

# FINANCIAL FUTURES MARKETS



Concepts, Evidence, and Applications

ROBERT T. DAIGLER

# FINANCIAL FUTURES MARKETS

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CONCEPTS, EVIDENCE,  
AND APPLICATIONS

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**FINANCIAL FUTURES MARKETS: CONCEPTS, EVIDENCE, AND APPLICATIONS**

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*To my family and friends  
Since it is the good times that make life worth living*

*In particular I dedicate this book to:*

*My wife Joyce, who makes life's burdens less troublesome  
My daughters Wendy and Shaina, I could not ask for any better  
My parents, Raymond and Josephine, for without their encouragement  
and understanding I would never have earned my Ph.D.  
My caring sister Carol  
To my special friends: Amy, Bob, Cynthia, and Jerry and Norma, among others  
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# PREFACE

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Today's financial manager must be able to use all of the tools available to control a company's exposure to financial risk. Futures contracts are one type of risk management tool. But students must understand that these contracts will not solve a company's profit and marketing problems. Moreover, there are trade-offs: to obtain a lower risk associated with hedging, one must forego potentially higher returns. Also, futures markets will not turn every speculator into a millionaire.

And so this textbook focuses on understanding how to use the financial futures and related cash and debt markets to achieve various financial risk management goals. A blending of the academic and business worlds, the book has two key objectives:

- To cover the concepts, empirical evidence, and essential equations that students as well as practitioners need to know in order to appreciate the techniques and applications of hedging, pricing, and arbitrage.
- To show clearly how to use futures markets to adjust the risk and return characteristics of a portfolio.

Throughout, the text stresses hedging techniques, hedging applications, and the pricing of futures contracts. It also examines the debt markets so that readers can understand their relationship to interest rate futures contracts and hedging concepts.

The book's organization is by topic rather than by type of contract. This structure emphasizes the *uses* of futures markets—the quotations and characteristics of all futures contracts, pricing and arbitrage, hedging, and market efficiency—to eliminate the repetitious description typically found in texts that cover interest rate futures, stock index futures, and other contracts separately. However, anyone who wants to start with, for example, stock index futures, can simply combine the related terminology and examples of stock index futures found in Chapters 2, “Quotations and Characteristics of Futures and Cash Instruments,” and Chapter 3, “Concepts and Strategies for Futures Markets,” with Chapter 6, “Stock Index Futures Pricing and Arbitrage.” Similarly, one could focus on pricing by emphasizing Part II of the book. It is hoped that this flexibility will add to the usefulness of the material.

Not only do the chapters stand alone, but advanced material is placed into appendixes so that instructors can customize the contents and the level of rigor to match course objectives and student ability. As a flexible learning tool with strong pedagogy, it can serve as a core text in the typical senior- and graduate-level derivative

markets course with at least one basic finance course as a prerequisite. Both undergraduate and graduate courses in futures markets would probably cover most of the chapters, but the graduate level should also include more of the appendices.

The text also works well as a complement to any options textbook for courses on options and futures, as a supplement to investments and financial markets and institutions texts, or as a complete on-the-job reference to futures markets. For example, a course on options and futures markets might include the *essential chapters* (Chapter 2, “Quotations and Characteristics of Futures and Cash Instruments”; Chapter 3, “Concepts and Strategies for Futures Markets”; Chapter 5, “The Basics of Futures Pricing and Arbitrage”; Chapter 10, “Hedging Concepts”; and Chapter 11, “The Naïve and Portfolio/Regression Hedging Techniques”) in addition to *selected chapters* chosen to illustrate key concepts (Chapter 6, “Stock Index Futures Pricing and Arbitrage”; Chapter 8, “T-Bond Futures Pricing and Arbitrage”; Chapter 12, “Duration and Immunization”; and Chapter 14, “Futures and Portfolio Management”).

## FEATURES

- Even the most difficult or technical material—such as the pricing of interest rate futures, the pricing of stock index futures, and hedging techniques—is accessible to students of all abilities so that instructors can cover what they might otherwise skip or dilute due to level of difficulty.
- Current coverage of market microstructure, the “pits,” speculation, duration, and immunization gives readers a competitive edge in futures markets by providing breadth and depth of up-to-date information not found in depth in competing texts. For example, the text devotes separate chapters to the following topics: Chapter 4 deals with intraday pricing and the operation of the “pits.” Chapter 5 covers the basics of futures pricing and arbitrage concepts including appendixes on spreads and strips, the theoretical factors affecting the futures/forward differential, pricing currency futures contracts, and developing the arbitrage, forward rate, and implied financing rate equations. Chapters 6, 8, and 9 cover pricing of specified contracts. Chapter 15 goes through the applications of futures to financial institutions. Chapter 16 looks at efficient markets, futures price behavior, and trading models. The text also provides appendixes that cover the derivation of the minimum variance hedge ratio, hedge ratio instability, risk-return hedging models, the assumptions of duration and immunization, and the difficulties with and some solutions to the duration hedge model.
- Unique overview and terminology sections at the *beginning* of each chapter, and bulleted lists throughout, serve as a quick reference and review.
- “Focus” boxes with excerpts from relevant articles from popular financial presses—such as “Scam Artists and Boiler Room Operations,” “Job Opportunities in Futures Markets,” and “Publications on Futures”—generate student attention and move from the text into the real world for greater insight and information.
- Numerous graphs, examples, exhibits, and notes clarify, illustrate, expand upon, and review all key points.
- End-of-chapter exercises are consistent with in-text examples so that students can refer closely to the text as they complete assignments.
- Empirical evidence shows that the concepts are relevant to real-world experience.

## **ORGANIZATION OF THE BOOK**

To use the financial futures markets properly, one must understand many aspects of them, notably the mechanics of these markets, the underlying cash markets, and the various relevant techniques and strategies. Gaining the ability to use the markets requires mastering the topics and interrelationships presented in this book.

Part I provides an overview of the futures and related cash markets, shows the characteristics and quotation procedures for futures and cash markets, discusses the key concepts and terminology for these markets, and shows how trading occurs in the exchange “pits.” Understanding these topics is essential for a participant in the futures markets.

Part II discusses the pricing of futures contracts and debt instruments, as well as arbitrage between futures and cash markets. After examining the basic issues relating to pricing and arbitrage in Chapter 5, specific determinants of the pricing of stock index and debt financial futures contracts are examined in individual chapters. Pricing issues are critical because the risk involved in various futures strategies is affected by the relationship between the futures contract characteristics and the cash instrument traded. We also cover the cash debt markets, since an understanding of the cash instrument is essential in implementing futures strategies effectively. Arbitrage exists when risk-free profits can be obtained. The concepts of arbitrage, various arbitrage strategies, and the empirical evidence on the ability of traders to obtain risk-free profits on a consistent basis are examined for financial futures contracts.

Part III covers hedging concepts and techniques. The hedging techniques covered include naive procedures, the portfolio/regression method, and duration. These techniques provide procedures to minimize risk with futures and show how to use “immunization” in the cash debt markets. Various techniques are available that help minimize risk. Hedging is the most widespread technique, providing a low-cost, effective means to reduce the risk of a position substantially.

Part IV both illustrates applications of hedging to achieve risk-management goals and shows how efficient market concepts apply to futures markets. Portfolio managers use various strategies involving futures markets, including duration and portfolio insurance, to reduce the risk of price declines. Financial institutions employ financial futures to manage the risk between assets and liabilities. Individuals use futures as a speculative instrument by using the leverage inherent in the futures contract. Speculation and price behavior are examined through technical analysis, mechanical trading models, and studies on the efficiency of the markets.

## **AVAILABLE SUPPLEMENTS**

The Guidebook provides the instructor with information on how to organize the course, observations on the significance and importance of each chapter, supplemental material, additional problems, and answers to the problems. In addition, a complete bibliography is available to those who adopt the book for classroom use. The bibliography is an integrated version of the bibliographies that appear in *The Journal of Futures Markets*. Every article that relates to futures and futures options is segregated into the type of market and into subheadings according to topic area. For more information

about the bibliography, readers should contact the author at Florida International University, Department of Finance, College of Business Administration, University Park, Miami, Florida 33199.

## ACKNOWLEDGMENTS

Many individuals have helped improve the quality, readability, and completeness of this textbook. Reviewers of this book noted important areas for improvement and clarification. Students in my undergraduate and graduate classes in futures markets politely pointed out confusing passages and helped to clarify the end-of-chapter problems and answers. Officials at the exchanges and financial institutions graciously provided information and ideas concerning the markets that helped to make this book more relevant to the users. Finally, my experiences at the Graduate School of Business at Stanford allowed me to clarify issues related to futures markets and find how models are employed on Wall Street. The gracious hospitality provided by the faculty at Stanford is appreciated and will remain a fond memory. I thank all these individuals, but I alone am responsible for any mistakes that may be contained here.

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At HarperCollins Suzy Spivey signed this book as the finance editor: Her enthusiasm for this project and her efforts to make me happy with HarperCollins are much



appreciated. Soon thereafter, Kirsten Sandberg became the finance editor: She had the difficult job of putting the project together and making sure everything worked correctly. Rebecca Kohn, my development editor, was patient in answering all my questions and telling me how to work with conflicting opinions on what changes to make in the book. And the project editor, Ellen MacElree, always seemed to be calm, even when I was not, and made sure everything was completed on time.

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Robert T. Daigler

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