Python for Finance

By Yuxing Yan

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Build reallife Python applications for quantitative finance and financial engineering

About This Book

- Estimate market risk, form various portfolios, and estimate their variance-covariance matrixes using real-world data
- Explains many financial concepts and trading strategies with the help of graphs
- A step-by-step tutorial with many Python programs that will help you learn how to apply Python to finance

Who This Book Is For

Python for Finance is perfect for graduate students, practitioners, and application developers who wish to learn how to utilize Python to handle their financial needs. Basic programming knowledge is helpful, but not necessary.

What You Will Learn

- Build a financial calculator based on Python
- Learn how to price various types of options such as European, American, average, lookback, and barrier options
- Write Python programs to download data from Yahoo! Finance
- Estimate returns and convert daily returns into monthly or annual returns
- Form an n-stock portfolio and estimate its variance-covariance matrix
- Estimate VaR (Value at Risk) for a stock or portfolio
- Run CAPM (Capital Asset Pricing Model) and the Fama-French 3-factor model
- Learn how to optimize a portfolio and draw an efficient frontier
- Conduct various statistic tests such as T-tests, F-tests, and normality tests

In Detail

Python is a free and powerful tool that can be used to build a financial calculator and price options, and can also explain many trading strategies and test various hypotheses. This book details the steps needed to retrieve time series data from

different public data sources.

Python for Finance explores the basics of programming in Python. It is a step-by-step tutorial that will teach you, with the help of concise, practical programs, how to run various statistic tests. This book introduces you to the basic concepts and operations related to Python. You will also learn how to estimate illiquidity, Amihud (2002), liquidity measure, Pastor and Stambaugh (2003), Roll spread (1984), spread based on high-frequency data, beta (rolling beta), draw volatility smile and skewness, and construct a binomial tree to price American options.

This book is a hands-on guide with easy-to-follow examples to help you learn about option theory, quantitative finance, financial modeling, and time series using Python.

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Editorial Review

About the Author

Yuxing Yan

Yuxing Yan graduated from McGill university with a PhD in finance. He has taught various finance courses, such as Financial Modeling, Options and Futures, Portfolio Theory, Quantitative Financial Analysis, Corporate Finance, and Introduction to Financial Databases to undergraduate and graduate students at seven universities: two in Canada, one in Singapore, and four in the USA. Dr. Yan has actively done research with several publications in Journal of Accounting and Finance, Journal of Banking and Finance, Journal of Empirical Finance, Real Estate Review, Pacific Basin Finance Journal, Applied Financial Economics, and Annals of Operations Research. For example, his latest publication, coauthored with Shaojun Zhang, will appear in the Journal of Banking and Finance in 2014. His research areas include investment, market microstructure, and open source finance. He is proficient at several computer languages such as SAS, R, MATLAB, C, and Python. From 2003 to 2010, he worked as a technical director at Wharton Research Data Services (WRDS), where he debugged several hundred computer programs related to research for WRDS users. After that, he returned to teaching in 2010 and introduced R into several quantitative courses at two universities. Based on lecture notes, he has the first draft of an unpublished manuscript titled Financial Modeling using R. In addition, he is an expert on financial data. While teaching at NTU in Singapore, he offered a course called Introduction to Financial Databases to doctoral students. While working at WRDS, he answered numerous questions related to financial databases and helped update CRSP, Compustat, IBES, and TAQ (NYSE highfrequency database). In 2007, Dr. Yan and S.W. Zhu (his coauthor) published a book titled Financial Databases, Shiwu Zhu and Yuxing Yan, Tsinghua University Press. Currently, he spends considerable time and effort on public financial data. If you have any queries, you can always contact him at yany@canisius.edu.

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