

<<奇异期权>>

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前言

Nearly one year has elapsed since the first edition of this book came into existence in early 1997. Within the past year, two significant events occurred which are directly related to the derivatives profession. The first was that on October 14, 1997, the Nobel committee gave the 1997 Nobel Prize in Economic Sciences to Professor Robert Merton of Harvard University and Professor Myron Scholes of Stanford University for their work on the development of option pricing theory. The Nobel committee made it clear that had he lived, Fischer Black would have shared the prize. As described in the first edition of this book, most of the models and pricing formulas in this book have been within a Black-Scholes-Merton world which has been central to the development of financial engineering as both a discipline and profession. The other is the still-going-on financial crisis spreading from East Asia to around the globe. This crisis started with the rapid devaluation of Thai Baht early in July, spreaded to the neighboring Southeast Asian countries of Indonesia, Malaysia, Singapore, and Philippines. Because of similar economic structures and foreign exchange rate policies, these countries began their competitive devaluation of their currencies. Within months, the crisis moved North to Hong Kong, Taiwan, and then South Korea. After defending the New Taiwan dollar for one week, the Taiwan central bank also followed the Southeast countries on October 16, by letting its currency float against the US dollar. The devaluation of the New Taiwanese dollar pressured Hong Kong Hang Seng Stock Index down for four consecutively days from October 17 to October 20 with an accumulated 3175 points, or nearly 15%. The tremendous fall of Hong Kong Stock market pushed the US stock markets the DOW Jones Index dived 554 points on October 27, the largest one-day drop since the Black Monday in October 1987 and stock markets around the world down significantly. Volatilities in both currency and equity markets have increased significantly during the crisis. Derivatives should have good potentiality for wider use, especially in East Asia.

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内容概要

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本书对奇异期权的形式与特征进行了探讨与研究。

书籍目录

Preface to the Second Edition
Preface to the First Edition
Acknowledgements
Part I : Introduction to Exotic Options and Option Pricing Methodology
Chapter 1. From Vanilla Options to Exotic Options 1.1. Plain Vanilla Options 1.2. Path-Dependent Options 1.3. Correlation Options 1.4. Other Exotic Options 1.5. Institutions Involved in Exotic Options 1.6. Summary
Chapter 2 : Option Pricing Methodology 2.1. Equilibrium and Arbitrage 2.2. Basic Option Terminology 2.3. The Black-Scholes Option Pricing Model 2.4. Pricing Options Using the Arbitrage-Free Argument 2.5. Solving Partial Differential Equations 2.6. Risk-Neutral Valuation Relationship 2.7. Monte Carlo Simulations 2.8. Lattice- and Tree-Based Method 2.9. Method Used in this Book
Part II : Standard Options
Part III : Path-Dependent Options
Part IV : Correlation/Multiassets Options
Part V : Other Options
Part VI : Hedging Exotic Options and Further Development of Exotic Options
Appendix
References
Subject Index

章节摘录

A portfolio may not be gamma-hedged when it is delta-hedged, as our above example showed. or it may not be delta-hedged when it is gamma-hedged. This is simply because when we change the composition of the portfolio to achieve the goal of either delta hedging or gamma hedging, the other is changed at the same time. However, this is not a serious problem because the need for one hedge often dominates the other. SO it is alright to consider the more important issue and hedge it consequently.

3.7. IMPLIED VOLATILITY

In discussing the Black-Scholes model, we learned that all the parameters in the model can be either observed from the market directly, or specified in option contracts with one exception——volatility of the underlying asset. We learned that historical data can be used to estimate the volatility of the underlying asset. However, there is no general rule as to what kind of historical data and how far back in history the data should be used to estimate this parameter. Estimation can be very different using daily data of the immediate past three months, six months, one year, or two years. Thus, the prices of options can be different using different estimated volatility parameters. That is a problem with the Black-Scholes pricing model and all other models as well. Academics have tried to overcome this problem. The market prices of options, like market prices of all other securities, are determined by the changing supply and demand conditions. The actual option prices can be observed from the markets. Using the actual market prices and the Black-Scholes formula inversely, we can solve for the value of the volatility parameter. The volatility value which equals the theoretical Black-Scholes formula value and the actual market price is called the implied volatility. Mathematically, the implied volatility is the solution of the inverse equation from the Black-Scholes formula.

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