

Preface to the third edition

This third edition of our book appears in the de Gruyter graduate textbook series. We have therefore included more than one hundred exercises. Typically, we have used the book as an introductory text for two major areas, either combined into one course or in two separate courses. The first area comprises static and dynamic arbitrage theory in discrete time. The corresponding core material is provided in Chapters 1, 5, and 6. The second area deals with mathematical aspects of financial risk as developed in Chapters 2, 4, and 11. Most of the exercises we have included in this edition are therefore contained in these core chapters. The other chapters of this book can be used both as complementary material for the introductory courses and as basis for special-topics courses.

In recent years, there has been an increasing awareness, both among practitioners and in academia, of the problem of model uncertainty, often called *Knightian uncertainty*, in finance and economics; see, e.g., [259]. In this third edition we have put more emphasis on this issue. The theory of risk measures can be seen as a case study how to deal with model uncertainty in mathematical terms. We have therefore updated Chapter 4 on static risk measures and added the new Chapter 11 on dynamic risk measures. Moreover, in Section 2.5 we have extended the characterization of robust preferences in terms of risk measures from the coherent to the convex case. We have also included the new Sections 3.5 and 8.3 on robust variants of the classical problems of optimal portfolio choice and efficient hedging.

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