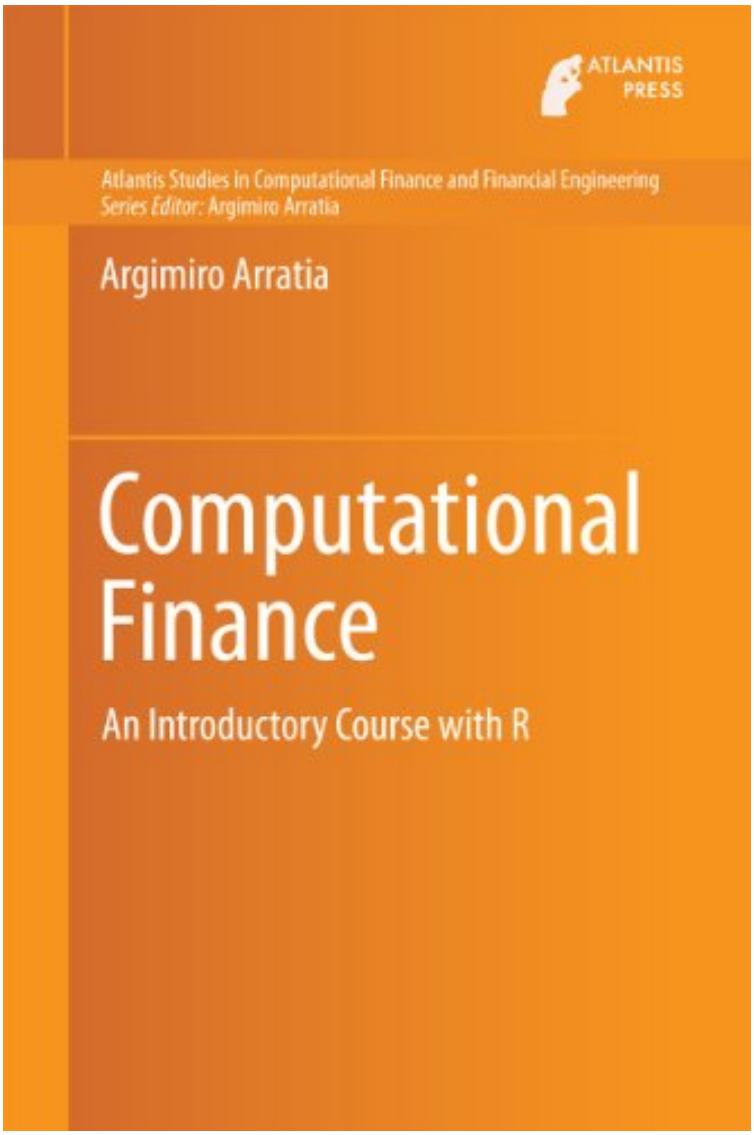
Computational Finance: An Introductory Course with R (Atlantis Studies in Computational Finance and Financial Engineering)

Argimiro Arratia
*ePub | *DOC | audiobook | ebooks | Download PDF*



#1517507 in eBooks 2014-05-08 2014-05-08File Name: B00K83T92E | File size: 78.Mb

Argimiro Arratia : Computational Finance: An Introductory Course with R (Atlantis Studies in Computational Finance and Financial Engineering) before purchasing it in order to gage whether or not it would be worth my time, and all praised Computational Finance: An Introductory Course with R (Atlantis Studies in Computational Finance and Financial Engineering):

1 of 5 people found the following review helpful. One StarBy Thomas SchlebuschThe R code is rather sparse...1 of 2

people found the following review helpful. A unique textbook in Computational FinanceBy ACNI highly recommend the book Computational Finance, An Introductory Course with R,as a textbook for a course on computational aspects of finance. I have used as such with great success. The book covers a wide range of topics, yet essential, in Computational Finance (CF), understood as a mix of Finance, Computational Statistics, and Mathematics of Finance. In that regard it is unique in its kind, for it touches upon the basic principles of all three main components of CF, with hands-on examples for programming models in R.The book has an accompanying web page computationalfinance.lsi.upc.edu where all the R programs in the book and more information are publicly available.I will give some highlights of the book. The first chapter gives an introduction to the Principles of Corporate Finance: the markets of stocks and options, valuation and economic theory, framed within Computation and Information Theory (e.g. the famous Efficient Market Hypothesis is stated in terms of computational complexity, a new perspective). Chapters 2 and 3 give the necessary tools of Statistics for analyzing financial time series, it also goes in depth into the concepts of correlation, causality and clustering. Chapters 4 and 5 review the most important discrete and continuous models for financial time series. Each model is provided with an example program in R. Chapter 6 covers the essentials of Technical Analysis (TA) and Fundamental Analysis. This chapter is suitable for people outside academics and into the world of financial investments, as a primer in the methods of charting and analysis of value for stocks, as it is done in the financial industry. Moreover, this is the first textbook where I have seen an attempt to give a mathematical foundation to the seemly ad-hoc methods of TA, framed in terms of the theory of optimal stopping time of stochastic processes.Chapter 7 reviews the most important heuristics for optimization: simulated annealing, genetic programming, and ant colonies (swarm intelligence) which is material to feed the computer savvy readers. Chapter 8 gives the basic principles of portfolio management, through the mean-variance model, and optimization under different constraints which is a topic of current research in computation, due to its complexity. One important aspect of this chapter is that it teaches how to use the tools from the RMetrics package for portfolio analysis, which is a powerful set of R functions whose only instructions manual is an approx. 400 euros textbook.Chapter 9 is a natural continuation of chapter 8 into the new area of research of online portfolio selection, in it the universal portfolio model of Cover and approximate methods to compute it is explained.0 of 1 people found the following review helpful. Highly informative and interesting to readBy Jan QuestThis book is highly informative and interesting to read. I found it is a good introduction to basic topics in corporate finance (definitions of financial securities, discounted cash flow models, arbitrage and risk neutral valuation), time series analisys (basic linear and nonlinear models), and it goes on to cover the more computational and algorithmic aspects of financial engineering, surveying optimization heuristics as simulated annealing, ant colony, genetic programming, each presented with applications to finance.The book gives a basic intro to technical analysis proposing to the reader to built his/her own automatic trading system...however does not go into much detail on the rigmarole of constructing such system, as expecting from the reader some expertise in intelligent systems. Quite a challenge for computer scientists.On the fundamental analysis (which is also covered in this book) it focus mainly on Benhamin Graham value investing philosophy.So, all in all the book is introductory in many aspects of computational finance (not all possible themes) and so it can serve well for an advanced CS-Math-Finance undergradute course , or first to second year graduate course.The book presents hands-on programming examples in R making use of several packages in this programming language geared for financial analysis.It is suitable for use both as a textbook and for self-study for people with a degree in mathematics or computer science.

The book covers a wide range of topics, yet essential, in Computational Finance (CF), understood as a mix of Finance, Computational Statistics, and Mathematics of Finance. In that regard it is unique in its kind, for it touches upon the basic principles of all three main components of CF, with hands-on examples for programming models in R. Thus, the first chapter gives an introduction to the Principles of Corporate Finance: the markets of stock and options, valuation and economic theory, framed within Computation and Information Theory (e.g. the famous Efficient Market Hypothesis is stated in terms of computational complexity, a new perspective). Chapters 2 and 3 give the necessary tools of Statistics for analyzing financial time series, it also goes in depth into the concepts of correlation, causality and clustering. Chapters 4 and 5 review the most important discrete and continuous models for financial time series. Each model is provided with an example program in R. Chapter 6 covers the essentials of Technical Analysis (TA) and Fundamental Analysis. This chapter is suitable for people outside academics and into the world of financial investments, as a primer in the methods of charting and analysis of value for stocks, as it is done in the financial industry. Moreover, a mathematical foundation to the seemly ad-hoc methods of TA is given, and this is new in a presentation of TA. Chapter 7 reviews the most important heuristics for optimization: simulated annealing, genetic programming, and ant colonies (swarm intelligence) which is material to feed the computer savvy readers. Chapter 8 gives the basic principles of portfolio management, through the mean-variance model, and optimization under different constraints which is a topic of current research in computation, due to its complexity. One important aspect of this chapter is that it teaches how to use the powerful tools for portfolio analysis from nbsp;the nbsp;RMetrics R-package. Chapter 9 is a natural continuation of chapter 8 into the new area of research of online portfolio selection.

The basic model of the universal portfolio of Cover and approximate methods to computenbsp;are alsonbsp;described.