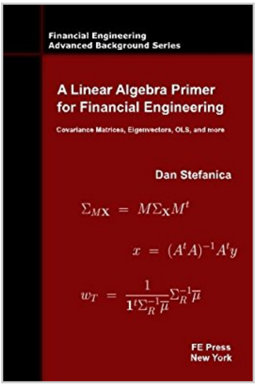

A Linear Algebra Primer for Financial Engineering: Covariance Matrices, Eigenvectors, OLS, and more (Financial Engineering Advanced Background Series)

By Dan Stefanica

A Linear Algebra Primer for Financial Engineering: Covariance Matrices, Eigenvectors, OLS, and more (Financial Engineering Advanced Background Series) By Dan Stefanica

This book covers linear algebra methods for financial engineering applications from a numerical point of view. The book contains many such applications, as well as pseudocodes, numerical examples, and questions often asked in interviews for quantitative positions.

Financial Applications

• The Arrow—Debreu one period market model

• One period index options arbitrage

• Covariance and correlation matrix estimation from time series data

• Ordinary least squares for implied volatility computation

• Minimum variance portfolios and maximum return portfolios

• Value at Risk and portfolio VaR

Linear Algebra Topics

• LU and Cholesky decompositions and linear solvers

• Optimal solvers for tridiagonal symmetric positive matrices

• Ordinary least squares and linear regression

• Linear Transformation Property

• Efficient cubic spline interpolation

• Multivariate normal random variables

The book is written in a similar spirit as the best selling ``A Primer for the Mathematics of Financial Engineering" by the same author, and should accordingly be useful to a similarly large audience:

• Prospective students for financial engineering or mathematical finance programs will be able to self-study material that will prove very important in their future studies

• Finance practitioners will find mathematical underpinnings for many methods used in practice, furthering the ability to expand upon these methods

• Academics teaching financial engineering courses will be able to use this book as textbook, or as reference book for numerical linear algebra methods with financial applications.

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Editorial Review

About the Author

Dan Stefanica has been the Director of the Baruch MFE Program since its inception in 2002, and is the author of the best-selling A Primer For The Mathematics Of Financial Engineering and A Linear Algebra Primer for Financial Engineering: Covariance Matrices, Eigenvectors, OLS, and more, and co-author of 150 Most Frequently Asked Questions on Quant Interviews. He teaches graduate courses on numerical methods for financial engineering, as well as pre-program courses on advanced calculus and numerical linear algebra with financial applications. His research spans numerical analysis, graph theory, and geophysical fluid dynamics. He has a PhD in mathematics from New York University and taught previously at the Massachusetts Institute of Technology.

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