source of temporary funds

# The Purpose of Money Markets

- Corporations and U.S. government use these markets because the timing of cash inflows and outflows are not well synchronized.
- Money markets provide a way to solve these cash-timing problems.

# The Purpose of Money Markets: Sample rates from the Federal Reserve

**Table 11.1** Sample Money Market Rates, May 15, 2013

| Instrument | Interest Rate (%) |
|---|---|
| Prime rate | 3.25 |
| Federal funds | 0.12 |
| Commercial paper | 0.15 |
| 1-month CDs (secondary market) | 0.17 |
| London interbank offer rate | 0.20 |
| Eurodollar | 0.23 |
| Treasury bills (4 week) | 0.01 |

*Source: Federal Reserve Statistical Bulletin*, http://www.federalreserve.gov/releases/h15/data.htm and Libor: http://www.fedprimerate.com/libor/libor_rates_history.htm.

# Who Participates in the Money Markets?

- We will discuss, in turn, each of the major borrowers and lenders in the money market.
- First, let's examine some of the current rates offered in the U.S. money markets.

# Who Participates in the Money Markets?

**Table 11.2** Money Market Participants

| Participant | Role |
|---|---|
| U.S. Treasury Department | Sells U.S. Treasury securities to fund the national debt |
| Federal Reserve System | Buys and sells U.S. Treasury securities as its primary method of controlling the money supply |
| Commercial banks | Buy U.S. Treasury securities; sell certificates of deposit and make short-term loans; offer individual investors accounts that invest in money market securities |
| Businesses | Buy and sell various short-term securities as a regular part of their cash management |
| Investment companies (brokerage firms) | Trade on behalf of commercial accounts |
| Finance companies (commercial leasing companies) | Lend funds to individuals |
| Insurance companies (property and casualty insurance companies) | Maintain liquidity needed to meet unexpected demands |
| Pension funds | Maintain funds in money market instruments in readiness for investment in stocks and bonds |
| Individuals | Buy money market mutual funds |
| Money market mutual funds | Allow small investors to participate in the money market by aggregating their funds to invest in large-denomination money market securities |

# Money Market Instruments

- We will examine each of these in the following slides:
  - Treasury Bills
  - Federal Funds
  - Repurchase Agreements
  - Negotiable Certificates of Deposit
  - Commercial Paper
  - Eurodollars

# Money Market Instruments (cont.)

- We will examine each of these in the following slides (continued):
  - Commercial Paper
  - Banker's Acceptance
  - Eurodollars

# Money Market Instruments: Treasury Bills

- T-bills have 28-day maturities through 12- month maturities.
- **Discounting:** When an investor pays less for the security than it will be worth when it matures, and the increase in price provides a return. This is common to short-term securities because they often mature before the issuer can mail out interest checks.

# Money Market Instruments: Treasury Bills Discounting Example

- You pay $996.73 for a 28-day T-bill. It is worth $1,000 at maturity. What is its discount rate?

$$i_{discount} = \frac{F - P}{F} \times \frac{360}{n}$$

$$i_{discount} = \frac{1{,}000 - 996.73}{1{,}000} \times \frac{360}{28} = 4.665\%$$

# Money Market Instruments: Treasury Bills Discounting Example

- You pay $996.73 for a 28-day T-bill. It is worth $1,000 at maturity. What is its annualized yield?

$$i_{yt} = \frac{F - P}{P} \times \frac{365}{n}$$

$$i_{yt} = \frac{1{,}000 - 996.73}{996.73} \times \frac{366}{28} = 4.76\%$$

# Money Market Instruments: Treasury Bill Auction Results

**Table 11.3** Recent Bill Auction Results

| Security Term | Issue Date | Maturity Date | Discount Rate | Investment Rate | Price per $100 | CUSIP |
|---|---|---|---|---|---|---|
| 28 days | 5/16/2013 | 6/13/2013 | 0.01 | 0.01 | 99.999222 | 912796AL3 |
| 91 days | 5/16/2013 | 8/15/2013 | 0.045 | 0.046 | 99.988625 | 912796AX7 |
| 182 days | 5/16/2013 | 11/14/2013 | 0.08 | 0.081 | 99.959556 | 912796AE9 |
| 28 days | 5/9/2013 | 6/6/2013 | 0 | 0 | 100 | 912796AJ8 |
| 91 days | 5/9/2013 | 8/8/2013 | 0.04 | 0.041 | 99.989889 | 912796AV1 |

*Source:* http://www.treasurydirect.gov/RI/OFBills.

# Money Market Instruments: Treasury Bill Auctions Example

- The Treasury auctioned $2.5 billion par value 91-day T-bills, the following bids were received:

| Bidder | Bid Amount | Bid Price |
|---|---|---|
| 1 | $500 million | $0.9940 |
| 2 | $750 million | $0.9901 |
| 3 | $1.5 billion | $0.9925 |
| 4 | $1 billion | $0.9936 |
| 5 | $600 million | $0.9939 |

- The Treasury also received $750 million in noncompetitive bids. Who will receive T-bills, what quantity, and at what price?

# Money Market Instruments: Treasury Bill Auctions Example

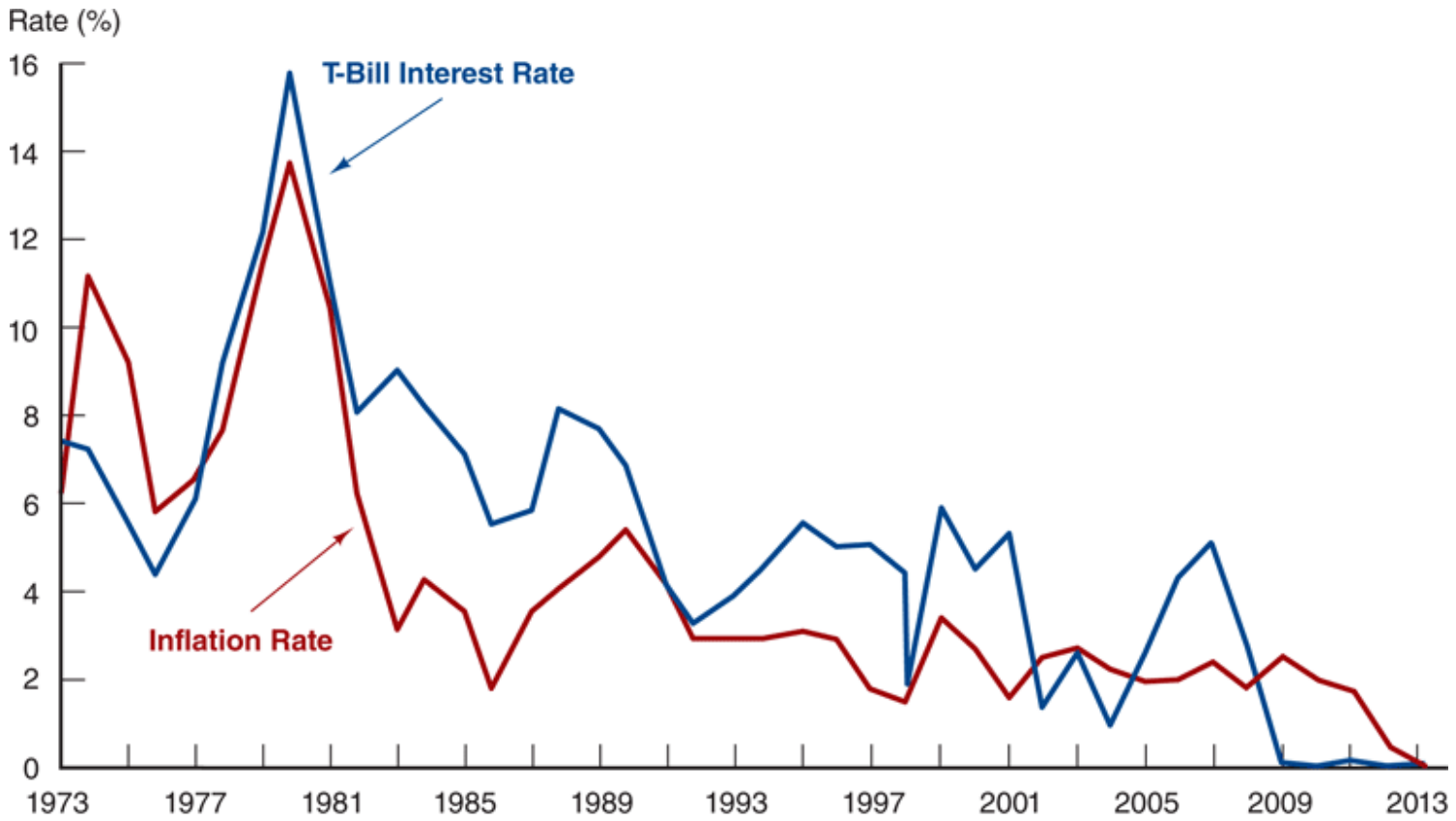
- The Treasury accepts the following bids:

| Bidder | Bid Amount | Bid Price |
|---|---|---|
| 1 | $500 million | $0.9940 |
| 5 | $600 million | $0.9939 |
| 4 | $650 million | $0.9936 |

- Both the competitive and noncompetitive bidders pay the highest yield—based on the price of 0.9936:

# Money Market Instruments: Treasury Bills

**Figure 11.2** Treasury Bill Interest Rate and the Inflation Rate, January 1973–January 2013




*Source:* http://www.federalreserve.gov/releases and CPI: ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt.

# Money Market Instruments: Fed Funds

- Short-term funds transferred (loaned or borrowed) between financial institutions, usually for a period of one day.
- Used by banks to meet short-term needs to meet reserve requirements.

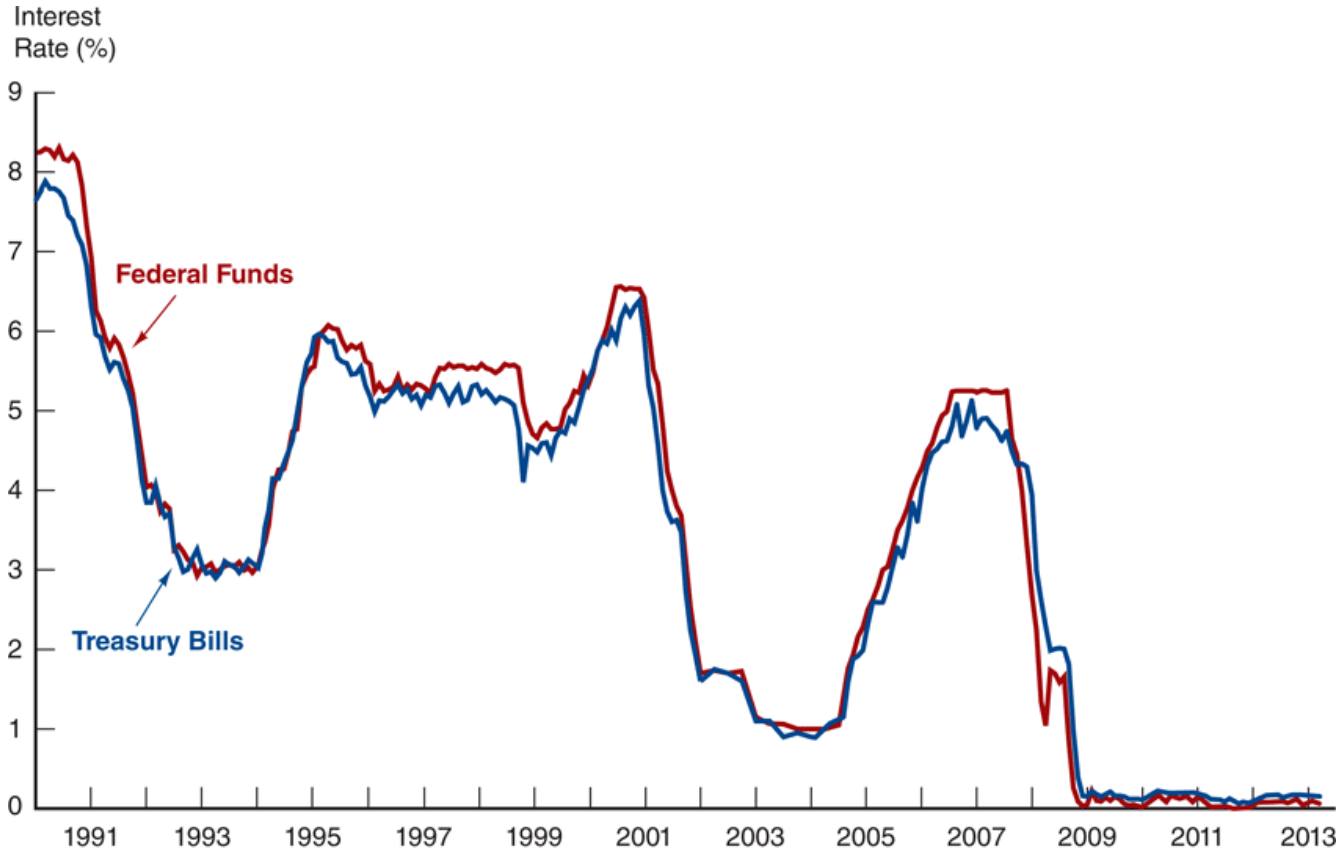
# Money Market Instruments: Fed Funds Rates

The next slide shows actual fed funds rates and T-bill rates 1990 through 2013.

Notice that the two rates track fairly closely. What does this suggest about the market for T-bills and the market for fed funds?

# Money Market Instruments: Fed Funds Rates

**Figure 11.3** Federal Funds and Treasury Bill Interest Rates, January 1990–January 2013




*Source:* http://www.federalreserve.gov/.

# Money Market Instruments: Repurchase Agreements

- These work similar to the market for fed funds, but nonbanks can participate.
- A firm sells Treasury securities, but agrees to buy them back at a certain date (usually 3–14 days later) for a certain price.

# Money Market Instruments: Repurchase Agreements

- This set-up makes a repo agreements essentially a short-term collateralized loan.
- This is one market the Fed may use to conduct its monetary policy, whereby the Fed purchases/sells Treasury securities in the repo market.

# Money Market Instruments: Negotiable Certificates of Deposit

- A bank-issued security that documents a deposit and specifies the interest rate and the maturity date
- Denominations range from $100,000 to $10 million

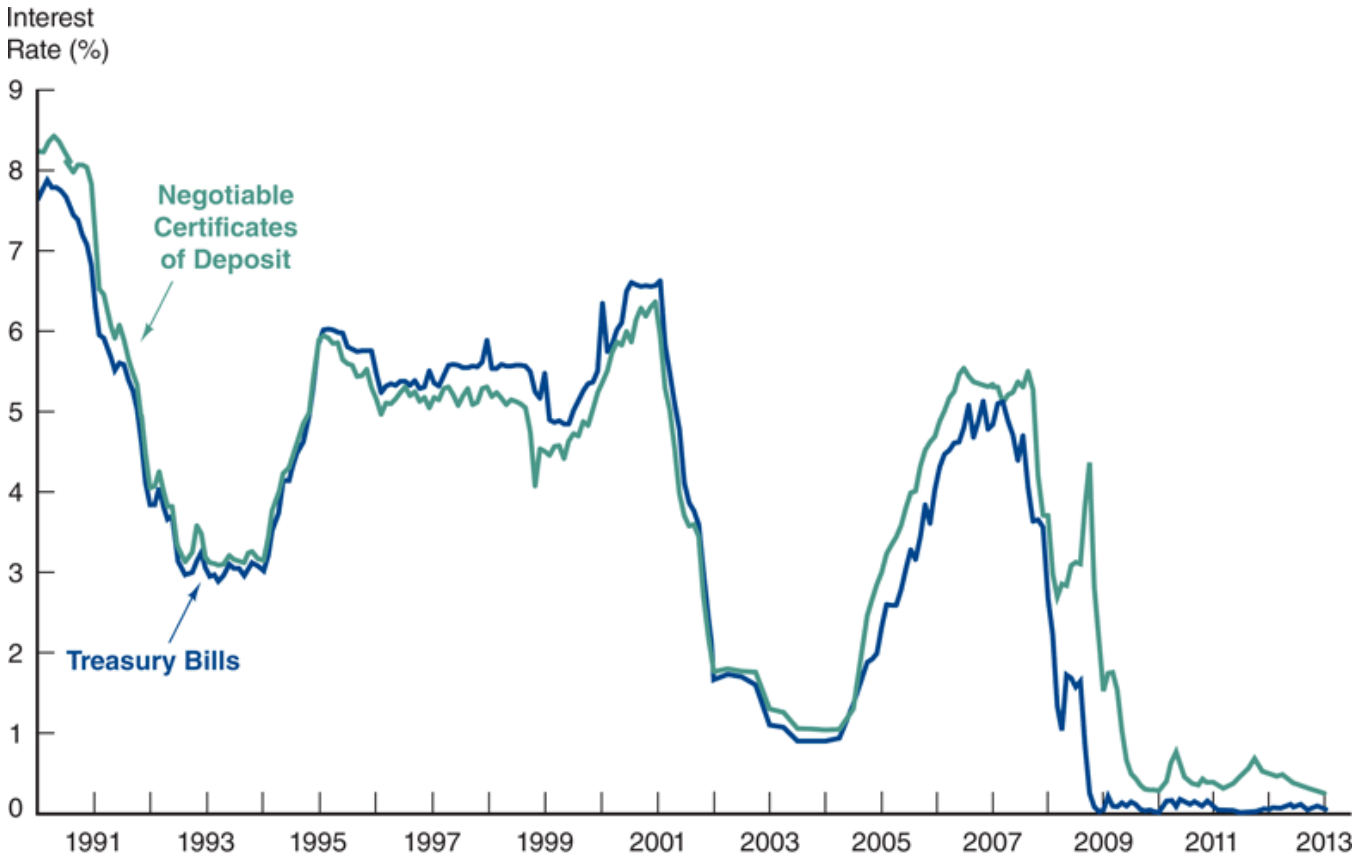
# Money Market Instruments: Negotiable Certificates of Deposit

The next slide shows actual CD rates and T-bill rates 1990 through 2013.

Again, notice that the two rates track fairly closely. What does this suggest about the market for T-bills and the market for CDs?

# Money Market Instruments: Negotiable CD Rates

**Figure 11.4** Interest Rates on Negotiable Certificates of Deposit and on Treasury Bills, January 1990–January 2013



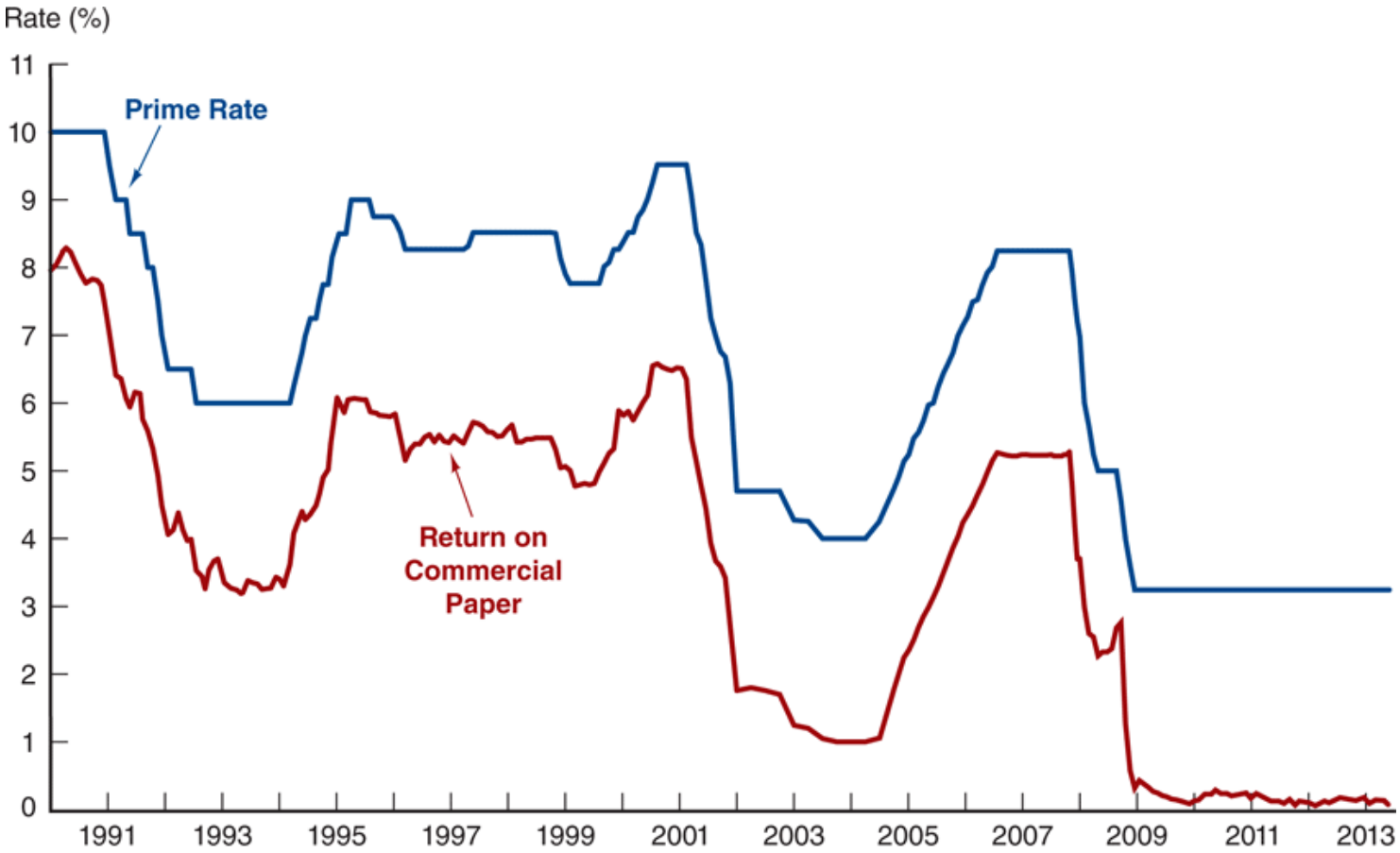

*Source:* http://www.federalreserve.gov/releases/h15/data.htm.

# Money Market Instruments: Commercial Paper

- Unsecured promissory notes, issued by corporations, that mature in no more than 270 days.
- The use of commercial paper increased significantly in the early 1980s because of the rising cost of bank loans.

# Money Market Instruments: Commercial Paper Rates

**Figure 11.5** Return on Commercial Paper and the Prime Rate, 1990–2013




*Source:* http://www.federalreserve.gov/releases/h15/current/default.htm.

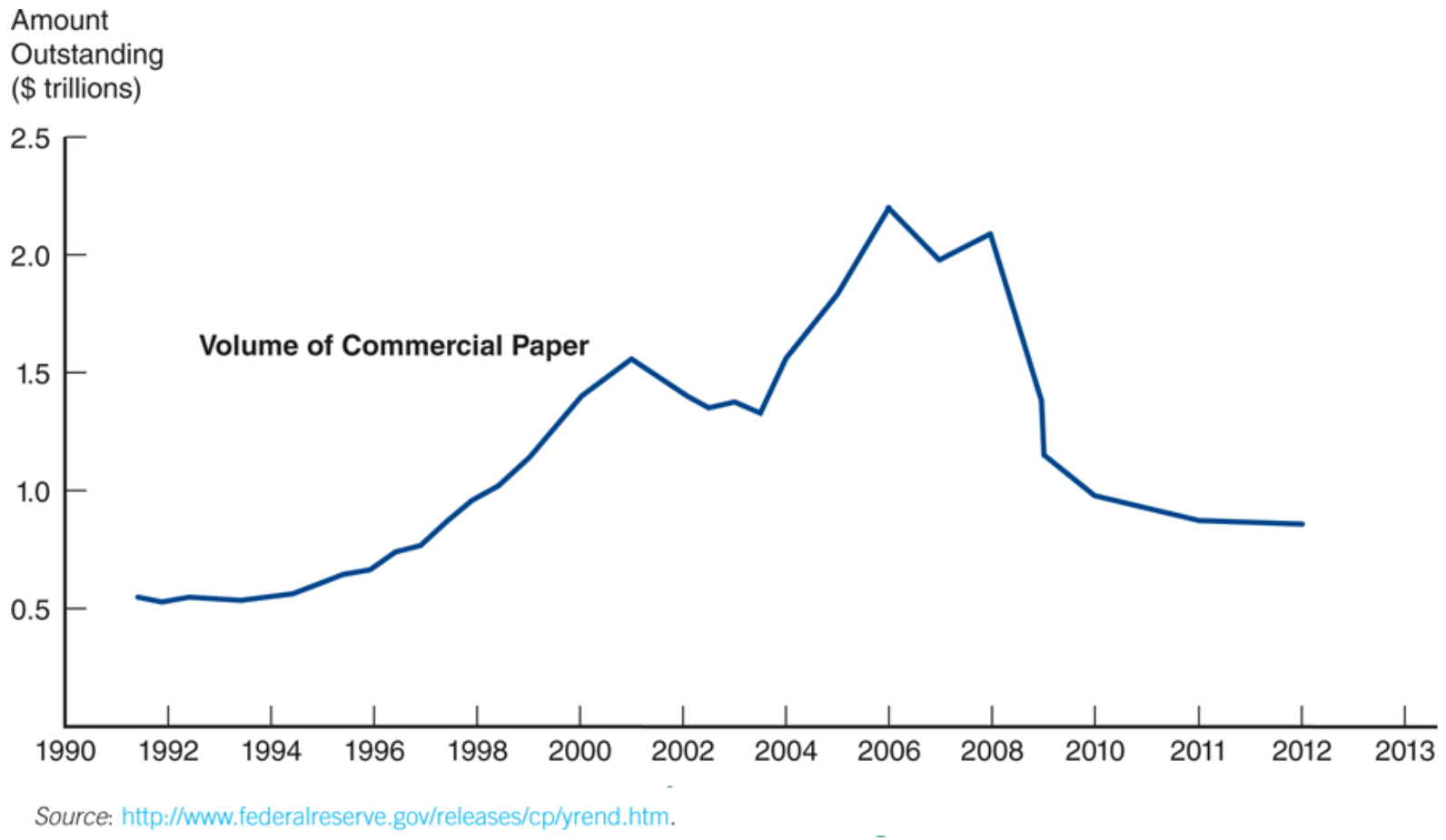
# Money Market Instruments: Commercial Paper

Commercial paper volume:

- fell significantly during the recent economic recession
- annual market is still large, at well over $0.85 trillion outstanding

# Money Market Instruments: Commercial Paper Volume

**Figure 11.6** Volume of Commercial Paper Outstanding




Source: http://www.federalreserve.gov/releases/cp/yrend.htm.

# Money Market Instruments: Commercial Paper

A special type of commercial paper, known as asset-backed commercial paper (ABCP)

- played a key role in the financial crisis in 2008 backed by securitized mortgages
- often difficult to understand
- accounted for about $1 trillion

# Money Market Instruments: Commercial Paper

When the poor quality of the underlying assets was exposed, a run on ABCP began. Because ABCP was held by many money market mutual funds (MMMFs), these funds also experienced a run. The government eventually had to step in to prevent the collapse of the MMMF market.

# Money Market Instruments: Banker's Acceptances

- An order to pay a specified amount to the bearer on a given date if specified conditions have been met, usually delivery of promised goods.
- These are often used when buyers / sellers of expensive goods live in different countries.

# Money Market Instruments: Banker's Acceptances Advantages

1. Exporter paid immediately
2. Exporter shielded from foreign exchange risk
3. Exporter does not have to assess the financial security of the importer
4. Importer's bank guarantees payment
5. Crucial to international trade

# Money Market Instruments: Banker's Acceptances

- As seen, banker's acceptances avoid the need to establish the credit-worthiness of a customer living abroad.
- There is also an active secondary market for banker's acceptances until they mature. The terms of note indicate that the bearer, whoever that is, will be paid upon maturity.

# Money Market Instruments: Eurodollars

- Eurodollars represent Dollar denominated deposits held in foreign banks.
- The market is essential since many foreign contracts call for payment is U.S. dollars due to the stability of the dollar, relative to other currencies.

# Money Market Instruments: Eurodollars

- The Eurodollar market has continued to grow rapidly because depositors receive a higher rate of return on a dollar deposit in the Eurodollar market than in the domestic market.
- Multinational banks are not subject to the same regulations restricting U.S. banks and because they are willing to accept narrower spreads between the interest paid on deposits and the interest earned on loans.

# Money Market Instruments: Eurodollars Rates

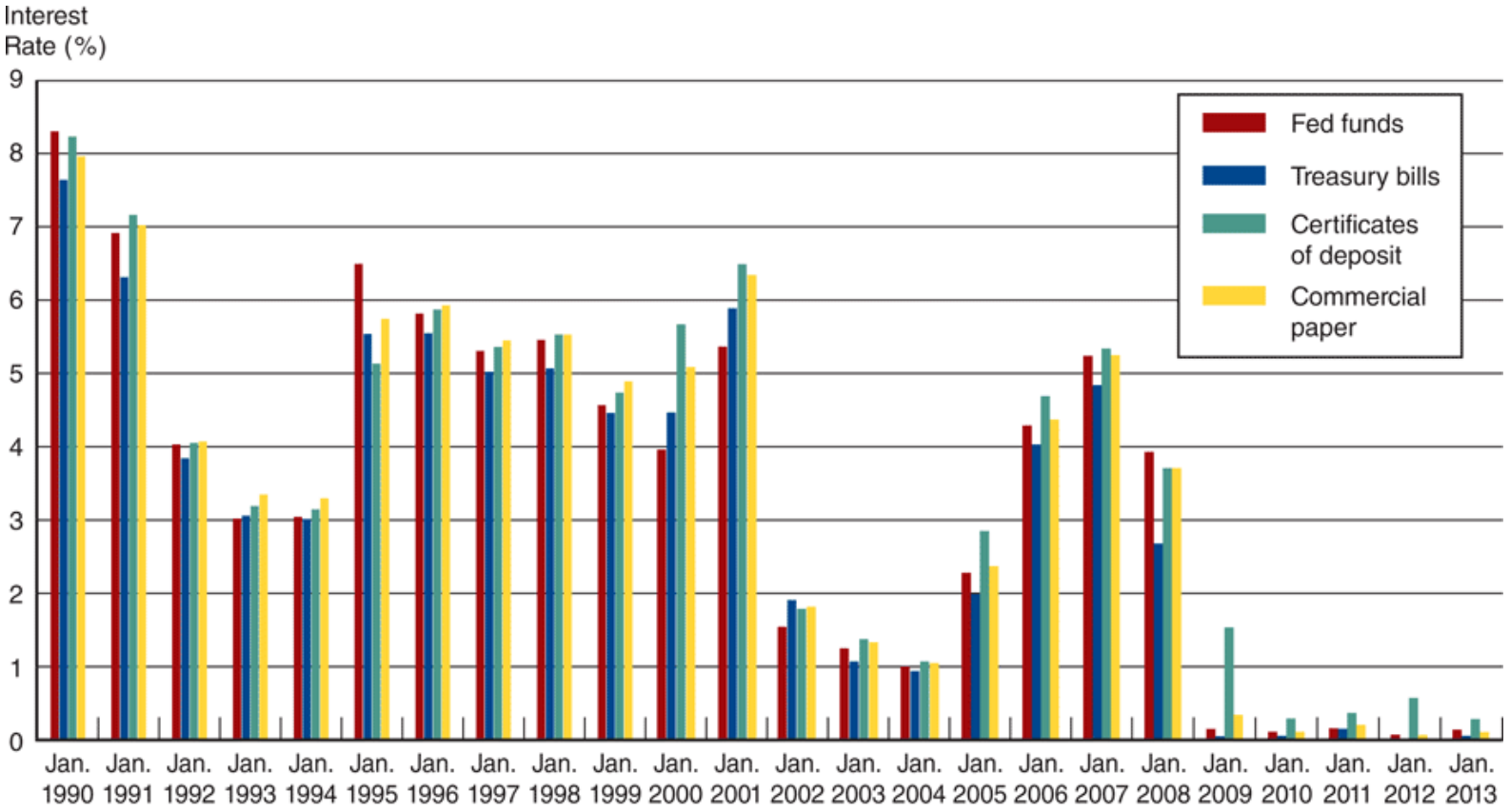
- London interbank bid rate (LIBID)
  - The rate paid by banks buying funds
- London interbank offer rate (LIBOR)
  - The rate offered for sale of the funds
- Time deposits with fixed maturities
  - Largest short term security in the world

# Global: Birth of the Eurodollar

- The Eurodollar market is one of the most important financial markets, but oddly enough, it was fathered by the Soviet Union.
- In the 1950s, the USSR had accumulated large dollar deposits, but all were in US banks. They feared the US might seize them, but still wanted dollars. So, the USSR transferred the dollars to European banks, creating the Eurodollar market.

# Comparing Money Market Securities : A comparison of rates

**Figure 11.7** Interest Rates on Money Market Securities, 1990–2013




*Source:* http://www.federalreserve.gov/releases/h15/data.htm.

# Comparing Money Market Securities

- Liquidity is also an important feature, which is closely tied to the depth of the secondary market for the various instruments.

# Comparing Money Market Securities: Money Market Securities and Their Depth

**Table 11.4** Money Market Securities and Their Markets

| Money Market Security | Issuer | Buyer | Usual Maturity | Secondary Market |
|---|---|---|---|---|
| Treasury bills | U.S. government | Consumers and companies | 4, 13, and 26 weeks | Excellent |
| Federal funds | Banks | Banks | 1 to 7 days | None |
| Repurchase agreements | Businesses and banks | Businesses and banks | 1 to 15 days | Good |
| Negotiable certificates of deposit | Large money center banks | Businesses | 14 to 120 days | Good |
| Commercial paper | Finance companies and businesses | Businesses | 1 to 270 days | Poor |
| Banker's acceptance | Banks | Businesses | 30 to 180 days | Good |
| Eurodollar deposits | Non-U.S. banks | Businesses, governments, and banks | 1 day to 1 year | Poor |

# Chapter Summary

- The Money Markets Defined
  - Short-term instruments
  - Most have a low default probability
- The Purpose of Money Markets
  - Used to “warehouse” funds
  - Returns are low because of low risk and high liquidity

# Chapter Summary (cont.)

- Who Participates in Money Markets?
  - U.S. Treasury
  - Commercial banks
  - Businesses
  - Individuals (through mutual funds)
- Money Market Instruments
  - Include T-bills, fed funds, etc.

# Chapter Summary (cont.)

- Comparing Money Market Securities
  - Issuers range from the US government to banks to large corporations
  - Mature in as little as 1 day to as long as 1 year
  - The secondary market liquidity varies substantially