Ross Westerfield Jaffe Roberts

SEVENTH EDITION

CORPORATE FINANCE

SEVENTH CANADIAN EDITION

CORPORATE FINANCE

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PREFACE

The teaching and practice of corporate finance in Canada are more challenging and exciting than ever before. The last decade has seen fundamental changes in financial markets and financial instruments. In the early years of the twenty-first century, we still see announcements in the financial press about such matters as takeovers, junk bonds, financial restructuring, initial public offerings, bankruptcy, and derivatives. In addition, there is the new recognition of "real" options (Chapter 9), private equity and venture capital (Chapter 20), and the reappearing dividend (Chapter 19). The world's financial markets are more integrated than ever before. Both the theory and practice of corporate finance have been moving ahead with uncommon speed, and our teaching must keep pace.

These developments place new burdens on the teaching of corporate finance. On one hand, the changing world of finance makes it more difficult to keep materials up to date. On the other hand, the teacher must distinguish the permanent from the temporary and avoid the temptation to follow fads. Our solution to this problem is to emphasize the modern fundamentals of the theory of finance and make the theory come to life with contemporary examples. All too often, the beginning student views corporate finance as a collection of unrelated topics that are unified largely because they are bound together between the covers of one book. As in the previous editions, our aim is to present corporate finance as the working of a small number of integrated and powerful institutions.

This book has been written for the introductory courses in corporate finance at the MBA level and for the intermediate courses in many undergraduate programs. Some instructors will find our text appropriate for the introductory course at the undergraduate level as well.

We assume that most students either will have taken, or will be concurrently enrolled in, courses in accounting, statistics, and economics. This exposure will help students understand some of the more difficult material. However, the book is self-contained, and a prior knowledge of these areas is not essential. The only mathematics prerequisite is basic algebra.

New to the Seventh Canadian Edition

- Discussions of the 2007–2009 credit crisis and its impact on the world of business have been added where appropriate throughout the text.
- Minicases have been reviewed and replaced to ensure that each has a business decision focus.
- Numerical examples and problems have been added that integrate capital cost allowance tax shields with the equivalent annual net present value.
- Tables, figures, and examples have been updated throughout the text.
- Recent Canadian examples have been added.
- Financial statements and text discussions (tax, leases, and business combinations, among others) have been updated to comply with the newly adopted IFRS accounting standards.
- End-of-chapter material has been substantially updated and refreshed.
- The discussion of corporate social responsibility, taxation of income trusts, and *Sarbanes-Oxley* in Chapter 1 has been updated.
- New discussion on firm valuation has been added in Chapter 6.
- Capital market data has been updated through 2013 in Chapter 10.
- The discussion on behavioural finance has been expanded in Chapter 14.

- A new discussion of research results on initial public offerings has been added in Chapter 20.
- A new discussion of contingent value rights has been added in Chapter 23.
- The discussion of executive compensation since the onset of the financial crisis has been updated in Chapter 24.
- A new discussion on the movement to exchange-traded swaps has been added in Chapter 26.

Pedagogy

Keeping the theory and concepts current is only one phase of developing our corporate finance text. To be an effective teaching tool, the text must present the theory and concepts in a coherent way that can be easily learned. With this in mind, we have included several study features.

Executive Summary

Each chapter begins with a roadmap that describes the objectives of the chapter and how it connects with concepts already learned in previous chapters. Real company examples that will be discussed are highlighted in this section.

EXECUTIVE SUMMARY

We now examine one of the most important concepts in all of corporate finance: the relationship between $1 today and $1 in the future. Consider the following example. A firm is contemplating investing $1 million in a project that is expected to pay out $200,000 per year for nine years. Should the firm accept the project? One might say yes at first glance, since the total inflows of $1.8 million (= $200,000 × 9) are greater than the $1 million outflow. However, the $1 million is paid out *immediately,* whereas the $200,000 per year is received in the future. Also, the immediate payment is known with certainty, whereas the later inflows can only be estimated. Thus, we need to know the relationship between a dollar today and a (possibly uncertain) dollar in the future before deciding on the project.

This relationship is called the *time value of money* concept. It is important in such areas as capital budgeting, lease-versus-buy decisions, accounts receivable analysis, financing arrangements, mergers, and pension funding.

The basics are presented in this chapter. We begin by discussing two fundamental concepts: future value and present value. Next, we treat simplifying formulas such as perpetuities and annuities.

In Their Own Words Boxes

Located throughout the chapters, this unique series consists of articles written by distinguished scholars or practitioners on key topics.

IN THEIR OWN WORDS

Robert C. Higgins on Sustainable Growth

Most financial officers know intuitively that it takes money to make money. Rapid sales growth requires increased assets in the form of accounts receivable, inventory, and fixed plant, which, in turn, require money to pay for assets. They also know that if their company does not have the money when needed, it can literally "grow broke." The sustainable growth equation states these intuitive truths explicitly.

Sustainable growth is often used by bankers and other external analysts to assess a company's creditworthiness. They are aided in this exercise by several sophisticated computer software packages that provide detailed analyses of the company's past financial performance, including its annual sustainable growth rate.

Bankers use this information in several ways. Quick comparison of a company's actual growth rate to its sustainable rate tells the banker what issues will be management's problem will be what to do with all the cash that keeps piling up in the till.

Bankers also find the sustainable growth equation useful for explaining to financially inexperienced small business owners and overly optimistic entrepreneurs that, for the long-run viability of their business, it is necessary to keep growth and profitability in proper balance.

Finally, comparison of actual to sustainable growth rates helps a banker understand why a loan applicant needs money and for how long the need might continue. In one instance, a loan applicant requested $100,000 to pay off several insistent suppliers and promised to repay in a few months when he collected some accounts receivable that were coming due. A sustainable growth analysis revealed that the firm had been growing at four to six times its sus-

Concept Questions

Included after each major section in a chapter, Concept Questions point to essential material and allow students to test their recall and comprehension before moving forward.

Figures and Tables

This text makes extensive use of real data and presents them in various figures and tables. Explanations in the narrative, examples, and end-of-chapter problems will refer to many of these exhibits.

Examples

Separate called-out examples are integrated throughout the chapters. Each example illustrates an intuitive or mathematical application in a step-by-step format. There is enough detail in the explanations that students don't have to look elsewhere for additional information.

EXAMPLE 3.1

The Computerfield Corporation's 2015 financial statements are as follows:

Statement of Comprehensive Income 2015	
Sales	$1,000
Costs	800
Net income	$ 200

Statement of Financial Position Year-End 2015			
Assets	$500	Debt	$250
		Equity	250
Total	$500	Total	$500

In 2015, Computerfield's profit margin is 20 percent, and it has never paid a dividend Its debt-to equity ratio is 1 This is also the firm's *target* debt to-equity ratio. Unless otherwise stated, the financial planners at Computerfield assume that all variables are tied directly to sales and that current relationships are optimal.

Equations

Key equations are numbered and highlighted for easy reference.

Highlighted Concepts

Throughout the text, important ideas are pulled out and presented in a box—signalling to students that this material is particularly relevant and critical to their understanding.

A Comparison of Partnerships and Corporations

	Corporation	Partnership
Liquidity and marketability	Common stock can be listed on a stock exchange.	Units are subject to substantial restrictions on transferability. There is no established trading market for partnership units.
Voting rights	Usually each share of common stock entitles each holder to one vote per share on matters requiring a vote and on the election of the directors. Directors determine top management.	Limited partners have some voting rights. However, general partners have exclusive control and management of operations.
Taxation	Corporate income is taxable. Dividends to shareholders are also taxable with partial integration through use of the dividend tax credit.	Partnership income is taxable.
Reinvestment and	Corporations have broad latitude on dividend	Partnerships are generally prohibited from

End-of-Chapter Material

The end-of-chapter material reflects and builds upon the concepts learned in the chapter.

Summary and Conclusions

The numbered summary provides a quick review of key concepts in the chapter.

3.5

SUMMARY AND CONCLUSIONS

Financial planning forces the firm to think about and forecast the future. It involves the following:

1. Building a corporate financial model.
2. Describing different scenarios of future development from worst to best cases.
3. Using the models to construct pro forma financial statements.
4. Running the model under different scenarios (conducting sensitivity analysis).
5. Examining the financial implications of ultimate strategic plans.

Corporate financial planning should not become a purely mechanical activity. If it does, it will probably focus on the wrong things. In particular, plans are formulated all too often in terms of a growth target with an explicit linkage to creation of value. We talk about a particular financial planning model called sustainable growth and provide a useful summary of formulas used in this chapter in Table 3.6. Although the financial planning model presented is simple, needless to say, it is an important concept to grasp.

List of Key Terms

A list of the boldfaced key terms in the text with page numbers is included for easy reference.

Questions and Problems

Because solving problems is so critical to a student's learning, new questions and problems have been added and existing questions and problems have been revised. All problems have also been thoroughly reviewed and checked for accuracy. Problems have been grouped according to the concepts they test, with the concept headings listed at the beginning of each group.

Additionally, we have tried to make the problems in the critical "concept" chapters, such as those on value, risk, and capital structure, especially challenging and interesting. We provide answers to selected problems in Appendix B, available on Connect.

Microsoft Excel Problems

Indicated by the Microsoft Excel icon in the margin, these Microsoft Excel problems can be found at the end of almost all chapters. Located on Connect, Microsoft Excel templates have been created for each of these problems, where students can use the data in the problem to work out the solution using Microsoft Excel skills.

Minicase

These Minicases, located in most chapters, apply what is learned in a number of chapters to a real-world scenario. After presenting the facts, the case gives students guidance in rationalizing a sound business decision.

Online Technology

McGraw-Hill Connect™ is a web-based assignment and assessment platform that gives students the means to better connect with their coursework, with their instructors, and with the important concepts that they will need to know for success now and in the future.

With **Connect**, instructors can deliver assignments, quizzes, and tests online. Nearly all the questions from the text are presented in an autogradeable format and tied to the text's learning objectives. Instructors can edit existing questions and author entirely new problems, track individual student performance—by question or assignment or in relation to the class overall—with detailed grade reports, and integrate grade reports easily with Learning Management Systems (LMS). **Connect** houses all the instructor support materials for instructors, including the following:

- **Solutions Manual.** Prepared by **Pan Zhang**, from NAIT, and **Larbi Hammami**, from McGill University. Includes complete solutions for all end-of-chapter problems and appendix problems, calculator solutions, and suggested solutions for all Minicase and case material.
- **Instructor's Manual.** Prepared by **Larbi Hammami**, from McGill University. Part I of the Instructor's Manual contains, by chapter, a brief chapter outline, an introduction, and an annotated outline. This outline provides additional explanations, examples, and teaching tips. Part II consists of answers to all Concept Questions. Part III consists of solutions for all end-of-chapter problems and has been thoroughly reviewed for accuracy.
- **Microsoft PowerPoint Presentations.** Prepared by **Ingrid McLeod-Dick**, from York University. These slides contain useful outlines, summaries, and exhibits from the text.
- **Computerized Test Bank.** Prepared by **Sujata Madan**, from McGill University. The Test Bank contains multiple-choice questions, problems, and essay questions. The computerized test bank is available through EZ Test Online, a flexible and easy-to-use electronic testing program that allows instructors to create tests from book-specific items. EZ Test accommodates a wide range of question types and allows instructors to add their own questions. Test items are also available in Microsoft Word (rich text) format. For secure online testing, exams created in EZ Test can be exported to WebCT and Blackboard. EZ Test Online is supported at http://www.mhhe.com/eztest, where users can download a Quick Start Guide, access FAQs, or log a ticket for help with specific issues.
- **Microsoft Excel Templates (with solutions).** Prepared by **Ian Rakita**, from Concordia University. Microsoft Excel templates and solutions are included for the end-of-chapter problems with a Microsoft Excel icon in the margin.

By choosing **Connect**, instructors are providing their students with a powerful tool for improving academic performance and truly mastering course material. **Connect** allows students to practise important skills at their own pace and on their own schedule. Importantly, students' assessment results and instructors' feedback are all saved online—so students can review their progress and plot their course to success.

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Acknowledgments

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Kenneth Liu, recent Schulich BBA graduate, deserves special mention for his role in producing the Seventh Canadian Edition. He capably researched updates, drafted revisions, and responded to editorial queries; his excellent input was essential to this edition.

Much credit must go to a first-class group of people at McGraw-Hill Ryerson who worked on the Seventh Canadian Edition. Leading the team were Kimberley Veevers, Senior Product Manager, and Erin Catto, Product Developer. Copy editing and proofreading of the manuscript were handled ably by Julia Cochrane, with the in-house supervision of Joanne Limebeer.

Through the development of this edition, we have taken great care to discover and eliminate errors. Our goal is to provide the best Canadian textbook available on this subject. Please write and tell us how to make this a better text. Forward your comments to:

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PREFACE

The teaching and practice of corporate finance in Canada are more challenging and exciting than ever before. The last decade has seen fundamental changes in financial markets and financial instruments. In the early years of the twenty-first century, we still see announcements in the financial press about such matters as takeovers, junk bonds, financial restructuring, initial public offerings, bankruptcy, and derivatives. In addition, there is the new recognition of "real" options (Chapter 9), private equity and venture capital (Chapter 20), and the reappearing dividend (Chapter 19). The world's financial markets are more integrated than ever before. Both the theory and practice of corporate finance have been moving ahead with uncommon speed, and our teaching must keep pace.

These developments place new burdens on the teaching of corporate finance. On one hand, the changing world of finance makes it more difficult to keep materials up to date. On the other hand, the teacher must distinguish the permanent from the temporary and avoid the temptation to follow fads. Our solution to this problem is to emphasize the modern fundamentals of the theory of finance and make the theory come to life with contemporary examples. All too often, the beginning student views corporate finance as a collection of unrelated topics that are unified largely because they are bound together between the covers of one book. As in the previous editions, our aim is to present corporate finance as the working of a small number of integrated and powerful institutions.

This book has been written for the introductory courses in corporate finance at the MBA level and for the intermediate courses in many undergraduate programs. Some instructors will find our text appropriate for the introductory course at the undergraduate level as well.

We assume that most students either will have taken, or will be concurrently enrolled in, courses in accounting, statistics, and economics. This exposure will help students understand some of the more difficult material. However, the book is self-contained, and a prior knowledge of these areas is not essential. The only mathematics prerequisite is basic algebra.

New to the Seventh Canadian Edition

- Discussions of the 2007–2009 credit crisis and its impact on the world of business have been added where appropriate throughout the text.
- Minicases have been reviewed and replaced to ensure that each has a business decision focus.
- Numerical examples and problems have been added that integrate capital cost allowance tax shields with the equivalent annual net present value.
- Tables, figures, and examples have been updated throughout the text.
- Recent Canadian examples have been added.
- Financial statements and text discussions (tax, leases, and business combinations, among others) have been updated to comply with the newly adopted IFRS accounting standards.
- End-of-chapter material has been substantially updated and refreshed.
- The discussion of corporate social responsibility, taxation of income trusts, and *Sarbanes-Oxley* in Chapter 1 has been updated.
- New discussion on firm valuation has been added in Chapter 6.
- Capital market data has been updated through 2013 in Chapter 10.
- The discussion on behavioural finance has been expanded in Chapter 14.

- A new discussion of research results on initial public offerings has been added in Chapter 20.
- A new discussion of contingent value rights has been added in Chapter 23.
- The discussion of executive compensation since the onset of the financial crisis has been updated in Chapter 24.
- A new discussion on the movement to exchange-traded swaps has been added in Chapter 26.

Pedagogy

Keeping the theory and concepts current is only one phase of developing our corporate finance text. To be an effective teaching tool, the text must present the theory and concepts in a coherent way that can be easily learned. With this in mind, we have included several study features.

Executive Summary

Each chapter begins with a roadmap that describes the objectives of the chapter and how it connects with concepts already learned in previous chapters. Real company examples that will be discussed are highlighted in this section.

EXECUTIVE SUMMARY

We now examine one of the most important concepts in all of corporate finance: the relationship between $1 today and $1 in the future. Consider the following example. A firm is contemplating investing $1 million in a project that is expected to pay out $200,000 per year for nine years. Should the firm accept the project? One might say yes at first glance, since the total inflows of $1.8 million (= $200,000 × 9) are greater than the $1 million outflow. However, the $1 million is paid out *immediately,* whereas the $200,000 per year is received in the future. Also, the immediate payment is known with certainty, whereas the later inflows can only be estimated. Thus, we need to know the relationship between a dollar today and a (possibly uncertain) dollar in the future before deciding on the project.

This relationship is called the *time value of money* concept. It is important in such areas as capital budgeting, lease-versus-buy decisions, accounts receivable analysis, financing arrangements, mergers, and pension funding.

The basics are presented in this chapter. We begin by discussing two fundamental concepts: future value and present value. Next, we treat simplifying formulas such as perpetuities and annuities.

In Their Own Words Boxes

Located throughout the chapters, this unique series consists of articles written by distinguished scholars or practitioners on key topics.

IN THEIR OWN WORDS

Robert C. Higgins on Sustainable Growth

Most financial officers know intuitively that it takes money to make money. Rapid sales growth requires increased assets in the form of accounts receivable, inventory, and fixed plant, which, in turn, require money to pay for assets. They also know that if their company does not have the money when needed, it can literally "grow broke." The sustainable growth equation states these intuitive truths explicitly.

Sustainable growth is often used by bankers and other external analysts to assess a company's creditworthiness. They are aided in this exercise by several sophisticated computer software packages that provide detailed analyses of the company's past financial performance, including its annual sustainable growth rate.

Bankers use this information in several ways. Quick comparison of a company's actual growth rate to its sustainable rate tells the banker what issues will be management's problem will be what to do with all the cash that keeps piling up in the till.

Bankers also find the sustainable growth equation useful for explaining to financially inexperienced small business owners and overly optimistic entrepreneurs that, for the long-run viability of their business, it is necessary to keep growth and profitability in proper balance.

Finally, comparison of actual to sustainable growth rates helps a banker understand why a loan applicant needs money and for how long the need might continue. In one instance, a loan applicant requested $100,000 to pay off several insistent suppliers and promised to repay in a few months when he collected some accounts receivable that were coming due. A sustainable growth analysis revealed that the firm had been growing at four to six times its sus-

Concept Questions

Included after each major section in a chapter, Concept Questions point to essential material and allow students to test their recall and comprehension before moving forward.

Figures and Tables

This text makes extensive use of real data and presents them in various figures and tables. Explanations in the narrative, examples, and end-of-chapter problems will refer to many of these exhibits.

Examples

Separate called-out examples are integrated throughout the chapters. Each example illustrates an intuitive or mathematical application in a step-by-step format. There is enough detail in the explanations that students don't have to look elsewhere for additional information.

EXAMPLE 3.1

The Computerfield Corporation's 2015 financial statements are as follows:

Statement of Comprehensive Income 2015	
Sales	$1,000
Costs	800
Net income	$ 200

Statement of Financial Position Year-End 2015			
Assets	$500	Debt	$250
		Equity	250
Total	$500	Total	$500

In 2015, Computerfield's profit margin is 20 percent, and it has never paid a dividend Its debt-to equity ratio is 1 This is also the firm's *target* debt to-equity ratio. Unless otherwise stated, the financial planners at Computerfield assume that all variables are tied directly to sales and that current relationships are optimal.

Equations

Key equations are numbered and highlighted for easy reference.

Highlighted Concepts

Throughout the text, important ideas are pulled out and presented in a box—signalling to students that this material is particularly relevant and critical to their understanding.

A Comparison of Partnerships and Corporations

	Corporation	Partnership
Liquidity and marketability	Common stock can be listed on a stock exchange.	Units are subject to substantial restrictions on transferability. There is no established trading market for partnership units.
Voting rights	Usually each share of common stock entitles each holder to one vote per share on matters requiring a vote and on the election of the directors. Directors determine top management.	Limited partners have some voting rights. However, general partners have exclusive control and management of operations.
Taxation	Corporate income is taxable. Dividends to shareholders are also taxable with partial integration through use of the dividend tax credit.	Partnership income is taxable.
Reinvestment and	Corporations have broad latitude on dividend	Partnerships are generally prohibited from

End-of-Chapter Material

The end-of-chapter material reflects and builds upon the concepts learned in the chapter.

Summary and Conclusions

The numbered summary provides a quick review of key concepts in the chapter.

3.5

SUMMARY AND CONCLUSIONS

Financial planning forces the firm to think about and forecast the future. It involves the following:

1. Building a corporate financial model.
2. Describing different scenarios of future development from worst to best cases.
3. Using the models to construct pro forma financial statements.
4. Running the model under different scenarios (conducting sensitivity analysis).
5. Examining the financial implications of ultimate strategic plans.

Corporate financial planning should not become a purely mechanical activity. If it does, it will probably focus on the wrong things. In particular, plans are formulated all too often in terms of a growth target with an explicit linkage to creation of value. We talk about a particular financial planning model called sustainable growth and provide a useful summary of formulas used in this chapter in Table 3.6. Although the financial planning model presented is simple, needless to say, it is an important concept to grasp.

List of Key Terms

A list of the boldfaced key terms in the text with page numbers is included for easy reference.

Questions and Problems

Because solving problems is so critical to a student's learning, new questions and problems have been added and existing questions and problems have been revised. All problems have also been thoroughly reviewed and checked for accuracy. Problems have been grouped according to the concepts they test, with the concept headings listed at the beginning of each group.

Additionally, we have tried to make the problems in the critical "concept" chapters, such as those on value, risk, and capital structure, especially challenging and interesting. We provide answers to selected problems in Appendix B, available on Connect.

Microsoft Excel Problems

Indicated by the Microsoft Excel icon in the margin, these Microsoft Excel problems can be found at the end of almost all chapters. Located on Connect, Microsoft Excel templates have been created for each of these problems, where students can use the data in the problem to work out the solution using Microsoft Excel skills.

Minicase

These Minicases, located in most chapters, apply what is learned in a number of chapters to a real-world scenario. After presenting the facts, the case gives students guidance in rationalizing a sound business decision.

Online Technology

McGraw-Hill Connect™ is a web-based assignment and assessment platform that gives students the means to better connect with their coursework, with their instructors, and with the important concepts that they will need to know for success now and in the future.

With **Connect**, instructors can deliver assignments, quizzes, and tests online. Nearly all the questions from the text are presented in an autogradeable format and tied to the text's learning objectives. Instructors can edit existing questions and author entirely new problems, track individual student performance—by question or assignment or in relation to the class overall—with detailed grade reports, and integrate grade reports easily with Learning Management Systems (LMS). **Connect** houses all the instructor support materials for instructors, including the following:

- **Solutions Manual**. Prepared by **Pan Zhang**, from NAIT, and **Larbi Hammami**, from McGill University. Includes complete solutions for all end-of-chapter problems and appendix problems, calculator solutions, and suggested solutions for all Minicase and case material.
- **Instructor's Manual.** Prepared by **Larbi Hammami**, from McGill University. Part I of the Instructor's Manual contains, by chapter, a brief chapter outline, an introduction, and an annotated outline. This outline provides additional explanations, examples, and teaching tips. Part II consists of answers to all Concept Questions. Part III consists of solutions for all end-of-chapter problems and has been thoroughly reviewed for accuracy.
- **Microsoft PowerPoint Presentations.** Prepared by **Ingrid McLeod-Dick**, from York University. These slides contain useful outlines, summaries, and exhibits from the text.
- **Computerized Test Bank.** Prepared by **Sujata Madan**, from McGill University. The Test Bank contains multiple-choice questions, problems, and essay questions. The computerized test bank is available through EZ Test Online, a flexible and easy-to-use electronic testing program that allows instructors to create tests from book-specific items. EZ Test accommodates a wide range of question types and allows instructors to add their own questions. Test items are also available in Microsoft Word (rich text) format. For secure online testing, exams created in EZ Test can be exported to WebCT and Blackboard. EZ Test Online is supported at http://www.mhhe.com/eztest, where users can download a Quick Start Guide, access FAQs, or log a ticket for help with specific issues.
- **Microsoft Excel Templates (with solutions).** Prepared by **Ian Rakita**, from Concordia University. Microsoft Excel templates and solutions are included for the end-of-chapter problems with a Microsoft Excel icon in the margin.

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