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Stochastic Methods In Asset Pricing (MIT Press)





Synopsis

This book presents a self-contained, comprehensive, and yet concise and condensed overview of the theory and methods of probability, integration, stochastic processes, optimal control, and their connections to the principles of asset pricing. The book is broader in scope than other introductory-level graduate texts on the subject, requires fewer prerequisites, and covers the relevant material at greater depth, mainly without rigorous technical proofs. The book brings to an introductory level certain concepts and topics that are usually found in advanced research monographs on stochastic processes and asset pricing, and it attempts to establish greater clarity on the connections between these two fields. The book begins with measure-theoretic probability and integration, and then develops the classical tools of stochastic calculus, including stochastic calculus with jumps and $L\tilde{A}f\hat{A}$ vy processes. For asset pricing, the book begins with a brief overview of risk preferences and general equilibrium in incomplete finite endowment economies, followed by the classical asset pricing setup in continuous time. The goal is to present a coherent single overview. For example, the text introduces discrete-time martingales as a consequence of market equilibrium considerations and connects them to the stochastic discount factors before offering a general definition. It covers concrete option pricing models (including stochastic volatility, exchange options, and the exercise of American options), Merton's investment--consumption problem, and several other applications. The book includes more than 450 exercises (with detailed hints). Appendixes cover analysis and topology and computer code related to the practical applications discussed in the text.

Book Information

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Customer Reviews

In this ambitious book, the author guides a dedicated reader from elementary probability to the advanced stochastic analysis of modern mathematical finance, with rewarding excursions into topics seldom seen in introductory texts. (Paul Glasserman, Jack R. Anderson Professor of Business, Columbia University)This is a very useful book providing a thoughtful and comprehensive overview of the theory of stochastic processes and methods in stochastic analysis that are relevant for asset pricing. The book contains many exercises that will greatly facilitate the teaching of the subject. (Viktor Todorov, Harold H. Hines Jr. Professor of Risk Management, Kellogg School of Management, Northwestern University)This beautiful book is for students and established researchers seeking deeper knowledge of the mathematics behind theories of asset pricing. Requiring little in the way of background, it takes readers to the frontier of what is necessary to understand current theory. (Jessica Wachter, Richard B. Worley Professor of Financial Management, Professor of Finance, The Wharton School)

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