DIMENSI INTENSIFIKASI HARGA CRYPTOCURRENCY DENGAN MEKANIKA KUANTUM HAMILTONIAN

ABSTRAK

Cryptocurrency (CC) merupakan sebuah inovasi mata uang digital yang telah mengambil peran penting dalam dunia keuangan pada substansial sistem distribusinya sejak dari Desember 2013. Tujuan dari penelitian ini ditujukan untuk menemukan hubungan non linier matematis pada intensifikasi progres fluktuasi harga kripto dengan harga dalam prediktor CC. Struktur penulisan penelitian ini akan menggunakan prinsip harga dalam mekanika kuantum keuangan Hamiltonian (H) dengan interpretasi harga potensial $V(x)$ melalui 4 macam hipotesis seperti Volatilitas Opsi Put Hamilton, Dinamika Harga Diskon, Opsi Harga Bebas Hamilton dan Momen Fluktuasi Harga pada CC. Pengukuran digunakan terhadap 157 data mingguan dalam 3 periode (2019-2021) yang diuji dengan model panel regresi dan regresi berganda. Hasil studi penelitian menemukan bahwa *altcoin* terbesar yang diperdagangkan di pasar tidak berdampak oleh harga efek Bitcoin, secara persentase terdapat 40,33% faktor pengaruh pergerakan progres harga koin kripto dengan 59,67% ialah faktor sisa batasan dalam penelitian. Sebagian besar hasil menunjukkan aset Bitcoin dan altcoin memiliki potensi arbitrase dengan signifikan positif pada volatilitas opsi *put* dengan diskonto aset sehingga hasil negatif dan timbul strategi *martingale* dalam perspektif Hamiltonian. Studi penelitian memiliki keterbatasan untuk mensimulasikan harga proteksi dengan tingkat keamanan koin kripto pada proses transaksi yang berpotensi merusak progres harga yang dapat menjadi studi penelitian kedepan.

Kata Kunci : *Cryptocurrency*, Intensifikasi harga, Fluktuasi harga, Harga diskon, Opsi bebas, Hamiltonian.

INTENSIFICATION DIMENSION OF PRICES CRYPTOCURRENCY WITH HAMILTONIAN QUANTUM MECHANICS

ABSTRACT

Cryptocurrency (CC) is a digital currency innovation that has impacted the financial sector's distribution mechanism since December 2013. This research aims to discover a non-linear mathematical relationship between the escalation of the development of cryptocurrency price fluctuations and prices in CC predictors. The writing structure of this research utilized the price principle in Hamiltonian financial quantum mechanics (H) with potential price $V(x)$ interpretation through 4 types of hypotheses such as Hamilton Put Option Volatility, Discount Price Dynamics, Hamilton Free Option Price, and Price Fluctuation Moments on CC. Measurements were taken on 157 weekly data points over three years (2019-2021), and panel regression and multiple regression models were employed to test them. The results of the research study found that the most prominent altcoins traded on the market were not affected by the price of Bitcoin securities. As a percentage, there were 40.33% of the factor influencing the movement of crypto coin price progress, with 59.67% being the remaining limiting factor in the research. Most results show that Bitcoin and altcoin assets have arbitrage potential with a significant positive on the volatility of put options with asset discounts resulting in negative results and martingale strategies arising from a Hamiltonian perspective. This study has limitations in simulating protection pricing with the security level of crypto coins in the transaction process, which has the potential to impede price progress and could be employed in future research studies.

Keyword *: Cryptocurrency, Price intensification, Price fluctuations, Discount price, Free option, Hamiltonian.*