

**METODE MARTINGALE DALAM PENENTUAN  
HARGA OPSI TIPE EROPA DENGAN MENGGUNAKAN  
PENDEKATAN WAKTU KONTINU PADA PASAR (B,S)**

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INTISARI

Dibawah bimbingan Prof. Drs. Suryo Guritno, M.Stats.,Ph.D<sup>1)</sup>

Tesis ini mempelajari tentang matematika finansial terutama tentang penentuan harga opsi tipe Eropa dengan pendekatan waktu kontinu. Diasumsikan suatu pasar (8,S) dijalankan pada waktu kontinu. Rekening bank yang tidak beresiko  $I_3 = (B,)_0$  disusun menurut formula bunga majemuk, dan saham yang mempunyai resiko  $S = (S_t)_{00}$  ditentukan oleh *geometric Brownian motion*.

Teori penentuan harga *martingale* disajikan pada harga opsi yang rasional, strategi *hedging*, dan waktu eksiprasi yang rasional. Formula Black-Scholes untuk opsi *call* tipe Eropa dihasilkan. Dalam tesis ini juga mempertimbangkan contoh tertentu opsi Eropa.

Kata kunci : sekuritas yang beresiko dan yang tidak beresiko, opsi, strategi *hedging*, *geometric Brownian motion*, opsi standar dan *exotic*, formula Black-Scholes, keseimbangan *put-call*, ukuran *martingale*.

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**MARTINGALE METHODS ON THE THEORY OF  
PRICING OF OPTIONS OF EUROPEAN TYPE WITH  
CONTINUOUSLY IN TIME ON (B,S)-MARKET**

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**ABSTRACT**

Under Supervision of Prof. Drs. Suryo Guritno, M.Stats.,Ph.D<sup>1)</sup>

This thesis study about financial mathematics, especially about the theory of pricing of options of European type with continuously in time. It is assumed that a (B,S) market is operating continuously in time. The riskless bank account  $B = (B_t)_{t \geq 0}$  is evolving according to the "compound interests" formula, and a risky stock price  $S = (S_t)_{t \geq 0}$  is governed by geometric Brownian Motion.

The "martingale" pricing theory is presented for rational option price, hedging strategies, and rational expiration times. The Black-Scholes formula for standard European call option is derived. This thesis consider a number of other particular examples of European option.

Key words : risky and riskless securities, options, hedging strategies, geometric Brownian motion, standard and exotic options, Black-Scholes formula, put-call parity, martingale measure.

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