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Global Energy-Related Uncertainty and Energy Tokens: A Wavelet Coherence Analysis

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Abstract: Do energy tokens hedge energy-market uncertainty or transmit its effects? Using wavelet coherence on monthly data from April 2021 to November 2023, this study examines the time-frequency co-movement between the Global Energy-related Uncertainty Index and the prices and trading volumes of two functionally distinct energy tokens: the utility-oriented Energy Web Token (EWT) and Power Ledger (POWR). The results show statistically significant, time-varying co-movement, particularly at medium- to long-term horizons, with responses differing across tokens and market dimensions. Rising energy-related uncertainty is associated with declines in both EWT prices and trading volume, whereas POWR prices decline while its trading volume increases. These contrasting responses suggest that energy-related uncertainty is transmitted unevenly across energy-token markets, with token design potentially shaping how market participants respond to uncertainty.

Keywords: Energy-Related Uncertainty, Energy Tokens, Wavelet Coherence, Cryptocurrency, Blockchain

JEL Classification Number: G12, G15, Q43, D81

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