

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 1

The Investment Environment

With Michael Nugent

This series of Investment Lectures

- 1. The Investment Environment
- 2. Securities Markets and Transactions
- 3. Investment Information and Securities Transactions
- 4. Return and Risk
- 5. Modern Portfolio Concepts
- 6. Common Stocks
- 7. Analyzing Common Stocks
- 8. Stock Valuation
- 9. Market Efficiency and Behavioral Finance
- 10. Fixed-Income Securities
- 11. Bond Valuation

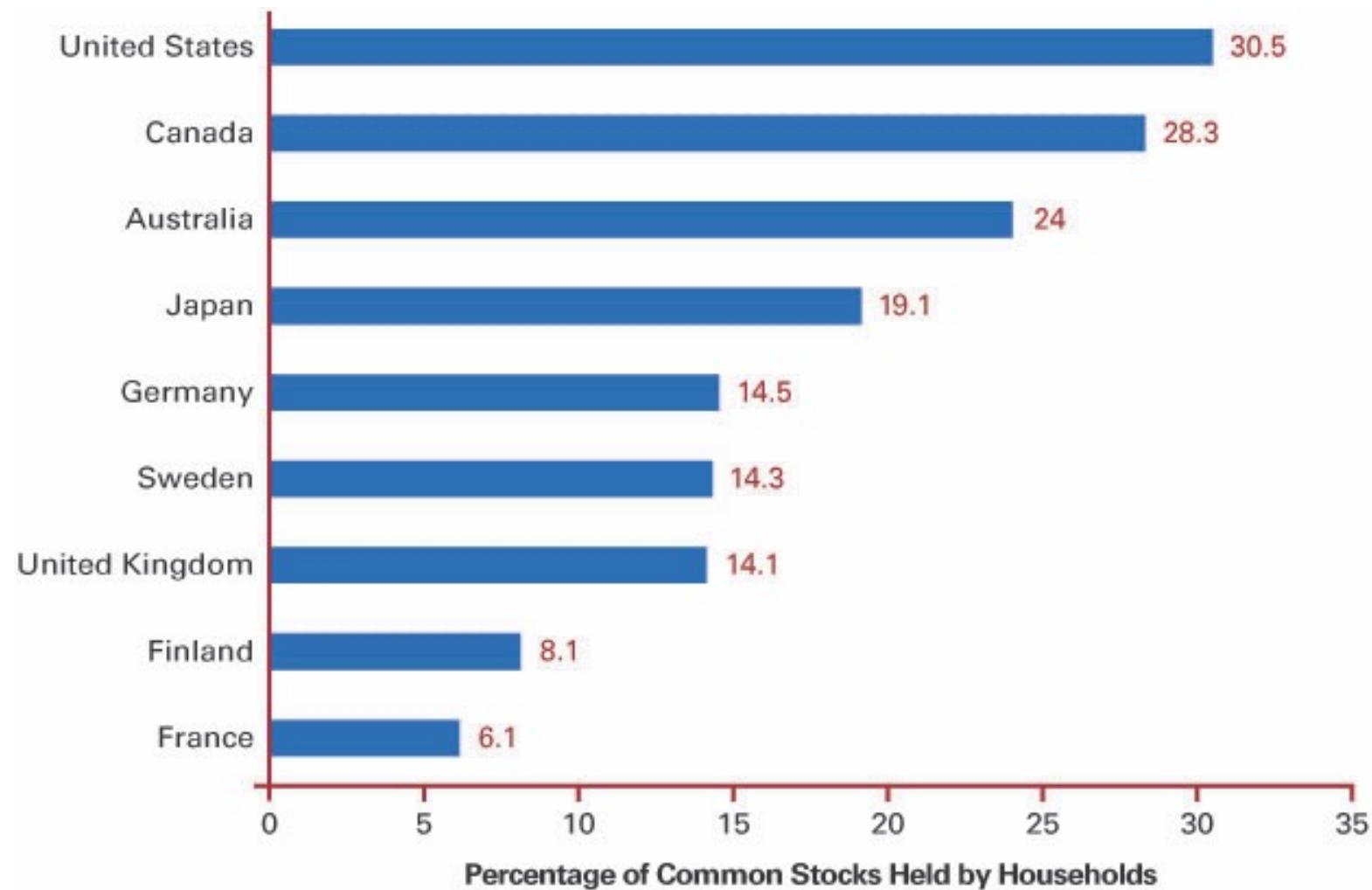
Investments and the Investment Process (1 of 7)

- The goal of investing is to grow your money to achieve long-term financial goals.
 - **Investment:** any asset into which you place funds with the expectation that it will generate positive income and/or increase its value
 - **Portfolio:** a collection of different investments
 - **Return:** reward from investing
 - Income from investment
 - Increase in value of investment
- Attributes of Investments
- The Structure of the Investment Process

Investments and the Investment Process (2 of 7)

- Attributes of Investments
 - Securities or Property
 - **Securities:** investments issued by firms, governments, or other organizations that represent a financial claim on the issuer's resources
 - **Liquidity:** the ability to buy and sell quickly
 - **Property:** real assets that are typically less liquid than securities
 - Real property: land, buildings, and things permanently affixed to the land
 - Tangible personal property: such as gold, artwork, antiques, and collectibles
 - Direct or Indirect
 - **Direct Investment:** investor directly acquires a claim/ownership
 - **Indirect Investment:** investor indirectly acquires a claim/ownership via a professional investment manager

Figure 1.1 Direct Stock Ownership by Households



Investments and the Investment Process (3 of 7)

- Attributes of Investments
 - Debt, Equity, or Derivative Securities
 - **Debt**: investor lends funds in exchange for interest income and repayment of loan in future (bonds)
 - **Equity**: ongoing ownership in a business or property (common stocks)
 - **Derivative Securities**: neither debt nor equity; derive value from an underlying asset (options)
 - Low- or High-Risk Investments
 - **Risk**: uncertainty surrounding the return that a particular investment will generate
 - Low-risk: more predictable, lower average return
 - High-risk: less predictable, higher average return
 - **Diversification**: holding different types of assets in an investment portfolio

Investments and the Investment Process (4 of 7)

- Attributes of Investments
 - Short- or Long-Term Investments
 - **Short-Term:** maturities of one year or less
 - **Long-Term:** maturities of longer than one year
 - Domestic or Foreign
 - **Domestic:** securities issued by domestic companies
 - **Foreign:** securities issued by foreign companies

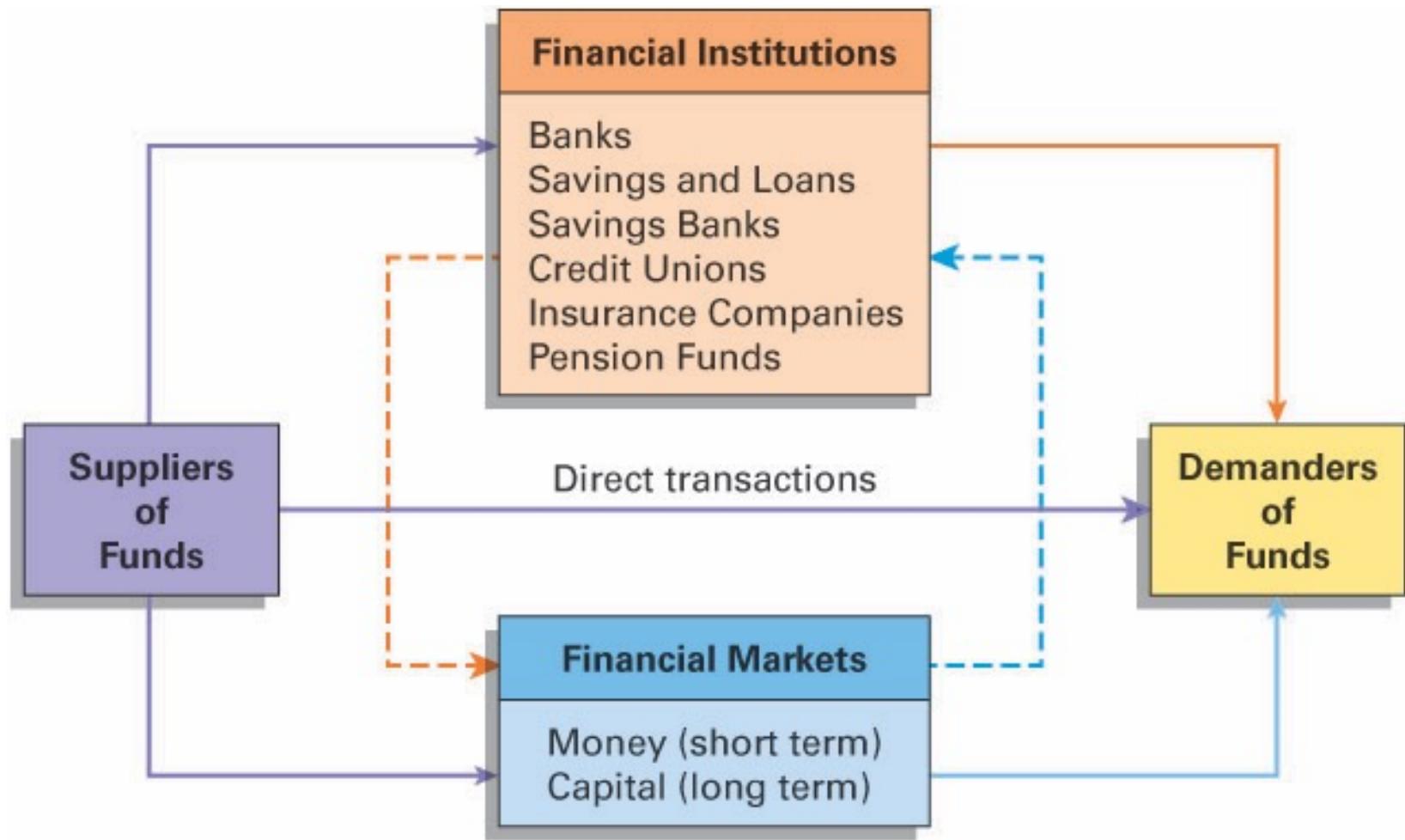
Investments and the Investment Process (5 of 7)

- The Structure of the Investment Process
 - Suppliers and Demanders of Funds
 - **Households**
 - Some need for loans (house, auto)
 - Typically **net suppliers of funds**
 - **Government**
 - Federal, state and local projects & operations
 - Typically **net demanders of funds**
 - **Businesses:**
 - Investments in production of goods and services
 - Typically **net demanders of funds**

Investments and the Investment Process (6 of 7)

- The Structure of the Investment Process
 - Bringing Together Suppliers and Demanders of Funds
 - **Financial Institutions:** organizations, such as banks, mutual funds, and insurance companies, that pool the resources of households and other savers and use those funds to make loans and to invest in securities.
 - **Financial Markets:** markets in which suppliers and demanders of funds trade financial assets, typically with the assistance of intermediaries such as securities brokers and dealers

Figure 1.2 The Investment Process



Investments and the Investment Process (7 of 7)

- The Structure of the Investment Process
 - Types of Investors
 - **Individual Investors:** individuals that manage their own funds to achieve their financial goals
 - **Institutional Investors:** investment professionals who earn their living by managing other people's money
 - Professionals that trade large volumes of securities for individuals, as well as for businesses and governments
 - Includes banks, life insurance companies, mutual funds, pension funds, and hedge funds

Types of Investments (1 of 5)

- Investors have a large variety of investments to choose from to achieve their investment goals.
 - Short-Term Investments
 - Common Stock
 - Fixed-Income Securities
 - Mutual Funds
 - Exchange-Traded Funds
 - Hedge Funds
 - Derivatives Securities
 - Other Popular Investments

Types of Investments (2 of 5)

- Short-term Investments
 - Investments with lives of 1 year or less and little risk
 - US Treasury Bills
 - Provide high liquidity
- Common Stock
 - Represents an ownership share of a corporation
 - Return comes through dividends and capital gains
- Fixed-income Securities
 - Bonds are long-term debt instruments issued by corporations and governments
 - Convertible securities are special fixed-income securities that can be converted into stock
 - Preferred Stock represents an ownership claim, but has no maturity and pays a fixed dividend

Types of Investments (3 of 5)

- Mutual funds
 - Portfolio of stocks, bonds, or other assets purchased with a pool of funds contributed by many different investors and managed by an investment company on behalf of its clients
 - Allow investors to construct diversified portfolios without investing a lot of money
 - **Money market mutual funds, or money funds,** are mutual funds that invest solely in short-term investments.
- Exchange-traded funds (ETFs)
 - Like mutual funds, except ETF shares trade on exchanges, so investors can buy and sell them at any time that exchanges are open for trading
- Hedge Funds
 - Funds that pool resources from different investors, but usually have higher minimum investments and are less regulated than mutual funds

Types of Investments (4 of 5)

- Derivatives
 - Securities that derive their value from some underlying asset (e.g., a share of stock or a commodity)
 - Include options and futures contracts
 - **Options:** securities that give the investor an opportunity to buy or sell an underlying asset at a specified price for a limited time.
 - **Futures:** legally binding contracts stipulating that the seller will make delivery and the buyer will take delivery of an asset at a specific date and price.

Types of Investments (5 of 5)

- Other Popular Investments
 - **Tax-advantaged investments:** investments that provide higher after-tax returns by reducing the taxes investors must pay.
 - Municipal bonds
 - **Real estate:** assets such as residential homes, raw land, and income property (warehouses, office and apartment buildings, and condominiums).
 - Potential returns in the form of rental income, tax write-offs, and capital gains.
 - **Tangibles:** investment assets, other than real estate, that can be seen or touched. Purchased in anticipation of price increases.
 - Gold or other precious metals
 - Collectibles

Table 1.1 Major Types of Investments (1 of 2)

Type	Description	Examples	Where Covered in This Book
Short-term investments	Savings instruments with lives of 1 year or less. Used to warehouse idle funds and to provide liquidity.	Deposit accounts, U.S. Treasury bills (T-bills), Certificates of deposit (CDs), Commercial paper, Money market mutual funds	Ch. 1
Common stock	Equity investments that represent ownership in a corporation.		Chs 6-9
Fixed-income securities	Investments that make fixed cash payments at regular intervals.	Bonds, Convertible securities, Preferred stock	Chs 10, 11 Web Ch. 16
Mutual funds	Companies that pool money from many investors and invest funds in a diversified portfolio of securities.	Large-cap funds, Growth funds	Ch. 12
Exchange-traded funds	Investment funds, typically index funds, that are exchange listed and, therefore, exchange traded.	Stock index funds, Bond index funds	Ch. 12

Table 1.1 Major Types of Investments (2 of 2)

Type	Description	Examples	Where Covered in This Book
Hedge funds	Alternative investments, usually in pools of underlying securities, available only to sophisticated investors, such as institutions and individuals with significant assets.	Long and short equities, funds of funds	Ch. 12
Derivative securities	Securities that are neither debt nor equity but are structured to exhibit the characteristics of the underlying assets from which they derive their value.	Options, Futures	Ch. 14 Ch. 15
Other popular investments	Various other investments that are widely used by investors.	Tax-advantaged investments Real estate Tangibles	Web Ch. 17 Web Ch. 18 Web Ch. 18

Making Your Investment Plan (1 of 7)

- Developing a well thought-out investment plan encourages you to follow a disciplined approach to managing money that will help you to avoid many common investment mistakes. A good investment plan is a reminder of goals and a strategic roadmap to guide investment decisions over a lifetime.
 - Writing an Investment Policy Statement
 - Considering personal taxes
 - Investing over the life cycle
 - Investing over the business cycle

Making Your Investment Plan (2 of 7)

- Writing an Investment Policy Statement
 - Summarize your current situation
 - List assets you currently own
 - Current income and spending habits
 - Define your investment horizon
 - Specify your investment goals
 - **Investment goals:** financial objectives you wish to achieve by investing
 - Articulate your investment philosophy
 - Risk tolerance
 - Set investment selection guidelines
 - Assign responsibility for selecting and monitoring investments

Making Your Investment Plan (3 of 7)

- Considering Personal Taxes
 - Basic sources of taxation
 - Federal, state, and local
 - Income, sales, and property
 - Types of Income
 - Three basic categories of ordinary income:
 - **Active Income:** income from working (wages, salaries, pensions)
 - **Portfolio Income:** income from investments (interest, dividends, capital gains)
 - **Passive Income:** income from special investments (rents from real estate, royalties, limited partnerships)
 - Taxed at progressive tax rates (rates go up as income goes up)

Making Your Investment Plan (4 of 7)

- Considering Personal Taxes
 - Capital Gains and Losses
 - **Capital Asset:** property owned and used by taxpayer, including securities and personal residence
 - **Capital Gain:** amount by which the proceeds from the sale of a capital asset exceed its original purchase price
 - Capital assets held less than one year: ordinary income tax rates
 - Capital assets held more than one year: taxed at rates ranging from 0% for low-income taxpayers to 23.8% for high-income earners
 - Medicare tax on investment income of 3.8% for high earners
 - **Capital Loss:** amount by which the proceeds from the sale of a capital asset are less than its original purchase price
 - Capital losses can be used to offset capital gains
 - Up to \$3,000 per year of capital losses can be used to offset ordinary income (such as wages)

Table 1.3 Federal Income Long-Term Capital Gains Tax Rates and Brackets for Individuals and Joint Returns

TABLE 1.3 FEDERAL INCOME LONG-TERM CAPITAL GAINS TAX RATES AND BRACKETS FOR INDIVIDUAL AND JOINT RETURNS (DUE BY APRIL 15, 2019)

Tax Rates	Taxable Income	
	Individual Returns	Joint Returns
0%	\$0 to \$38,600	\$0 to \$77,200
15%	\$38,601 to \$425,800	\$77,201 to \$479,000
20%	Over \$425,800	Over \$479,000

Making Your Investment Plan (5 of 7)

- Considering Personal Taxes
 - Investments and taxes
 - **Tax planning:** looking at your current and projected earnings and developing strategies to defer and minimize taxes.
 - Tax plan should achieve maximum after-tax returns for an acceptable level of risk.
 - Tax-Advantaged Retirement Savings Plan
 - Allows taxes to be deferred until withdrawn in future
 - Employer sponsored plans: profit-sharing, thrift and savings, and 401(k)
 - Self-employed individual plans: Keogh and SEP-IRAs
 - Individual plans: Individual retirement arrangements (IRAs) and Roth IRAs

Making Your Investment Plan (6 of 7)

- Investing over the Life Cycle
 - Investors tend to follow different investment philosophies as they move through different stages of life.
 - Growth-oriented youth (age: 20 to 45)
 - Middle-age consolidation (age: 46 to 60)
 - Income-oriented retirement years (age: 61 to ?)
 - Growth-oriented youth: portfolio tends to favor growth-oriented and speculative investments; particularly high-risk common stocks
 - Middle-age consolidation: portfolio shifts to less risky investments such as stocks that offer a balance between growth and income
 - Income-oriented retirement: portfolio becomes highly conservative to preserve capital and current income in low-risk income stocks and mutual funds, bonds, etc.

Making Your Investment Plan (7 of 7)

- Investing over the Business Cycle
 - Investments are affected by conditions in the U.S. economy
 - The business cycle reflects the current status of economic variables: gross domestic product (GDP), industrial production, disposable income, unemployment rate
 - A strong economy is reflected in an expanding business cycle
 - Stock prices tend to rise during expanding business cycles and fall during declining business cycles
 - Bonds and other forms of fixed-income securities are also affected by the business cycle since their values are tied to interest rates, which are affected by economic conditions
 - Interest rates and bond prices move in opposite directions

Table 1.4: Performance of Stocks Before, During, and After Recessions

TABLE 1.4 PERFORMANCE OF STOCKS BEFORE, DURING, AND AFTER RECESSIONS

	Panel A Average Monthly Return (%)		
	6 Months Prior to Recession	During Recession	12 Months After Recession
	−0.26	0.37	1.75
Panel B Total Return (%)			
October 1926 to November 1927	18.01	33.41	41.66
August 1929 to March 1933	9.27	−76.29	96.77
May 1937 to June 1938	−0.03	−25.08	100.30
February 1945 to October 1945	9.95	22.80	−4.85
November 1948 to October 1949	5.32	5.06	28.45
July 1953 to May 1954	−5.27	26.73	36.31
August 1957 to April 1958	9.31	−6.58	39.73
April 1960 to February 1961	−0.54	19.42	13.08
December 1969 to November 1970	−8.46	−7.51	12.95
November 1973 to March 1975	4.49	−20.23	28.52
January 1980 to July 1980	9.75	16.18	15.65
July 1981 to November 1982	1.15	12.67	25.74
July 1990 to March 1991	1.84	7.09	13.72
March 2001 to November 2001	−20.60	−6.92	−14.89
December 2007 to June 2009	−2.04	−34.46	16.45

Meeting Liquidity Needs with Short-Term Investments (1 of 3)

- Planning for and providing for adequate liquidity, in the event of unexpected expenses or opportunities for example, is an important part of an investment plan.
- **Liquidity:** the ability to convert an investment into cash quickly with little or no loss in value.
 - The Role of Short-Term Investments
 - Common Short-Term Investments
 - Investment Suitability

Meeting Liquidity Needs with Short-Term Investments (2 of 3)

- The Role of Short-Term Investments
 - Primary function is to provide a pool of reserves for emergencies or simply to accumulate funds for some specific purpose.
 - Short-term investments earn either a stated rate of interest or earn interest on a discount basis,
 - **Discount basis:** you buy a security at a price below its redemption value and the difference between what you pay to acquire the asset and what you are paid when it matures is the interest the investment will earn (E.g., U.S. Treasury bills, or T-bills).
 - Advantages and Disadvantages:
 - Advantages: high liquidity, low risk of default
 - Disadvantages: low levels of return, loss of potential purchasing power from inflation

Table 1.5 Common Short-Term Investments (1 of 3)

Part A. Deposit-Type Accounts

Type of Account	Description	Minimum Balance	Interest Rate	Federal Insurance
Passbook savings account	Savings accounts offered by banks. *Used primarily for convenience or if investors lack sufficient funds to purchase other short-term investments.	Typically none	0.25%-4% depending on economy	Up to \$250,000 per deposit.
Negotiable order of withdrawal (NOW)	Bank checking account that pays interest on balances.	No legal minimum but often set at \$500 to \$1,000	At or near passbook rates	Up to \$250,000 per deposit.
Money market deposit account (MMDA)	Bank deposit account with limited check-writing privileges.	No legal minimum, but often set at about \$2,500	Typically slightly above passbook rate	Up to \$250,000 per deposit.
Asset management account	Deposit account at bank, brokerage house, mutual fund, or insurance company that combines checking, investing, and borrowing. Automatically "sweeps" excess balances into short-term investments and borrows to meet shortages.	Typically \$5,000 to \$20,000	Similar to MMDAs	Up to \$250,000 per deposit in banks. Varies in other institutions.

Table 1.5 Common Short-Term Investments (2 of 3)

Part B. Federal Government Issues

Security	Issuer	Description	Initial Maturity	Risk and Return
I Bonds	U.S. Treasury	Savings bonds issued by the U.S. Treasury in denominations as low as \$25; earn an interest rate that varies with the inflation rate; interest is exempt from state and local taxes.	30 years, but redeemable after 1 year	Lowest, virtually risk free
Treasury bills	U.S. Treasury	Issued weekly at auction; sold at a discount; strong secondary market; exempt from local and state income taxes.	1 year or less	Lowest, virtually risk free

Table 1.5 Common Short-Term Investments (3 of 3)

Part C. Nongovernment Issues

Security	Issuer	Description	Initial Maturity	Risk and Return
Certificates of deposit (CDs)	Commercial banks	Cash deposits in commercial banks; amounts and maturities tailored to investor's needs.	1 month and longer	Higher than U.S. Treasury issues and comparable to commercial paper
Commercial paper	Corporation with a high credit standing	Unsecured note of issuer; large denominations.	3 to 270 days	Higher than U.S. Treasury issues and comparable to CDs
Banker's acceptances	Banks	Analogous to a postdated check on an account with over-draft protection; a time draft drawn on a customer's account, guaranteed by a bank; bank's "acceptance" makes the trade a tradable instrument.	30 to 180 days	About the same as CDs and commercial paper but higher than U.S. Treasury issues
Money market mutual funds (money funds)	Professional portfolio management companies	Professionally managed portfolios of marketable securities; provide instant liquidity.	None—depends on wishes of investor	Vary, but generally higher than U.S. Treasury issues and comparable to CDs and commercial paper

*The term **bank** refers to commercial banks, savings and loans (S&Ls), savings banks, and credit unions.

Meeting Liquidity Needs with Short-Term Investments (3 of 3)

- Investment Suitability
 - Short-Term investments are used for:
 - Savings
 - Emphasis on safety and security instead of high yield
 - Investment
 - Yield is often as important as safety
 - Used as component of diversified portfolio
 - Used as temporary outlet waiting for attractive permanent investments
 - To decide which securities are most appropriate for a particular situation, you need to consider such characteristics as availability, safety, liquidity, and rate of return.

Table 1.6 A Scorecard for Short-Term Investment

Type of Investment	Availability	Safety	Liquidity	Typical Rate in 2018
NOW account	A-	A+	A+	0.20%
Passbook savings account	A+	A+	A	0.40%
Money market mutual fund (money fund)	B	A/A+	B+	1.75%
Money market deposit account (MMDA)	B	A+	A	1.25%
Asset management account	B-	A	A+	0.50%
U.S. Treasury bill (1 year)	B-	A++	A-	2.10%
Banker's acceptance (90 day)	B-	A	B	1.75%
Commercial paper (90 day)	B-	A-	B-	2.00%
Certificate of deposit (1 year, large denomination)	B	A±	B	2.04%
I bonds	A+	A++	C-	2.50%

Careers in Finance (1 of 3)

- A career in finance, regardless of the job title, requires you to understand the investment environment. Some of the industries with investments-oriented career opportunities are:
 - Commercial banking
 - Corporate finance
 - Financial planning
 - Insurance
 - Investment Banking
 - Investment Management

Careers in Finance (2 of 3)

- Commercial banking – employs more people than any other part of financial services industry
- Corporate finance – requires broad understanding of functional areas of a business
- Financial planning – professionals in this area often acquire the Certified Financial Planner[®] certification
- Insurance – usually involves risk management or asset management
- Investment banking – assists organizations in raising capital

Careers in Finance (3 of 3)

- Investment management – involves managing money for clients
 - practitioners often have the Chartered Financial Analyst (CFA) certification
 - example CFA questions appear at the end of each part of this text

Table 1.7 Average Salaries For Various Finance Jobs (2018) (1 of 2)

Job Title	Salary	Years of Experience
Commercial Banking		
Commercial credit analyst, Jr.	\$ 47,392	0
Commercial credit analyst, Sr.	\$ 92,616	7
Lending officer, Jr.	\$ 86,801	8
Lending officer, Sr.	\$160,611	12
Corporate Finance		
Financial analyst, Jr.	\$ 55,693	0
Financial analyst, Sr.	\$ 100,312	7
Assistant controller	\$125,222	7
Investor relations director	\$163,324	10
Treasurer	\$195,014	7
Chief financial officer	\$361,258	15

Table 1.7 Average Salaries For Various Finance Jobs (2018) (2 of 2)

Job Title	Salary	Years of Experience
Investment Banking		
Analyst	\$ 77,000	0
Associate	\$130,000	3
Managing director	\$834,000	18
Investment Management		
Securities analyst	\$ 114,663	2
Investment specialist	\$100,406	2
Portfolio manager	\$109,495	5
Investment operations manager	\$133,464	7

Sources: Data from [Salary.com](#); data for investment banking from

<https://news.efinancialcareers.com/uk-en/185046/much-earn-now-investment-banker-30s>

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 2

Securities Markets and Transactions

With Michael Nugent

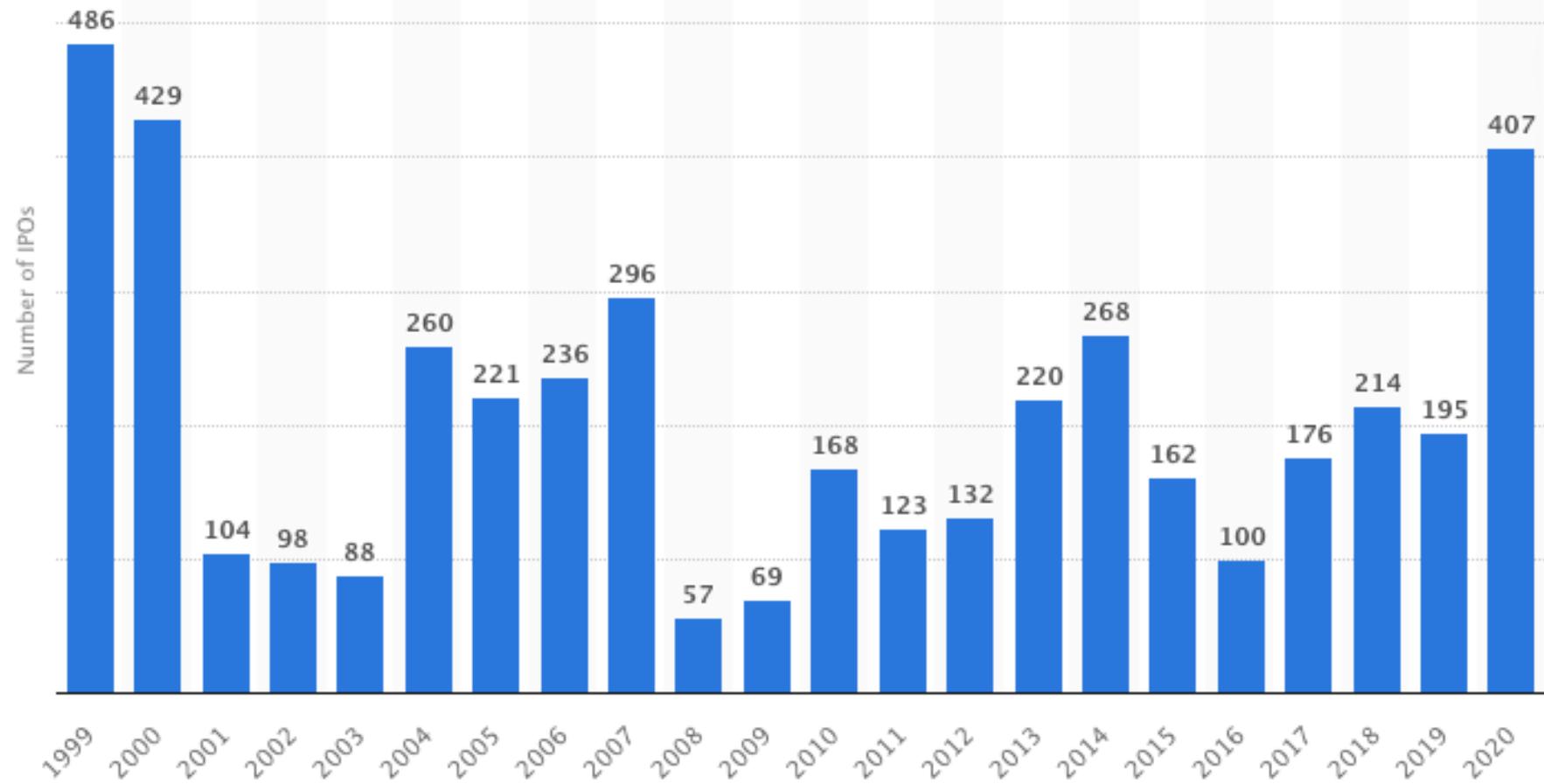
Securities Markets (1 of 16)

- The goal of securities markets is to permit financial transactions to be made quickly and at a fair price.
 - Securities Markets**: markets that allow buyers and sellers of securities to make financial transactions.
- Types of Securities Markets
- Broker Markets and Dealer Markets
- Electronic and High-Frequency Trading
- General Market Conditions: Bull or Bear

Securities Markets (2 of 16)

- Types of Securities Markets
 - **Money market:** the market where short-term debt securities trade.
 - **Capital Market:** the market where long-term securities, such as stocks and bonds, are bought and sold; classified as primary or secondary.
 - **Securities and Exchange Commission (SEC):** Federal agency that regulates the securities markets.
- The Primary Market
 - **Primary market:** the market in which new issues of securities are sold to investors.
 - **Initial Public Offering (IPO):** the first public sale of a company's stock

Number of IPOs in the United States from 1999 to 2020



Securities Markets (3 of 16)

- Types of Securities Markets
 - The Primary Market
 - Three choices to market securities in the primary market:
 - **Public offering:** securities offered for sale to public investors.
 - **Rights offering:** shares are offered to existing shareholders on a pro rata basis
 - **Private placement:** securities sold directly to select groups of private investors

Securities Markets (4 of 16)

- Types of Securities Markets
 - The Primary Market
 - Going Public: The IPO Process
 - **Underwriting:** promoting the stock and facilitating the sale of the company's shares.
 - **Prospectus:** registration statement describing the issue and the issuer.
 - **Quiet period:** time period after prospectus is filed when company must restrict what is said about the company.
 - **Red Herring:** preliminary prospectus available during the waiting period.
 - **Road show:** series of presentations to potential investors

Figure 2.1 Cover of a Preliminary Prospectus for a Stock Issue

The information in this preliminary prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject To Completion. Dated February 23, 2018.

Shares



Class A Common Stock

This is an initial public offering of shares of Class A common stock of Dropbox, Inc.

Dropbox, Inc. is offering to sell _____ shares of Class A common stock in this offering. The selling stockholders identified in this prospectus are offering to sell an additional _____ shares of Class A common stock. We will not receive any of the proceeds from the sale of the shares being sold by the selling stockholders.

We have three classes of authorized common stock, Class A common stock, Class B common stock, and Class C common stock. The rights of the holders of Class A common stock, Class B common stock, and Class C common stock are identical, except with respect to voting and conversion. Each share of Class A common stock is entitled to one vote per share. Each share of Class B common stock is entitled to ten votes per share and is convertible at any time into one share of Class A common stock. Shares of Class C common stock have no voting rights, except as otherwise required by law, and will convert automatically into Class A common stock, on a share-for-share basis, upon the conversion of all outstanding shares of Class B common stock into shares of Class A common stock. Following this offering, outstanding shares of Class B common stock will represent approximately _____ % of the voting power of our outstanding capital stock.

Prior to this offering, there has been no public market for the Class A common stock. It is currently estimated that the initial public offering price per share will be between \$ _____ and \$ _____. We have applied to list the Class A common stock on the Nasdaq Global Select Market under the symbol "DBX".

We will be treated as an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012, for certain purposes until we complete this offering. As such, in this registration statement we have taken advantage of certain reduced disclosure obligations that apply to emerging growth companies regarding selected financial data and executive compensation arrangements.

See "[Risk Factors](#)" beginning on page 15 to read about factors you should consider before buying shares of our Class A common stock.

Neither the Securities and Exchange Commission nor any other regulatory body has approved or disapproved of these securities or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

	Per share	Total
Initial public offering price	\$	\$
Underwriting discount(1)	\$	\$
Proceeds, before expenses, to Dropbox, Inc.	\$	\$
Proceeds, before expenses, to Selling Stockholders	\$	\$

(1) See the section titled "Underwriting (Conflicts of Interest)" for a description of the compensation payable to the underwriters.

To the extent that the underwriters sell more than _____ shares of Class A common stock, the underwriters have the option to purchase up to an additional _____ shares from Dropbox, Inc. and the selling stockholders at the initial public offering price less the underwriting discount.

The underwriters expect to deliver the shares against payment in New York, New York, on or about _____, 2018.

Goldman Sachs & Co. LLC	J.P. Morgan	Deutsche Bank Securities	Allen & Company LLC	BofA Merrill Lynch
RBC Capital Markets	Jefferies	Macquarie Capital		
Canaccord Genuity	JMP Securities	KeyBanc Capital Markets	Piper Jaffray	
Prospectus dated				
, 2018				

Securities Markets (5 of 16)

Equation 2.1

IPO Underpricing = (Market Price – Offer Price) ÷ Offer Price

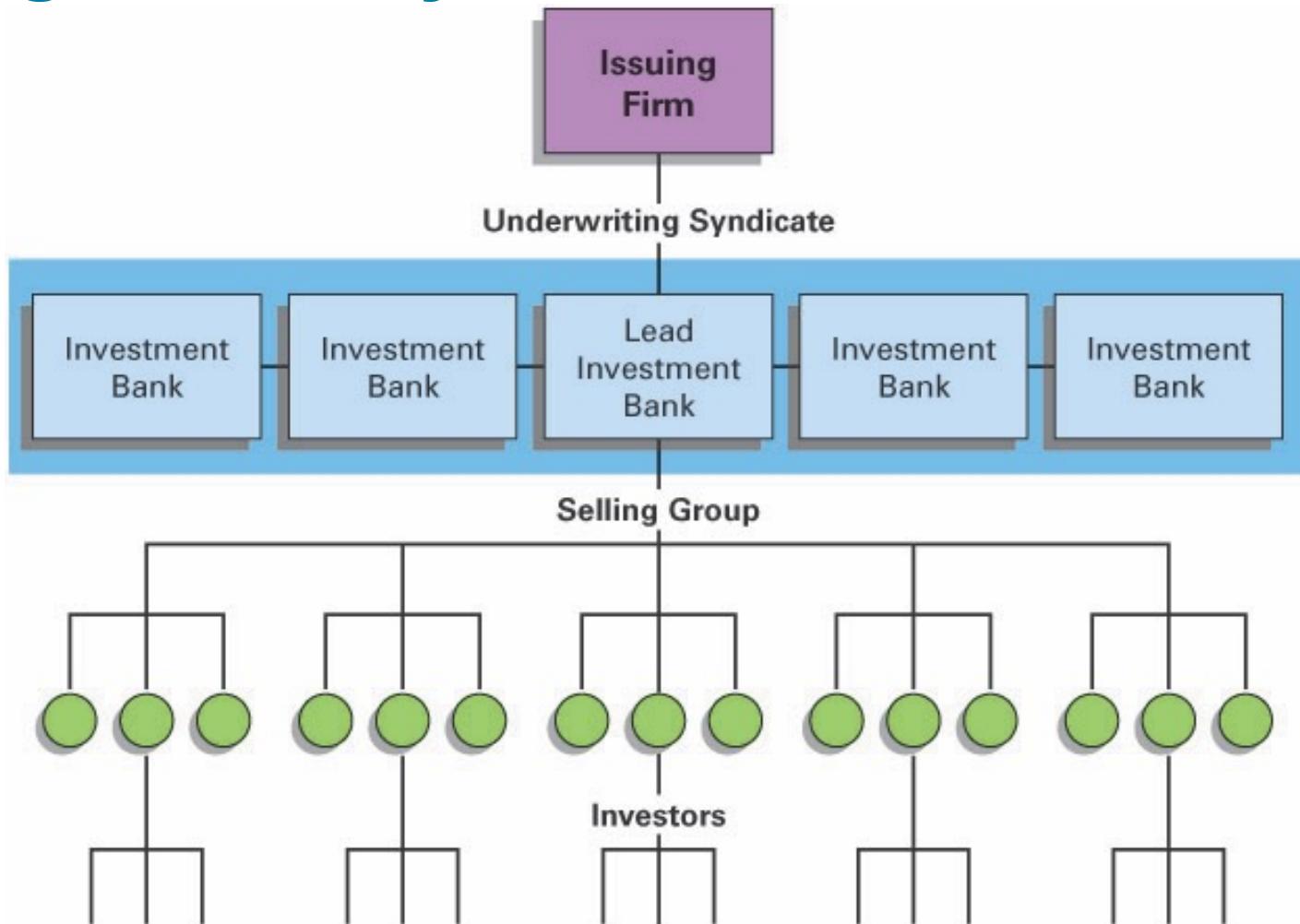
Equation 2.2

Gross Proceeds = IPO Offer Price × No. of IPO Shares Sold

Securities Markets (6 of 16)

- Types of Securities Markets
 - The Primary Market
 - The Investment Banker's Role
 - **Investment Banker:** financial intermediary that specializes in assisting companies in issuing new securities and advising firms with regard to major financial transactions.
 - For IPOs, their main role is underwriting.
 - **Underwriting:** purchases the security at agreed-upon price and bears risk of selling it to the public.
 - For large security issues, forms an underwriting syndicate.
 - **Underwriting Syndicate:** group formed to share the financial risk of underwriting.
 - **Selling group:** other brokerage firms that help the underwriting syndicate sell the issue to the public.
 - Compensation typically in the form of a discount on the sale price of the securities.

Figure 2.2 The Selling Process for a Large Security Issue



Securities Markets (7 of 16)

- Types of Securities Markets
 - *Public Offerings: The Direct Listing Process*
 - In a direct listing, the company does not issue any new shares or raise any capital.
 - The company transfers some existing shares directly to a stock exchange.
 - After gathering information about the public's demand for shares, the exchange sets an initial price and opens trading to the public.

Securities Markets (8 of 16)

- Types of Securities Markets
 - *Public Offerings: The Direct Listing Process*
 - Benefits of Direct Listing Include:
 - Saving the issuer millions of dollars in investment banking fees.
 - Allows pre-IPO investors to liquidate some of their holdings making it easier for the firm to add equity to employee compensation packages.
 - Some Disadvantages of Direct Listing:
 - No road show to explain the business to potential investors.
 - Uncertainty around where the initial price will be set.
 - No new capital is raised.

Securities Markets (9 of 16)

- Types of Securities Markets
 - The Secondary Market
 - **Secondary market (aftermarket):** the market in which securities are traded after they are issued.
 - Role:
 - Provides continuous pricing mechanism
 - Provides liquidity to security purchasers
 - Major segments:
 - **National Securities Exchanges:** markets in which the buyers and sellers of listed securities come together to execute trades.
 - **Over-the-counter (OTC) Market:** involves trading in smaller, unlisted securities.

Securities Markets (10 of 16)

- Broker Markets and Dealer Markets
 - **Broker Market:** consists of national and regional securities exchanges. Trades are executed when a buyer and a seller are brought together by a **broker** and the trade takes place directly between the buyer and seller.
 - **Dealer Market:** made up of the Nasdaq OMX and OTC trading venues. Trades are executed with a dealer (**market maker**) in the middle. Sellers sell to a market maker at a stated price. The market maker then offers the securities to a buyer.

Bid/Ask Spread = Ask Price – Bid Price

Securities Markets (11 of 16)

- Broker Markets and Dealer Markets
 - Broker Markets:
 - New York Stock Exchange (NYSE) is the largest stock exchange in the world.
 - In 2018, more than 2,800 firms with an aggregate market value of greater than \$28.8 trillion were listed on the NYSE.
 - **Designated market maker (DMM):** an exchange member who specializes in making transactions in one or more stocks ; job is to manage the auction process.
 - Listing requirements are a minimum stock price of \$4, 400 round lot shareholders, 1.1 million publicly held shares, and \$40 million market value of publicly held shares.
 - Regional Stock Exchanges
 - Modeled after the NYSE, but membership and listing requirements are more lenient.
 - Majority of securities listed here are also listed on NYSE

Securities Markets (12 of 16)

- Broker Markets and Dealer Markets
 - Broker Markets:
 - Options Exchanges
 - Allows trading of options
 - Dominant exchange is Chicago Board Options Exchange (CBOE)
 - Futures Exchanges
 - Allows trading of futures
 - Dominant exchange is the CME Group

Securities Markets (13 of 16)

- Broker Markets and Dealer Markets
 - Dealer Markets:
 - No centralized trading floor; comprised of market makers linked via a mass electronic network.
 - **Bid price:** the highest price offered to purchase a given security
 - **Ask price:** the lowest price offered to sell a given security.
 - Nasdaq:
 - Largest dealer market
 - Listed companies include Amazon, Microsoft, Intel, Cisco Systems, eBay, Google, Facebook, Apple, and Starbucks.

Securities Markets (14 of 16)

- Broker Markets and Dealer Markets
 - Dealer Markets:
 - The Over-the-Counter Market
 - Includes mostly smaller companies that either cannot or do not wish to comply with Nasdaq's listing requirements.
 - Companies traded on the OTC Bulletin Board (OTCBB) are regulated and required to file audited financial statements and comply with federal securities law.
 - Companies traded on the OTC Markets Group are not required to file with the SEC. There are three tiers.
 - OTC Pink: unregulated; small, risky companies
 - OTC QB: companies must provide SEC, bank, or insurance reporting and be current in their disclosures.
 - OTC QX: reserved for companies that choose to provide audited financial statements and other required information.

Securities Markets (15 of 16)

- Electronic and High-Frequency Trading
 - Electronic communications networks (ECNs): automated computer-based trading systems that electronically execute orders by matching or crossing the buy and sell orders for securities.
 - Most effective for high-volume, actively traded securities and play a key role in after-hours trading
 - Can save money because they only charge a transaction fee, per share or based on order size
 - High-Frequency Trading: ultra-fast algorithmic trading that relies on computers and electronic order execution.
 - Traders use highly sophisticated computer-based trading strategies to analyze markets and execute orders based on market conditions, usually moving in and out of positions in seconds or fractions of a second.
 - Accounts for about 50% of all equity trading in the United States and Europe.
 - **Decimalization** – the quoting and transacting of securities in decimals (i.e., in pennies or increments of \$0.01)

Securities Markets (16 of 16)

- General Market Conditions: Bull or Bear
 - **Bull market:** Conditions in security markets normally associated with rising prices, investor optimism, economic recovery, and government stimulus.
 - **Bear Market:** Conditions in security markets normally associated with falling prices, investor pessimism, economic slowdown, and government restraint.

Globalization of Securities Markets

(1 of 5)

Diversification: the inclusion of a number of different securities in a portfolio to increase returns and reduce risk.

An investor can greatly increase the potential for diversification by holding 1) a wider range of industries and securities, 2) securities traded in a larger number of markets, and 3) securities denominated in different currencies

- Growing Importance of International Markets
- International Investment Performance
- Ways to Invest in Foreign Securities



Globalization of Securities Markets

(2 of 5)

- Growing Importance of International Markets
 - Securities exchanges now operate in more than 100 countries worldwide.
 - Top four securities markets (based on dollar volume) worldwide:
 - NYSE
 - Nasdaq
 - London Stock Exchange
 - Tokyo Stock Exchange
 - Increasing number of mergers and cooperative arrangements between securities exchanges worldwide represent steps toward a worldwide stock exchange.
 - Bond markets too have become global: Investors regularly purchase government and corporate fixed-income securities in foreign markets

Globalization of Securities Markets

(3 of 5)

- International Investment Performance
 - Opportunities for high returns
 - Foreign securities markets do not necessarily move with the U.S. securities market
 - Foreign securities markets tend to be more risky than U.S. markets

Globalization of Securities Markets

(4 of 5)

- Ways to Invest in Foreign Securities
 - Indirect Ways to Invest in Foreign Securities
 - Purchase shares of U.S.-based multinational with substantial foreign operations
 - Direct Ways to Invest in Foreign Securities
 - Purchase securities on foreign stock exchanges
 - Buy securities of foreign companies that trade on U.S. stock exchanges
 - Buy **American Depository Shares (ADRs)**: foreign stocks trading on U.S. exchanges, created to permit U.S. investors to hold shares of non-U.S. companies and trade them on U.S. stock exchanges.
Backed by:
 - **American Depository Receipts (ADRs)**: U.S. dollar-denominated receipts for stocks of foreign companies held in vaults of banks in the companies' home countries

Globalization of Securities Markets

(5 of 5)

- Risks of Investing Internationally
 - Usual Investment Risks Still Apply
 - Government Policies Risks
 - Possibly unstable foreign governments
 - Different laws in trade, labor or taxation
 - Different economic and political conditions
 - Less stringent regulation of foreign securities markets
 - Currency exchange risk: risk caused by the varying exchange rates between the currencies of two countries.
 - Currency exchange rate: the price of one currency in terms of another.
 - The value of foreign currency fluctuates compared to U.S. dollar
 - The value of foreign investments can go up and down with exchange rate fluctuations

Trading Hours and Regulation of Securities Markets (1 of 5)

- Understanding the structure of domestic and international securities markets is an important foundation for developing a sound investment program.
 - Trading Hours of Securities Markets
 - Regulation of Securities Markets

Trading Hours and Regulation of Securities Markets (2 of 5)

- Trading Hours of Securities Markets
 - Regular Trading Session for U.S. Exchanges and Nasdaq:
 - 9:30 A.M. to 4:00 P.M. Eastern time
 - Extended-Hours Electronic-Trading Sessions
 - Most securities exchanges and ECNs offer extended trading sessions before and after regular hours.
 - Extended hours allow U.S. securities markets to compete more effectively with foreign securities markets
 - Most of the after-hours markets are **crossing markets**: orders are only filled if matched with identical opposing orders

Trading Hours and Regulation of Securities Markets (3 of 5)

- Regulation of Securities Markets
 - U.S. securities laws protect investors and participants in the financial marketplace
 - Sarbanes-Oxley Act of 2002: focuses on eliminating corporate fraud related to accounting and other information releases.
 - Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010: aims to promote the financial stability of the U.S. by improving accountability and transparency; Created the Bureau of Consumer Financial Protection.
 - Ethics: standards of conduct or moral judgement
 - Blue sky laws:
 - Laws imposed by individual states to regulate sellers of securities
 - Intended to prevent investors from being sold nothing but “blue sky”

Trading Hours and Regulation of Securities Markets (4 of 5)

- Regulation of Securities Markets
 - Securities Act of 1933
 - Required full disclosure of information by companies
 - Securities Exchange Act of 1934
 - Established SEC as government regulatory body
 - Maloney Act of 1938
 - Allowed self-regulation of securities industry through trade associations such as the National Association of Securities Dealers (NASD)
 - Investment Company Act of 1940
 - Created & regulated mutual funds
 - Investment Advisors Act of 1940
 - Required investment advisers to make full disclosure about their backgrounds and their investments, as well as register with the SEC

Trading Hours and Regulation of Securities Markets (5 of 5)

- Regulation of Securities Markets
 - Securities Acts Amendments of 1975
 - Abolished fixed-commissions and established an electronic communications network to make stock pricing more competitive
 - Insider Trading and Fraud Act of 1988
 - Prohibited insider trading on nonpublic information
 - Regulation Fair Disclosure (2000)
 - Required companies to disclose material information to all investors at the same time
 - Sarbanes-Oxley Act of 2002
 - Tightened accounting and audit guidelines to reduce corporate fraud
 - Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010
 - Aims to promote the financial stability of the U.S. by improving accountability and transparency; Created the Bureau of Consumer Financial Protection.

Table 2.2 Important Federal Securities Laws (1 of 3)

Act	Brief Description
Securities Act of 1933	Passed to ensure full disclosure of information about new security issues. Requires the issuer of a new security to file a registration statement with the Securities and Exchange Commission (SEC) containing information about the new issue. The firm cannot sell the security until the SEC approves the registration statement, which usually takes about 20 days. Approval of the registration statement by the SEC merely indicates that the facts presented in the statement appear to reflect the firm's true position.
Securities Exchange Act of 1934	Formally established the SEC as the agency in charge of administering federal securities laws. The act gave the SEC the power to regulate the organized exchanges and the OTC market; their members, brokers, and dealers; and the securities traded in these markets.
Maloney Act of 1938	An amendment to the Securities Exchange Act of 1934, it provided for the establishment of trade associations to self-regulate the securities industry and led to the creation of the National Association of Securities Dealers (NASD). Today the Financial Industry Regulatory Authority (FINRA) has replaced the NASD as the industry's only self-regulatory body.
Investment Company Act of 1940	Established rules and regulations for investment companies (e.g., mutual funds) and authorized the SEC to regulate their practices. It required investment companies to register with the SEC and to fulfill certain disclosure requirements.

Table 2.2 Important Federal Securities Laws (2 of 3)

Act	Brief Description
Investment Advisors Act of 1940	Requires investment advisors, persons hired by investors to advise them about security investments, to disclose all relevant information about their backgrounds, conflicts of interest, and any investments they recommend. Advisors must register and file periodic reports with the SEC.
Securities Acts Amendments of 1975	Requires the SEC and the securities industry to develop a competitive national system for trading securities. First, the SEC abolished fixed-commission schedules, thereby providing for negotiated commissions. Second, it established the Intermarket Trading System (ITS), an electronic communications network linking nine markets and trading over 4,000 eligible issues, which allowed traders to be made across these markets wherever the network shows a better price for a given issue.
Insider Trading and Securities Fraud Enforcement Act of 1988	Established penalties for insider trading. Insiders include anyone who obtains Nonpublic information, typically a company's directors, officers, major shareholders, commercial banks, investment banks, accountants, and attorneys. The SEC requires corporate insiders to file monthly reports detailing all transactions made in the company's stock. Recent legislation substantially increased the penalties for insider trading and gave the SEC greater power to investigate and prosecute claims of illegal insider-trading activity.

Table 2.2 Important Federal Securities Laws (3 of 3)

Act	Brief Description
Regulation Fair Disclosure (2000)	Required companies to disclosure material information to all investors at the same time.
Sarbanes-Oxley Act of 2002	Passed to protect investors against corporate fraud, particularly accounting fraud. It created an oversight board to monitor the accounting industry, tightened audit regulations and controls, toughened penalties against executives who commit corporate fraud, strengthened accounting disclosure requirements and ethical guidelines for financial officers, established corporate board structure and membership guidelines, established guidelines for analyst conflicts of interest, and increased the SEC's authority and budgets for auditors and investigators. The act also mandated instant disclosure of stock sales by corporate executives.
Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010	Passed in the wake of the 2007-2008 financial crisis. Its stated aim was to promote the financial stability of the United States by improving accountability and transparency. It created the Bureau of Consumer Financial Protection and other new agencies.

Basic Types of Securities Transactions

(1 of 9)

An investor can make a number of basic types of securities transactions. Each type is available to those who meet the requirements established by government agencies as well as by brokerage firms.

- Long Purchase
- Margin Trading
- Short Selling

Basic Types of Securities Transactions

(2 of 9)

- Long purchase
 - **Long purchase:** transaction in which investors buy securities, usually in the hope they will increase in value and can be sold at a later date for profit.
 - Object is to “buy low and sell high”
 - Most common type of transaction
 - Return comes from any dividends or interest received during the ownership period, plus the difference (capital gain or loss) between the purchase and selling prices.
 - Reduced by transaction costs

Basic Types of Securities Transactions

(3 of 9)

- Margin Trading
 - **Margin trading:** Investors use funds borrowed from brokerage firms to make securities purchases.
 - **Margin requirement:** the minimum amount of equity that must be in the margin investor's own funds. The margin requirement for stocks has been 50% for some time; set by the Federal Reserve Board.
 - Essentials of Margin trading
 - The idea of margin trading is to employ financial leverage.
 - **Financial leverage:** the use of debt financing to magnify investment returns
 - **Margin loan:** official vehicle through which the borrowed funds are made available in a margin transaction.

Table 2.3 The Effect of Margin Trading on Security Returns

	Without Margin (100% Equity)	With Margins of		
		80%	65%	50%
Number of \$50 shares purchased	100	100	100	100
Cost of investment	\$5,000	\$5,000	\$5,000	\$5,000
Less: Borrowed money	-\$ 0	-\$1,000	-\$1,750	-\$2,500
Equity in investment	<u><u>\$5,000</u></u>	<u><u>\$4,000</u></u>	<u><u>\$3,250</u></u>	<u><u>\$2,500</u></u>
A. Investor's position if price rises by \$30 to \$80/share				
Value of stock	\$8,000	\$8,000	\$8,000	\$8,000
Less: Cost of investment	<u><u>-\$5,000</u></u>	<u><u>-\$5,000</u></u>	<u><u>-\$5,000</u></u>	<u><u>-\$5,000</u></u>
Capital gain	<u><u>\$3,000</u></u>	<u><u>\$3,000</u></u>	<u><u>\$3,000</u></u>	<u><u>\$3,000</u></u>
Return on investor's equity (capital gain/equity in investment)	60%	75%	92.3%	120%
B. Investor's position if price falls by \$30 to \$20/share				
Value of stock	\$2,000	\$2,000	\$2,000	\$2,000
Less: Cost of investment	<u><u>-\$5,000</u></u>	<u><u>-\$5,000</u></u>	<u><u>-\$5,000</u></u>	<u><u>-\$5,000</u></u>
Capital loss*	<u><u>-\$3,000</u></u>	<u><u>-\$3,000</u></u>	<u><u>-\$3,000</u></u>	<u><u>-\$3,000</u></u>
Return on investor's equity (capital loss/equity in investment)*	(60%)	(75%)	(92.3%)	(120%)

*Both the capital loss and the return on investor's equity are negative, as noted by the parentheses.

Basic Types of Securities

Transactions (4 of 9)

- Margin Trading
 - Essentials of Margin trading
 - Advantages:
 - Magnifies returns
 - Allows investors to spread their limited capital over a larger number of investments which promotes diversification
 - Disadvantages:
 - Magnifies losses
 - Cost of margin loan: the vehicle through which the borrowed funds are made available
 - Interest rate usually 1% to 3% above the **prime rate**: the interest rate charged to creditworthy business borrowers

Basic Types of Securities

Transactions (5 of 9)

- Margin Trading
 - Making Margin Transactions
 - **Margin account:** established to execute a margin transaction, an investor must contribute a minimum of \$2,000 in equity or 100% of the purchase price, whichever is less, in the form of cash or securities.
 - **Initial margin:** minimum amount of equity that must be provided by the investor
 - **Restricted account:** account with equity less than the initial margin requirement
 - **Maintenance margin:** absolute minimum amount of margin (equity) that an investor must maintain in the margin account at all times
 - **Margin call:** Investor receives this when an insufficient amount of maintenance margin exists and then has a short period of time (few hours to few days) to bring equity up above the maintenance margin.
 - **Debit balance:** amount of money being borrowed in the margin loan

Table 2.4 Initial Margin Requirements for Various Types of Securities

Security	Minimum Initial Margin (Equity) Required
Listed common and preferred stock	50%
Nasdaq OMX stocks	50%
Convertible bonds	50%
Corporate bonds	30%
U.S. government bills, notes, and bonds	10% of market value or 6% of principal
U.S. government agencies	10% of market value or 6% of principal
Options	Option premium plus 20% of market value of underlying stock
Futures	5% to 10% of the value of the contract

Basic Types of Securities

Transactions (6 of 9)

- Margin Trading
 - The Basic Margin Formula

$$\text{Margin} = \frac{\text{Value of securities} - \text{Debit balance}}{\text{Value of securities}} = \frac{V - D}{V}$$

- Example of Using Margin

$$\text{Margin} = \frac{V - D}{V} = \frac{\$6,500 - \$1,200}{\$6,500} = 0.815 = \underline{\underline{81.5\%}}$$

Basic Types of Securities

Transactions (7 of 9)

- Margin Trading
 - Return on Invested Capital

$$\begin{array}{l} \text{Return on} \\ \text{invested capital} \\ \text{from a margin} \\ \text{transaction} \end{array} = \frac{\begin{array}{c} \text{Total} \\ \text{current} \\ \text{income} \\ \text{received} \end{array} - \begin{array}{c} \text{Total} \\ \text{interest} \\ \text{paid on} \\ \text{margin loan} \end{array} + \begin{array}{c} \text{Market} \\ \text{value of} \\ \text{securities} \\ \text{at sale} \end{array}}{\begin{array}{c} \text{Market} \\ \text{value of} \\ \text{securities} \\ \text{at purchase} \end{array} - \begin{array}{c} \text{Market} \\ \text{value of} \\ \text{securities} \\ \text{at purchase} \end{array}} \end{array}$$

Amount of equity at purchase

- Example of Return on Invested Capital

$$\begin{array}{l} \text{Return on} \\ \text{invested capital} \\ \text{from a margin} \\ \text{transaction} \end{array} = \frac{\$100 - \$125 + \$7,500 - \$5,000}{\$2,500} = \frac{\$2,475}{\$2,500} = 0.99 = \underline{\underline{99\%}}$$

Basic Types of Securities Transactions (8 of 9)

- Margin Trading
 - Uses of Margin Trading
 - Magnify returns
 - **Pyramiding:** uses the paper profits in margin accounts to partly or fully finance the acquisition of additional securities.
 - **Excess margin:** more equity in the account than required
 - Constraint: when additional securities are purchased your margin account must be at or above the required initial margin level.
 - Risk associated with possible price declines in the margined securities

Basic Types of Securities Transactions (9 of 9)

- Short Selling
 - Essentials of Short Selling
 - **Short selling:** practice of selling borrowed securities
 - Investor borrows securities from a broker
 - Broker lends securities owned by other investors that are held in “street name”
 - Investor must make a deposit with the broker equal to the initial margin requirement applied to short-sale proceeds; broker retains proceeds from the short sale.
 - “Sell high and buy low”
 - Investors make money when stock prices go down

Table 2.5 The Mechanics of a Short Sale

<i>Step 1. Short sale initiated</i> 100 shares of borrowed stock are sold at \$50/share: Proceeds from sale to investor	\$5,000
<i>Step 2. Short sale covered</i> Later, 100 shares of the stock are purchased at \$30/share and returned to broker from whom stock was borrowed: Cost to investor	-\$3,000
Net profit	\$2,000

Table 2.6 Margin Positions on Short Sales

Line	Item	A Initial Short Sale Price	B Subsequent Share Prices	C
1	Price per share	\$ 50	\$ 30	\$ 70
2	Proceeds from initial short sale [(1) × 100 shares]	\$5,000		
3	Initial margin deposit [0.50 × (2)]	\$2,500		
4	Total deposit with broker [(2) + (3)]	\$7,500	\$ 7,500	\$ 7,500
5	Current cost of buying back stock [(1) × 100 shares]	\$5,000	\$ 3,000	\$ 7,000
6	Account equity [(4) – (5)]	\$2,500	\$ 4,500	\$ 500
7	Actual margin [(6) ÷ (5)]	50%	150%	7.14%
8	Maintenance margin position [(7) > 30%?]	OK	OK	Margin call*

*Investor must either (a) deposit at least an additional \$1,600 with the broker to bring the total deposit to \$9,100 (i.e., \$7,500 + \$1,600), which would equal the current value of the 100 shares of \$7,000 plus a 30% maintenance margin deposit of \$2,100 (i.e., $0.30 \times \$7,000$); or (b) buy back the 100 shares of stock and return them to the broker.

Basic Types of Securities Transactions

- Short Selling
 - Advantages
 - Chance to profit when stock price declines
 - Disadvantages
 - Limited return opportunities: stock price cannot go below \$0.00
 - Unlimited risks: stock price can go up an unlimited amount
 - If stock price goes up, short seller still needs to buy shares to pay back the “borrowed” shares to the broker
 - Short sellers never earn dividend income and must pay to the lender any dividends paid out during the short-sale transaction

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 3 Part II

Investment Information and
Securities Transactions

Investment Research and Planning (1 of 2)

- There are a wide range of options for conducting investment research. The internet has reduced the cost of executing trades and provides access to tools formerly restricted to professionals.
 - Getting Started in Investment Research
 - A Word of Caution About Internet Trading

Investment Research and Planning (2 of 2)

- Getting Started in Investment Research
 - Investment Education Sites
 - Offer articles, tutorials, and online classes
 - Examples: **Wise Bread, Kahn Academy, The Motley Fool, Investopedia, CNN Money Essentials**
 - Investment Tools
 - Planning: Develop financial plans, set investment goals
 - Screening: Screen stocks on a wide variety of characteristics
 - Charting: Plot charts that track the performance of investments over time
 - Stock Quotes and Portfolio Tracking: Keep track of your investments by obtaining current stock quotes as well as your overall portfolio value

Figure 3.1 Tools & Calculators

At sites like www.calculator.net you'll find many tools and calculators that you can use to solve specific personal finance problems such as evaluating loan offers, saving for retirement, and making sound investment decisions. Screenshot of

<https://www.calculator.net/financial-calculator.html>

Financial Calculators

The following is a complete list of our financial calculators.

Mortgage and Real Estate

[Mortgage Calculator](#)
[Real Estate Calculator](#)
[Amortization Calculator](#)
[Mortgage Payoff Calculator](#)
[Refinance Calculator](#)
[House Affordability Calculator](#)
[Rent Calculator](#)
[Debt-to-Income Ratio Calculator](#)
[Rental Property Calculator](#)
[APR Calculator](#)
[FHA Loan Calculator](#)
[VA Mortgage Calculator](#)
[Down Payment Calculator](#)
[Rent vs. Buy Calculator](#)

Auto

[Auto Loan Calculator](#)
[Cash Back or Low Interest Calculator](#)
[Auto Lease Calculator](#)

Investment

[Interest Calculator](#)
[Investment Calculator](#)
[Finance Calculator](#)
[Savings Calculator](#)
[Compound Interest Calculator](#)
[Interest Rate Calculator](#)
[CD Calculator](#)
[Average Return Calculator](#)
[ROI Calculator](#)
[Payback Period Calculator](#)
[Present Value Calculator](#)

Retirement

[Retirement Calculator](#)
[Pension Calculator](#)
[Social Security Calculator](#)
[Annuity Calculator](#)
[Annuity Payout Calculator](#)
[401K Calculator](#)
[Roth IRA Calculator](#)
[IRA Calculator](#)

Tax and Salary

[Take-Home-Paycheck Calculator](#)
[Income Tax Calculator](#)
[Salary Calculator](#)
[Marriage Tax Calculator](#)
[Estate Tax Calculator](#)

Other

[Loan Calculator](#)
[Payment Calculator](#)
[Currency Calculator](#)
[Personal Loan Calculator](#)
[Inflation Calculator](#)
[Lease Calculator](#)
[Budget Calculator](#)
[Credit Card Calculator](#)
[Credit Cards Payoff Calculator](#)
[Debt Payoff Calculator](#)
[Debt Consolidation Calculator](#)
[Repayment Calculator](#)
[Student Loan Calculator](#)
[College Cost Calculator](#)
[Sales Tax Calculator](#)

Figure 3.2 Zacks Stock Screener

The screenshot shows the Zacks Stock Screener homepage. At the top, there's a banner for "Gorilla Trades" featuring "CURRENT PORTFOLIO LEADERS" with three entries: Monster Beverage (+92%), Global Payments (+89%), and Advance Auto Parts (+73%). Below the banner is a call-to-action: "Sign up today for your FREE 30-Day Trial -- Click Here! →". The navigation menu includes Home, Stocks, Funds, Earnings, Screening, Finance, Portfolio, Education, Services, a search bar, and links for Join, Sign In, and Help.

A central callout box states: "Whether you're a fundamentalist researching a company from top to bottom or a technician more interested in stock charting, you can pick stocks on a multitude of selection criteria that is most relevant to you with this stock screener. Or you can use Zacks' predefined stock screens to help you find the types of companies that meet your criteria."

The main feature is a detailed screening tool with two columns:

Category	Item	Operator	Value	Condition	Action
Popular Criteria	Zacks Rank	>=	1	PREMIUM	Add
	Zacks Industry Rank	>=		PREMIUM	Add
	Growth Score	>=	A		Add
	Value Score	>=	A		Add
	Momentum Score	>=	A		Add
	52 Week High	>=			Add
	Market Cap	>=			Add
	Last EPS Surprise (%)	>=			Add
	P/E (F1)	>=			Add
	# of Brokers in Rating	>=			Add
	Optionable	EQUAL	---		Add
	% Change F1 Est. (4 weeks)	>=			Add
	Div. Yield %	>=			Add
	Avg Volume	>=			Add

At the bottom of the screen, there are two calls-to-action: "Get the Top 5 Valuation Secrets" and "Test How Profitable Your Screens Are".

A Word of Caution About Internet Trading

- Investing online still involves risk
- Exercise same cautions as regular investing
- Remember: there is no live broker to act as a “safety net”
- Be skeptical of “free” advice online
- Know what you are buying and from whom
- Watch out for frequent trading
 - High transaction costs
 - Higher taxes on short-term gains
- Beware of the risks of margin trading

Types and Sources of Investment Information

- Investment information can be either descriptive or analytical:
- **Descriptive Information** – factual data on past performance of the economy, financial markets, an industry, a company, or even a specific investment
- **Analytical Information** – available current data in conjunction with projections and recommendations about potential investments
 - Types of information
 - Sources of information

Figure 3.3 A Report Containing Descriptive Information

McDonald's Corporation (MCD)		Add to watchlist
NYSE - NYSE Delayed Price. Currency in USD		<input type="text"/> Quote Lookup Search
166.41	+3.10 (+1.90%)	Buy Sell
At close: 4:01PM EDT		
Summary	Chart	Conversations
Historical Data	Profile	Financials
Analysis	Options	Holders
Sustainability		
		Currency in USD
Valuation Measures	Trading Information	Get live quotes and news on new tabs
Market Cap (intraday) ⁵	129.1B	Stock Price History
Enterprise Value ³	157.62B	Beta
Trailing P/E ¹	24.41	52-Week Change ³
Forward P/E ¹	20.32	S&P500 52-Week Change ³
PEG Ratio (5 yr expected) ¹	2.52	52 Week High ³
Price/Sales (ttm)	5.98	52 Week Low ³
Price/Book (mrq)	N/A	50-Day Moving Average ³
Enterprise Value/Revenue ³	7.30	200-Day Moving Average ³
Enterprise Value/EBITDA ⁶	15.95	
	Share Statistics	
Avg Vol (3 month) ³	3.4M	
Avg Vol (10 day) ³	4.79M	
Fiscal Year	Shares Outstanding ⁵	775.8M
Fiscal Year Ends	Dec 31, 2017	Float
Most Recent Quarter (mrq)	Jun 30, 2018	% Held by Insiders ¹
		0.09%
		% Held by Institutions ¹
Profitability		68.62%
Profit Margin	25.20%	Shares Short (Aug 31, 2018) ⁴
Operating Margin (ttm)	39.16%	Short Ratio (Aug 31, 2018) ⁴
		2.16
Management Effectiveness	Short % of Float (Aug 31, 2018) ⁴	0.83%
Return on Assets (ttm)	16.14%	Short % of Shares Outstanding (Aug 31, 2018) ⁴
Return on Equity (ttm)	N/A	0.84%
	Shares Short (prior month Jul 31, 2018) ⁴	6.61M
Income Statement	Dividends & Splits	
Revenue (ttm)	21.59B	Forward Annual Dividend Rate ⁴
Revenue Per Share (ttm)	27.24	Forward Annual Dividend Yield ⁴
Quarterly Revenue Growth (oy)	-11.50%	Trailing Annual Dividend Rate ³
Gross Profit (ttm)	10.62B	Trailing Annual Dividend Yield ³
EBITDA	9.88B	5 Year Average Dividend Yield ⁴
Net Income Avi to Common (ttm)	5.45B	Payout Ratio ⁴
Diluted EPS (ttm)	6.82	58.21%
Quarterly Earnings Growth (oy)	7.30%	Dividend Date ³
		Dec 17, 2018
Balance Sheet	Ex-Dividend Date ⁴	
Total Cash (mrq)	1.62B	Aug 31, 2018
Total Cash Per Share (mrq)	2.09	Last Split Factor (new per old) ²
Total Debt (mrq)	31B	2/1
Total Debt/Equity (mrq)	N/A	
Current Ratio (mrq)	1.47	Last Split Date ³
Book Value Per Share (mrq)	-7.54	Mar 8, 1999
Cash Flow Statement		
Operating Cash Flow (ttm)	5.78B	
Levered Free Cash Flow (ttm)	4.95B	

Types and Sources of Information (1 of 9)

- Types of Information
 - Economic and current event information
 - Industry and company information
 - Information on alternative investments
 - Price information
 - Information on personal investment strategies

Types and Sources of Information (2 of 9)

- Sources of Information
 - Economic and Current Event Information
 - Financial journals:
 - **Wall Street Journal**: Best-known source; reports daily world, national, regional, and corporate news
 - **Barron's**: second credible source, published weekly
 - **Investor's Business Daily**: contains more detailed price and market data than WSJ

Types and Sources of Information

(3 of 9)

- Sources of Information
 - Economic and Current Event Information
 - Institutional News
 - Monthly economic letters of several of the banks in the Federal Reserve System provide useful economic information
 - Wire services: **Dow Jones, Bloomberg Financial Services, AP, UPI**
 - Websites specializing in financial news:
 - **CNN Business**
 - **Marketwatch**
 - Business Periodicals:
 - Some present general business and economic articles, others cover securities markets and related topics, or specific industries.
 - Business and Finance-oriented periodicals: **Bloomberg Businessweek, Fortune, Forbes, and The Economist** provide in-depth articles, 2012, wide range of business topics

Types and Sources of Information (4 of 9)

- Sources of Information
 - Economic and Current Event Information
 - Government Publications:
 - **Economic Report of the President**, provides broad view of current and expected state of economy
 - **Federal Reserve Bulletin**,
<https://www.federalreserve.gov/>
 - Department of Commerce
 - **Survey of Current Business**
 - U.S. Census Bureau
 - **Quarterly Financial Report**
 - Special Subscription Services: **Kipling Letter**

Types and Sources of Information (5 of 9)

- Sources of Information
 - Industry and Company Information
 - Trade publications: periodicals devoted to a specific industry
 - Examples: **Chemical Week, American Banker, Computerworld, Industry Week, Oil and Gas Journal, and Public Utilities Fortnightly**
 - General business periodicals: **Wall Street Journal, Business Week, Forbes, Fortune**
 - Company Web Sites:
 - Investor information
 - Annual reports
 - Filings
 - Financial and press releases
 - Free and subscription resources online that emphasize industry and company information

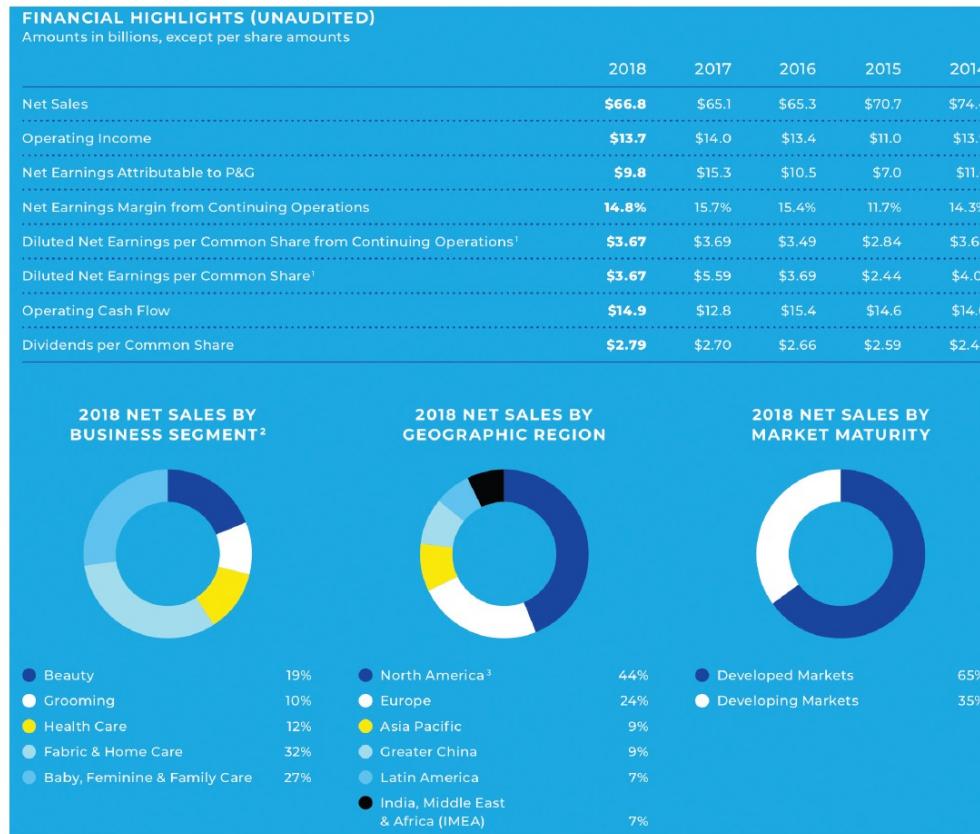
Table 3.1 Online Sources for Industry and Company Information

Website	Description	Cost
D&B Hoover's Online (hoovers.com)	Reports and news on public and private companies with in-depth coverage of 43,000 of the world's top firms	Varies according to level of service
CNET (news.cnet.com)	One of the best sites for high-tech news, analysis, and breaking news. Has great search capabilities and links.	Free
Yahoo! Finance (finance.yahoo.com)	Provides information on companies gathered from around the web: stock quotes, news, investment ideas, research, financials, analyst ratings, insider trades, and more.	Free
Market Watch (marketwatch.com)	Latest news from various wire services. Searchable by market or industry. Good for earnings announcements and company news.	Free

Types and Sources of Information (6 of 9)

- Sources of Information
 - Industry and Company Information
 - **Regulation FD (fair disclosure rule):** requires critical company information to be disclosed simultaneously to investment professionals and the public via press releases or SEC filings
 - **Stockholders' Report (Annual Report):** report published yearly by publicly held corporations
 - **Form 10-K:** annual statement filed with SEC by all companies with publicly traded stock
 - Freedgar.com: SEC-maintained website with free access to SEC filings
 - Comparative Data Sources: Dun & Bradstreet's **Key Business Ratios, Risk Management Association's and the Almanac of Business & Industrial Financial Ratios**

Figure 3.4 Pages from Procter & Gamble's 2018 Stockholders' Report



The excerpt from Procter & Gamble's Annual Report quickly acquaints the investor with some key information on the firm's operations over the past year. (Source: Procter & Gamble annual report, <http://www.pginvestor.com/Cache/1001242072.PDF?O=PDF&T=&Y=&D=&FID=1001242072&iid=4004124>, Accessed November 8, 2018.) Courtesy of Procter & Gamble

Types and Sources of Information

(7 of 9)

- Sources of Information
 - Industry and Company Information
 - Subscription Services
 - **Standard & Poor's Corporation (S&P)**: basic news and market commentary is free; Bloomberg Businessweek
 - **Mergent**: equity and bond portraits, corporate research
 - **Value Line Investment Survey**: provides online access to data, graphing, portfolio tracking and technical indicators
 - Brokerage Reports: research reports available to brokerage firms' clients
 - **Back-office research reports**: analysis of and recommendations on prospects for the securities markets, specific industries, or specific securities.
 - **Investment Letters**: newsletters that provide, on a subscription basis, the analyses, conclusions, and recommendations of their authors.

Types and Sources of Information

(8 of 9)

- Sources of Information
 - Price Information
 - **Quotations:** contain price information about various types of securities, including current price data and statistics on recent price movements; CNBC TV has real-time stock quotes
 - Other Online Investment Information Sources
 - **Financial Portals:** supersites that combine investing features with other personal finance features
 - Bond Sites: online resources for bond and interest rate information; Bloomberg and Wall Street Journal
 - Mutual Fund Sites: online resources for mutual fund information
 - International Sites: online resources for global investing, from country research to foreign currency exchange
 - Investment Discussion Forums: websites where investors can exchange opinions on stocks and investing strategies

Table 3.2 Symbols for Some Well-Known Companies

Company	Symbol	Company	Symbol
Alphabet	GOOG	Johnson & Johnson	JNJ
Amazon.com, Inc.	AMZN	McDonald's Corporation	MCD
Apple	AAPL	Microsoft	MSFT
AT&T	T	Netflix	NFLX
Bank of America	BAC	Nike	NKE
Costco Wholesale	COST	Nordstrom	JWN
Cisco Systems	CSCO	Oracle	ORCL
The Coca-Cola Company	KO	PepsiCo, Inc	PEP
Estee Lauder Companies	EL	Ralph Lauren	RL
ExxonMobil	XOM	Southwest Airlines	LUV
Facebook	FB	Starbucks	SBUX
FedEx	FDX	Target	TGT
Hewlett-Packard	HPQ	United Parcel Service	UPS
Intel	INTC	Walmart Stores	WMT
Int'l Business Machines	IBM	Walt Disney	DIS

Table 3.3 Popular Investment Websites (1 of 3)

The following websites are just a few of the thousand of sites that provide investing information. Unless otherwise mentioned, all are free.

Website	Description
CNN Business	Covers domestic and foreign markets. Provides access to market data and has a heavy emphasis on Silicon Valley.
Motley Fool	Comprehensive and entertaining site with educational features, research, news, and message boards. Model portfolios cover a variety of investment strategies. Free but offers premium services, such as its Stock Advisor monthly newsletter, for a fee.
Yahoo! Finance	Simple design, content-rich; easy to find information quickly. Includes financial news, price quotes, portfolio trackers, bill paying, personalized home page, and a directory of other major sites.
MarketWatch	A site devoted more to investment data and numbers rather than news, MarketWatch provides quotes and charts that update throughout the trading day.

Table 3.3 Popular Investment Websites (2 of 3)

Website	Description
Investing in Bonds	Developed by the Securities Industry and Financial Markets Association; good for novice investors. Bond education, research reports, historical data, and links to other sites. Searchable database.
Treasury Direct	Run by U.S. Treasury Department. Information about U.S. savings bonds and Treasury securities. Can buy Treasury securities online through Treasury Direct program.

Table 3.3 Popular Investment Websites (3 of 3)

Website	Description
Morningstar	Profiles mutual funds with ratings; screening tools, portfolio analysis and management; fund manager interviews, e-mail newsletters; educational sections. Advanced screening and analysis tools are available for a fee.
Mutual Fund Investor's Center	Not-for-profit, easy-to-navigate site from the Mutual Fund Education Alliance with investor education, search feature, and links to profiles of funds, calculators for retirement, asset allocation, and college planning.
MAXfunds	Offers several custom metrics and data points to help find the best funds and give investors tools other than past performance to choose funds. Covers more funds than any other on- or offline publication. MAXadvisor Powerfund Portfolios, a premium advisory service, is available for a fee.

Types and Sources of Information (9 of 9)

- Sources of Information
 - Avoiding Scams
 - Beware of stock manipulators posting false news or overly optimistic opinions
 - Always know your source
 - Beware of “pump-and-dump”—promoters who hype a stock and sell out on the inflated prices
 - E.g., “Rudy” sports drink, cryptocurrencies
 - Beware of “get-rich-quick”—promoters selling worthless investments to naïve buyers
 - The Commodities Futures Trading Commission (CFTC) issued the following advice:
 - Don’t purchase digital coins or tokens based on a single tip, especially if that tip came via social media.
 - Be skeptical of ads or websites that promote the idea that you can get rich fast by investing in cryptocurrencies.
 - No investment is guaranteed. If someone tells you an investment has no risk, do not invest.

Understanding Market Averages and Indexes (1 of 9)

- Studying the performance of market averages and indexes allow you to conveniently
 1. Gauge general market conditions
 2. Compare your portfolio's performance to that of a large, diversified (market) portfolio
 3. Study the market's historical performance and use that as a guide to understand future market behavior
- Stock Market Averages and Indexes
- Bond Market Indicators

Understanding Market Averages and Indexes (2 of 9)

- Stock Market Averages and Indexes
 - **Averages:** reflect the arithmetic average price behavior of a representative group of stocks at a given point in time.
 - **Indexes:** measure the current price behavior of a representative group of stocks in relation to a base value set at an earlier point in time.

Understanding Market Averages and Indexes (3 of 9)

- Stock Market Averages and Indexes
 - The Dow Jones Averages

- **Dow Jones Industrial Average (DJIA):** average made up of 30 stocks, most of which are issued by large, well-respected companies with long operating histories from industry sectors such as technology, transportation, banking, energy, healthcare, consumer products and many others.
 - Price-weighted (stocks with higher prices get more weight than stocks with lower prices)
 - Stock makeup can change due to a merger or bankruptcy as well as when Dow Jones believes the average does not reflect the broader market.

Equation 3.1

DJIA =

$$\frac{\text{Closing share price of stock 1} + \text{Closing share price of stock 2} + \dots + \text{Closing share price of stock 30}}{\text{DJIA divisor}}$$

Understanding Market Averages and Indexes (4 of 9)

- Stock Market Averages and Indexes
 - The Dow Jones Averages
 - **Dow Jones Transportation Average:** based on 20 stocks, including railroads, airlines, freight forwarders and mixed transportation companies
 - **Dow Jones Utility Average:** comprised of 15 public utility stocks
 - **Dow Jones Composite Average:** made up of 65 stocks, including 30 industrials, 20 transports and 15 utilities
 - Dow Jones also publishes numerous indexes including:
 - U.S. Total Stock Market Index
 - Indexes for various sectors based on company size (e.g. large cap, mid cap, small cap) or industry.
 - Indexes that track global equities market, developed and emerging stock markets, and regional markets in Asia, Europe, the Americas, the Middle East, and Africa.

Understanding Market Averages and Indexes (5 of 9)

- Stock Market Averages and Indexes
 - Standard & Poor's Indexes: Many investors feel they provide a more broad-based and representative measure of general market conditions than do the Dow averages. They are widely used, frequently as a basis for estimating "market return"
 - **S&P 500 Index:** Common stock index comprising 500 large (but not necessarily the largest) companies

$$\text{S \& P 500 Index} = \frac{\text{Closing market capitalization of stock 1} + \text{Closing market capitalization of stock 2} + \dots + \text{Closing market capitalization of stock 500}}{\text{Divisor}}$$

Understanding Market Averages and Indexes (6 of 9)

- Stock Market Averages and Indexes
 - **Standard & Poor's Indexes:**
 - **S&P 100 Index:** comprises 100 large companies, each of which must have stock options available for trade
 - **S&P 400 MidCap Index:** comprises 400 medium-sized companies (accounts for 7% of U.S. equity market)
 - **S&P 600 SmallCap Index:** comprises 600 small-sized companies (account for 3% of U.S. equity market)
 - **S&P Total Market Index:** comprises all stocks listed on NYSE and Nasdaq

Figure 3.5 The DJIA Average Compared to the S&P 500 Index from June 1, 2016 to June 1, 2018



During this period, both indexes followed a rising trend, with the DJIA gaining about 38% and the S&P 500 gaining about 30%. (Source: Yahoo! Finance screenshot, <http://www.finance.yahoo.com>.)

Understanding Market Averages and Indexes (7 of 9)

- Stock Market Averages and Indexes
 - **NYSE, NYSE MKT, and Nasdaq Indexes:** each index reflects the movement of stocks listed on its exchange
 - NYSE Composite Index: includes all stocks listed on the NYSE; behavior of index is normally similar to that of the DJIA and S&P 500 indexes.
 - NYSE MKT Composite Index: reflects the price of all shares traded on the NYSE MKT Exchange; tends to move in the general direction, but not exactly as the S&P and NYSE indexes
 - **Nasdaq Stock Market Indexes:** reflect Nasdaq stock market activity
 - Composite Index: most comprehensive, calculated using the more than 3,000 common stocks traded on the Nasdaq
 - Nasdaq 100: includes 100 of the largest domestic and international nonfinancial companies listed on Nasdaq
 - Biotech and Computer Indexes
 - Movements of these indexes are often sharper than those of the other major indexes

Understanding Market Averages and Indexes (8 of 9)

- Stock Market Averages and Indexes
 - Value Line Indexes: stock indexes constructed by equally weighting the price of each stock included to eliminate the bias of stocks with large total market values.
 - **Value Line Composite Index:** includes nearly 1,700 stocks in the Value Line Investment Survey that are traded on the NYSE, NYSE MKT , and OTC markets.
 - Other Averages and Indexes
 - Frank Russell Company (pension advisory firm) publishes three primary indexes:
 - Russell 1000: 1,000 largest companies
 - Russell 2000: 2,000 small to medium-sized companies
 - Russell 3000: 3,000 companies in the Russell 1000 and 2000
 - Wall Street Journal publishes a number of global and foreign stock market indexes:
 - World Index
 - Europe/Australia/Far East (EAFE MSCI) Index

Understanding Market Averages and Indexes (9 of 9)

- Bond Market Indicators
 - Bond Yields
 - **Bond yield:** the return an investor would receive on a bond if it were purchased and held to maturity
 - Reported as annual rates of return
 - Reflects the interest payments an investor receives as well as gains or losses in the bond's value from the date of purchase until it matures
 - Bond Indexes
 - **Dow Jones Corporate Bond Index:** equal-weighted index of 96 U.S.-issued corporate bonds:
 - 48 industrial
 - 36 financial
 - 12 utility

Making Securities Transactions (1 of 13)

- You need to understand how to make securities transactions based on the information you've used to locate attractive security investments.
 - The Role of Stockbrokers
 - Basic Types of Orders
 - Online Transactions
 - Transaction Costs
 - Investor Protection: SIPC and Arbitration

Making Securities Transactions (2 of 13)

- The Role of Stockbrokers
 - **Stockbrokers:** (also called **account executives, investment executives, and financial consultants**) act as intermediaries between buyers and sellers of securities
 - Must be licensed by both the SEC and the securities exchanges where they place orders
 - Client places order with stockbroker. Stockbroker works for a brokerage firm that maintains memberships on the securities exchanges, and members of the securities exchange execute orders that the brokers in the firm's various sales offices transmit to them
 - For transactions in markets such as Nasdaq, brokerage firms typically transmit orders to **market makers**; these transactions are executed rapidly due to competition among dealers

Making Securities Transactions (3 of 13)

- The Role of Stockbrokers
 - Brokerage Services
 - Primary service is to execute clients' purchase and sale transactions at the best possible price
 - Client's security certificates are typically held in street name
 - Street name:** stock certificates issued in brokerage firm's name, but held in trust for the client who actually owns them
 - Research information is often provided on specific stocks or economic conditions
 - Statements showing detailed account transactions are provided

Making Securities Transactions (4 of 13)

- The Role of Stockbrokers
 - Types of Brokerage Firms
 - **Full-Service Broker:** offers an investor a full array of brokerage services such as providing investment advice and information, holding securities in street name, offering online brokerage services and extending margin loans
 - **Premium Discount Broker:** focus primarily on making transactions for customers.
 - Charge low commissions
 - Limited free research information and investment advice
 - **Basic Discount Broker:** typically deep-discount brokers through whom investors can execute trades electronically online via a commercial service, on the Internet, or by phone.

Table 3.4 Select Full-Service, Premium Discount, and Basic Discount Brokers

Full-Service Broker	Premium Discount Broker	Basic Discount Broker
Morgan Stanley	Bank of America	Firstrade
Merrill Lynch	Charles Schwab	Ally Invest
UBS Financial Services	E* Trade	Robin hood
Wells Fargo	Fidelity.com	Interactive Brokers
	TD Ameritrade	
	Wells Trade	

Making Securities Transactions

(5 of 13)

- The Role of Stockbrokers
 - Selecting a Stockbroker
 - Find someone who understands your investment goals
 - Consider the investing style and goals of your stockbroker
 - Be prepared to pay higher fees for advice and help from full-service brokers
 - Ask for referrals from friends or business associates
 - Beware of **churning**: increasing commissions by causing excessive trading of clients' accounts

Making Securities Transactions

(6 of 13)

- The Role of Stockbrokers
 - Opening an Account
 - Single or Joint
 - Joint accounts are most common between spouses or parent and child
 - **Custodial account:** brokerage account of a minor that requires a parent or guardian to be involved in all transactions
 - Cash or Margin
 - **Cash account:** brokerage account where customer can make only cash transactions
 - **Margin account:** brokerage account in which brokerage firm extends borrowing privileges to a customer
 - **Wrap account:** account that allows brokerage customers with portfolios worth \$100,000 or more to shift stock selection decisions to a professional money manager, in return for a flat annual fee

Making Securities Transactions

(7 of 13)

- The Role of Stockbrokers
 - Odd-Lot and Round-Lot Transactions
 - **Odd lot:** order consists of less than 100 shares of stock
 - **Round lot:** orders for a 100-share unit or multiples thereof

Making Securities Transactions

(8 of 13)

- Basic Types of Orders

- **Market Order:**

- Orders to buy or sell stock at the best price available at the time the order is placed
 - Quickest way to fill order

- **Limit Order:**

- Order to buy at or below a specified price (limit buy order) or to sell at or above a specified price (limit sell order)
 - Fill-or-Kill: order cancelled if not immediately filled
 - Day Order: order expires at the end of the day if not filled
 - Good-'til-Canceled (GTC) Order: Order remains in effect for six months unless executed, canceled, or renewed

Making Securities Transactions

(9 of 13)

- Basic Types of Orders

- **Stop-Loss Order:**

- “Suspended order” placed to sell a stock if the price reaches or falls below a specified level
 - Orders can be day orders or GTC orders
 - Once activated, becomes a market order
 - Used to protect against adverse effects of a rapid decline in share price
 - Can also use stop orders to buy stocks, such as to limit risk on short sales
 - Stop-Limit Order: order to buy or sell stock at a given or better price once a stipulated stop price has been met
 - Prevents sales at an undesirable price
 - No sale may occur if price continues to decline

Making Securities Transactions (10 of 13)

- Online Transactions
 - Day Trading
 - **Day trader:** an investor who buys and sells stocks quickly throughout the day in hopes of making quick profits
 - Highly risky, especially if used with margin trading
 - High brokerage commissions due to frequent trading
 - Technical and Service Problems
 - Service outages
 - Slowdowns in process of confirming trades can lead to duplicate orders
 - Long wait times on hold when using telephone

Making Securities Transactions

(11 of 13)

- Online Transactions
 - Tips for Successful Online Trades
 - Know how to place and confirm your order before you begin trading
 - Verify the stock symbol of the security you wish to buy
 - Use limit orders
 - Don't ignore the online reminders that ask you to check and recheck
 - Don't get carried away: have a strategy and stick to it to avoid impulse trading
 - Open accounts with two brokers
 - Double-check orders for accuracy



Making Securities Transactions

(12 of 13)

- Transaction Costs
 - Fixed commissions: apply to small transactions, the ones most often made by individual investors
 - Negotiated commission: commission to which both parties agree; used on large institutional transactions
- Investor Protection: SIPC and Arbitration
 - Securities Investor Protection Corporation (SIPC): nonprofit membership corporation authorized by the Securities Investor Protection Act of 1970 to protect consumer accounts against the consequences of financial failure of the brokerage firm.
 - Insures each customer's account for up to \$500,000 for securities and \$250,000 for cash
 - Does not guarantee that the investor will recover the dollar value of the securities; only that the securities themselves will be returned.

Making Securities Transactions

(13 of 13)

- Investor Protection: SIPC and Arbitration
 - Mediation:** informal, voluntary dispute resolution process between a customer and a broker
 - Nonbinding if parties cannot agree
 - Arbitration:** Formal dispute resolution process that requires customer and broker to present arguments before a panel
 - Binding arbitration: requires customer to accept arbitration panel's decisions and give up right to sue broker

Investment Advisors and Investment Clubs (1 of 5)

- **Investment advisor:** an individual or firm that provides investment advice, typically for a fee
- **Investment clubs:** legal partnership binding a group of investors (partners) to a specific organizational structure, operating procedure and purpose.
 - Using an Investment Advisor
 - Investment Clubs

Investment Advisors and Investment Clubs (2 of 5)

- Using an Investment Advisor
 - Regulation of Advisors
 - Investment Advisors Act of 1940 ensures that investment advisors make full disclosure of information about their backgrounds, conflicts of interest, and so on
 - Advisors are required to be registered and file periodic reports with the SEC
 - No law or regulatory body guarantees competence
 - Look for advisors with professional designations
 - CFA, CIMA, CIC, CFP, ChFC, CLU, and CPA
 - Robo-Advisors
 - The Cost and Use of Investment Advice

Investment Advisors and Investment Clubs (3 of 5)

- Using an Investment Advisor
 - Robo-Advisors
 - Investors get investment advice generated by computer algorithms rather than from a human advisor
 - Essentially they are programs that gather various financial data from clients and using those inputs, generate automated investment recommendations
 - Benefits include helping investors make unbiased decisions, providing an automated approach to rebalancing a portfolio, and being cost efficient
 - Only as good as the algorithm used to generate advice

Investment Advisors and Investment Clubs (4 of 5)

- Using an Investment Advisor
 - The Cost and Use of Investment Advice
 - Typical professional investment advice fees
 - Small portfolios: annual fees between 2% and 3% of funds under management
 - Large portfolios: annual fees between 0.25% and 0.75% of funds under management
 - Online advisors are much less expensive: Free or annual fee
 - Look for advisors with good performance record and overall reputation
 - Expect lots of questions from good advisor to assess your investing expertise
 - Online advisors lack the “human touch” aspect

Investment Advisors and Investment Clubs (5 of 5)

- Investment Clubs
 - A legal partnership binding a group of investors to a specified organizational structure, operating procedure, and purpose.
 - Goal of most clubs is to earn favorable long-term returns by making investments according to the group's investment objectives.
 - Investors pool their knowledge and money in a jointly owned and managed portfolio.
 - Members make stock recommendations and analyze stock performance.
 - Better **Investing Community** assists in organizing clubs and provides educational tools
 - Better **Investing Community** has over 200,000 individual and club investors and more than 16,000 investment clubs

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 4

Return and Risk

with Prof Nugent

The Concept of Return (1 of 7)

- **Return:** the profit from an investment—that is, the reward for investing.
 - Components of Return
 - Why Return is Important
 - Level of Return
 - Historical Returns
 - The Time Value of Money and Returns

The Concept of Return (2 of 7)

- Components of Return
 - Income:** cash that investors periodically receive from the investment.
 - Capital Gains (or Losses):** the difference between the proceeds from the sale of an investment and its original purchase price.
 - Total Return:** the sum of the income and the capital gain (loss) earned on an investment over a specified period of time.

Table 4.1 Profiles of Two Investments In 2017

TABLE 4.1 PROFILES OF TWO INVESTMENTS IN 2017

	Investment	
	Target	Discover
Starting price (Jan. 3, 2017)	\$72.75	\$ 72.73
Cash received		
1st quarter	\$ 0.60	\$ 0.30
2nd quarter	\$ 0.60	\$ 0.30
3rd quarter	\$ 0.62	\$ 0.35
4th quarter	<u>\$ 0.62</u>	<u>\$ 0.35</u>
Total income (for year)	<u>\$ 2.44</u>	<u>\$ 1.30</u>
Ending price (Dec. 29, 2017)	\$65.25	\$ 76.92

Table 4.2 Total Returns of Two Investments

TABLE 4.2 TOTAL RETURNS OF TWO INVESTMENTS

Return	Investment	
	Target	Discover
Income	\$2.44	\$1.30
Capital gain (loss)	-\$7.50	\$4.19
Total return	<u>-\$5.06</u>	<u>\$5.49</u>

The Concept of Return (3 of 7)

- Why Return is Important
 - The rate of return indicates how rapidly an investor can build wealth.
 - Historical Performance
 - Provides a basis for future expectations
 - Does not guarantee future performance
 - Expected Return
 - Return an investor thinks an investment will earn in the future
 - Determines what an investor is willing to pay for an investment or if they are willing to make an investment

Table 4.3 Historical Investment Data for ExxonMobil Corp. (XOM)

TABLE 4.3 HISTORICAL INVESTMENT DATA FOR EXXONMOBIL CORP. (XOM)

Year	Market Value (Price)				Yearly Total Return	
	(1) Dividend Income	(2) Beginning of Year	(3) End of Year	(4) (3) – (2) Capital Gain	(5) (1) + (4)	(6) (5) ÷ (2)
2008	\$1.55	\$93.51	\$81.64	-\$11.87	-\$10.32	-11.0%
2009	\$1.66	\$81.64	\$69.15	-\$12.49	-\$10.83	-13.3%
2010	\$1.74	\$69.15	\$74.55	\$ 5.40	\$ 7.14	10.3%
2011	\$1.85	\$74.55	\$86.00	\$ 11.45	\$13.30	17.8%
2012	\$2.18	\$86.00	\$88.71	\$ 2.71	\$ 4.89	5.7%
2013	\$2.46	\$88.71	\$99.75	\$ 11.04	\$13.50	15.2%
2014	\$2.70	\$99.75	\$92.83	-\$ 6.92	-\$ 4.22	-4.2%
2015	\$2.88	\$92.83	\$77.46	-\$15.37	-\$12.49	-13.5%
2016	\$2.98	\$77.46	\$90.89	\$13.43	\$16.41	21.2%
2017	<u>\$3.06</u>	\$90.89	\$85.03	<u>-\$ 5.86</u>	<u>-\$ 2.80</u>	<u>-3.1%</u>
Average	\$2.31			-\$ 0.85	\$ 1.46	2.5%

(Source: Based on Dividends and end-of-year closing prices were obtained from Yahoo! Finance.)

The Concept of Return (4 of 7)

- Level of Return
 - Internal characteristics
 - Type of investment (e.g., stocks or bonds)
 - Quality of the firm's management
 - Whether the firm finances its operations with debt or equity
 - External Forces
 - Political environment
 - Business environment
 - Economic environment
 - Direction of price changes:
 - **Inflation (Deflation):** up (down)
 - Generally speaking, when investors expect inflation to occur, they demand higher returns.
 - The way that investment returns respond to unexpected changes in inflation will vary by type of investment, and that response can be influenced by investors' beliefs about how policymakers will react to changing inflation.

The Concept of Return (5 of 7)

- Historical Returns
 - Returns vary over time and by type of investment
 - Significant differences exist among the average annual rates of return realized on stocks, bonds, and bills

Table 4.4 Historical Returns for Major Asset Classes (1900-2017)

TABLE 4.4 HISTORICAL RETURNS FOR MAJOR ASSET CLASSES (1900–2017)

	Average Annual Rates of Return			
	Stocks	Long-Term Government Bonds	Short-Term Government Bills	Inflation
Australia	12.2%	6.1%	4.5%	3.8%
Belgium	10.2%	5.9%	4.7%	6.0%
Canada	10.2%	5.6%	4.5%	3.1%
Denmark	11.4%	7.5%	5.9%	3.9%
Finland	16.4%	7.4%	6.5%	8.6%
France	13.0%	7.4%	4.7%	7.4%
Germany	13.4%	5.3%	3.4%	5.3%
Ireland	11.0%	6.5%	4.8%	4.3%
Italy	14.2%	7.3%	4.3%	10.3%
Japan	14.5%	6.7%	4.7%	9.8%
Netherlands	10.3%	4.9%	3.4%	2.9%
New Zealand	11.8%	6.2%	5.4%	3.7%
Norway	11.0%	5.9%	4.8%	3.9%
South Africa	14.7%	7.3%	6.1%	5.2%
Spain	11.5%	8.0%	5.9%	5.7%
Sweden	11.5%	6.6%	5.2%	3.5%
Switzerland	8.4%	4.7%	2.9%	2.3%
United Kingdom	11.2%	6.2%	4.8%	3.9%
United States	11.5%	5.3%	3.8%	3.0%
World	9.6%	5.3%	3.8%	3.0%

(Source: Data from *Credit Suisse Global Investment Returns Yearbook 2018*.)

The Concept of Return (6 of 7)

- The Time Value of Money and Returns
 - **Time value of money:** It is generally better to receive cash sooner rather than later
 - Computational Aids for Use in Time Value of Money Calculations
 - Financial calculators
 - Electronic spreadsheet

The Concept of Return (7 of 7)

- The Time Value of Money and Returns
 - Determining a Satisfactory Investment
 - Satisfactory investment: one for which the present value of benefits (discounted at the appropriate discount rate) equals or exceeds its costs.
 - If the present value of the benefits equals the cost, the investment is satisfactory because it provides a return just equal to the return you could earn on other similar investments (i.e., a return equal to the discount rate).
 - If the present value of the benefits exceeds the cost, the investment is more than satisfactory because it provides a greater return than you can earn on other similar investments (i.e., a return greater than the discount rate).
 - If the present value of the benefits is less than the cost, the investment is unsatisfactory because it provides a return below what you could earn on other similar investments (i.e., a return below the discount rate).

Table 4.5 Present Value Applied to an Investment

TABLE 4.5 PRESENT VALUE APPLIED TO AN INVESTMENT

End of Year	(1) Income	(2) Present Value Calculation at 8%	(3) Present Value at 8%
1	\$ 90	$\$90/(1.08)^1$	\$ 83.33
2	\$ 100	$\$100/(1.08)^2$	\$ 85.73
3	\$ 110	$\$110/(1.08)^3$	\$ 87.32
4	\$ 120	$\$120/(1.08)^4$	\$ 88.20
5	\$ 100	$\$100/(1.08)^5$	\$ 68.06
6	\$ 100	$\$100/(1.08)^6$	\$ 63.02
7	\$1,200	$\$1,200/(1.08)^7$	\$ 700.19
Total Present Value			<u><u>\$1,175.85</u></u>

Measuring Return (1 of 14)

- There are several measures that enable us to compare alternative investments.
- To compare returns from different investments, we need to incorporate time value of money concepts that explicitly consider differences in the timing of investment income and capital gains.
 - Real, Risk-Free, and Required Returns
 - Holding Period Return
 - The Internal Rate of Return
 - Finding Growth Rates

Measuring Return (2 of 14)

- Real, Risk-Free, and Required Returns
 - Inflation and Returns
 - **Nominal Rate of Return:** the return that the investment earns expressed in current dollars. It does not take into account the effects of inflation on purchasing power.
 - **Real Rate of Return:** measures the increase in purchasing power that the investment provides.
 - Approximately equals the nominal rate of return minus the inflation rate:

Real Return \approx Nominal Return – Inflation Rate

Measuring Return (3 of 14)

- Real, Risk-Free, and Required Returns
 - Risk and Returns
 - Investors are generally **risk averse**: they do not like risk and will only take risk when they expect compensation for doing so.
 - **Required Return**: the rate of return that fully compensates for an investment's risk

Equation 4.1

Required return on investment $j =$

Real rate of return + Expected inflation premium + Risk premium for investment j

Equation 4.1a

$$r_j = r^* + IP + RP_j$$

Measuring Return (4 of 14)

- Real, Risk-Free, and Required Returns
 - Risk and Returns
 - Expected inflation premium: the rate of inflation expected over an investment's life
 - Risk-free rate: rate of return that can be earned on a risk-free investment, such as a short-term U.S. Treasury bill.

Equation 4.2

Risk - free rate = Real rate of return + Expected inflation premium

Equation 4.2a

$$r_f = r^* + IP$$

Measuring Return (5 of 14)

- Real, Risk-Free, and Required Returns
 - Risk and Returns
 - **Risk premium:** Additional return an investor requires on a risky investment to compensate for risks based upon issue and issuer characteristics.
 - Issue characteristics are the type, maturity and features
 - Issuer characteristics are industry and company factors

Equation 4.3

Required return on investment $j = \text{Risk-free rate} + \text{Risk premium for investment } j$

Equation 4.3a

$$r_j = r_f + RP_j$$

Measuring Return (6 of 14)

- Holding Period Return
 - **Holding period:** the period of time over which one wishes to measure the return on an investment.
 - Understanding Return Components
 - **Realized Return:** income received by the investor during the investment period
 - **Paper Return:** the capital gain or loss that has been achieved but not yet realized (no sale has taken place)

Measuring Return (7 of 14)

- Holding Period Return
 - Computing the Holding Period Return
 - Holding Period Return (HPR): the total return earned from holding an investment for a specified time (the holding period); usually one year or less.

Equation

$$4.4 \quad \text{Holding period return} = \frac{\text{Income during period} + \text{Capital gain (or loss) during period}}{\text{Beginning investment value}}$$

Equation

$$4.4a \quad HPR = \frac{Inc + CG}{V_0}$$

Equation

$$4.5 \quad \text{Capital gain (or loss) during period} = \text{Ending investment value} - \text{Beginning investment value}$$

Equation

$$4.5a \quad CG = V_n - V_0$$

- Using the HPR in Investment Decisions

- HPR offers a relative comparison, by dividing the total return by the amount of the investment.

Table 4.6 Key Financial Variables for Four Investments

TABLE 4.6 KEY FINANCIAL VARIABLES FOR FOUR INVESTMENTS

	Investment			
	Savings Account	Common Stock	Bond	Real Estate
Cash Received				
1st quarter	\$ 15	\$ 10	\$ 0	\$ 0
2nd quarter	\$ 15	\$ 10	\$ 70	\$ 0
3rd quarter	\$ 15	\$ 10	\$ 0	\$ 0
4th quarter	\$ 15	\$ 15	\$ 70	\$ 0
(1) Total current income	<u>\$ 60</u>	<u>\$ 45</u>	<u>\$ 140</u>	<u>\$ 0</u>
Investment Value				
End-of-year	\$1,000	\$2,200	\$ 970	\$3,300
(2) Beginning-of-year	<u>-\$1,000</u>	<u>-\$2,000</u>	<u>-\$1,000</u>	<u>-\$3,000</u>
(3) Capital gain (loss)	\$ 0	\$ 200	-\$ 30	\$ 300
(4) Total return [(1) + (3)]	<u>\$ 60</u>	<u>\$ 245</u>	<u>\$ 110</u>	<u>\$ 300</u>
(5) Holding period return [(4) ÷ (2)]	6.00%	12.25%	11.00%	10.00%

Measuring Return (8 of 14)

- The Internal Rate of Return
 - IRR for a Stream of Income
 - Investments such as income-oriented stocks and bonds typically provide the investor with an income stream.
 - The IRR on an investment that pays income periodically is the discount rate that equates the present value of the investment's cash flows to its current price.

Measuring Return

(9 of 14)

- The Internal Rate of Return
 - Internal Rate of Return:** The discount rate that equates an investment's cost to the present value of the benefits that it provides for the investor.
 - IRR for a Single Cash Flow**
 - E.g., investments such as U.S. savings bonds, stocks paying no dividends, and zero-coupon bonds, that provide no periodic income.
 - **Example:** What is the yield (IRR) on an investment costing \$1,000 today that you expect will be worth \$1,400 at the end of a 5-year holding period?

Measuring Return (10 of 14)

IRR for a Single Cash Flow

	A	B
1	IRR FOR A SINGLE CASH FLOW	
2	Investment	Cash Flow
3	Cost (PV)	-\$1,000
4	Payoff (FV)	\$1,400
5	Number of Years	5
6	IRR	6.96%

Entry in Cell B6 is
 $=\text{Rate}(B5,0,B3,B4,0)$.
The minus sign appears before the \$1,000 in B3 because the cost of the investment is treated as a cash outflow.

Entry in Cell B6 is $= \text{Rate}(B5,0,B3,B4,0)$. The minus sign appears before the \$1,000 in B3 because the cost of the investment is treated as a cash outflow.

Table 4.7 Present Value Applied to an Investment

TABLE 4.7 PRESENT VALUE APPLIED TO AN INVESTMENT

End of Year	(1) Income	(2) Present Value Calculation at 9%	(3) Present Value at 9%	(4) Present Value Calculation at 10%	(5) Present Value at 10%
1	\$ 90	\$90/(1 + 0.09) ¹	\$ 82.57	\$90/(1 + 0.1) ¹	\$ 81.82
2	\$ 100	\$100/(1 + 0.09) ²	\$ 84.17	\$100/(1 + 0.1) ²	\$ 82.64
3	\$ 110	\$110/(1 + 0.09) ³	\$ 84.94	\$110/(1 + 0.1) ³	\$ 82.64
4	\$ 120	\$120/(1 + 0.09) ⁴	\$ 85.01	\$120/(1 + 0.1) ⁴	\$ 81.96
5	\$ 100	\$100/(1 + 0.09) ⁵	\$ 64.99	\$100/(1 + 0.1) ⁵	\$ 62.09
6	\$ 100	\$100/(1 + 0.09) ⁶	\$ 59.63	\$100/(1 + 0.1) ⁶	\$ 56.45
7	\$1,200	\$1,200/(1 + 0.09) ⁷	\$ 656.44	\$1,200/(1 + 0.1) ⁷	\$ 615.79
Total Present Value			<u>\$1,117.75</u>		<u>\$1,063.40</u>

Measuring Return (11 of 14)

IRR for a Stream of Income

Entry in Cell B11 is =
 $\text{IRR}(\text{B3:B10})$. The
minus sign appears
before the \$1,100 in
B3 because the cost
of the investment is
treated as a cash
outflow.

	A	B
1	IRR FOR A STREAM OF INCOME	
2	Year	Cash Flow
3	0	-\$1,100
4	1	\$90
5	2	\$100
6	3	\$110
7	4	\$120
8	5	\$100
9	6	\$100
10	7	\$1,200
11	IRR	9.32%

Entry in Cell B11 is
 $=\text{IRR}(\text{B3:B10})$.
The minus sign appears before the \$1,100
in B3 because the cost of the investment
is treated as a cash outflow.

Measuring Return

(13 of 14)

- Finding Growth Rates
 - **Rate of Growth:** The compound annual **rate of change** in some financial quantity, such as the price of a stock or the size of its dividend.
 - Growth Rate Example:
 - Reference Exxon's dividends from Table 4.3, shown earlier

Measuring Return (14 of 14)

Growth Rate for a Dividend Stream

Entry in Cell B13 is
 $= RATE((A12-A3),0,-B3,B12,0)$.
The expression (A12–A3) in the entry calculates the number of years of growth. The minus sign appears before B3 because the dividend in 2008 is treated as a cash outflow.

A	B
GROWTH RATE FOR A DIVIDEND STREAM	
2 Year	Dividend
3 2008	\$1.55
4 2009	\$1.66
5 2010	\$1.74
6 2011	\$1.85
7 2012	\$2.18
8 2013	\$2.46
9 2014	\$2.70
10 2015	\$2.88
11 2016	\$2.98
12 2017	\$3.06
13 Annual Growth Rate	7.85%

Entry in Cell B13 is
 $= RATE((A12-A3),0,-B3,B12,0)$.
The expression (A12–A3) in the entry calculates the number of years of growth. The minus sign appears before B3 because the first dividend is treated as a cash outflow and the last dividend as a cash inflow.

Risk: The Other Side of the Coin

(1 of 9)

- **Risk:** the uncertainty surrounding the actual return that an investment will generate.
- **Risk-Return Tradeoff:** the relationship between risk and return in which investors want to obtain the highest possible return for the level of risk that they are willing to take.
- Sources of Risk
- The Risk of a Single Asset
- Assessing Risk
- Steps in the Decision Process: Combining Return and Risk

Risk: The Other Side of the Coin

(2 of 9)

- Sources of Risk
 - **Business Risk:** the degree of uncertainty associated with an investment's earnings and the investment's ability to pay the returns (interest, principal, dividends) that investors expect.
 - Tied to a firm's industry
 - Generally, investments from similar kinds of firms have similar business risk
 - Differences in management, costs, and location can cause variation
 - **Financial Risk:** the increased uncertainty that results when a firm borrows money.
 - The more debt used to finance a firm, the greater its financial risk.

Risk: The Other Side of the Coin

(3 of 9)

- Sources of Risk
 - Purchasing Power Risk:** the chance that unanticipated changes in price levels will adversely affect investment returns.
 - Interest Rate Risk:** the chance that changes in interest rates will adversely affect a security's value.
 - Liquidity Risk:** the risk of not being able to sell (liquidate) an investment quickly without reducing its price.
 - Tax Risk:** The chance that Congress will make unfavorable changes in tax laws, driving down the after-tax returns and market values of certain investments.

Risk: The Other Side of the Coin

(4 of 9)

- Sources of Risk
 - **Event Risk:** occurs when an unexpected event has a significant and unusually immediate effect on the underlying value of an investment.
 - **Market Risk:** the risk that investment returns will decline because of factors that affect the broader market, not just one company or one investment.
 - Examples: political, macroeconomic, and social events as well as changes in investor risk preferences
 - Actually embodies a number of risks including purchasing power risk, interest rate risk, and tax risk.

Risk: The Other Side of the Coin

(5 of 9)

- Risk of a Single Asset
 - Standard Deviation: A Measure of Return Volatility
 - **Standard Deviation:** An indicator of an asset's risk, it measures the dispersion (variation) of returns around an asset's average or expected return.

Equation

4.7

$$\text{Standard deviation} = \sqrt{\frac{\sum_{t=1}^n (\text{Return for outcome } t - \text{Average or expected return})^2}{\text{Total number of outcomes} - 1}}$$

Equation

4.7a

$$s = \sqrt{\frac{\sum_{t=1}^n (r_t - \bar{r})^2}{n - 1}}$$

Table 4.8 Historical Annual Returns for Target and American Eagle Outfitters

TABLE 4.8 HISTORICAL ANNUAL RETURNS FOR TARGET AND AMERICAN EAGLE OUTFITTERS

Year (t)	Annual Rate of Return* (r_t)	
	Target	American Eagle Outfitters
2008	−30.0%	−53.6%
2009	42.5%	86.5%
2010	26.3%	−8.4%
2011	−13.0%	8.0%
2012	18.2%	47.5%
2013	9.5%	−28.1%
2014	23.8%	0.3%
2015	−1.5%	15.3%
2016	2.7%	1.1%
2016	−6.3%	27.2%
Average (\bar{r})	7.2%	9.6%

*Annual rate of return is calculated based on end-of-year closing prices.

(Source: Based on end-of-year closing prices are obtained from Yahoo! Finance and are adjusted for dividends and stock splits.)

Table 4.9 Calculation of Standard Deviations of Returns for Target and American Eagle Outfitters (1 of 2)

TABLE 4.9 CALCULATION OF STANDARD DEVIATIONS OF RETURNS FOR TARGET AND AMERICAN EAGLE OUTFITTERS

Year (t)	Target			
	(1) Return r_t	(2) Average Return [\bar{r}]	(3) $r_t - \bar{r}$	(4) $(r_t - \bar{r})^2$
2008	−30.0%	7.2%	−37.2%	1,385.4% ²
2009	42.5%	7.2%	35.2%	1,242.2% ²
2010	26.3%	7.2%	19.1%	365.1% ²
2011	−13.0%	7.2%	−20.2%	408.0% ²
2012	18.2%	7.2%	11.0%	119.9% ²
2013	9.5%	7.2%	2.3%	5.2% ²
2014	23.8%	7.2%	16.6%	275.9% ²
2015	−1.5%	7.2%	−8.7%	76.0% ²
2016	2.7%	7.2%	−4.5%	20.7% ²
2017	−6.3%	7.2%	−13.5%	182.4% ²
			Sum	4,080.7% ²
		Variance % ²	$s_{TGT}^2 =$	453.4% ²
		Standard deviation %	$s_{TGT} =$	21.3%

$$s_{TGT} = \sqrt{\frac{\sum_{t=1}^{10} (r_t - \bar{r})^2}{n-1}} = \sqrt{\frac{4,080.7\%^2}{10-1}} = \sqrt{453.4\%^2} = 21.3\%$$

Table 4.9 Calculation of Standard Deviations of Returns for Target and American Eagle Outfitters (2 of 2)

TABLE 4.9 CALCULATION OF STANDARD DEVIATIONS OF RETURNS FOR TARGET AND AMERICAN EAGLE OUTFITTERS

Year (t)	American Eagle Outfitters			
	(1) Return r_t	(2) Average Return [\bar{r}]	(3) $r_t - \bar{r}$	(4) $(r_t - \bar{r})^2$
2008	-53.6%	9.6%	-63.2%	3,988.3% ²
2009	86.5%	9.6%	76.9%	5,911.4% ²
2010	-8.4%	9.6%	-18.0%	323.4% ²
2011	8.0%	9.6%	-1.6%	2.5% ²
2012	47.5%	9.6%	37.9%	1,437.1% ²
2013	-28.1%	9.6%	-37.6%	1,417.1% ²
2014	0.3%	9.6%	-9.3%	86.3% ²
2015	15.3%	9.6%	5.7%	32.4% ²
2016	1.1%	9.6%	-8.5%	72.0% ²
2017	27.2%	9.6%	17.6%	311.3% ²
			Sum	13,581.8% ²
		Variance % ²	$s_{AOE}^2 =$	1,509.1% ²
		Standard deviation %	$s_{AOE} =$	38.8%

$$s_{AOE} = \sqrt{\frac{\sum_{t=1}^{10} (r_t - \bar{r})^2}{n-1}} = \sqrt{\frac{13,581.8\%^2}{10-1}} = \sqrt{1,509.1\%^2} = 38.8\%$$

Risk: The Other Side of the Coin

(6 of 9)

- Risk of a Single Asset
 - Historical Returns and Risk
 - Standard deviation can be used as a measure of risk to assess historical investment return data
 - General pattern: Investments with higher average returns have higher standard deviations, reflecting greater risk.

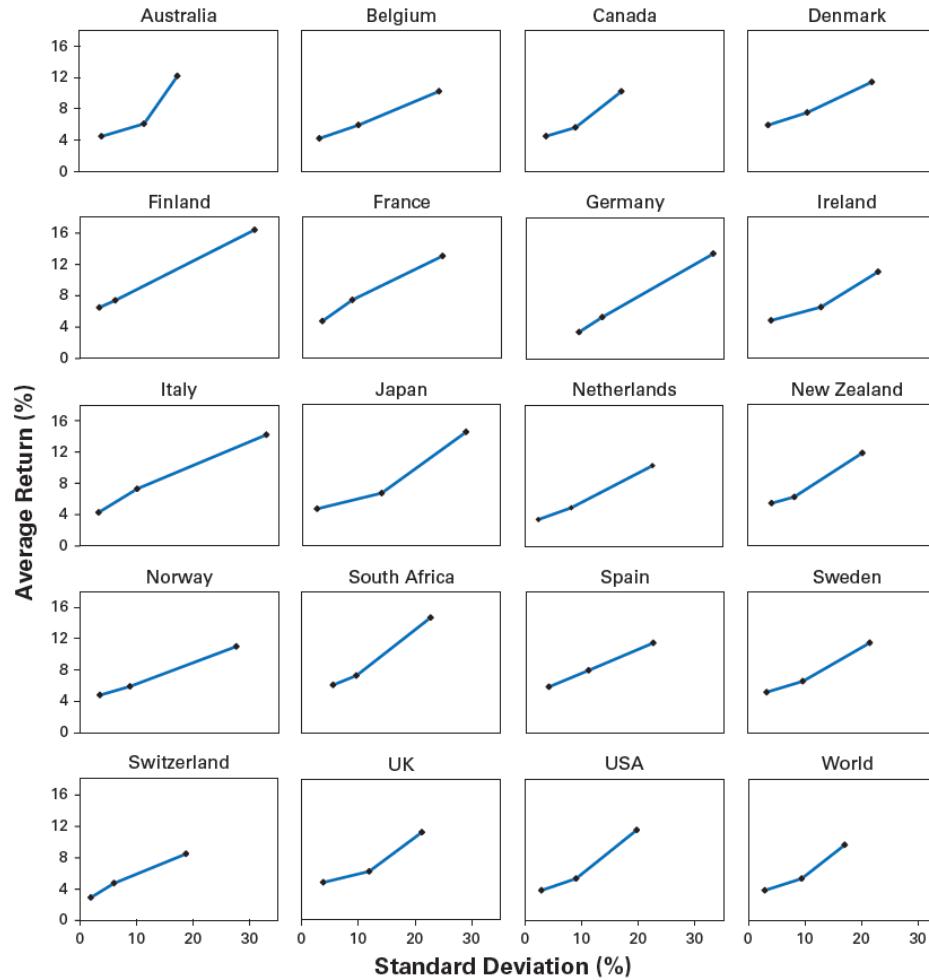
Table 4.10 Historical Returns and Standard Deviations for Select Asset Classes (1900-2017)

TABLE 4.10 HISTORICAL RETURNS AND STANDARD DEVIATIONS FOR SELECT ASSET CLASSES (1900–2017)

	Stocks		Long-Term Government Bonds		Short-Term Government Bills	
	Average Annual Return	Standard Deviation of Returns	Average Annual Return	Standard Deviation of Returns	Average Annual Return	Standard Deviation of Returns
Australia	12.2%	17.3%	6.1%	11.4%	4.5%	3.9%
Belgium	10.2%	24.2%	5.9%	10.0%	4.7%	3.1%
Canada	10.2%	16.9%	5.6%	8.8%	4.5%	3.6%
Denmark	11.4%	21.9%	7.5%	10.5%	5.9%	3.6%
Finland	16.4%	30.8%	7.4%	6.2%	6.5%	3.4%
France	13.0%	24.7%	7.4%	8.8%	4.7%	3.5%
Germany	13.4%	33.1%	5.3%	13.5%	3.4%	9.4%
Ireland	11.0%	23.0%	6.5%	12.9%	4.8%	4.1%
Italy	14.2%	32.9%	7.3%	10.1%	4.3%	3.3%
Japan	14.5%	28.9%	6.7%	14.0%	4.7%	2.6%
Netherlands	10.3%	22.6%	4.9%	8.2%	3.4%	2.4%
New Zealand	11.8%	20.2%	6.2%	8.2%	5.4%	4.2%
Norway	11.0%	27.6%	5.9%	8.8%	4.8%	3.5%
South Africa	14.7%	22.7%	7.3%	9.6%	6.1%	5.5%
Spain	11.5%	22.5%	8.0%	11.1%	5.9%	4.1%
Sweden	11.5%	21.5%	6.6%	9.7%	5.2%	3.3%
Switzerland	8.4%	18.7%	4.7%	6.0%	2.9%	1.9%
United Kingdom	11.2%	21.2%	6.2%	11.9%	4.8%	3.8%
United States	11.5%	19.7%	5.3%	9.0%	3.8%	2.9%
World	9.6%	17.0%	5.3%	9.4%	3.8%	2.9%

(Source: Data from Elroy Dimson, Paul Marsh, and Mike Staunton, *Credit Suisse Global Investment Returns Sourcebook 2018*.)

Figure 4.1 The Risk-Return Tradeoff Around the World

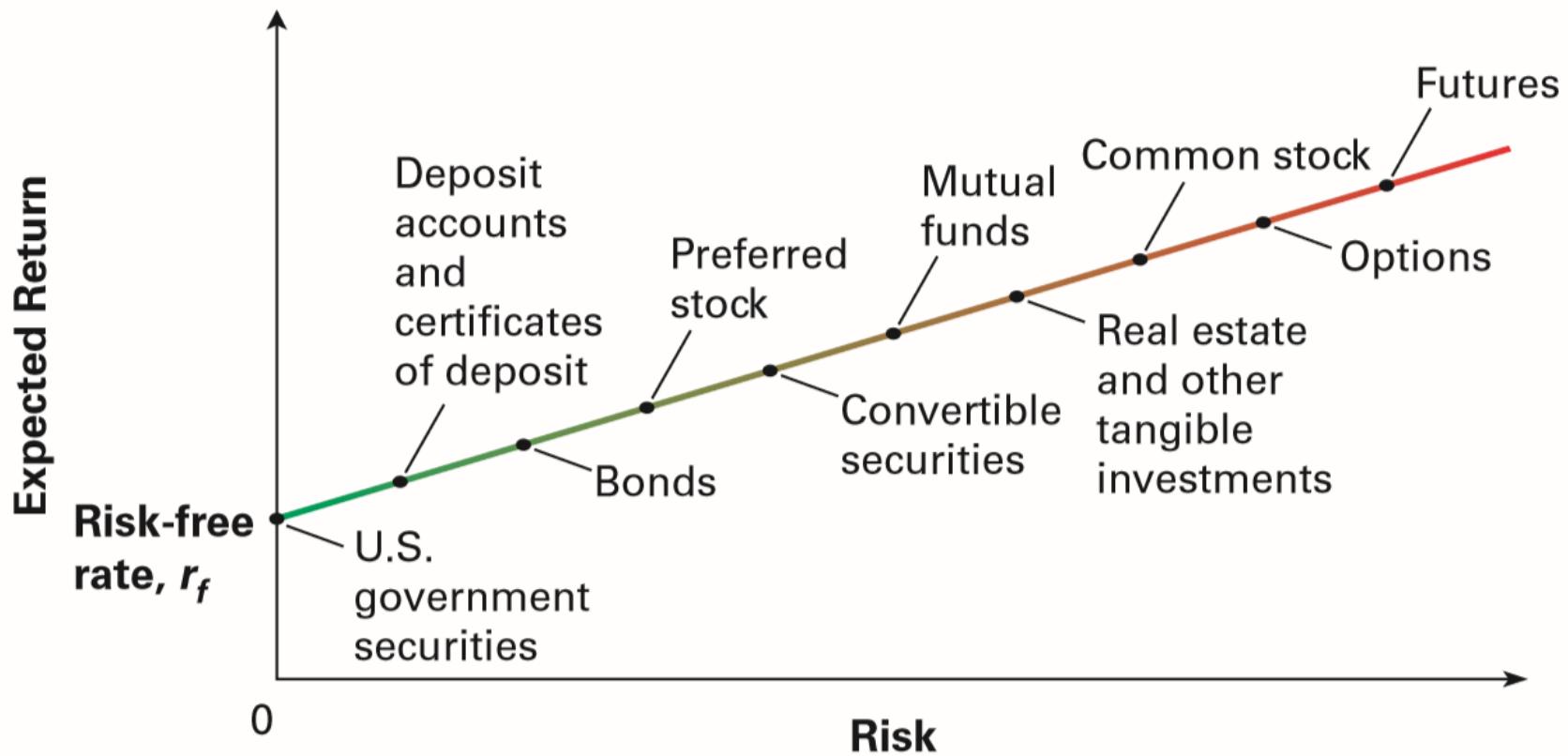


Risk: The Other Side of the Coin

(7 of 9)

- Assessing Risk
 - A look at the general risk-return characteristics of alternative investments and at the question of an acceptable level of risk helps show how to evaluate risk.
 - Risk-Return Characteristics of Alternative Investments
 - A risk-return tradeoff exists such that for a higher risk one expects a higher return, and vice versa.
 - In general, low-risk/low-return investments include U.S. government securities and deposit accounts.
 - In general, high-risk/high-return investments include real estate and other tangible investments, common stocks, options, and futures.

Figure 4.2 Risk Preferences

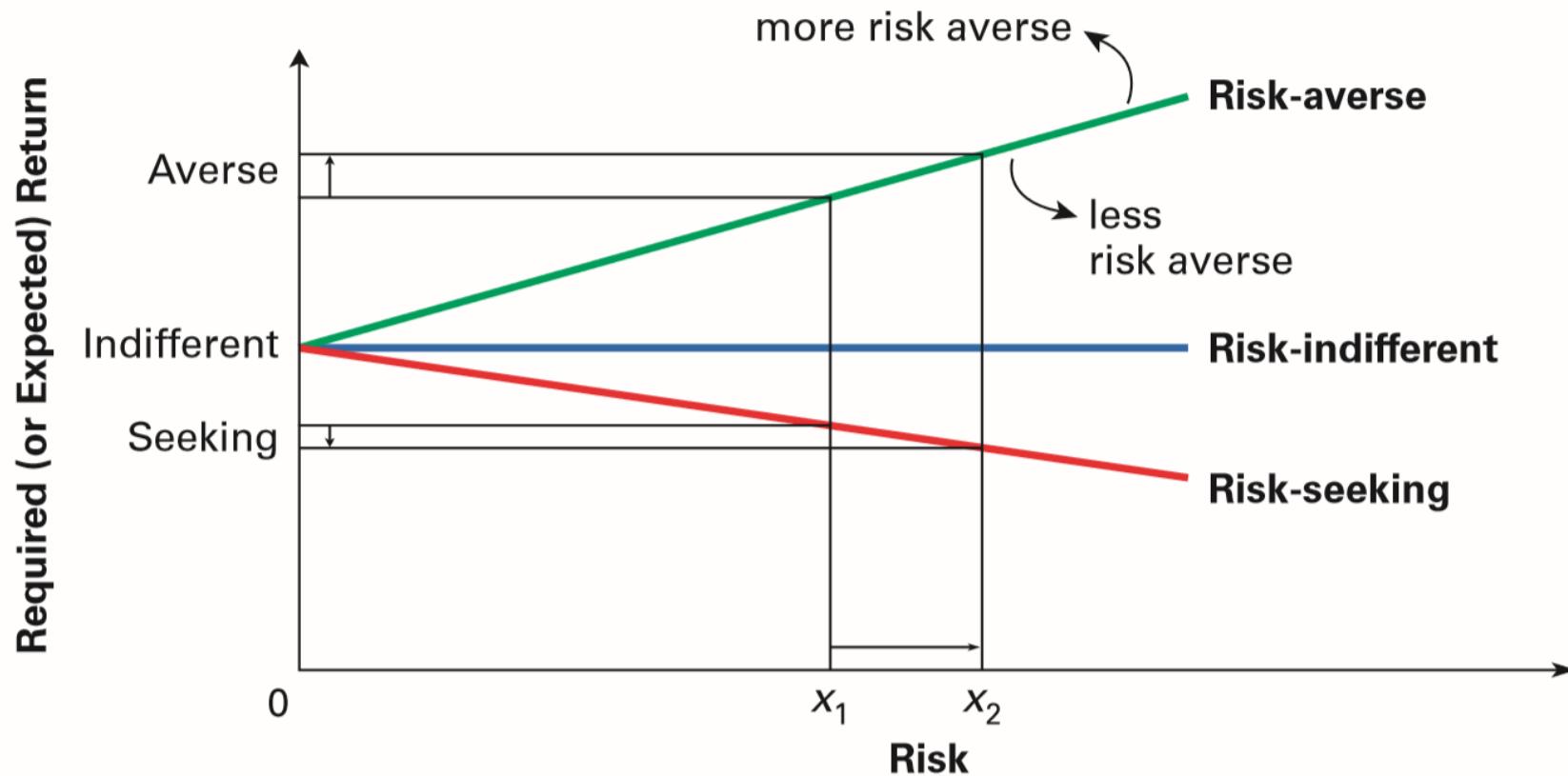


Risk: The Other Side of the Coin

(8 of 9)

- Assessing Risk
 - A look at the general risk-return characteristics of alternative investments and at the question of an acceptable level of risk helps show how to evaluate risk.
 - An Acceptable Level of Risk
 - Individuals differ in the amount of risk that they are willing to bear and the return they require as compensation for bearing that risk.
 - **Risk-indifferent (risk-neutral):** describes an investor who does not require a change in return as compensation for greater risk.
 - **Risk-averse:** describes an investor who requires greater return in exchange for greater risk.
 - **Risk-seeking:** describes an investor who will accept a lower return in exchange for greater risk.

Figure 4.3



Risk: The Other Side of the Coin

(9 of 9)

- Steps in the Decision Process: Combining Return and Risk
 - When you are deciding among alternative investments, you should take the following steps to combine return and risk:
 - Estimate the expected return using present value methods and historical or projected return data
 - Assess the risk of the investment by looking at historical/projected returns using standard deviation.
 - Evaluate the risk-return characteristics of each investment option to make sure the return is reasonable given the level of risk.
 - Select the investments that offer the highest expected returns associated with the level of risk you are willing to accept.

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 5

Modern Portfolio Concepts

with Prof Nugent

Principles of Portfolio Planning (1 of 14)

- A **portfolio** is a collection of investments assembled to meet one or more investment goals.
- **Growth-oriented portfolio:** primary goal is long-term price appreciation.
- **Income-oriented portfolio:** designed to produce regular dividends and interest payments.
 - Portfolio Objectives
 - Portfolio Return and Standard Deviation
 - Correlation and Diversification
 - International Diversification

Principles of Portfolio Planning (2 of 14)

- Portfolio Objectives
 - Ultimate goal is an efficient portfolio
 - **Efficient portfolio:** one that provides the highest return for a given risk level.
 - Requires search for investment alternatives to get the best combinations of risk and return.

Principles of Portfolio Planning (3 of 14)

- Portfolio Return and Standard Deviation
 - Portfolio return is just a weighted average of returns on the assets (i.e., investments) that make up the portfolio.

Equation 5.1

$$\begin{aligned}\text{Portfolio Return} &= (\text{Proportion of portfolio's total dollar value invested in asset 1} \times \text{Return on asset 1}) \\ &\quad + (\text{Proportion of portfolio's total dollar value invested in asset 2} \times \text{Return on asset 2}) + \dots + \\ &\quad (\text{Proportion of portfolio's total dollar value invested in asset n} \times \text{Return on asset n}) \\ &= \sum_{j=1}^n (\text{Proportion of portfolio's total dollar value invested in asset j} \times \text{Return on asset j})\end{aligned}$$

Equation 5.1a

$$r_p = (w_1 \times r_1) + (w_2 \times r_2) + \dots + (w_n \times r_n) = \sum_{j=1}^n (w_j \times r_j)$$

Let's apply the general equation to an example using two actual companies by forming a portfolio that is 80% invested in Walmart and 20% invested in Century Casinos on the following slide.

Table 5.1 Individual and Portfolio Returns and Standard Deviation of Returns for Wal-Mart Stores Inc. (WMT) and Century Casinos Inc. (CNTY) (1 of 3)

TABLE 5.1 INDIVIDUAL AND PORTFOLIO RETURNS AND STANDARD DEVIATION OF RETURNS FOR WALMART STORES INC. (WMT) AND CENTURY CASINOS INC. (CNTY)

A. Individual and Portfolio Returns

Year (<i>t</i>)	(1)	(2)	(3)	(4)
	<i>R</i> _{WMT}	<i>R</i> _{CNTY}	Portfolio Weights	Portfolio Return
2008	19.9%	15.8%	$W_{WMT} = 0.80$	$(0.80 \times 19.9\%) + (0.20 \times 15.8\%) =$
2009	-2.6%	163.7%	$W_{CNTY} = 0.20$	$(0.80 \times -2.6\%) + (0.20 \times 163.7\%) =$
2010	3.2%	-9.3%		$(0.80 \times 3.2\%) + (0.20 \times -9.3\%) =$
2011	13.8%	3.7%		$(0.80 \times 13.8\%) + (0.20 \times 3.7\%) =$
2012	16.9%	12.2%		$(0.80 \times 16.9\%) + (0.20 \times 12.2\%) =$
2013	18.2%	83.4%		$(0.80 \times 18.2\%) + (0.20 \times 83.4\%) =$
2014	11.8%	-3.1%		$(0.80 \times 11.8\%) + (0.20 \times -3.1\%) =$
2015	-26.6%	54.1%		$(0.80 \times -26.6\%) + (0.20 \times 54.1\%) =$
2016	16.0%	5.8%		$(0.80 \times 16.0\%) + (0.20 \times 5.8\%) =$
2017	<u>46.5%</u>	<u>10.9%</u>		$(0.80 \times 46.5\%) + (0.20 \times 10.9\%) =$
Average Return	11.7%	33.7%		16.1%

Table 5.1 Individual and Portfolio Returns and Standard Deviation of Returns for Wal-Mart Stores Inc. (WMT) and Century Casinos Inc. (CNTY) (2 of 3)

- The previous slide shows us returns on individual stocks and on a particular portfolio year by year. The next step is to quantify the risk of those returns over time. Now let's move on to see how risky those returns are.

Table 5.1 Individual and Portfolio Returns and Standard Deviation of Returns for Wal-Mart Stores Inc. (WMT) and Century Casinos Inc. (CNTY) (3 of 3)

B. Individual and Portfolio Standard Deviations

Standard Deviation Calculation for WMT:

$$s_{WMT} = \sqrt{\frac{\sum_{t=1}^{10} (r_t - \bar{r})^2}{n-1}} = \sqrt{\frac{(19.9\% - 11.7\%)^2 + \dots + (46.5\% - 11.7\%)^2}{10-1}} = \sqrt{\frac{3114.1\%^2}{10-1}} = 18.6\%$$

— Standard Deviation Calculation for CNTY:

$$s_{CNTY} = \sqrt{\frac{\sum_{t=1}^{10} (r_t - \bar{r})^2}{n-1}} = \sqrt{\frac{(15.8\% - 33.7\%)^2 + \dots + (10.9\% - 33.7\%)^2}{10-1}} = \sqrt{\frac{2,5970.4\%^2}{10-1}} = 53.7\%$$

— Standard Deviation Calculation for Portfolio:

$$s_p = \sqrt{\frac{\sum_{t=1}^{10} (r_t - \bar{r})^2}{n-1}} = \sqrt{\frac{(19.1\% - 16.1\%)^2 + \dots + (39.4\% - 16.1\%)^2}{10-1}} = \sqrt{\frac{2010.9\%^2}{10-1}} = 14.9\%$$

*Annual rate of return is calculated based on end-of-year closing prices

Source: End-of-year closing prices are obtained from Yahoo Finance and are adjusted for dividends and stock splits.

Principles of Portfolio Planning (4 of 14)

- Portfolio Return and Standard Deviation
 - The standard deviation (risk) of a portfolio's returns is a function of the portfolio's individual assets' weights, standard deviations, and correlations with all other assets.

	A	B	C	D
1	STANDARD DEVIATION OF RETURNS FOR WMT, CNTY, AND PORTFOLIO			
2	Year (t)	r_{WMT}	r_{CNTY}	r_p
3	2008	19.9%	15.8%	19.1%
4	2009	-2.6%	163.7%	30.7%
5	2010	3.2%	-9.3%	0.7%
6	2011	13.8%	3.7%	11.8%
7	2012	16.9%	12.2%	16.0%
8	2013	18.2%	83.4%	31.2%
9	2014	11.8%	-3.1%	8.8%
10	2015	-26.6%	54.1%	-10.5%
11	2016	16.0%	5.8%	14.0%
12	2017	46.5%	10.9%	39.4%
13	Standard deviation	18.6%	53.7%	14.9%

Entries in Cells B13, C13, and D13 are $=STDEV(B3:B12)$, $=STDEV(C3:C12)$, and $=STDEV(D3:D12)$, respectively.

Principles of Portfolio Planning (5 of 14)

- A portfolio's standard deviation depends on three things:
 - The standard deviation of each asset within the portfolio.
 - The weight of each asset.
 - The correlation between each asset contained in the portfolio.

Principles of Portfolio Planning (6 of 14)

- Correlation and Diversification
 - Correlation:** a statistical measure of the relationship between two series of numbers.
 - **Positively correlated:** two series tend to move in the same direction.
 - **Negatively correlated:** two series tend to move in opposite directions.
 - **Uncorrelated:** two series bear no relationship to each other.

Principles of Portfolio Planning (7 of 14)

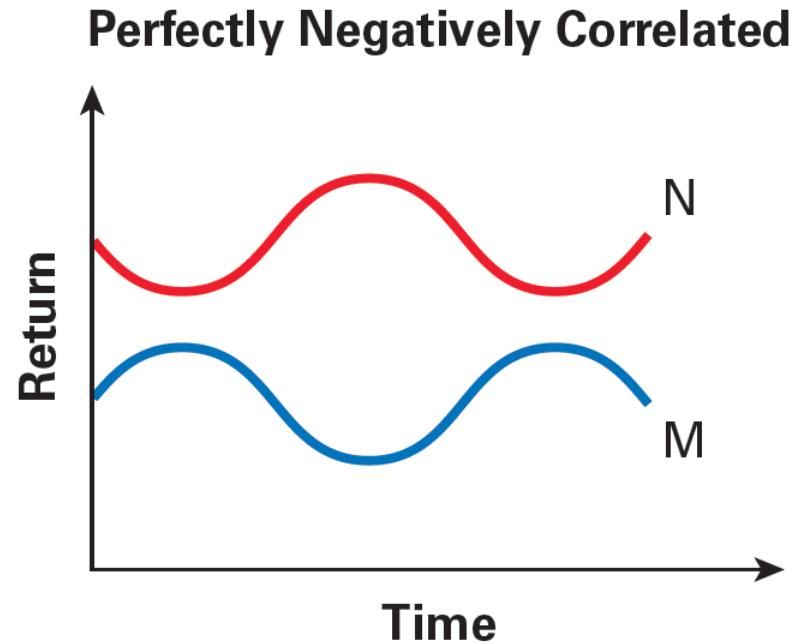
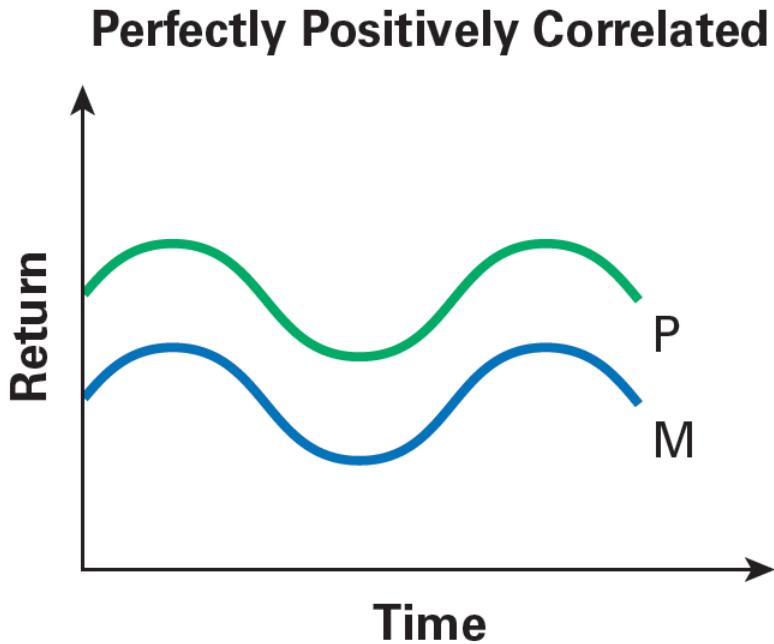
- Correlation and Diversification
 - Correlation
 - **Correlation coefficient:** measures the degree of correlation, whether positive or negative
 - Perfectly positively correlated: series with a correlation coefficient of +1.0
 - Perfectly negatively correlated: series with a correlation coefficient of -1.0

Principles of Portfolio Planning (8 of 14)

	A	B	C
1	CORRELATION COEFFICIENT OF RETURNS FOR WMT AND CNTY		
2	Year (t)	r_{WMT}	r_{CNTY}
3	2008	19.9%	15.8%
4	2009	-2.6%	163.7%
5	2010	3.2%	-9.3%
6	2011	13.8%	3.7%
7	2012	16.9%	12.2%
8	2013	18.2%	83.4%
9	2014	11.8%	-3.1%
10	2015	-26.6%	54.1%
11	2016	16.0%	5.8%
12	2017	45.5%	10.9%
13		Correlation coefficient	-0.35

Entry in Cell C13 is = CORREL (B3:B12, C3:C12).

Figure 5.1 The Correlations of Returns between Investments M and P and Investments M and N

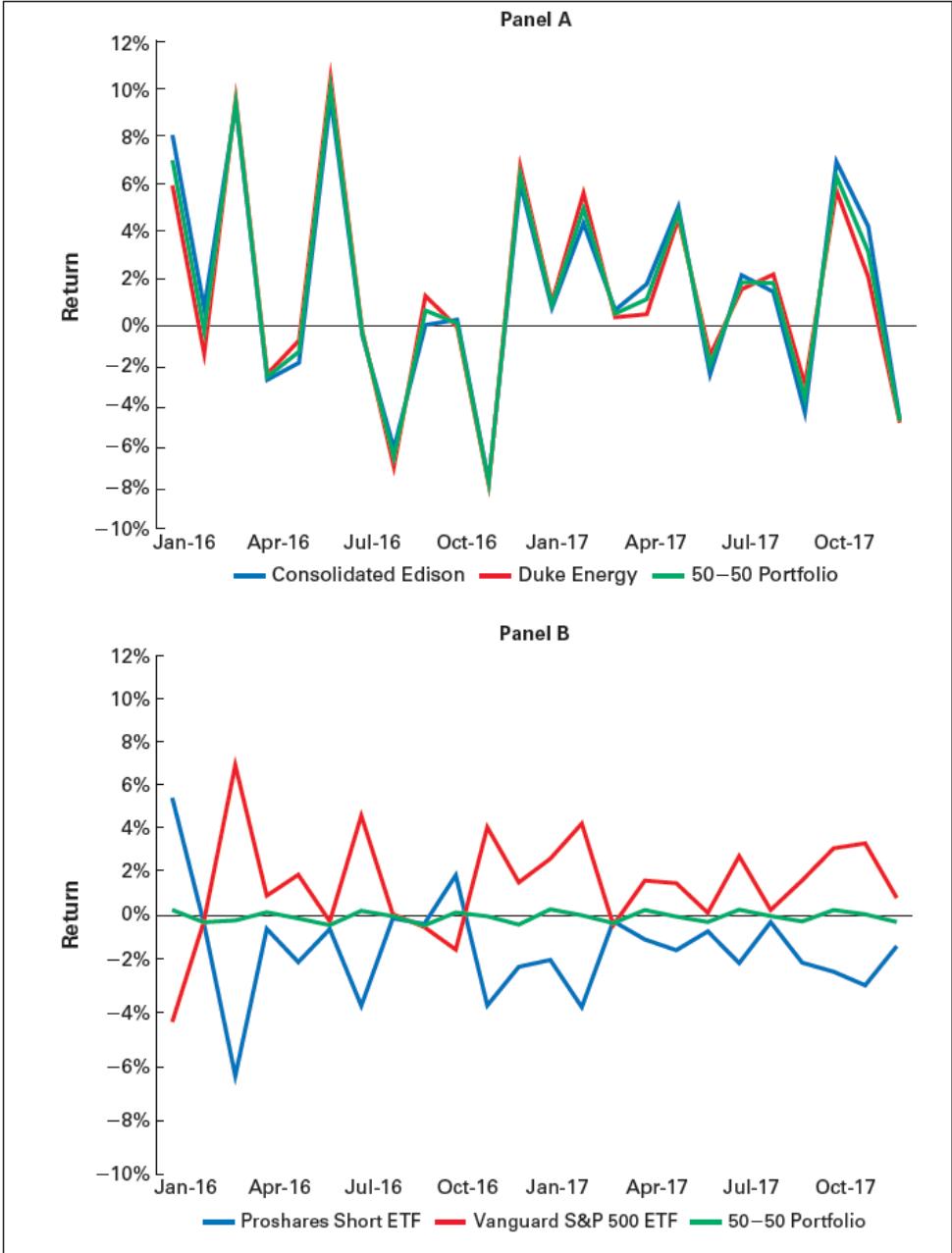


Principles of Portfolio Planning (9 of 14)

- Correlation and Diversification
 - As a general rule, the lower the correlation between any two assets, the greater the risk reduction that investors can achieve by combining those assets in a portfolio:
 - When the correlation is +1, portfolios merely average the risk of the assets in the portfolio
 - When the correlation is less than +1, a portfolio's risk will be less than the average risk of stocks in the portfolio
 - When the correlation is -1, there will be some combination of the assets that produces a portfolio with no risk at all
 - Now let's look at the correlations from some real-world investments.



Figure 5.2 The Effect of Correlation on Portfolio Volatility Panel



Principles of Portfolio Planning (10 of 14)

- To find the standard deviation of a portfolio, we need to use Equation 5.2 below, which shows that the standard deviation of a portfolio consisting of two stocks depends on the fraction invested in each stock (w_1 and w_2), the standard deviation of each stock (s_1 and s_2), and the correlation coefficient between the two stocks (ρ).

Equation 5.2

$$s_p = \sqrt{(w_1^2 s_1^2) + (w_2^2 s_2^2) + 2 w_1 w_2 s_1 s_2 \rho}$$

Table 5.2 Portfolio Average Returns and Standard Deviations for Walmart (WMT) and Century Casinos (CNTY) (1 of 2)

TABLE 5.2 PORTFOLIO AVERAGE RETURNS AND STANDARD DEVIATIONS FOR WALMART (WMT) AND CENTURY CASINOS (CNTY)

(1) Portfolio Weights		(3) Portfolio Average Return		(4) Portfolio Standard Deviation
W_{WMT}	W_{CNTY}	$\bar{r}_{WMT} = 11.7\%$	$\bar{r}_{CNTY} = 33.7\%$	
1.0	0.0	$(1.0 \times 11.7\%) + (0.0 \times 33.7\%) = 11.7\%$		18.6%
0.9	0.1	$(0.9 \times 11.7\%) + (0.1 \times 33.7\%) = 13.9\%$		15.7%
0.8	0.2	$(0.8 \times 11.7\%) + (0.2 \times 33.7\%) = 16.1\%$		14.9%
0.7	0.3	$(0.7 \times 11.7\%) + (0.3 \times 33.7\%) = 18.3\%$		16.7%
0.6	0.4	$(0.6 \times 11.7\%) + (0.4 \times 33.7\%) = 20.5\%$		20.4%
0.5	0.5	$(0.5 \times 11.7\%) + (0.5 \times 33.7\%) = 22.7\%$		25.1%
0.4	0.6	$(0.4 \times 11.7\%) + (0.6 \times 33.7\%) = 24.9\%$		30.4%
0.3	0.7	$(0.3 \times 11.7\%) + (0.7 \times 33.7\%) = 27.1\%$		36.0%
0.2	0.8	$(0.2 \times 11.7\%) + (0.8 \times 33.7\%) = 29.3\%$		41.8%
0.1	0.9	$(0.1 \times 11.7\%) + (0.9 \times 33.7\%) = 31.5\%$		47.7%
0.0	1.0	$(0.0 \times 11.7\%) + (1.0 \times 33.7\%) = 33.7\%$		53.7%

Table 5.2 Portfolio Average Returns and Standard Deviations for Walmart (WMT) and Century Casinos (CNTY) (2 of 2)

Example: Calculation of the Standard Deviation for the Equally Weighted Portfolio

$$s_{WMT} = 18.6\%$$

$$s_{CNTY} = 53.7\%$$

$$\rho_{WMT,CNTY} = -0.35$$

$$s_P = \sqrt{w_{WMT}^2 s_{WMT}^2 + w_{CNTY}^2 s_{CNTY}^2 + 2w_{WMT} w_{CNTY} s_{WMT} s_{CNTY} \rho}$$

$$s_p = \sqrt{0.5^2 \times 18.6\%^2 + 0.5^2 \times 53.7\%^2 + 2(0.5 \times 0.5 \times 18.6\% \times 53.7\% \times -0.35)} = 25.1\%$$

Figure 5.3 Portfolios of Walmart and Century

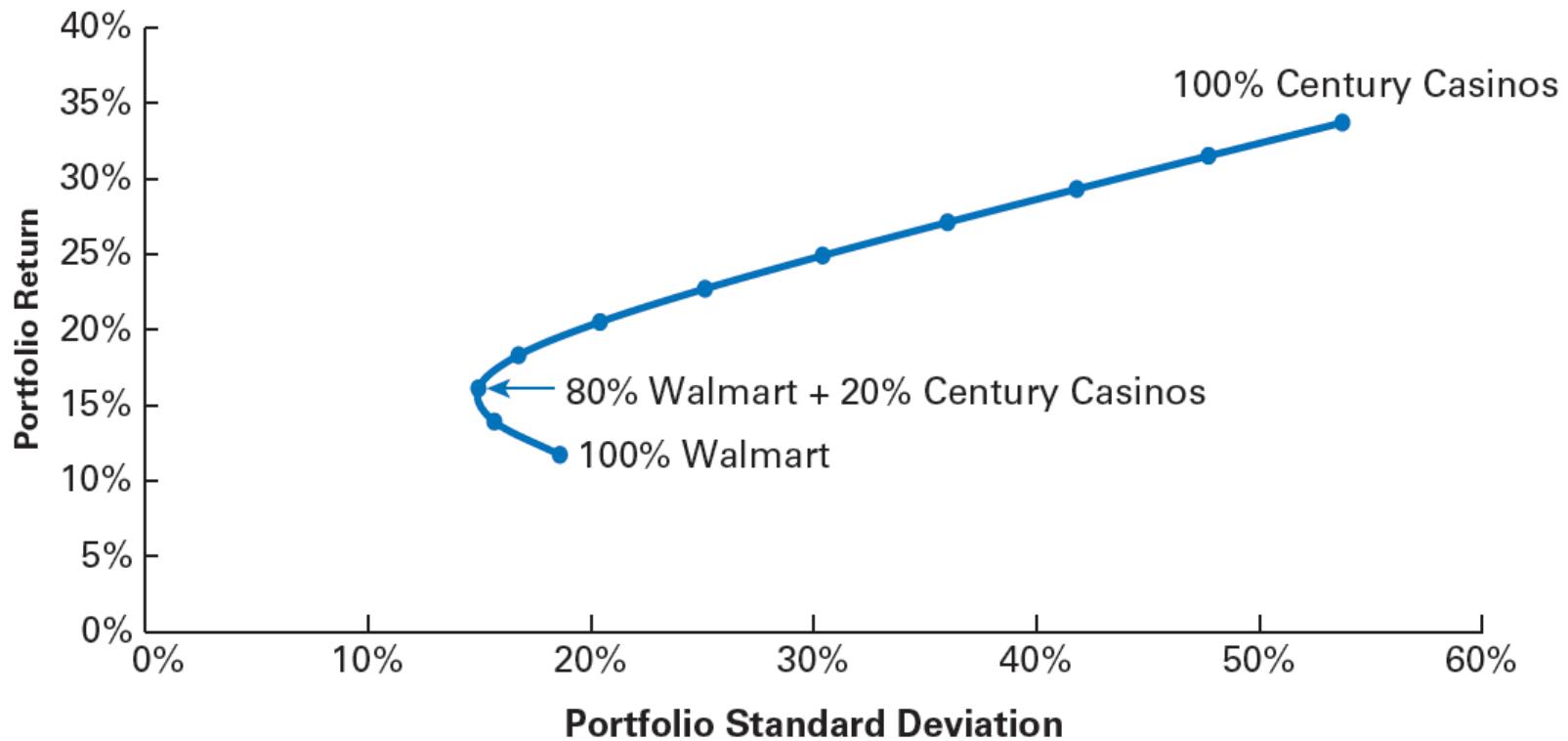


Table 5.3 Expected Returns and Standard Deviations for Assets X, Y, and Z and Portfolios XY and XZ

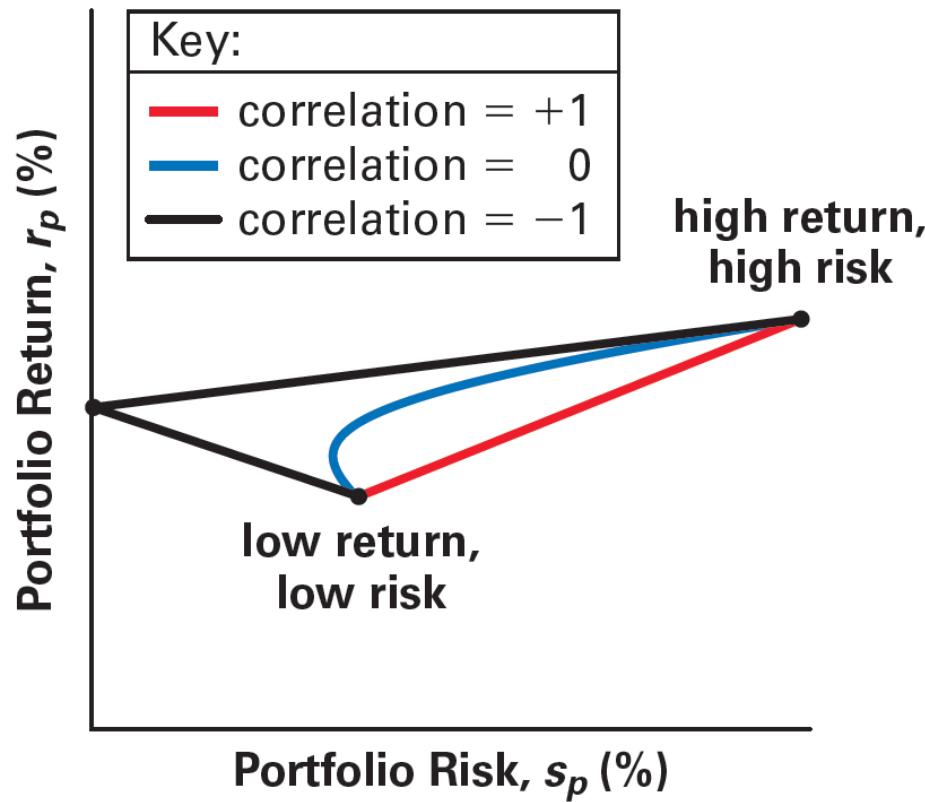
TABLE 5.3 EXPECTED RETURNS AND STANDARD DEVIATIONS FOR ASSETS X, Y, AND Z AND PORTFOLIOS XY AND XZ

Year (t)	Asset's Projected Returns			Portfolio's Projected Returns	
	$E(r_X)$	$E(r_Y)$	$E(r_Z)$	$E(r_{XY})$	$E(r_{XZ})$
2020	8.0%	24.0%	8.0%	13.3%	8.0%
2021	10.0%	20.0%	12.0%	13.3%	10.7%
2022	12.0%	16.0%	16.0%	13.3%	13.3%
2023	14.0%	12.0%	20.0%	13.3%	16.0%
2024	16.0%	8.0%	24.0%	13.3%	18.7%
Average Return	12.0%	16.0%	16.0%	13.3%	13.3%
Standard Deviation	3.2%	6.3%	6.3%	0.0%	4.2%

Risk and Return for Combinations of Two Assets with Various Correlation Coefficients

- Figure 5.4 illustrates how a low-return, low-risk asset can be combined with a high-return, high-risk asset in a portfolio, and how the performance of that portfolio depends on the correlation between the two assets.
- In general, as an investor shifts the portfolio weight from the low-return to the high-return investment, the portfolio return will rise.
- The standard deviation may rise or fall depending on the correlation.
- In general, the lower the correlation, the greater the risk reduction that can be achieved through diversification.

Figure 5.4 Risk and Return for Combinations of Two Assets with Various Correlation Coefficients



Principles of Portfolio Planning (11 of 14)

- International Diversification
 - Effectiveness of International Diversification
 - Offers more diverse investment alternatives than U.S.-only based investing:
 - Returns in different markets around the world do not move exactly in sync (correlation between markets is less than +1.0).
 - Investors can diversify across many stock markets around the world rather than just a few.
 - Globalization, and thus rising correlation across markets, limits these benefits to an extent.

Principles of Portfolio Planning

(12 of 14)

- International Diversification
 - Methods of International Diversification
 - Direct Investment Abroad
 - Foreign currency investment brings currency exchange risk.
 - Less convenient, more expensive, and riskier than investing in U.S.
 - Investment in stock or bonds of foreign companies/governments listed on U.S. exchanges
 - **Yankee bonds:** bonds issued in the U.S. bond market by a foreign entity.
 - American Depository Shares (ADSs)
 - International mutual fund

Principles of Portfolio Planning

(13 of 14)

- International Diversification
 - Methods of International Diversification
 - What about a portfolio of U.S. based multinational corporations?
 - A portfolio of U.S. multinationals is more diversified than a portfolio of wholly domestic firms.
 - Investors still won't enjoy the full benefits of international diversification since a disproportionate share of revenues and costs generated by these firms is still in the U.S.
 - To fully realize benefits of international diversification, it is necessary to invest in firms located outside the U.S.

Principles of Portfolio Planning

(14 of 14)

- International Diversification
 - Costs of International Diversification
 - Investment advisers suggest allocations to foreign investments of 20%–30%:
 - two-thirds of this allocation in established foreign markets.
 - other one-third in emerging markets.
 - Transaction costs of buying securities directly on foreign markets tends to be high.
 - International mutual funds and American Depository Shares (ADSs) allow you to obtain international diversification with low cost, convenience, transactions in U.S. dollars, and protection under U.S. security laws.

The Capital Asset Pricing Model (1 of 11)

- Diversification cannot eliminate risk entirely. From an investor's perspective this is the most worrisome risk; the risk that is undiversifiable.
 - Components of Risk
 - Beta: A Measure of Undiversifiable Risk
 - The CAPM: Using Beta to Estimate Return

The Capital Asset Pricing Model (2 of 11)

- Components of Risk
 - **Diversifiable (Unsystematic) Risk:** results from factors that affect a single firm or perhaps a handful of firms.
 - Examples: whether a new product succeeds or fails, the performance of senior managers, or a firms' relationship with its customers and suppliers.
 - **Undiversifiable (Systematic) Risk:** the inescapable portion of an investment's risk that remains even if a portfolio is well diversified.
 - Associated with broad forces such as economic growth, inflation, interest rates, and political events.
 - Also called **market risk**
 - **Total risk:** sum of undiversifiable and diversifiable risk.

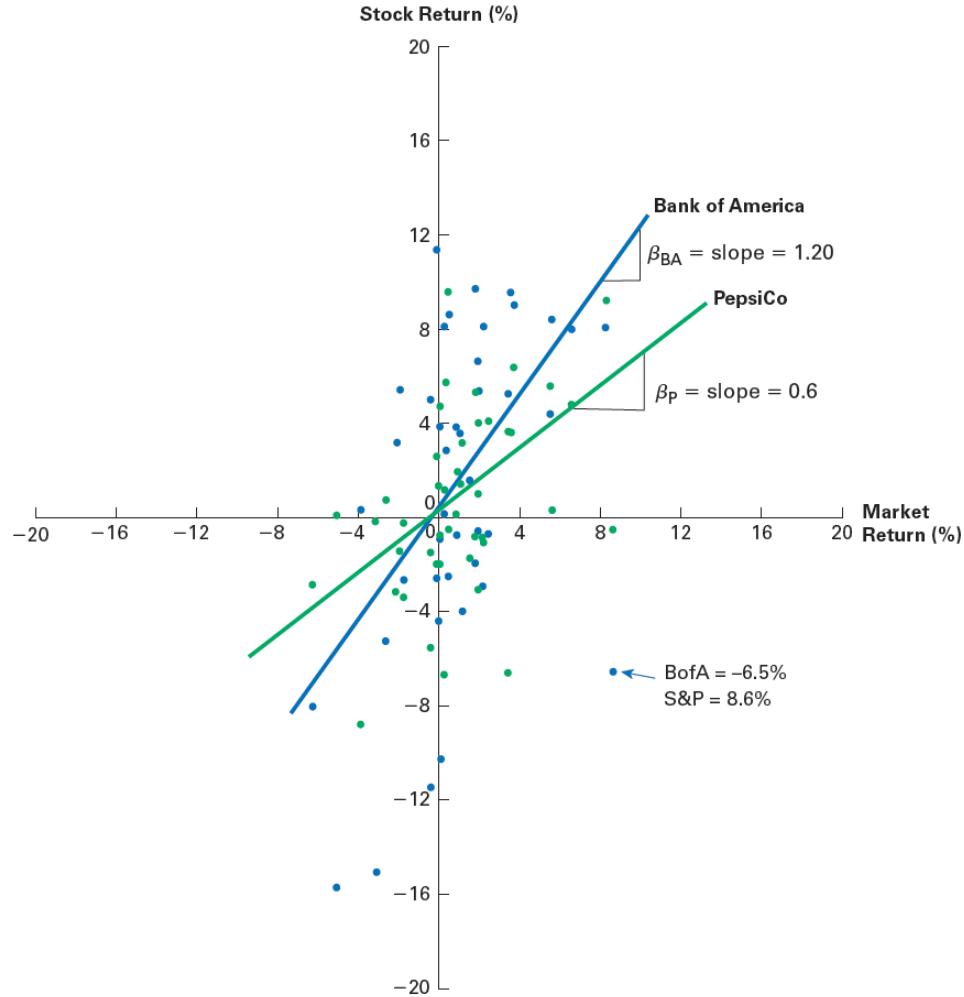
$$\text{Total risk} = \text{Diversifiable risk} + \text{Undiversifiable risk}$$

The Capital Asset Pricing Model

(3 of 11)

- Beta: A Measure of Undiversifiable Risk
 - **Beta:** a number that quantifies undiversifiable risk, indicating how the security's return responds to fluctuations in market returns.
 - Deriving Beta:
 - Betas can be derived graphically by plotting the coordinates for the market return and security return of a stock at various points in time and using statistical techniques to fit the “characteristic line” to the data points.
 - Equation for a straight line takes form:
 - The slope of the line is beta.
 - **m** from the equation
$$y = mx + b$$

Figure 5.5 Estimating Betas for Bank of America and Pepsi



The Capital Asset Pricing Model

(4 of 11)

- Beta: A Measure of Undiversifiable Risk
 - Interpreting Beta:
 - The beta for the overall market is 1.0.
 - Stocks may have positive or negative betas, although nearly all investments have positive betas.
 - The positive or negative sign in front of the beta number merely indicates whether the stock's return moves in the same direction as the general market (**positive beta**) or in the opposite direction (**negative beta**).
 - Most stocks have betas that fall between 0.50 and 1.75.

Table 5.4 Selected Betas and Associated Interpretations

Beta	Comment	Interpretation
+2.0	Move in same direction as the market	Twice as responsive as the market
+1.0		Same response as the market
+0.5		One-half as responsive as the market
0.0		Unaffected by market movement
-0.5	Move in opposite direction of the market	One-half as responsive as the market
-1.0		Same responsive as the market
-2.0		Twice as responsive as the market

The Capital Asset Pricing Model

(5 of 11)

- Beta
 - Interpreting Beta
 - Actual betas for some popular stocks, as reported on Yahoo! Finance in August 2018

Stock	Beta	Stock	Beta
Amazon	1.72	IBM	1.02
Molson Coors Brewing	0.47	Goldman Sachs	1.30
Wells Fargo	1.28	Microsoft	1.24
Procter & Gamble	0.39	Nike	0.64
Walt Disney	1.22	Century Casinos	0.83
eBay Inc.	1.51	Qualcomm	1.52
ExxonMobil	0.81	Walmart	0.40
The Gap	0.60	Facebook	0.89
Ford Motor	0.87	Xerox	1.06
Intel	0.90	Netflix	1.39

The Capital Asset Pricing Model

(6 of 11)

- Beta: A Measure of Undiversifiable Risk
 - Applying Beta
 - Beta measures the undiversifiable (or market) risk of a security.
 - Beta reveals how a security responds to market forces:
 - If the market return goes up by 10% and a stock's beta is 1.5, on average we would expect the stock's return to increase by 15%.
 - If the market return falls 10%, then the stock with a beta of 1.5 should, on average, experience a 15% decrease in its return.
 - Stocks with betas greater than 1.0 are more responsive than average to market fluctuations and are more risky than average.
 - Stocks with betas less than 1.0 are less risky than the average stock.

The Capital Asset Pricing Model

(7 of 11)

- The CAPM: The Connection Between Beta and Expected Return
 - Capital Asset Pricing Model: A model that uses beta to quantify the relation between risk and return for different investments.
 - The Equation
 - Equation 5.4

Expected return on investment j = Risk-free rate

+ [Beta for investment j \times (Expected market return – Risk-free rate)]

- Equation 5.4a

$$r_j = r_f + [b_j \times (r_m - r_f)]$$

The Capital Asset Pricing Model

(8 of 11)

- The CAPM: Using Beta to Estimate Return
 - The Graph: The Security Market Line
 - **Security Market Line (SML):** graphically shows the expected return (y-axis) for any security given its beta (x-axis).
 - For each level of undiversifiable risk (beta), the SML shows the return the investor should expect to earn in the marketplace.
 - It is the “picture” of the CAPM.

The Capital Asset Pricing Model

(9 of 11)

- The CAPM: Using Beta to Estimate Return
 - The Graph: The Security Market Line
 - Example: Assume you are thinking about investing in Bank of America stock, which has a beta of 1.2. At the time you are making your investment decision, the risk-free rate is 2% and the expected market return is 8%. Substituting these data into the CAPM, equation 5.4a we get:

$$r_{BA} = 2\% + 1.2(8\% - 2\%) = 9.2\%$$

- If the beta were 1.0, the required return would be lower:
$$r_{BA} = 2\% + 1.0(8\% - 2\%) = 8\%$$
 - If the beta were 2.0, the required return would be higher:

$$r_{BA} = 2\% + 2.0(8\% - 2\%) = 14\%$$

The Capital Asset Pricing Model

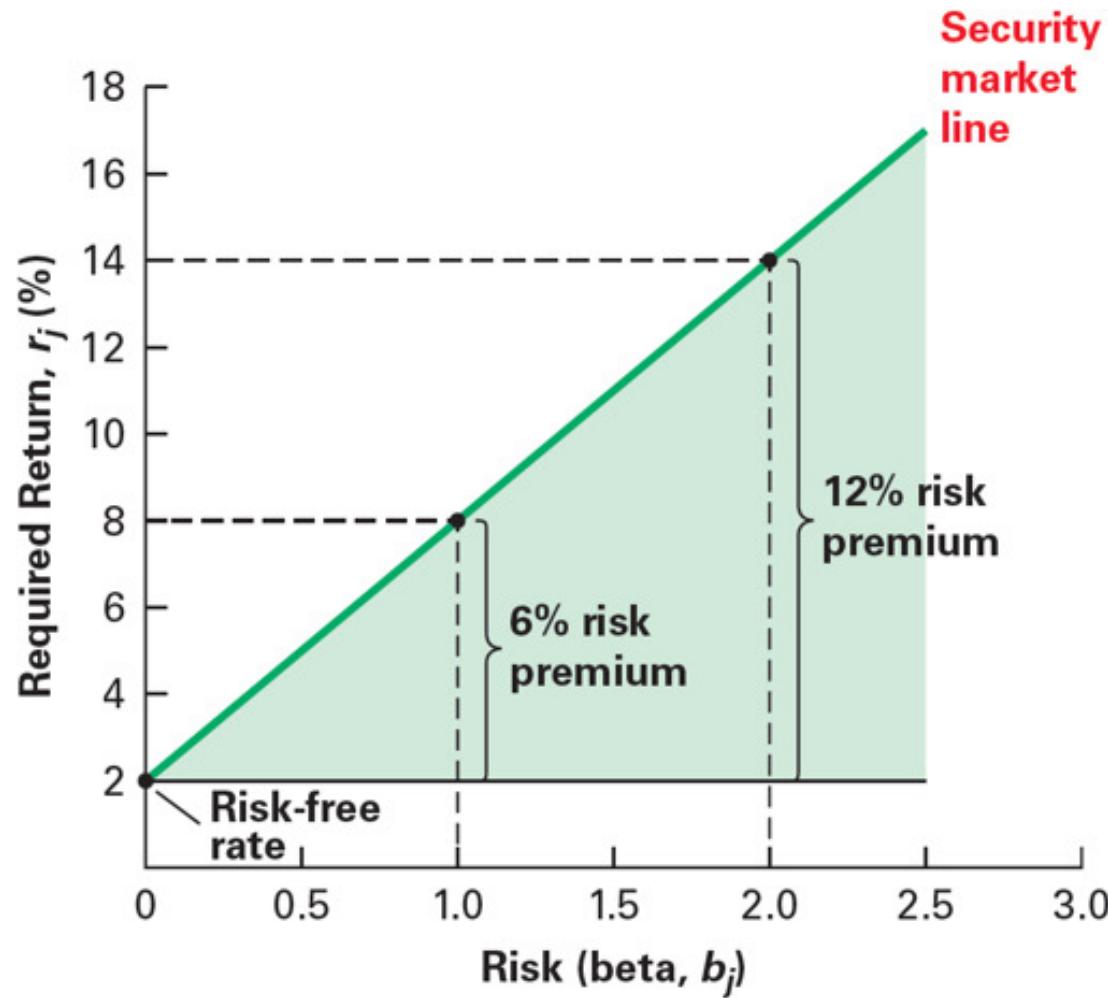
(10 of 11)

- The CAPM: Using Beta to Estimate Return
 - The Graph: The Security Market Line
 - Similarly, we can find the required return for a number of betas and end up with the following combinations of risk (beta) and required return:

Risk (beta)	Required Return
0.0	2%
0.5	5%
1.0	8%
1.5	11%
2.0	14%
2.5	17%

- Plotting these values on a graph will yield a straight line like the one in Figure 5.6.
- As risk (beta) increases, you can see that the risk premium and required return do as well.

Figure 5.6 The Security Market Line (SML)



The Capital Asset Pricing Model

(11 of 11)

- The CAPM: Using Beta to Estimate Return
 - Some Closing Comments
 - Limitations
 - To implement CAPM requires an estimate of beta, which in turn usually comes from historical data.
 - Betas estimated from historical data may or may not accurately reflect how the company's stock will perform relative to the overall market in the future.
 - Simplicity and Practical Appeal
 - CAPM provides a useful conceptual framework for evaluating and linking risk and return.
 - Important tool for investors.
 - Widely used in corporate finance: Many surveys show the primary method that companies use to determine the required rate of return on their stock is the CAPM.

Traditional Versus Modern Portfolio Management (1 of 11)

- Individual and institutional investors currently use two approaches to plan and construct their portfolios: Traditional and Modern Portfolio Theory (MPT)
 - The Traditional Approach
 - Modern Portfolio Theory
 - Reconciling the Traditional Approach and MPT

Traditional Versus Modern Portfolio Management (2 of 11)

- The Traditional Approach
 - Traditional portfolio management: emphasizes balancing the portfolio by assembling a wide variety of stocks and/or bonds.
 - interindustry diversification: typical emphasis uses securities of companies from a broad range of industries to diversify the portfolio.
 - Tends to focus on well-known companies
 - Perceived as less risky
 - Stocks are more liquid and available
 - Familiarity provides higher “comfort” levels for investors “window dressing”

Table 5.5 The Growth Fund of America (AGTHX) Investments in Select Industry Groups as of June 30, 2018

The Growth Fund of America appears to adhere to the traditional approach to portfolio management. Its total portfolio value is \$193,980.7 million, of which 80.9% is U.S. equities, 11.6% is non-U.S. equities, and 7.5% is cash & equivalents.

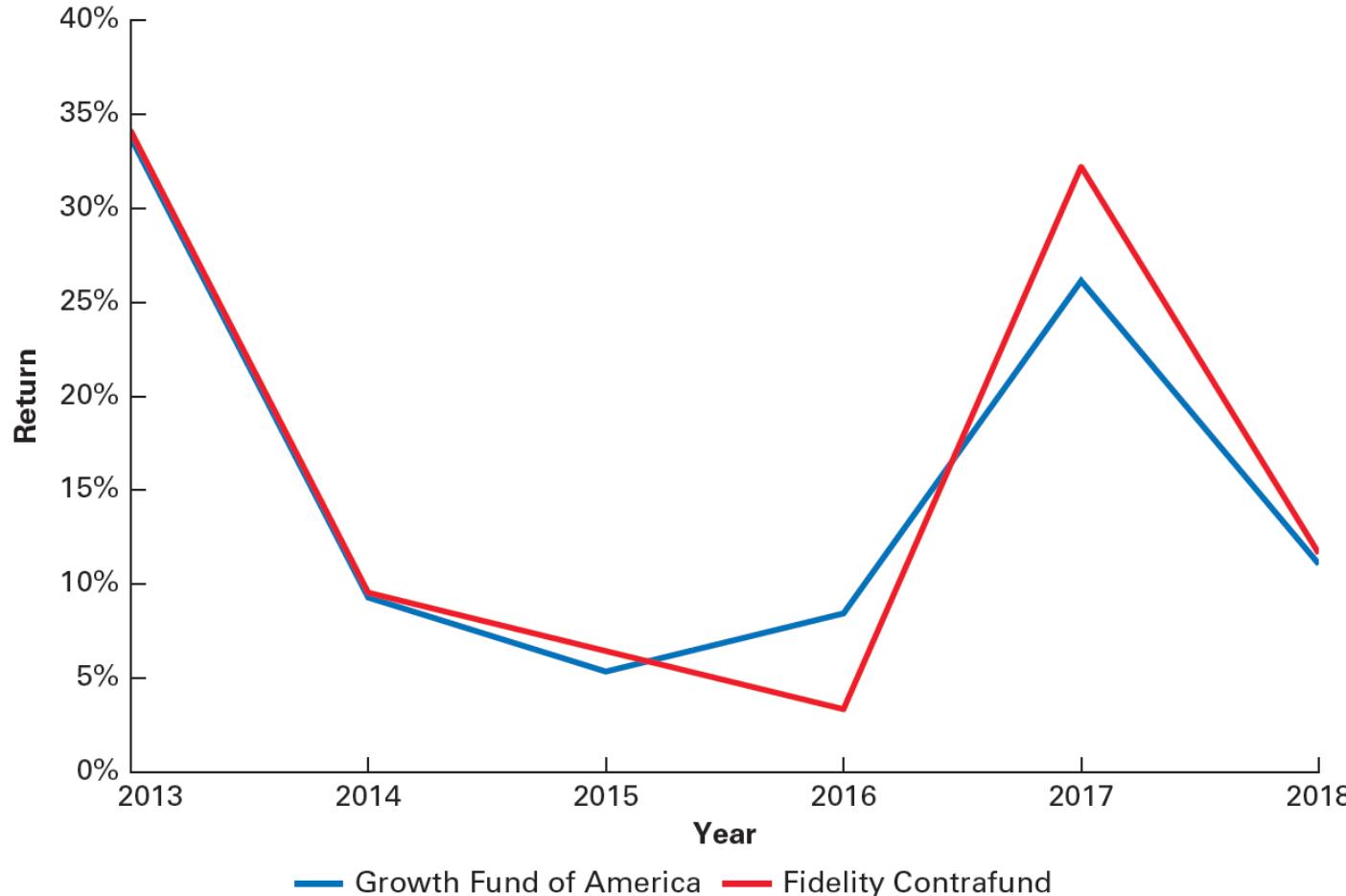
Sector Breakdown	Percentage
Information technology	27.9%
Consumer discretionary	21.8%
Health care	13.5%
Financials	8.7%
Energy	7.2%
Industrials	5.5%
Consumer staples	3.5%
Materials	3.0%
Real estate	1.0%
Telecommunication services	0.4%

(Source: Data from The Growth Fund of America, Class A Shares, Quarterly Fund Fact Sheet, June 30, 2018.)

Returns on the Growth Fund of America and the Fidelity Contrafund

- Figure 5.7 on the following slide plots annual returns from 2013 through 2018 on two large mutual funds, the Growth Fund of America and the Fidelity Contrafund. The funds' returns are highly correlated, perhaps because they hold very similar portfolios.

Figure 5.7 Returns on the Growth Fund of America and the Fidelity Contrafund



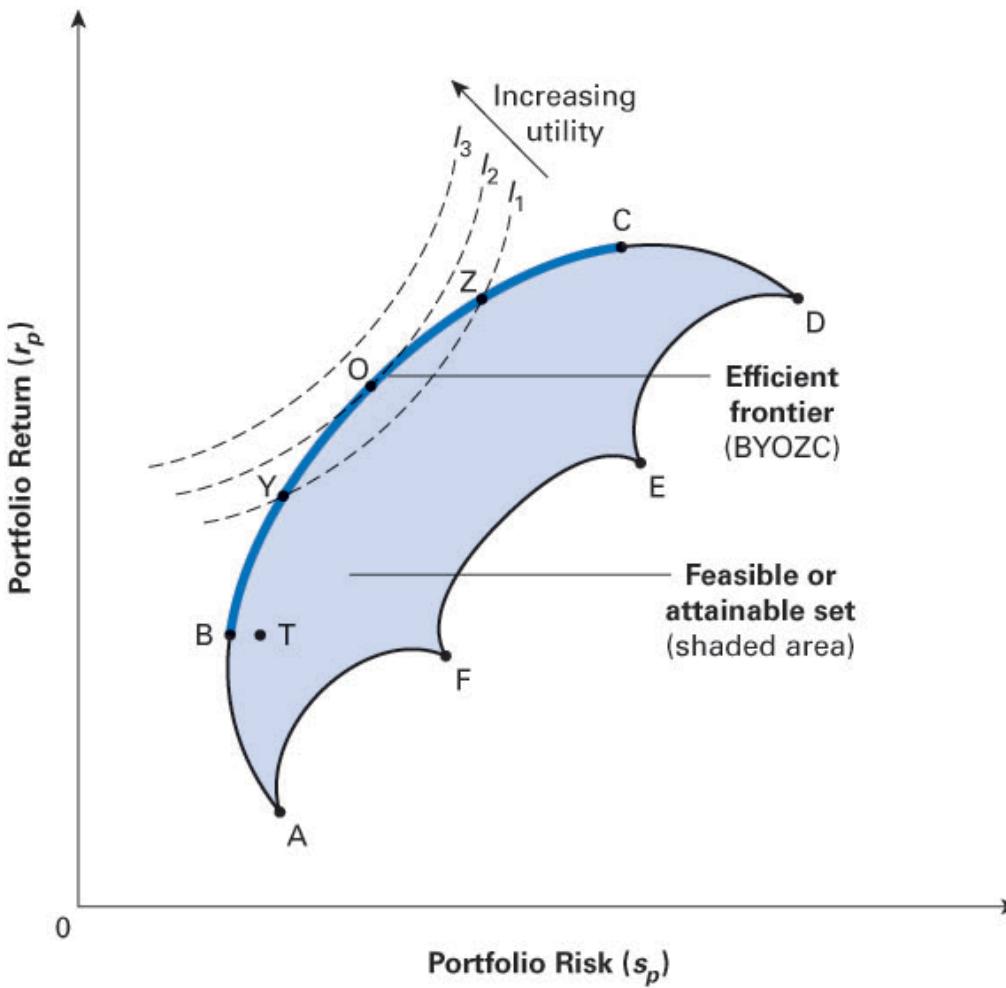
Traditional Versus Modern Portfolio Management (3 of 11)

- Modern Portfolio Theory
 - Modern portfolio theory (MPT): uses several basic statistical measures to develop a portfolio plan from:
 - Expected returns
 - Standard deviations
 - Correlations
 - Uses these measures among many combinations of investments to find an optimal portfolio.
 - Maximum benefits of diversification occur when investors find securities that are relatively uncorrelated and combine them in the portfolio.

Traditional Versus Modern Portfolio Management (4 of 11)

- Modern Portfolio Theory
 - The Efficient Frontier
 - Any number of possible portfolios could be constructed from the hundreds of investments available at any point in time.
 - **Feasible (attainable) set:** set of all possible portfolio combinations if the risk and return of each were plotted on a graph (ABYZCDEF on Figure 5.8).
 - **Efficient frontier:** portfolios that provide the best tradeoff between risk and return (boundary BYOZC on Figure 5.8).
 - Portfolios that fall below the frontier are not desirable because portfolios on the frontier offer higher returns for the same risk level
 - Portfolios that fall to the left are not feasible/available

Figure 5.6 The Feasible, or Attainable, Set and the Efficient Frontier



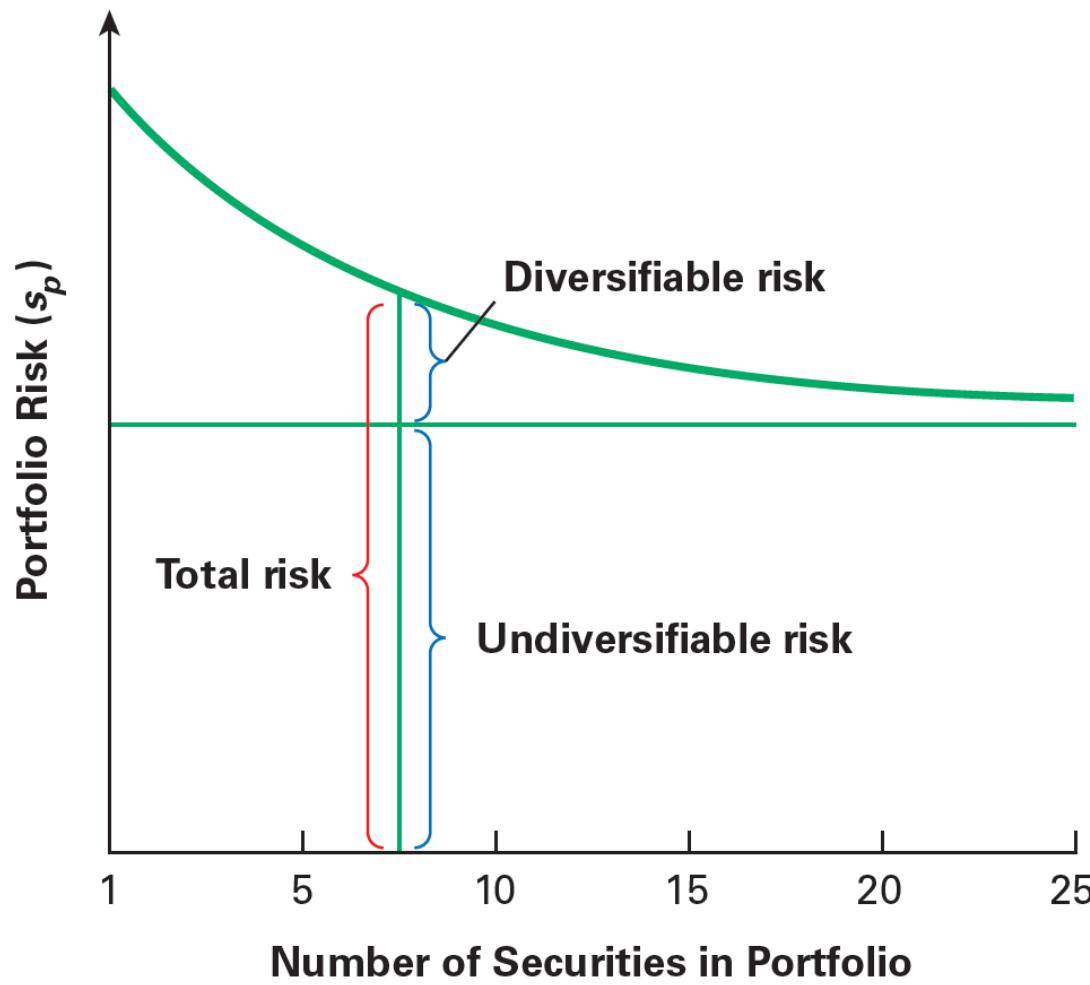
Traditional Versus Modern Portfolio Management (5 of 11)

- Modern Portfolio Theory
 - The Efficient Frontier
 - **Indifference curves** (I_1 , I_2 , and I_3 on Figure 5.8): indicate for a given level of utility (satisfaction), the set of risk-return combinations about which an investor would be indifferent.
 - **Optimal portfolio** (“O” on Figure 5.8): the point at which an investor’s highest possible indifference curve is tangent to the efficient frontier represents the highest level of satisfaction the investor can achieve given the available set of portfolios.

Traditional Versus Modern Portfolio Management (6 of 11)

- Modern Portfolio Theory
 - Portfolio Betas
 - Because there is no reward for bearing diversifiable risk, investors should minimize this form of risk by diversifying the portfolio so that only undiversifiable risk remains.
 - Risk diversification
 - Minimizing diversifiable risk through careful selection of investments requires that the investments chosen for the portfolio come from a wide range of industries.
 - As more securities are added to a portfolio, the total portfolio risk declines because of the effects of diversification.

Figure 5.9 Portfolio Risk and Diversification



Traditional Versus Modern Portfolio Management (7 of 11)

- Modern Portfolio Theory
 - Calculating Portfolio Betas
 - **The portfolio beta (b_p):** the beta of a portfolio, calculated as the weighted average of the betas of the individual assets in the portfolio.

Equation 5.5

$$\begin{aligned}\text{Portfolio beta} &= (\text{Proportion of portfolio's total dollar value in asset 1} \times \text{Beta on asset 1}) \\ &\quad + (\text{Proportion of portfolio's total dollar value in asset 2} \times \text{Beta for asset 2}) + \dots + \\ &\quad (\text{Proportion of portfolio's total dollar value in asset n} \times \text{Beta on asset n}) \\ &= \sum_{j=1}^n (\text{Proportion of portfolio's total dollar value in asset j} \times \text{Beta for asset j})\end{aligned}$$

Equation 5.5a

$$b_p = (w_1 \times b_1) + (w_2 \times b_2) + \dots + (w_n \times b_n) = \sum_{j=1}^n (w_j \times b_j)$$

Table 5.6 Betas for Tech and Consumer Portfolios

TABLE 5.6 BETAS FOR TECH AND CONSUMER PORTFOLIOS

Asset	Tech Portfolio		Consumer Portfolio	
	Proportion	Beta	Proportion	Beta
1	0.10	1.65	0.10	0.80
2	0.30	1.00	0.10	1.00
3	0.20	1.30	0.20	0.65
4	0.20	1.10	0.10	0.75
5	<u>0.20</u>	1.25	<u>0.50</u>	1.05
Total	<u>1.00</u>		<u>1.00</u>	

Traditional Versus Modern Portfolio Management (8 of 11)

- Modern Portfolio Theory
 - Calculating Portfolio Betas
 - Example: Consider the following two portfolios, Tech and Consumer. Calculate the betas for portfolios Tech and Consumer.

$$\begin{aligned} b_{Tech} &= (0.10 \times 1.65) + (0.30 \times 1.00) + (0.20 \times 1.30) + (0.20 \times 1.10) + (0.20 \times 1.25) \\ &= 0.165 + 0.300 + 0.260 + 0.220 + 0.250 = 1.195 \approx \underline{1.20} \end{aligned}$$

$$\begin{aligned} b_{Consumer} &= (0.10 \times 0.80) + (0.10 \times 1.00) + (0.20 \times 0.65) + (0.10 \times 0.75) + (0.50 \times 1.05) \\ &= 0.080 + 0.100 + 0.130 + 0.075 + 0.525 = \underline{0.91} \end{aligned}$$

Traditional Versus Modern Portfolio Management (9 of 11)

- Modern Portfolio Theory
 - Interpreting Portfolio Betas
 - Portfolio betas are interpreted exactly the same way as individual stock betas.
 - Table 5.7 lists the expected returns for three portfolio betas in two situations: an increase in market return of 10% and a decrease in market return of 10%.

Table 5.7 Portfolio Betas and Associated Changes in Returns

Portfolio Beta	Changes in Market Return (%)	Change in Expected Portfolio Return (%)
+2.0	+10.0%	+20.0%
	-10.0%	-20.0%
+0.5	+10.0%	+5.0%
	-10.0%	-5.0%
-1.0	+10.0%	-10.0%
	-10.0%	+10.0%

Traditional Versus Modern Portfolio Management (10 of 11)

- Modern Portfolio Theory
 - Two approaches to portfolio management: traditional and MPT
 - **Traditional:** stresses security selection and emphasizes diversification of the portfolio across industry lines.
 - **MPT:** stresses reducing correlations between securities within the portfolio to minimize diversifiable risk.

Traditional Versus Modern Portfolio Management (11 of 11)

- Reconciling the Traditional Approach and MPT
 - Which technique should we use?
 - Recommended portfolio management policy uses aspects of both approaches:
 - Determine how much risk you are willing to bear.
 - Seek diversification among different types of securities and across industry lines.
 - Pay attention to correlation of return between securities.
 - Use beta to keep portfolio at acceptable level of risk.
 - Evaluate alternative portfolios to select highest return for the given level of acceptable risk.

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 6 Common Stocks

With Prof Nugent

What Stocks Have to Offer (1 of 6)

- Common stock shareholders are part owners of the firm, and thus have a claim on the wealth created by the company. This claim is not without limitations.
 - **Residual owners:** a common stockholder's claim on company wealth is subordinate to the claims of other investors, such as lenders, and thus there is no guarantee that they will receive any return on their investment.
- The Appeal of Common Stocks
- Putting Stock Price Behavior in Perspective
- A Real Estate Bubble Goes Bust and So Does the Market
- The Pros and Cons of Stock Ownership

What Stocks Have to Offer (2 of 6)

- The Appeal of Common Stocks
 - Popular investment choice for both individual and institutional investors.
 - Stocks may increase in value over time and generating capital gains.
 - Stocks may provide a periodic income stream through dividends.

What Stocks Have to Offer (3 of 6)

- Putting Stock Price Behavior in Perspective
 - When the market is strong, investors can generally expect to benefit from price appreciation.
 - When markets falter, so do investor returns.
 - Bad market days are the exception, rather than the rule;
 - The total return on the S&P 500 over the 92-year period from 1926-2017 was negative just 24 times.
 - About three-quarters of the time, the market was up from less than 1% to nearly 54% on the year.
 - Upside potential: From 1926 to 2017, a \$1,000 investment in the S&P 500 grew to \$7.3 million!

Table 6.1 Historical Average Annual Returns on the Standard & Poor's 500, 1930–2017

	Rate of Return from Dividends	Rate of Return from Capital Gains	Total Return
1930s	5.7%	-1.4%	4.3%
1940s	5.8%	3.8%	9.6%
1950s	4.7%	16.2%	20.9%
1960s	3.2%	5.4%	8.6%
1970s	4.2%	3.3%	7.5%
1980s	4.1%	13.8%	17.9%
1990s	2.4%	16.5%	18.9%
2000s	1.8%	-0.7%	1.1%
2010–2017	2.0%	12.2%	14.2%
1930–2017	3.8%	7.6%	11.4%

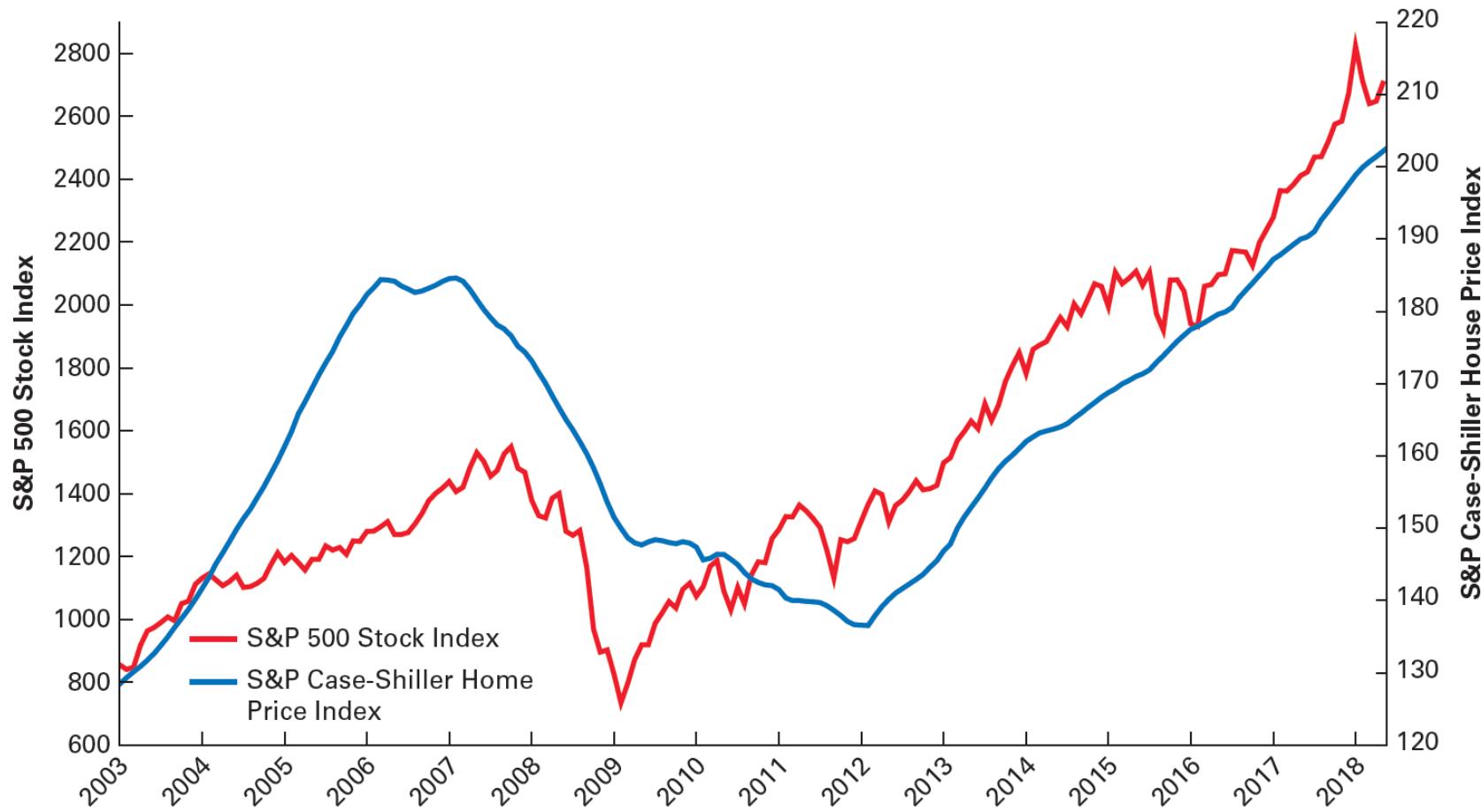
Note: The S&P 500 annual total returns come from Damodaran Online, and the S&P 500 annual dividend returns come from multpl.com. The S&P 500 annual capital gain returns are approximations, computed by the authors by subtracting the annual dividend return from the annual total return.

(Sources: Data from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/histretSP.html and <http://www.multpl.com/>.)

What Stocks Have to Offer (4 of 6)

- A Real Estate Bubble Goes Bust and So Does the Market
 - U.S. stocks rose along with housing prices for many years, but when weakness in the housing sector spilled over into banking, stock prices plummeted.
 - The average home price peaked in July 2006, and over the next three years fell sharply, falling 31% by summer of 2009.
 - The S&P 500 fell by 52% in just 16 months.
 - U.S. economy fell into a deep recession.

Figure 6.1 A Snapshot of U.S. Stock and Housing Indexes (2003 through 2018)



Source: Data from S&P Dow Jones Indices LLC.

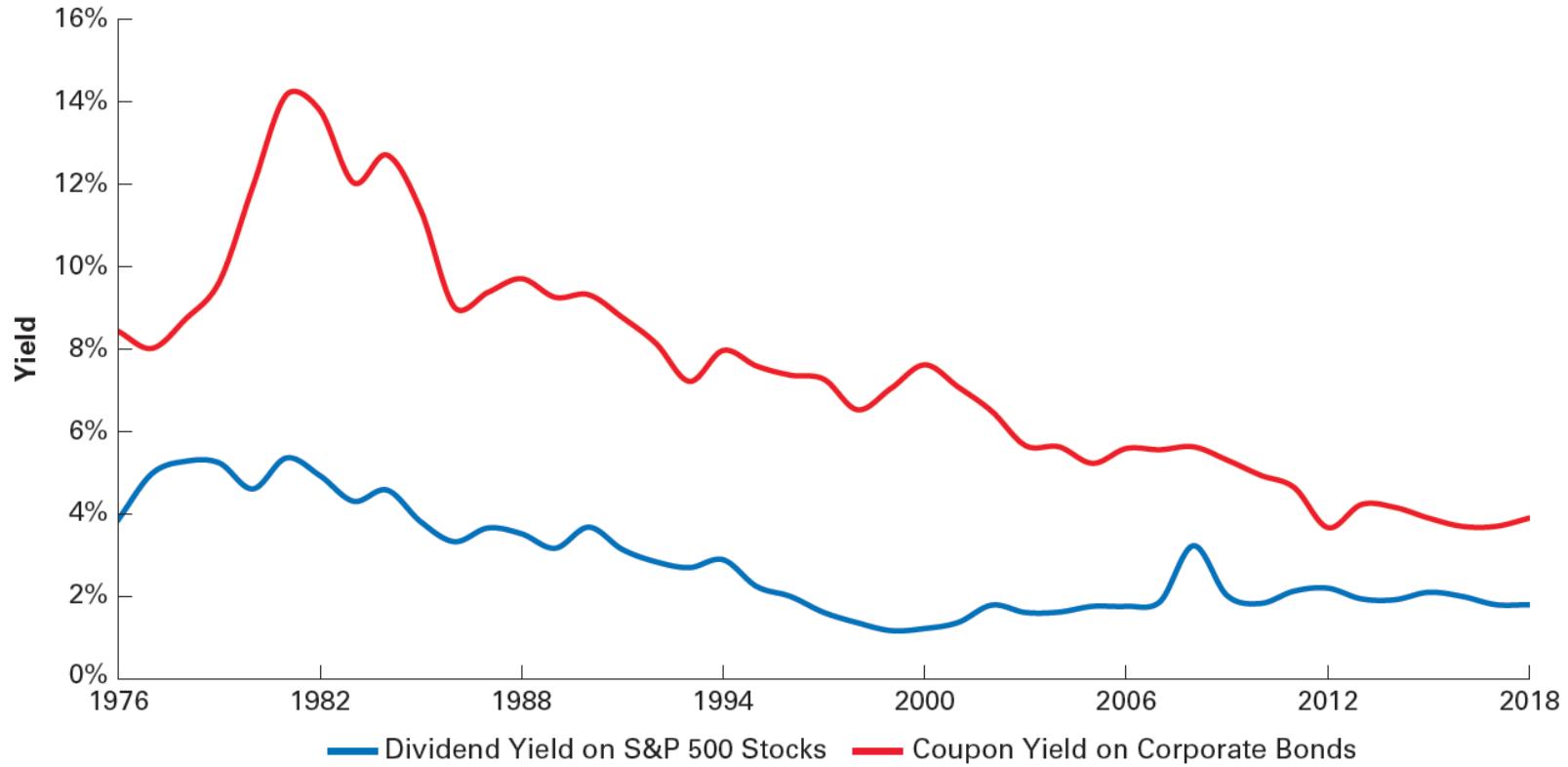
What Stocks Have to Offer (5 of 6)

- The Pros and Cons of Stock Ownership
 - The Advantages of Stock Ownership
 - Provide opportunity for substantial returns
 - Stocks typically outperform bonds, and usually by a wide margin.
 - Over the last century, stocks earned annual returns roughly double that of the returns provided by high-grade corporate bonds.
 - Stocks provide protection from inflation because over time their returns exceed the inflation rate.
 - Stocks are easy to buy and sell.
 - Costs associated with trading stocks are modest.
 - Price and market information is easy to find in the news and financial media.
 - Unit cost per share of stock is low enough to encourage ownership.

What Stocks Have to Offer (6 of 6)

- The Pros and Cons of Stock Ownership
 - The Disadvantages of Stock Ownership
 - Stocks are subject to various types of risk:
 - Business risk
 - Financial risk
 - Purchasing power risk
 - Market risk
 - Event risk
 - Stock returns are highly volatile and very hard to predict, so it is difficult to consistently select top performers.
 - Stocks generally distribute less current income compared to other investment alternatives.
 - Bonds pay more current income and do so with much greater certainty.

Figure 6.2 The Current Income of Stocks and Bonds



Source: Data from the St. Louis Federal Reserve (FRED) and <http://www.multpl.com/s-p500-dividend-yield/table>.

Basic Characteristics of Common Stock (1 of 11)

- **Equity capital:** every share of common stock represents an equity (ownership) position in a company. This is why stocks are sometimes called “equity securities”.
 - Common Stock as a Corporate Security
 - Buying and Selling Stocks
 - Common Stock Values

Basic Characteristics of Common Stock (2 of 11)

- Common Stock as a Corporate Security
 - **Publicly traded issues:** shares of stock that are readily available to the general public and that are bought and sold in the open market.
 - Issuing New Shares
 - **Public offering:** an offering to sell to the investing public a set number of shares of a firm's stock at a specified price
 - **Rights offering:** Existing stockholders have the first opportunity to purchase new shares of the company's stock in proportion to his or her current ownership position.
 - In both types of offerings, the net result is the same:
 - The firm ends up with more equity in its capital structure, and the number of shares outstanding increases.

Figure 6.3 An Announcement of a New Stock Issue

Filed Pursuant to Rule 424(b)(4)
Registration No. 333-215866

PROSPECTUS

200,000,000 Shares

Snap Inc.

Class A Common Stock

This is an initial public offering of shares of non-voting Class A common stock of Snap Inc.

Snap Inc. is offering to sell 145,000,000 shares of Class A common stock in this offering. The selling stockholders identified in this prospectus are offering an additional 55,000,000 shares of Class A common stock. We will not receive any of the proceeds from the sale of the shares being sold by the selling stockholders.

We have three classes of common stock: Class A common stock, Class B common stock, and Class C common stock. The rights of the holders of Class A common stock, Class B common stock, and Class C common stock are identical, except with respect to voting, conversion, and transfer rights. Class A common stock is non-voting. Anyone purchasing Class A common stock in this offering will therefore not be entitled to any votes. Each share of Class B common stock is entitled to one vote and is convertible into one share of Class A common stock. Each share of Class C common stock is entitled to ten votes and is convertible into one share of Class B common stock. The Class C common stock, which is held by our founders, each of whom is an executive officer and a director of the company, will represent approximately 88.5% of the voting power of our outstanding capital stock following this offering.

Before this offering, there has been no public market for our Class A common stock. The initial public offering price is \$17.00 per share. Our Class A common stock has been approved for listing on the New York Stock Exchange under the symbol "SNAP."

We are an "emerging growth company" under the Jumpstart Our Business Startups Act of 2012, have elected to comply with reduced public company reporting requirements, and may elect to comply with reduced public company reporting requirements in future filings.

See "[Risk Factors](#)" beginning on page 15 to read about factors you should consider before buying our Class A common stock.

	<u>Price to Public</u>	<u>Underwriting Discounts and Commissions (1)</u>	<u>Proceeds to Snap Inc.</u>	<u>Proceeds to Selling Stockholders</u>
Per share	\$17.00	\$0.425	\$16,575	\$16,575
Total	\$3,400,000,000.00	\$85,000,000.00	\$2,403,375,000.00	\$911,625,000.00

(1) See "Underwriting" for a description of the compensation payable to the underwriters.

At our request, the underwriters have reserved up to 7.0% of the shares of Class A common stock offered by this prospectus for sale, at the initial public offering price, to certain institutions as well as individuals associated with us. See "Underwriting—Directed Share Program."

To the extent that the underwriters sell more than 200,000,000 shares of Class A common stock, the underwriters have the option to purchase up to an additional 30,000,000 shares of Class A common stock from us and certain of the selling stockholders at the initial public offering price less the underwriting discount.

The Securities and Exchange Commission and state securities regulators have not approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The underwriters expect to deliver the shares against payment in New York, New York on March 7, 2017.

Morgan Stanley

Barclays

Goldman, Sachs & Co.

Credit Suisse

J. P. Morgan

Credit Suisse

Deutsche Bank Securities

Allen & Company LLC

Source: Snap Inc.,
Initial Public Offer
prospectus.

Basic Characteristics of Common Stock (3 of 11)

- Common Stock as a Corporate Security
 - Stock Spin-Offs
 - **Stock spin-off:** conversion of one of a firm's subsidiaries or divisions to a stand-alone company by distribution of stock in the new company to existing shareholders.
 - Notable recent spin-offs:
 - Land's End by Sears Holdings
 - News Corporation by 21st Century Fox
 - Trip Advisor by Expedia
 - Companies normally choose to execute a spin-off if they believe the subsidiary is no longer a good fit or if they feel they've become too diversified and want to focus on their core products.

Basic Characteristics of Common Stock (4 of 11)

- Common Stock as a Corporate Security
 - Stock Splits
 - **Stock split:** when a company increases the number of shares outstanding by exchanging a specified number of new shares of stock for each outstanding share.
 - two-for-one stock split: two new shares of stock are exchanged for each old share.
 - three-for-two stock split: three new shares of stock are exchanged for every two old shares outstanding.
 - Usually done to lower the stock price to make it more attractive to investors.
 - Normally, the price of the stock falls roughly in proportion to the terms of the split.
 - Example: Aflac two-for-one stock split on March 19, 2018.
 - Price day before split: \$90.49
 - Opening price day split went into effect: \$45.24

Basic Characteristics of Common Stock (5 of 11)

- Common Stock as a Corporate Security
 - Treasury Stock
 - **Treasury stock:** shares of stock that were originally sold by the company and have been repurchased by the company. Share repurchases are often called “buybacks.”
 - Reduces the number of shares outstanding to the public.
 - Kept by the corporation and may be used later for mergers, acquisitions, to pay stock dividends or to meet employee stock option plans.
 - Companies buyback when they believe their stock is undervalued and a good buy.
 - Companies also repurchase shares as an alternative to paying dividends.
 - Short-term impact usually positive: stock prices generally go up.

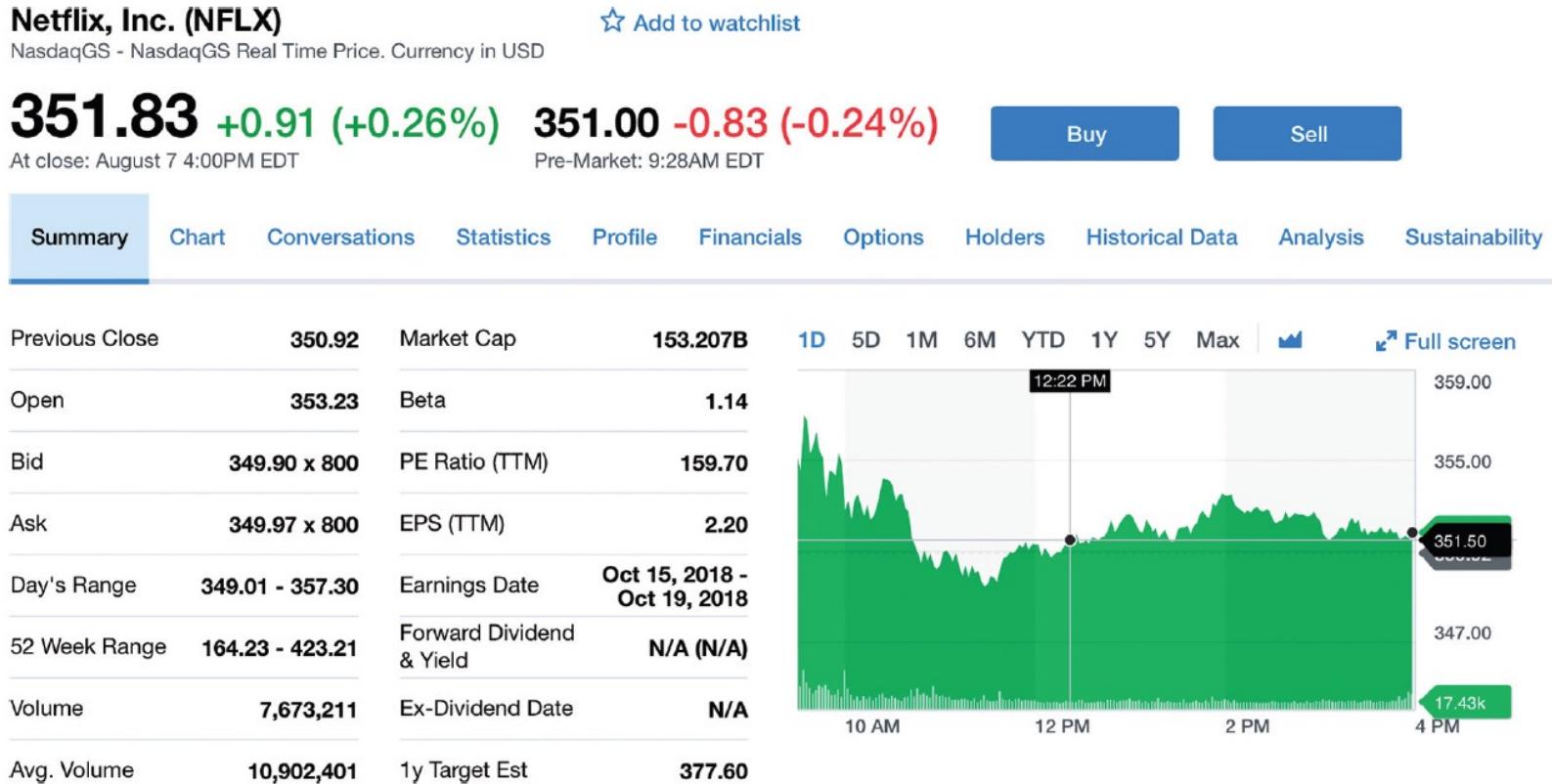
Basic Characteristics of Common Stock (6 of 11)

- Common Stock as a Corporate Security
 - Classified Common Stock
 - **Classified Common Stock:** common stock issued in different classes, each of which entitles holders to different privileges and benefits.
 - Different shares have different voting rights.
 - May also be used to grant different dividend rights.
 - Often used to allow a relatively small group to control the voting of a publicly-traded company.
 - Example: Facebook IPO in 2012 issued Class A and B shares
 - Class A shares, available to public, were entitled 1 vote per share
 - Class B shares, held by Facebook CEO and other insiders, were entitled to 10 votes per share.

Basic Characteristics of Common Stock (7 of 11)

- Buying and Selling Stocks
 - Reading the Quotes
 - Stock quotes appear daily in the financial press and online
 - **Market capitalization:** total number of shares outstanding multiplied by the share price (market value per share).
 - Example: Consider quotes that appear at Yahoo! Finance, such as in Figure 6.4.

Figure 6.4 A Stock Quote for Netflix



Source: yahoo! Finance, <https://finance.yahoo.com/quote/NFLX?p=NFLX>.

Basic Characteristics of Common Stock (8 of 11)

- Buying and Selling Stocks
 - Transaction Costs
 - Investors can trade stock in round or odd lots:
 - Round lot: 100 shares of stock or multiples of 100.
 - Odd lot: less than 100 shares of stock.
 - An investor incurs transaction costs when buying or selling stock.
 - Major cost is brokerage fee paid at the time of the transaction, from a fraction of 1% to 2% or more.
 - Can be higher when buying odd lots or small numbers of shares.
 - Bid-ask spread: difference between the bid and ask prices for a stock.
 - Cost you incur when you make a roundtrip trade (i.e. purchase and then later sell).

Basic Characteristics of Common Stock (9 of 11)

- Common Stock Values
 - **Par Value:** arbitrary amount assigned to a stock when it is first issued.
 - Set very low, representing a minimum value (floor) for the value of the stock.
 - Mainly an accounting term and not very useful to investors
 - **Book Value:** Stockholder's equity as reported on the balance sheet.
 - Accounting term
 - Difference between the company's assets and liabilities (less any preferred stock)
 - Backward-looking estimate of value

Basic Characteristics of Common Stock (10 of 11)

- Common Stock Values
 - **Market Value:** the current price of the stock in the stock market.
 - Forward-looking, reflecting investors' expectations about how the company will perform in the future.
 - Stocks usually trade at market prices that exceed their book values, sometimes to a very great degree.
 - When a stock's market value drops below its book value, the firm is usually dealing with some sort of financial distress and doesn't have good prospects for growth.

Basic Characteristics of Common Stock (11 of 11)

- Common Stock Values
 - **Investment Value:** the amount that investors believe the stock should be trading for, or what they think it is worth.
 - Probably the most important measure for a stockholder.
 - Determined by a complex process of evaluating risk and return information to place a value on the stock that represents the maximum price an investor should be willing to pay for the issue.

Common Stock Dividends (1 of 9)

- Dividend income is one of the two basic sources of return to investors. Dividends represent the return of part of the profit of the company to the owners (the stockholders).
- Dividend income is more predictable than capital gains, so it is preferred by investors seeking lower risk.
- Current tax laws put dividends on the same plane as capital gains; both now are taxed at the same rate.
 - The Dividend Decision
 - Types of Dividends
 - Dividend Reinvestment Plans

Common Stock Dividends (2 of 9)

- The Dividend Decision
 - A firm's board of directors evaluates the firm's operating results and financial condition to determine whether dividends should be paid out and in what amount.
 - Corporate versus Market Factors
 - Corporate:
 - **Earnings Per Share:** the amount of annual earnings available to common stockholders, stated on a per-share basis.

$$\text{Equation 6.1} \quad \text{EPS} = \frac{\text{Net profit after taxes} - \text{Preferred dividends}}{\text{Number of shares of common stock outstanding}}$$

Common Stock Dividends (3 of 9)

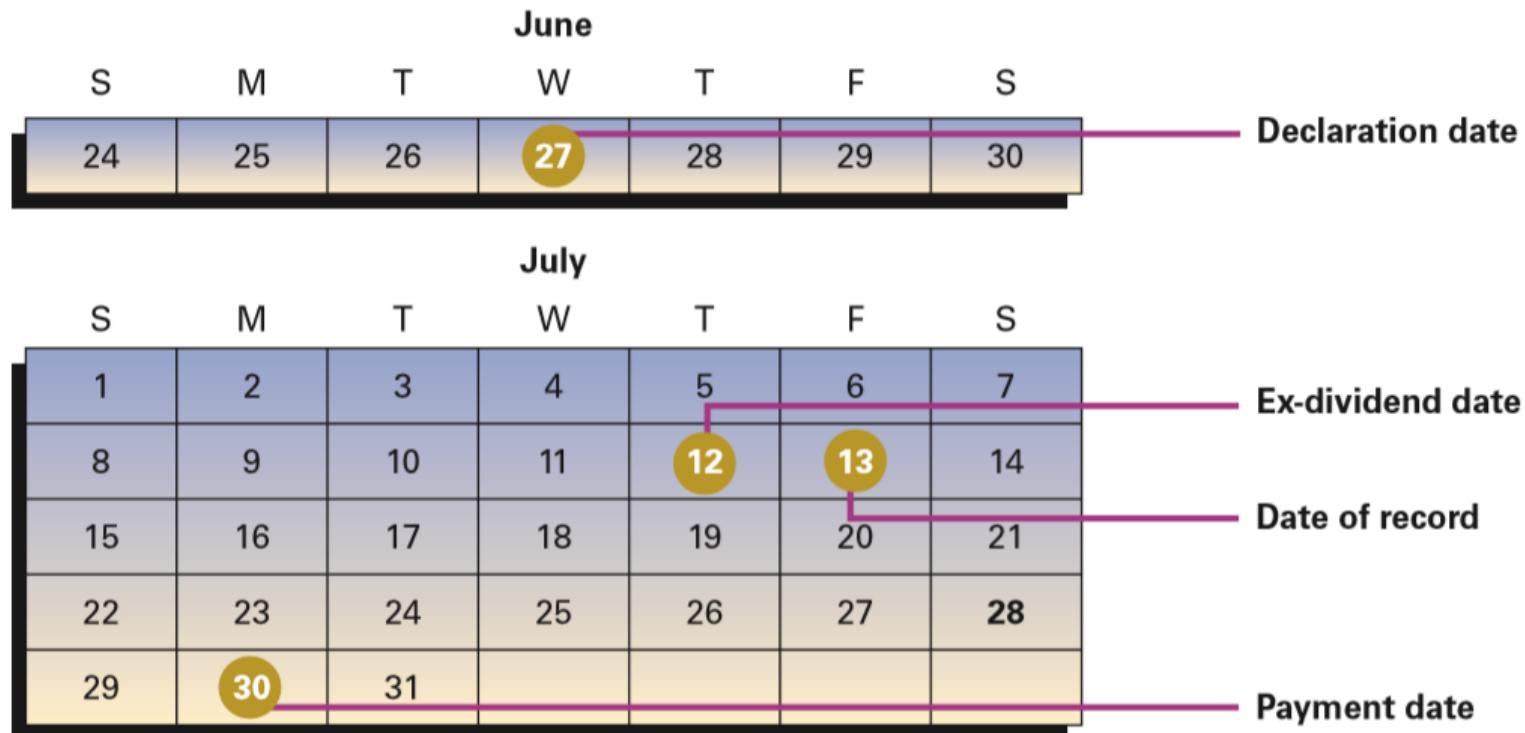
- The Dividend Decision
 - Corporate versus Market Factors
 - Other Corporate:
 - Growth prospects: how much does the firm need of their earnings to invest and finance future growth?
 - Cash position: Make sure dividends won't lead to a cash shortfall.
 - Loan agreements: Is the firm legally limited in the amount of dividends it can pay?
 - Market:
 - Can the firm justify to investors retaining the earnings and reinvesting them at a favorable rate of return to achieve faster growth and higher profits?
 - What are the dividend expectations of its shareholders?

Common Stock of Dividends (4 of 9)

- The Dividend Decision
 - Some Important Dates
 - Once a dividend is declared, the firm must indicate certain dates associated with that dividend:
 - Date of record:** date on which the investor must be a registered shareholder of the firm (holder of record) to receive a dividend.
 - Payment date (payable date):** actual date on which the company will mail dividend checks to holders of record; generally follows the date of record by a week or two.
 - Ex-dividend date:** dictates whether you were an official shareholder and therefore eligible to receive the declared dividend.
 - Stock will sell without the dividend for three business days up to and including the date of record because of time needed to make bookkeeping entries

Common Stock of Dividends (5 of 9)

- The Dividend Decision
 - Some Important Dates



Common Stock Dividends (6 of 9)

- Types of Dividends
 - Two main types:
 - **Cash dividend:** dividend paid out in the form of cash
 - **Stock dividend:** dividend paid out in the form of stock
 - Rarely, dividends may be paid out in other forms such as stock spin-offs or perhaps samples of the company's products.
 - Cash Dividends
 - Most common
 - Tend to increase over time as companies' earnings grow.

Common Stock of Dividends (7 of 9)

- Types of Dividends
 - Cash Dividends
 - **Dividend yield:** measures dividends on a relative (percentage) basis rather than on an absolute (dollar) basis.
 - Equation 6.2

$$\text{Dividend yield} = \frac{\text{Annual dividends received per share}}{\text{Current market price of the stock}}$$

- **Dividend Payout Ratio:** measures the percentage of earnings that a firm pays in dividends.
 - Equation 6.3

$$\text{Dividend payout ratio} = \frac{\text{Dividends per share}}{\text{Earnings per share}}$$

Common Stock of Dividends (8 of 9)

- Types of Dividends
 - Stock Dividends
 - A stock dividend means the firm pays its dividend by distributing additional shares of stock.
 - A 10% stock dividend would mean that you would receive 1 new share of stock for each 10 shares you currently own.
 - This dividend would normally lead to a decline of around 10% in the stock's share price.
 - Stock dividends, unlike cash dividends, are not taxed until you actually sell the stock.

Common Stock of Dividends (9 of 9)

- Dividend Reinvestment Plans
 - **Dividend Reinvestment Plan (DRIP):** A corporate-sponsored program where shareholders can have their cash dividends automatically reinvested into additional shares of the company's stock.
 - Over 1,000 companies offer DRIPs
 - Convenient and inexpensive way to accumulate capital
 - Usually free of brokerage commissions
 - Most plans allow partial participation
 - Similar reinvestment programs are offered by mutual funds and some brokerage houses such as Bank of America and Fidelity.
 - Reinvested dividends are treated as taxable income in the year they're received, just as though they had been received as cash.

Table 6.2 Cash or Reinvested Dividends?

Situation: You buy 100 shares of stock at \$25 a share (total investment, \$2,500); the stock currently pays \$1 a share in annual dividends. The price of the stock increases at 8% per year; dividends grow at 5% per year.

Investment Period	Number of Shares Held	Market Value of Stock Holdings (\$)	Total Cash Dividends Received (\$)
Take Dividends in Cash			
5	100	\$ 3,672	\$ 552
10	100	\$ 5,397	\$1,258
15	100	\$ 7,930	\$2,158
20	100	\$11,652	\$3,307
Full Participation in Dividend Reinvestment Plan (100% of cash dividends reinvested)			
5	115.59	\$ 4,245	0
10	135.66	\$ 7,322	0
15	155.92	\$12,364	0
20	176.00	\$20,508	0

Types and Uses of Common Stock

(1 of 23)

- The market contains a wide range of stocks, from the most conservative to the highly speculative. Generally, the kinds of stocks that investors seek depend upon their investment objectives and investment programs.
 - Types of Stocks
 - Investing in Foreign Stocks
 - Alternative Investment Strategies

Types and Uses of Common Stock

(2 of 23)

- Types of Stocks
 - **Blue-Chip Stocks:** stocks issued by large, well-established firms with long track records of earning profits and paying dividends.
 - Companies are often leaders in their industries
 - Not all blue-chips are alike:
 - Some provide consistently high dividend yields: AT&T, Chevron, McDonald's, Johnson & Johnson, Pfizer.
 - Others are more growth-oriented: Nike, Home Depot, Walgreen's, Lowe's, United Parcel Service
 - Less risky than most stocks; Appeal to investors who want to earn higher returns than bonds typically offer without taking a great deal of risk.

Types and Uses of Common Stock

(3 of 23)

- Types of Stocks
 - **Income Stocks:** stocks with a long history of regularly paying higher-than-average dividends.
 - Ideal for investors seeking relatively safe and high level of current income.
 - Dividends tend to increase regularly over time
 - Some companies pay high dividends because they offer limited growth potential
 - Subject to a fair amount of interest rate risk
 - Examples: Many public utilities such as American Electric Power and Duke Energy, as well as Conagra Foods, General Mills, and Altria Group.

Types and Uses of Common Stock (4 of 23)

- Types of Stocks
 - **Growth Stocks:** stocks issued by companies experiencing rapid growth in revenues and earnings.
 - Have sustained earnings growth well above general market.
 - Typically pay little or no dividends.
 - May include blue chip stocks as well as speculative stocks.
 - Appeal to investors looking for attractive capital gains, rather than dividends, and willing to bear more risk.
 - Riskier investment because price may fall if earnings growth cannot be maintained, particularly in a down market.
 - Examples: Amazon, Gilead Sciences, Centene, and Starbucks

Types and Uses of Common Stock

(5 of 23)

- Types of Stocks
 - **Tech Stocks:** stocks representing the technology sector of the market.
 - Includes companies that produce computers, semiconductors, data storage devices, and software as well as those that provide Internet services, networking equipment, and wireless communications.
 - Range from speculative stocks of small companies to stocks of large companies that are growth-oriented, some of which are legitimate blue chips.
 - Vast majority of these stocks are traded on the Nasdaq
 - Offer potential for very high returns but also involve considerable risk and volatility.
 - Examples: Apple, Cisco Systems, Google, AMD, NVIDIA, Marvell Technology, LinkedIn, Facebook, Electronic Arts

Types and Uses of Common Stock

(6 of 23)

- Types of Stocks
 - **Speculative Stocks:** stocks that offer potential for substantial price appreciation, but that lack sustained records of success.
 - Attractive particularly when the market is bullish.
 - Offer attractive growth prospects with the chance to “hit it big” in the market.
 - Highly risky
 - Companies lack a sustained track record of business and financial success.
 - Earnings may be uncertain or highly unstable.
 - Stock price subject to wide swings in price.
 - Usually pay out little or no dividends.
 - Examples: Sirius XM Radio, Destination Maternity, Global Power Equipment Group, Iridium Communications.

Types and Uses of Common Stock

(7 of 23)

- Types of Stocks
 - **Cyclical Stocks:** stocks issued by companies whose earnings are closely linked to the overall economy.
 - Stock price tends to move up and down with the business cycle.
 - Tend to do well when the economy is growing, especially in early stages of economic recovery.
 - Tend to perform poorly in a weakening economy.
 - Examples:
 - Alcoa, Caterpillar, Genuine Parts, Lennar, Brunswick, Timken
 - Companies that serve markets tied to capital equipment spending by business or to consumer spending for big ticket, durable items like houses and cars.

Types and Uses of Common Stock

(8 of 23)

- Types of Stocks
 - **Defensive Stocks:** stocks that tend to hold their value, and even do well, when the economy starts to falter.
 - Tend to be less susceptible to downswings in the business cycle than the average stock.
 - Commonly used by aggressive investors looking for a “parking place” during a slow economy.
 - Include stocks of public utilities, industrial and consumer goods companies that produce or market staples such as beverages, foods and drugs.
 - Examples: Walmart, Kraft Heinz, WD-40, Extendicare

Types and Uses of Common Stock

(9 of 23)

- Types of Stocks
 - Market-Cap Stocks
 - U.S. stock market can be broken into three segments based on a stock's market capitalization.
 - **Large-cap stocks:** stocks of large companies with market capitalizations over \$10 billion
 - Few in number, but account for over 75% of the total market value of all U.S. equities.
 - Bigger is not necessarily better: small-cap stocks tend to earn higher returns.
 - Examples: Walmart, Exxon Mobil, Apple

Types and Uses of Common Stock

(10 of 23)

- Types of Stocks
 - Market-Cap Stocks
 - **Mid-cap Stocks:** stocks of medium-sized companies with market capitalizations between \$2 billion and \$10 billion.
 - Provide opportunity for greater capital appreciation than large-cap stocks, but less price volatility than small-cap stocks.
 - Usually have long-term track records
 - Examples: Dick's Sporting Goods, Hasbro, Wendy's, and Williams-Sonoma.
 - “Baby blues” : a type of mid-cap stock that offers the same characteristics of blue chip stocks, except size.
 - Ideal for investors seeking quality long-term growth
 - Examples: Logitech and American Eagle Outfitters.

Types and Uses of Common Stock

(11 of 23)

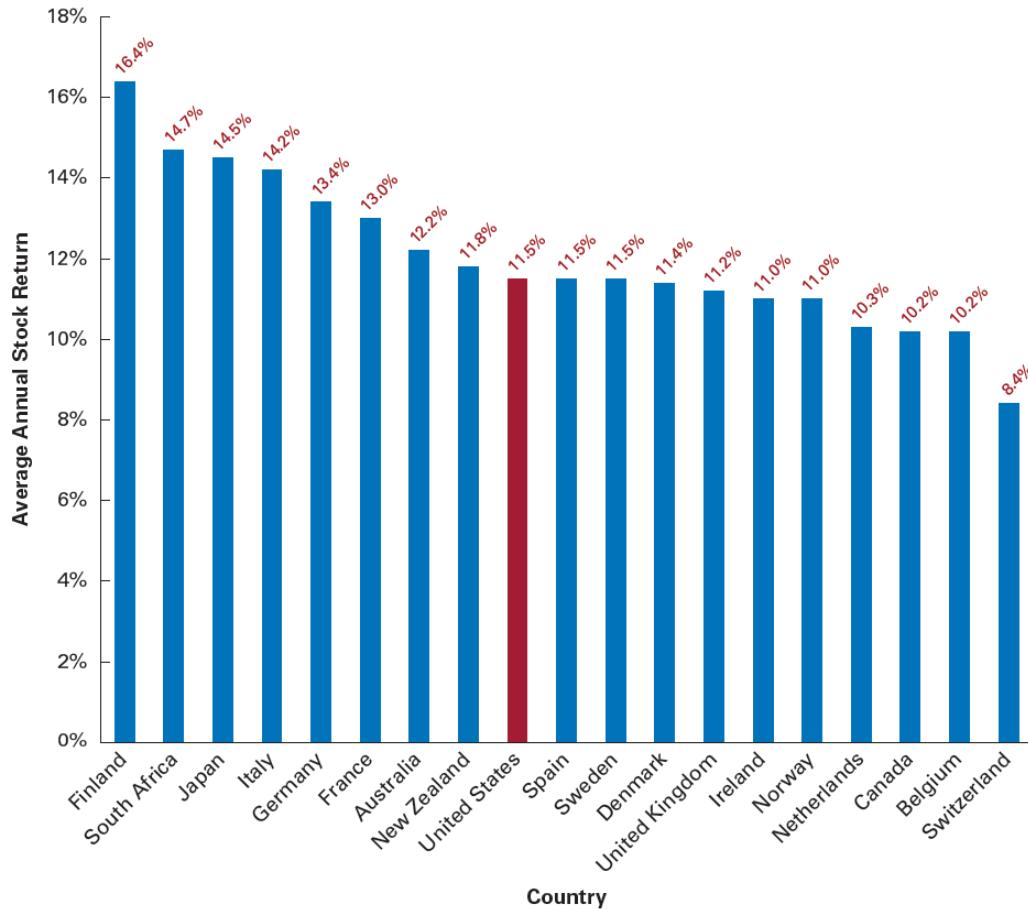
- Types of Stocks
 - Market-Cap Stocks
 - **Small-cap stocks:** stocks of small companies with market capitalizations less than \$2 billion
 - Generally have annual revenues of less than \$250 million.
 - Spurts of growth can have dramatic effects on earnings and stock price.
 - Usually not widely-traded; liquidity is an issue.
 - Potential for high returns, but along with that comes high-risk exposure.
 - Examples: Spectrum Pharmaceuticals, TiVo, and Shoe Carnival
 - Special Category: Initial Public Offering (IPO)

Types and Uses of Common Stock

(12 of 23)

- Investing in Foreign Stocks
 - Globalization of financial markets is growing
 - U.S. share of the world equity market dropped below 40% in 2018 compared to two-thirds in 1970.
 - Comparative Returns
 - Over a long period of time, stock returns in the U.S. have been unremarkable relative to those in other markets around the world.
 - There are definitely attractive returns awaiting investors willing to venture in to foreign markets.

Figure 6.5 Average Annual Stock Returns Around the World (1900 to 2017)



Source: Based on Elroy Dimson, Paul Marsh, and Mike Staunton, *Credit Suisse Global Investment Returns Yearbook 2018*.

Types and Uses of Common Stock

(13 of 23)

- Investing in Foreign Stocks
 - Going Global: Direct Investments
 - Most adventuresome approach
 - Know what you're doing and be prepared to tolerate a good deal of market risk
 - Logistical problems:
 - Currency fluctuations can have dramatic impact on your returns.
 - Different regulatory and accounting standards.
 - Language barriers, “red tape”, tax issues.

Types and Uses of Common Stock

(14 of 23)

- Investing in Foreign Stocks
 - Going Global with ADRs
 - Buy American depository receipts (ADRs), which are dollar-denominated instruments that represent ownership interest in American depository shares (ADSs).
 - ADSs represent a certain number of shares in a non-U.S. company that have been deposited in a U.S. bank.
 - Great for investors who want to own foreign stocks without the hassles that often come with them.
 - ADRs are bought and sold on U.S. markets just like stocks in U.S. companies.
 - Transactions are in U.S. dollars.

Types and Uses of Common Stock

(15 of 23)

- Investing in Foreign Stocks
 - Putting Global Returns in Perspective
 - Foreign stocks are valued much the same way as U.S. stocks
 - Earnings and dividends drive stock values in foreign markets
 - Each market reacts to its own set of economic forces
 - Additional diversification opportunities for investors outside of their domestic markets

Equation 6.4

Total returns (in U.S. dollars) =

Current income (dividends) + Capital gains (or losses) ± Changes in currency exchange rates

Equation 6.5

Total returns (in U.S. dollars) =

Returns from current income and capital gains (in local currency) ± Returns from changes in currency exchange rates

Types and Uses of Common Stock

(16 of 23)

- Investing in Foreign Stocks
 - Measuring Global Returns
 - The “exchange rate” represents the value of the foreign currency in U.S. dollars, or how much one unit of foreign currency is worth in U.S. money.

Equation 6.6

Total return (in U.S. dollars) =

$$\left[\frac{\text{Ending value of stock in foreign currency} + \text{Amount of dividends received in foreign currency}}{\text{Beginning value of stock in foreign currency}} \times \frac{\text{Exchange rate at end of holding period}}{\text{Exchange rate at beginning of holding period}} \right]$$

Types and Uses of Common Stock

(17 of 23)

- Investing in Foreign Stocks
 - Currency Exchange Rates
 - A stronger U.S. dollar has negative impact on foreign investments
 - A weaker U.S. dollar has positive impact on foreign investments
 - You want the value of both the foreign stock and the foreign currency to go up over your investment horizon.

Types and Uses of Common Stock (18 of 23)

- Alternative Investment Strategies
 - Investors may use common stocks as a:
 - storehouse of value
 - Safety of investment most important
 - Use high-quality blue chip and non-speculative stocks
 - way to accumulate capital
 - Capital gains and/or dividends build up wealth
 - Growth stocks and/or income stocks
 - Long-term investment horizon
 - source of income
 - Dependable flow of dividends
 - High-yield, good quality income shares preferred
 - Depending on their investment goals, investors use various investment strategies.

Types and Uses of Common Stock (19 of 23)

- Alternative Investment Strategies
 - Buy-and-Hold:
 - Basic and very conservative investment strategy.
 - Objective is to place money in a secure investment and watch it grow over time.
 - Investors buy high quality stocks that offer attractive current income and/or capital gains.
 - Investors hold these stocks for extended periods, possibly 10 to 15 years.
 - Investors often add to existing stocks over time.
 - Popular with value-oriented investors.

Types and Uses of Common Stock

(20 of 23)

- Alternative Investment Strategies
 - Current Income:
 - Investors buy stocks that have increasing dividend yields
 - Safety and stability of income are of primary importance
 - Capital gains are of secondary importance
 - Often used to provide a supplement to income, such as in retirement.

Types and Uses of Common Stock (21 of 23)

- Alternative Investment Strategies
 - Quality Long-Term Growth
 - Emphasizes capital gains as primary source of return.
 - Significant trading of stocks may occur over time.
 - Investors buy high-quality growth stocks, including mid-cap and baby blue stocks and tech stocks.
 - Diversification is used to spread higher level of risk
 - “Total Return Approach” is a version that combines quality long-term growth as well as high income.
 - Investors in this approach are concerned with quality.
 - Amount of return is more important than the source of the return.
 - Investors seek the most attractive returns wherever they can find them, be they from a growing stream of dividends or from price appreciation.

Types and Uses of Common Stock

(22 of 23)

- Alternative Investment Strategies
 - Aggressive Stock Management
 - Seeks attractive rates of return through a fully managed portfolio.
 - Investor aggressively trades in and out of stocks, often holding for short periods.
 - Capital gains are primary goal.
 - Timing security transactions and turning investment capital over fairly rapidly are key elements of this strategy.
 - Substantial risks and trading costs.
 - Time consuming to manage.

Types and Uses of Common Stock

(23 of 23)

- Alternative Investment Strategies
 - Speculation and Short-Term Trading
 - Sole objective is capital gains.
 - Most risky strategy; Highest level of risk due to emphasis on capital gains in short time period.
 - Investors concentrate on speculative or small-cap stocks and tech stocks; not averse to foreign shares (especially those in emerging markets).
 - Process of constantly switching from one position to another, as new opportunities appear.
 - Investors often look for “big score” on unknown stock.
 - Time consuming & high trading costs.

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 7

Analyzing Common Stocks

With Prof Nugent

Security Analysis (1 of 5)

- Security Analysis should be part of formulating a successful long-range investment program.
 - Principles of Security Analysis
 - Who Needs Security Analysis in an Efficient Market?

Security Analysis (2 of 5)

- Principles of Security Analysis
 - **Security analysis:** process of gathering information, organizing it into a logical framework, and then using the information to determine the intrinsic value of common stock.
 - **Intrinsic value:** a measure of the underlying worth of a share of stock.
 - A prudent investor will only buy a stock if its market price does not exceed what the investor thinks the stock is worth.
 - Intrinsic value depends upon several factors:
 - Estimates of the stock's future cash flows
 - The discount rate
 - The risk associated with future performance

Security Analysis (3 of 5)

- Principles of Security Analysis
 - The Top-Down Approach to Security Analysis
 - Step 1: Economic Analysis
 - Assess the general state of the economy and its potential effects on businesses.
 - Step 2: Industry Analysis
 - Overall outlook for specific industry within which a company operates.
 - Level of competition in that industry.
 - Step 3: Fundamental Analysis
 - Financial condition and operating results of a company.
 - Company analysis helps investors formulate expectations about the company's future performance.

Security Analysis (4 of 5)

- Who Needs Security Analysis in an Efficient Market?
 - Security analysis, and fundamental analysis in particular, is based on the assumption that at least some investors are capable of identifying stocks whose intrinsic values differ from their market values.
 - Fundamental analysis operates on the broad premise that some securities may be mispriced in the marketplace, at least some of the time.
 - The **efficient market hypothesis** asserts:
 - Securities are rarely, if ever, substantially mispriced in the marketplace.
 - No security analysis is capable of consistently finding mispriced securities more frequently than might be expected by random chance.

Security Analysis (5 of 5)

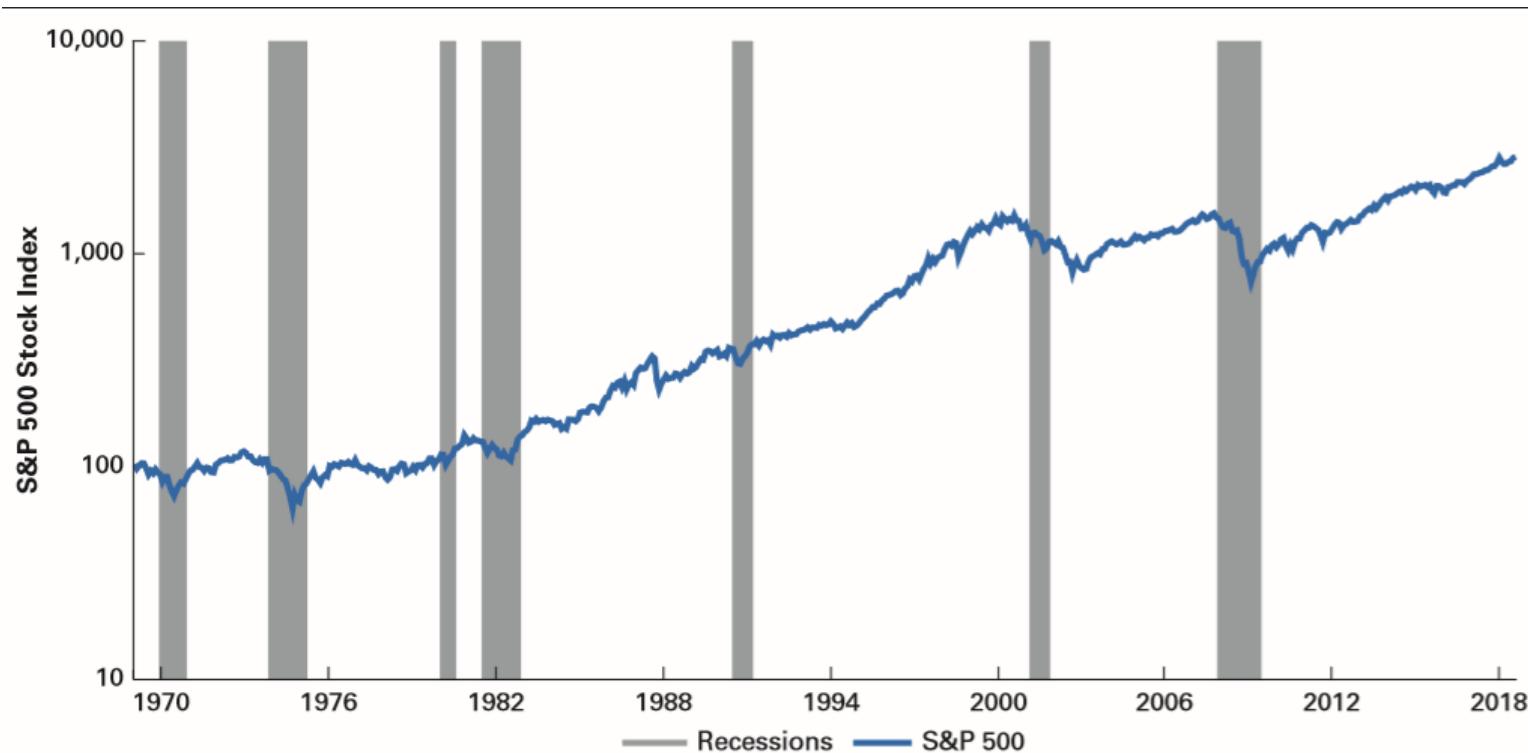
- Who Needs Security Analysis in an Efficient Market?
 - Fundamental analysis is still of value because:
 - All of the people doing fundamental analysis is the reason the market is efficient.
 - Financial markets may not be perfectly efficient; pricing errors are inevitable.

Economic Analysis (1 of 6)

- **Economic Analysis:** the study of the underlying condition of the economy and the impact it might have on the behavior of share prices.
 - Economic Analysis and the Business Cycle
 - Key Economic Factors
 - Developing an Economic Outlook

Figure 7.1 The Economy and the Stock Market

The figure shows that during recessions (indicated by the vertical gray bars) the stock market tends to fall, though the stock market usually begins to rebound before the recession ends



Economic Analysis (2 of 6)

- Economic Analysis and the Business Cycle
 - The overall performance of the economy has a significant bearing on the performance and profitability of most companies.
 - **Business cycle:** a series of alternating contractions and expansions which reflects changes in the total economic activity over time. Two widely followed measures:
 - **Gross domestic product (GDP):** market value of all goods and services produced in a country over a given period.
 - **Industrial production:** an indicator of the output produced by industrial companies.
 - Normally, GDP and index of industrial production move up and down with the business cycle.

Economic Analysis (3 of 6)

- Key Economic Factors
 - The state of the economy is affected by a wide range of factors:
 - Government Fiscal Policy
 - Taxes
 - Government Spending
 - Debt management
 - Monetary Policy
 - Money supply
 - Interest rates
 - Other Factors
 - Inflation
 - Consumer spending
 - Business Investments
 - Foreign trade and foreign exchange rates

Table 7.1 Keeping Track of the Economy (1 of 3)

To help you sort out the confusing array of figures that flow almost daily from Washington, DC, and keep track of what's happening in the economy, here are some of the most important economic measures and reports to watch.

Gross domestic product (GDP)	This is the broadest measure of the economy's performance. Measured every three months by the Commerce Department, GDP is an estimate of the total dollar value of all the goods and services produced in the United States. In particular, watch the annual rate of growth or decline in "real" or "constant" dollars. This number eliminates the effects of inflation and thus measures the actual volume of production. Remember, though, that frequent revisions of GDP figures sometimes change the picture of the economy.
Industrial production	Issued monthly by the Federal Reserve Board, this index tracks the output of U.S. factories, mines, and electric and gas utilities. The index tends to move in the same direction as the economy, so it is a good guide to business conditions between reports on GDP. Detailed breakdowns of the index give a reading on individual industries.
The leading economic index	This boils down to one number, which summarizes the movement of a dozen statistics that tend to predict—or "lead"—changes in the GDP. This monthly index, issued by the Conference Board, includes such things as average weekly hours worked by employees of manufacturing firms, initial weekly claims for unemployment insurance, stock prices, and consumer expectations. If the index moves in the same direction for several months, it's a fairly good sign that total output will move the same way in the near future.

Table 7.1 Keeping Track of the Economy (2 of 3)

Personal income	A monthly report from the Commerce Department, this shows the before-tax income received in the form of wages and salaries, interest and dividends, rents, and other payments, such as Social Security, unemployment compensation, and pensions. As a measure of individuals' spending power, the report helps explain trends in consumer buying habits, a major part of GDP. When personal income rises, people often increase their buying.
Retail sales	The Commerce Department's monthly estimate of total retail sales includes everything from cars to groceries. Based on a sample of retail establishments, the figure gives a rough clue to consumer attitudes.
Money supply	The amount of money in circulation as reported weekly by the Federal Reserve is known as the money supply. Actually, there are several measures of the money supply. M1, which is designed to measure the most liquid forms of money, is basically currency, demand deposits, and NOW accounts. M2, the most widely followed measure, equals M1 plus savings deposits, money market deposit accounts, and money market mutual funds. An expanding economy is generally associated with a rising money supply, although when the money supply increases too fast, inflation may result. A reduction in the money supply is often associated with recessions.
Consumer prices	Issued monthly by the Labor Department, the Consumer Price Index (CPI) shows changes in prices for a fixed market basket of goods and services. The CPI is the most widely watched indicator of inflation.

Table 7.1 Keeping Track of the Economy (3 of 3)

Producer prices	The Labor Department's monthly Producer Price Index (PPI) shows price changes of goods at various stages of production, from crude materials such as raw cotton to finished goods like clothing and furniture. An upward surge may mean higher consumer prices later. However, the index can miss discounts and may exaggerate rising price trends. Watch particularly changes in the prices of finished goods. These do not fluctuate as widely as the prices of crude materials and thus are a better measure of inflationary pressures.
Employment	The percentage of the workforce that is involuntarily out of work (unemployment) is a broad indicator of economic health. But another monthly figure issued by the Labor Department—the number of payroll jobs—may be better for spotting changes in business. A decreasing number of jobs is a sign that firms are cutting production.
Housing starts	A pickup in the pace of housing starts usually follows an easing in the availability and cost of money and is an indicator of improving economic health. This monthly report from the Commerce Department also includes the number of new building permits issued across the country, an even earlier indicator of the pace of future construction.

Economic Analysis (4 of 6)

- Developing an Economic Outlook
 - Sources that provide summary of economic outlook
 - **Wall Street Journal**
 - **Barron's**
 - **Fortune**
 - **Business Week**
 - Periodic reports from major brokerage houses
 - Use the economic outlook information to either:
 - Determine areas for further analysis:
 - What industries will benefit/be hurt?
 - Focus on or avoid companies in industries based on this.
 - Or evaluate specific industries or companies:
 - How will specific industries or companies be affected by expected development in the economy?
 - Outlook for corporate profits and business investments?

Economic Analysis (5 of 6)

- Developing an Economic Outlook
 - Assessing the Potential Impact on Share Prices
 - Investors can use indicators of economic outlook to help predict where stock prices in the market may be headed in the future.
 - See Table 7.2

Table 7.2 Economic Variables and the Stock Market

Economic Variable	Potential Effect on the Stock Market
Real growth in GDP	Positive impact—it's good for the market.
Industrial production	Continued increases are a sign of strength, which is good for the market.
Inflation	Detrimental to stock prices when running high. High inflation leads to higher interest rates and lower price-to-earnings multiples, and generally makes equity securities less attractive.
Corporate profits	Strong corporate earnings are good for the market.
Unemployment	A downer—an increase in unemployment means business is starting to slow down.
Federal budget	Budget surpluses during strong economic times are generally positive, but modest deficits are usually not cause for alarm. Larger deficits during downturns may stimulate the market.
Weak dollar	Has a complex impact on the market. A weak dollar may increase the value of U.S. firms' overseas earnings while at the same time making U.S. investments less attractive to foreigners.
Interest rates	Another downer—rising rates tend to have a negative effect on the market for stocks.
Money supply	Moderate growth can have a positive impact on the economy and the market. Rapid growth, however, is inflationary and therefore detrimental to the stock market.

Economic Analysis (6 of 6)

- Developing an Economic Outlook
 - The Market as a Leading Indicator
 - Changes in stock prices usually occur before the actual forecasted changes become apparent in the economy.
 - The current trend of stock prices is frequently used to help predict the course of the economy itself.
 - So, watching the course of stock prices as well as the course of the general economy can make for more accurate investment forecasting.

Industry Analysis (1 of 5)

- Understanding the outlook and risks inherent in an industry gives valuable insight about the outlook for and risks inherent in individual companies, and their securities, that makeup that industry.
 - Key Issues
 - Developing an Industry Outlook

Industry Analysis (2 of 5)

- Key Issues
 - Industry Analysis:** In analyzing an industry, look at such things as its makeup and basic characteristics, the key economic and operating variables that drive industry performance, and the outlook for the industry.
 - Step 1: establish the competitive position of a particular industry in relation to other industries.
 - Step 2: Identify companies within the industry that hold particular promise.
 - Look for strong market positions, pricing leadership, economies of scale, etc.

Industry Analysis (3 of 5)

- Key Issues
 - Seek to answers to questions such as:
 - What is the nature of the industry?
 - Is the industry regulated?
 - What role does labor play in the industry?
 - How important are technological developments?
 - Which economic forces are especially important to the industry?
 - What are the important financial and operating considerations?

Industry Analysis (4 of 5)

- Key Issues
 - The Industry Growth Cycle
 - **Growth cycle:** an industry's growth cycle reflects the vitality of the industry over time.
 - **Initial Development:** industry is new and risks are very high.
 - **Rapid Expansion:** product acceptance is growing and investors become very interested.
 - **Mature Growth:** expansion comes from growth in the economy and the long-term nature of the industry becomes more apparent.
 - **Stability or Decline:** demand for the industry's products is diminishing and companies are leaving the industry.

Industry Analysis (5 of 5)

- Developing an Industry Outlook
 - Sources for Industry information
 - **S&P Industry Surveys**
 - Brokerage house reports
 - Articles in the popular financial media
 - Morningstar, Value Line, Mergent
 - Yahoo.com, zacks.com, businessweek.com, bigcharts.com
 - Assess the expected industry response to forecasted economic developments.
 - Demand for product
 - Industry sales
 - Research & Development
 - What are the prospects for industry growth?
 - Take a closer look at any firm(s) that stand out.

Fundamental Analysis (1 of 33)

- **Fundamental analysis:** the study of a firm's financial statements and other information for the purpose of determining a stock's intrinsic value.
 - The Concept
 - Financial Statements
 - Financial Ratios
 - Interpreting the Numbers

Fundamental Analysis (2 of 33)

- The Concept
 - The value of a stock is influenced by the performance of the company that issued the stock.
 - **Company analysis:** a historical analysis of the financial strength of the firm, using financial statements of the firm.
 - The competitive position of the company
 - The types of assets owned and growth rate of sales
 - Profit margins and dynamics of earnings
 - Composition and liquidity of assets (asset mix)
 - Capital structure (financing mix)
 - Time consuming and demanding phase, so investors may rely on published reports and financial websites as well.

Fundamental Analysis (3 of 33)

- Financial Statements
 - **Balance Sheet:** statement of what a company owns and what it owes at one specific time.
 - **Assets:** what the company owns (i.e., cash, inventory, accounts receivable, equipment, buildings, land)
 - **Liabilities:** what the company owes (i.e. bills, debt)
 - **Stockholders' equity:** difference between assets and liabilities; claim held by the firm's stockholders.
 - A firm's total assets must equal the sum of its liabilities and equity.

Table 7.3 Corporate Balance Sheet

TABLE 7.3 CORPORATE BALANCE SHEET

Universal Office Furnishings, Inc. Comparative Balance Sheets December 31 (\$ millions)

	2019	2018
Assets		
<i>Current assets</i>		
Cash and equivalents	\$ 95.8	\$ 80.0
Receivables	\$ 227.2	\$192.4
Inventories	\$ 103.7	\$ 107.5
Other current assets	\$ 73.6	\$ 45.2
Total current assets	<u>\$ 500.3</u>	<u>\$ 425.1</u>
<i>Noncurrent assets</i>		
Property, plant, & equipment, gross	\$ 771.2	\$ 696.6
Accumulated depreciation	-\$ 372.5	-\$ 379.9
Property, plant, & equipment, net	\$ 398.7	\$316.7
Other noncurrent assets	\$ 42.2	\$ 19.7
Total noncurrent assets	<u>\$ 440.9</u>	<u>\$ 336.4</u>
Total assets	<u>\$ 941.2</u>	<u>\$ 761.5</u>
Liabilities and stockholders' equity		
<i>Current liabilities</i>		
Accounts payable	\$ 114.2	\$ 82.4
Short-term debt	\$ 174.3	\$ 79.3
Other current liabilities	\$ 85.5	\$ 89.6
Total current liabilities	<u>\$ 374.0</u>	<u>\$ 251.3</u>
<i>Noncurrent liabilities</i>		
Long-term debt	\$ 177.8	\$ 190.9
Other noncurrent liabilities	\$ 94.9	\$ 110.2
Total noncurrent liabilities	<u>\$ 272.7</u>	<u>\$ 301.1</u>
Total liabilities	<u>\$ 646.7</u>	<u>\$552.4</u>
<i>Stockholders' equity</i>		
Common shares	\$ 92.6	\$ 137.6
Retained earnings	\$ 201.9	\$ 71.5
Total stockholders' equity	<u>\$ 294.5</u>	<u>\$209.1</u>
Total liabilities and stockholders' equity	<u>\$ 941.2</u>	<u>\$ 761.5</u>

Fundamental Analysis (4 of 33)

- Financial Statements
 - **Income Statement:** provides a financial summary of the operating results of the firm over a period of time such as a quarter or a year.
 - Revenues (i.e. sales)
 - Expenses
 - Profit/Loss
 - The income statement shows how successful the firm has been in using the assets listed on the balance sheet.

Table 7.4 Corporate Income Statement

TABLE 7.4 CORPORATE INCOME STATEMENT

Universal Office Furnishings, Inc. Income Statements Fiscal Year Ended December 31 (\$ millions)

	2019	2018
Sales revenue	\$1,938.0	\$1,766.2
Cost of goods sold	\$ 1,128.5	\$1,034.5
Gross profit	\$ 809.5	\$ 731.7
Selling, general, and administrative, and other operating expenses	\$ 496.7	\$ 419.5
Depreciation & amortization	\$ 77.1	\$ 62.1
Other expenses	\$ 0.5	\$ 12.9
Total operating expenses	\$ 574.3	\$ 494.5
Earnings before interest & taxes (EBIT)	<u>\$ 235.2</u>	<u>\$ 237.2</u>
Interest expense	\$ 13.4	\$ 7.3
Earnings before taxes	\$ 221.8	\$ 229.9
Income taxes	\$ 82.1	\$ 88.1
Net profit after taxes	<u>\$ 139.7</u>	<u>\$ 141.8</u>
Dividends paid per share	\$ 0.15	\$ 0.13
Earnings per share (EPS)	\$ 2.26	\$ 2.17
Number of common shares outstanding (in millions)	61.80	65.30

Fundamental Analysis (5 of 33)

- Financial Statements
 - **The Statement of Cash Flows:** provides a summary of the firm's cash flow and other events that caused changes in its cash position.
 - Helps investors determine how much cash a firm actually spent and received in a particular year.
 - A company's reported earnings vs. cash flow
 - A firm that shows positive profits on its income statement may be spending more cash than it is taking in, which could lead to financial distress.
 - **Net cash flow from operating activities:** Amount of cash ("cash flow") generated by the company and available for investment and financing.
 - **Net increase (decrease) in cash**

Table 7.5 Statement of Cash Flows

TABLE 7.5 STATEMENT OF CASH FLOWS

Universal Office Furnishings, Inc. Statements of Cash Flows Fiscal Year Ended December 31
(\$ millions)

	2019	2018
Cash from operating activities		
Net earnings	\$ 139.7	\$ 141.8
Depreciation and amortization	\$ 77.1	\$ 62.1
Other noncash charges	-\$ 84.5	\$ 16.7
Decrease (increase) in noncash current assets	-\$ 59.4	\$ 14.1
Increase (decrease) in current liabilities	\$ 122.7	-\$ 29.1
Net cash flow from operating activities	<u>\$ 195.6</u>	<u>\$ 205.6</u>
Cash from investing activities		
Acquisitions of property, plant, and equipment	-\$ 74.6	-\$ 90.6
Acquisitions of other noncurrent assets	-\$ 22.5	-\$ 0.0
Net cash flow from investing activities	<u>\$ 97.1</u>	<u>-\$ 90.6</u>
Cash from financing activities		
Net change in noncurrent liabilities	-\$ 28.4	-\$ 132.0
Net repurchase of capital stock	-\$ 45.0	-\$ 9.8
Payment of dividends on common stock	-\$ 9.3	-\$ 8.5
Net cash flow from financing activities	<u>-\$ 82.7</u>	<u>-\$ 150.3</u>
Net increase (decrease) in cash	<u>\$ 15.8</u>	<u>-\$ 35.3</u>
Cash and equivalents at beginning of period	\$ 80.0	\$ 115.3
Cash and equivalents at end of period	\$ 95.8	\$ 80.0

Fundamental Analysis (6 of 33)

- Financial Ratios
 - **Ratio analysis:** study of the relationships between various financial statement accounts.
 - What Ratios Have to Offer
 - Investors use financial ratios to evaluate the financial condition and operating results of a company and to compare those results to historical or industry standards.
 - Compare a company's ratios from one year to the next.
 - Compare a company's ratios to those of other companies in the same line of business.
 - Understanding a company's past performance allows a forecast of its future performance with some degree of confidence.

Fundamental Analysis (7 of 33)

- Financial Ratios
 - What Ratios Have to Offer
 - Five groups of financial ratios:
 - Liquidity
 - Activity
 - Leverage
 - Profitability
 - Common Stock (Market) measures

Fundamental Analysis (8 of 33)

- Financial Ratios
 - Liquidity Ratios
 - **Liquidity ratios:** company's ability to meet its daily operating expenses and pay its short-term bills as they come due.
 - **Current Ratio:** measures a company's ability to meet its short-term liabilities with its short-term assets.
 - One of the best measures of a company's financial health
 - Higher ratio: more liquidity

7.1

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{For Universal} = \frac{\$500.3}{\$374.0} = \underline{\underline{1.34}}$$

Fundamental Analysis (9 of 33)

- Financial Ratios
 - Liquidity Ratios
 - **Quick Ratio:** Similar to the current ratio, but it excludes inventory in the numerator.
 - Inventory is often the least liquid asset on a firm's balance sheet.
 - During periods of declining sales, firms may have difficulty selling its inventory and converting it to cash.

Equation

7.2

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{inventory}}{\text{Current liabilities}}$$

$$\text{For Universal} = \frac{\$500.3 - 103.7}{\$374.0} = \underline{\underline{1.06}}$$

Fundamental Analysis (10 of 33)

- Financial Ratios
 - Liquidity Ratios
 - **Net Working Capital:** the difference between current assets and current liabilities.

Equation

7.3 Net working capital = Current assets – Current liabilities

For Universal = $\$500.3 - \$374.0 = \underline{\underline{\$126.3 \text{ million}}}$

- How much liquidity is enough?
 - Investors generally want firms to maintain enough liquidity to cover their short-term obligations, but they do not want firms to hold excessive amounts of liquid assets.

Fundamental Analysis (11 of 33)

- Financial Ratios
 - Activity Ratios
 - **Activity Ratios:** compare company sales to various asset categories in order to measure how well the company is using its assets.
 - also called efficiency ratios.
 - High or increasing ratio values generally indicate the firm is managing its assets efficiently.

Fundamental Analysis (12 of 33)

- Financial Ratios
 - Activity Ratios
 - **Accounts Receivable Turnover Ratio:** Captures the relationship between a firm's receivables balance and its sales.

Equation

7.4

$$\text{Accounts receivable turnover} = \frac{\text{Sales revenue}}{\text{Accounts receivable}}$$

$$\text{For Universal} = \frac{\$1,938.0}{\$227.2} = \underline{\underline{8.53}}$$

- A high receivables turnover indicates a firm generates sales without having to extend credit for long periods.

Fundamental Analysis (13 of 33)

- Financial Ratios
 - Activity Ratios
 - **Inventory Turnover Measure:** How quickly the company is selling its inventory.

Equation

7.5

$$\text{Inventory turnover} = \frac{\text{Sales revenue}}{\text{Inventory}}$$

$$\text{For Universal} = \frac{\$1,938.0}{\$103.7} = \underline{\underline{18.69}}$$

- Generally, a higher turnover ratio indicates a firm is doing a better job managing its inventory.
 - Unless a firm is holding too little inventory.
- Some analysts prefer to use Cost of Goods Sold in the numerator of equation 7.5, rather than sales.

Fundamental Analysis (14 of 33)

- Financial Ratios
 - Activity Ratios
 - **Total Asset Turnover:** indicates how efficiently a firm uses its assets to support sales.

Equation 7.6

$$\text{Total asset turnover} = \frac{\text{Sales revenue}}{\text{Total assets}}$$

$$\text{For Universal} = \frac{\$1,938.0}{\$941.2} = \underline{\underline{2.06}}$$

- A high total asset turnover figure suggests that corporate resources are being well managed and that the firm is able to realize a high level of sales (profits) from its asset investments.

Fundamental Analysis (15 of 33)

- Financial Ratios
 - Leverage Ratios
 - **Leverage ratios:** Indicate the amount of debt being used to support the resources and operations of the company.
 - Sometimes called solvency ratios
 - Investors are concerned with:
 - The amount of indebtedness
 - Ability of firm to service its debt

Fundamental Analysis (16 of 33)

- Financial Ratios
 - Leverage Ratios
 - **Debt-Equity Ratio:** measures the relative amount of funds provided by lenders and owners.

Equation

$$7.7 \quad \text{Debt-equity ratio} = \frac{\text{Long-term debt}}{\text{Stockholders' equity}}$$

$$\text{For Universal} = \frac{\$177.8}{\$294.5} = \underline{\underline{0.60}}$$

- Particularly helpful in assessing a stock's risk exposure (risk of defaulting on their loans)
- Lower or declining ratio indicates lower risk exposure.

Fundamental Analysis (17 of 33)

- Financial Ratios
 - Leverage Ratios
 - **Equity Multiplier (financial leverage ratio):** measures a firm's use of debt.

Equation

7.8

$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Stockholders' equity}}$$

$$\text{For Universal} = \frac{\$941.2}{\$294.5} = \underline{\underline{3.20}}$$

- Total Assets is the sum of liabilities and equity.
- Holding equity fixed, the more debt the firm uses, the higher will be its total assets, and the higher will be the equity multiplier.

Fundamental Analysis (18 of 33)

- Financial Ratios
 - Leverage Ratios
 - **Times Interest Earned:** measures the ability of the firm to meet (“cover”) its fixed interest payments.
 - Also called a “coverage ratio”

Equation

$$7.9 \quad \text{Times interest earned} = \frac{\text{Earnings before interest and taxes}}{\text{Interest expense}}$$

$$\text{For Universal} = \frac{\$235.2}{\$13.4} = \underline{\underline{17.55}}$$

- As a rule, a ratio 8 to 9 times earnings is strong.
- Usually little concern until times interest earned drops to something less than 2 or 3 times earnings.

Fundamental Analysis (19 of 33)

- Financial Ratios
 - Profitability Ratios
 - **Profitability:** a relative measure of success; Three widely used profitability measures relates the returns (profits) of a company to its sales, assets, or equity.
 - Higher or increasing measures of profitability are what investors would like to see.
 - **Net Profit Margin:** indicates the rate of profit being earned from sales and other revenues; the “bottom line” of operations.

Equation 7.10

$$\text{Net profit margin} = \frac{\text{Net profit after taxes}}{\text{Sales revenue}}$$

$$\text{For Universal} = \frac{\$139.7}{\$1,938.0} = 0.072 = \underline{\underline{7.2\%}}$$

Fundamental Analysis (20 of 33)

- Financial Ratios
 - Profitability Ratios
 - **Return on Assets (ROA):** measures management's efficiency at using assets to generate profits.

Equation

7.11

$$\text{ROA} = \frac{\text{Net profit after taxes}}{\text{Total assets}}$$

$$\text{For Universal} = \frac{\$139.7}{\$941.2} = 0.148 = \underline{\underline{14.8\%}}$$

- As a rule you would like to see a company maintain as high an ROA as possible.

Fundamental Analysis (21 of 33)

- Financial Ratios
 - Profitability Ratios
 - **Return on Equity (ROE):** measures the return to the firm's shareholders by relating profits to shareholder equity.
 - Sometimes called return on investment (ROI)
 - Shows annual profit earned by the firm as a percentage of the equity that stockholders have invested in the firm.

Equation

$$7.12 \quad \text{ROE} = \frac{\text{Net profit after taxes}}{\text{Stockholders' equity}}$$

$$\text{For Universal} = \frac{\$139.7}{\$294.5} = 0.474 = \underline{\underline{47.4\%}}$$

- Generally speaking, look out for a falling ROE, as it could mean trouble later on.

Fundamental Analysis (22 of 33)

- Financial Ratios
 - Breaking Down ROA and ROE
 - Breaking down ROA allows investors to identify the components that are driving company profits.

Equation

$$^{7.13} \text{ROA} = \text{Net profit margin} \times \text{Total asset turnover}$$

$$\text{For Universal} = 7.2\% \times 2.06 = \underline{\underline{14.8\%}}$$

- Investors want to know if ROA is moving up (or down) because of improvement (or deterioration) in the company's profit margin and/or its total asset turnover



Fundamental Analysis (23 of 33)

- Financial Ratios

- Breaking Down ROA and ROE

- Going from ROA to ROE

Equation

$$7\text{ROE} = \text{ROA} \times \text{Equity multiplier}$$

- ROA is nothing more than an extension of ROE. An Expanded ROE measure indicates the extent to which financial leverage (i.e. how much debt the firm uses) can increase the return to stockholders.

Fundamental Analysis (24 of 33)

- Financial Ratios
 - Breaking Down ROA and ROE
 - An Expanded ROA Equation

Equation

7.15

$$\text{ROE} = \text{ROA} \times \text{Equity multiplier}$$

$$= (\text{Net profit margin} \times \text{Total asset turnover}) \times \text{Equity multiplier}$$

$$\text{For Universal} = 7.2\% \times 2.06 \times 3.20 = \underline{\underline{47.4\%}}$$

- Investors want to know if ROE is moving up simply because of how much debt the company is using or because of how the firm is managing its assets and operations.
- High ROE means the firm is currently very profitable and if some of those profits are reinvested in the firm, the firm may grow rapidly.

Fundamental Analysis (25 of 33)

- Financial Ratios
 - Common-Stock Ratios
 - **Common-Stock Ratios:** They tell the investor exactly what portion of total profits, dividends and equity is allocated to each share of stock.
 - Also called valuation ratios; market ratios.
 - We already examined two of these measures earlier: earnings per share and dividend yield.

Fundamental Analysis (26 of 33)

- Financial Ratios
 - Common-Stock Ratios
 - **Price-to-Earnings Ratio (P/E):** used to determine how the market is pricing the company's common stock.

$$\text{EPS} = \frac{\text{Net profit after taxes} - \text{Preferred dividends}}{\text{Number of common shares outstanding}}$$

$$\text{For Universal} = \frac{\$139.7 - \$0}{61.8} = \underline{\underline{\$2.26}}$$

Equation

$$\frac{P}{E} = \frac{\text{Price of common stock}}{\text{EPS}}$$

$$\text{For Universal} = \frac{\$41.50}{\$2.26} = \underline{\underline{18.36}}$$

- Investors would like to find stocks with rising P/E ratios
- Watch out for P/E ratios that become too high; may be a signal that the stock is becoming overvalued and ready to fall.

Fundamental Analysis (27 of 33)

- Financial Ratios
 - Common-Stock Ratios
 - **Price/Earnings Growth Ratio (PEG):** compares company's P/E ratio to the rate of growth in earnings.

Equation

7.17

$$\text{PEG ratio} = \frac{\text{Stock's P / E ratio}}{\text{3 - to 5 - year growth rate in earnings}}$$

- Ratio > 1: stock may be fully valued
- Ratio = 1: stock price in line with earnings growth
- Ratio < 1: stock may be undervalued

Fundamental Analysis (28 of 33)

- Financial Ratios

- Common-Stock Ratios

- **Dividends Per Share:** the amount of dividends paid out to common stockholders, on a per share basis.

Equation

7.18

$$\text{Dividends per share} = \frac{\text{Annual dividends paid to common stock}}{\text{Number of common shares out standing}}$$

$$\text{For Universal} = \frac{\$9.3}{61.8} = \underline{\underline{\$0.15}}$$

Fundamental Analysis (29 of 33)

- Financial Ratios
 - Common-Stock Ratios
 - **Payout Ratio:** indicates how much of its earnings a company pays out to stockholders in the form of dividends.

Equation

7.19

$$\text{Dividends payout ratio} = \frac{\text{Dividends per share}}{\text{Earnings per share}}$$

$$\text{For Universal} = \frac{\$0.15}{\$2.26} = \underline{\underline{0.07}}$$

- Traditional payout ratios have been 30% to 50%; growth-oriented companies often have low or zero payout ratios.
- A rising dividend payout ratio is often a sign that a company's earnings are falling.
- High payout ratios may be difficult to maintain and the stock market does not like cuts in dividends.

Fundamental Analysis (30 of 33)

- Financial Ratios
 - Common-Stock Ratios
 - **Book Value Per Share:** represents the difference between total assets and total liabilities.
 - Another term for equity (or net worth).

Equation 7.20

$$\text{Book value per share} = \frac{\text{Stockholders' equity}}{\text{Number of common shares outstanding}}$$

$$\text{For Universal} = \frac{\$294.5}{61.8} = \underline{\underline{\$4.76}}$$

- A stock should sell for more than its book value, otherwise it could indicate something is seriously wrong with the company's outlook and profitability.

Fundamental Analysis (31 of 33)

- Financial Ratios
 - Common-Stock Ratios
 - **Price-to-book-value ratio:** relates the book value of a company to the market price of its stock, to show how aggressively the stock is being priced.

Equation 7.21

$$\text{Price - to - book - value} = \frac{\text{Market price of common stock}}{\text{Book value per share}}$$

$$\text{For Universal} = \frac{\$41.50}{\$4.76} = \underline{\underline{8.72}}$$

- Most stocks have a price-to-book-value ratio of more than 1.0.
- In a strong bull market, it is not uncommon to find stocks trading at four or five (or more) times their book values.
- Too high a price-to-book-value ratio may indicate the stock is already fully priced, or perhaps even overpriced.

Fundamental Analysis (32 of 33)

- Interpreting the Numbers
 - Rather than compute all the numbers themselves, most investors rely on published reports for such information.
 - Many large brokerage houses and financial services firms publish such reports.
 - These reports provide vital information in a convenient, easy-to-read format and relieves the investor of the chore of computing the financial ratios themselves.
 - As an investor, though, you must be able to evaluate this information.

Figure 7.2 An Example of a Published Report with Financial Statistics

This and similar reports are widely available to investors and play an important part in the security analysis process. (Source: *Mergent*, November 19, 2018. © 2018. Used with permission.)



Financial Highlights as of 09/29/2018 in USD

Income Statement		(In Thousands)	Management Effectiveness				
Total Revenue		265,595,000	Revenue per Employee		2,017,611		
EBITDA		81,360,000	Net Income per Employee		452,231		
Operating Income		70,898,000	ROA % (Net)		16.11		
Net Income		69,531,000	ROE % (Net)		49.50		
Revenue per Share		53.74	ROI % (Operating)		30.17		
EPS from Continuing Operations		11.91	Profitability Ratios				
EPS - Net Income - Diluted		11.91	Gross Margin		38.34		
Share Outstanding		4,754,986	Operating Margin		26.69		
Weighted Average Shares Outstanding - Basic		4,955,377	EBITDA Margin %		30.63		
Weighted Average Shares Outstanding - Diluted		5,000,109	Calculated Tax Rate %		18.34		
Earnings per Share - Basic		12.01	Profit Margin (TTM)		22.41		
Balance Sheet		(In Thousands)	Valuation Ratios				
Total Assets		365,725,000	Price/Earnings (TTM)		18.74		
Current Assets		131,339,000	Price/Book (TTM)		10.02		
Total Liabilities		268,579,000	Price/Cash Flow(TTM)		14.41		
Long Term Debt		93,735,000	Asset Management				
Stockholders' Equity		107,147,000	Total Asset Turnover		0.72		
Total Assets per Share		76.91	Receivables Turnover		6.29		
Current Liabilities		116,866,000	Inventory Turnover		37.17		
Net Assets per Share		22.53	Property Plant & Equip Turnover		7.09		
Cash Flow Statement		(In Thousands)	Cash & Equivalents Turnover		11.53		
Cash from Operations		77,434,000	Debt Management				
Cash from Investing		16,066,000	Long Term Debt/Equity		0.87		
Cash from Financing		(87,876,000)	Long Term Debt as % of Invested Capital		42.29		
Capital Expenditures		13,313,000	Total Debt/Equity		1.07		
Cash Flow per Share		15.49	Accounts Payable Turnover		5.08		
Cash & Cash Equivalents, Beginning of Year		20,289,000	Liquidity Indicators				
Cash & Cash Equivalents, End of Year		25,913,000	Quick Ratio		0.99		
Stock Price and Valuation (Data as of 11/16/2018)							
Market Cap(mil)		918,377	Current Ratio		1.12		
Share Outstanding(000's)		4,745,398	Net Current Assets as % of Total Assets		3.96		
PE Ratio		16.2494	Free Cash Flow per Share		12.98		
Dividend Per Share(TTM)		2.82	Revenue to Assets		0.73		
Earning Per Share(TTM)		12.01	Consensus Estimates		2019Ae	2018Q4e	2019Q1e
Last Closing Price		193.53	Earnings Per Share		13.48	4.09	3.08
Previous Trading Day Range		189.46 - 194.97	Revenue		280,251.00	91,812.00	65,128.00
52 Week Range		155.15 - 232.07	EBITDA		85,124.50	29,287.59	19,413.12
7 Day Average Closing Price		193.77					
30 Day Average Closing Price		209.20					
200 Day Average Closing Price		203.00					
Beta		1.19					
High Price Last 3 Mos.		232.07					
Low Price Last 3 Mos.		186.80					
Avg Daily Volume Last 3 Mos.		36,310,618.09					



Fundamental Analysis (33 of 33)

- Interpreting the Numbers
 - Using Historical and Industry Standards
 - Look at historical ratio trends for the company.
 - Look at ratios for the industry.
 - Compare and evaluate how the company performed relative to its industry.
 - Looking at the Competition
 - Evaluate the firm relative to two or three major competitors.
 - A lot can be gained from seeing how a company stacks up against its competitors and by determining whether it is, in fact, positioned to take advantage of unfolding developments.

Table 7.6 Comparative Historical and Industry Ratios

TABLE 7.6 COMPARATIVE HISTORICAL AND INDUSTRY RATIOS

	Historical Figures for Universal Office Furnishings, Inc.				Office Equipment Industry Average in 2019
	2016	2017	2018	2019	
<i>Liquidity measures</i>					
Current ratio	1.55	1.29	1.69	1.34	1.45
Quick ratio	1.21	1.02	1.26	1.06	1.15
<i>Activity measures</i>					
Receivables turnover	9.22	8.87	9.18	8.53	5.7
Inventory turnover	15.25	17.17	16.43	18.69	7.8
Total asset turnover	1.85	1.98	2.32	2.06	0.85
<i>Leverage measures</i>					
Debt-equity ratio	0.7	0.79	0.91	0.6	1.58
Equity multiplier	3.32	3.45	3.64	3.20	6.52
Times interest earned	15.37	26.22	32.49	17.55	5.6
<i>Profitability measures</i>					
Net profit margin	6.60%	7.50%	8.00%	7.20%	4.60%
Return on assets	9.80%	16.40%	18.60%	14.80%	3.90%
Return on equity	25.90%	55.50%	67.80%	47.40%	17.30%
<i>Common stock measures</i>					
Earnings per share	\$ 1.92	\$ 2.00	\$ 2.17	\$ 2.26	N/A
Price-to-earnings ratio	16.2	13.9	5.8	18.4	16.2
Dividend yield	0.30%	0.40%	0.40%	0.40%	1.10%
Payout ratio	5.20%	5.50%	6.00%	6.60%	24.80%
Price-to-book-value ratio	7.73	10.73	10.71	8.72	3.54

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 8

Stock Valuation

With Prof Nugent

Valuation: Obtaining a Standard of Performance (1 of 15)

- **Stock valuation:** Investors attempt to resolve the question of whether and to what extent a stock is under- or over-valued by comparing its current market price to its intrinsic value.
 - Valuing a Company Based on Its Future Performance
 - Developing a Forecast of Universal's Financial Performance
 - The Valuation Process

Valuation: Obtaining a Standard of Performance (2 of 15)

- Valuing a Company Based on Its Future Performance
 - For stock valuation, the future matters more than the past.
 - The price of a share of stock depends on investors' expectations about the future performance of a company.
 - Investors look at past performance to gain insight about a firm's future direction.
 - Historical data are used to project key financial variables into the future.

Valuation: Obtaining a Standard of Performance (3 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Sales and Profits
 - Forecast Future Sales based upon:
 - “Naïve” approach—assume sales will grow as they have in the past and extend the historical trend.
 - OR
 - Historical trend in sales adjusted based on economic, industry, or company information that suggests a departure from the past growth trend.

Valuation: Obtaining a Standard of Performance (4 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Sales and Profits
 - Forecast Net Profit Margin based upon:
 - Common-size income statement:** takes every entry found on an ordinary income statement or balance sheet and converts it to a percentage (i.e., divides every item on the statement by sales).
 - Helps investors identify changes in profit margins and highlights possible causes of those changes.
 - Helps investors make projections of future profits.

Table 8.1 Comparative Dollar-Based and Common-Size Income Statement Universal Office Furnishings, Inc. 2019 Income Statement

**TABLE 8.1 COMPARATIVE DOLLAR-BASED AND COMMON-SIZE INCOME STATEMENT
UNIVERSAL OFFICE FURNISHINGS, INC. 2019 INCOME STATEMENT**

	(\$ millions)	(Common-Size)*
Net sales	\$1,938.0	100.0%
Cost of goods sold	\$1,128.5	58.2%
Gross operating profit	\$ 809.5	41.8%
Selling, general, and administrative expenses	\$ 496.7	25.6%
Depreciation and amortization	\$ 77.1	4.0%
Other expenses	\$ 0.5	0.0%
Total operating expenses	\$ 574.3	29.6%
Earnings before interest and taxes (EBIT)	\$ 235.2	12.1%
Interest expense	\$ 13.4	0.7%
Income taxes	\$ 82.1	4.2%
Net profit after taxes	<u>\$ 139.7</u>	<u>7.2%</u>

*Common-size figures are found by using net sales as the common denominator and then dividing all entries by net sales. For example, cost of goods sold = \$1,128.5 ÷ \$1,938.0 = 58.2%; EBIT = \$235.2 ÷ \$1,938.0 = 12.1%.

Valuation: Obtaining a Standard of Performance (5 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Sales and Profits
 - Given a sales forecast and estimate of net profit margin, we can combine these to arrive at future earnings.

Equation 8.1

$$\text{Future after-tax earnings in year } t = \frac{\text{Estimated sales in year } t}{\times} \text{Net profit margin expected in year } t$$

Valuation: Obtaining a Standard of Performance (6 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - Given a corporate earnings forecast, investors need three additional pieces of information:
 - An estimate of future dividend payout ratios
 - Project firm's recent experience into the future, unless there is other evidence to contrary.
 - The number of common shares that will be outstanding over the forecast period.
 - Not likely to change much from one year to the next; use the current number in the forecast until announcements otherwise are made.
 - A future price-to-earnings (P/E) ratio
 - More difficult to estimate.

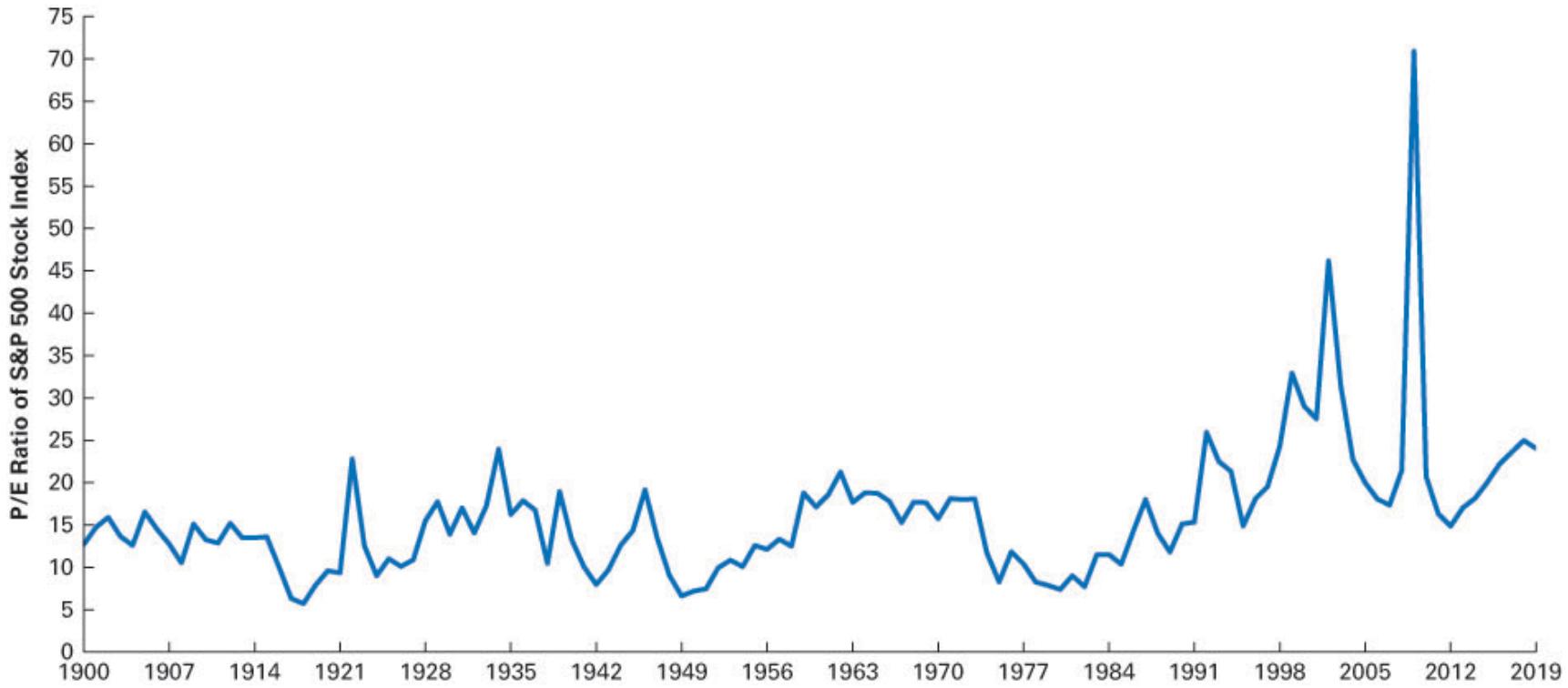
Valuation: Obtaining a Standard of Performance (7 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - Estimating the P/E Ratio
 - P/E ratio is generally a function of several variables:
 - Growth rate in earnings
 - General state of the market
 - Amount of debt in a company's capital structure.
 - Current and projected rate of inflation
 - Dividend payout ratio
 - Higher P/E ratios associated with higher earnings growth rates, an optimistic outlook, and lower debt.
 - Inflation often puts downward pressure on stock prices and P/E multiples.
 - Most companies with high P/E ratios have low dividend payouts due to prospect of earnings growth.

Valuation: Obtaining a Standard of Performance (8 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - A Relative Price-to-Earnings Multiple
 - **Average market multiple:** Average P/E ratio of all the stocks in a given market index, like S&P 500 or DJIA.
 - Indicates general state of the market.
 - Gives idea of how aggressively the market, in general, is pricing stocks.
 - All else equal, the higher P/E ratio the more optimistic the market.
 - Increases in P/E ratio do not necessarily indicate a bull market; P/E ratio spiked in 2009 because earnings were very low due to the recession.

Figure 8.1 Average P/E Ratio of S&P 500 Stocks 1900 to 2019



Valuation: Obtaining a Standard of Performance (9 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - A Relative Price-to-Earnings Multiple
 - **Relative P/E multiple:** investors calculate this to evaluate a stock's P/E performance relative to the market; calculated by dividing a stock's P/E by a market multiple.
 - Example: If a stock currently has a P/E of 35 and the market multiple for the S&P 500 is 25, then the stock's relative P/E is $35 \div 25 = 1.4$.
 - The higher the relative P/E, the higher the stock will be priced in the market.
 - High relative P/E multiples can also mean lots of price volatility.

Valuation: Obtaining a Standard of Performance (10 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - Generate a forecast of the stock's future P/E over the anticipated investment horizon.
 - Use existing P/E multiple as a base.
 - Adjust up or down based on expectations.

Valuation: Obtaining a Standard of Performance (11 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - Estimated Earnings per Share

Equation 8.2

$$\text{Estimated EPS in year } t = \frac{\text{Future after-tax earnings in year } t}{\text{Number of shares of common stock outstanding in year } t}$$

Equation 8.3

$$\text{EPS} = \frac{\text{After-tax earnings}}{\text{Book value of equity}} \times \frac{\text{Book value of equity}}{\text{Shares outstanding}} = \text{ROE} \times \text{Book value per share}$$

Valuation: Obtaining a Standard of Performance (12 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Sales and Profits
 - Estimated Earnings per Share
 - Forecast dividend payout ratio

Equation 8.4

$$\text{Estimated dividends per share in year } t = \frac{\text{Estimated EPS for year } t}{\text{payout ratio}}$$

Valuation: Obtaining a Standard of Performance (13 of 15)

- Valuing a Company Based on Its Future Performance
 - Forecasted Dividends and Prices
 - Estimated Earnings per Share
 - Estimate future value of the stock

Equation 8.5

$$\text{Estimated share price at end of year } t = \frac{\text{Estimated EPS in year } t}{\text{Estimated P/E ratio}}$$

- Putting It All Together
 - Estimated share price is important because it has embedded in it the capital gains portion of the stock's total return.

Valuation: Obtaining a Standard of Performance (14 of 15)

- Developing a Forecast of Universal's Financial Performance
 - Tables 8.2 and 8.3 show historical financial data and a financial forecast for 3 years for the company Universal Office Furnishings.
 - Sequence involved:
 - Company dimensions handled first: sales and revenue estimates, net profit margins, net earnings, and number of shares of common stock outstanding.
 - Estimate earnings per share by dividing expected earnings by shares outstanding.
 - Project dividends.
 - Project price of a share of stock.

Table 8.2 Selected Historical Financial Data, Universal Office Furnishings

Blank	2015	2016	2017	2018	2019
Total assets (millions)	\$554.20	\$694.90	\$755.60	\$761.50	\$941.20
Total asset turnover	1.72	1.85	1.98	2.32	2.06
Sales revenue (millions)	\$953.20	\$1,283.90	\$1,495.90	\$1,766.20	\$1,938.00
Annual rate of growth in sales*	-1.07%	34.69%	16.51%	18.07%	9.73%
Net profit margin	4.20%	6.60%	7.50%	8.00%	7.20%
Payout ratio	6.80%	5.20%	5.50%	6.00%	6.60%
Price/earnings ratio	13.5	16.2	13.9	15.8	18.4
Number of common shares outstanding (millions)	77.7	78.0	72.8	65.3	61.8

*To find the annual rate of growth in sales, divide sales in one year by sales in the previous year and then subtract 1. For example, the annual rate of growth in sales for 2019 = $(\$1,938.00 - \$1,766.20) \div \$1,766.20 - 1 = 9.73\%$.



Table 8.3 Summary Forecast Statistics, Universal Office Furnishings

TABLE 8.3 SUMMARY FORECAST STATISTICS, UNIVERSAL OFFICE FURNISHINGS

	Latest Actual Figure (Fiscal 2019)	Weighted Average in Recent Years (2015–2019)	Forecasted Figures**		
			2020	2021	2022
Annual rate of growth in sales	9.7%	15.0%	22.0%	19.0%	15.0%
Net sales (millions)	\$1,938.0	N/A*	\$2,364.4	\$2,813.6	\$3,235.6
× Net profit margin	7.2%	5.6%	8.0%	8.5%	8.5%
= Net after-tax earnings (millions)	\$ 139.7	N/A	\$ 189.1	\$ 239.2	\$ 275.0
÷ Common shares outstanding (millions)	61.8	71.1	61.5	60.5	59.0
= Earnings per share	\$ 2.26	N/A	\$ 3.08	\$ 3.95	\$ 4.66
× Payout ratio	6.6%	6.2%	6.0%	6.0%	6.0%
= Dividends per share	\$ 0.15	\$ 0.08	\$ 0.18	\$ 0.24	\$ 0.28
Earnings per share	\$ 2.26	N/A	\$ 3.08	\$ 3.95	\$ 4.66
× P/E ratio	18.4	16.8	20.0	20.0	20.0
= Share price at year end	\$ 41.58	N/A	\$ 61.51	\$ 79.00	\$ 93.20

*N/A: Not applicable

**Forecasted sales figures: Sales from preceding year × (1 + growth rate in sales) = forecasted sales

For example, for 2020: \$1,938.0 × (1 + 0.22) = \$2,364.4

*N/A: Not applicable.

**Forecasted sales figures: Sales from preceding year × (1 + growth rate in sales) = forecasted sales.

For example, 2020: \$1,938.0 × (1 + 0.22) = \$2,364.4.

Valuation: Obtaining a Standard of Performance (1 of 2)

- The Valuation Process
 - **Valuation:** process by which an investor determines a security's worth, keeping in mind the tradeoff between risk and return.
 - Investor must determine key inputs such as the amount and timing of future cash flows, and the required return on the investment.
 - Valuation models help determine an expected rate of return or the intrinsic worth of a share of stock.
 - A stock could be a worthwhile investment candidate if:
 - The expected rate of return equals or exceeds the return that is warranted given the stock's risk.
 - The intrinsic value is equal to or greater than the current market price.
 - There is no assurance that the actual outcome will match the expected (projected) outcome.

Valuation: Obtaining a Standard of Performance (2 of 2)

- The Valuation Process
 - Required Return
 - **Required Return:** the return that an investor requires to compensate them for the investment's risk.

Equation 8.6

$$\text{Required rate of return} = \frac{\text{Risk-free rate}}{} + \left[\text{Stock's beta} \times \left(\frac{\text{Market return} - \text{Risk-free rate}}{} \right) \right]$$

- Stock's beta: many online sites and print sources publish stock betas.
- Risk-free rate: the current return provided by a risk-free investment such as a Treasury bill.
- Market return: can be estimated using a long-run average return on the stock market.
 - May have to be adjusted up or down based on what investors expect the market to do over the next year or so.

Stock Valuation Models (1 of 17)

- Investors employ several stock valuation models.
 - The Dividend Valuation Model
 - Other Approaches to Stock Valuation

Stock Valuation Models (2 of 17)

- The Dividend Valuation Model
 - Dividend valuation model (DVM):** approach which holds the value of a stock depends on its future dividends.
 - Three versions of the DVM:
 - **Zero-growth model:** assumes dividends will not grow.
 - **Constant-growth model:** assumes dividends will grow by a constant rate.
 - **Variable-growth model:** assumes rate of growth in dividends will vary.

Stock Valuation Models (3 of 17)

- The Dividend Valuation Model
 - Zero Growth
 - Assumes dividends will not grow over time.
 - Value of a zero-growth stock is simply the present value of its annual dividends.

Equation 8.7

$$\text{Value of a share of stock} = \frac{\text{Annual dividends}}{\text{Required rate of return}}$$

Stock Valuation Models (4 of 17)

- The Dividend Valuation Model
 - Constant Growth
 - Assumes dividends will grow over time at a specified rate.

Equation 8.8

$$\text{Value of a share of stock} = \frac{\text{Next year's dividends}}{\text{Required rate of return} - \text{Dividend growth rate}}$$

Equation 8.8a

$$V = \frac{D_1}{r - g}$$

- Best suited to the valuation of large-cap or mature mid-cap companies with established dividend policies and fairly predictable growth rates in earnings and dividends.

Stock Valuation Models (5 of 17)

- The Dividend Valuation Model
 - Constant Growth
 - Estimating the dividend growth rate
 - Look at historical behavior of dividends
 - Company's annual report, various online sources
 - Assume growth will continue at (or near) that average rate in the future.
 - Average rate of growth in dividends
 - Use basic present value arithmetic to find the growth rate embedded in a stream of dividends.
 - Stock-Price Behavior over Time
 - Constant-growth model implies that a stock's price will grow over time at the same rate that dividends grow; and that growth rate + the dividend yield equals the required return.

Stock Valuation Models (6 of 17)

- The Dividend Valuation Model
 - Variable Growth
 - Allows for variable rates of growth in dividends over time.
 - Calculates a stock price in two stages:

Equation 8.9

Value of a share of stock =

Present value of future dividends during the initial variable-growth period

+ Present value of the price of the stock at the end of the variable-growth period

Equation 8.9a

$$V = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \dots + \frac{D_v}{(1+r)^v} + \frac{\frac{D_v(1+g)}{(r-g)}}{(1+r)^v}$$

Stock Valuation Models (7 of 17)

- The Dividend Valuation Model
 - Variable Growth
 - Appropriate for companies that are expected to experience rapid or variable rates of growth for a time (maybe 3-5 years) and then settle down to a more stable growth rate thereafter.
 - Steps to value a stock with equation 8.9 and 8.9a:
 - Estimate annual dividends during initial variable-growth period; then specify constant growth rate (g) that dividends will grow at after the initial period.
 - Find present value of dividends expected during initial period.
 - Using constant-growth DVM find price of stock at end of initial growth period.
 - Find present value of price from constant-growth period.
 - Add the two present value components together.

Table 8.4 Using the Variable-Growth DVM to Value Sweatmore Stock (1 of 3)

Step 1. Projected annual dividends:

Most recent dividend	2018	\$2.21
Future dividends	2019	\$2.65
blank	2020	\$3.08
blank	2021	\$3.48

Estimated annual rate of growth in dividends, g , for 2022 and beyond: 3%

Table 8.4 Using the Variable-Growth DVM to Value Sweatmore Stock (2 of 3)

Step 2. Present value of dividends, using a required rate of return, r , of 11%, during the initial variable-growth period:

Year	Dividends	Present Value
2019	\$2.65	\$2.39
2020	\$3.08	\$2.50
2021	\$3.48	<u>\$2.54</u>
	Total	\$7.43 (to step 5)

Step 3. Price of the stock at the end of the initial growth period:

$$P_{2021} = \frac{D_{2022}}{r - g} = \frac{D_{2021} \times (1 - g)}{r - g} = \frac{\$3.48 \times (1.03)}{0.11 - 0.03} = \frac{\$3.58}{0.08} = \underline{\underline{\$44.81}}$$

Table 8.4 Using the Variable-Growth DVM to Value Sweatmore Stock (3 of 3)

Step 4. Discount the price of the stock (as computed previously) back to its present value, at r , of 11%:

$$\$44.81 \div (1.11)^3 = \$32.76 \text{ (to step 5)}$$

Step 5. Add the present value of the initial dividend stream (step 2) to the present value of the price of the stock at the end of the initial growth period (step 4):

$$\text{Value of Sweatmore stock: } \$7.43 + \$32.76 = \underline{\$40.19}$$

Stock Valuation Models (8 of 17)

- The Dividend Valuation Model
 - Defining the Expected Growth Rate
 - One of the most difficult (and important) aspects of the DVM is specifying the appropriate growth rate over an extended period of time.
 - Growth rate, g , has an enormous impact on the value derived from the model.
 - Historical dividend growth of company does not always work well for determining the future growth rate.

Stock Valuation Models (9 of 17)

- The Dividend Valuation Model
 - Defining the Expected Growth Rate
 - Approach widely used in practice assumes the future dividend growth depends on the rate of return a firm earns and the fraction of earnings managers reinvest in the company.

Equation 8.10

$$g = \text{ROE} \times \text{The firm's retention rate, } rr$$

where

Equation 8.10a

$$rr = 1 - \text{Dividend payout ratio}$$

Stock Valuation Models (10 of 17)

- Other Approaches to Stock Valuation
 - The market has developed other approaches to valuing stock in addition to the DVM.
 - **Free cash flow to equity method (or flow to equity method):** estimates cash flow that a firm generates for common stockholders, whether it pays those out as dividends or not.
 - **P/E approach:** builds the stock valuation process around the stock's price-to-earnings ratio.
 - Major advantage is that these approaches do not rely on dividends as the primary input.

Stock Valuation Models (11 of 17)

- Other Approaches to Stock Valuation
 - Free Cash Flow to Equity
 - **Free cash flow to equity method:** estimates the cash flow a company generates for its shareholders and discounts that to the present to determine the company's total equity value.
 - **Free cash flow** (to equity): the cash flow remaining after a firm pays all of its expenses and makes necessary investments in working capital and fixed assets.

Equation 8.11

Value of a share of stock = $\frac{\text{present value of future free cash flows going to equity}}{\text{shares outstanding}}$

Free cash flow = after-tax earnings + depreciation
– investments in working capital – investments in fixed assets

Equation 8.11a

$$V = \frac{\frac{FCF_1}{(1+r)^1} + \frac{FCF_2}{(1+r)^2} + \dots}{N}$$

Stock Valuation Models (12 of 17)

- Other Approaches to Stock Valuation
 - Free Cash Flow to Equity
 - Requires forecasts of the cash flow going to equity far out into the future.
 - Similar to dividend-growth model, except we are discounting future free cash flows rather than future dividends.
 - As in the dividend growth model, we can assume free cash flows remain constant over time, grow at a constant rate, or grow at a rate that varies over time.
 - Zero Growth in Free Cash Flow
 - Constant Growth in Free Cash Flow
 - Variable Growth in Free Cash Flow

Stock Valuation Models (13 of 17)

- Other Approaches to Stock Valuation
 - Free Cash Flow to Equity
 - Use IRR to Solve for the Expected Return
 - Some investors prefer to find the expected return of a stock given its current market price, rather than estimate the stock's intrinsic value.
 - Use trial-and-error to find the discount rate that equates the present value of a company's future free cash flows to the current market value of firm's common stock.
 - Having estimated the stock's expected return, investors can decide if that return is sufficient to justify buying the stock given its risk.

Stock Valuation Models (14 of 17)

- Other Approaches to Stock Valuation
 - The Price-to-Earnings (P/E) Approach
 - Simpler approach.
 - Favorite of professional security analysts and widely used in practice.

Equation 8.12

$$\text{Stock price} = \text{EPS} \times \frac{P}{E} \text{ ratio}$$

- Customary to use forecasted EPS for next year (i.e. projected earnings one year out).

Stock Valuation Models (15 of 17)

- Other Price-Relative Procedures
 - P/E approach and other price-relative procedures base their valuations on assumptions that the value of stock is directly linked to a performance characteristic.
 - Price-to-cash-flow (P/CF) ratio
 - Price-to-sales (P/S) ratio
 - Price-to-book-value (P/BV) ratio
 - Involve a good deal of judgment and intuition.
 - Rely heavily on the market expertise of the analysts of the firm.

Stock Valuation Models (16 of 17)

- Other Price-Relative Procedures
 - A Price-to-Cash-Flow (P/CF) Procedure
 - Similar to the P/E approach, but substitutes projected cash flow for earnings.
 - Popular with investors who believe cash flow provides a more accurate picture of a company's true value than do net earnings.

Equation 8.13

$$\text{P/CF ratio} = \frac{\text{Market price of common stock}}{\text{Cash flow per share}}$$

- Define the appropriate cash flow measure:
 - Cash flow from operating activities
 - Free Cash flow
 - EBITDA (most popular)

Stock Valuation Models (17 of 17)

- Other Price-Relative Procedures
 - Price-to-Sales (P/S) and Price-to-Book-Value (P/BV) Ratios
 - Similar to P/E approach, but substitutes sales or book value for earnings.
 - Useful for companies with no earnings or volatile (highly unpredictable) earnings.

$$\text{P/BV ratio} = \frac{\text{Market price of common stock}}{\text{Book value per share}}$$

Equation 8.14

$$\text{P/S ratio} = \frac{\text{Market price of common stock}}{\text{Sales per share}}$$

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 9

Market Efficiency and
Behavioral Finance

With Prof Nugent

Efficient Markets (1 of 10)

- **Random walk hypothesis:** the theory that stock price movements are largely unpredictable.
 - Studies of stock price movements indicate that they do not move in neat patterns.
 - This random pattern is a natural outcome of markets that are highly efficient and respond quickly to new information.
- **Efficient market:** a market that rapidly and fully incorporates new information.
 - The Efficient Markets Hypothesis
 - Market Anomalies
 - Possible Explanations

Figure 9.1 Walmart Quarterly Revenues

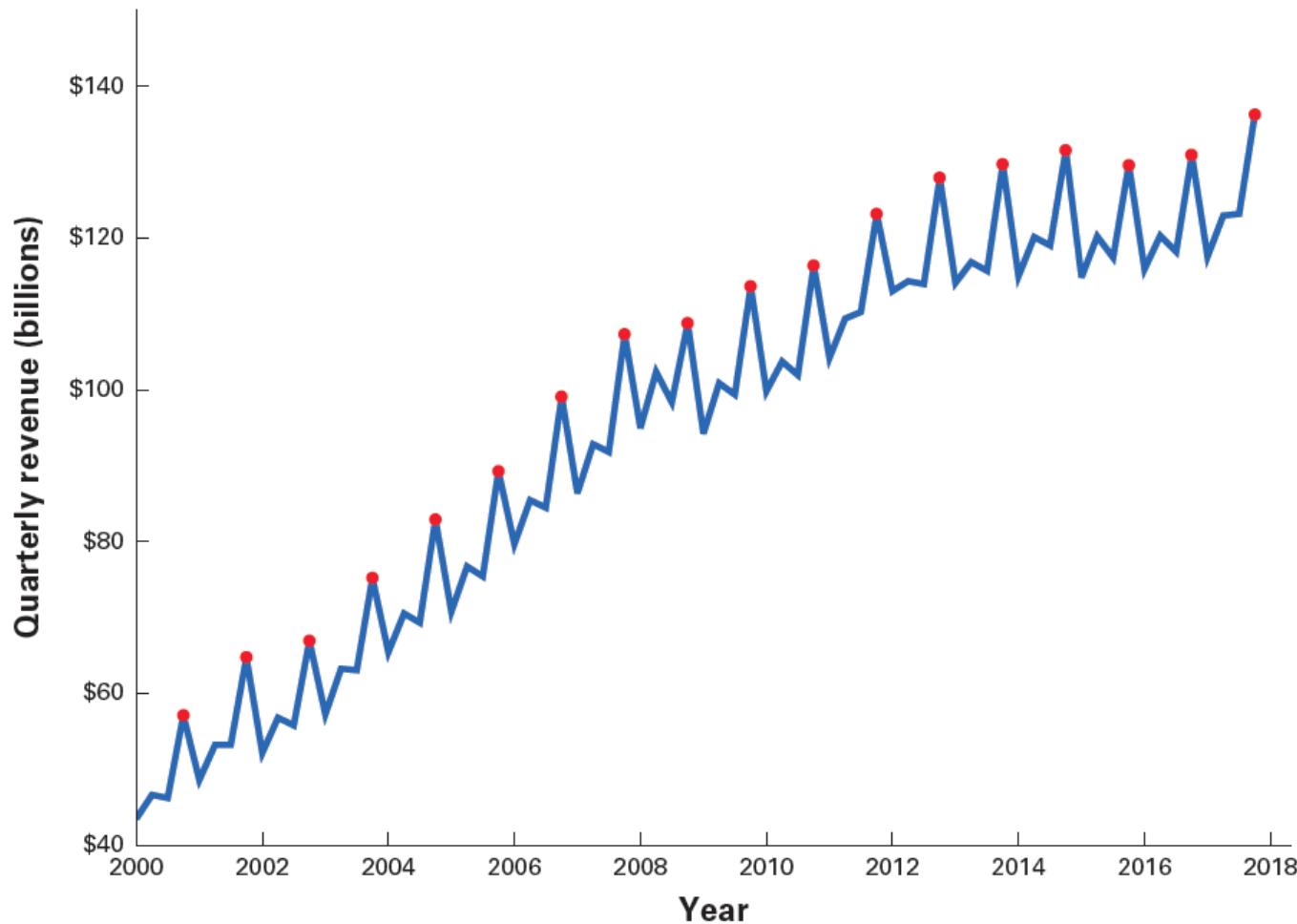
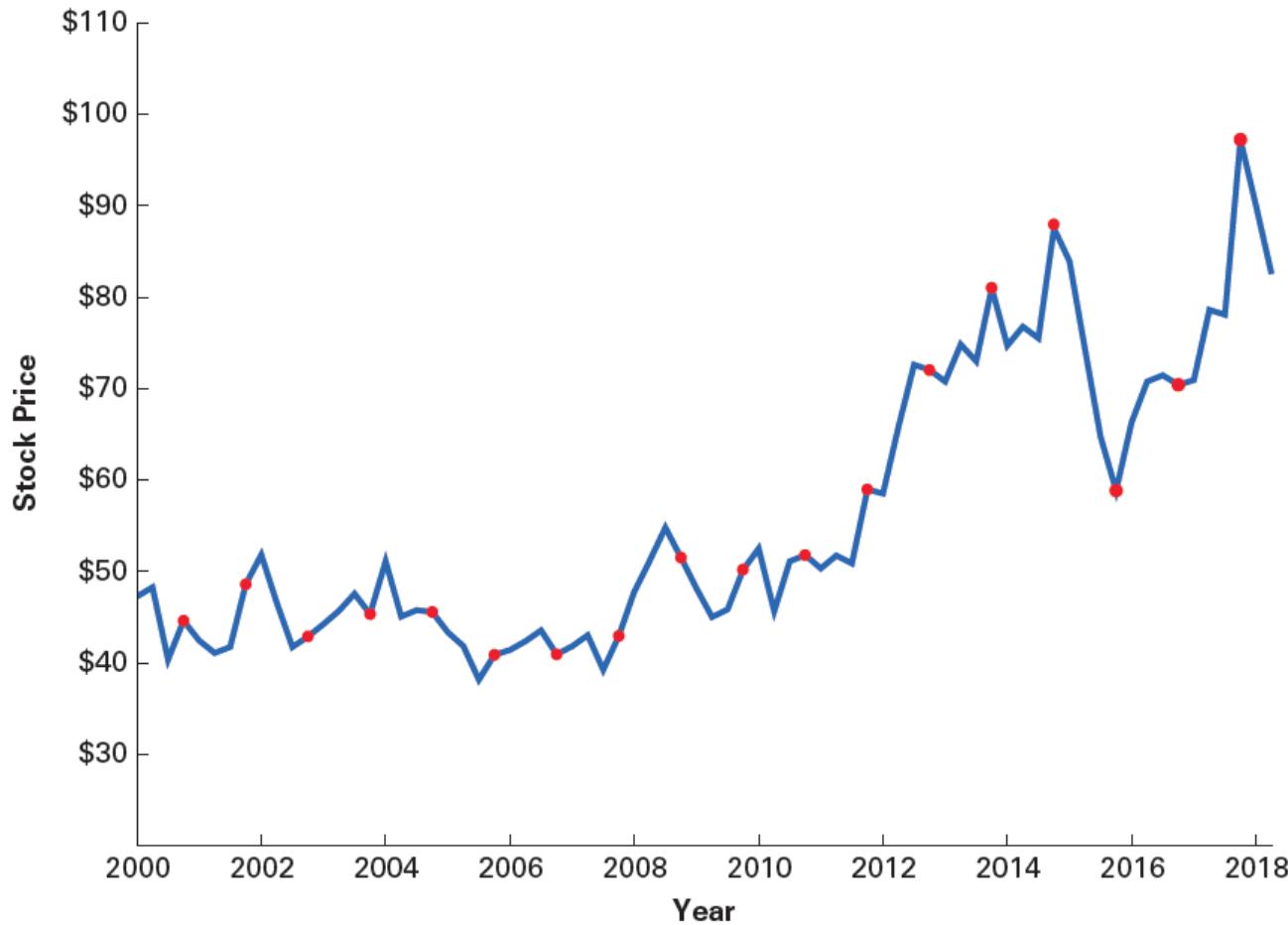


Figure 9.2 Walmart's Stock Price



Efficient Markets (2 of 10)

- The Efficient Markets Hypothesis
 - **Efficient Markets Hypothesis (EMH):** stock prices (and prices in other financial markets) rapidly incorporate new information.
 - Investors should not expect to earn abnormal returns consistently.
 - **Abnormal return (alpha):**

Equation 9.1

Abnormal return (or alpha) = Actual return – Expected return

- **Expected return:**

Equation 9.2

$$E(r_j) = r_{rf} + b_t (r_m - r_{rf})$$

Efficient Markets (3 of 10)

- The Efficient Markets Hypothesis
 - Example: Assume a stock has a beta of 1.0, the risk-free rate is 2% and the return on the overall market is 10%.
 - Expected return:

$$E(r) = 2\% + 1.0(10\% - 2) = 10\%$$

- Suppose the stock actually earned a 12% return:

$$\text{Abnormal return} = 12\% - 10\% = 2\%$$

Efficient Markets (4 of 10)

- The Efficient Markets Hypothesis
 - The more information that is incorporated into stock prices and the more rapidly that information becomes incorporated into prices, the more efficient the market becomes.
 - Levels of the EMH:
 - Weak Form EMH
 - Semi-Strong Form EMH
 - Strong Form EMH

Efficient Markets (5 of 10)

- The Efficient Markets Hypothesis

- **Weak Form EMH:**

- Past data on stock prices are of no use in predicting future stock price changes.
 - Stock prices move at random.

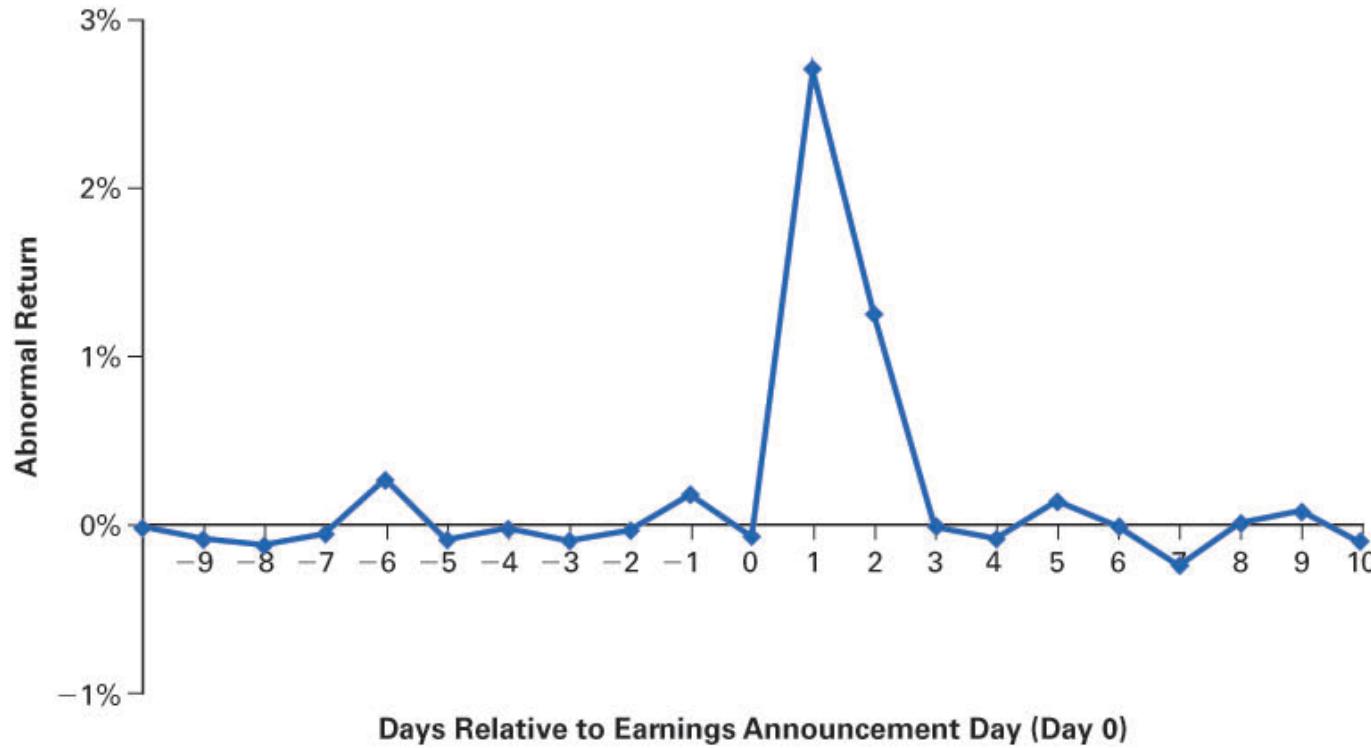
- **Semi-strong Form EMH:**

- Investors cannot consistently earn abnormally high returns using publicly available information.
 - Any price anomalies are quickly discovered and the stock market adjusts.

- **Strong Form EMH:**

- There is no information, public or private, that allows investors to consistently earn abnormally high returns.

Figure 9.3 Daily Stock Price Reactions Surrounding Positive Earnings News



Source: Modified from Andreas Neuhierl, Anna Scherbina, and Bernd Schlusche, "Market Reaction to Corporate Press Releases," **Journal of Financial and Quantitative Analysis**, August 2013.

Efficient Markets (6 of 10)

- The Efficient Markets Hypothesis
 - Arbitrage and Efficient Markets
 - **Arbitrage:** type of transaction in which an investor simultaneously buys and sells the same asset at different prices to earn an instant, risk-free profit.
 - In the “real world” if price differences exist, arbitragers exploit those differences and through their buying and selling transactions push the prices closer together until no arbitrage opportunity remains.

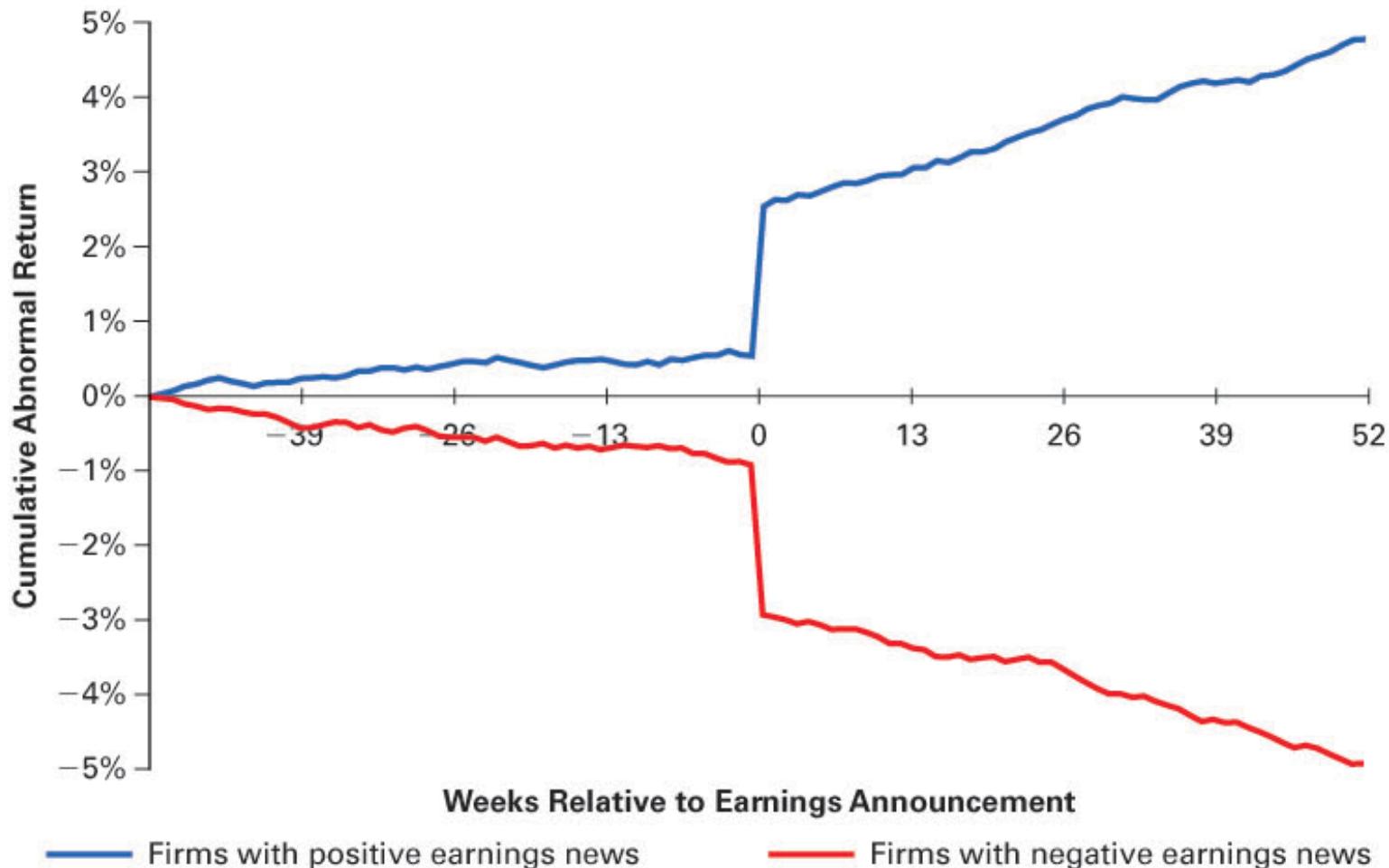
Efficient Markets (7 of 10)

- Market Anomalies
 - **Market Anomalies:** patterns observed in the market that seem inconsistent with the EMH.
 - Calendar Effects:
 - Stock returns may be closely tied to the time of year or time of the week.
 - Example: January effect (the tendency of small-cap stocks to outperform large-cap stocks by an unusually wide margin in the month of January).
 - Small-firm Effect (Size Effect):
 - Small firms tend to earn positive abnormal returns of as much as 5% to 6% per year.
 - Small firms may offer higher returns than larger firms, even after adjusting for risk

Efficient Markets (8 of 10)

- Market Anomalies
 - Post Earnings Announcement Drift (or Momentum)
 - Stock price adjustments may continue after earnings adjustments have been announced.
 - This pattern seems to create an opportunity for investors to earn abnormal returns by purchasing stocks that have recently issued good earnings news or by short selling stocks that have recently delivered poor earnings results.
 - **Momentum:** tendency for stocks that have gone up recently to keep going up or the tendency for stocks that have gone down to continue going down.

Figure 9.4 Post-Earnings Announcement Drift



Efficient Markets (9 of 10)

- Market Anomalies
 - The Value Effect
 - Uses P/E or market-to-book ratios to buy or sell stocks.
 - On average, low P/E or market-to-book ratio stocks outperform high P/E or market-to-book ratio stocks.

Efficient Markets (10 of 10)

- Possible Explanations
 - Stocks that appear to earn abnormally high returns are actually riskier than other stocks, so higher returns merely represent compensation for risk.
 - Some anomalies may simply be patterns in that data that appeared by chance and are thus not likely to persist over time.
 - **Behavioral finance:** market participants make systematic mistakes when they invest, and those mistakes create persistent inefficiencies in the market.

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (1 of 8)

- Although considerable evidence supports the concept of market efficiency, an increasing number of studies have begun to cast doubt on the EMH. This research documents various anomalies and draws from research on cognitive psychology to offer explanations for the anomalies.
 - Investor Behavior and Security Prices
 - Implications of Behavioral Finance for Security Analysis

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (2 of 8)

- Investor Behavior and Security Prices
 - Overconfidence and Self-Attribution Bias
 - **Overconfidence:** Investors tend to be overconfident in their judgement or ability and this leads them to underestimate risks.
 - **Self-attribution bias:** Investors tend to take credit for successes and blame factors out of their control for failures.
 - These biases may cause investors to trade too often, leading to higher transaction costs and much lower returns.

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (3 of 8)

- Investor Behavior and Security Prices
 - **Loss Aversion:** the tendency to exhibit risk-averse behavior when confronting gains and risk-seeking behavior when confronting losses.
 - Investors may hold on to investments that have lost money longer than they should.
 - Studies have shown that when investors want to sell a stock in their portfolio, they are more likely to sell a stock that has gone up than one that has fallen in value.
 - Other studies show a tendency for stocks that investors sell (stocks that have gone up) to perform better than the stocks that they choose to hold (stocks that have lost value).

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (4 of 8)

- Investor Behavior and Security Prices
 - **Representativeness:** cognitive biases that occur because people have difficulty thinking about randomness in outcomes.
 - Overreaction
 - Investors overreact to a string of good performance and overestimate the likelihood that the trend will continue.
 - Past performance of mutual funds
 - May explain the value anomaly
 - Firm looking to make an acquisition may overreact to a firm that has been growing faster than its competitors in recent years and pay a larger premium even though the prospect of sustaining the growth is low.

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (5 of 8)

- Investor Behavior and Security Prices
 - Representativeness
 - Underreaction
 - Investors may underreact to new information, such as earnings announcements.
 - Could explain the post earnings announcement drift (momentum) anomaly.
 - **Narrow Framing:** investors tend to analyze a situation in isolation, while ignoring the larger context.
 - Example: asset allocation decisions investors make in their retirement plans.

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (6 of 8)

- Investor Behavior and Security Prices
 - Belief perseverance:** Investors tend to ignore information that conflicts with their existing beliefs.
 - Investors who believe a stock is good and purchase it may later tend to discount any signs of trouble.
 - In many cases they even avoid gathering new information for fear it will contradict their initial opinion.

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (7 of 8)

- Investor Behavior and Security Prices
 - **Anchoring:** Individuals attempting to predict or estimate some unknown quantity place too much weight on information that they have at hand, even when that information is not particularly relevant.
 - Investors tend to predict faster (slower) sales growth when they know the past growth rate has been high (low).
 - Investors estimate future market returns anchored on the market's recent past returns.
 - **Familiarity Bias:** Investors buy stocks that are familiar to them without regard to whether the stocks are good buys or not.
 - May lead investors to hold underdiversified portfolios.

Behavioral Finance: A Challenge to the Efficient Markets Hypothesis (8 of 8)

- Implications of Behavioral Finance for Security Analysis
 - The contribution of behavioral finance is to:
 - identify psychological factors that can lead investors to make systematic mistakes
 - AND
 - determine whether those mistakes may contribute to predictable patterns in stock prices.
 - If that's the case, the mistakes of some investors may be the profit opportunities of others.

Table 9.1 Using Behavioral Finance to Improve Investment Results (1 of 2)

Studies have documented a number of behavioral factors that appear to influence investors' decisions and adversely affect their returns. By following some simple guidelines, you can avoid making mistakes and improve your portfolio's performance. A little common sense goes a long way in the financial markets!

Don't hesitate to sell a losing stock.	If you buy a stock at \$20 and its price drops to \$10, ask yourself whether you would buy that same stock if you came into the market today with \$10 in cash. If the answer is yes, then hang onto it. If not, sell the stock and buy something else.
Don't chase performance.	The evidence suggests that past performance is at best a very noisy guide to future performance. For example, the best performing mutual funds in the last year or even the last five years are not especially likely to perform best in subsequent years. Don't buy last year's hottest mutual fund based solely on its performance. Always keep your personal investment objectives and constraints in mind.
Be humble and open-minded.	Many investment professionals, some of whom are extremely well paid, are frequently wrong in their predictions. Admit your mistakes and don't be afraid to take corrective action. The fact is, reviewing your mistakes can be a very rewarding exercise—all investors make mistakes, but the smart ones learn from them. Winning in the market is often about not losing, and one way to avoid loss is to learn from your mistakes.

Table 9.1 Using Behavioral Finance to Improve Investment Results (2 of 2)

Review the performance of your investments on a periodic basis.	Remember the old saying, "Out of sight, out of mind". Don't be afraid to face the music and to make changes as your situation changes. Nothing runs on "autopilot" forever-including investment portfolios.
Don't trade too much.	Investment returns are uncertain, but transaction costs are guaranteed. Considerable evidence indicates that investors who trade frequently perform poorly.

Technical Analysis (1 of 16)

- **Technical analysis:** the practice of searching the historical record of stock prices and returns for patterns. If these patterns repeat, investors who know about them and can spot them early may have an opportunity to earn better-than-average returns.
- Technical analysis in practice remains controversial. Its focus on past price movements to predict future returns puts it at odds with even the weak form of market efficiency.
 - Measuring the Market
 - Trading Rules and Measures
 - Charting

Technical Analysis (2 of 16)

- Measuring the Market
 - Technical analysts argue that internal market factors, such as trading volume and price movements, often reveal the market's future direction long before it is evident in financial statistics.
 - Investors use charts and/or market statistics in their technical analysis to address those factors in the marketplace that can (or may) have an effect on the price movements of stocks in general.

Technical Analysis (3 of 16)

- Measuring the Market
 - The Confidence Index
 - **Confidence Index:** one measure that attempts to capture the tone of the market through bond returns.
 - A ratio that reflects the spread between the average yield on high-grade corporate bonds relative to the yield on average- or intermediate-grade corporate bonds.

Equation 9.3

$$\text{Confidence index} = \frac{\text{Average yield on 10 high-grade corporate bonds}}{\text{Average yield on 10 intermediate-grade bonds}}$$

- A rise in the index is interpreted as a positive sign for future stock returns.

Technical Analysis (4 of 16)

- Measuring the Market
 - The Confidence Index
 - Trend of “smart money” is revealed in the bond market before it shows up in the stock market.
 - A rise in the confidence index today foreshadows a rise in the stock market.
 - Market Volume
 - Obvious reflection of the amount of investor interest in stocks.
 - Increasing volume during a rising market is a positive sign that the upward movement in stocks will continue.
 - When stocks have been moving up and volume begins to drop off, that may signal the end of the bull market.
 - Easy statistic to track; reported by numerous sources.

Technical Analysis (5 of 16)

- Measuring the Market
 - Breadth of the Market
 - Looks at number of stock prices that go up (advances) versus number of stock prices that go down (declines).
 - The number of advances and declines reflects the underlying sentiment of investors.
 - The market is strong when advances outnumber declines.
 - The market is weak when declines outnumber advances.
 - Data on advances and declines are widely available.

Figure 9.5 Basic Market Statistics

Market Diaries				Data as of 8/9/2018 04:38:10 PM
Issues:	NYSE	AMEX	NASDAQ	Bulletin Board
Advancing	1,469	152	1,550	0
Declining	1,449	142	1,405	0
Unchanged	142	19	162	0
Total	3,060	313	3,117	0
Issues at:				
52 Week High	114	8	115	0
52 Week Low	35	9	66	0
Volume:				
Advancing	1.28B	39.68M	978.75M	0
Declining	1.70B	71.25M	1.02B	0
Unchanged	56.22M	3.53M	27.99M	0
Total	3.04B	114.46M	2.02B	0

Source: Based on the data from Market volume, advances from Yahoo <http://finance.yahoo.com/advances>, accessed August 12, 2018.

Technical Analysis (6 of 16)

- Measuring the Market
 - Short Interest
 - Short interest: the number of shares of stocks sold short in the market at any point in time.
 - The more stocks that are sold short, the higher the short interest.
 - Can give two different interpretations:
 - Measure of Future Demand for Stock
 - Strong market when short sales are high since guarantees future stock sales to cover the short positions.
 - Measure of Present Market Optimism or Pessimism
 - Weak market when short sales are high since professional short sellers think stocks will decline.

Technical Analysis (7 of 16)

- Measuring the Market
 - Odd-Lot Trading
 - Many small traders deal in transactions of fewer than 100 shares, or odd-lots.
 - **Theory of contrary opinion:** uses the amount and type of odd-lot trading as an indicator of the current state of the market and pending changes.
 - Assumes that small traders will do just the opposite of what should be done:
 - Panic and sell when market is low.
 - Speculate and buy when market is high.
 - When there is a significant difference between odd-lot purchases and sales, this can signal a bull or bear market is about to end.

Technical Analysis (8 of 16)

- Trading Rules and Measures
 - Market technicians:** analysts who believe it is primarily supply and demand that drive stock prices and use a variety of mathematical equations and measures to assess the underlying condition of the market.
 - Develop trading rules based on these market measures.
 - Analysts like to see three or four of these measures all pointing in the same direction.

Technical Analysis (9 of 16)

- Trading Rules and Measures
 - Advance-Decline Line
 - Difference between stocks closing higher (advance) and stocks closing lower (decline) than previous day; difference plotted on a graph to view trends.
 - If the graph is rising, the advancing issues are dominating the declining issues and analysts conclude the market is strong.
 - Technicians use the A-D line as a signal to buy or sell stocks.

Technical Analysis (10 of 16)

- Trading Rules and Measures
 - New Highs—New Lows
 - Measures the difference between stocks reaching a 52-week high and stocks reaching a 52-week low.
 - A 10-day moving average is plotted on a graph to view trends.
 - Used as a signal to buy or sell stocks.
 - Market is strong when highs outnumber lows.
 - Market is weak when lows outnumber highs.

Technical Analysis (11 of 16)

- Trading Rules and Measures
 - The Arms Index
 - Trading index (TRIN): Combines the A-D line with trading volume

Equation 9.4

$$\text{TRIN} = \frac{\text{Number of up stocks}}{\text{Number of down stocks}} \div \frac{\text{Volume in up stocks}}{\text{Volume in down stocks}}$$

- A strong market is characterized by more stocks rising in price than falling, along with greater volume in rising stocks than in the falling ones.
- Higher TRIN values signal a weak market.

Technical Analysis (12 of 16)

- Trading Rules and Measures
 - Mutual Fund Cash Ratio
 - MFCR looks at the cash position of mutual funds as an indicator of future market performance.
 - Measures the percentage of mutual fund assets that are held in cash:

$$\text{MFCR} = \frac{\text{Mutual fund cash position}}{\text{Total assets under management}}$$

- Assumes the higher the MFCR the stronger the market.
- High cash positions in mutual funds provides liquidity for future stocks purchases or protection from future mutual fund withdrawals.

Technical Analysis (13 of 16)

- Trading Rules and Measures
 - On-Balance Volume
 - Momentum indicator that relates volume to price change.
 - It uses trading volume in addition to price and tracks trading volume as a running total.
 - Up-volume occurs when stock closes higher and is added to running total; down-volume occurs when stock closes lower and is subtracted from running total
 - Direction or trend of indicator is more important than actual value.
 - Used to confirm price trends.
 - Bull market when OBV values are higher.
 - Bear market when OBV values are lower.

Technical Analysis (14 of 16)

- Trading Rules and Measures
 - Relative Strength
 - Relative strength index (RSI): index measuring a security's strength of advances and declines over time.
 - Indicates a security's momentum and is most often used for short trading periods.
 - Helps identify market extremes, signaling a security is approaching its price top or bottom and may soon reverse this trend.

Equation 9.6

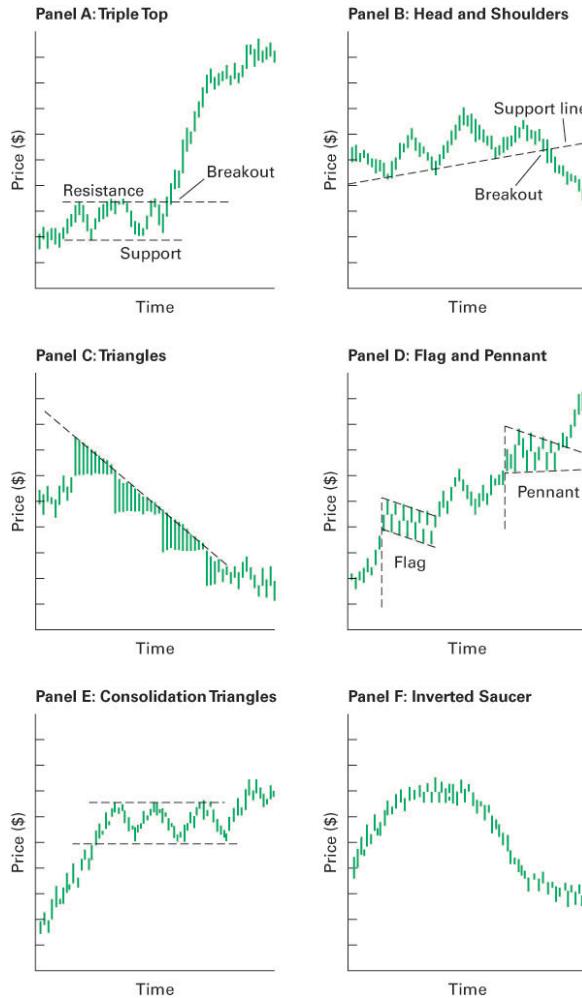
$$RSI = 100 - \left[100 \div \left(1 + \frac{\text{Average price change on up days}}{\text{Average price change on down days}} \right) \right]$$

- RSI ranges from 0 to 100, but most values fall between 30 and 70.
 - Investors set buy and sell ranges
 - Investors compare RSI with stock price charts

Technical Analysis (15 of 16)

- Charting
 - **Charting:** technical analysts use various types of charts to show a visual summary of stock activity over time.
 - provides valuable information about developing trends and the future behavior of the market or individual stocks.
 - Price patterns evolve into chart formations that provide signals about the future course of the market or a stock.
 - Chart Formations
 - Patterns form “support levels” and “resistance lines” that when combined with the basic formations, yield buy and sell signals.
 - Buy when stocks break through the “line of resistance”.
 - Sell when stocks break through a “line of support”.

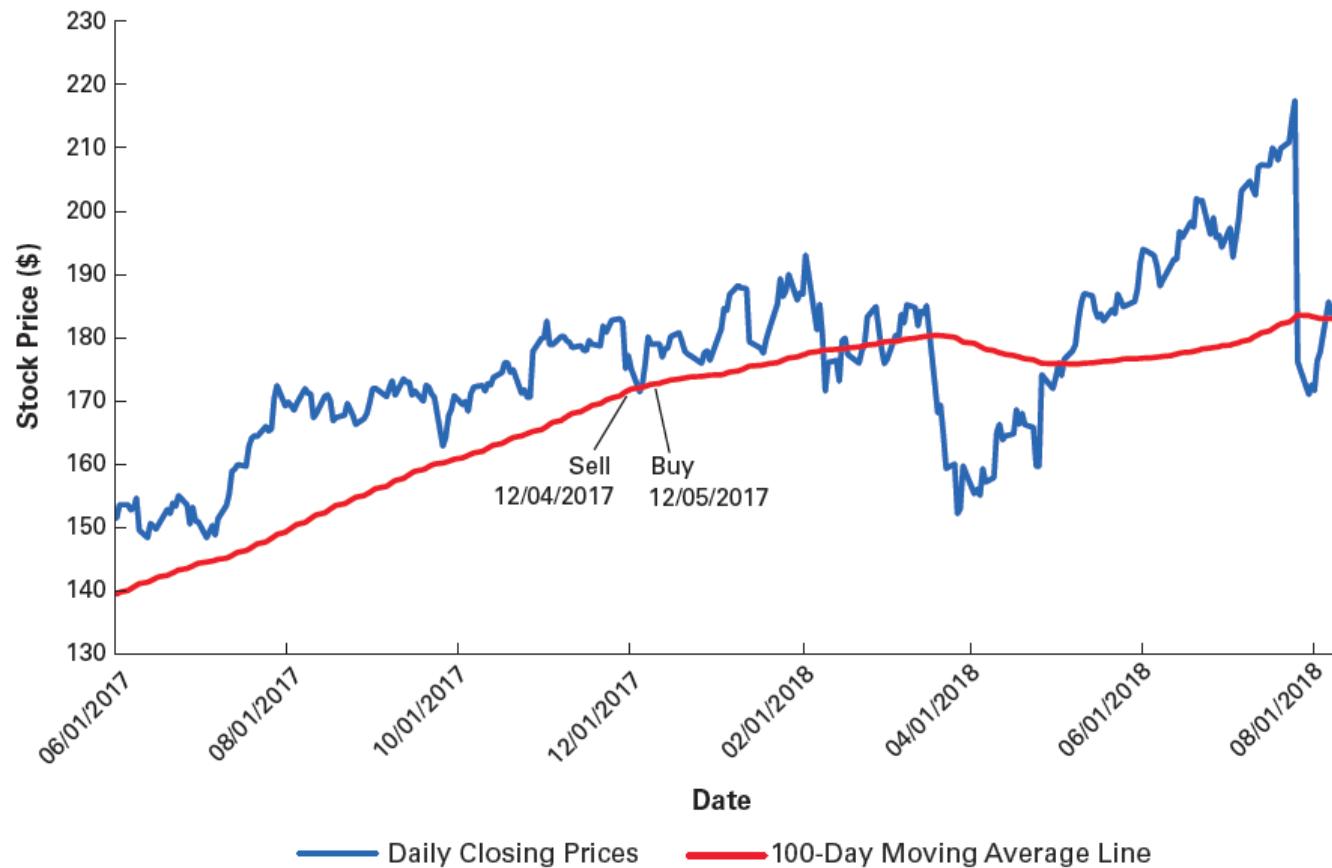
Figure 9.6 Some Popular Chart Formations



Technical Analysis (16 of 16)

- Charting
 - Moving averages
 - **Moving average:** mathematical procedure that records the average value of a series of prices, or other data, over time.
 - Smooths out a data series and make it easier to spot trends.
 - Computed over time periods of 10 to 200 days.
 - Plotting the stock price and the moving average line together helps technicians make buy and sell decisions about a stock.
 - Buy signal when security's price starts moving above the moving-average line.
 - Sell signal when the security's price moves below the moving-average line.

Figure 9.7 Daily Closing Prices and 100-Day Moving-Average Line for Facebook



Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 10 Fixed-Income Securities

With Prof Nugent

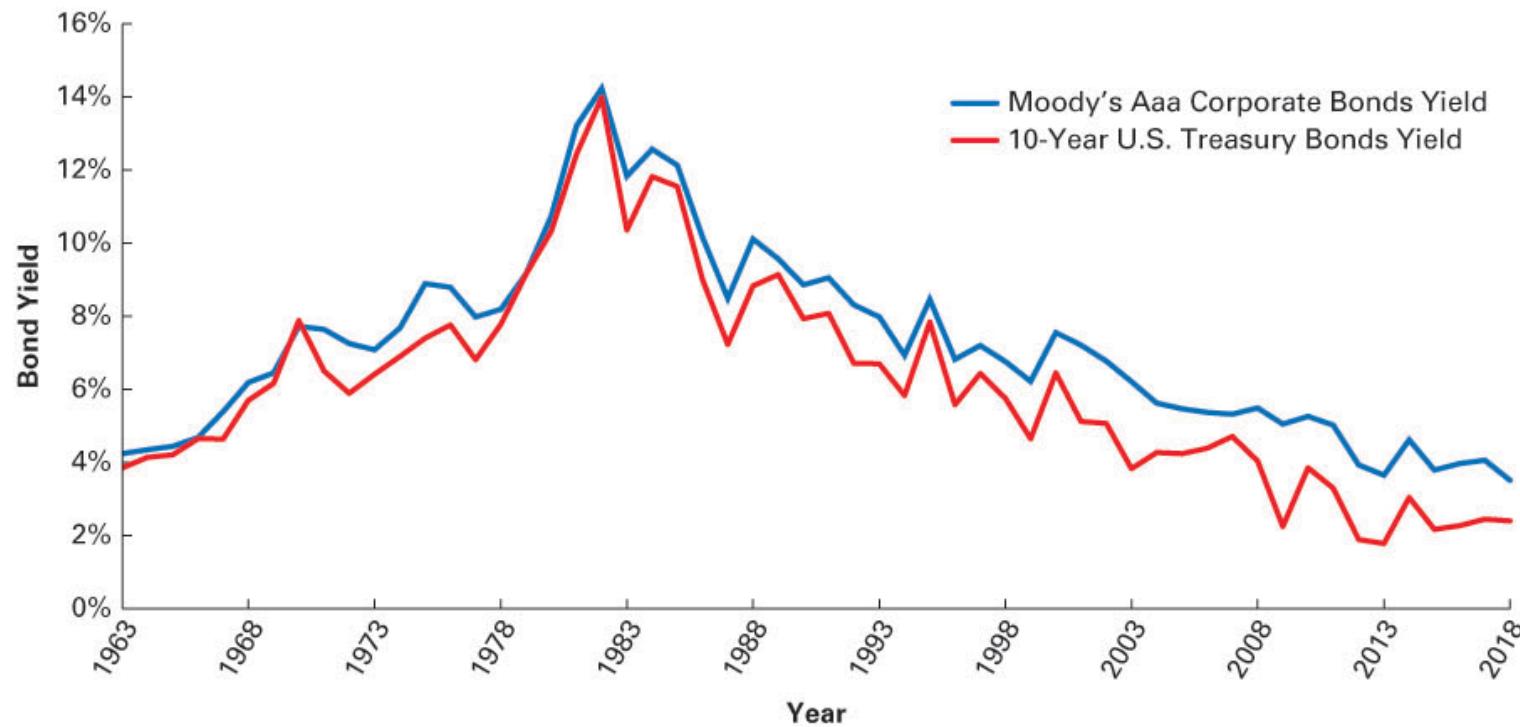
Why Invest in Bonds? (1 of 6)

- **Bonds** are publicly traded, long-term debt securities. Because bond issuers usually repay lenders by making fixed periodic interest payments and a fixed principal payment at maturity, bonds are called “fixed-income securities”.
 - The issuer (borrower) agrees to pay a fixed amount of interest periodically and to repay a fixed amount of principal at maturity.
 - Like stocks, bonds can provide two types of income: (1) current income and (2) capital gains.
 - A Brief History of Bond Prices, Returns, and Interest Rates
 - Exposure to Risk

Why Invest in Bonds? (2 of 6)

- A Brief History of Bond Prices, Returns, and Interest Rates
 - The behavior of interest rates is the most important influence on bond returns.
 - When interest rates rise, bond prices fall.
 - When interest rates drop, bond prices move up.
 - Corporate and government bond rates tend to move together, but corporate bond rates are higher.
 - Corporate bonds are more risky and thus require a higher rate to compensate for this risk.
 - Difference between the corporate and government bond rates is called the **yield spread**, or **credit spread**.

Figure 10.1 The Behavior of Interest Rates Over Time, 1963 through 2018



(Source: Board of Governors of the Federal Reserve System (US), Moody's Seasoned Aaa Corporate Bond Yield© [AAA], retrieved from FRED, Federal Reserve Bank of St. Louis, <https://research.stlouisfed.org/fred2/series/AAA/>, June 30, 2018. Board of Governors of the Federal Reserve System (US), 10-Year Treasury Constant Maturity Rate [DGS10], retrieved from FRED, Federal Reserve Bank of St. Louis, <https://research.stlouisfed.org/fred2/series/DGS10/>, June 30, 2018.)

Why Invest in Bonds? (3 of 6)

- A Brief History of Bond Prices, Returns, and Interest Rates
 - Historical Returns
 - Total returns on bonds depend on the direction of interest rate movements.
 - When interest rates are rising, total returns on bonds include capital losses that can sometimes exceed the bonds' interest income, resulting in a negative total return.
 - Total returns on U.S. Treasury bonds were negative in 10 of 55 years (Table 10.1); years with negative total returns on bonds were years in which bond yields rose.

Table 10.1 Historical Annual Yields and Total Returns for Treasury Bonds (1 of 2)

Year	Beginning-of-Year T-Bond Yield	End-of-Year T-Bond Yield	T-Bond Total Return	Year	Beginning-of-Year T-Bond Yield	End-of-Year T-Bond Yield	T-Bond Total Return
1963	3.9%	4.1%	1.5%	1977	6.8%	7.8%	0.2%
1964	4.1%	4.2%	3.6%	1978	7.8%	9.2%	-1.0%
1965	4.2%	4.7%	0.8%	1979	9.2%	10.3%	2.0%
1966	4.7%	4.6%	4.7%	1980	10.3%	12.4%	-1.3%
1967	4.6%	5.7%	-3.3%	1981	12.4%	14.0%	4.3%
1968	5.7%	6.2%	2.3%	1982	14.0%	10.4%	35.9%
1969	6.2%	7.9%	-5.4%	1983	10.4%	11.8%	2.0%
1970	7.9%	6.5%	17.8%	1984	11.8%	11.6%	13.4%
1971	6.5%	5.9%	11.0%	1985	11.6%	9.0%	27.9%
1972	5.9%	6.4%	2.1%	1986	9.0%	7.2%	21.3%
1973	6.4%	6.9%	3.0%	1987	7.2%	8.8%	-3.1%
1974	6.9%	7.4%	3.5%	1988	8.8%	9.1%	6.9%
1975	7.4%	7.8%	5.0%	1989	9.1%	7.9%	17.3%
1976	7.8%	6.8%	14.5%	1990	7.9%	8.1%	6.9%

Table 10.1 Historical Annual Yields and Total Returns for Treasury Bonds (2 of 2)

Year	Beginning-of-Year T-Bond Yield	End-of-Year T-Bond Yield	T-Bond Total Return	Year	Beginning-of-Year T-Bond Yield	End-of-Year T-Bond Yield	T-Bond Total Return
1991	8.1%	6.7%	17.8%	2005	4.2%	4.4%	3.0%
1992	6.7%	6.7%	6.8%	2006	4.4%	4.7%	1.9%
1993	6.7%	5.8%	13.2%	2007	4.7%	4.0%	10.1%
1994	5.8%	7.8%	-7.8%	2008	4.0%	2.3%	19.9%
1995	7.8%	5.6%	24.8%	2009	2.3%	3.9%	-10.8%
1996	5.6%	6.4%	-0.6%	2010	3.9%	3.3%	8.5%
1997	6.4%	5.8%	11.5%	2011	3.3%	1.9%	16.0%
1998	5.8%	4.7%	14.4%	2012	1.9%	1.8%	2.9%
1999	4.7%	6.5%	-8.3%	2013	1.8%	3.0%	-8.9%
2000	6.5%	5.1%	16.7%	2014	3.0%	2.2%	10.8%
2001	5.1%	5.1%	5.5%	2015	2.2%	2.3%	1.3%
2002	5.1%	3.8%	15.2%	2016	2.3%	2.5%	0.7%
2003	3.8%	4.3%	0.3%	2017	2.5%	2.4%	2.9%
2004	4.3%	4.2%	4.5%	2018	2.4%	3.1%	-0.1%

(Source: Board of Governors of the Federal Reserve System (US), 10-Year Treasury Constant Maturity Rate [DGS10], retrieved from FRED, Federal Reserve Bank of St. Louis, <https://research.stlouisfed.org/fred2/series/DGS10/>, December 31, 2018.)

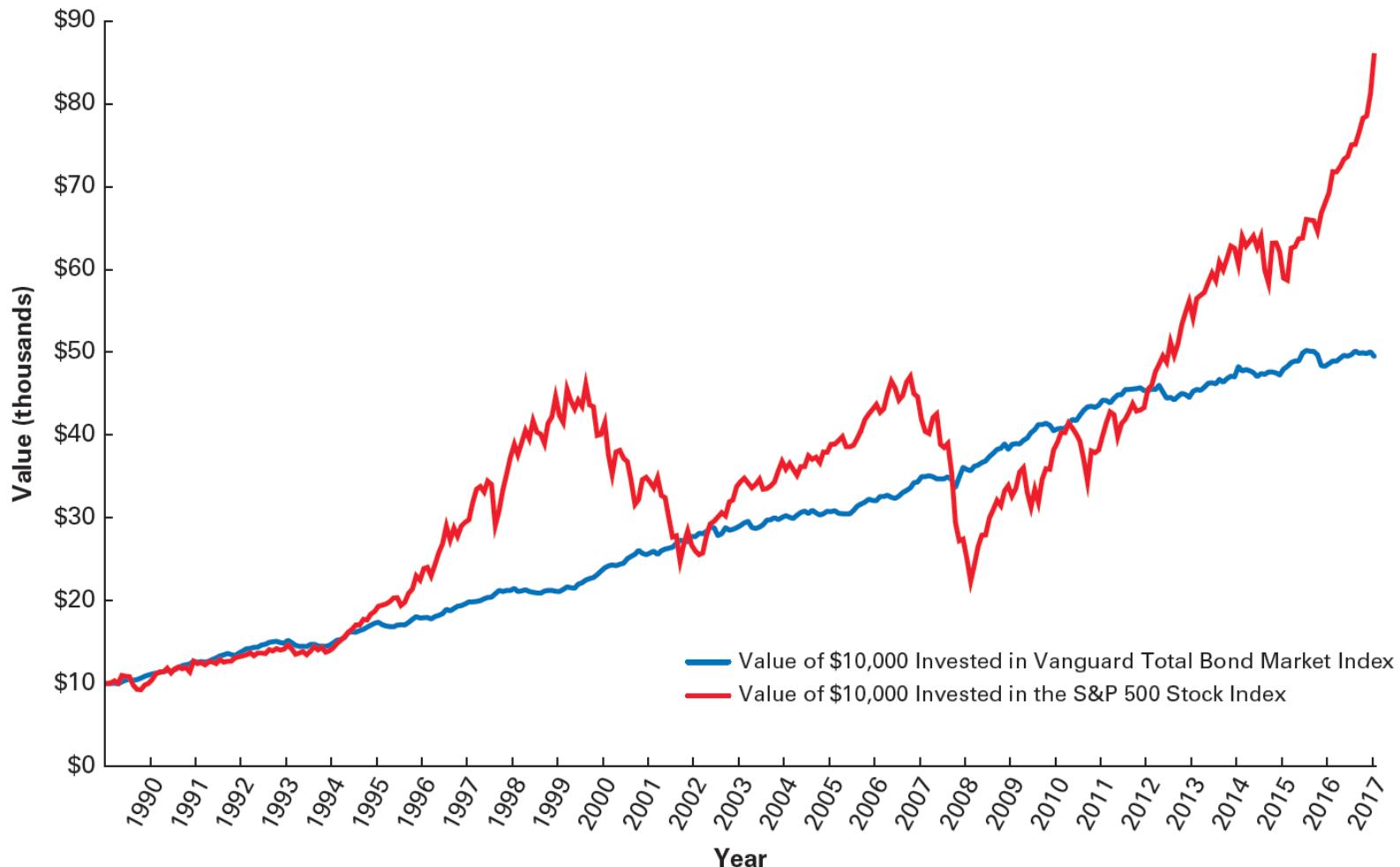
Why Invest in Bonds? (4 of 6)

- A Brief History of Bond Prices, Returns, and Interest Rates
 - Historical Returns
 - The inverse relationship between bond prices and yields can also work in investors' favor. Years with the highest total returns on bonds (Table 10.1) are **almost always** years in which bond yields fell during the year.

Why Invest in Bonds? (5 of 6)

- A Brief History of Bond Prices, Returns, and Interest Rates
 - Bonds Versus Stocks
 - Compared with stocks, bonds generally offer lower returns.
 - Main benefits of bonds in a portfolio:
 - Lower risk
 - High levels of current income
 - Diversification
 - Bonds add an element of stability to a portfolio.

Figure 10.2 Comparative Performance of Stocks and Bonds, 1990 through 2017



Why Invest in Bonds? (6 of 6)

- Exposure to Risk
 - Bonds are exposed to five major types of risk:
 - **Interest Rate Risk:** the chance that changes in interest rates will negatively affect the bond's value.
 - **Purchasing Power Risk:** the chance that bond yields will lag behind inflation rates. Inflation erodes the purchasing power of money.
 - **Business/Financial Risk:** the risk that the issuer of the bond will default on interest or principal payments.
 - **Liquidity Risk:** the risk that a bond will be difficult to sell at a reasonable price.
 - **Call Risk:** risk that a bond will be “called” (retired) before its scheduled maturity date.

Essential Features of a Bond (1 of 14)

- A bond is a long-term debt instrument that obligates the borrower to make interest and principal payments.
- Bondholders are lenders, not owners.
 - Bond Interest and Principal
 - Maturity Date
 - Principles of Bond Price Behavior
 - Quoting Bond Prices
 - The Call Feature
 - Sinking Funds
 - Secured or Unsecured Debt
 - Bond Ratings

Essential Features of a Bond (2 of 14)

- Bond Interest and Principal
 - **Coupon**: the amount of annual interest income that it pays to the bondholder.
 - **Principal (par value; face value)**: the amount that the borrower must repay at maturity.
 - **Coupon rate**: the coupon divided by the bond's par value, and it simply expresses the interest payment as a percentage of par value.
 - **Current Yield**: measures the interest component of a bond's return relative to the bond's market price (calculated as the bond's annual coupon divided by the bond's current price).

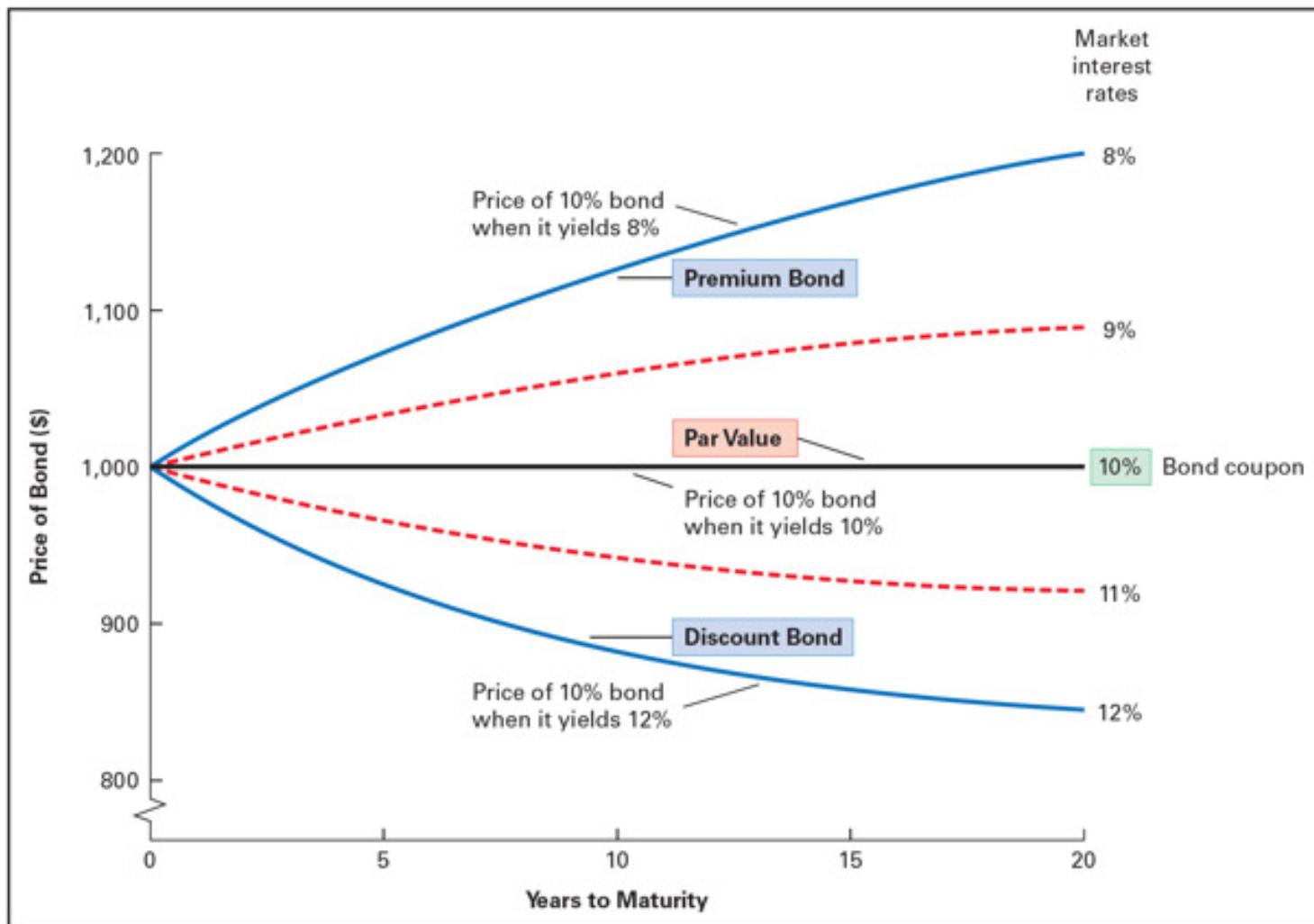
Essential Features of a Bond (3 of 14)

- Maturity Date
 - **Maturity date:** the date when a bond matures and the principal must be repaid.
 - Fixed
 - Term to maturity: amount of time remaining on a bond's life until it matures.
 - **Term bond:** a bond issue that has a single maturity date for all the bonds being issued; most common type.
 - **Serial bond:** a bond issue that has a series of bonds with different maturity dates, perhaps as many as 15 or 20, within a single bond offering.
 - **Note:** a debt security that's originally issued with a maturity of 2 to 10 years (unlike bonds which are usually issued with a maturity of more than 10 years).

Essential Features of a Bond (4 of 14)

- Principles of Bond Price Behavior
 - The price of a bond is a function of the bond's coupon, its maturity, and the level of market interest rates.
 - **Premium bond:** a bond that sells for more than its par value; occurs when market interest rates drop below the bond's coupon rate.
 - **Discount bond:** a bond that sells for less than its par value; occurs when market interest rates are above the bond's coupon rate.
 - The maturity of an issue has a greater impact on price volatility than the coupon does.
 - Prices of bonds with longer maturities are affected more by changes in interest rates.

Figure 10.3 The Price Behavior of a Bond



Essential Features of a Bond (5 of 14)

- Quoting Bond Prices
 - Bonds are not widely quoted in the financial press like stocks are.
 - Prices of all types of bonds are usually expressed as a percent of par.
 - In the corporate and municipal markets, bond prices are expressed in decimals:
 - A quote of 87.562 translates into a price of 87.562% of par or \$875.62 for a bond with a \$1,000 par value.
 - In U.S. Treasury and agency bond quotes are stated in thirty-seconds of a point (1 point equals \$10):
 - A quote for a T-bond of 94.16 translates to 94 16/32 or 94.5% of par, assuming \$1,000 par value (i.e., \$945.00).
 - The price of bond depends on its coupon and maturity, so these are usually included in a price quote.

Essential Features of a Bond (6 of 14)

- The Call Feature
 - **Call feature:** every bond is issued with a call feature, which stipulates whether and under what conditions a bond can be called in for retirement prior to maturity.
 - **Freely callable:** issuer can prematurely retire the bond at any time.
 - **Noncallable:** issuer is prohibited from retiring the bond prior to maturity.
 - **Deferred call:** the issue cannot be called until after some time has passed since the issue date.
 - Call features work for the benefit of the issuer, allowing issuers to take advantage of declines in market interest rates. The investor is left with a much lower rate of return than would be the case if the bond was not called.

Essential Features of a Bond (7 of 14)

- The Call Feature
 - Call premium:** the amount added to the bond's par value and paid upon call to compensate bondholders.
 - Call price:** the bond's par value plus the call premium.
 - Refunding protection provision:** prevent borrowers from using the proceeds of a new, lower-coupon bond issue to pay for the cost of calling an outstanding bond issue.

Essential Features of a Bond (8 of 14)

- Sinking Funds
 - **Sinking fund:** stipulates how the issuer will pay off the bond over time.
 - Applies only to term bonds.
 - Not all term bonds have sinking fund requirements.
 - Sinking fund requirements usually begin 1 to 5 years after the date of issue and continue annually thereafter until all or most of the issue is paid off.
 - Any amount not repaid would then be retired with a single “balloon” payment at maturity.
 - Obligates the issuer to pay off the bond systematically over time.

Essential Features of a Bond (9 of 14)

- Secured or Unsecured Debt
 - **Senior bonds** are **secured** obligations, meaning they are backed by a legal claim or some specific property of the issuer.
 - **Mortgage bonds** are secured by real estate.
 - **Collateral trust bonds** are secured by financial assets owned by the issuer but held in trust by a third party.
 - **Equipment trust certificates** are secured by specific pieces of equipment, such as boxcars and airplanes.
 - **First and refunding bonds** are a combination of first mortgage and junior lien bonds.
 - bonds secured by a first mortgage on some of the issuer's property and by second or third mortgages on other properties.
 - Less secure than straight first-mortgage bonds.

Essential Features of a Bond (10 of 14)

- Secured or Unsecured Debt
 - Junior bonds:** **Unsecured** debt, backed only by the promise of the issuer to pay interest and principal.
 - **Debenture:** a bond that is totally unsecured, meaning there is no collateral backing up the obligation.
 - **Subordinated debenture:** unsecured bond issues whose claim is secondary to other debenture bonds.
 - **Income bonds:** most junior of all bonds; unsecured debts requiring that the issuer pay interest only after it earns a certain amount of income.

Essential Features of a Bond (11 of 14)

- Bond Ratings
 - **Bond rating agencies:** institutions that perform extensive financial analysis on companies issuing bonds to assess the credit risk associated with a particular bond issue.
 - Examples: Moody's, Standard & Poor's, Fitch
 - **Bond ratings:** letter grades that rating agencies give to new bond issues, corresponding to a certain level of credit risk.

Essential Features of a Bond (12 of 14)

- Bond Ratings
 - How Ratings Work
 - A firm's financial strength and stability are very important in determining the appropriate rating.
 - Generally, higher ratings are associated with more profitable companies that:
 - rely less on debt as a form of financing
 - are more liquid
 - have stronger cash flows
 - have no trouble servicing their debt in a prompt and timely fashion

Essential Features of a Bond (13 of 14)

- Bond Ratings
 - How Ratings Work
 - **Investment-grade bonds:** bonds receiving one of the top four ratings, indicating financially strong, well-run companies.
 - **Junk bonds (high-yield bonds):** bonds with below-investment-grade ratings, reflecting issuers lacking financial strength.
 - **Split rating:** occurs when a bond issue is given different ratings by major rating agencies.
 - Ratings change as the financial condition of the issuer changes. All rated issues are reviewed regularly to ensure the assigned rating is valid.
 - Upgrades and downgrades

Table 10.2 Bond Ratings

Moody's	S&P	Definition
Aaa	A A A	High-grade investment bonds. The highest rating assigned, denoting extremely strong capacity to pay principal and interest. Often called "gilt-edge" securities.
A a	A A	High-grade investment bonds. High quality but rated lower primarily because the margins of protection are not as strong as AAA bonds.
A	A	Medium-grade investment bonds. Many favorable investment attributes, but elements may be present that suggest susceptibility to adverse economic changes.
Baa	BBB	Medium-grade investment bonds. Adequate capacity to pay principal and interest but possibly lacking certain protective elements against adverse economic conditions.
Ba	BB	Speculative issues. Only moderate protection of principal and interest in varied economic times.
B	B	Speculative issues. Generally lacking desirable characteristics of investment bonds. Assurance of principal and interest may be small.
Caa	CCC	Default. Poor-quality issues that may be in default or in danger of default.
Ca	CC	Default. Highly speculative issues, often in default or processing other market shortcomings.
C		Default. These issues may be regarded as extremely poor in investment quality.
	C	Default. Rating given to income bonds on which no interest is paid.
	D	Default. Issues actually in default, with principal or interest in arrears.

(Source: Based on Moody's Investors Service and Standard & Poor's Ratings Services.)

Essential Features of a Bond (14 of 14)

- Bond Ratings
 - What Ratings Mean
 - Ratings are tied to bond yields: the higher the rating, the lower the yield.
 - A bond's rating has an impact on how sensitive its price is to interest rate movements as well as to changes in the company's financial performance.
 - Bond ratings serve to relieve individual investors of the time and cost of a thorough credit analysis of their own, but keep in mind:
 - Bond ratings only measure an issue's default risk, which is not related at all to an issue's exposure to interest rate risk.
 - Ratings agencies do make mistakes.

The Market for Debt Securities (1 of 16)

- The bond market is:
 - Mainly over-the-counter in nature.
 - Far more stable than the stock market.
 - Growing rapidly
- The U.S. bond market is quite a bit larger than the U.S. stock market.
 - Major Market Segments
 - Specialty Issues
 - A Global View of the Bond Market

The Market for Debt Securities (2 of 16)

- Major Market Segments
 - Treasury Bonds
 - Issued by the U.S. Treasury, all Treasury obligations are of the highest quality because they are backed by the “full faith and credit” of the U.S. government.
 - **Treasury notes:** issued with maturities of 2,3,5,7, and 10 years.
 - **Treasury bonds:** maturity of 30 years.
 - Interest is paid semiannually and exempt from state and local taxes.
 - Today the Treasury issues only noncallable securities.
 - The Treasury issues its securities at regularly scheduled auctions.

Figure 10.4 Auction Results for a 30-Year Treasury Bond

U.S. Treasury Auction Results May 10, 2018

U.S. Treasury Auction Results May 10, 2018		
Type of security	30-Year Bond	
Issue date	May 15, 2018	
Maturity date	May 15, 2048	
Interest rate	3.125%	
High yield ¹	3.130%	
Price	99.903175	
	Tendered	Accepted
Competitive	\$40,397,723,000	\$16,994,954,700
Noncompetitive	\$ 5,087,100	\$ 5,087,100
Total	\$40,402,810,100	\$17,000,041,800

¹All tenders at lower yields were accepted in full.

¹All tenders at lower yields were accepted in full.

(Source: Based on U.S. Department of the Treasury, Bureau of Public Debt, May 10, 2018.)

The Market for Debt Securities (3 of 16)

- Major Market Segments
 - Treasury Bonds
 - **Treasury Inflation-Protected Securities (TIPS):** first issued in 1997, these securities offer investors the opportunity to stay ahead of inflation by periodically adjusting their returns for any inflation that has occurred.
 - Maturities of 5, 10, and 30 years
 - Pay interest semiannually
 - Eliminates purchasing power risk
 - Lower risk than ordinary bonds, TIPS generally offer lower returns than ordinary Treasury bonds do.

The Market for Debt Securities (4 of 16)

- Major Market Segments
 - Agency Bonds
 - **Agency bonds:** debt securities issued by various agencies and organizations of the U.S. government:
 - Federal Home Loan Bank
 - Federal Farm Credit Systems
 - Small Business Administration
 - Student Loan Marketing Association
 - Federal National Mortgage Association
 - High quality securities with almost no risk of default.
 - Usually provide yields that are slightly above the market rates for Treasuries.

Table 10.3 Characteristics of Some Common Agency Issues

TABLE 10.3 CHARACTERISTICS OF SOME COMMON AGENCY ISSUES

Type of Issue	Minimum Denomination	Initial Maturity	Tax Status*		
			Federal	State	Local
Federal Farm Credit System	\$ 1,000	13 months to 15 years	T	E	E
Federal Home Loan Bank	\$10,000	1 to 20 years	T	E	E
Federal Land Banks	\$ 1,000	1 to 10 years	T	E	E
Farmers Home Administration	\$25,000	1 to 25 years	T	T	T
Federal Housing Administration	\$50,000	1 to 40 years	T	T	T
Federal Home Loan Mortgage Corp.** ("Freddie Mac")	\$25,000	18 to 30 years	T	T	T
Federal National Mortgage Association** ("Fannie Mae")	\$25,000	1 to 30 years	T	T	T
Government National Mortgage Association** (GNMA—"Ginnie Mae")	\$25,000	12 to 40 years	T	T	T
Student Loan Marketing Association ("Sallie Mae")	\$10,000	3 to 10 years	T	E	E
Tennessee Valley Authority (TVA)	\$ 1,000	5 to 50 years	T	E	E
U.S. Postal Service	\$10,000	25 years	T	E	E
Federal Financing Corp.	\$ 1,000	1 to 20 years	T	E	E

*T = taxable; E = tax-exempt.

**Mortgage-backed securities.

The Market for Debt Securities (5 of 16)

- Major Market Segments
 - Municipal Bonds
 - **Municipal bonds** (munis): issued by states, counties, cities, and other political subdivisions (such as school districts).
 - Two basic types:
 - **General obligation bonds** are backed by the full faith, credit, and taxing power of the issuer.
 - **Revenue bonds** are serviced by the income generated from specific income-producing projects (e.g. toll road).
 - Some are backed by **municipal bond guarantees**, which are an additional source of collateral in the form of insurance, which improves the quality of the bond (higher ratings and improved liquidity).

The Market for Debt Securities (6 of 16)

- Major Market Segments
 - Municipal Bonds
 - Tax Advantages
 - Interest is tax-exempt for Federal taxes
 - Interest can be tax-exempt from state and local taxes if you live in the state where the bond was issued.
 - **Taxable equivalent yield:** the taxable yield that is equivalent to a municipal bond's lower, tax-free yield.

Equation 10.1

$$\text{Taxable equivalent yield} = \frac{\text{Yield on municipal bond}}{1 - \text{Marginal federal tax rate}}$$

Equation 10.2

$$\begin{aligned}&\text{Taxable equivalent yield for both federal and state taxes} \\&= \frac{\text{Municipal bond yield}}{1 - [\text{Federal tax rate} + \text{State tax rate}(1 - \text{Federal tax rate})]}\end{aligned}$$

Table 10.4 Taxable Equivalent Yields for Various Tax-Exempt Returns

TABLE 10.4 TAXABLE EQUIVALENT YIELDS FOR VARIOUS TAX-EXEMPT RETURNS

Federal Tax Bracket	Tax-Free Yield					
	5%	6%	7%	8%	9%	10%
10%	5.56%	6.67%	7.78%	8.89%	10.00%	11.11%
12%	5.68%	6.82%	7.95%	9.09%	10.23%	11.36%
22%	6.41%	7.69%	8.97%	10.26%	11.54%	12.82%
24%	6.58%	7.89%	9.21%	10.53%	11.84%	13.16%
32%	7.35%	8.82%	10.29%	11.76%	13.24%	14.71%
35%	7.69%	9.23%	10.77%	12.31%	13.85%	15.38%
37%	7.94%	9.52%	11.11%	12.70%	14.29%	15.87%

The Market for Debt Securities (7 of 16)

- Major Market Segments
 - Corporate Bonds
 - Issued by corporations from four major segments:
 - Industrials
 - Public Utilities
 - Transportation
 - Financial services
 - Wide variety of bond quality and bond types available
 - Popular with individuals because of the steady, predictable income they provide.
 - **Equipment trust certificate:** special corporate issue security issued by railroad, airlines, and other transportation concerns; used to purchase equipment that serves as collateral for the issue.

The Market for Debt Securities (8 of 16)

- Specialty Issues
 - Zero-Coupon Bonds
 - **Zero-coupon bonds** do not pay interest.
 - Sold at a discount from their par values.
 - Investors receive full par value when the bonds mature.
 - Subject to tremendous price volatility as interest rates fluctuate.
 - Interest must be reported as it is accrued for tax purposes, even though no interest is actually received.
 - **Treasury strips:** zero-coupon bonds created from U.S. Treasury securities and sold by government securities dealers.

The Market for Debt Securities (9 of 16)

- Specialty Issues
 - Mortgage-Backed Securities
 - **Mortgage-backed bond:** a debt issue that is secured by a pool of mortgages.
 - The monthly payments received by bondholders are, like mortgage payments, made up of both principal and interest.
 - Issued primarily by three federal agencies:
 - Government National Mortgage Association (GNMA)
 - Federal Home Loan Mortgage Corporation (FHLMC)
 - Federal National Mortgage Association (FNMA)
 - Self-liquidating investment, since a portion of the monthly cash flow is repayment of the principal.

The Market for Debt Securities

(10 of 16)

- Specialty Issues
 - Collateralized Mortgage Obligations
 - **Collateralized Mortgage Obligations (CMOs):** mortgage-backed bond pool that is divided into “tranches”, or classes of investors, based on whether they want a short-, intermediate-, or long-term investment.
 - Principal payments go first to the shortest tranche until it is fully retired, then the next in sequence is paid.
 - Complex and potentially risky.
 - Prepayment (call) risk.
 - Different tranches have different levels of prepayment risk.

The Market for Debt Securities

(11 of 16)

- Specialty Issues
 - Asset-Backed Securities
 - **Securitization:** various lending vehicles are transformed into marketable securities.
 - **Asset-backed securities (ABS):** securities backed by pools of auto loans, credit card bills, home equity lines of credit, as well as computer leases, hospital receivables, small business loans, truck rentals, even royalty fees.
 - Issued by corporations
 - Offer relatively high yields
 - Short maturities, typically less than 5 years
 - Interest and principal payments are monthly
 - High credit quality

The Market for Debt Securities

(12 of 16)

- Specialty Issues
 - Junk Bonds
 - Highly speculative securities that have received low, sub-investment grade ratings.
 - Often take the form of subordinated debentures.
 - Called “junk” because of their high risk of default.
 - Typically offer very high yields.
 - Prices tend to behave more like stocks than bonds.

The Market for Debt Securities

(13 of 16)

- Specialty Issues
 - Junk Bonds
 - **PIK bond:** an unusual type of junk bond
 - PIK stands for “payment in kind”
 - Rather than paying the bond’s coupon in cash, the issuer can make annual interest payments in the form of additional debt, usually for five or six years, before making interest payments in real money.

The Market for Debt Securities

(14 of 16)

- A Global View of the Bond Market
 - Foreign bonds have caught on with investors who want to hold well-diversified portfolios.
 - Big risk with foreign bonds has to do with the impact that currency fluctuations can have on returns in U.S. dollars.
 - The U.S. has the world's biggest bond market, followed by Japan, China, and several EU countries (Germany, Italy, France), together accounting for greater than 90% of the world bond market.

The Market for Debt Securities

(15 of 16)

- A Global View of the Bond Market
 - U.S.-Pay Versus Foreign-Pay Bonds
 - Dollar-Denominated Bonds
 - **Yankee bonds:** issued by foreign governments or corporations or by supernational agencies, like the World Bank and the InterAmerican Bank.
 - Issued and traded in the U.S.
 - Registered with SEC
 - All transactions are in U.S. dollars
 - No currency risk
 - **Eurodollar bonds:** issued and traded outside of the U.S. and are not registered with the SEC.
 - Denominated in U.S. dollars
 - Eurodollar market primarily aimed at institutional investors and dominated by foreign-based investors.

The Market for Debt Securities

(16 of 16)

- A Global View of the Bond Market
 - U.S.-Pay versus Foreign-Pay Bonds
 - Foreign-Pay Bonds
 - Bonds denominated in another currency other than U.S. dollars.
 - Issued and traded overseas
 - Not registered with the SEC
 - Examples: German government bonds, payable in euros; Japanese bonds, issued in yen.
 - Subject to currency exchange rate risk

Equation 10.3

Total return (in U.S. dollars) =

$$\left[\frac{\text{Ending value of bond in foreign currency} + \text{Amount of interest received in foreign currency}}{\text{Beginning value of bond in foreign currency}} \times \frac{\text{Exchange rate at end of holding period}}{\text{Exchange rate at beginning of holding period}} \right] - 1.00$$

Convertible Securities (1 of 11)

- **Convertible bonds:** securities originally issued as bonds (or even preferred stock) by a corporation and containing a provision that gives investors the option to convert their bonds into shares of the issuing firm's stock.
- Convertibles are hybrid securities because they contain attributes of both debt and equity.
- They should be viewed primarily as a form of equity.
 - Convertibles as Investment Outlets
 - Sources of Value
 - Measuring the Value of a Convertible

Convertible Securities (2 of 11)

- Convertibles as Investment Outlets
 - Convertible securities are popular with investors because of their **equity kicker**: the right to convert these bonds into shares of the company's common stock.
 - The market price of a convertible often behaves very much like the price of its underlying stock.
 - Issued either as:
 - Convertible bonds (most common).
 - Convertible **preferreds**.
 - Convertibles are usually viewed as a form of **deferred equity**.

Convertible Securities (3 of 11)

- Convertibles as Investment Outlets
 - Convertible Notes and Bonds
 - Convertible notes are like convertible bonds, except the debt portion of the security carries a shorter maturity (usually 5 to 10 years).
 - **Forced conversion:** while the bondholder has the right to convert the bond at any time, more often than not, the issuing firm initiates the conversion by calling the bonds.

Convertible Securities (4 of 11)

- Convertibles as Investment Outlets
 - Conversion Privilege
 - **Conversion privilege:** key element of a convertible that stipulates the conversion feature's conditions.
 - **Conversion period:** the time period during which a convertible issue can be converted.
 - **Conversion ratio:** denotes the number of common shares an investor receives by converting a bond.
 - **Conversion price:** indicates the implicit price per share that an investor pays by trading a bond for shares of stock.

Convertible Securities (5 of 11)

- Convertibles as Investment Outlets
 - LYONs
 - **LYON(liquid yield option note):** zero-coupon convertible bond that is convertible, at a fixed conversion ratio, for the life of the issue
 - i.e., a zero coupon bond with both a conversion feature and a put option.
 - No current income, but no limit on potential capital appreciation.
 - Put option allows security to be sold back to issuer at prespecified prices, providing downside protection.

Convertible Securities (6 of 11)

- Sources of Value
 - Value of convertibles is based on both the stock and the bond dimensions of the security.
 - Convertibles trade much like common stock as the market price of the stock starts getting close to (or exceeds) the stated conversion price.
 - Convertibles trade much like a bond when the market price of the stock is well below the conversion price.
 - Bond price sets a “price floor” in case the stock price goes into a freefall.

Convertible Securities (7 of 11)

- Measuring the Value of a Convertible
 - Conversion Value
 - **Conversion value:** indicates what a convertible issue would trade for if it were priced to sell on the basis of its stock value.

Equation 10.4

Conversion value = Conversion ratio \times Current market price of the stock

- **Conversion equivalent (conversion parity):** indicates the price at which the common stock would have to sell in order to make the convertible security worth its present market price.

Equation 10.5

$$\text{Current equivalent} = \frac{\text{Current market price of the convertible bond}}{\text{Conversion ratio}}$$

Convertible Securities (8 of 11)

- Measuring the Value of a Convertible
 - Conversion Value
 - **Conversion Premium:** the extent to which the market price of the convertible exceeds its conversion value.
 - Investors are willing to pay a premium because of the added current income provided relative to the underlying stock and because of the convertible's upside potential.

Equation 10.7

$$\text{Conversion premium (in \%)} = \frac{\text{Conversion premium (in \$)}}{\text{Conversion value}}$$

Convertible Securities (9 of 11)

- Measuring the Value of a Convertible
 - Conversion Value
 - **Payback period:** a measure of the length of time it will take to recover the conversion premium from the extra interest income earned on the convertible.

Equation 10.8

Payback period =

Conversion premium (in \$)

Annual interest income from the convertible bond –

Annual dividend income from the underlying common stock

Convertible Securities (10 of 11)

- Measuring the Value of a Convertible
 - Investment Value
 - **Investment value:** the price at which the bond would trade if it were nonconvertible and if it were priced at or near the prevailing market yields of comparable nonconvertible bonds.
 - The present value of its coupon stream and its par value discounted at a rate equal to the prevailing yield on comparable nonconvertible issues.

Fundamentals of Investing, Investment Analysis, & Principles of Investment Finance

Chapter 11

Bond Valuation

With Prof Nugent

The Behavior of Market Interest Rates (1 of 16)

- The required return on a bond can be expressed as:

Equation 11.1

$$r_i = r^* + IP + RP$$

- For bonds, the risk premium addresses the default (credit) risk of the issuer, liquidity and call risks.
- The risk-free rate (real rate of return plus expected inflation premium) accounts for interest rate and purchasing power risk.
 - Keeping Tabs on Market Interest Rates
 - What Causes Rates to Move?
 - The Term Structure of Interest Rates and Yield Curves

The Behavior of Market Interest Rates (2 of 16)

- Keeping Tabs on Market Interest Rates
 - The bond market is not a single market, but consists of many different sectors:
 - U.S. Treasury issues
 - Municipal bond issues
 - Corporate bond issues
 - There is no single interest rate that applies to all the segments of the bond market.
 - **Yield spreads:** differences in interest rates between the various market sectors.

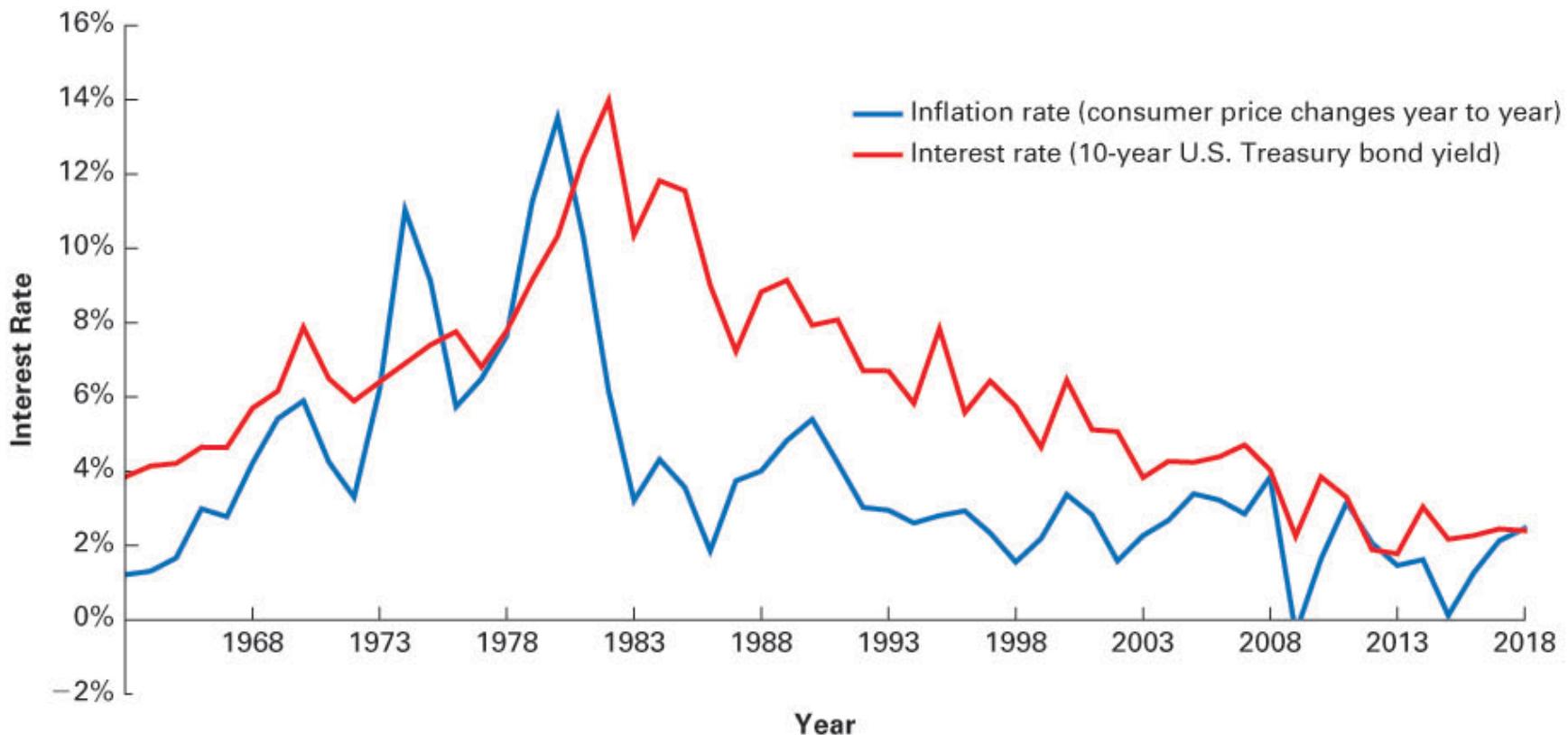
The Behavior of Market Interest Rates (3 of 16)

- Keeping Tabs on Market Interest Rates
 - Municipal bond rates are usually 20-30% lower than corporate bond rates due to their tax-exempt feature.
 - General obligation bonds pay lower rates than revenue bonds.
 - Treasury bonds have lower rates than corporate bonds due to no default risk and exemption from state income taxes.
 - The lower the credit rating (and higher the risk), the higher the interest rate.
 - Bonds with longer maturities generally provide higher yields than short-term issues (not ALWAYS the case).
 - Freely callable bonds generally pay higher interest rates than noncallable bonds.

The Behavior of Market Interest Rates (4 of 16)

- What Causes Rates to Move?
 - Major Determinants of Interest Rates
 - Inflation is the most important variable to have an effect on market interest rates. Holding other factors constant...
Expected inflation goes , interest rates go 
Expected inflation goes , interest rates go 
 - In addition to inflation, five other economic variables can significantly affect the level of interest rates.

Figure 11.1 The Impact of Inflation on the Behavior of Interest Rates from 1963 to 2018



The Behavior of Market Interest Rates (5 of 16)

- What Causes Rates to Move?
 - Major Determinants of Interest Rates:

Economic Variable	Type of Change	Effect on Rates
Change in money supply	Slow increase	Decrease
	Slow decrease	Increase
	Fast increase	Increase
	Fast decrease	Decrease
Federal Budget	Deficit	Increase
	Surplus	Decrease
U.S. Economic Activity	Recession	Decrease
	Expansion	Increase

The Behavior of Market Interest Rates (6 of 16)

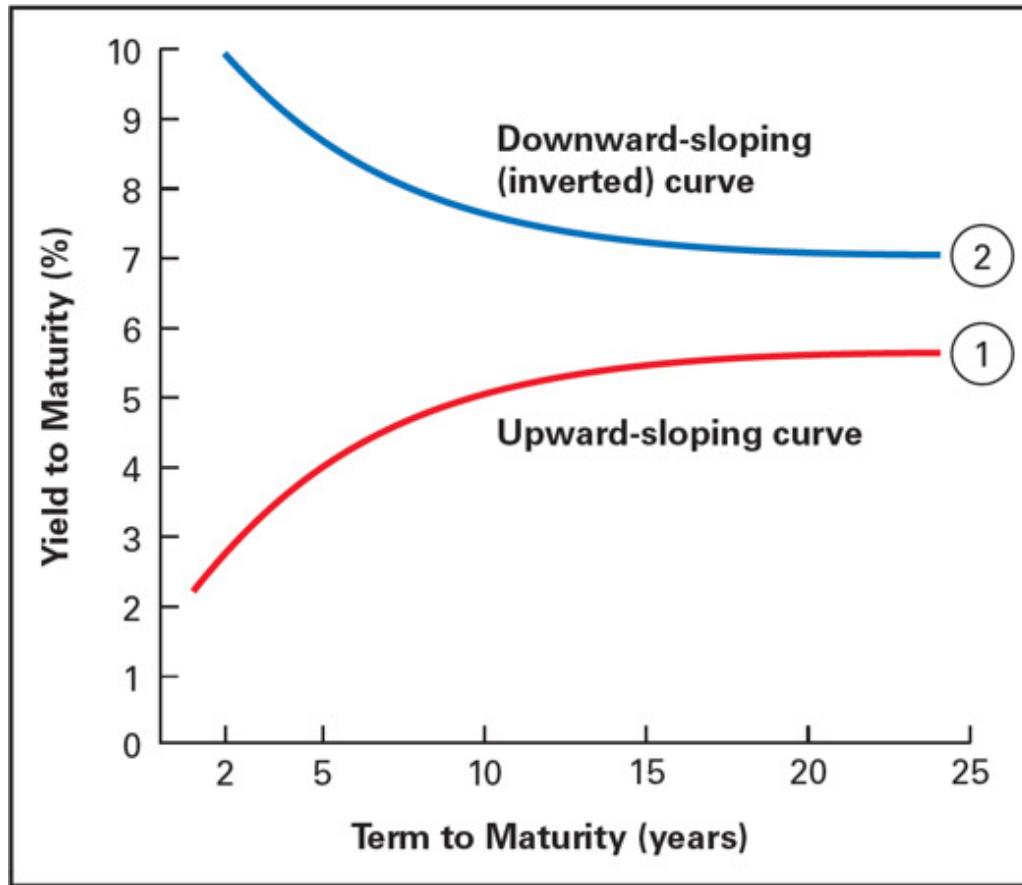
- What Causes Rates to Move?
 - Major Determinants of Interest Rates:

Economic Variable	Type of Change	Effect on Rates
Federal Reserve Policies	Expansionary	Decrease
	Contractionary	Increase
Foreign Interest Rates	Higher	Increase
	Lower	Decrease

The Behavior of Market Interest Rates (7 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - **Term structure of interest rates:** the relationship between interest rates (yield) and time to maturity for any class of similar-risk securities.
 - **Yield curve:** a graph that depicts this relationship.

Figure 11.2 Two Types of Yield Curves



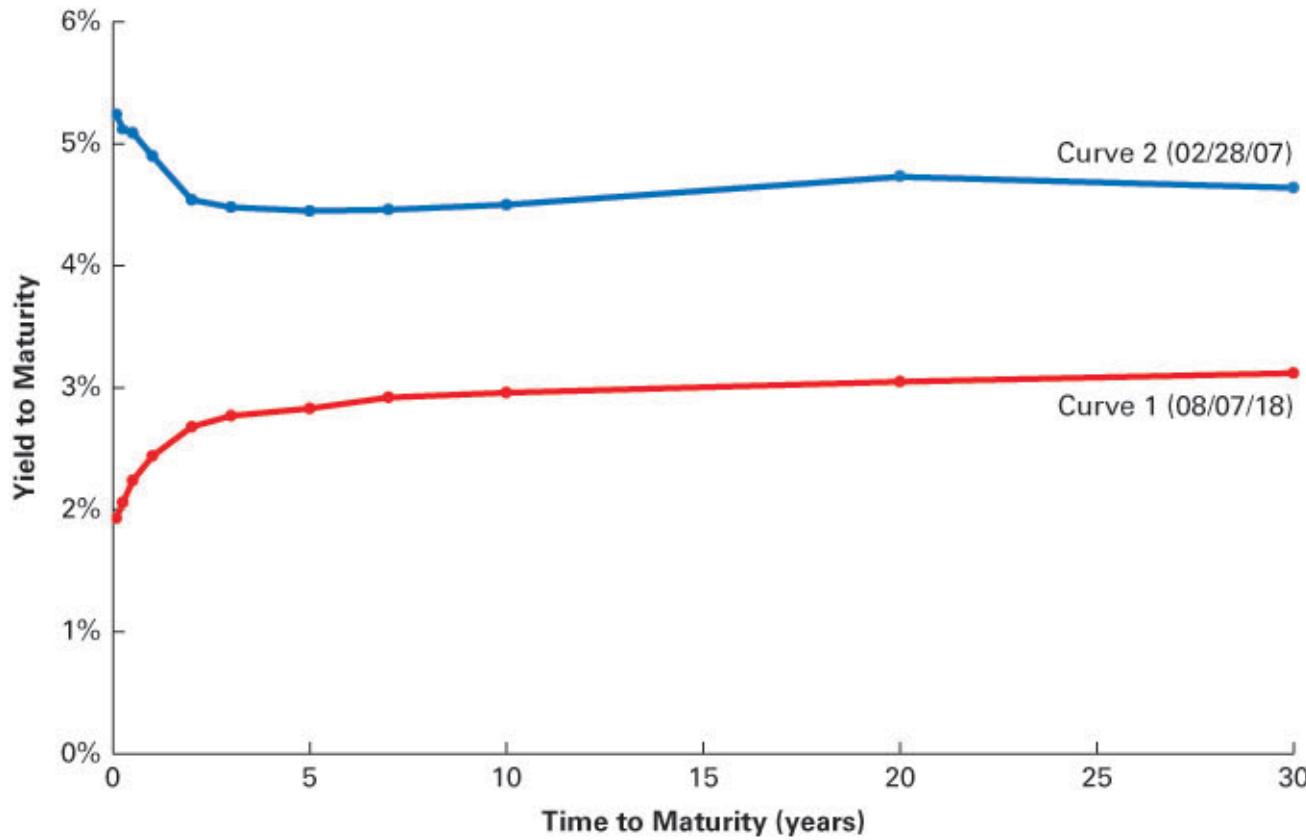
The Behavior of Market Interest Rates (8 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Types of Yield Curves
 - Most common type is upward-sloping
 - Occasionally, the yield curve becomes inverted
 - Flat: rates for short- and long-term debt are essentially the same.
 - Humped: when intermediate rates are the highest.

The Behavior of Market Interest Rates (9 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Plotting Your Own Curves
 - Treasury securities (bills, notes, bonds) are usually used to construct yield curves, for several reasons:
 - Treasury securities have no risk of default.
 - They are actively traded, so their prices and yields are easy to observe.
 - They are relatively homogeneous with regard to quality and other issue characteristics.
 - Can also construct yield curves with other classes of debt securities, such as A-rated municipal bonds, Aa-rated corporate bonds, and even certificates of deposit.

Figure 11.3 Yield Curves on U.S. Treasury Issues



Source: Based on U.S. Department of the Treasury.

Figure 11.3B Yield Curves on U.S. Treasury Issues

Date	1 mo	3 mo	6 mo	1 yr	2 yr	3 yr	5 yr	7 yr	10 yr	20 yr	30 yr
02/15/2002	1.72	1.74	1.84	2.2	2.97	3.5	4.27	4.66	4.86	5.58	5.37
07/28/2006	4.98	5.07	5.15	5.1	4.98	4.94	4.92	4.94	5.00	5.17	5.07
02/28/2007	5.24	5.16	5.12	4.96	4.65	4.55	4.52	4.53	4.56	4.78	4.68
05/01/2017	0.67	0.83	0.98	1.09	1.28	1.48	1.84	2.13	2.33	2.71	3.00
08/07/2018	1.96	2.06	2.23	2.45	2.68	2.76	2.84	2.92	2.98	3.06	3.12

Source: Based on U.S. Department of the Treasury.

The Behavior of Market Interest Rates (10 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Explanations of the Term Structure of Interest Rates
 - The shape of the yield curve can change over time.
 - There are three commonly cited theories to explain reasons for the general shape of the yield curve:
 - Expectations hypothesis
 - Liquidity preference theory
 - Market segmentation theory

The Behavior of Market Interest Rates (11 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Explanations of the Term Structure of Interest Rates
 - **Expectations Hypothesis:** the yield curve reflects investor expectations about future interest rates.
 - When investors expect interest rates to go up, they will only purchase long-term bonds if those bonds offer higher yields than short-term bonds; hence the yield curve will be upward sloping.
 - When investors expect interest rates to go down, they will only purchase short-term bonds if those bonds offer higher yields than long-term bonds; hence the yield curve will be downward sloping.

The Behavior of Market Interest Rates (12 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Explanations of the Term Structure of Interest Rates
 - **Liquidity Preference Theory:** long-term bond rates should be higher than short-term rates because of the added risks involved with the longer maturities.
 - Investors may view long-term bonds as being riskier because long-term bonds are less liquid and are subject to greater interest rate risk.
 - Borrowers will also pay a premium to obtain long-term funds. Borrowers thus assure themselves that funds will be available and avoid having to roll over short-term debt at unknown and possibly unfavorable rates.

The Behavior of Market Interest Rates

(13 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Explanations of the Term Structure of Interest Rates
 - **Market Segmentation Theory:** the bond market is segmented on the basis of the maturity preferences of different investors.
 - The yield curve changes as the supply and demand for funds within each maturity segment determines its prevailing interest rate.
 - If supply is greater than demand for short-term loans, short-term rates will be relatively low. If at the same time, demand for long-term loans is higher than the available supply of funds, then long-term rates will move up. The yield curve will slope upward.

The Behavior of Market Interest Rates (14 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Explanations of the Term Structure of Interest Rates
 - Which Theory is Right?
 - Upward-sloping yield curves result from:
 - Expectations of rising interest rates.
 - Lender preferences for shorter-maturity loans.
 - Greater supply of shorter-term loans.
 - Downward-sloping yield curves result from:
 - Expectations of falling interest rates.
 - Lender preference for longer-maturity loans.
 - Greater supply of longer-term loans

The Behavior of Market Interest Rates (15 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Using the Yield Curve in Investment Decisions
 - Analyze the changes in yield curves.
 - provides investors with information about future interest rate movements, which affect the prices and returns on different types of bonds.
 - Example: if the entire yield curve begins to move upward, indicating inflation is going to be increasing, then investors expect interest rates too will rise. Seasoned bond investors would turn to short or intermediate (3 to 5 years) maturities.

The Behavior of Market Interest Rates (16 of 16)

- The Term Structure of Interest Rates and Yield Curves
 - Using the Yield Curve in Investment Decisions
 - Consider the difference in yields on different maturities—the “steepness” of the curve.
 - Steep yield curves are generally viewed as a bullish sign. Aggressive bond investors would look to move into long-term securities.
 - Flatter yield curves reduce the incentive for moving to long-term maturities because the difference in yield between different maturities is small.

The Pricing of Bonds (1 of 7)

- All bonds are priced according to the present value of their future cash flow streams.
- Market yields largely determine bond prices.
 - The Basic Bond Valuation Model
 - Annual Compounding
 - Semiannual Compounding
 - Accrued Interest

The Pricing of Bonds (2 of 7)

- The Basic Bond Valuation Model
 - Bondholders receive two distinct types of cash flow:
 - Periodic interest income (i.e. coupon payments).
 - Principal (par value) at maturity.
 - Bonds are priced according to the present value of their future cash flow streams.

Equation 11.2

$$BP_i = \sum_{t=1}^N \frac{C}{(1+r_i)^t} + \frac{PV_N}{(1+r_i)^N}$$

= Present value of coupon payments + Present value of bond's par value

The Pricing of Bonds (3 of 7)

- Annual Compounding
 - You need the following information to value a bond
 - Annual Coupon payment (C)
 - Par value (usually \$1,000) (PV_n)
 - Number of years remaining to maturity (N)
 - Prevailing market yield to use as the discount rate (r_i)

Equation

11.3 Bond price = Present value of coupon payments + Present value of bond's par value

Equation

11.3a

$$BP_i = \frac{C}{(1+r_i)^1} + \frac{C}{(1+r_i)^2} + \dots + \frac{C}{(1+r_i)^N} + \frac{\$1,000}{(1+r_i)^N}$$

The Pricing of Bonds (5 of 7)

- Semiannual Compounding
 - In practice, most bonds pay interest every six months, so it is appropriate to use semiannual compounding to value bonds.

Equation 11.4

$$\text{Bond price (with semi-annual compounding)} = \frac{\text{Present value of the annuity}}{\text{of semiannual coupon payments}} + \frac{\text{Present value of the bond's par value}}{}$$

Equation 11.4a

$$BP_i = \frac{\frac{C}{2}}{\left(1 + \frac{r_i}{2}\right)^1} + \frac{\frac{C}{2}}{\left(1 + \frac{r_i}{2}\right)^2} + \dots + \frac{\frac{C}{2}}{\left(1 + \frac{r_i}{2}\right)^{2N}} + \frac{\$1,000}{\left(1 + \frac{r_i}{2}\right)^{2N}}$$

The Pricing of Bonds (7 of 7)

- Accrued Interest
 - What happens if you sell a bond at some time between scheduled coupon dates?
 - **Accrued interest:** the amount of interest earned on a bond since the last coupon payment.
 - The bond buyer adds accrued interest to the bond's price.
 - **Clean price** of a bond equals the present value of its cash flows.
 - **Dirty price** of a bond is the clean price plus accrued interest.

Measures of Yield and Return (1 of 12)

- There are three widely used metrics to assess the return on a bond.
- Expected return measures the expected (or actual) rate of return earned over a specific holding period.
 - Current Yield
 - Yield to Maturity
 - Yield to Call
 - Expected Return
 - Valuing a Bond

Measures of Yield and Return (2 of 12)

- Current Yield
 - **Current yield:** indicates the amount of current income a bond provides relative to its prevailing market price.
 - Simplest of all bond return measures.
 - Looks at only one source of return: a bond's annual interest income (current income).

Equation 11.5

$$\text{Current yield} = \frac{\text{Annual interest income}}{\text{Current market price of the bond}}$$

Measures of Yield and Return (3 of 12)

- Yield to Maturity
 - **Yield to maturity (YTM):** the most important and widely used measure of a bond's return.
 - Also known as the **promised yield**.
 - The rate of return earned by an investor who holds a bond to maturity and receives all principal and interest payments when promised.
 - Used not only to gauge the return on a single issue but also to measure required returns for broad classes on bonds.
 - Basically, the internal rate of return on a bond.

Measures of Yield and Return (6 of 12)

- Yield to Maturity
 - Finding the Yield on a Zero
 - Equations 11.4 and 11.3 can be used to solve for Yield to maturity of a zero-coupon bond. The coupon portion of the equations can be ignored since for a zero, they will of course equal zero.
 - Solve for this expression:

$$\text{Yield} = \left(\frac{\$1,000}{\text{Price}} \right)^{\frac{1}{N}} - 1$$

Measures of Yield and Return (7 of 12)

- Yield to Maturity
 - Finding the Yield on a Zero
 - Example: Suppose today you buy a 15-year, zero-coupon bond for \$315. If you purchase this bond at that price and hold it to maturity, what is your YTM?
 - Annual compounding:

$$\text{Yield} = \left(\frac{\$1,000}{\$315} \right)^{\frac{1}{15}} - 1 = 0.08 = 8\%$$

- If we use semiannual compounding, replace the 15 with 30 and solve, to find Yield = 3.926% (per half year). The bond equivalent yield = $2 \times 3.926\% = 7.85\%$.

Measures of Yield and Return (8 of 12)

- Yield to Call
 - YTM is not always a good measure of the return you can expect from the purchase of a callable bond, since the issue may not remain outstanding to maturity.
 - **Yield to call (YTC):** shows the yield on a bond assuming that the bond is called on its first (or some other specified) call date.
 - The length of the investment horizon (N) is defined as the number of years to the first call date, rather than years to maturity.
 - Use the bond's call price (premium) instead of the par value.

Measures of Yield and Return (9 of 12)

- Yield to Call
 - Example: Find the YTC on a 20-year, 10.5% deferred-call bond that is trading at \$1,204 but can be called in 5 years at a call price of \$1,085? Example 11.6

$$BP_i = \$1,204 = \frac{\$105}{(1+r_i)^1} + \frac{\$105}{(1+r_i)^2} + \frac{\$105}{(1+r_i)^3} + \frac{\$105}{(1+r_i)^4} + \frac{\$105}{(1+r_i)^5} + \frac{\$1,085}{(1+r_i)^5}$$

- Use trial and error or use excel to solve for the YTC = 7%.
- In comparison, YTM = 8.37%; market convention is to use the lower, more conservative measure of yield.

Measures of Yield and Return (10 of 12)

- Expected Return
 - Used by investors who expect to actively trade in and out of bonds rather than hold until maturity date.
 - **Expected return:** indicates the rate of return an investor can expect to earn by holding a bond over a period of time that's less than the life of the issue.
 - Also called **realized yield**, because it shows the return an investor would realize by trading in and out of bonds over short holding periods.
 - Uses estimates of market price of the bond at the expected sale date instead of par value.
 - Lacks precision (subject to uncertainty)

Measures of Yield and Return (11 of 12)

- Expected Return

Equation 11.7

$$\text{Bond price} = \frac{\text{Present value of the bond's annual coupon payments over the holding period}}{\text{Present value of the bond's future price at the end of the holding period}}$$

Equation 11.7a

$$BP_i = \frac{C}{(1+r_i)^1} + \frac{C}{(1+r_i)^2} + \dots + \frac{C}{(1+r_i)^N} + \frac{FV}{(1+r_i)^N}$$

- Example (semiannual compounding):
 - Find the expected return on a 7.5% bond that is currently priced in the market at \$809.50 but is expected to rise to \$960 within a 3-year holding period?
 - Bond equivalent yield = $7.217 \times 2 = 14.43\%$

Measures of Yield and Return (12 of 12)

- Valuing a Bond
 - Conservative, income-oriented investors focus on YTM.
 - Earning interest income over extended periods of time is their primary objective.
 - More aggressive bond traders, hoping to profit from swings in market interest rates, calculate the expected return.
 - Earning capital gains by purchasing and selling bonds over relatively short holding periods is their chief concern.

Duration and Immunization (1 of 10)

- **Duration:** A measure of bond price volatility, which captures both price and reinvestment risk and which is used to indicate how a bond will react in different interest rate environments.
 - Improvement over YTM because it accounts for reinvestment risk and price (or market) risk.
- The Concept of Duration
- Measuring Duration
- Bond Duration and Price Volatility
- Effective Duration
- Uses of Bond Duration Measures

Duration and Immunization (2 of 10)

- The Concept of Duration
 - In general, bond duration possesses the following properties:
 - Higher **coupons** result in shorter durations.
 - Longer **maturities** mean longer durations.
 - Higher **yields** (YTMs) lead to shorter durations.
 - These variables (coupon, maturity, yield) interact to determine a bond's duration.
 - Shorter the duration, the less volatility in bond prices.

Duration and Immunization (3 of 10)

- Measuring Duration
 - Bond Duration is the average amount of time that it takes to receive the interest and the principal.
 - **Weighted-average life of a bond:** Calculates the weighted average of the cash flows (interest and principal payments) of the bond, discounted to the present time.
 - **Macaulay duration**

Equation 11.8

$$\text{Duration} = \sum_{t=1}^N \left[\frac{PV(C_t)}{BP} \times t \right]$$

Duration and Immunization (4 of 10)

- Measuring Duration
 - Steps in Calculating Duration
 - Step 1: Find present value of each coupon or principal payment. Use prevailing YTM on the bond as the discount rate.
 - Step 2: Divide this present value by the current market price of the bond. This is the “weight”.
 - Step 3: Multiply this weight by the year in which the cash flow is to be received.
 - Step 4: Repeat steps 1 through 3 for each year in the life of the bond, then add up the values computed in Step 3.

Table 11.1 Duration Calculation for a 7.5%, 15-Year Bond Priced to Yield 8%

(1)	(2)	(3)	(4)	(5)
Year t	Annual Cash Flow C_t	Present Value at 8% of Annual Cash Flow (2) $\div (1.08)^t$	Present Value of Annual Cash Flow Divided by Price of the Bond (3) $\div \$957.20$	Time-Weighted Relative Cash Flow (1) $\times (4)$
1	\$ 75	\$ 69.44	0.0725	0.0725
2	\$ 75	\$ 64.30	0.0672	0.1344
3	\$ 75	\$ 59.54	0.0622	0.1866
4	\$ 75	\$ 55.13	0.0576	0.2304
5	\$ 75	\$ 51.04	0.0533	0.2666
6	\$ 75	\$ 47.26	0.0494	0.2963
7	\$ 75	\$ 43.76	0.0457	0.3200
8	\$ 75	\$ 40.52	0.0423	0.3387
9	\$ 75	\$ 37.52	0.0392	0.3528
10	\$ 75	\$ 34.74	0.0363	0.3629
11	\$ 75	\$ 32.17	0.0336	0.3696
12	\$ 75	\$ 29.78	0.0311	0.3734
13	\$ 75	\$ 27.58	0.0288	0.3745
14	\$ 75	\$ 25.53	0.0267	0.3735
15	\$1,075	\$338.88	0.3540	5.3106
		Price of Bond: \$957.20	1.00	Duration: 9.36 yr

Duration and Immunization (5 of 10)

- Measuring Duration
 - Duration for a Single Bond
 - Calculation is illustrated in Table 11.1.
 - Keep in mind the duration on any bond will change over time as YTM and term to maturity change.
 - Duration for a Portfolio of Bonds
 - Need duration of the individual securities in a portfolio and their weights in the portfolio.
 - The duration of portfolio is the weighted average of the durations of the bonds in the portfolio.

Duration and Immunization (5a of 10)

- Measuring Duration
 - Duration is measured in years. Generally, the higher the duration of a bond or a bond fund (meaning the longer you need to wait for the payment of coupons and return of principal), the more its price will drop as interest rates rise.
 - For example, you expect rates to rise, it may make sense to focus on shorter-duration investments (in other words, those that have less interest-rate risk). Or, in this sort of environment, you may want to focus on bonds that take on different types of risks, such as the Strategic Income Opportunities Fund, which is less affected by movements in interest rates.

Duration and Immunization (6 of 10)

- Bond Duration and Price Volatility
 - The duration measure helps investors understand how bond prices will respond to changes in market interest rates, as long as those changes are not too large.
 - A bond's duration can be used as a viable predictor of its price volatility only as long as yield swings are relatively small.
 - As interest rates change, bond prices change in a nonlinear fashion.
 - However, duration predicts as interest rates change, bond prices move in the opposite direction in a linear fashion.

Duration and Immunization (7 of 10)

- Bond Duration and Price Volatility
 - Modified duration:
 - Percent change in bond price:

Equation

11.9

$$\text{Modified duration} = \frac{\text{Macaulay duration in years}}{1 + \text{Yield to maturity}}$$

Equation

11.10

Percent change in bond price

$$= -1 \times \text{Modified duration} \times \text{Change in interest rates}$$

$$= -1 \times 8.67 \times 0.5\% = \underline{-4.33\%}$$

Duration and Immunization (8 of 10)

- Effective Duration
 - An alternative duration measure used for bonds that may be called or converted before they mature is effective duration (ED):

Duration and Immunization (9 of 10)

Uses of Bond Duration Measures

- Bond Immunization
 - **Immunization:** allows you to derive a specified rate of return from bond investments over a given investment interval regardless of what happens to market interest rates.
 - Seeks to offset the opposite changes in bond valuation caused by price effect and reinvestment effect:
 - **Price effect:** change in bond value caused by interest rate changes.
 - **Reinvestment effect:** as coupon payments are received, they are reinvested at higher or lower rates than original coupon rate.
 - Bond immunization occurs when the average duration of the bond portfolio just equals the investment time horizon.

Table 11.2 Bond Immunization

Year t	Cash flow From Bond							Terminal Value of Reinvested Cash Flow
1	\$ 80	×	$(1.08)^4$	×	$(1.06)^3$	=	\$ 129.63	
2	\$ 80	×	$(1.08)^3$	×	$(1.06)^3$	=	\$ 120.03	
3	\$ 80	×	$(1.08)^2$	×	$(1.06)^3$	=	\$ 111.14	
4	\$ 80	×	(1.08)	×	$(1.06)^3$	=	\$ 102.90	
5	\$ 80	×	$(1.06)^3$			=	\$ 95.28	
6	\$ 80	×	$(1.06)^2$			=	\$ 89.89	
7	\$ 80	×	(1.06)			=	\$ 84.80	
8	\$ 80					=	\$ 80.00	
8	\$1,036.67						\$1,036.67	
					Total		\$1,850.33	
					Investor's required wealth at 8%		\$1,850.93	
					Difference		\$ 0.60	

Duration and Immunization (10 of 10)

- Uses of Bond Duration Measures
 - Bond Immunization
 - Table 11.2 provides an example of bond immunization using a 10-year, 8% coupon bond, with a duration of 8 years. Assume a desired investment horizon of also 8 years. Assumes you purchased the bond at par and that market interest rates drop from 8% to 6% at the end of the fifth year.
 - Maintaining a fully immunized portfolio (of more than one bond) requires continual portfolio rebalancing.

Bond Investment Strategies (1 of 5)

- There are a number of strategies investors can use with fixed-income securities in order to reach their different investment objectives.
 - Passive Strategies
 - Trading on Forecasted Interest Rate Behavior
 - Bond Swaps

Bond Investment Strategies (2 of 5)

- Passive Strategies
 - Characterized by a lack of input regarding investor expectations of changes in interest rates and or bond prices.
 - Typically do not generate significant transactions costs
 - Examples of some passive strategies:
 - Bond immunization
 - Buy-and-hold: replace bonds as they mature or are called, or when quality declines.
 - **Bond ladders:**
 - Set up “ladder” by investing equal amounts into varying maturity dates (i.e. 3-, 5-, 7- and 10-year)
 - As bonds mature, purchase new bonds with 10-year maturity to keep ladder growing
 - Provides higher yields of longer-term bonds and dollar-cost averaging benefits

Bond Investment Strategies (3 of 5)

- Trading on Interest Rate Forecasts
 - **Forecasted interest rate approach: strategy essentially about market timing.**
 - Investors seek to increase the return on a bond portfolio by making strategic moves in anticipation of interest rate changes.
 - Seek attractive capital gains when they expect interest rates to decline.
 - Seek preservation of capital when they anticipate increasing rates.
 - Trading is mostly done with investment-grade securities because active traders hope to profit from their increased sensitivity to interest rate movements.

Bond Investment Strategies (4 of 5)

- Bond Swaps
 - **Bond swap:** occurs when investor sells one bond and simultaneously buys another to take its place
 - Can be executed to:
 - Increase current yield or yield to maturity
 - Exploit interest rate shifts
 - Improve the quality of a portfolio
 - Save taxes
 - May go by names such as “profit takeout”, “substitution swap” or “tax swap”.

Bond Investment Strategies (5 of 5)

- Bond Swaps
 - **Yield pickup swap:** investor switches out of a low-coupon bond into a comparable higher-coupon issue to realize an instantaneous pickup of current yield and yield to maturity.
 - Such swap opportunities arise because of the yield spreads that normally exist between different types of bonds.
 - Must be careful of transaction costs.
 - **Tax swap:** Sell a bond that has declined in value, use the capital loss to offset other capital gains, and repurchase another bond of comparable credit quality.
 - Watch out for wash sales—new bond cannot be an identical issue to old bond.