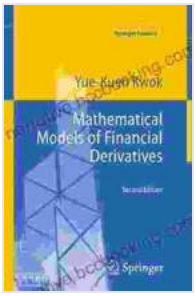
Mathematical Models of Financial Derivatives: A Comprehensive Guide for Practitioners and Researchers

Financial derivatives are complex financial instruments that are used to manage risk and speculate on the future value of assets. The mathematical models used to price and risk-manage financial derivatives are complex and require a deep understanding of mathematics.



Mathematical Models of Financial Derivatives (Springer Finance) by Chris Stanley

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This book provides a comprehensive overview of the mathematical models used to price and risk-manage financial derivatives. It is written for practitioners and researchers who need a deep understanding of the underlying mathematics.

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Financial derivatives are financial instruments that derive their value from the value of an underlying asset, such as a stock, bond, or commodity. Financial derivatives are used to manage risk and speculate on the future value of assets.

The mathematical models used to price and risk-manage financial derivatives are complex and require a deep understanding of mathematics. This book provides a comprehensive overview of the mathematical models used to price and risk-manage financial derivatives.

Forward Contracts

Forward contracts are agreements to buy or sell an asset at a specified price on a specified date in the future. Forward contracts are used to lock in a price for an asset, which can be useful for managing risk or speculating on the future value of the asset.

The mathematical model used to price forward contracts is the Black-Scholes model. The Black-Scholes model is a stochastic differential equation that describes the evolution of the price of an asset over time. The Black-Scholes model can be used to price forward contracts for a variety of underlying assets, including stocks, bonds, and commodities.

Futures Contracts

Futures contracts are similar to forward contracts, but they are traded on an exchange. Futures contracts are standardized contracts that have a specified size and expiration date. Futures contracts are used to manage risk and speculate on the future value of an asset.

The mathematical model used to price futures contracts is the same as the mathematical model used to price forward contracts. The Black-Scholes model can be used to price futures contracts for a variety of underlying assets, including stocks, bonds, and commodities.

Options Contracts

Options contracts are agreements that give the buyer the right, but not the obligation, to buy or sell an asset at a specified price on a specified date in the future. Options contracts are used to manage risk and speculate on the future value of an asset.

The mathematical model used to price options contracts is the Black-Scholes model. The Black-Scholes model is a stochastic differential equation that describes the evolution of the price of an asset over time. The Black-Scholes model can be used to price options contracts for a variety of underlying assets, including stocks, bonds, and commodities.

Swaps

Swaps are agreements to exchange cash flows between two parties at specified intervals. Swaps are used to manage risk and speculate on the future value of interest rates or other financial instruments.

The mathematical model used to price swaps is the LIBOR market model. The LIBOR market model is a stochastic differential equation that describes the evolution of the LIBOR interest rate over time. The LIBOR market model can be used to price swaps for a variety of maturities and currencies.

Credit Derivatives

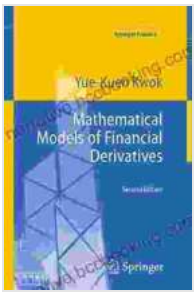
Credit derivatives are agreements that protect the buyer from the risk of default by a third party. Credit derivatives are used to manage risk and speculate on the creditworthiness of companies or governments.

The mathematical model used to price credit derivatives is the Merton model. The Merton model is a structural credit risk model that describes the probability of default of a company or government. The Merton model can be used to price credit derivatives for a variety of credit ratings and maturities.

Risk Management

Financial derivatives can be used to manage risk. Financial derivatives can be used to hedge against the risk of price fluctuations, interest rate fluctuations, or credit risk. Financial derivatives can also be used to speculate on the future value of assets.

The mathematical models used to price and risk-manage financial derivatives are essential for understanding the risk and return of financial



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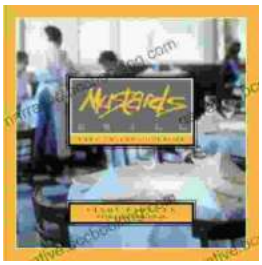

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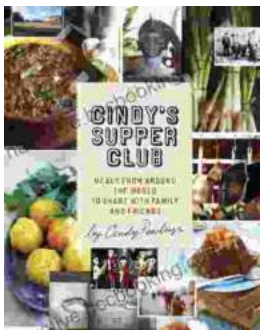

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