

# Chapter 2, Asset Classes and Financial Instruments

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# Chapter Overview

## Financial Markets

### The Money Market

Types of Money Market Instruments

### Capital Markets

The Bond Market

Equity Markets

Stock Market Indexes

Derivative Markets

# Learning Goals

- LO2-1 Distinguish among the major assets that trade in money markets and in capital markets.
- LO2-2 Describe the construction of stock market indexes.
- LO2-3 Calculate the profit or loss on investments in options and futures contracts.

# Asset Allocation → Asset Classes

- ▶ Asset allocation—deciding which asset classes to go into
- ▶ Security selection—which specific securities to buy (e.g. a particular company's equity)
- ▶ Money markets vs. capital markets
- ▶ Money Markets:
  - ▶ Low risk, short term, liquid
  - ▶ Types of money market instruments
- ▶ Capital market securities:
  - ▶ Bonds
  - ▶ Equity
  - ▶ Derivatives



Table 2.1. Financial Markets and Indexes

**TABLE 2.1**

**Financial markets and indexes**

**The money market**

- Treasury bills
- Certificates of deposit
- Commercial paper
- Bankers' acceptances
- Eurodollars
- Repos and reverses
- Federal funds
- Brokers' calls

**Indexes**

- Dow Jones averages
- Standard & Poor's indexes
- Bond market indicators
- International indexes

**The bond market**

- Treasury bonds and notes
- Federal agency debt
- Municipal bonds
- Corporate bonds
- Mortgage-backed securities

**Equity markets**

- Common stocks
- Preferred stocks

**Derivative markets**

- Options
- Futures and forwards
- Swaps

# The Money Market

- ▶ Subsector of the fixed-income market: Securities are short-term, liquid, low risk, and often have large denominations
- ▶ Money market mutual funds allow individuals to access the money market

# T-Bills

- ▶ Treasury bills: Short-term debt of U.S. government
  - ▶ Issued by the Federal Government
  - ▶ Denomination – min \$100, common \$10,000
  - ▶ Maturity – 4, 13, 26, or 52 weeks
  - ▶ Highly liquid
  - ▶ No default risk
  - ▶ Interest type – discount
  - ▶ Taxation – Federal taxes owed, no state or local
  - ▶ Bid and asked price

Figure 2.1. T-Bill Listings

## Treasury Bills

<b>MATURITY</b>	<b>DAYS TO MAT</b>	<b>BID</b>	<b>ASKED</b>	<b>CHG</b>	<b>ASK YLD</b>
Sep 01 11	56	0.045	0.015	0.030	0.005
Oct 06 11	91	0.025	0.015	0.005	0.015
Nov 03 11	119	0.040	0.020	0.015	0.020
Jan 05 12	182	0.070	0.060	0.070	0.061
Mar 08 12	245	0.085	0.070	0.005	0.071
Jun 28 12	357	0.185	0.180	0.015	0.183

# Certificates of Deposit

- ▶ Issued by – Depository Institutions
- ▶ Denomination – Any, 100,000 or more are marketable
- ▶ Maturity – Varies, typically 14 day minimum
- ▶ Liquidity – 3 months or less are liquid if marketable
- ▶ Default risk – First 100,000 (250,000) is insured
- ▶ Interest type – Add on
- ▶ Taxation – Interest income is fully taxable

# Commercial Paper

- ▶ Unsecured, short term debt issuance directly to the public
- ▶ Issued by – Large creditworthy corporations & financial inst
- ▶ Maturity – Maximum 270 days, usually 1 to 2 months
- ▶ Denomination – Minimum \$100,000
- ▶ Liquidity – 3 months or less are liquid if marketable
- ▶ Default risk – Unsecured, rated, mostly high quality
- ▶ Interest type – Discount
- ▶ Taxation – Interest income is fully taxable

# Fed Funds and LIBOR

- ▶ Federal Funds
  - ▶ Depository institutions must maintain deposits with the Federal Reserve Bank.
  - ▶ Federal funds represents trading in reserves held on deposit at the Federal Reserve.
  - ▶ Key interest rate for the economy
- ▶ LIBOR (London Interbank Offer Rate)
  - ▶ Rate at which large banks in London (and elsewhere) lend to each other.
  - ▶ Base rate for many loans and derivatives.

# Other Money Market Instruments

- ▶ Bankers Acceptance
- ▶ Eurodollars
- ▶ Repos and Reverses
- ▶ Broker's Calls
- ▶ Call Money Rate
  - ▶ Investors who buy stock on margin borrow money from their brokers to purchase stock. The borrowing rate is the call money rate.
  - ▶ The loan may be called in by the broker



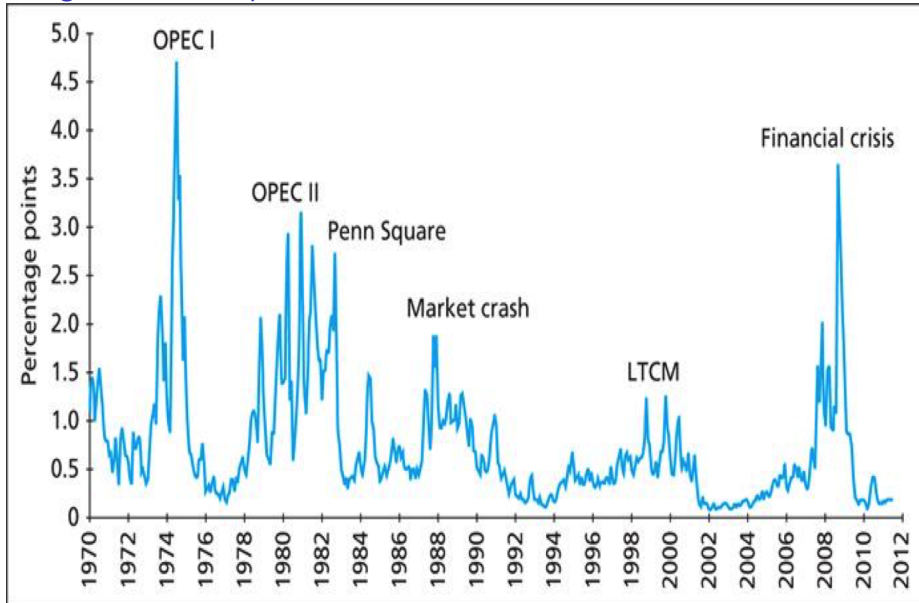
## Table: Money Market Instruments

	\$ Billion
Repurchase agreements	\$ 944.4
Savings deposits and small-denomination time deposits*	5,411.8
Large-denomination time deposits*	2,413.3
Treasury bills	1,003.9
Commercial paper	1,748.0
Money market mutual funds	3,343.2

\*Small denominations are less than \$100,000.

Sources: *Economic Report of the President*, U.S. Government Printing Office, 2008; *Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System, September 2008.

Figure 2.2 The spread between 3-mo CD and T-bill rates



# MMMF and the Crisis of 2008

- ▶ Between 2005 and 2008 money market mutual funds (MMMFs) grew by 88%. Why?
- ▶ MMMFs had their own crisis in 2008 when Lehman Brothers filed for bankruptcy on September 15.
- ▶ Some funds had invested heavily in Lehman's commercial paper.
- ▶ On Sept. 16, Reserve Primary fund "broke the buck." What does this mean?
- ▶ A run on money market funds ensued.
- ▶ Fears spilled over: borrowing rates on commercial paper go from 2 to 8%. Market nearly seizes up
- ▶ The U.S. Treasury temporarily offered to insure all money funds to stop the run (up to \$3.4 trillion in these funds.)

# Capital Markets

- ▶ Fixed Income (Bond) Markets
  - ▶ Government
  - ▶ Corporate
  - ▶ Munies
- ▶ Equity markets

# Bond Market Instruments

- ▶ Treasury Notes and Bonds
- ▶ Inflation-Protected Treasury Bonds
- ▶ Federal Agency Debt
- ▶ International Bonds
- ▶ Municipal Bonds
- ▶ Corporate Bonds
- ▶ Mortgages and Mortgage-Backed Securities

# Treasury Notes and Bonds

- ▶ Maturities
  - ▶ Notes – Maturities up to 10 years
  - ▶ Bonds – Maturities from 10 to 30 years
- ▶ Par Value – \$1,000
- ▶ Interest paid semiannually
- ▶ Quotes – Percentage of par
- ▶ Interest type – semiannual coupons
- ▶ Risk – no default risk or liquidity risk, price risk at longer maturities.
- ▶ Taxation – taxable at the federal level only.

Fig. 3 Listing of Treasury Issues

<b>MATURITY</b>	<b>COUPON</b>	<b>BID</b>	<b>ASKED</b>	<b>CHG</b>	<b>YLD TO MATURITY</b>
2011 Nov 15	1.750	100.5859	100.6016	−0.008	0.051
2013 Nov 15	4.250	108.4375	108.4844	−0.234	0.613
2015 Nov 15	4.500	112.9375	113.0000	−0.438	1.410
2018 Feb 15	3.500	107.2969	107.3594	−0.547	2.294
2020 Feb 15	8.500	143.6875	143.7344	−0.547	2.756
2025 Aug 15	6.875	134.4844	134.5166	−0.531	3.710
2030 May 15	6.250	129.1406	129.1719	−0.484	4.026
2040 Nov 15	4.250	97.9531	98.0000	−0.313	4.371

**CONCEPT**  
*c h e c k*

**2.1**

What were the bid price, asked price, and yield to maturity of the 3.5% February 2018 Treasury bond displayed in [Figure 2.3](#)? What was its asked price the previous day?

[answer](#)



# Bond Market Instruments

- ▶ Inflation-Protected Treasury Bonds
  - ▶ TIPS: Provide inflation protection
  - ▶ Tips have principal adjusted for increases in the Consumer Price Index
  - ▶ Marked with a trailing i in the quote sheet (See Figure 2.4)
- ▶ Federal Agency Debt
  - ▶ Debt of mortgage-related agencies such as Fannie Mae and Freddie Mac
  - ▶ Risk of these securities—Implied backing by the government
  - ▶ In September 2008, Federal government took over FNMA and FHLMC.
- ▶ International Bonds
  - ▶ Eurobonds and Yankee bonds

# Municipal Bonds

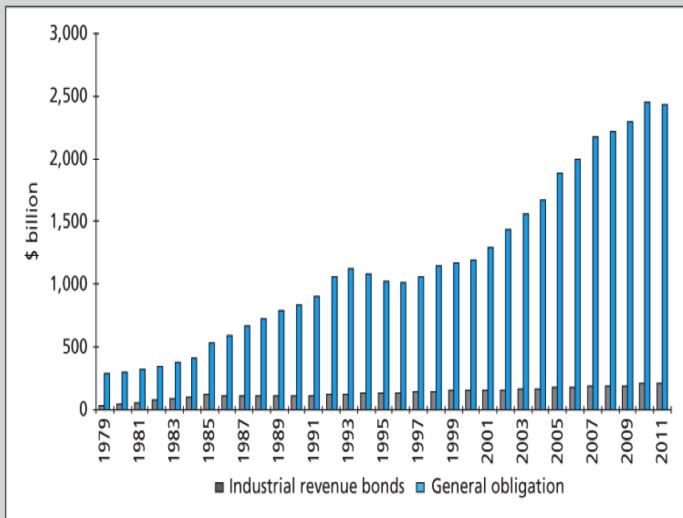
- ▶ Issued by state and local governments
- ▶ Interest is exempt from federal income tax and sometimes from state and local tax
- ▶ Types
  - ▶ General obligation bonds: Backed by taxing power of issuer
  - ▶ Revenue bonds: backed by project's revenues or by the municipal agency operating the project.

## Figure 2.4 Tax-Exempt Debt Outstanding

**FIGURE 2.4**

Outstanding tax-exempt debt

Source: *Flow of Funds Accounts of the U.S.*, Board of Governors of the Federal Reserve System, June 2011.



# Municipal Bonds Yields

- ▶ To choose between taxable and tax-exempt bonds, compare after-tax returns on each bond.
- ▶ Let  $t$  equal the investor's marginal tax bracket
- ▶ Let  $r$  equal the before-tax return on the taxable bond and  $r_m$  denote the municipal bond rate.
- ▶ If  $r(1 - t) > r_m$ , then the taxable bond gives a higher return; otherwise, the municipal bond is preferred.
- ▶ Equivalent taxable yield =  $\frac{r_m}{(1-t)}$

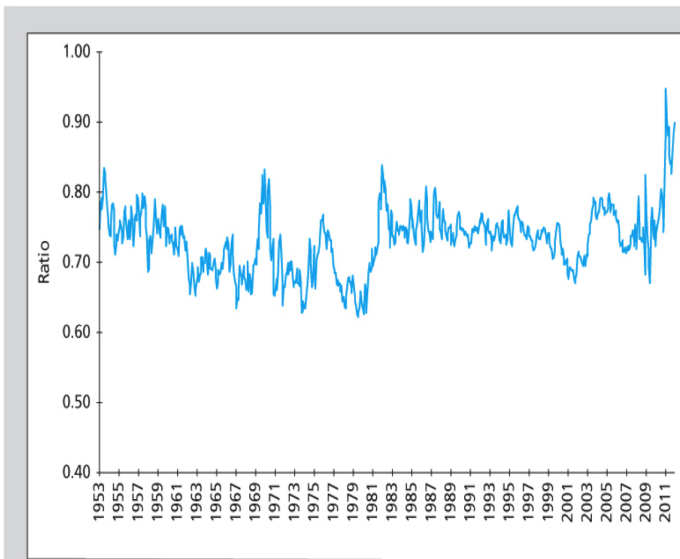
Table 2.2. Tax-Exempt Yields

**TABLE 2.2**

Equivalent taxable yields corresponding to various tax-exempt yields

Marginal Tax Rate	Tax-Exempt Yield				
	1%	2%	3%	4%	5%
20%	1.25%	2.50%	3.75%	5.00%	6.25%
30	1.43	2.86	4.29	5.71	7.14
40	1.67	3.33	5.00	6.67	8.33
50	2.00	4.00	6.00	8.00	10.00

Figure 2.5 Ratio of yields on municipal debt to corporate Baa-rate debt



**FIGURE 2.5**

Ratio of yields on tax-exempt to taxable bonds

Source: [www.federalreserve.gov/releases/h15/data.htm](http://www.federalreserve.gov/releases/h15/data.htm).

## Problem

### **Municipal bond yields**

An investor is in the 30% tax bracket. If corporate bonds offer 9% yields, what much municipal bonds offer for the investor to prefer them to corporate bonds?

Find the equivalent taxable yield of a short-term municipal bond currently offering yields of 4% for tax brackets of zero, 10%, 20%, and 30%.

# Corporate Bonds

- ▶ Issued by private firms
- ▶ Semi-annual interest payments
- ▶ Subject to larger default risk than government securities
- ▶ Options in corporate bonds
  - ▶ Callable
  - ▶ Convertible



# Mortgage-Backed Securities

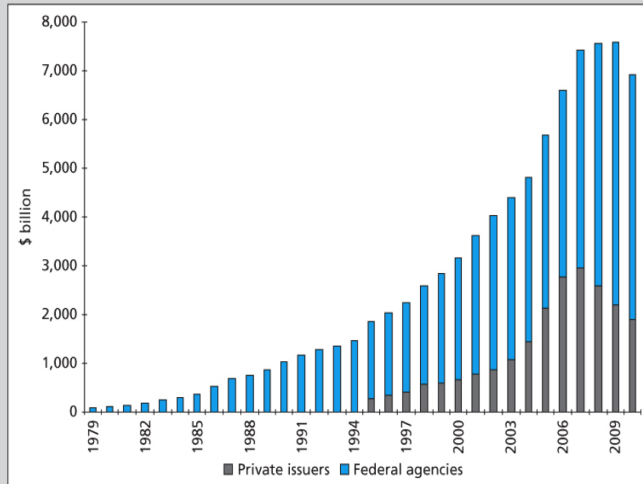
- ▶ Proportional ownership of a mortgage pool or a specified obligation secured by a pool
- ▶ Produced by securitizing mortgages
  - ▶ Mortgage-backed securities are called pass-throughs because the cash flows produced by homeowners paying off their mortgages are passed through to investors.
- ▶ Most were issued by Fannie Mae and Freddie Mac

## Figure 2.6. MBS Outstanding

**FIGURE 2.6**

Mortgage-backed securities outstanding

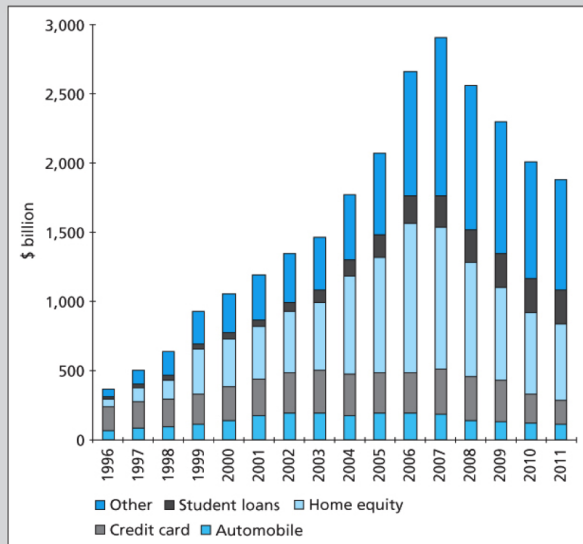
Source: *Flow of Funds Accounts of the U.S.*, Board of Governors of the Federal Reserve System, June 2011.



# Mortgage-Backed Securities

- ▶ Traditionally, were comprised of conforming mortgages, which met standards of credit worthiness
- ▶ Later on, “Private-label” issuers securitized large amounts of subprime mortgages, made to financially weak borrowers
- ▶ Fannie and Freddie were allowed and even encouraged to buy subprime mortgage securities

Figure 2.7 Asset-backed securities outstanding



**FIGURE 2.7**

Asset-backed securities  
outstanding

Source: Securities Industry &  
Financial Markets Association,  
[www.sifma.org](http://www.sifma.org).

## The U.S. Bond Market

	Sector	Size (\$ billion)	% of Market
	Treasury	\$ 5,055.7	23.2%
	Gov't sponsored enterprise	3,104.0	14.3
	Corporate	3,685.3	16.9
	Tax-exempt*	2,661.5	12.2
	Mortgage-backed	4,761.5	21.9
	Asset-backed	2,480.3	11.4
	Total	<u>\$21,748.3</u>	<u>100.0%</u>

\*Includes private purpose tax-exempt debt.

Source: *Flow of Funds Accounts of the United States: Flows and Outstandings*, Board of Governors of the Federal Reserve System, September 2008.

# Equity Securities

- ▶ Common stock: Ownership
  - ▶ Residual claim
  - ▶ Limited liability
- ▶ Preferred stock
  - ▶ Fixed dividends: limited gains, non-voting
  - ▶ Perpetuity
  - ▶ No contractual obligation to pay dividends, but must be paid in full before common shareholders
  - ▶ Priority over common
  - ▶ Tax treatment
    - ▶ Preferred & common dividends are not tax deductible to the issuing firm
    - ▶ Corporate tax exclusion on 70% dividends earned
- ▶ American Depositary Receipts
  - ▶ Certificates traded in U.S. markets that represent ownership in shares of a foreign company

Figure 2.8

FIGURE 2.8

NAME	SYMBOL	CLOSE	CHG	VOLUME	52 WK HIGH	52 WK LOW	DIV	P/E	YIELD	YTD% CHG
Gannett	GCI	14.60	0.22	2,485,119	18.93	11.65	0.16	6.55	1.10	-3.25
Gap	GPS	19.28	0.95	13,621,775	23.73	16.62	0.45	10.54	2.33	-12.92
Gardner Denver	GDI	87.15	-0.66	450,263	88.70	44.24	0.20	22.99	0.23	26.63
Gartner	IT	41.40	0.11	230,999	43.39	22.89	----	39.06	----	24.70
GATX	GMT	38.85	0.36	203,912	42.84	25.40	1.16	22.33	2.99	10.12
Gaylord Entertainment	GET	31.90	0.89	806,280	38.22	22.45	----	dd	----	-11.24
GenCorp	GY	6.38	0.05	298,903	7.09	4.30	----	24.54	----	23.40
Genco Shipping & Trading	GNK	7.49	0.10	409,701	18.08	6.28	----	2.18	----	-47.99
Generac Holdings	GNRC	19.55	0.04	65,811	21.10	11.70	----	7.29	----	20.90
General Cable	BGC	43.41	0.61	418,968	49.32	21.68	----	20.19	----	23.71
General Dynamics	GD	75.60	0.97	2,236,585	78.27	55.46	1.88	10.92	2.49	6.54
General Electric	GE	19.30	0.25	44,235,766	21.65	13.96	0.60	15.32	3.11	5.52

Listing of stocks traded on the New York Stock Exchange

Source: Compiled from data from *The Wall Street Journal Online*, July 8, 2011. Reprinted by permission of *The Wall Street Journal*, Copyright © 2011 Dow Jones & Company, Inc. All Rights Reserved Worldwide.

Note: dd means that P/E cannot be computed because earnings were negative.

## Example: Capital Gains and Dividend Yields

- ▶ You buy a share of stock for \$50, hold it for one year, collect a \$1.00 dividend and sell the stock for \$54. What were your dividend yield, capital gain yield and total return? (Ignore taxes)
- ▶ Answer: Dividend yield

$$\text{Dividend yield} = \frac{\text{Dividend}}{P_{\text{buy}}} = \frac{\$1.00}{\$50} = 2\%$$

- ▶ Capital gain yield:

$$\text{Capital gain yield} = \frac{(P_{\text{sell}} - P_{\text{buy}})}{P_{\text{buy}}} \frac{(\$54 - \$50)}{\$50} = 8 \quad (1)$$

- ▶ Total return = Dividend yield + Capital gain yield

$$2\% + 8\% = 10\%$$



## Problem

### Equity price quotes and returns

Refer to Figure 2.8 and look at the listing for General Dynamics.

- a. How many shares could you buy for \$5,000?
- b. What would be your annual dividend income from those shares?
- c. What must be General Dynamics earnings per share?
- d. What was the firm's closing price on the day before the listing?

# Stock and Bond Indexes

- ▶ Uses
  - ▶ Track average returns
  - ▶ Comparing performance of managers
  - ▶ Base of derivatives
- ▶ Factors in constructing or using an index
  - ▶ Representative?
  - ▶ Broad or narrow?
  - ▶ How is it constructed?

# Stock Market Indexes

- ▶ Dow Jones Industrial Average
  - ▶ Includes 30 large blue-chip corporations
  - ▶ Computed since 1896
  - ▶ Price-weighted average

# Table 2.5 Companies included in the DJIA, 1928 and 2011

**TABLE 2.5**

Companies included in the Dow Jones Industrial Average: 1928 and 2011

Dow Industrials in 1928	Current Dow Companies	Ticker Symbol	Industry	Year Added to Index
Wright Aeronautical	3M	MMM	Diversified industrials	1976
Allied Chemical	Alcoa	AA	Aluminum	1959
North American	American Express	AXP	Consumer finance	1982
Victor Talking Machine	AT&T	T	Telecommunications	1999
International Nickel	Bank of America	BAC	Banking	2008
International Harvester	Boeing	BA	Aerospace & defense	1987
Westinghouse	Caterpillar	CAT	Construction	1991
Texas Gulf Sulphur	Chevron	CVX	Oil and gas	2008
General Electric	Cisco Systems	CSCO	Computer equipment	2009
American Tobacco	Coca-Cola	KO	Beverages	1987
Texas Corp	DuPont	DD	Chemicals	1935
Standard Oil (NJ)	ExxonMobil	XOM	Oil & gas	1928
Sears Roebuck	General Electric	GE	Diversified industrials	1907
General Motors	Hewlett-Packard	HPQ	Computers	1997
Chrysler	Home Depot	HD	Home improvement retailers	1999
Atlantic Refining	Intel	INTC	Semiconductors	1999
Paramount Publix	IBM	IBM	Computer services	1979
Bethlehem Steel	Johnson & Johnson	JNJ	Pharmaceuticals	1997
General Railway Signal	JPMorgan Chase	JPM	Banking	1991
Mack Trucks	Kraft Foods	KFT	Food processing	2008
Union Carbide	McDonald's	MCD	Restaurants	1985
American Smelting	Merck	MRK	Pharmaceuticals	1979
American Can	Microsoft	MSFT	Software	1999
Postum Inc	Pfizer	PFE	Pharmaceuticals	2004
Nash Motors	Procter & Gamble	PG	Household products	1932
American Sugar	Travelers	TRV	Insurance	2009
Goodrich	United Technologies	UTX	Aerospace	1939
Radio Corp	Verizon	VZ	Telecommunications	2004
Woolworth	Wal-Mart	WMT	Retailers	1997
U.S. Steel	Walt Disney	DIS	Broadcasting & entertainment	1991

Initial Value of Outstanding Stock (\$ million)	Final Value of Outstanding Stock (\$ million)
\$500	\$600
<u>100</u>	<u>90</u>
\$600	\$690

## Example 2.2 Price-weighted index

- ▶ Portfolio:

$$\text{Initial value } \$25 + \$100 = \$125 \quad (2)$$

$$\text{Final value } \$30 + \$90 = \$120 \quad (3)$$

- ▶ Percentage change in portfolio value  $= 5/125 = -.04 = -4\%$
- ▶ Index:

$$\text{Initial index value } (25 + 100)/2 = 62.5 \quad (4)$$

$$\text{Final index value } (30 + 90)/2 = 60 \quad (5)$$

- ▶ Percentage change in index  $-2.5/62.5 = -.04 = -4\%$

## Example 2.3 Splits and Price-Weighted Averages

- ▶ Suppose XYZ were to split two for one (Table 2.4 on next slide). The index value before the split is 62.5:

$$\text{Initial index value } (25 + 100)/2 = 62.5 \quad (6)$$

- ▶ After the split the values has to be the same:

$$\frac{Price_{ABC} + NewPrice_{XYZ}}{d} = \frac{25 + 50}{d} = 62.5$$
$$d = 1.20$$

## Table 2.4 Stock splits

**TABLE 2.4**

Data to construct stock price indexes after stock split

Stock	Initial Price	Final Price	Shares (millions)	Initial Value of Outstanding Stock (\$ million)	Final Value of Outstanding Stock (\$ million)
ABC	\$25	\$30	20	\$500	\$600
XYZ	50	45	2	<u>100</u>	<u>90</u>
Total				\$600	\$690



## Concept check 2.4

Suppose the price of xyz in table 2.3 increases to \$110, while abc falls to \$20. find the percentage change in the price-weighted average of these two stocks. Compare that to the percentage return of a portfolio holding one share in each company.

# Stock Market Indexes

- ▶ Standard & Poor's 500
  - ▶ Broadly based index of 500 firms
  - ▶ Market-value-weighted index
- ▶ Investors can base their portfolios on an index
  - ▶ Buy an index mutual fund
  - ▶ Buy exchange traded funds (ETFs)

## Example 2.4 Value-weighted index

Look again at Table 2.3. The final value of all outstanding stock in our two-stock universe is \$690 million. The initial value was \$600 million. Therefore, if the initial level of a market-value-weighted index of stocks ABC and XYZ were set equal to an arbitrarily chosen starting value such as 100, the index value at year-end would be  $100 \times (690/600) = 115$ . The increase in the index reflects the 15% return earned on a portfolio consisting of those two stocks held in proportion to outstanding market values.

## Concept check 2.5

Reconsider companies XYZ and ABC from Concept Check 2.4. Calculate the percentage change in the market-value-weighted index. Compare that to the rate of return of a portfolio that holds \$500 of ABC stock for every \$100 of XYZ stock (i.e., an index portfolio).

# Other Indexes

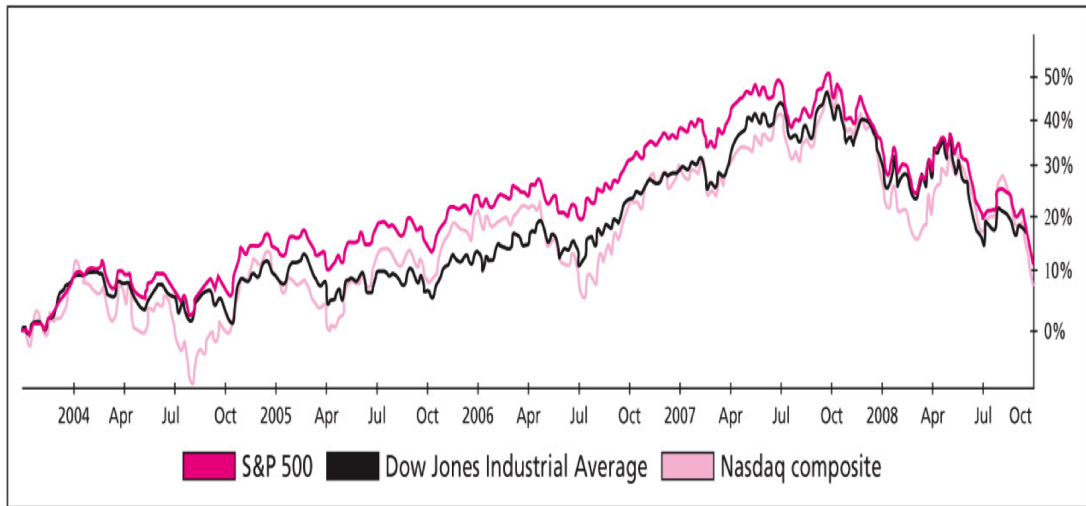
- ▶ U.S. Indexes

- ▶ NYSE Composite
- ▶ NASDAQ Composite
- ▶ Wilshire 5000

- ▶ Foreign Indexes

- ▶ Nikkei (Japan)
- ▶ FTSE (U.K.; pronounced “footsie”)
- ▶ DAX (Germany),
- ▶ Hang Seng (Hong Kong)
- ▶ TSX (Canada)

# Comparative performance of stock market indexes



# International indexes

**TABLE 2.6**

**MSCI stock indexes**

Regional Indexes		Countries	
Developed Markets	Emerging Markets	Developed Markets	Emerging Markets
EAFE (Europe, Australasia, Far East)	Emerging Markets (EM)	Australia	Brazil
EASEA (EAFE excluding Japan)	EM Asia	Austria	Chile
Europe	EM Far East	Belgium	China
EMU	EM Latin America	Canada	Colombia
Far East	EM Eastern Europe	Denmark	Czech Republic
Kokusai (World excluding Japan)	EM Europe	Finland	Egypt
Nordic Countries	EM Europe & Middle East	France	Hungary
North America		Germany	India
Pacific		Greece	Indonesia
World		Hong Kong	Korea
G7 countries		Ireland	Malaysia
World excluding U.S.		Israel	Mexico
		Italy	Peru
		Japan	Philippines
		Netherlands	Poland
		New Zealand	Russia
		Norway	South Africa
		Portugal	Taiwan
		Singapore	Thailand
		Spain	Turkey
		Sweden	
		Switzerland	
		U.K.	
		U.S.	

# Derivative Markets

- ▶ A derivative is a security that gets its value from the values of another asset, such as commodity prices, bond and stock prices, or market index values



# Options

- ▶ Call: Right to buy underlying asset at the strike or exercise price
  - ▶ Value of calls decreases as strike price increases
- ▶ Put: Right to sell underlying asset at the strike or exercise price
  - ▶ Value of puts increase with strike price
- ▶ Value of both calls and puts increases with time until expiration

## Problem

### Price relationships

Which security should sell at a greater price?

- a. A 10-year Treasury bond with a 9% coupon rate versus a 10-year T-bond with a 10% coupon.
- b. A 3-month expiration call option with an exercise price of \$40 versus a 3-month call on the same stock with an exercise price of \$35.
- c. A put option on a stock selling at \$50, or a put option on another stock selling at \$60 (all other relevant features of the stocks and options may be assumed to be identical).

# Figure 2.9

Prices at close July 7, 2011

<b>Apple (AAPL)</b>		<b>Underlying stock price: 357.20</b>					
Expiration	Strike	Call			Put		
		Last	Volume	Open Interest	Last	Volume	Open Interest
Jul	350	9.00	32874	46311	1.73	15148	9711
Aug	350	16.50	5883	24232	8.95	4457	6421
Oct	350	24.90	751	8526	16.70	138	1732
Jan	350	33.95	859	30028	25.35	316	8067
Jul	355	5.60	43911	40395	0.90	18762	1061
Aug	355	13.70	4624	8952	11.10	2859	3146
Oct	355	21.98	760	2146	18.85	176	938
Jan	355	31.27	383	2842	27.45	175	1279
Jul	360	3.15	43485	50184	3.50	3811	114
Aug	360	11.15	8692	43183	13.55	1864	1176
Oct	360	19.41	693	4669	21.34	134	868
Jan	360	28.50	1018	14117	29.98	305	1564

## FIGURE 2.9

Stock options on Apple

Source: From *The Wall Street Journal Online*, July 8, 2011. Reprinted by permission of *The Wall Street Journal*, Copyright © 2011 Dow Jones & Company, Inc. All Rights Reserved Worldwide.

# Concept check

## CONCEPT check

2.6

What would be the profit or loss per share of stock to an investor who bought the July 2011 expiration Apple call option with exercise price \$355, if the stock price at the expiration of the option is \$365? What about a purchaser of the put option with the same exercise price and expiration?

[answer](#)

# Futures Contracts

- ▶ An agreement made today regarding the delivery of an asset (or in some cases, its cash value) at a specified delivery or maturity date for an agreed-upon price, called the futures price, to be paid at contract maturity
- ▶ Long position: Take delivery at maturity
- ▶ Short position: Make delivery at maturity

# Comparison

## ► Option

- Right, but not obligation, to buy or sell; option is exercised only when it is profitable
- Options must be purchased
- The premium is the price of the option itself.

## ► Futures Contract

- Obligated to make or take delivery; long position must buy at the futures price, short position must sell at futures price
- Futures contracts are entered into without cost

Figure 2.10

**FIGURE 2.10**

Corn futures prices in the Chicago Board of Trade, July 8, 2011

MONTH	LAST	CHG	OPEN	HIGH	LOW	VOLUME	OPEN INT
Jul '11	672'2	22'2	652'4	672'0	652'4	2575	6043
Sep '11	642'2	17'2	626'0	646'4	626'0	51128	380602
Dec '11	637'0	21'4	615'6	638'0	615'6	130702	487465
Mar '12	649'2	20'6	628'6	650'2	628'6	13351	112108
May '12	656'2	19'4	637'4	657'0	637'0	3632	24787
Jul '12	662'4	18'4	644'6	664'0	644'4	5692	70374
Sep '12	644'0	18'0	628'4	643'0	627'4	696	6079
Dec '12	614'0	12'2	600'0	615'0	600'0	3506	71122

Source: Data from *The Wall Street Journal Online*, July 8, 2011. Reprinted by permission of *The Wall Street Journal*, Copyright © 2011 Dow Jones & Company, Inc. All Rights Reserved Worldwide.

## Problem

### Pricing Futures Contracts

Look at the futures listings for the corn contract in Figure 2.10.

- a. Suppose you buy one contract for March delivery. If the contract closes in March at a level of 692'2, what will your profit be?