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INVESTMENTS

Tenth Edition

Investments

The McGraw-Hill/Irwin Series in Finance, Insurance and Real Estate

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Investments

TENTH EDITION

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Brief Contents

Contents

Preface

We've just ended three decades of rapid and profound change in the investments industry as well as a financial crisis of historic magnitude. The vast expansion of financial markets during this period was due in part to innovations in securitization and credit enhancement that gave birth to new trading strategies. These strategies were in turn made feasible by developments in communication and information technology, as well as by advances in the theory of investments.

Yet the financial crisis also was rooted in the cracks of these developments. Many of the innovations in security design facilitated high leverage and an exaggerated notion of the efficacy of risk transfer strategies. This engendered complacency about risk that was coupled with relaxation of regulation as well as reduced transparency, masking the precarious condition of many big players in the system. Of necessity, our text has evolved along with financial markets and their influence on world events.

Investments, Tenth Edition, is intended primarily as a textbook for courses in investment analysis. Our guiding principle has been to present the material in a framework that is organized by a central core of consistent fundamental principles. We attempt to strip away unnecessary mathematical and technical detail, and we have concentrated on providing the intuition that may guide students and practitioners as they confront new ideas and challenges in their professional lives.

This text will introduce you to major issues currently of concern to all investors. It can give you the skills to conduct a sophisticated assessment of watershed current issues and debates covered by the popular media as well as more-specialized finance journals. Whether you plan to become an investment professional, or simply a sophisticated individual investor, you will find these skills essential, especially in today's rapidly evolving environment.

Our primary goal is to present material of practical value, but all three of us are active researchers in financial economics and find virtually all of the material in this book to be of great intellectual interest. Fortunately, we think, there is no contradiction in the field of investments between the pursuit of truth and the pursuit of money. Quite the opposite. The capital asset pricing model, the arbitrage pricing model, the efficient markets hypothesis, the option-pricing model, and the other centerpieces of modern financial research are as much intellectually satisfying subjects of scientific inquiry as they are of immense practical importance for the sophisticated investor.

In our effort to link theory to practice, we also have attempted to make our approach consistent with that of the CFA Institute. In addition to fostering research in finance, the CFA Institute administers an education and certification program to candidates seeking designation as a Chartered Financial Analyst (CFA). The CFA curriculum represents the consensus of a committee of distinguished scholars and practitioners regarding the core of knowledge required by the investment professional.

Many features of this text make it consistent with and relevant to the CFA curriculum. Questions from past CFA exams appear at the end of nearly every chapter, and, for students who will be taking the exam, those same questions and the exam from which they've been taken are listed at the end of the book. Chapter 3 includes excerpts from the "Code of Ethics and Standards of Professional Conduct" of the CFA Institute. Chapter 28, which discusses investors and the investment process, presents the

CFA Institute's framework for systematically relating investor objectives and constraints to ultimate investment policy. End-of-chapter problems also include questions from test-prep leader Kaplan Schweser.

In the Tenth Edition, we have continued our systematic collection of Excel spreadsheets that give tools to explore concepts more deeply than was previously possible. These spreadsheets, available on the Web site for this text (**www.mhhe.com/bkm**), provide a taste of the sophisticated analytic tools available to professional investors.

UNDERLYING PHILOSOPHY

In the Tenth Edition, we address many of the changes in the investment environment, including the unprecedented events surrounding the financial crisis.

At the same time, many basic *principles* remain important. We believe that attention to these few important principles can simplify the study of otherwise difficult material and that fundamental principles should organize and motivate all study. These principles are crucial to understanding the securities traded in financial markets and in understanding new securities that will be introduced in the future, as well as their effects on global markets. For this reason, we have made this book thematic, meaning we never offer rules of thumb without reference to the central tenets of the modern approach to finance.

The common theme unifying this book is that *security markets are nearly efficient,* meaning most securities are usually priced appropriately given their risk and return attributes. Free lunches are rarely found in markets as competitive as the financial market. This simple observation is, nevertheless, remarkably powerful in its implications for the design of investment strategies; as a result, our discussions of strategy are always guided by the implications of the efficient markets hypothesis. While the degree of market efficiency is, and always will be, a matter of debate (in fact we devote a full chapter to the behavioral challenge to the efficient market hypothesis), we hope our discussions throughout the book convey a good dose of healthy criticism concerning much conventional wisdom.

Distinctive Themes

Investments is organized around several important themes:

1. **The central theme** is the near-informational-efficiency of well-developed security markets, such as those in the United States, and the general awareness that competitive markets do not offer "free lunches" to participants.

   A second theme is the risk–return trade-off. This too is a no-free-lunch notion, holding that in competitive security markets, higher expected returns come only at a price: the need to bear greater investment risk. However, this notion leaves several questions unanswered. How should one measure the risk of an asset? What should be the quantitative trade-off between risk (properly measured) and expected return? The approach we present to these issues is known as *modern portfolio theory,* which is another organizing principle of this book. Modern portfolio theory focuses on the techniques and implications of *efficient diversification,* and we devote considerable attention to the effect of diversification on portfolio risk as well as the implications of efficient diversification for the proper measurement of risk and the risk–return relationship.
2. **This text places** greater emphasis on asset allocation than most of its competitors. We prefer this emphasis for two important reasons. First, it corresponds to the procedure that most individuals actually follow. Typically, you start with all of your money in a bank account, only then considering how much to invest in something riskier that might offer a higher expected return. The logical step at this point is to consider risky asset classes, such as stocks, bonds, or real estate. This is an asset allocation decision. Second, in most cases, the asset allocation choice is far more important in determining overall investment performance than is the set of security selection decisions. Asset allocation is the primary determinant of the risk–return profile of the investment portfolio, and so it deserves primary attention in a study of investment policy.
3. **This text offers** a much broader and deeper treatment of futures, options, and other derivative security markets than most investments texts. These markets have become both crucial and integral to the financial universe. Your only choice is to become conversant in these markets—whether you are to be a finance professional or simply a sophisticated individual investor.

NEW IN THE TENTH EDITION

The following is a guide to changes in the Tenth Edition. This is not an exhaustive road map, but instead is meant to provide an overview of substantial additions and changes to coverage from the last edition of the text.

Chapter 1 The Investment Environment

This chapter contains updated coverage of the consequences of the financial crisis as well as the Dodd-Frank act.

Chapter 2 Asset Classes and Financial Instruments

We devote additional attention to money markets, including recent controversies concerning the regulation of money market mutual funds as well as the LIBOR scandal.

Chapter 3 How Securities Are Traded

We have extensively rewritten this chapter and included new sections that detail the rise of electronic markets, algorithmic and high-speed trading, and changes in market structure.

Chapter 5 Risk, Return, and the Historical Record

This chapter has been updated with considerable attention paid to evidence on tail risk and extreme stock returns.

Chapter 9 The Capital Asset Pricing Model

We have streamlined the explanation of the simple CAPM and updated and integrated the sections dealing with extensions of the CAPM, tying together extra-market hedging demands and factor risk premia.

Chapter 10 Arbitrage Pricing Theory

The chapter contains new material on the practical feasibility of creating well-diversified portfolios and the implications for asset pricing.

Chapter 11 The Efficient Market Hypothesis

We have added new material documenting the behavior of market anomalies over time, suggesting how market inefficiencies seem to be corrected.

Chapter 13 Empirical Evidence on Security Returns

Increased attention is given to tests of multifactor models of risk and return and the implications of these tests for the importance of extra-market hedging demands.

Chapter 14 Bond Prices and Yields

This chapter includes new material on sovereign credit default swaps.

Chapter 18 Equity Valuation Models

This chapter includes a new section on the practical problems entailed in using DCF security valuation models and the response of value investors to these problems.

Chapter 19 Financial Statement Analysis

We have added a new introduction to the discussion of ratio analysis, providing greater structure and rationale concerning the use of financial ratios as tools to evaluate firm performance.

Chapter 21 Option Valuation

We have added substantial new sections on risk-neutral valuation methods and their implementation in the binomial option-pricing model, as well as the implications of the option pricing model for tail risk and financial instability.

Chapter 24 Portfolio Performance Evaluation

New sections on the vulnerability of standard performance measures to manipulation, manipulation-free measures, and the Morningstar Risk-Adjusted Return have been added.

ORGANIZATION AND CONTENT

The text is composed of seven sections that are fairly independent and may be studied in a variety of sequences. Because there is enough material in the book for a two-semester course, clearly a one-semester course will require the instructor to decide which parts to include.

Part One is introductory and contains important institutional material focusing on the financial environment. We discuss the major players in the financial markets, provide an overview of the types of securities traded in those markets, and explain how and where securities are traded. We also discuss in depth mutual funds and other investment companies, which have become an increasingly important means of investing for individual investors. Perhaps most important, we address how financial markets can influence all aspects of the global economy, as in 2008.

The material presented in Part One should make it possible for instructors to assign term projects early in the course. These projects might require the student to analyze in detail a particular group of securities. Many instructors like to involve their students in some sort of investment game, and the material in these chapters will facilitate this process.

Parts Two and Three contain the core of modern portfolio theory. Chapter 5 is a general discussion of risk and return, making the general point that historical returns on broad asset classes are consistent with a risk–return trade-off, and examining the distribution of stock returns. We focus more closely in Chapter 6 on how to describe investors' risk preferences and how they bear on asset allocation. In the next two chapters, we turn to portfolio optimization (Chapter 7) and its implementation using index models (Chapter 8).

After our treatment of modern portfolio theory in Part Two, we investigate in Part Three the implications of that theory for the equilibrium structure of expected rates of return on risky assets. Chapter 9 treats the capital asset pricing model and Chapter 10 covers multifactor descriptions of risk and the arbitrage pricing theory. Chapter 11 covers the efficient market hypothesis, including its rationale as well as evidence that supports the hypothesis and challenges it. Chapter 12 is devoted to the behavioral critique of market rationality. Finally, we conclude Part Three with Chapter 13 on empirical evidence on security pricing. This chapter contains evidence concerning the risk–return relationship, as well as liquidity effects on asset pricing.

Part Four is the first of three parts on security valuation. This part treats fixed-income securities—bond pricing (Chapter 14), term structure relationships (Chapter 15), and interest-rate risk management (Chapter 16). **Parts Five and Six** deal with equity securities and derivative securities. For a course emphasizing security analysis and excluding portfolio theory, one may proceed directly from Part One to Part Four with no loss in continuity.

Finally, **Part Seven** considers several topics important for portfolio managers, including performance evaluation, international diversification, active management, and practical issues in the process of portfolio management. This part also contains a chapter on hedge funds.

A Guided Tour

This book contains several features designed to make it easy for students to understand, absorb, and apply the concepts and techniques presented.

CHAPTER OPENING VIGNETTES

SERVE TO OUTLINE the upcoming material in the chapter and provide students with a road map of what they will learn.

CHAPTER ONE

The Investment Environment

AN INVESTMENT IS the *current* commitment of money or other resources in the expectation of reaping *future* benefits. For example, an individual might purchase shares of stock anticipating that the future proceeds from the shares will justify both the time that her money is tied up as well as the risk of the investment. The time you will spend studying this text (not to mention its cost) also is an investment. You are forgoing either current leisure or the income you could be earning at a job in the expectation that your future career will be sufficiently enhanced to justify this commitment of time and effort. While these two investments differ in many ways, they share one key

Broadly speaking, this chapter addresses three topics that will provide a useful perspective for the material that is to come later. First, before delving into the topic of "investments," we consider the role of financial assets in the economy. We discuss the relationship between securities and the "real" assets that actually produce goods and services for consumers, and we consider why financial assets are important to the functioning of a developed economy.

Given this background, we then take a first look at the types of decisions that confront investors as they assemble a portfolio of assets. These investment decisions are made in an environment where higher returns

CONCEPT CHECKS

A UNIQUE FEATURE of this book! These self-test questions and problems found in the body of the text enable the students to determine whether they've understood the preceding material. Detailed solutions are provided at the end of each chapter.

Residual claim means that stockholders are the last in line of all those who have a claim on the assets and income of the corporation. In a liquidation of the firm's assets the shareholders have a claim to what is left after all other claimants such as the tax authorities, employees, suppliers, bondholders, and other creditors have been paid. For a firm not in liquidation, shareholders have claim to the part of operating income left over after interest and taxes have been paid. Management can either pay this residual as cash dividends to shareholders or reinvest it in the business to increase the value of the shares.

Limited liability means that the most shareholders can lose in the event of failure of the corporation is their original investment. Unlike owners of unincorporated businesses, whose creditors can lay claim to the personal assets of the owner (house, car, furniture), corporate shareholders may at worst have worthless stock. They are not personally liable for the firm's obligations.

CONCEPT CHECK **2.3**

a. If you buy 100 shares of IBM stock, to what are you entitled?

b. What is the most money you can make on this investment over the next year?

c. If you pay $180 per share, what is the most money you could lose over the year?

NUMBERED EXAMPLES

NUMBERED AND TITLED examples are integrated throughout chapters. Using the worked-out solutions to these examples as models, students can learn how to solve specific problems step-by-step as well as gain insight into general principles by seeing how they are applied to answer concrete questions.

Example 4.2 Fees for Various Classes

Here are fees for different classes of the Dreyfus High Yield Fund in 2012. Notice the trade-off between the front-end loads versus 12b-1 charges in the choice between Class A and Class C shares. Class I shares are sold only to institutional investors and carry lower fees.

	Class A	Class C	Class I
Front-end load	0–4.5%[a]	0	0
Back-end load	0	0–1%[b]	0%[b]
12b-1 fees[c]	.25%	1.0%	0%
Expense ratio	.70%	.70%	.70%

[a]Depending on size of investment.
[b]Depending on years until holdings are sold.
[c]Including service fee.

WORDS FROM THE STREET BOXES

SHORT ARTICLES FROM business periodicals, such as *The Wall Street Journal,* are included in boxes throughout the text. The articles are chosen for real-world relevance and clarity of presentation.

WORDS FROM THE STREET

Investors Sour on Pro Stock Pickers

Investors are jumping out of mutual funds managed by professional stock pickers and shifting massive amounts of money into lower-cost funds that echo the broader market.

Through November 2012, investors pulled $119.3 billion from so-called actively managed U.S. stock funds according to the latest data from research firm Morningstar Inc. At the same time, they poured $30.4 billion into U.S. stock exchange-traded funds.

The move reflects the fact that many money managers of stock funds, which charge fees but also dangle the prospect of higher returns, have underperformed the benchmark stock indexes. As a result, more investors are choosing simply to invest in funds tracking the indexes, which carry lower fees and are perceived as having less risk.

The mission of stock pickers in a managed mutual fund is to outperform the overall market by actively trading individual stocks or bonds, with fund managers receiving higher fees for their effort. In an ETF (or indexed mutual fund), managers balance the share makeup of the fund so it accurately reflects the performance of its underlying index, charging lower fees.

Morningstar says that when investors have put money in stock funds, they have chosen low-cost index funds and ETFs. Some index ETFs cost less than 0.1% of assets a year, while many actively managed stock funds charge 1% a year or more.

While the trend has put increasing pressure lately on stock pickers, it is shifting the fortunes of some of the biggest players in the $14 trillion mutual-fund industry.

Fidelity Investments and American Funds, among the largest in the category, saw redemptions or weak investor interest compared with competitors, according to an analysis of mutual-fund flows done for *The Wall Street Journal* by research firm Strategic Insight, a unit of New York-based Asset International.

At the other end of the spectrum, Vanguard, the world's largest provider of index mutual funds, pulled in a net $141 billion last year through December, according to the company.

Many investors say they are looking for a way to invest cheaply, with less risk.

Source: Adapted from Kirsten Grind, "Investors Sour on Pro Stock Pickers" *The Wall Street Journal,* January 3, 2013.

or a mutual fund company that operates a market index fund. Vanguard, for example, operates the Index 500 Portfolio that mimics the S&P 500 index fund. It purchases shares of the firms constituting the S&P 500 in proportion to the market values of the outstanding equity of each firm, and therefore essentially replicates the S&P 500 index. The fund thus duplicates the performance of this market index. It has one of the lowest operating expenses (as a percentage of assets) of all mutual stock funds precisely because it requires minimal managerial effort.

A second reason to pursue a pass[illegible] strategy is the free-ride[illegible] many

EXCEL APPLICATIONS

THE TENTH EDITION features Excel Spreadsheet Applications with new Excel questions. A sample spreadsheet is presented in the text with an interactive version available on the book's Web site at **www.mhhe.com/bkm**.

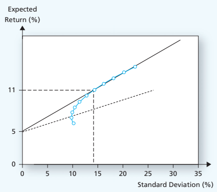
eXcel APPLICATIONS: Two–Security Model

The accompanying spreadsheet can be used to measure the return and risk of a portfolio of two risky assets. The model calculates the return and risk for varying weights of each security along with the optimal risky and minimum-variance portfolio. Graphs are automatically generated for various model inputs. The model allows you to specify a target rate of return and solves for optimal combinations using the risk-free asset and the optimal risky portfolio. The spreadsheet is constructed with the two-security return data from Table 7.1. This spreadsheet is available at **www.mhhe.com/bkm.**

Excel Question

1. Suppose your target expected rate of return is 11%.
   a. What is the lowest-volatility portfolio that provides that expected return?
   b. What is the standard deviation of that portfolio?
   c. What is the composition of that portfolio?

	A	B	C	D	E	F
1	**Asset Allocation Analysis: Risk and Return**					
2		**Expected**	**Standard**	**Correlation**		
3		**Return**	**Deviation**	**Coefficient**	**Covariance**	
4	Security 1	0.08	0.12	0.3	0.0072	
5	Security 2	0.13	0.2			
6	T-Bill	0.05	0			
7						
8	**Weight**	**Weight**		**Expected**	**Standard**	**Reward to**
9	**Security 1**	**Security 2**		**Return**	**Deviation**	**Volatility**
10	1	0		0.08000	0.12000	0.25000
11	0.9	0.1		0.08500	0.11559	0.30281
12	0.8	0.2		0.09000	0.11454	0.34922
13	0.7	0.3		0.09500	0.11696	0.38474
14	0.6	0.4		0.10000	0.12264	0.40771



	A	B	C	D	E	F
1						
2						
3		Implicitly Assumed		Squared	Gross HPR =	Wealth
4	Period	Probability = 1/5	HPR (decimal)	Deviation	1 + HPR	Index*
5	2001	.2	–0.1189	0.0196	0.8811	0.8811
6	2002	.2	–0.2210	0.0586	0.7790	0.6864
7	2003	.2	0.2869	0.0707	1.2869	0.8833
8	2004	.2	0.1088	0.0077	1.1088	0.9794
9	2005	.2	0.0491	0.0008	1.0491	1.0275
10	Arithmetic average	AVERAGE(C5:C9) =	0.0210			
11	Expected HPR	SUMPRODUCT(B5:B9, C5:C9) =	0.0210			
12		Standard deviation	SUMPRODUCT(B5:B9, D5:D9)^.5 =	0.1774		Check:
13			STDEV(C5:C9) =	0.1983		1.0054^5=
14			Geometric average return	GEOMEAN(E5:E9) – 1 =	0.0054	1.0275
15	*The value of $1 invested at the beginning of the sample period (1/1/2001).					

Spreadsheet 5.2

Time series of HPR for the S&P 500

eXcel
Please visit us at
www.mhhe.com/bkm

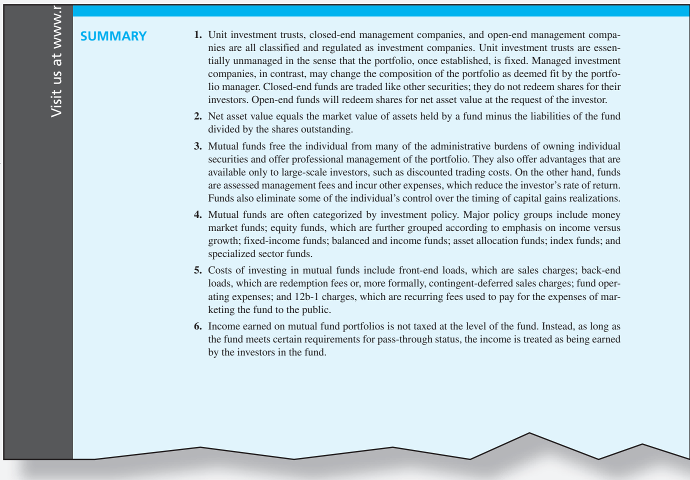
EXCEL EXHIBITS

SELECTED EXHIBITS ARE set as Excel spreadsheets and are denoted by an icon. They are also available on the book's Web site at **www.mhhe.com/bkm**.

End-of-Chapter Features

SUMMARY

AT THE END of each chapter, a detailed summary outlines the most important concepts presented. A listing of related Web sites for each chapter can also be found on the book's Web site at **www.mhhe.com/bkm**. These sites make it easy for students to research topics further and retrieve financial data and information.



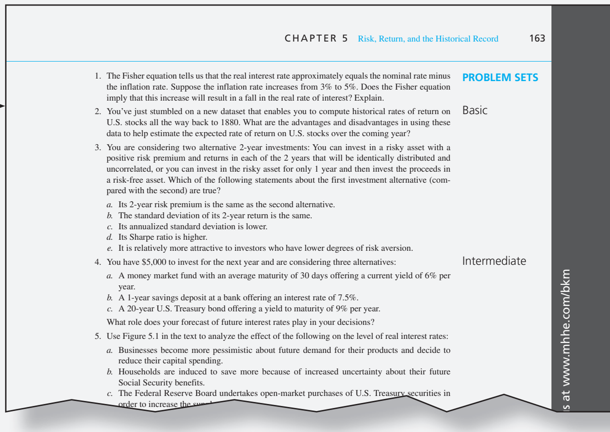
Visit us at www.m

SUMMARY

1. Unit investment trusts, closed-end management companies, and open-end management companies are all classified and regulated as investment companies. Unit investment trusts are essentially unmanaged in the sense that the portfolio, once established, is fixed. Managed investment companies, in contrast, may change the composition of the portfolio as deemed fit by the portfolio manager. Closed-end funds are traded like other securities; they do not redeem shares for their investors. Open-end funds will redeem shares for net asset value at the request of the investor.
2. Net asset value equals the market value of assets held by a fund minus the liabilities of the fund divided by the shares outstanding.
3. Mutual funds free the individual from many of the administrative burdens of owning individual securities and offer professional management of the portfolio. They also offer advantages that are available only to large-scale investors, such as discounted trading costs. On the other hand, funds are assessed management fees and incur other expenses, which reduce the investor's rate of return. Funds also eliminate some of the individual's control over the timing of capital gains realizations.
4. Mutual funds are often categorized by investment policy. Major policy groups include money market funds; equity funds, which are further grouped according to emphasis on income versus growth; fixed-income funds; balanced and income funds; asset allocation funds; index funds; and specialized sector funds.
5. Costs of investing in mutual funds include front-end loads, which are sales charges; back-end loads, which are redemption fees or, more formally, contingent-deferred sales charges; fund operating expenses; and 12b-1 charges, which are recurring fees used to pay for the expenses of marketing the fund to the public.
6. Income earned on mutual fund portfolios is not taxed at the level of the fund. Instead, as long as the fund meets certain requirements for pass-through status, the income is treated as being earned by the investors in the fund.

PROBLEM SETS

WE STRONGLY BELIEVE that practice in solving problems is critical to understanding investments, so a good variety of problems is provided. For ease of assignment we separated the questions by level of difficulty Basic, Intermediate, and Challenge.



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PROBLEM SETS

Basic

1. The Fisher equation tells us that the real interest rate approximately equals the nominal rate minus the inflation rate. Suppose the inflation rate increases from 3% to 5%. Does the Fisher equation imply that this increase will result in a fall in the real rate of interest? Explain.
2. You've just stumbled on a new dataset that enables you to compute historical rates of return on U.S. stocks all the way back to 1880. What are the advantages and disadvantages in using these data to help estimate the expected rate of return on U.S. stocks over the coming year?
3. You are considering two alternative 2-year investments: You can invest in a risky asset with a positive risk premium and returns in each of the 2 years that will be identically distributed and uncorrelated, or you can invest in the risky asset for only 1 year and then invest the proceeds in a risk-free asset. Which of the following statements about the first investment alternative (compared with the second) are true?
   a. Its 2-year risk premium is the same as the second alternative.
   b. The standard deviation of its 2-year return is the same.
   c. Its annualized standard deviation is lower.
   d. Its Sharpe ratio is higher.
   e. It is relatively more attractive to investors who have lower degrees of risk aversion.

Intermediate

4. You have $5,000 to invest for the next year and are considering three alternatives:
   a. A money market fund with an average maturity of 30 days offering a current yield of 6% per year.
   b. A 1-year savings deposit at a bank offering an interest rate of 7.5%.
   c. A 20-year U.S. Treasury bond offering a yield to maturity of 9% per year.

   What role does your forecast of future interest rates play in your decisions?
5. Use Figure 5.1 in the text to analyze the effect of the following on the level of real interest rates:
   a. Businesses become more pessimistic about future demand for their products and decide to reduce their capital spending.
   b. Households are induced to save more because of increased uncertainty about their future Social Security benefits.
   c. The Federal Reserve Board undertakes open-market purchases of U.S. Treasury securities in order to increase the

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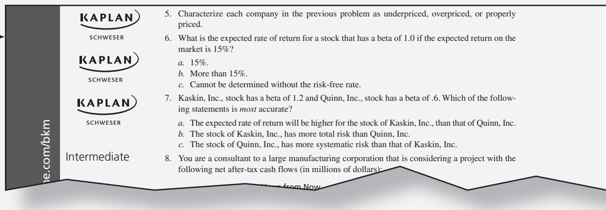

KAPLAN SCHWESER

5. Characterize each company in the previous problem as underpriced, overpriced, or properly priced.

KAPLAN SCHWESER

6. What is the expected rate of return for a stock that has a beta of 1.0 if the expected return on the market is 15%?
   a. 15%.
   b. More than 15%.
   c. Cannot be determined without the risk-free rate.

KAPLAN SCHWESER

7. Kaskin, Inc., stock has a beta of 1.2 and Quinn, Inc., stock has a beta of .6. Which of the following statements is *most* accurate?
   a. The expected rate of return will be higher for the stock of Kaskin, Inc., than that of Quinn, Inc.
   b. The stock of Kaskin, Inc., has more total risk than Quinn, Inc.
   c. The stock of Quinn, Inc., has more systematic risk than that of Kaskin, Inc.

Intermediate

8. You are a consultant to a large manufacturing corporation that is considering a project with the following net after-tax cash flows (in millions of dollars):

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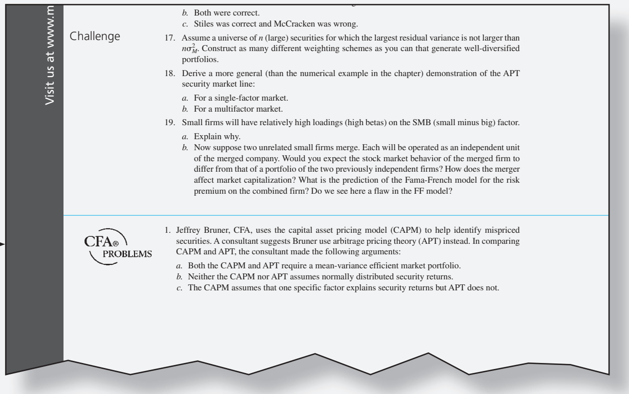
CFA PROBLEMS

WE PROVIDE SEVERAL questions from past CFA examinations in applicable chapters. These questions represent the kinds of questions that professionals in the field believe are relevant to the "real world." Located at the back of the book is a listing of each CFA question and the level and year of the CFA exam it was included in for easy reference when studying for the exam.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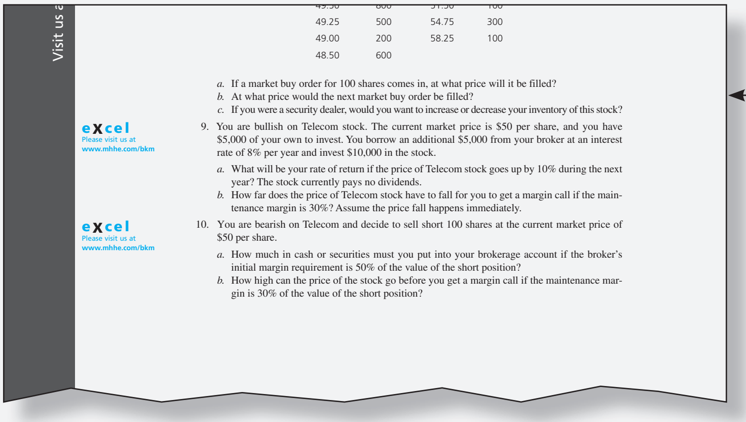
b. Both were correct.
c. Stiles was correct and McCracken was wrong.

Challenge

17. Assume a universe of n (large) securities for which the largest residual variance is not larger than $n\sigma_M^2$. Construct as many different weighting schemes as you can that generate well-diversified portfolios.
18. Derive a more general (than the numerical example in the chapter) demonstration of the APT security market line:
    a. For a single-factor market.
    b. For a multifactor market.
19. Small firms will have relatively high loadings (high betas) on the SMB (small minus big) factor.
    a. Explain why.
    b. Now suppose two unrelated small firms merge. Each will be operated as an independent unit of the merged company. Would you expect the stock market behavior of the merged firm to differ from that of a portfolio of the two previously independent firms? How does the merger affect market capitalization? What is the prediction of the Fama-French model for the risk premium on the combined firm? Do we see here a flaw in the FF model?

CFA® PROBLEMS

1. Jeffrey Bruner, CFA, uses the capital asset pricing model (CAPM) to help identify mispriced securities. A consultant suggests Bruner use arbitrage pricing theory (APT) instead. In comparing CAPM and APT, the consultant made the following arguments:
    a. Both the CAPM and APT require a mean-variance efficient market portfolio.
    b. Neither the CAPM nor APT assumes normally distributed security returns.
    c. The CAPM assumes that one specific factor explains security returns but APT does not.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49.25	500	54.75	300
49.00	200	58.25	100
48.50	600		

a. If a market buy order for 100 shares comes in, at what price will it be filled?
b. At what price would the next market buy order be filled?
c. If you were a security dealer, would you want to increase or decrease your inventory of this stock?

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9. You are bullish on Telecom stock. The current market price is $50 per share, and you have $5,000 of your own to invest. You borrow an additional $5,000 from your broker at an interest rate of 8% per year and invest $10,000 in the stock.
    a. What will be your rate of return if the price of Telecom stock goes up by 10% during the next year? The stock currently pays no dividends.
    b. How far does the price of Telecom stock have to fall for you to get a margin call if the maintenance margin is 30%? Assume the price fall happens immediately.

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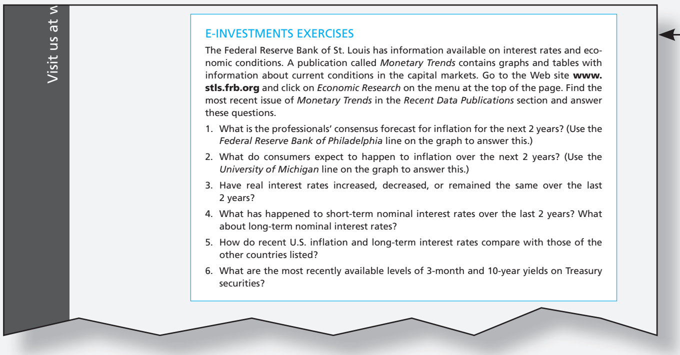
10. You are bearish on Telecom and decide to sell short 100 shares at the current market price of $50 per share.
    a. How much in cash or securities must you put into your brokerage account if the broker's initial margin requirement is 50% of the value of the short position?
    b. How high can the price of the stock go before you get a margin call if the maintenance margin is 30% of the value of the short position?

EXCEL PROBLEMS

SELECTED CHAPTERS CONTAIN problems, denoted by an icon, specifically linked to Excel templates that are available on the book's Web site at **www.mhhe.com/bkm**.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E-INVESTMENTS EXERCISES

The Federal Reserve Bank of St. Louis has information available on interest rates and economic conditions. A publication called *Monetary Trends* contains graphs and tables with information about current conditions in the capital markets. Go to the Web site **www.stls.frb.org** and click on *Economic Research* on the menu at the top of the page. Find the most recent issue of *Monetary Trends* in the *Recent Data Publications* section and answer these questions.

1. What is the professionals' consensus forecast for inflation for the next 2 years? (Use the *Federal Reserve Bank of Philadelphia* line on the graph to answer this.)
2. What do consumers expect to happen to inflation over the next 2 years? (Use the *University of Michigan* line on the graph to answer this.)
3. Have real interest rates increased, decreased, or remained the same over the last 2 years?
4. What has happened to short-term nominal interest rates over the last 2 years? What about long-term nominal interest rates?
5. How do recent U.S. inflation and long-term interest rates compare with those of the other countries listed?
6. What are the most recently available levels of 3-month and 10-year yields on Treasury securities?

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- **Instructor's Manual** Prepared by Anna Kovalenko, Virginia Tech University, the Manual has been revised and improved for this edition. Each chapter includes a Chapter Overview, Learning Objectives, and Presentation of Material.
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- **PowerPoint Presentation** These presentation slides, also prepared by Anna Kovalenko, contain figures and tables from the text, key points, and summaries in a visually stimulating collection of slides that you can customize to fit your lecture.
- **Solutions Manual** Updated by Marc-Anthony Isaacs, this Manual provides detailed solutions to the end-of-chapter problem sets. This supplement is also available for purchase by your students or can be packaged with your text at a discount.

FOR THE STUDENT

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- **Related Web Sites** A list of suggested Web sites is provided for each chapter. To keep Web addresses up-to-date, the suggested sites as well as their links are provided online. Each chapter summary contains a reference to its related sites.
- **Online Quizzes** These multiple-choice questions are provided as an additional testing and reinforcement tool for students. Each quiz is organized by chapter to test the specific concepts presented in that particular chapter. Immediate scoring of the quiz occurs upon submission and the correct answers are provided.

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Alex Kane
Alan J. Marcus

CHAPTER ONE

The Investment Environment

AN INVESTMENT IS the *current* commitment of money or other resources in the expectation of reaping *future* benefits. For example, an individual might purchase shares of stock anticipating that the future proceeds from the shares will justify both the time that her money is tied up as well as the risk of the investment. The time you will spend studying this text (not to mention its cost) also is an investment. You are forgoing either current leisure or the income you could be earning at a job in the expectation that your future career will be sufficiently enhanced to justify this commitment of time and effort. While these two investments differ in many ways, they share one key attribute that is central to all investments: You sacrifice something of value now, expecting to benefit from that sacrifice later.

This text can help you become an informed practitioner of investments. We will focus on investments in securities such as stocks, bonds, or options and futures contracts, but much of what we discuss will be useful in the analysis of any type of investment. The text will provide you with background in the organization of various securities markets; will survey the valuation and risk-management principles useful in particular markets, such as those for bonds or stocks; and will introduce you to the principles of portfolio construction.

Broadly speaking, this chapter addresses three topics that will provide a useful perspective for the material that is to come later. First, before delving into the topic of "investments," we consider the role of financial assets in the economy. We discuss the relationship between securities and the "real" assets that actually produce goods and services for consumers, and we consider why financial assets are important to the functioning of a developed economy.

Given this background, we then take a first look at the types of decisions that confront investors as they assemble a portfolio of assets. These investment decisions are made in an environment where higher returns usually can be obtained only at the price of greater risk and in which it is rare to find assets that are so mispriced as to be obvious bargains. These themes—the risk–return trade-off and the efficient pricing of financial assets—are central to the investment process, so it is worth pausing for a brief discussion of their implications as we begin the text. These implications will be fleshed out in much greater detail in later chapters.

We provide an overview of the organization of security markets as well as the various players that participate in those markets. Together, these introductions should give you a feel for who the major participants are in

(concluded)

the securities markets as well as the setting in which they act. Finally, we discuss the financial crisis that began playing out in 2007 and peaked in 2008. The crisis dramatically illustrated the connections between the financial system and the "real" side of the economy. We look at the origins of the crisis and the lessons that may be drawn about systemic risk. We close the chapter with an overview of the remainder of the text.

1.1 Real Assets versus Financial Assets

The material wealth of a society is ultimately determined by the productive capacity of its economy, that is, the goods and services its members can create. This capacity is a function of the **real assets** of the economy: the land, buildings, machines, and knowledge that can be used to produce goods and services.

In contrast to real assets are **financial assets** such as stocks and bonds. Such securities are no more than sheets of paper or, more likely, computer entries, and they do not contribute directly to the productive capacity of the economy. Instead, these assets are the means by which individuals in well-developed economies hold their claims on real assets. Financial assets are claims to the income generated by real assets (or claims on income from the government). If we cannot own our own auto plant (a real asset), we can still buy shares in Ford or Toyota (financial assets) and thereby share in the income derived from the production of automobiles.

While real assets generate net income to the economy, financial assets simply define the allocation of income or wealth among investors. Individuals can choose between consuming their wealth today or investing for the future. If they choose to invest, they may place their wealth in financial assets by purchasing various securities. When investors buy these securities from companies, the firms use the money so raised to pay for real assets, such as plant, equipment, technology, or inventory. So investors' returns on securities ultimately come from the income produced by the real assets that were financed by the issuance of those securities.

The distinction between real and financial assets is apparent when we compare the balance sheet of U.S. households, shown in Table 1.1, with the composition of national wealth in the United States, shown in Table 1.2. Household wealth includes financial assets such as bank accounts, corporate stock, or bonds. However, these securities, which are financial assets of households, are *liabilities* of the issuers of the securities. For example, a bond that you treat as an asset because it gives you a claim on interest income and repayment of principal from Toyota is a liability of Toyota, which is obligated to make these payments to you. Your asset is Toyota's liability. Therefore, when we aggregate over all balance sheets, these claims cancel out, leaving only real assets as the net wealth of the economy. National wealth consists of structures, equipment, inventories of goods, and land.[1]

CONCEPT CHECK 1.1

Are the following assets real or financial?

a. Patents
b. Lease obligations
c. Customer goodwill
d. A college education
e. A $5 bill

[1]You might wonder why real assets held by households in Table 1.1 amount to $23,774 billion, while total real assets in the domestic economy (Table 1.2) are far larger, at $48,616 billion. A big part of the difference reflects the fact that real assets held by firms, for example, property, plant, and equipment, are included as *financial* assets of the household sector, specifically through the value of corporate equity and other stock market investments. Also, Table 1.2 includes assets of noncorporate businesses. Finally, there are some differences in valuation methods. For example, equity and stock investments in Table 1.1 are measured by market value, whereas plant and equipment in Table 1.2 are valued at replacement cost.

Assets	$ Billion	% Total	Liabilities and Net Worth	$ Billion	% Total
Real assets			**Liabilities**		
Real estate	$18,608	24.4%	Mortgages	$ 9,907	13.0%
Consumer durables	4,821	6.3	Consumer credit	2,495	3.3
Other	345	0.5	Bank and other loans	195	0.3
Total real assets	$23,774	31.2%	Security credit	268	0.4
			Other	568	0.7
			Total liabilities	$13,433	17.6%
Financial assets					
Deposits	$ 8,688	11.4%			
Life insurance reserves	1,203	1.6			
Pension reserves	13,950	18.3			
Corporate equity	9,288	12.2			
Equity in noncorp. business	7,443	9.8			
Mutual fund shares	5,191	6.8			
Debt securities	5,120	6.7			
Other	1,641	2.2			
Total financial assets	52,524	68.8	*Net worth*	62,866	82.4
Total	76,298	100.0%		$76,298	100.0%

Table 1.1

Balance sheet of U.S. households

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States,* Board of Governors of the Federal Reserve System, June 2012.

Assets	$ Billion
Commercial real estate	$12,781
Residential real estate	23,460
Equipment and software	5,261
Inventories	2,293
Consumer durables	4,821
Total	$48,616

Note: Column sums may differ from total because of rounding error.

Source: *Flow of Funds Accounts of the United States*, Board of Governors of the Federal Reserve System, June 2012.

Table 1.2

Domestic net worth

We will focus almost exclusively on financial assets. But you shouldn't lose sight of the fact that the successes or failures of the financial assets we choose to purchase ultimately depend on the performance of the underlying real assets.

1.2 Financial Assets

It is common to distinguish among three broad types of financial assets: fixed income, equity, and derivatives. **Fixed-income** or **debt securities** promise either a fixed stream of income or a stream of income determined by a specified formula. For example, a corporate bond typically would promise that the bondholder will receive a fixed amount of interest each year. Other so-called floating-rate bonds promise payments that depend on current interest rates. For example, a bond may pay an interest rate that is fixed at 2 percentage points above the rate paid on U.S. Treasury bills. Unless the borrower is declared bankrupt, the payments on these securities are either fixed or determined by formula. For this reason, the investment performance of debt securities typically is least closely tied to the financial condition of the issuer.

Nevertheless, fixed-income securities come in a tremendous variety of maturities and payment provisions. At one extreme, the *money market* refers to debt securities that are short term, highly marketable, and generally of very low risk. Examples of money market securities are U.S. Treasury bills or bank certificates of deposit (CDs). In contrast, the fixed-income *capital market* includes long-term securities such as Treasury bonds, as well as bonds issued by federal agencies, state and local municipalities, and corporations. These bonds range from very safe in terms of default risk (for example, Treasury securities) to relatively risky (for example, high-yield or "junk" bonds). They also are designed with extremely diverse provisions regarding payments provided to the investor and protection against the bankruptcy of the issuer. We will take a first look at these securities in Chapter 2 and undertake a more detailed analysis of the debt market in Part Four.

Unlike debt securities, common stock, or **equity,** in a firm represents an ownership share in the corporation. Equityholders are not promised any particular payment. They receive any dividends the firm may pay and have prorated ownership in the real assets of the firm. If the firm is successful, the value of equity will increase; if not, it will decrease. The performance of equity investments, therefore, is tied directly to the success of the firm and its real assets. For this reason, equity investments tend to be riskier than investments in debt securities. Equity markets and equity valuation are the topics of Part Five.

Finally, **derivative securities** such as options and futures contracts provide payoffs that are determined by the prices of *other* assets such as bond or stock prices. For example, a call option on a share of Intel stock might turn out to be worthless if Intel's share price remains below a threshold or "exercise" price such as $20 a share, but it can be quite valuable if the stock price rises above that level.[2] Derivative securities are so named because their values derive from the prices of other assets. For example, the value of the call option will depend on the price of Intel stock. Other important derivative securities are futures and swap contracts. We will treat these in Part Six.

Derivatives have become an integral part of the investment environment. One use of derivatives, perhaps the primary use, is to hedge risks or transfer them to other parties. This is done successfully every day, and the use of these securities for risk management is so commonplace that the multitrillion-dollar market in derivative assets is routinely taken for granted. Derivatives also can be used to take highly speculative positions, however. Every so often, one of these positions blows up, resulting in well-publicized losses of hundreds of millions of dollars. While these losses attract considerable attention, they are in fact the exception to the more common use of such securities as risk management tools. Derivatives will continue to play an important role in portfolio construction and the financial system. We will return to this topic later in the text.

Investors and corporations regularly encounter other financial markets as well. Firms engaged in international trade regularly transfer money back and forth between dollars and

[2] A call option is the right to buy a share of stock at a given exercise price on or before the option's expiration date. If the market price of Intel remains below $20 a share, the right to buy for $20 will turn out to be valueless. If the share price rises above $20 before the option expires, however, the option can be exercised to obtain the share for only $20.

other currencies. Well more than a trillion dollars of currency is traded each day in the market for foreign exchange, primarily through a network of the largest international banks.

Investors also might invest directly in some real assets. For example, dozens of commodities are traded on exchanges such as the New York Mercantile Exchange or the Chicago Board of Trade. You can buy or sell corn, wheat, natural gas, gold, silver, and so on.

Commodity and derivative markets allow firms to adjust their exposure to various business risks. For example, a construction firm may lock in the price of copper by buying copper futures contracts, thus eliminating the risk of a sudden jump in the price of its raw materials. Wherever there is uncertainty, investors may be interested in trading, either to speculate or to lay off their risks, and a market may arise to meet that demand.

1.3 Financial Markets and the Economy

We stated earlier that real assets determine the wealth of an economy, while financial assets merely represent claims on real assets. Nevertheless, financial assets and the markets in which they trade play several crucial roles in developed economies. Financial assets allow us to make the most of the economy's real assets.

The Informational Role of Financial Markets

Stock prices reflect investors' collective assessment of a firm's current performance and future prospects. When the market is more optimistic about the firm, its share price will rise. That higher price makes it easier for the firm to raise capital and therefore encourages investment. In this manner, stock prices play a major role in the allocation of capital in market economies, directing capital to the firms and applications with the greatest perceived potential.

Do capital markets actually channel resources to the most efficient use? At times, they appear to fail miserably. Companies or whole industries can be "hot" for a period of time (think about the dot-com bubble that peaked in 2000), attract a large flow of investor capital, and then fail after only a few years. The process seems highly wasteful.

But we need to be careful about our standard of efficiency. No one knows with certainty which ventures will succeed and which will fail. It is therefore unreasonable to expect that markets will never make mistakes. The stock market encourages allocation of capital to those firms that appear *at the time* to have the best prospects. Many smart, well-trained, and well-paid professionals analyze the prospects of firms whose shares trade on the stock market. Stock prices reflect their collective judgment.

You may well be skeptical about resource allocation through markets. But if you are, then take a moment to think about the alternatives. Would a central planner make fewer mistakes? Would you prefer that Congress make these decisions? To paraphrase Winston Churchill's comment about democracy, markets may be the worst way to allocate capital except for all the others that have been tried.

Consumption Timing

Some individuals in an economy are earning more than they currently wish to spend. Others, for example, retirees, spend more than they currently earn. How can you shift your purchasing power from high-earnings periods to low-earnings periods of life? One way is to "store" your wealth in financial assets. In high-earnings periods, you can invest your savings in financial assets such as stocks and bonds. In low-earnings periods, you can sell these assets to provide funds for your consumption needs. By so doing, you can "shift" your consumption over the course of your lifetime, thereby allocating your consumption to periods that provide the greatest satisfaction. Thus, financial markets allow individuals to separate decisions concerning current consumption from constraints that otherwise would be imposed by current earnings.

Allocation of Risk

Virtually all real assets involve some risk. When Ford builds its auto plants, for example, it cannot know for sure what cash flows those plants will generate. Financial markets and the diverse financial instruments traded in those markets allow investors with the greatest taste for risk to bear that risk, while other, less risk-tolerant individuals can, to a greater extent, stay on the sidelines. For example, if Ford raises the funds to build its auto plant by selling both stocks and bonds to the public, the more optimistic or risk-tolerant investors can buy shares of its stock, while the more conservative ones can buy its bonds. Because the bonds promise to provide a fixed payment, the stockholders bear most of the business risk but reap potentially higher rewards. Thus, capital markets allow the risk that is inherent to all investments to be borne by the investors most willing to bear that risk.

This allocation of risk also benefits the firms that need to raise capital to finance their investments. When investors are able to select security types with the risk-return characteristics that best suit their preferences, each security can be sold for the best possible price. This facilitates the process of building the economy's stock of real assets.

Separation of Ownership and Management

Many businesses are owned and managed by the same individual. This simple organization is well suited to small businesses and, in fact, was the most common form of business organization before the Industrial Revolution. Today, however, with global markets and large-scale production, the size and capital requirements of firms have skyrocketed. For example, in 2012 General Electric listed on its balance sheet about $70 billion of property, plant, and equipment, and total assets of $685 billion. Corporations of such size simply cannot exist as owner-operated firms. GE actually has more than half a million stockholders with an ownership stake in the firm proportional to their holdings of shares.

Such a large group of individuals obviously cannot actively participate in the day-to-day management of the firm. Instead, they elect a board of directors that in turn hires and supervises the management of the firm. This structure means that the owners and managers of the firm are different parties. This gives the firm a stability that the owner-managed firm cannot achieve. For example, if some stockholders decide they no longer wish to hold shares in the firm, they can sell their shares to other investors, with no impact on the management of the firm. Thus, financial assets and the ability to buy and sell those assets in the financial markets allow for easy separation of ownership and management.

How can all of the disparate owners of the firm, ranging from large pension funds holding hundreds of thousands of shares to small investors who may hold only a single share, agree on the objectives of the firm? Again, the financial markets provide some guidance. All may agree that the firm's management should pursue strategies that enhance the value of their shares. Such policies will make all shareholders wealthier and allow them all to better pursue their personal goals, whatever those goals might be.

Do managers really attempt to maximize firm value? It is easy to see how they might be tempted to engage in activities not in the best interest of shareholders. For example, they might engage in empire building or avoid risky projects to protect their own jobs or overconsume luxuries such as corporate jets, reasoning that the cost of such perquisites is largely borne by the shareholders. These potential conflicts of interest are called **agency problems** because managers, who are hired as agents of the shareholders, may pursue their own interests instead.

Several mechanisms have evolved to mitigate potential agency problems. First, compensation plans tie the income of managers to the success of the firm. A major part of the total compensation of top executives is often in the form of stock or stock options, which means that the managers will not do well unless the stock price increases, benefiting shareholders. (Of course, we've learned more recently that overuse of options can create its own agency problem. Options can create an incentive for managers to manipulate information to prop up a stock price temporarily, giving them a chance to cash out before the price returns to a level reflective of the firm's true prospects. More on this shortly.) Second, while boards of directors have sometimes been portrayed as defenders of top management, they can, and in recent years, increasingly have, forced out management teams that are underperforming. The average tenure of CEOs fell from 8.1 years in 2006 to 6.6 years in 2011, and the percentage of incoming CEOs who also serve as chairman of the board of directors fell from 48% in 2002 to less than 12% in 2009.[3] Third, outsiders such as security analysts and large institutional investors such as mutual funds or pension funds monitor the firm closely and make the life of poor performers at the least uncomfortable. Such large investors today hold about half of the stock in publicly listed firms in the U.S.

Finally, bad performers are subject to the threat of takeover. If the board of directors is lax in monitoring management, unhappy shareholders in principle can elect a different board. They can do this by launching a *proxy contest* in which they seek to obtain enough proxies (i.e., rights to vote the shares of other shareholders) to take control of the firm and vote in another board. However, this threat is usually minimal. Shareholders who attempt such a fight have to use their own funds, while management can defend itself using corporate coffers. Most proxy fights fail. The real takeover threat is from other firms. If one firm observes another underperforming, it can acquire the underperforming business and replace management with its own team. The stock price should rise to reflect the prospects of improved performance, which provides incentive for firms to engage in such takeover activity.

Example 1.1 Carl Icahn's Proxy Fight with Yahoo!

In February 2008, Microsoft offered to buy Yahoo! by paying its current shareholders $31 for each of their shares, a considerable premium to its closing price of $19.18 on the day before the offer. Yahoo's management rejected that offer and a better one at $33 a share; Yahoo's CEO Jerry Yang held out for $37 per share, a price that Yahoo! had not reached in more than 2 years. Billionaire investor Carl Icahn was outraged, arguing that management was protecting its own position at the expense of shareholder value. Icahn notified Yahoo! that he had been asked to "lead a proxy fight to attempt to remove the current board and to establish a new board which would attempt to negotiate a successful merger with Microsoft." To that end, he had purchased approximately 59 million shares of Yahoo! and formed a 10-person slate to stand for election against the current board. Despite this challenge, Yahoo's management held firm in its refusal of Microsoft's offer, and with the support of the board, Yang managed to fend off both Microsoft and Icahn. In July, Icahn agreed to end the proxy fight in return for three seats on the board to be held by his allies. But the 11-person board was still dominated by current Yahoo management. Yahoo's share price, which had risen to $29 a share during the Microsoft negotiations, fell back to around $21 a share. Given the difficulty that a well-known billionaire faced in defeating a determined and entrenched management, it is no wonder that proxy contests are rare. Historically, about three of four proxy fights go down to defeat.

[3]"Corporate Bosses Are Much Less Powerful than They Used To Be," *The Economist,* January 21, 2012.

Corporate Governance and Corporate Ethics

We've argued that securities markets can play an important role in facilitating the deployment of capital resources to their most productive uses. But market signals will help to allocate capital efficiently only if investors are acting on accurate information. We say that markets need to be *transparent* for investors to make informed decisions. If firms can mislead the public about their prospects, then much can go wrong.

Despite the many mechanisms to align incentives of shareholders and managers, the three years from 2000 through 2002 were filled with a seemingly unending series of scandals that collectively signaled a crisis in corporate governance and ethics. For example, the telecom firm WorldCom overstated its profits by at least $3.8 billion by improperly classifying expenses as investments. When the true picture emerged, it resulted in the largest bankruptcy in U.S. history, at least until Lehman Brothers smashed that record in 2008. The next-largest U.S. bankruptcy was Enron, which used its now-notorious "special-purpose entities" to move debt off its own books and similarly present a misleading picture of its financial status. Unfortunately, these firms had plenty of company. Other firms such as Rite Aid, HealthSouth, Global Crossing, and Qwest Communications also manipulated and misstated their accounts to the tune of billions of dollars. And the scandals were hardly limited to the United States. Parmalat, the Italian dairy firm, claimed to have a $4.8 billion bank account that turned out not to exist. These episodes suggest that agency and incentive problems are far from solved.

Other scandals of that period included systematically misleading and overly optimistic research reports put out by stock market analysts. (Their favorable analysis was traded for the promise of future investment banking business, and analysts were commonly compensated not for their accuracy or insight, but for their role in garnering investment banking business for their firms.) Additionally, initial public offerings were allocated to corporate executives as a quid pro quo for personal favors or the promise to direct future business back to the manager of the IPO.

What about the auditors who were supposed to be the watchdogs of the firms? Here too, incentives were skewed. Recent changes in business practice had made the consulting businesses of these firms more lucrative than the auditing function. For example, Enron's (now-defunct) auditor Arthur Andersen earned more money consulting for Enron than by auditing it; given Arthur Andersen's incentive to protect its consulting profits, we should not be surprised that it, and other auditors, were overly lenient in their auditing work.

In 2002, in response to the spate of ethics scandals, Congress passed the Sarbanes-Oxley Act to tighten the rules of corporate governance. For example, the act requires corporations to have more independent directors, that is, more directors who are not themselves managers (or affiliated with managers). The act also requires each CFO to personally vouch for the corporation's accounting statements, created an oversight board to oversee the auditing of public companies, and prohibits auditors from providing various other services to clients.

1.4 The Investment Process

An investor's *portfolio* is simply his collection of investment assets. Once the portfolio is established, it is updated or "rebalanced" by selling existing securities and using the proceeds to buy new securities, by investing additional funds to increase the overall size of the portfolio, or by selling securities to decrease the size of the portfolio.

Investment assets can be categorized into broad asset classes, such as stocks, bonds, real estate, commodities, and so on. Investors make two types of decisions in constructing their portfolios. The **asset allocation** decision is the choice among these broad asset classes, while the **security selection** decision is the choice of which particular securities to hold *within* each asset class.

Asset allocation also includes the decision of how much of one's portfolio to place in safe assets such as bank accounts or money market securities versus in risky assets. Unfortunately, many observers, even those providing financial advice, appear to incorrectly equate saving with safe investing.[4] "Saving" means that you do not spend all of your current income, and therefore can add to your portfolio. You may choose to invest your savings in safe assets, risky assets, or a combination of both.

"Top-down" portfolio construction starts with asset allocation. For example, an individual who currently holds all of his money in a bank account would first decide what proportion of the overall portfolio ought to be moved into stocks, bonds, and so on. In this way, the broad features of the portfolio are established. For example, while the average annual return on the common stock of large firms since 1926 has been better than 11% per year, the average return on U.S. Treasury bills has been less than 4%. On the other hand, stocks are far riskier, with annual returns (as measured by the Standard & Poor's 500 index) that have ranged as low as –46% and as high as 55%. In contrast, T-bills are effectively risk-free: You know what interest rate you will earn when you buy them. Therefore, the decision to allocate your investments to the stock market or to the money market where Treasury bills are traded will have great ramifications for both the risk and the return of your portfolio. A top-down investor first makes this and other crucial asset allocation decisions before turning to the decision of the particular securities to be held in each asset class.

Security analysis involves the valuation of particular securities that might be included in the portfolio. For example, an investor might ask whether Merck or Pfizer is more attractively priced. Both bonds and stocks must be evaluated for investment attractiveness, but valuation is far more difficult for stocks because a stock's performance usually is far more sensitive to the condition of the issuing firm.

In contrast to top-down portfolio management is the "bottom-up" strategy. In this process, the portfolio is constructed from the securities that seem attractively priced without as much concern for the resultant asset allocation. Such a technique can result in unintended bets on one or another sector of the economy. For example, it might turn out that the portfolio ends up with a very heavy representation of firms in one industry, from one part of the country, or with exposure to one source of uncertainty. However, a bottom-up strategy does focus the portfolio on the assets that seem to offer the most attractive investment opportunities.

1.5 Markets Are Competitive

Financial markets are highly competitive. Thousands of intelligent and well-backed analysts constantly scour securities markets searching for the best buys. This competition means that we should expect to find few, if any, "free lunches," securities that are so underpriced that they represent obvious bargains. This no-free-lunch proposition has several implications. Let's examine two.

[4]For example, here is a brief excerpt from the Web site of the Securities and Exchange Commission. "Your 'savings' are usually put into the safest places or products . . . When you 'invest,' you have a greater chance of losing your money than when you 'save.'" This statement is incorrect: Your investment portfolio can be invested in either safe or risky assets, and your savings in any period is simply the difference between your income and consumption.