"Are there bubbles in Bitcoin ? An analysis with Markov switching AR model"

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Abstract

In this paper, we examine whether there is a bubble phenomenon in the price dynamics of Bitcoin, one of representative cryptocurrencies. We apply a Markov switching AR (MSAR) model to the price data of Bitcoin. For that purpose, first, we introduce various statistical methods for detecting bubble, including existing popular ones and the ones that have not been used, but may potentially be useful. We examine their finite sample performances by Monte Carlo simulation. We also examine the performances of MSAR model by Monte Carlo simulation because properties of its estimator has not been theoretically established. Finally, we apply these methods to the data of Bitcoin and confirm its practical usefulness.