

## Abstract

Motivated by the occurrence of financial stylized facts (also) in the cryptocurrency markets, we study their dynamics by applying one of the most well-known financial agent-based models to them. Based on interactions between two boundedly rational types of traders, this modeling framework nests eight submodels using four attractiveness specifications and two switching mechanisms between the trading strategies. The analysis is based on three types of datasets — S&P500 to receive a benchmark to the previous research and a comparison with crypto markets, Bitcoin, and a hypothetical market-weighted Top20 cryptocurrency index. For the estimation, we utilize the simulated method of moments, a technique commonly used in complex models where analytical solutions are not feasible. Overall, the results for cryptocurrency datasets imply a very promising application of agent-based models to the analysis of crypto markets. Particularly, for Bitcoin, all submodels produce data in close agreement with the empirical data-generating process. We attribute the robust rank of results to the low level of rationality of the studied markets. However, we are unable to directly interpret the evolution of the trading groups due to the lack of the resulting group dynamics. We identify a similar problem in several other recent studies and suggest addressing this issue in further research by reevaluating the fixed parameters.

**JEL Classification** C13, C15, C51, C52, C53

**Keywords** agent-based model, Bitcoin, cryptocurrencies, simulated method of moments

**Title** Application of a Financial Agent-Based Model to the Cryptocurrency Market