

## Hawkes Process-Based Reflexivity Analysis in the Cryptocurrency Market

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**Abstract :** We study the endogeneity in the cryptocurrency market over the branching ratio of the Hawkes process and evaluate the movement of self-excitability in the financial markets. We consider a semi-parametric self-exciting point process regression model where the excitation function is assumed to be smooth and decreasing but otherwise unspecified, and the baseline intensity is assumed to be a linear function of the regressors. We apply the empirical analysis to the three largest crypto assets, i.e. Bitcoin - Ethereum - Ripple, and provide a comparison with other financial assets such as SP500, Gold, and the volatility index VIX observed from January 2015 to December 2020. The results depict variable and high levels of endogeneity in the basket of cryptocurrencies under investigation, underlining the evidence of a significant role of endogenous feedback mechanisms in the price formation process.

**Keywords :** hawkes process, cryptocurrency, endogeneity, reflexivity

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