

Preface

Leveraged exchange-traded funds (ETFs) are relatively new financial products liquidly traded on major exchanges. They have gained popularity with a rapidly growing aggregate assets under management (AUM) in recent years. Furthermore, there are now derivatives written based on ETFs. This book aims to provide an overview of the major characteristics of ETFs, examine their price dynamics, and analyze the mathematical problems that arise from trading ETFs and pricing options written on these funds.

When writing this book, we aim to make it useful not only for graduate and advanced undergraduate students but also for researchers interested in financial engineering, as well as practitioners who specialize in trading leveraged or non-leveraged ETFs and related derivatives.

In the first part of the book, we assume very little background in probability and statistics in our discussion of the price dynamics of ETFs. Nevertheless, new insights and trading strategies are discussed with mathematical justification and illustrated with a host of examples using empirical data. Our emphasis is on the risk analyses of ETFs and associated trading strategies. The second part focuses on the risk measurement for ETFs, and we provide a number of formulas for instant implementation. In the final part, we present the analytical and empirical studies on the pricing and returns of options written on ETFs. Our main objective is to examine a consistent pricing approach applied to all ETFs. This allows us to identify any price discrepancies across the ETF options markets. As the market of ETFs continues to grow in terms of market capitalization and product diversity, there are plenty of new problems for future research. In the final chapter, we point out a number of new directions.

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