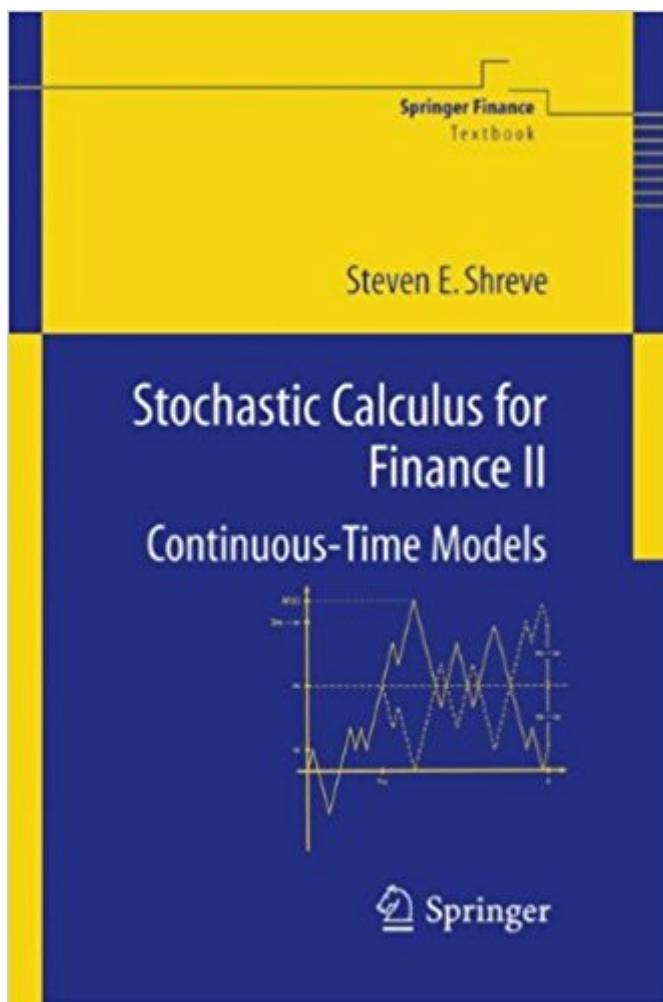


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# Stochastic Calculus For Finance II: Continuous-Time Models (Springer Finance)



## Synopsis

"A wonderful display of the use of mathematical probability to derive a large set of results from a small set of assumptions. In summary, this is a well-written text that treats the key classical models of finance through an applied probability approach....It should serve as an excellent introduction for anyone studying the mathematics of the classical theory of finance." --SIAM

## Book Information

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## Customer Reviews

From the reviews of the first edition: "Steven Shreve's comprehensive two-volume Stochastic Calculus for Finance may well be the last word, at least for a while, in the flood of Master's level books.... a detailed and authoritative reference for "quants" (formerly known as "rocket scientists"). The books are derived from lecture notes that have been available on the Web for years and that have developed a huge cult following among students, instructors, and practitioners. The key ideas presented in these works involve the mathematical theory of securities pricing based upon the ideas of classical finance....the beauty of mathematics is partly in the fact that it is self-contained and allows us to explore the logical implications of our hypotheses. The material of this volume of Shreve's text is a wonderful display of the use of mathematical probability to derive a large set of results from a small set of assumptions. In summary, this is a well-written text that treats the key classical models of finance through an applied probability approach. It is accessible to a broad audience and has been developed after years of teaching the subject. It should serve as an excellent introduction for anyone studying the mathematics of the classical theory of finance." (SIAM, 2005) "The contents of the book have been

used successfully with students whose mathematics background consists of calculus and calculus-based probability. The text gives both precise statements of results, plausibility arguments, and even some proofs. But more importantly, intuitive explanations, developed and refine through classroom experience with this material are provided throughout the book." (Finanz Betrieb, 7:5, 2005) "The origin of this two volume textbook are the well-known lecture notes on Stochastic Calculus [ ]. The first volume contains the binomial asset pricing model. [ ] The second volume covers continuous-time models [ ]. This book continues the series of publications by Steven Shreve of highest quality on the one hand and accessibility on the other end. It is a must for anybody who wants to get into mathematical finance and a pleasure for experts [ ]." (www.mathfinance.de, 2004) "This is the latter of the two-volume series evolving from the author's mathematics courses in M.Sc. Computational Finance program at Carnegie Mellon University (USA). The content of this book is organized such as to give the reader precise statements of results, plausibility arguments, mathematical proofs and, more importantly, the intuitive explanations of the financial and economic phenomena. Each chapter concludes with summary of the discussed matter, bibliographic notes, and a set of really useful exercises." (Neculai Curteanu, Zentralblatt MATH, Vol. 1068, 2005)

Stochastic Calculus for Finance evolved from the first ten years of the Carnegie Mellon Professional Master's program in Computational Finance. The content of this book has been used successfully with students whose mathematics background consists of calculus and calculus-based probability. The text gives both precise statements of results, plausibility arguments, and even some proofs, but more importantly intuitive explanations developed and refine through classroom experience with this material are provided. The book includes a self-contained treatment of the probability theory needed for stochastic calculus, including Brownian motion and its properties. Advanced topics include foreign exchange models, forward measures, and jump-diffusion processes. This book is being published in two volumes. This second volume develops stochastic calculus, martingales, risk-neutral pricing, exotic options and term structure models, all in continuous time. Masters level students and researchers in mathematical finance and financial engineering will find this book useful. Steven E. Shreve is Co-Founder of the Carnegie Mellon MS Program in Computational Finance and winner of the Carnegie Mellon Doherty Prize for sustained contributions to education.

Although I work in a major global bank at a senior level I don't use stochastic calculus in my job. My maths and physics background goes back to the 1970s when stochastic calculus was not part of

undergraduate studies. Indeed, one usually did stochastic theory at postgraduate level. I have memories of reading Halmos for measure theory, Feller for probability theory, Wiener and others. None of this was easy. Suffice it to say that there were a lot of abstract building blocks one had to erect first before one could actually do anything useful. Stochastic calculus is not easy. It is less intuitive than ordinary calculus. The vast majority of textbooks launch into a wall of definitions that seem divorced from the motivation for them. I am always suspicious of authors who do that. It's fine if you are writing for a very specialised audience but I am with Richard Feynman who reckoned that if you can't provide a simple explanation you don't really understand what is going on. In that context read his PhD thesis - it is most readable and understandable. What Shreve has done - and this is a significant achievement in my view - is to present something that is rigorous enough (and we all know that in this and other areas of mathematics one can go on and on with minute points of detail all in the name of rigour) yet grounds the concepts in something that is understandable. The simple pedagogical fact of life with this type of material is that there is a large overhead in getting to a particular point and Shreve had done a very good job in getting readers to a good standard without destroying their will to go on! When one looks at areas of mathematics with much longer pedigrees - and Fourier Theory is an example - there are some extremely good presentations of the theory at both mathematical and physical levels. Elias Stein, for instance, has done some marvellous work in the area. Stochastic calculus is really very young in terms of mainstream appeal. I can recall actuarial subjects I did in the early 1980s that had no stochastic calculus at all in them. All that has changed and I think Shreve's attempts in this area can be improved upon too but this will only happen over time. My colleagues in quant like Shreve's books so I guess that says something too.

I have a lot of these 'introductory' books, and this one (and its companion Volume I), are by far the best set of introductory books to mathematical finance I have come across. It contains everything you need to get an entry level position as a quant - meaning that you will pass interview tests if you understand the contents of this book, the portion of the test about stochastic calculus at least - provided you do all the exercises, and also are able to reproduce some of these proofs (eg the barrier option and lookback options analytical formulas in the exotic options chapter). If you want to make absolutely sure to pass the interview tests (again that section of the test focusing on stochastic calculus and derivative pricing), you could also buy Joshi's books, which are slightly more focused on the finance. [as an aside, interview tests are likely to contain more than just derivative pricing and stochastic calculus, you will need other books to cover these aspects]

Being a lover of mathematics, I found this book very enjoyable to read. Stochastic calculus is pretty much what it says: deriving, integrating, etc. over processes that are stochastic ("random") instead of deterministic. You will be surprised about how many properties of stochastic processes you can nail down as a precise deterministic number. I haven't tried to make money off the ideas in this book, so I can't speak for whether that would work. However, keep in mind that it doesn't really have trading ideas per se but rather lays the foundation for some mathematical models which could be incorporated in such.

I'm pursuing one of those MS degree in Financial Engineering right now, and I bought volume 1 and volume 2 of this textbook together. I used only volume 2 two semesters ago, as a helpful reference. And I'm reading both of the books very thoroughly this semester everyday. These books are very well organized and explain intuitively, to the extent that it is very helpful for those whose background doesn't come from mathematics or engineering. (But don't get me wrong, this book is not at all easy) My rate is only three because these books are not nice as products. I'm spending 4~6 hours a day with these books, almost 6 days in a week, and it makes me so stressed because it is so hard to hold the book firmly when I should go to look for something from previous chapters. I'm not saying the pages are made of steel, so that I really have to work out, no. But it is still annoying since these books require me to go back to previous chapters and check some formulas once again for the most of the time. Moreover these books never stay opened on the desk. Thus I really had to hold them every single seconds when I was studying. All I wanted is them to be opened as the way I left them on the desk. So the content seems really awesome, but the books themselves are not handy at all. I eventually made them spring notes, and I'm happy.

The content of the book is great. Both for refreshing you rusty math, or learning it from scratch. However, the print is terrible. Missing pages (108-109, for example), or empty pages (not just at the end of chapters...)... wait for another edition.

Was received in a good condition barring a tear. As far as the book is concerned, the concepts of stochastic calculus are very well explained. Brownian motions and Ito integrals in particular are explained immaculately.

this is a very good book comparing to other books in the genre of continuous time stochastic

calculus, this book is much easier to read while not compromising the theoretical depth. also the notation adopted is not only consistent but tasteful!

It gave me all that I needed to know for my Stochastic Calculus course

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