

Price Dynamics in Centralized and Decentralized Exchanges

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ABSTRACT

This thesis investigates the price dynamics of Ethereum across centralized and decentralized exchanges to contribute to the knowledge systematization of cryptocurrencies and Decentralized Finance (DeFi). This study follows Alexander et al. (2020) using autoregressive, including VECM, and cointegration models to investigate the price discovery dynamics between markets. We use the connectedness framework of Diebold and Yilmaz (2012) to estimate the magnitude of spillovers between the Uniswap V2 (decentralized exchange) and three other centralized exchanges, Binance, Gemini, and Bitstamp, comparing the prices of ETH/USDC in all of the exchanges. Our analysis reveals that Binance plays a central role in the inter-market price discovery process, as it demonstrates a higher level of gross spillover to other exchanges compared to Uniswap, Bitstamp, and Gemini. On the other hand, Uniswap gives significantly less spillover to other exchanges than the other centralized exchanges, and it is influenced by the other centralized exchanges significantly more than it influences them. Furthermore, the study shows that Binance responds more quickly to price deviations in other exchanges compared to the other exchanges in the study, emphasizing the crucial role of Binance in the price discovery process. Finally, we observed that microstructure noise in the studied markets dissipates as the frequency of observations decreases, the volatility signature plot curve becomes smoother and start to filter out the noise, with Uniswap converging with spot exchanges at around the 40 minute mark. Overall, the findings of this study provide a better understanding of the price dynamics of Ethereum across centralized and decentralized exchanges and contribute to the growing body of knowledge on cryptocurrencies and DeFi.

KEYWORDS

Blockchain, Finance, Decentralized Finance, Exchanges, Decentralized Exchanges