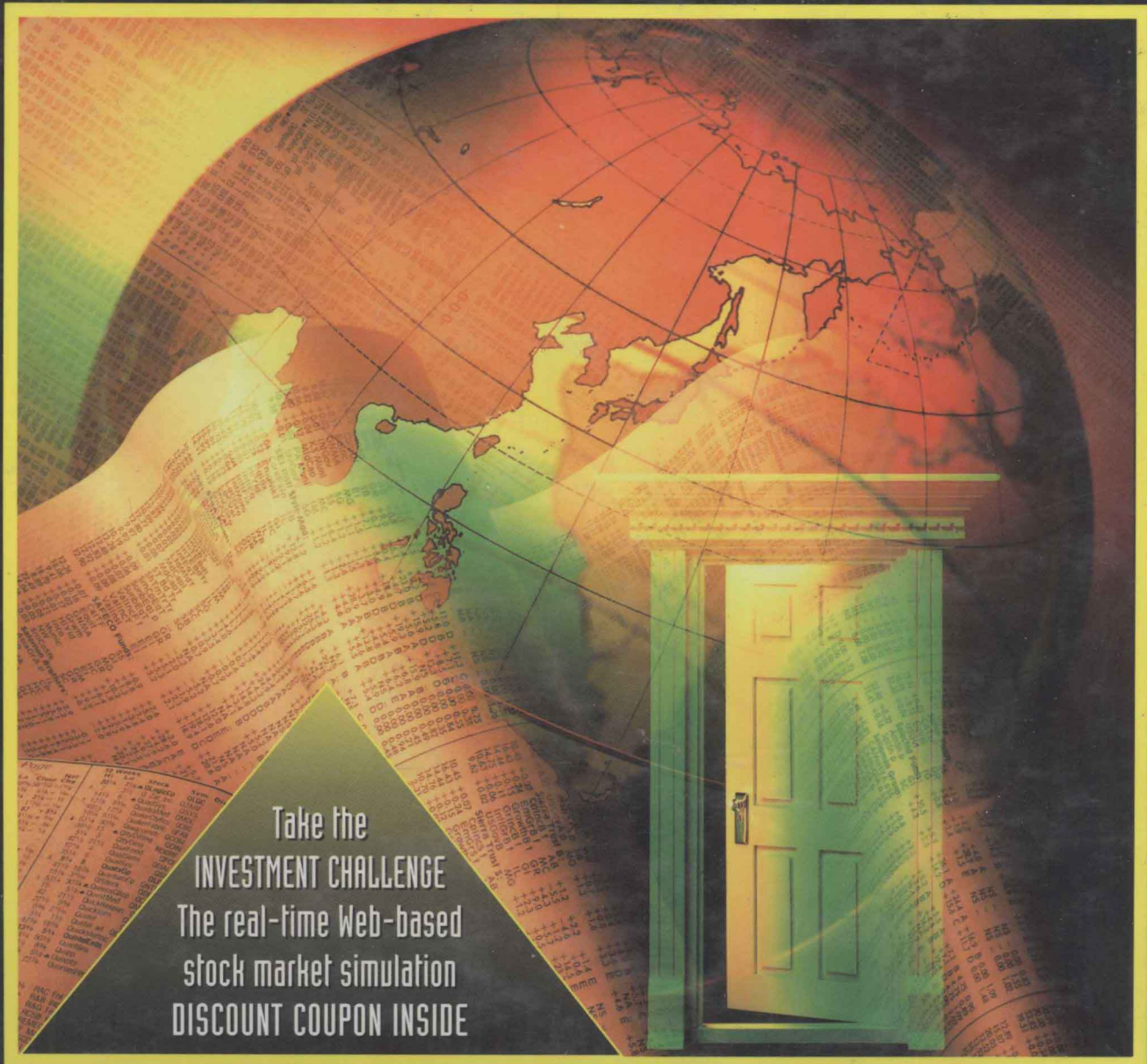


INVESTMENTS



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WILLIAM F. SHARPE
GORDON J. ALEXANDER
JEFFERY V. BAILEY

S I X T H E D I T I O N

INVESTMENTS

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STANFORD UNIVERSITY

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To Kathy
WFS

To my mother and in memory
of my father
GJA

In memory of Sudhaker Rao Aiyagari,
a brilliant economist and a good friend
JVB

Investment management once seemed a simple process. Well-heeled investors would hold portfolios composed, for the most part, of stocks and bonds of blue chip U. S. industrial companies, as well as U.S. Treasury bonds, notes, and bills. The choices available to less well-off investors were much more limited, confined primarily to passbook savings accounts and U.S. Savings Bonds. If the investment environment can be thought of as an ice cream parlor, then the customers of past decades were offered only chocolate and vanilla.

Mirroring the diversity of modern society, the investment ice cream parlor now makes available a myriad of flavors to the investing public. Investors face a dizzying array of choices. The stocks and bonds of large U.S.-based companies and the debt securities of the U.S. Treasury remain the predominant favorites. However, to mention only a few additional choices, investors can now own the stocks of small U.S.-based companies, the stocks and bonds of companies headquartered from London to Auckland, high-yield bonds, collateralized mortgage obligations, floating rate notes, swaps, puts, calls, and futures contracts. The list is seemingly endless, and it continues to grow. Furthermore, the ability to purchase these securities has become both less expensive and more convenient with the advent of advanced communications and computer networks, along with the proliferating market for mutual funds that has developed to serve large and small investors alike.

The difficulty of writing a textbook on investing has increased as the investment environment has become more complex. Virtually all types of securities, be they traditional or of recent origin, merit at least some discussion. The challenge to us as textbook writers, therefore, is daunting. We must enumerate and describe the various securities and markets in a clear and concise manner that accurately blends theory and practice. However, with the rapid evolution that the investment industry is undergoing, we must also present a discussion of new investment management techniques. Preventing the textbook from reaching encyclopedic proportions thus becomes a difficult project in itself.

The subject matter for this edition of *Investments* has evolved considerably since 1978 when the first edition was published. For example, in the last several years international investing has expanded rapidly, securities such as swaps and mortgage derivatives have become increasingly popular, and investors have placed much more emphasis on investment styles. Our task has been to keep *Investments* fresh and stimulating and to continue to offer students and instructors the most thorough survey of the investment environment available. We believe that we have accomplished these objectives and hope that you agree.

We designed *Investments*, Sixth Edition for advanced undergraduate and graduate students. In doing so, we assumed that such students would have been exposed to basic economics, accounting, statistics, and algebra. Furthermore, it is our belief that serious students of investments should receive a balanced presentation of theory and practical information without being burdened by excessive details. A textbook that focuses solely on institutional features leaves students unable to appreciate the subtle and important issues faced by investment professionals.

Some people will wonder how *Investments*, Sixth Edition compares with the textbook entitled *Fundamentals of Investments* that we have also written. Although both are intended to be comprehensive, they are dissimilar in three significant ways. First,

they are organized differently. *Investments* is written in an integrated fashion, whereas *Fundamentals* is more modular in design. Second, *Investments* is somewhat more theoretical and technical than *Fundamentals*. Third, *Investments* is more extensive in its coverage of material, whereas *Fundamentals* tends to be more concentrated.

As any textbook author will attest, a previous work can always be improved—even one that has been in existence as long as this one. Over the years we have received many helpful suggestions from instructors and reviewers regarding ways in which we can make *Investments* better. In each new edition we have tried to enhance the book's breadth and presentation style. In this, the sixth edition, we have made numerous improvements from the previous edition. Of particular note are:

- **Updated coverage of material.** Where appropriate, we have updated the text to keep students abreast of the latest developments in investments. More specifically, we have revised tables and graphs and added discussions in order to incorporate current information and recent academic research.
- **A new chapter on efficient markets.** We have added an entire chapter devoted to discussing the notion of market efficiency that underlies much of current investment thinking.
- **Statistical concepts appendix.** We have added to Chapter 6 an appendix that explains certain basic statistical concepts that are fundamental to understanding the quantitative side of investing.
- **Coverage of financial analysis expanded and revised.** The discussion of financial analysis has been notably expanded and now includes a real-life corporate example.
- **New “Institutional Issues.”** Students typically want to know how the concepts presented in the text are applied in the real world. In each chapter we have updated and in some cases added more of the Institutional Issues features that offer discussions concerning issues that face large institutional investors, such as pension funds and mutual funds.
- **Additional end-of-chapter problems and CFA examination questions.** These have been added to give students a better opportunity to learn the material and prepare for the CFA examinations.
- **Additional annotated references.** For those students who are interested in further study of subjects presented in the text, we have updated our extensive set of references organized by topic at the end of each chapter.

We are particularly proud of the “Institutional Issues” features in each chapter. Specifically written for *Investments*, they are designed to give students a sense of how various investment issues and techniques are applied by practitioners. For example, the Chapter 2 features discuss how institutional investors create market neutral portfolios utilizing short selling and introduces readers to hedge funds. One of the Chapter 23 features considers how pension funds go about structuring groups of money managers to achieve specific investment objectives while one of the Chapter 25 features describes the controversial issue of whether or not to hedge the currency risk of an international portfolio. Furthermore, Ann Guenther Sherman of the Hong Kong University of Science and Technology has written two “Institutional Issues” features that deal with investing in the People's Republic of China, which we view as the ultimate emerging market—particularly now that Hong Kong is part of the PRC. In summary, we believe that the “Institutional Issues” features will provide both interesting reading for the students and a stimulating source of classroom discussion material.

A new supplements package for the instructor has been designed for this edition of *Investments*. Many of these password protected supplements such as the **PowerPoint Lecture Presentations**, **Spreadsheet Solutions**, and **Transparency Masters** can

be downloaded easily from the Prentice Hall Finance Center web site: **www.prenhall.com/financecenter**. A password is available from your local Prentice Hall Representative. Included in the supplement package are:

- **The Instructor's Manual.** Written by the authors, it provides detailed solutions to all end-of-chapter problems as well as a set of course outlines designed to accommodate a variety of teaching approaches and course emphases.
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- **Prentice Hall Custom Test Manager.** This Windows-based computerized test program allows the instructor to edit, add, and delete questions to create their own classroom exams.
- **PowerPoint Lecture Presentations.** Prepared by Joseph Greco of California State University, Fullerton, these electronic transparencies give detailed outlines of each chapter and highlight examples from the text using graphs and tables.
- **Spreadsheet Solutions.** Excel spreadsheet solutions are provided for many of the quantitative end-of-chapter questions.
- **Transparency Masters.** Black and white of all the figures and tables in the text can also be downloaded from our Web site.

For the student:

- **Excel Worksheets.** Students can download these templates of Excel spreadsheets from www.prenhall.com/financecenter (no password required).

Many people have assisted us in preparing the sixth edition of this book, and we would like to acknowledge them as well as those who helped us with earlier editions. Specifically, we would like to thank Seth Anderson, Ted Aronson, Ann Bailey, Ed Baker, Michael Barclay, Kenneth S. Bartunek, Jeffrey Born, E. Taylor Claggett, James Conley, Thomas Eyssell, Joe Finnerty, Charlie Freund, Ping Hsiao, Terrence Jalbert, Robert Jennings, Lee Jones, Steven L. Jones, Douglas R. Kahi, Ed Keon, Robert Kleinman, Jaroslaw Komarynsky, Linda Kramer, Stephen Leroy, K.C. Ma, S. Maheswaren, Linda J. Martin, Carl McGowan, Ronald Melicher, John Nagorniak, Chee Ng, Tom Nohel, Thomas O'Brien, Martha Ortiz, James A. Overdahl, Lynne Pi, Maggie Queen, Sailesh Ramamurtie, Peter Robbins, Anthony Sanders, Frederick P. Schadler, Jandhyala L. Sharma, Arlene Spiegel, Len Washko, Tony Wilkins, Robert Wolf, Steve Wunsch, Fernando Zapatero, Emilio Zarruk, and Ken Zumwalt.

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We have learned much by writing this book and hope that you will learn much by reading it. Although we have done our best to eliminate errors from the book, experience tells us that perfection is unattainable. Thus we encourage those students and instructors with constructive comments to send them to us at either <wfs Sharpe@leland.stanford.edu>, <galexander@csom.umn.edu>, or <oldbail@winternet.com>.

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