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The Dynamic Relationship of Carbon Emissions Futures, WTI Futures and Green Bond Index

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Abstract: This paper applies AR-GJR-GARCH-Copula to examine the volatility behavior and dependence structure among carbon emissions futures, WTI futures, and the green bond index during January 1, 2017, to August 31, 2023. Our findings reveal a strong rank correlation. Empirical results suggest that the best-fitting model during this period is the Normal copula. However, the Kendall tau statistic indicates a relatively lower positive relationship between the returns of carbon futures and WTI futures, as well as a lower negative relationship between the returns of carbon futures and the green bond index. Furthermore, the dynamic Normal copula model yields similar results to static copula models, demonstrating changes in data correlation levels over time.

Keywords::Carbon Emission Futures, Green Bond Index, WTI Futures, Dependence, AR-GJR-GARCH-Copula

JEL Classification Number: C01, C32, G28

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