# Numerical Methods in Finance with C++ (Mastering Mathematical Finance)

*M. J. Capiski, Tomasz Zastawniak*
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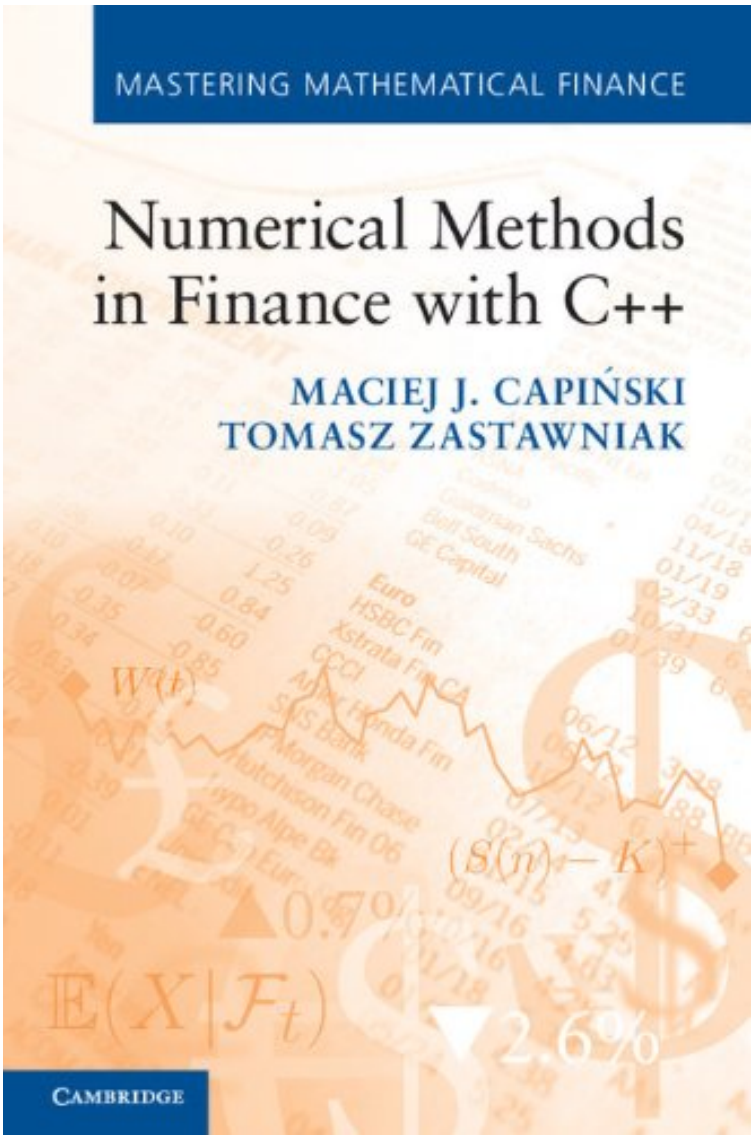




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**M. J. Capiski, Tomasz Zastawniak : Numerical Methods in Finance with C++ (Mastering Mathematical Finance)** before purchasing it in order to gage whether or not it would be worth my time, and all praised Numerical Methods in Finance with C++ (Mastering Mathematical Finance):

13 of 14 people found the following review helpful. Focus on this book is mediocreBy E. LauAs a disclosure before starting my review, I have worked with C++ in the area for years. While I had expected this book to cover more on financial mathematics, I am not giving this book 3 stars for any of that since it was mentioned in the Preface that it's a

focus on connecting financial mathematics with C++. However, since the entire first half of the book is about C++, I will review it as more of a beginner's C++ book.To begin, the author seems follow some of the worst C++ practices I've seen. I have worked with (and currently work with) developing strategies with C++, and I can say that if you are using single letter variables everywhere without comments pointing out what they mean in a complex model, someone is bound to make a wrong assumption and make a mistake. It certainly makes sense using single letter variables in numerical programming in many cases, but at the least, it should be commented.The above is probably not too bad since it can easily be refactored, and bugs are probably not too terribly difficult to fix. What does really bring up my attention is his liberal use of non-const references. Sending in and modifying random variables in the parameter (with some not being modified) is extremely poor practice, and it makes development very difficult. Debugging may become very time consuming, and algorithms could easily have unexpected errors from "Get" functions modifying their data.This also brings up the point that he copies far too many variables into functions. I would normally not be this critical with authors, but the fact that he has brought templating in the book (which I personally consider somewhat advanced), he should have at least included some mention of encapsulating options data as a struct/class and passing it into functions as a const reference to avoid copying (which he does mention in the book, by the way).I can go on much longer with other poor practices in the book, but I'd also like to mention some positive points. As someone new in derivatives, the author provides a very simple to understand format for mathematical equations. I have only studied up to and including multi-variate calculus, discrete math, basic probability/statistics, and linear algebra, and I can easily understand all the math in this book. The examples, while following poor C++ practice, are not too difficult to follow provided you know what each variable means. Additionally, the format of the book (mostly bulleted points) makes it a pretty easy read - even for a subject that can get unbearably complicated and verbose.Overall, while the book isn't horrible, I would not recommend it to people without C++ knowledge simply due to the poor practices it may teach in linking financial math and C++. If you already know C++ and would simply like some ideas for your code, it could definitely be helpful. In this case, I would jump straight to chapter 4 (Non-linear solvers) and start from there since the first three chapters are all C++ basics.I would recommend a reader to simply read the original Stroustrup book for C++: http://www..com/The-Programming-Language-4th-Edition/dp/0321563840He covers best practices and topics ranging all over C++ with detail. As a supplement to Stroustrup's book, I feel that Effective C++ is one of the best C++ books out there in terms of practice:http://www..com/Effective-Specific-Improve-Programs-Designs/dp/0321334876For those like me and already know C++ to the very low-level intricacies, I'd recommend reading Dan Stephanica's financial engineering book: http://www..com/Primer-Mathematics-Financial-Engineering-Edition/dp/0979757622I personally found it to be very easily understandable with a wealth of information. It covers practically all the topics in this book other than Monte Carlo (if I recall correctly).If you are fairly well-versed in math, the more challenging book would be the Springer book to Stochastic Calculus. It's very informative, but it may take some time for those without familiarity in probability/mathematical language to read:http://www..com/Stochastic-Calculus-Finance-Binomial-Textbooks/dp/03872496801 of 1 people found the following review helpful. this is an extremely good book with respect to basic programming techniques for pricing ...By ludwigvonardenthis is an extremely good book with respect to basic programming techniques for pricing models. if you want to learn c++ for finance i would buy this book and would not waste your time with any of daniel duffys books which i also have.0 of 0 people found the following review helpful. Good book with good examplesBy Cheng-Chin ChiangThis book gives good examples of numerical methods in finance. The C++ codes are also easy to understand and can be free download from the website. It is good for the people who want to study financial engineering and learn how to it quickly.

Driven by concrete computational problems in quantitative finance, this book provides aspiring quant developers with the numerical techniques and programming skills they need. The authors start from scratch, so the reader does not need any previous experience of C++. Beginning with straightforward option pricing on binomial trees, the book gradually progresses towards more advanced topics, including nonlinear solvers, Monte Carlo techniques for path-dependent derivative securities, finite difference methods for partial differential equations, and American option pricing by solving a linear complementarity problem. Further material, including solutions to all exercises and C++ code, is available online. The book is ideal preparation for work as an entry-level quant programmer and it gives readers the confidence to progress to more advanced skill sets involving C++ design patterns as applied in finance.

"This book leads the reader directly into the heart of C++ programming technique without too much fuss. And in so doing, the reader also learns some very important and fundamental methods in options pricing. I highly recommend this little gem of a book." Professor Michael K. Ong, IIT Stuart School of Business"I find the monograph to be an excellent integration of the object-oriented concepts of C++ and the classical numerical techniques used in quantitative finance. Throughout the book, there is an introduction to the numerical technique to be used, along with the need for such a method from the prospective of financial mathematics. After this discussion, the C++ source code that implements the technique is not only given but also annotated to highlight or to clarify reasons for the use of certain object-oriented constructs. As the authors comment, there are some source files which are not listed but are available

from the publisher's web site. The monograph is an exceptional book for demonstrating the implementation of the various aspects of C++ in a very concrete fashion. There is substance given to C++ concepts that are introduced in basic programming courses but seldom framed in a realistic setting. The reader, however, should have some familiarity with C++ and mathematical finance, prior to reading the monograph. The book is not intended to be an introduction to either object-oriented C++ or mathematical finance. With such a background, the style and the content of the book make for an informative experience." Professor Sherman Wong, City University of New YorkAbout the AuthorMaciej J. Capi?ski is an Associate Professor in the Faculty of Applied Mathematics at AGH University of Science and Technology in Krakow, Poland. His interests include mathematical finance, financial modelling, computer assisted proofs in dynamical systems and celestial mechanics. He has authored eight research publications and supervised over thirty MSc dissertations, mostly in mathematical finance.Tomasz Zastawniak holds the Chair of Mathematical Finance at the University of York. He has authored about fifty research publications and four books. He has supervised four PhD dissertations and around eighty MSc dissertations in mathematical finance.