Ninth Canadian Edition

BODIE | KANE | MARCUS | SWITZER | BOYKO | PANASIAN | STAPLETON

INVESTMENTS

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NINTH CANADIAN EDITION

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Investments
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PREFACE

After three decades of rapid and profound change in the investments industry, in addition to a financial crisis of historic magnitude, the Ninth Canadian Edition of *Investments* takes a hard look at the here and now. The vast expansion of financial markets during this tumultuous period, due in part to innovations in securitization and credit enhancement, gave way to new trading strategies. And 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 persisted and 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 complacency about risk, coupled with the relaxation of regulation and reduced transparency, masked the precarious condition of many big players in the system. In turn and out of necessity, our text has evolved along with financial markets and their influence on world events.

The Ninth Canadian Edition of *Investments* is intended primarily as a textbook for courses in investment analysis. Our guiding principle has been and continues to be to present the material in a framework that is organized by a central core of consistent fundamental principles. We strip away unnecessary mathematical and technical details, and concentrate on providing the intuition that may guide students and practitioners as they confront new ideas and challenges in their professional and personal lives.

This text introduces and explores many issues. It provides the skills to conduct a sophisticated assessment of watershed current issues and debates covered by the popular media and more-specialized finance journals. Whether you plan to become an investment professional yourself or an individual investor, these skills are essential, especially in today's rapidly evolving environment.

Our primary goal is to present material of practical value. And for our author team, there is no contradiction in the field of investments between the pursuit of truth and the pursuit of money. Quite the opposite, actually. The capital asset pricing model, the arbitrage pricing model, the efficient markets hypothesis, the option-pricing model, and the other centrepieces 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 have made our 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 for candidates seeking designation as Chartered Financial Analysts (CFAs). The CFA curriculum is the product of consensus from a committee of distinguished scholars and practitioners regarding the core 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 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 discusses investors and the investment process and 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 select chapters.

In the Ninth Canadian 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 Connect, provide a taste of the sophisticated analytic tools available to professional investors.

Underlying Philosophy

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

While the financial environment is constantly evolving, many basic *principles* remain important. We believe that fundamental principles should organize and motivate all study and that attention to these few central ideas can simplify the study of otherwise difficult material. 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 behavioural 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

The Ninth Canadian Edition of *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 Canada, 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 we 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 Ninth Canadian Edition

The following is a guide to changes in the Ninth Canadian 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 U.S. Dodd–Frank Act. The Canadian experience of the financial crisis is also discussed.

Chapter 2 Financial Markets, 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, and the Asset Backed Commercial Paper crisis in Canada. We also discuss the new benchmark money market rate, CDOR which has replaced the Canadian LIBOR.

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. We also provide an update on the latest regulatory developments concerning short-selling and market circuit breakers. In addition, we introduce a new innovation for financing small startup companies that considerably lightens the regulatory burden of firms: equity crowdfunding

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 8 Index Models We illustrate the implementation of the index model by constructing an optimal portfolio from the S&P/TSX Index using a set of stocks traded on the TSX.

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 premiums.

Chapter 10 Arbitrage Pricing Theory and the Multifactor Models of Risk and Return 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 behaviour 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 16 Managing Bond Portfolios This chapter now includes information on liability driven investing for pension plans, a strategy that has gained importance since the financial crisis of 2008/2009.

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 23 Futures Markets We look at the evolution of trading platforms for Canadian commodities to the closure of the Winnipeg Exchange and beyond.

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 I 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 II and III 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 II, we investigate in Part III 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 behavioural critique of market rationality. Finally, we conclude Part III 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 IV 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 V and VI deal with equity securities and derivative securities. For a course emphasizing security analysis and excluding portfolio theory, it is possible to proceed directly from Part I to Part IV with no loss in continuity.

Finally, **Part VII** 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

The Ninth Canadian Edition of *Investments* has several features designed to make it easy for students to understand, absorb, and apply the concepts and techniques presented.

Chapter Openers

Chapter Openers outline the upcoming material in the chapter and provide students with a road map of what they will learn.

CHAPTER FOUR

Mutual Funds and Other Investment Companies

THE PREVIOUS CHAPTER introduced you to the mechanics of trading securities and the structure of the markets in which securities trade. Commonly, however, individual investors do not trade securities directly for their own accounts. Instead, they direct their funds to investment companies that purchase securities on their behalf. The most important of these financial intermediaries are open-end investment companies, more commonly known as mutual funds, to which we devote most of this chapter. We also touch briefly on other types of funds, such as closed-end funds, hedge funds, and exchange-traded funds.

We begin the chapter by describing and comparing the various types of investment companies available to investors. We then examine the functions of mutual funds, their investment styles and

CONCEPT CHECK 4.2

The Equity Fund sells two classes of shares. Class A shares have a front-end load of 4% and a management expense ratio (MER) equal to 2%. Class B shares have an MER of 2.5% as well as back-end load fees that start at 5% and fall by 1% for each full year the investor holds the portfolio (until the fifth year). Assume the rate of return on the fund portfolio before management and operating expenses is 12% annually. What will be the value of a $10,000 investment in Class A and Class B shares if the shares are sold after (*a*) 1 year, (*b*) 4 years, (c) 10 years? Which fee structure provides higher net proceeds at the end of each investment horizon?

Concept Checks

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.

Numbered Examples

These 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 4.1 Net Asset Value

Consider a mutual fund that manages a portfolio of securities worth $120 million. Suppose the fund owes $4 million to its investment advisers and owes another $1 million for rent, wages due, and miscellaneous expenses. The fund has 5 million shares outstanding.

$$\text{Net asset value} = \frac{\$120 \text{ million} - \$5 \text{ million}}{5 \text{ million shares}} = \$23 \text{ per share}$$

WORDS FROM THE STREET

The Flash Crash of May 2010

At 2:42 New York time on May 6, 2010, the Dow Jones Industrial Average was already down about 300 points for the day. The market was demonstrating concerns about the European debt crisis, and nerves were already on edge. Then, in the next 5 minutes, the Dow dropped an additional 600 points. And only 20 minutes after that, it had recovered most of those 600 points. Besides the staggering intraday volatility of the broad market, trading in individual shares and ETFs was even more disrupted. The iShares Russell 1000 Value fund temporarily fell from $59 a share to 8 cents. Shares in the large consulting company Accenture, which had just sold for $38, traded at 1 cent only a minute or two later. At the other extreme, share prices of Apple and Hewlett-Packard momentarily increased to over $100,000. These markets were clearly broken.

The causes of the flash crash are still debated. An SEC report issued after the trade points to a $4 billion sale of market index futures contracts by a mutual fund. As market prices began to tumble, many algorithmic trading programs withdrew from the markets, and those that remained became net sellers, further pushing down equity prices. As more and more of these algorithmic traders shut down, liquidity in these markets evaporated: buyers for many stocks simply disappeared.

Finally, trading was halted for a short period. When it resumed, buyers decided to take advantage of many severely depressed stock prices, and the market rebounded almost as quickly as it had crashed. Given the intraday turbulence and the clearly distorted prices at which some trades had been executed, the NYSE and NASDAQ decided to cancel all trades that were executed more than 60% away from a "reference price" close to the opening price of the day. Almost 70% of those cancelled trades involved ETFs.

The SEC has since approved experimentation with new circuit breakers to halt trading for 5 minutes in large stocks that rise or fall by more than 10% in a 5-minute period. The idea is to prevent trading algorithms from moving share prices quickly before human traders have a chance to determine whether those prices are moving in response to fundamental information.

The flash crash highlighted the fragility of markets in the face of huge variation in trading volume created by algorithmic traders. The potential for these high-frequency traders to withdraw from markets in periods of turbulence remains a concern, and many observers are not convinced that we are protected from future flash crashes.

Words from the Street Boxes

These short feature articles from business periodicals are included in boxes throughout the text. The articles are chosen for real-world relevance and clarity of presentation.

eXcel APPLICATIONS: Buying on Margin

The following Excel spreadsheet, available in Connect or through your course instructor, makes it easy to analyze the impacts of different margin levels and the volatility of stock prices. It also allows you to compare return on investment for a margin trade with a trade using no borrowed funds.

	A	B	C	D	E	F	G	H
1								
2			Action or Formula	Ending	Return on		Ending	Return with
3			for Column B	St Price	Investment		St Price	No Margin
4	Initial Equity Investment	$10,000.00	Enter data		−41.60%			−18.80%
5	Amount Borrowed	$10,000.00	(B4/B10) − B4	$20.00	−121.60%		$20.00	−58.80%
6	Initial Stock Price	$50.00	Enter data	25.00	−101.60%		25.00	−48.80%
7	Shares Purchased	400	(B4/B10) − B6	30.00	−81.60%		30.00	−38.80%
8	Ending Stock Price	$40.00	Enter data	35.00	−61.60%		35.00	−28.80%
9	Cash Dividends During Hold Per	$0.60	Enter data	40.00	−41.60%		40.00	−18.80%
10	Initial Margin Percentage	50.00%	Enter data	45.00	−21.60%		45.00	−8.80%
11	Maintenance Margin Percentage	30.00%	Enter data	50.00	−1.60%		50.00	1.20%
12				55.00	18.40%		55.00	11.20%
13	Rate on Margin Loan	8.00%	Enter data	60.00	38.40%		60.00	21.20%
14	Holding Period in Months	6	Enter data	65.00	58.40%		65.00	31.20%
15			B13 − B14	70.00	78.40%		70.00	41.20%
16	**Return on Investment**		B4	75.00	98.40%		75.00	51.20%
17	Capital Gain on Stock	−$4,000.00	B7*(B8 − B6)	80.00	118.40%		80.00	61.20%
18	Dividends	$240.00	B7*B9					
19	Interest on Margin Loan	$400.00	B5*(B14/12)*B13					
20	Net Income	−$4,160.00	B17 + B18 − B19			LEGEND:		
21	Initial Investment	$10,000.00	B4			Enter data		
22	Return on Investment	−41.60%	B20/B21			Value calculated		

Excel Questions

1. Suppose you buy 100 shares of stock initially selling for $50, borrowing 25% of the necessary funds from your broker (i.e., the initial margin on your purchase is 25%). You pay an interest rate of 8% on margin loans.
   a. How much of your own money do you invest? How much do you borrow from your broker?
   b. What will be your rate of return for the following stock prices at the end of a 1-year holding period? (i) $40; (ii) $50; (iii) $60.
2. Repeat Question 1 assuming your initial margin was 50%. How does margin affect the risk and return of your position.

Excel Applications

The Ninth Canadian Edition features Excel Spreadsheet Applications with new Excel questions. A sample spreadsheet is presented in the text with additional templates and solutions available on our Connect site.

Excel Exhibits

Selected exhibits are set as Excel spreadsheets and are denoted by an icon. They are also available on our Connect site.

	A	B	C	D	E	F	G	H	I
1									
2									
3	Purchase Price =		$100			T-bill Rate =	0.04		
4									
5							Squared		Squared
6	State of the		Year-End	Cash		Deviations	Deviations	Excess	Deviations
7	Market	Probability	Price	Dividends	HPR	from Mean	from Mean	Returns	from Mean
8	Excellent	0.25	126.50	4.50	0.3100	0.2124	0.0451	0.2700	0.0451
9	Good	0.45	110.00	4.00	0.1400	0.0424	0.0018	0.1000	0.0018
10	Poor	0.25	89.75	3.50	−0.0675	−0.1651	0.0273	−0.1075	0.0273
11	Crash	0.05	46.00	2.00	−0.5200	−0.6176	0.3815	−0.5600	0.3815
12	Expected Value (mean)	SUMPRODUCT(B8:B11, E8:E11) =			0.0976				
13	Variance of HPR				SUMPRODUCT(B8:B11, G8:G11) =		0.0380		
14	Standard Deviation of HPR					SQRT(G13) =	0.1949		
15	Risk Premium					SUMPRODUCT(B8:B11, H8:H11) =		0.0576	
16	Standard Deviation of Excess Return						SQRT(SUMPRODUCT(B8:B11, I8:I11)) =		0.1949

Spreadsheet 5.1 eXcel
Scenario analysis of holding period return of the stock-index fund

END-OF-CHAPTER FEATURES

Summary

At the end of each chapter, a detailed summary outlines the most important concepts presented.

22 PART ONE Introduction

SUMMARY

1. Real assets create wealth. Financial assets represent claims to parts or all of that wealth. Financial assets determine how the ownership of real assets is distributed among investors.
2. Financial assets can be categorized as fixed income, equity, or derivative instruments. Top-down portfolio construction techniques start with the asset allocation decision—the allocation of funds across broad asset classes—and then progress to more specific security-selection decisions.
3. Competition in financial markets leads to a risk–return trade-off, in which securities that offer higher expected rates of return also impose greater risks on investors. The presence of risk, however, implies that actual returns can differ considerably from the returns expected at the beginning of the investment period. Competition among security analysts also promotes financial markets that are nearly informationally efficient, meaning that prices reflect all available information concerning the value of the security. Passive investment strategies may make sense in nearly efficient markets.
5. Investment banking brings efficiency to corporate fund-raising. Investment bankers develop expertise in pricing new issues and in marketing them to investors. By the end of 2008, all the major stand-alone U.S. investment banks had been absorbed into commercial banks or had reorganized themselves into bank holding companies. In Canada and Europe, large banks maintained both commercial and investment banking divisions.
6. The financial crisis of 2008 showed the importance of systemic risk. Systemic risk can be limited by transparency that allows traders and investors to assess the risk of their counterparties, capital requirements to prevent trading participants from being brought down by potential losses, frequent settlement of gains or losses to prevent losses from accumulating beyond an institution's ability to bear them, incentives to discourage excessive risk taking, and accurate and unbiased analy-

sells its own securities to the small investors. The intermediary invests the funds thus raised, uses the proceeds to pay back the small investors, and profits from the difference (the spread).

PROBLEM SETS

1. What are some comparative advantages of investing in
   a. Open-end mutual funds
   b. Individual stocks and bonds that you choose for yourself
2. Open-end equity mutual funds find it necessary to keep a significant percentage of total investments, typically around 5% of the portfolio, in very liquid money market assets. Closed-end funds do not have to maintain such a position in cash-equivalent securities. What difference between open-end and closed-end funds might account for their differing policies?
3. Balanced funds, life-cycle funds, and asset allocation funds all invest in both the stock and bond markets. What are the differences among these types of funds?

The fund has not borrowed any funds, but its accrued management fee with the portfolio manager currently totals $30,000. There are 4 million shares outstanding. What is the net asset value of the fund?

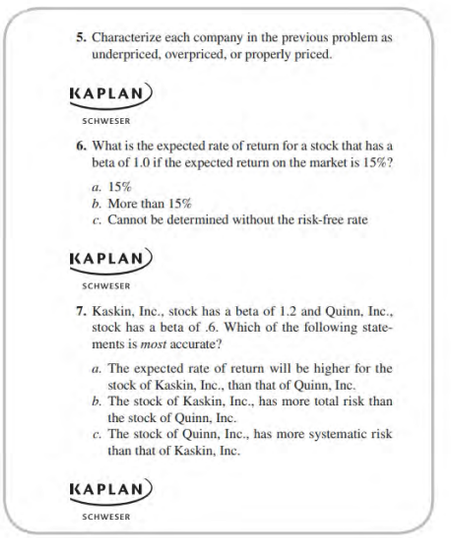
9. Reconsider the Fingroup Fund in the previous problem. If, during the year, the portfolio manager sells all of the holdings of stock D and replaces them with 200,000 shares of stock E at $50 per share and 200,000 shares of stock F at $25 per share, what is the portfolio turnover rate?
10. The Closed Fund is a closed-end investment company with a portfolio currently worth $200 million. It has liabilities of $3 million and 5 million shares outstanding.

Problem Sets

We strongly believe that practice in solving problems is essential to understanding investments, so a good variety of problems is provided.

Exam Prep Questions

Practice questions for the CFA® exams provided by Kaplan Schweser, A Global Leader in CFA® Education, are available in selected chapters for additional test practice. These are easily identified by the Kaplan Schweser logos featured throughout the problem sets. Learn more at www.schweser.com.



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 the stock of Quinn, Inc.
c. The stock of Quinn, Inc., has more systematic risk than that of Kaskin, Inc.

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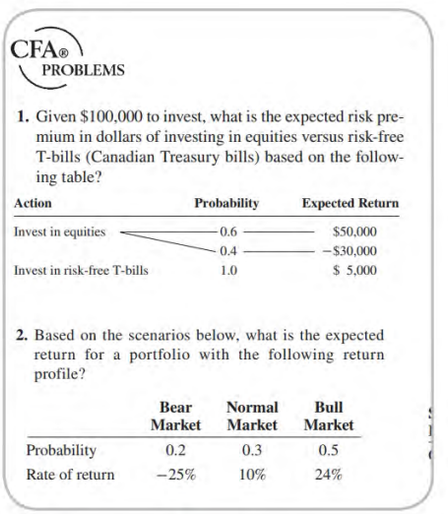
CFA Problems

Several questions from past CFA examinations are provided 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.



CFA® PROBLEMS

1. Given $100,000 to invest, what is the expected risk premium in dollars of investing in equities versus risk-free T-bills (Canadian Treasury bills) based on the following table?

Action	Probability	Expected Return
Invest in equities	0.6	$50,000
	0.4	−$30,000
Invest in risk-free T-bills	1.0	$ 5,000

2. Based on the scenarios below, what is the expected return for a portfolio with the following return profile?

	Bear Market	Normal Market	Bull Market
Probability	0.2	0.3	0.5
Rate of return	−25%	10%	24%

Excel Problems

eXcel

Selected chapters feature Excel problems, denoted by an icon, specifically linked to templates that are available on our Connect site.

E-Investments Boxes

These exercises provide students with simple activities to enhance their experience using the Internet. Easy-to-follow instructions and questions are presented for students to utilize what they have learned in class and apply it to today's Web-driven world.

E-INVESTMENTS EXERCISES

1. Use data from finance.yahoo.com to answer the following questions:
   a. Collect the following data for 25 firms of your choosing.
      i. Book-to-market ratio
      ii. Price–earnings ratio
      iii. Market capitalization (size)
      iv. Price–cash flow ratio (i.e., market capitalization/operating cash flow)
      v. Another criterion that interests you

   You can find this information by choosing a company and then clicking on Key Statistics. Rank the firms based on each of the criteria separately, and divide the firms into five groups based on their ranking for each criterion. Calculate the average rate of return for each group of firms.

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Instructor Resources

- **Instructor's Manual** Prepared by Lorne N. Switzer, John Molson School of Business, Concordia University. This manual has been revised and improved for this edition. Each chapter includes a Chapter Overview, Learning Objectives, and Presentation of Material to help instructors with classroom prep.
- **Test Bank** Prepared by Christine Panasian, Sobey School of Business, Saint Mary's University. The Test Bank has been revised to improve the quality of questions. Each question is ranked by level of difficulty, which allows greater flexibility in creating a test and also provides a rationale for the solution.
- **PowerPoint Presentations** These presentation slides were prepared by Cagdas Tahaoglu, John Molson School of Business, Concordia University. They 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 our Canadian author team: Lorne N. Switzer, Dana Boyko, Christine Panasian, and Maureen Stapleton, and meticulously checked for technical accuracy by Cagdas Tahaoglu. This Manual provides detailed solutions to all end-of-chapter problem sets.

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Sincerely,

Lorne N. Switzer

Dana Boyko

Christine A. Panasian

Maureen Stapleton

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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 investing. We will focus on investments in securities such as stocks, bonds, and 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 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 who participate in those markets. Together, these introductions should give you a feel for who the major participants are in 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.

LEARNING OBJECTIVES

- LO1 Real Assets versus Financial Assets
- LO2 Financial Assets
- LO3 Financial Markets and the Economy

LO1 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.

Real and financial assets are distinguished operationally by the balance sheets of individuals and firms in the economy. Whereas real assets appear only on the asset side of the balance sheet, financial assets always appear on both sides of balance sheets. Your financial claim on a firm is an asset, but the firm's issuance of that claim is the firm's liability. When we aggregate over all balance sheets, financial assets will cancel out, leaving only the sum of real assets as the net wealth of the aggregate economy.

Another way of distinguishing between financial and real assets is to note that financial assets are created and destroyed in the ordinary course of doing business. For example, when a loan is paid off, both the creditor's claim (a financial asset) and the debtor's obligation (a financial liability) cease to exist. In contrast, real assets are destroyed only by accident or by wearing out over time.

A way to concretize the distinction between real and financial assets is to examine the Canadian Balance Sheet Accounts for households, as prepared by Statistics Canada.[1] For example, from these accounts for the second quarter of 2018, Statistics Canada data

[1] The National Balance Sheet for Canadian Households can be obtained from the Statistics Canada website: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610058001&pickMembers%5B0%5D=2.4&pickMembers%5B1%5D=3.1.

show that about 47% of Canadian household wealth consists of non-financial assets. The largest category of non-financial assets consists of residential structures (which accounts for about 37% of non-financial assets). The next largest category of non-financial assets consists of consumer durables (which represents about 11% of non-financial assets). Equity and investment fund shares are the largest category of Canadian household financial wealth (39%) followed by life insurance and pensions (38%) and bank deposits (about 20%). Not surprisingly, mortgage loans to households account for about 65% of Canadian household financial liabilities (or borrowings). Consumer credit is the second largest category of financial liabilities (representing about 29% of Canadian household borrowing.

CONCEPT CHECK 1.1

Are the following assets real or financial?

a. Patents

b. Lease obligations

c. Customer goodwill

d. A university education

e. A $5 bill

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.

LO2 Financial Assets

It is common to distinguish among three broad types of financial assets: fixed income, equity, and derivatives. **Fixed-income securities** 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 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 Treasury bills, Bankers' Acceptances, and commercial paper. In contrast, the fixed-income *capital market* includes long-term securities such as Government of Canada bonds, as well as bonds issued by federal agencies, provinces, municipalities, and corporations. These bonds range from very safe in terms of default risk (e.g., securities issued by the federal government) to relatively risky (e.g., 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 IV.

Unlike debt securities, common stock, or **equity**, in a firm represents an ownership share in the corporation. Equity holders are not promised any particular payment. They receive any dividends the firm may pay and have pro-rated 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 V.

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 Suncor Energy stock might turn out to be worthless if Suncor's share price remains below a threshold or *exercise* price, such as $40 a share, but it can be quite valuable if the stock price rises above that level.[2] Other important derivative securities are futures and swap contracts. We will examine these in Part VI.

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 multi-trillion-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 often transfer money back and forth between dollars and other currencies. In London alone, nearly $2 trillion U.S. dollars of currency is traded each day.

Investors also might invest directly in some real assets. For example, dozens of commodities are traded on exchanges such as the Montréal Exchange, 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.

LO3 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

[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 Suncor Energy remains below $40 a share, the right to buy for $40 will turn out to be valueless. If the share price rises above $40 before the option expires, however, the option can be exercised to obtain the share for only $40.