The Comparison of Long Memory and Multiple Structure Breaks for Carbon Indices and Exchange-Traded Fund (ETF)

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A B S T R A C T

The long-memory properties of four types of carbon indices and prices are tested using models of general autoregressive conditional heteroskedasticity with a moving mean and an integrated fraction (ARFIMA-FIGARCH). The study found that three carbon indices, three ETFs, ETN, and futures have a significant long-memory effect. Using the iterated cumulative sum of squares algorithm (ICSS), the multiple structural breaks in the four carbon indexes were examined during the enormous magnitude of oil price and pandemic from 2019/01/01-2023/02/01. The evolution of distinct fundamentals is made possible by the presence of multiple structural changes between eight carbon indexes (prices). Previous literature has been enhanced by evidence that shows that carbon pricing breaks are typically associated with structural changes that are driven by key events. The carbon prices are responsive to energy, macroeconomic factors, and policy issues.

Keywords: Carbon Indices, ETFs, ARFIMA-FIGARCH Models, The Long Memory, Multiple Structural Breaks, Bai and Perron test, ICSS Algorithm

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