Throughout the nineties, we have seen the synergistic union of mathematics, finance, the computer, and the global economy. Currency markets trade two trillion dollars per day, and sophisticated financial derivatives such as options, swaps, and quantos are commonplace.

Since the appearance of the Black-Scholes formula in 1973, the financial community has embraced an abundant and ever-expanding array of mathematical tools and models. Enrollment in courses presenting these applications of mathematical finance has exploded at schools everywhere. It is driven by the attraction of the material, coupled with enormous employment demand. We expect that the twenty-first century will see even greater growth in these areas, following Kurzweil’s law of accelerating returns. The practical analysis of a broad range of market transactions and activities has converted many market devotees to this mode of thinking.

This textbook explains the basic financial and mathematical concepts used in modeling and hedging. Each topic is introduced with the assumption that the reader has had little or no previous exposure to financial matters or to the activities that are common to major equity markets. Exercises and examples illustrate these topics. Often an exercise or example uses real market data.

To the Instructor

A complete, well-balanced course at the undergraduate level can be based on Chapters 2, 3, 5, 6, 7, 8, and 9. An instructor might touch only briefly on Chapter 1 as an introduction to the financial terminology and to strategies that are employed in trading equity shares. You might wish to return to Chapter 1 repeatedly as you progress through the textbook; the chapter is always there as a convenient reference for market transactions and terminology.

Most undergraduate students seem to be very comfortable with computers, and they appear to pick up the ins and outs of software packages such as Maple™, Mathematica™, and Microsoft® Excel very quickly. Each instructor will have to evaluate the proficiency of his or her own students in this area. For example, we have found that Excel is readily available on the Indiana University campus and that students are comfortable in preparing data and reports using this software.
Acknowledgments

We would like to thank the National Science Foundation for support while preparing some of the material used in this textbook. In particular, we owe a great debt of gratitude to Dan Maki and Bart Ng, principal investigator on the NSF grant, “Mathematics Throughout the Curriculum,” for encouraging us to write the book and for their continued support, financial and personal, during the period of creation. We wish to thank our reviewers: Rich Sowers, University of Illinois; William Yin, La Grange College; and John Chadam, University of Pittsburgh.

In November 1999, Joseph Stampfli presented several lectures on financial mathematics at a workshop on this topic in Bangkok, Thailand, sponsored by Mahidol University. We would like to thank the university and, in particular, Professor Yongwemon Lenbury and Ponchai Matangkasombut, then Dean and now President of the university, for their gracious hospitality throughout the visit. It was a truly memorable experience.

We would also like to thank the editorial and production teams at Brooks/Cole for their continuous and timely help. In particular, Gary Ostedt and Carol Benedict did everything an editorial team can do and more. Several unexpected crises arose as the book progressed, and Gary guided us through them with patience, wisdom, and humor. We would also like to thank the other members of the Brooks/Cole team: Mary Vezilich, Production Coordinator; Karin Sandberg, Marketing Manager; Sue Ewing, Permissions Editor; and Samantha Cabaluna, Marketing Communications. We would also like to thank Kris Engberg of Publication Services, who helped us solve hundreds of problems, both large and small; Jerome Colburn, whose contributions as copy editor turned limp doggerel into sparkling prose; and Jason Brown and his production team.

Victor Goodman wishes to thank Devraj Basu for his personal input during the early stages of the manuscript preparation. In addition, Joseph Stampfli would like to thank Jeff Gerlach, a graduate student in Economics at Indiana University. Chapter 11 is entirely due to Jeff’s efforts, and he provided solutions to most of the exercises.

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